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Differentials in Tanzania.

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ABSTRACT:

The empirical literature on gender in agriculture has consistently found a significant gender gap in disadvantage of female plot owners/managers. This paper goes beyond the plot ownership or management-related gender gaps and investigates the returns of female empowerment in agriculture on agricultural productivity differentials. We use data from the latest Tanzania Panel Survey to explore the existence, the sign and the magnitude of potential gender gaps related to (female) decision-making across the whole value chain in agriculture. We bring to the fore a number of key findings. First, prior to controlling for covariates, we find one significant (unconditional) agricultural productivity gender gap in disadvantage of female plot owners and five (unconditional) pro-female gaps related to female decision-making power in agriculture. Second, After controlling for relevant covariates, the (conditional) gap in disfavor of female-owned-plots substantially drops and is often insignificant. However, and more interestingly, we found that two pro-female conditional gaps are consistently significant: (1) plots on which the female enjoys use rights and (2) plots on which she decides about the use of the (main) crop are significantly more productive, even after controlling for the gender of the plot owner. Moreover, these two pro-female gaps are always greater (in magnitude) than their corresponding plot-ownership-related gap. Third, a sub-sample analysis shows that the first pro-female gap operates (only) on female-not-owned plots but not on female-owned plots, while the second pro-female gap operates on both plot sub-samples, although it is more emphasized on female-owned plots. Fourth, the decomposition of these two pro-female gaps shows that they are mainly explained by the structure effect. Fifth, the robustness check highlights that these gender gaps are not homogenous across female marital status: non-married female are further disadvantaged or less advantaged than married female.

Key words: Female, decision-making, agriculture, productivity, Tanzania.
JEL codes: J16, O13, Q12, Q15.

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1 INTRODUCTION

Agriculture is the backbone of many developping economies. It accounts for 32% of the African GDP, supports the livelihoods of 80% of the African population, employs 65% of the Africa's labour force and 70% of the poorest people in Africa (AFDB, 2010). Smallholder agriculture is the predominant form of farm organization in Sub-Saharan Africa (SSA) (FAO, 2009). Agricultural growth is critical for sustainable development, rural poverty alleviation as well as hunger eradication in most developing countries (World Bank, 2007; Timmer and Akkus, 2008; Binswanger-Mkhize et al., 2010).

In SSA, women farmer's labour is at the core of the agricultural sector. They perform more than 50% of all agricultural activities, producing about 60-70% of the food in SSA (Gawaya, 2008). Women contribute significantly with their labor in agriculture (Tripp, 2004) although recent cross-country evidence does not consistently support the view that women provide the majority of labor in crop production in sub-Saharan Africa.

Despite their role in agriculture, women face more constraints than men. Studies have identified a gender gap in agricultural productivity of 20 to 30 percentage points in disadvantage of women (Fontana, Marzia., Paciello, Cristina., 2009; FAO, 2011; World Bank and FAO and IFAD, 2007; Kilic et al., 2013). This gender gap is counter-productive for agriculture productivity and is an important barrier to the development of the agricultural sector, achievement of food security and welfare improvement of rural poor people (Quisumbing et al., 1995; Udry, 1996; FAO, 2011).

Given the paramount importance of (smallholder) agriculture in SSA, its productivity growth has been identified as a key driver of poverty reduction, increased food security and hunger reduction; and for that growth to take place, it's essential to close the gender gap in agriculture which goes along with the inclusive agriculture sector growth(Moock, 1976; Saito et al., 1994; Udry et al., 1995; Blackden et al., 2006; FAO, 2011; World Bank, 2011). The inclusive agriculture sector growth is broad and multidimensional concept. One important component of it is the assessment of women's empowerment in agriculture. According to the Moser's gender planning framework (Moser, 1989), the needs that women's empowerment aims at achieving are classified into "practical" needs[1] such as adressing the challenge of inputs to women and "strategic" needs[2] such as control over decision-making on certain productive resources.

According to Allendorf (2007), land is the main source of livelihoods as well as power and status. Land is of paramount importance to women's economic empowerment, especially in countries that depend on agriculture for their livelihood such as SSA countries (Mutangadura, 2004). Unfortunately, few famale have acquired rights over land through ownership of land and are able to influence decisions (see Kevane and Gray (1999) and Walker (2002)). Access to and control over land continues to be a major setback for women farmers which limits their ability to effectively practice sustainable agricultural development (Allendorf, 2007). citeMehra2008 speak of a myth that women farmers who head households are the only

[1] These are needs that, if met, help women in current activities. They are what result from the condition of the people arising from the gender division of labor.

[2] These are needs that, once met, transform the balance of power between men and women. They refer to the subordinate position of women that limits their ability to effectively indulge in socioeconomic activities.

ones who need development support[3]. However, as a mater of fact, the majority of women who farm live in male headed households and they need development support too (Doss, 2001)[4]. To reword Doss (2001) but in another regard, the majority of women farmers live in male-headed households and farm on male-owned plots. They need empowerment (in agriculture) too, for instance over decision-making in agricutlture. Moreover, some female plot-owners also live with their husband. For them as well, empowerment in other dimensions (than ownership) is crucial since plot ownership does not guarantee decision-making power on that plot. Indeed, access to resources does not guarantee control over them (Kabira,1997) since the one in control might dominate in the decision-making. For instance, men can challenge women's rights to land even in matrilinear societies (Kevane and Gray, 1999). Women might sometimes lose access even to the land provided to them for food production (Lastarria-Cornhiel, 2006). Men have tended to dominate in making decisions about what to grow since societies are constructed in such a way that they control economic activities in the household (Squire, 2003).

This paper is related to the literature on (1) women empowerment in agriculture and (2) gender productivity differentials in agriculture. In the empirical literature on gender gap in agriculture, the gender gap at plot level is generally investigated as the yields differential on either male- versus female-owned plot or male- versus female-managed plots (we refer to Peterman et al. (2011) and Kilic et al. (2013) for an extensive review of this literature). It has been documented that, for example, female-owned/managed plots are less endowed in production factors (in terms of both quantity and quality) than their male counterparts. In recent literature, this unequal access to productive resources has been highlighted as the main effect, the so called "endowment" or "composition" effect[5], driving the gender gap in agriculture in disadvantage of female (Kilic et al., 2013; Aguilar et al., 2014).

This paper investigates the role of women empowerment (in agriculture) on agricultural productivity in Tanzania. It makes use of the latest LSMS-ISA data available for Tanzania. As a contribution to existing literature, the women empowerment in agriculture is considered across the whole value chain in agriculture. At our best knowledge, this is the first time such a broad analysis is done. Concretely, we consider female ownership of plots, female decision-making at different levels of the production, marketing of agricultural products and management of agricultural income[6]. Then, we pore the analysis to another level beyond plot ownership and plot management by female.

Our main research question is adressed as follows. Beside the plot ownership and plot management-related gender gaps (i.e. irrespective of the gender of the plot owner and plot manager) in disadvantage of women, are there other gender gaps related to other aspects of women empowerment in agriculture (other than plot ownership and management)? If yes, are they significant, in disadvantage of female or pro-female? How relevant are they compared to the plot

[3] (Mehra and Rojas, 2008, p.2)

[4] cited in (Mehra and Rojas, 2008, p.2)

[5] The endowment effect is defined as the share of the gender gap that is explained by differences in in the levels of explanatory variables between the male and female-owned/managed plots.

[6] This includes whether the female (1) owns the plot; (2) can decide to sell the plot ot to use it as collateral; (3) has use rights to the plot; (4) decides about what to plant on the plot; (5) decides about inputs use; (6) decides about the use of the harvested crops; (7) is crop sales negociator and (8) is crop sale earnings manager.

ownership/management-related gender gaps? We adress a number of specific research questions. For instance, assume a household with both male and female, some male-owned plots, some jointly-owned plots as well as some female-owned plots. On one hand, could female control over decision-making in agriculture (use rights to the plot, decision-making over what to plan, inputs use, crop use,) counterbalance the endowment effect that female-owned plots suffer from and, thus, reduce the gender gap? On the other hand, could female decision-making in agriculture boost their efficiency, still on their own plots? On male-owned plots, women obviously contribute, for example with their labor supply. Therefore, would women that enjoy better decision-making position in agriculture (for example control over the use of the crop, management of the crop sale earnings,...) be more efficient on the male-owned plots than those who don't? A priori, the answer to all these questions is "yes".

We hypothesize that these women empowerment domains/dimensions are complementary in some ways. By this, we don't mean that they just add up but they can also interact between each other. None of them would be enough *per se*. Productive resources that foster agricultural production need to be available to women in terms of both accessibility and control to adress their needs. Beyond targeting plot ownership by female, there is a need for increased female decision-making along the value chain on their own plots as well as on male-owned plots. Women decision-making power is also multidimensional. A woman that (can) decides over what to plant but totally loses control over what to do with crop sale earnings is not enough empowered. In such a situation, she might engage more in cultivation of food crops rather than cash crops. If she also decides about inputs use, she might also give priority to food-crop plots than cash-crop plots.

The reminder of the paper is structured as follows. Section 2 gives a background on Tanzania. Section 3 is about the data (dataset and descriptive statistics). Section 4 presents the econometric results. Section 5 is about the robustness check. Finally, Section 6 concludes.

2 Background on Tanzania

Formed by the Tanzania mainland (former Tanganyika) and the semi-autonomous islands of Zanzibar, the United Republic of Tanzania (URT henceforth) is an East African country as large as 947,300 square kilometers. It's divided into 30 administrative regions of which 25 in the mainland and 5 in Zanzibar. According to the 2012 population and housing census, the population growth rate and the total population stand at 2.7 percent and 44.9 million in 2012,respectively, of which 43.6 million on Tanzania mainland and 1.3 million in Zanzibar. The country is sparsely populated with population density of 51 persons per square kilometre. The average household size is 4.8 and the sex ratio is 95 males per 100 females in 2012.

According the the 2011 Tanzania Agriculture and Food Security Investment Plan (TAFSIP)[7], the agriculture sector generates 25% of GDP, 24% of exports, employs over 75% of the population and is home to the great majority of the poor. The agriculture sector in Zanzibar is slightly different from that of the mainland: the share of the agricultural sector in GDP is slightly higher (about 28%) but accounts for over 75% of foreign exchange earnings generated by two export commodities (cloves and seaweed); aboout 70% of the population relies directly or indirectly on agriculture for their livelihood. The URT has 95.5 million ha of land of which 44

[7] by United Republic of Tanzania (2011)

million ha are classified as arable, but only 27% of the arable land is under cultivation. Of the 50 million ha suitable for livestock, only 26 milllion ha is under use while the rest can not be accessed due to tsetse fly infestation. the area suitable for irrigation is estimated to be about 29.4 million ha but only 0.34 ha are currrently under irrigation. Over 80% of the arable lad is used by smallholders (with average size of 0.2 to 2 ha) and only 1.5 million ha is under medium or large scale farming.

Agriculture is given a prominent role in economic growth and poverty reduction since the rural sector contains the majority of the poor population. Over the last decades, the country has achieved impressive economic growth with an average 6% annual economic growth mainly driven by the strong growth in the industry and services sector rather than in the agriculture sector. The agricultural sector has performed somewhat weaker performance with persistently lower growth rate compared to other sectors, so that its share of GDP fell from 29 per cent in 2000 to 25 per cent in 2009. The agriculture sector performance has varied between subsectors with the best performance in export crops such as sugar, tea and tobacco, which have recorder growth rates of almost 10 per cent per annum. The agriculture sector in the URT is female-intensive. For instance, 54 percent of the labor force in agriculture are women. 81 percent (98 percent in rural areas) of women, against 73 percent for men, are engaged in agricultural activity (FAO, IFAD and ILO, 2010). This share of women involvement in agriculture is higher than counterpart average in the rest of SSA (55%).

Gender issues in general (i.e not only related to the agriculure sector) are still pertinent. For instance, unemployment is twice higher among women (5.8%) than men (2.8%) whereas women constitute 89 percent of the labor force United Republic of Tanzania (2006). According to the 2007 National Household Budget Survey[8], average earnings are estimated to be 1.7 times higher for men than for women. In the 2013 Global Gender Gap report of the World Economic Forum, the URT is ranked 66th out of 136 countries with a gender gap index of 0.693. The gender inequality index was 0.556 (rank: 119) in the Human Development Report 2013 of the UNDP.To adress the gender disparity, the URT has formulated gender sensitive action plans. Particulary, the URT has launched the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) as an initiative that brings all stakeholders in the agriculture sector to a common agenda of comprehensively transforming the sector to achieve food and nutrition security, create wealth, and poverty alleviation. More importantly, the URT has ackonwledged the importance of gender as key issue pertaining to the success of the TAFSIP. Therefore, the TAFSIP integrates gender as a cross-cutting issue in agriculture vis-à-vis of two areas: (1) Empowerment of women (among other vulnerable groups) through policies that target their ability to be active participants in the agriculture sector. (2) Promoting gender equity: ensuring that women and other vulnerable groups have equitable access to resources.

[8] By United Republic of Tanzania (2007)

3 DATA

3.1 THE DATASET

With support from the World Bank LSMS-ISA team (among others), the Tanzanian National Bureau of Statistics (TNBS) conducted a nation-wide representative household panel survey (The Tanzania National Panel Survey - NPS). So far, three rounds of TZNPS have been implemented, namely the 2008/2009, 2010/2011 and 2012/2013 waves.

Each survey questionnaire is made of three sub-questionnaires namely the household questionnaire, agriculture questionnaire and community questionnaire. In the agriculture questionnaire, some questions are about plot ownership and decision-making in agriculture. The number of these questions varies across rounds. The box below summarizes which questions are asked in which round of the NPS.

Box 1. Ownership and agricultural decision-making questions in the TZNPS.

Item	Tanzanian National Panel Survey		
	2008-2009	2010-2011	2012-2013
Who owns the plot	YES	YES	YES
Who decide(s) whether to sell this plot or use it as collateral	NO	NO	YES
Who has use right to the plot	NO	NO	YES
Who decide(s) what to plant	YES	YES	YES
Who decide(s) about input use	NO	NO	YES
Who decide(s) about the use of the harvesed crop	NO	NO	YES
Who is responsible for negociating the sale of crops to customers	NO	NO	YES
Who decide(s) what to do with sale earnings	NO	YES	YES

Source: From questionnaire instruments of the three waves of TZNPS.

3.2 DESCRIPTIVE STATISTICS

WOMEN DECISION-MAKING OVER THE EIGHT DIMENSIONS. To link the (i) distribution of plots by the gender of the plot owner or of the decision-maker over a given dimension and (ii) women empowerment, we construct a dummy variable equals 1 if the female solely or jointly own/decide, and 0 elsewhere. Table 1 in the Appendix presents the means of eight dummies representing the women's empowerment in agriculture together with other eight dummies for the man's counterpart. Overall, women own fewer plots than men and have less decision-making than men over a range of decision items in agriculture. 43% of the plots are (co-)owned by a woman. Some women plot owners do not decide to sell or to use the plot as collateral since women can do so on only 35% of the plots. On half of the plots (51%), the woman (co-)decides about what to plant on the plot whereas she (co-)decides about input use on 49% of the plots. The share of plots on which the woman decides about the use of crop is 38%. The share of plots where the woman is sales negociator and earnings manager is only 19% against 36% for men.

The detailed (cross-) distribution of plots by the eight dimensions[9] shows that joint ownership/decision-making occurs more often than male and female exclusive ownership/decision-making with female exclusive ownership/decision-making being rather scarce. The plot owner is very often the same who decides when it comes to selling the plot or using it as collateral but little correlation exists between the former attribute and having use rights to the plot. Moreover, the decision-maker about what to plant is the same decision-maker over input use on over 90% of plots, and is still often the same decision-maker about the use of harvested crop.

Plot agricultural productivity. The plot agricultural productivity is proxied by the gross value (in TSH) of plot output per acre. Table 2 in appendix displays the means of the plot agricultural productivity by specific sub-samples defined by whether the female (co-)owns the plot or has some say over a given plot or crop-related decision-making. Agricultural productivity is 12 percent significantly (at 1 percent level) lower on female-(co-)owned plots than on female-not-owned plots. When the female can decide about selling the plot or using it as collateral, the productivity is also higher but weakly, both in magnitude (8 percent higher) and in significance (significance only at 10 percent level). Decision-making by the wife about what to plant and input use on the plot does not significantly increase the agricultural productivity. At the contrary, when the female has use right to the plot or has some say over the use of the crop, the productivity is on average 28 and 27 percent higher. Plots on which the female is (one of the) crop sale negociator or crop sale earnings manager are 33 and 34 percent more productive.

Other variables.

The Table 3 in Appendix presents some summary statistics of a set of covariates on the pooled sample, on female-(co-)owned plots and female-not-owned plots[10].

Plot characteristics. Intercropped cultivation occurs on half of the female-owned-plots against one quarter of the female-not-owned plots. Female-owned-plots are significantl closer to the market than female-not-owned plots. The share of plots cultivated in the 2012 long rainy season and that of plots with good soil quality are 18 percent and 10 percent higher, respectively, on female-owned plots.

Labor inputs. The incidence of household male labor is slightly higher on female-owned plots[11] while househodl male labor is 8 percent less intensive on female-owned plots. However, although the incidence of household female labor is 20 percent higher on female-owned-plots, household female labor is not more intensive on female-owned plots. As regard the hired labor, there is no difference in its intensity, regardless of its provider (man, woman or child).

[9] The cross-tabulations are not reported in this paper just for the space issue.

[10] Female-not-owned plots are different from male-owned plots for two reasons: on one hand, female owned plots also include jointly-owned plots while, on the other hand, female-not-owned plots also include outsider-owned-plots.

[11] This does not mean that household male labor is necessary lower on male-owned plots: on one hand, female owned plots also include jointly-owned plots while, on the other hand, female-not-owned plots also include outsider-owned-plots.

Non-labor inputs. The incidence of organic fertilizer use is 3 percent higher on female-owned plots. The share of plots under inorganic fertilizer and pesticide use is roughly the same on female-owned plots and female-not-owned plots. Moreover, there is no significant difference about the instensity of using organic and inorganic fertilizer on female-owned plots versus on female-not-owned plots. However, the average quantity of pesticide used per acre is distinctly six times lower on female-owned plots.

Household and individual characteristics. The majority of female plot owners live in household headed by male. Only 31 percent of them head their household. Female plot owners also live in rather small-size households. They are also 9 years older than other female. As regard human capital, female plot owners are rather deprived along a range of educational achievements vis-à-vis of other female.

Household experience of shocks. On 29 percent of female-owned plot area, the plot area harvested was less that the area planted; i.e 13 percent higher than on female-not-owned plots. As regards other shocks at household level, female plot-owners live in households vulnerable to shocks: 81 percent of households where the female is plot-owner have been severly affected (negatively) by some shocks over the previous five years, particulary agricultural shocks (63 percent) that cause income loss (44 percent)

4 Econometrics

4.1 Naïve model regression results.

Table 4 presents naïve estimates of the (unconditional) gender gap in agricultural productivity without fixed effects. From column (1) to column (8), the (log of) plot agricultural productivity is regressed on one dummy indicating whether the female (co-)owns the plot and seven dummies indicating whether the female has some decision-making power in agriculture, one by one. From column (9) to column (15), two dummies are simultaneously included: the first (and always the same) indicates whether the female (co-)owns the plot while the second (different across columns) indicates whether she has some say over a given decision-making in agriculture. Table 5 shows similar estimates with district and region fixed effects, respectively.

The unconditional productivity differential points at 12.2 percent in disfavor of female-owned plots. Unlike the ownership-related gender gap, Four out of the seven decision-making-related gaps are pro-female, i.e in favor of plots under female decision-making. For instance, when the wife has use rights to the plot, productivity is 28.3 percent higher. When the wife (co-)decides about the use of the main crop, plot productivity is between 28.1 percent higher. When the wife is crop sale negociator or sale earning's manager, the productivity is 46.4 percent and 47.4 percent higher, respectively. These two last naïve coefficients particularly high are to be interpreted with caution since they might also capture the simple fact that the main crop is for sale.

When two dummies are included simultaneously, the gender gap is consistently significant in disfavor of female-owned plots. Female-owned plots are between 9.48 and 23.9 percent less productive. Moreover, six (out of seven) gender gaps related to decision-making in agriculture are consistently and significantly positive (thus pro-female) and even improve in magnitude.

Including district and region fixed effects yields qualitatively comparable results. But, it's worth noting that with region fixed effects, the model improves as the coefficient of determination (R^2) substancially increases relative to the models without fixed effects and with district fixed effects. Therefore, in all what follows, all the estimates we will present and interpret are based on models with region fixed effects.

4.2 Full model regression results

Table 6 presents the OLS estimates of plot productivity on the pooled sample with region fixed effects. From column (1) to column (8), the dummies indicating women empowerment in agriculture are included one by one (thus, eight specifications). From column (9) to columns (15), a pair combination of the the dummy indicating whether the female owns the plot and one particular dummy indicating if she has some say over a given decision-making in agriculture is included. This table is to be compared to the naïve estimates in Panel B of Table 5 if one wants to compare naïve and full model estimates.

The productivity difference in disfavor of female-owned plots substantially decreases from 15.6 percent to 6.09 percent and is no longer significant (column (1)). When the ownership dummy is pair-combined with one particular decision-making dummy, the gender gap in disfavor of female-owned plots is significant in two cases only (columns (9) and column(13)) and is about 9.5 percent.

As regards the pro-female gender gaps related to female decision-making power in agriculture, only two are still significant although they decrease in magnitude. For instance, when the female has use rights to the plot, the plot is 15.9 percent more productive (column (3)). When the female decides about the use of the main harvested crop, plot productivity is 8.92 percent higher (column (6)). When the dummies underlying these pro-female gaps are pair-combined with the ownership-dummy, these two pro-female gaps remain significant and are 14.5 and 12.1 percent, respectively.

The estimates of the remaining covariates are qualitatively similar across all the fifteen specifications. The statistical significance of the dummy variables indicating whether the female is crop sale negociator and whether she is the manager of sale's earnings vanishes (compared to its estimate in Panel B of Table 5) as we include the dummy indicating whether the main crop is for sale. This confirms our prior presumption that the positive gaps related to female decision-making over sales negociation and earnings management were driven by the mere fact that the main crop is for sale[12].

The GPS-based plot area negatively impacts the plot agricultural productivity across all the specifications. Plot agricultural productivity is positively associated with intercropping cultivation. The distance from the plot to the home slightly increases the agricultural productivity. Plots with good-quality soil, under use of improved seeds as well as plots under irrigation are more productive.

The incidence of household male labor has no significant effect whereas the incidence of household female labor has positive effect but is significant in two specifications only. Unlike household labor, any type of hired labor (male, female or children) yields positive returns to plot productivity across all the fifteen specifications. As regards non-labor inputs, the use of organic fertilizer, inorganic fertilizer

[12]When the dummy indicating whether the main crop is for sale is not included as a covariate, the pro-female gender gaps related to female decision-making over sale's negociation and earnings management are still significant.

and pesticide generates higher plot yields.

Plot agricultural productivity is lower in female-headed households while the size of the household is positively associated with plot productivity. The experience of household agricultural shocks has a negative effect on the agricultural productivity while, as obvious from the construction of our proxy of plot agricultural productivity, when the area harvested is less than the area planted, productivity is consequently lower.

An interaction model

From column (9) to column (15) of Table 6, each significant pro-female gender gap related to decision-making in agricutlure is greater than the corresponding gender gap against female-owned plots. The question that naturally arises here is whether these gaps just add up or can interact in some ways. We investigate this by fitting a model that interacts the dummy variables underlying the two gaps. Results are presented in Table 7.

Given that the female does not (co-)own the plot, the plot agricultural productivity is between 17.2 percent higher when the female has useright to the plot. Given that the female (co-)owns the plot, the plot productivity is lower when she has no use rights to the plot but the difference is not significant. Plots owned by the female to which she also has use rights are more productive than female-not-owned plots to which she neither has use rights, although this positive difference is not significant (as indicated by the iterated factor YES_YES). The returns to having (versus not having) use rights to the plot is lower on female-owned plots than on female-not-owned plots, although this negative difference is not significant (as indicated by the interaction factor YES_YES_bis).

Given that the female does not (co-)own the plot, the plot agricultural productivity is arround 10 percent higher when the female decides about the use of the crops. Given that the female (co-)owns the plot, the plot is between 17.2 and 23.9 percent less productive when she has no say about the use of the crop. Plots owned by the female and on which she also decides about the use of the main crop are more productive than female-not-owned plots on which she neither decides about the use of the main crop, although this positive difference is not significant (as indicated by the iterated factor YES_YES). The returns to deciding (versus not not deciding) about the use of the main crop is higher on female-owned plots than on female-not-owned plots, although this positive difference is significant at 10 percent level (as indicated by the interaction factor YES_YES_bis).

Analysis by sub-sample

To investigate in depth whether the sign, magnitude and significance of the estimates presented in Table 6 are driven by some sub-samples, we re-estimate the agricultural productivity on (1) female-not-owned plots *versus* female-owned plots, (2) plots to which the female has no use rights *versus* plots to which she does and (3) plots on which the female does not decide about the use of the (main) crop *versus* plots on which she does. Results are presented in Tables 8, 9 and 10. All the three set of results are with region fixed effects. A number of observations come in order.

The first set of split results (female-not-owned plots *versus* female-owned plots) are presented in the Table8. The positive effect of "female having use rights to the plot" in the pooled sample is driven by female-not-owned plots. Indeed, Female use

rights to the plot are not (positively) associated with plot agriculture productivity on female-owned plots. Unlike on female-owned plots, the agricultural productivity is 14 percent higher when the female has use rights to the plot. This finding suggests that securing female use rights to the plot is good for productivity. Unlike on female-not-owned plots, female decision-making about inputs use and the use of the harvested (main) crop yield higher productivity (18 and 21.9 percent respectively). This finding suggests that at the top of plot ownership by female, female decision-making authority over inputs and crops use is a productivity-enhancing attribute. Estimates of some covariates are qualitatively similar on either sub-sample but others are rather different across the two sub-samples. One covariate's estimate is significantly positive on female-not-owned plots only ("plot_irrigation_d"); some covariate estimates are significantly positive on female-owned plots only ("cultivation_intercropped_d", "organic_fertilizer_use"); whereas others are more significant (in magnitude) on one sub-sample than on the other, and vice-versa. For instance,

The second set of split results are presented in the Table 9. On plots where the female has no use rights, when she decide about the use of the (main) crop, the agricutural productivity is 9 percent higher. On plots where the female has use rights, if she also own the plot or can decide to sell the plot, the productivity is also higher. This finding indicates that these different dimensions of women empowerment are complementary one to another. As other covariates are concerned, we interestingly notice that, while the incidence of household male labor is not significant on neither sub-sample, the incidence of household female labor yields positive returns on (only) plots where she has use rights. We interpret this as indication that female labor is significantly more efficient when the female enjoy use rights to the plot.

The third set of split results are presented in the Table 10. On plots where the female decides about the use of the (main) crop, if she further enjoy use rights to the plot, the agriculture productivity is even higher. Again, as just previously found for household female labor, a number of variables (incidence of household female labor, incidence of hired woman labor, incidence of organic fertilizer use, incidence of pesticide use) are productivity-enhancing factors (only) on plots where the female decides about the use of the main crop.

4.3 Oaxaca-Blinder decomposition

We resort to the so called "Oaxaca-Blinder" decomposition methods to unpack the gender differentials in agricultural productivity.

Assume that the sample can be split into two mutually-exclusive groups A and B and let Y be an outcome variable that can be predicted by a set of covariates X according to the linear model:

$$Y_{gi} = X_{gi}^{'}\beta_g + \epsilon_{gi} \tag{1}$$

where $g \in \{A, B\}$, X_i is a $Kx1$ vector of explanatory variables (including the "unit" for the intercept) and β_g is a $Kx1$ vector of group "g"-specific coefficients. ϵ_i are the errors such that $E\left(\epsilon_i\right) = 0$.

The difference in Y between the two groups is defined as:

$$D = E\left(Y_A\right) - E\left(Y_B\right) = E\left(X_A\right)^{'}\beta_A - E\left(X_B\right)^{'}\beta_B \tag{2}$$

To decompose the contribution of group differences in observables to the overall difference in the outcome, two approaches are common in the literature.

THREEFOLD DECOMPOSITION. By adding and substracting $E\left(X_A^{'}\right)\beta_B$ and $E\left(X_B^{'}\right)\beta_A$ to the equation 2, the latter can be rearranged as:[13]

$$D = \underbrace{\left[E\left(X_A\right) - E\left(X_B\right)\right]^{'}\beta_B}_{\textbf{EE}} + \underbrace{E\left(X_B\right)\left(\beta_A - \beta_B\right)}_{\textbf{SE}} + \underbrace{\left\{E\left(X_A\right) - E\left(X_B\right)\right\}^{'}\left(\beta_A - \beta_B\right)}_{\textbf{IE}} \tag{3}$$

Equation 3 is known as the "*aggregate decomposition*". The first component (**EE**) of equation 3 captures the "*endowments effect*" (also called "*composition effect*") that amounts to the share of the outcome gap due differences in observables. It measures the expected change in Y_B if group B was endowed with group A's level of observables. The second component "**SE**" is the "*structure effect*" that captures the share of the outcome gap due to differences in returns to the same level of observables. It quantifies the expected change in Y_B if group B had the same returns to observables as group A. The third component of (**IE**) is the "*interaction effect*" accounting for simultaneous difference in level of observables and returns to observables.

TWOFOLD DECOMPOSITION. This is an alternative decomposition starts from the assumption that there is a nondiscriminatory coefficient vector B^* that should be used the reference vector coefficient when quantifying the endowments effect. By adding and substracting $E\left(X_A^{'}\right)\beta^*$ and $E\left(X_B^{'}\right)\beta^*$ to the equation 2, the latter can be rearranged as:

$$D = \underbrace{\left\{E\left(X_A\right) - E\left(X_B\right)\right\}^{'}\beta^*}_{\textbf{EE}} + \underbrace{\left\{\underbrace{E\left(X_A\right)^{'}\left(\beta_A - \beta^*\right)}_{\textbf{GASA/D}} + \underbrace{E\left(X_B\right)^{'}\left(\beta^* - \beta_B\right)}_{\textbf{GBSD/A}}\right\}}_{\textbf{SE}} \tag{4}$$

The first component (**EE**) of equation 4 (*aggregate decomposition*) is the "*endowement effect*" that still quantifies the expected change in Y_B if group B was endowed with group A's level of observables, except that the differences in observables are valued at the nondiscriminatory return. The second component of equation 4 is the "*structure effect*" (also referred to as the "*unexplained effect*" and captures the share of the gap in the outcome that is driven by deviatios of each group-specific vector of coefficients (β_A and β_B) from the nondiscriminatory vector of coefficients β^*. Several estimates of the (unknown) nondiscriminatory vector of coefficients (β^* have been suggested in the literature(Oaxaca, 1973; Reimers, 1983; Cotton, 1988; Neumark, 1988; Oaxaca and Ransom, 1994). We refer to Jann (2008) for a detailed review of those suggested estimates. The "*structure effect*" itself is composed of two components namely the group A's structural advantage/disadvantage (GASA/D) and the group B's structural disadvantage/advantage (GBSD/A). Beyond the *aggregate decomposition*, it is also possible to perform a *detailed decomposition* that disentagles the composition and structure effects into individual contribution of each covariate.

[13] The following equation is formulated from the wiewpoint of group B. Obviously, it's alternatively possible to formulate the the difference in outcome means from the viewpoint of group A.

Identification of the parameters of interest for the *aggregate* and *detailed decomposition* rests on some identification restrictions on the joint distribution of observable and unobservable characteristics(Fortin et al., 2011). The first assumption underlying the *aggregate decomposition* is the *overlapping support* that guarantees that no single values of $X = x$ or $\epsilon = e$ can identify membership into one the two groups, i.e. let D_G be a dummy variable indicating whether an individual belongs to group "G" with $G \in \{A, B\}$ and $\left[X^{'}, \epsilon^{'}\right]^{'}$ be $\chi \times \varepsilon$. Thus, $0 < Pr\left[D_G = 1 \mid X = x, \epsilon = e\right] < 1, \forall \left[x^{'}, e^{'}\right]^{'} \in \chi \times \varepsilon$. The second assumption behind the *aggregate decomposition* is the *ignorability* (or *unconfoundness*) that imposes the distribution of unobservables to be orthogonal to the group membership indicator conditional on observables (i.e., $\forall x \in \chi : D_G \perp \epsilon | X$). The *detailed decomposition*' exercise requires additional assumptions namely the *additive linearity* and *zero conditional mean* (Fortin et al., 2011).

In this paper, we rely on the twofold decomposition approach to disentangle the "*endowment effect*" and "*structure effect*" driving the agricultural productivity gaps aforementionned. Following Jann (2008), we choose the nondiscriminatory vector of coefficients β^* to be the one estimated from the pooled model including the group indicator as an additional covariate[14]. As regards the productivity gap in disfavor of female-owned plots, in further splitting the "*structure effect*", we will speak of structural disadvantage on female-owned plots (female owners structural disadvantage). Conversely, as regards the two pro-female gaps in favor of plots wherein the female has use rights or decides about the use of the harvested crops, we will rather speak of female structural advantage.

4.3.1 Oaxaca-Blinder decomposition results, by the gender of the plot owner.

Table 11 presents the results from decomposing agricultural productivity differentials by whether the wife owns (or not) the plot. In some cases, one of the two relevant decision-making variables (that exhibited significant pro-female gaps) is included among other covariates. The (log of the) average productivity is 11.47 on female-not-owned plots agains 11.35 on female-owned-plots, i.e 12.3 percent gap.

First, when neither of the two decision-making variables are included, neither the endowment effect nor the structure effect are significant.

Second, when the dummy indicating whether the female has use rights to the plot is included, the endowment effect explains 72.43 percent of the gap (i.e. 0.0891 / 0.123) and the remaining 27.57 percent is unexplained. The endowment effect is mainly driven by the dummy indicating whether the wife has use rights to the plot.

Third, when the dummy indicating whether the female decides about the use of the main crop is included, female structural disadvantage explain 93.5 percent of the gender productivity gap (0.115 / 0.123). Interestingly, the fact that the female decides about the use of the harvested crops contributes negatively (and strongly) to the female structural disadvantage.

4.3.2 Oaxaca-Blinder decomposition results, by whether the wife has use rights.

Table 12 presents the results from decomposing agricultural productivity differentials by whether the female has (or not) use rights the plot.

[14] Jann (2008) shows that if the group indicator is not included in the pooled model, some of the unexplained parts of the differential can be inappropriately transferred into the explained component.

First, when no other empowerment variable is included, the female structural advantage explains 75 percent (0.212 / 0.284) of the pro-female gender gap in productivity.

Second, when the dummy indicating whether the female owns the plot is controlled for, the female structural advantage explains 70 percent (0.200 / 0.284) of the pro-female gender gap in productivity. The fact that the female owns the plot contributes positively to the female structural advantage. Moreover, wife labor incidence is more efficient and contribute positively towards the female structural advantage.

Third, when the dummy indicating whether the female decides about the use of the main crop is controlled for, 34 percent (0.0968 / 0.284) and 66 percent (0.187 / 0.284) of the pro-female gender gap in productivity are explained by the endowment effect and the female structural advantage, respectively.

4.3.3 Oaxaca-Blinder decomposition results, by whether the female decides about the use of the main crop

Table 13 presents the results from decomposing agricultural productivity differentials by whether the wife decides (or not) about the use of the harvested crops.

First, when no other empowerment variable is included, 52 percent (0.147 / 0.284) and 48 percent (0.137 / 0.284) of the pro-female gender gap in productivity are explained by the endowment effect and female structural advantage, respectively. Interestingly, the wife labor incidence contributes positively to the female structural advantage. This points to higher returns to female labor incidence when the female decides about the use of the main crop.

Second, when the dummy indicating whether the female owns the plot is included as a covariate, the female structural advantage explains 62 percent of the pro-female gender productivity gap (0.176 / 0.284). The remaining 38 percent (0.108 / 0.284) of the gap are explained by the endowment effect. The fact that the female owns the plot contribute negatively to the endowment effect but positively to the female structural advantage. Interestingly, the female labor incidence still contributes positively to the female structural advantage.

Third, when the dummy indicating whether the female has use right to the plot is includes as a covariate, the endowment effect explains 58 percent (0.164 / 0.284) of the pro-female gender gap in productivity. The remainig 42 percent (0.119 / 0.284) are explained by the female structural advantage. Unlike previously, the fact that the female has use rights to the plot only contribute positively to the endowment effect but not to the female structural advantage. Still, the incidence of female labor contributes positively to the female structural advantage.

5 Robustness check.

5.1 Sensitibity of the OLS main results by female marital status

We decompose the main results (from Table 6) by female marital status to check their robustness. First, we merely distinguish between married female and non-married female[15]. Second, we provide full marital status decomposition. The results are presented in Table 14.

[15]The marital status is composed of seven categories, namely: (1) monogamous married, (2) polygamous married, (3) living together, (4) separated, (5) divorced, (6) never married and (7) widow. We consider the three first categories as referring to simply "married".

Results in Panel A of Table 14 show that, irrespective of female having or not use right to the plot, productivity is higher if they are married (col (2)). This effect remains significant even after controlling for the gender of the plot owner(col (4)). On the contrary, there is no productivity gain favoring female who are married but who don't decide about the use of the main crop. However, plots whereon the female decides about the use of the main crop and is also married are significantly more productive than the baseline plot category. Results in Panel B of Table 14 show that the disadvantage of non-married female is more driven by separated, divorced and widow women.

5.2 Sensitivity of the OB decomposition results to sub-sample restrictions.

The two mutually exclusive groups that underlied the three gender gaps are (i) female-(co-)owned-plots *versus*female-not-owned plots; (ii) plots whereto the female (jointly) has use rights *versus* plots whereto she does not and (iii) plots whereon the female (co-)decides about the use of the main crop *versus* plots whereon she does not at all. By such construction, for example *female-not-owned plots* are not equivalent to *male-owned plots* since, one hand, the former also include *jointly-owned plots*, while on the other hand the latter also include *outsider-owned plots*. Consequently, as mentionned earlier, this calls attention to the interpretation of the results as they should not viewed from the angle of *female versus male*.

We apply three restrictions to the sample as a robustness check. The first restriction (R1) downsizes the sample by excluding plots owned by somebody else but the head of the household or his/her spouse (male or female). Thes second restriction (R2) downsizes the sample by excluding plots whereto neither the household head nor his/her spouse has use rights. Finally, the third restriction (R3) downsizes the sample by excluding plots whereon neither the household head, nor his/her spouse decide about the use of the (main) harvested crop. Therefore, the reusults can be interpreted from the view of (i) female-(co-)owned plots *versus* male-solely-owned plots, (ii) plots under female use rights (exclusively or jointly with the male) *versus* plots under male use rights (exclusively), and (iii) plots under female decision-making (exclusively or jointly with the male) *versus* plots under male exclusive decision-making.

Table 15 in the Appendix presents the results of the OB decomposition under these restrictions. As pertaining to the first gender gap against female-owned plots, it is statistically significant in only one case and reveals to be driven by the endowment effect. As for the first *pro-female* gap in favor of plots whereto the female (jointly) has use rights, the difference remains significant in all cases. Moreover, il all cases, the female structural advantage drive a substantial portion of the gap. As for the second *pro-female* gap related to (female) decision-making about the use of the (main) harvested crop, it is (still) significant in all cases. This gap turns out to be main driven by the endowment effect (significant in all cases but one) rather than the female structural advantage (significant in only one case).

6 Conclusion

This paper uses the third wave of the Tanzanian National Panel Survey to investigate the role of female empowerment in agriculture on agricultural productivity differentials.

The findings, prior to controling for observables, support the existence of an

unconditional gender gap in agricultural productivity in disadvantage of female-owned plots. We also find out that there are rather pro-female unconditional gender gaps in agricultural productivity when the female enjoys some power over decision-making in agriculture. For instance, when the female (1) has use rights to the plot, (2) decides about inputs use, (3) decides about the use of the main crop, (4) negociates the crop sales and (5) manages the crop sale earnings, the plot agricultural productivity is significantly higher than when she does not.

After controling for different relevant covariates, the (conditional) gender gap in disadvantage of female-owned plots substantially decrease in magnitude and is often statistically insignificant. However, two of the five unconditionally-significant pro-female gaps are still significant in the multivariate analysis. For instance, when the female has use rights to the plot and when she decides about the use of the main crop, plot agricultural productivity is 14.5 and 12.1 percent higher, respectively.

The first pro-female gender gap related to whether the female has use rights to the plot reveals to significantly operate (only) on female-not-owned plots but not on female-owned plots. For instance, on female-not-owned plots, the gain in productivity ranges between 17.2 percent and 24.8 percent (according to whether fixed effects are included or not) when the wife has use right to the plot. The second pro-female gender gap related to whether the female decides over the use of the crop reveals to operate on both female-not-owned plots (with arround 10 percent increase in productivity whe she decides) and female-owned plots (with arround 17 percent decrease in productivity when she does not decide). But, the returns of female decision-making about the use of the crop on agricultural productivity is higher on female-owned plots than on female-not-owned plots (arround 17 percent difference).

The decomposition of these two pro-female gaps brings to light that they are mainly driven by the "*structure effect*". On one hand, as regard the first pro-female gender gap related to whether the female has (or not) use rights to the plot, between 66 percent and 78 percent of it are explained by the "*structural effect*", precisely the " *female structural advantage*". On the other hand, as regards the second pro-female gender gap related to whether the female decides (or not) over the use of the crop, between 42 percent and 62 percent of it are driven by the "*structure effect*", precisely the " *female structural advantage*".

An analysis by subgroups defined by female marital status put in evidence that the gender gaps are not homogenous across female marital status: non-married female are further disadvantaged or less advantaged than married female.

To conlude on this, the answer to our research question is "Yes, there are significant pro-female gaps in agricultural productivity related to (female) decision-making in agriculture" (hence the title of the paper). These pro-female gaps are greater in magnitude than the plot ownership/management-related gender gap against female. They can counterbalance it either in an adding-up fashion or interaction fashion. A relatively large portion of these pro-female gaps are explained by the "*structure effect*", precisely the female structural advantage.

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Appendices

Table 1: Means of woman empowerment variables

Wife empowerment variable	All plots	By plot ownership		
		FNOP	FOP	Difference
wife_own_plot	0.43	.	.	.
husband_own_plot	0.70	0.58	0.86	-0.28***
wife_decide_sell_plot	0.35	0.02	0.77	-0.75***
husband_decide_sell_plot	0.66	0.53	0.82	-0.29***
wife_has_useright	0.13	0.13	0.14	-0.02**
husband_has_useright	0.30	0.29	0.31	-0.02*
wife_decide_what2plant	0.51	0.30	0.78	-0.47***
husband_decide_what2plant	0.69	0.62	0.78	-0.16***
wife_decide_inputuse	0.49	0.28	0.76	-0.48***
husband_decide_inputuse	0.69	0.62	0.77	-0.15***
wife_decide_cropuse_t1	0.38	0.22	0.59	-0.37***
husband_decide_cropuse_t1	0.52	0.46	0.60	-0.15***
wife_sale_negociator	0.2	0.09	0.33	-0.23***
husband_sale_negociator	0.37	0.31	0.45	-0.14***
wife_earnings_manager	0.2	0.09	0.34	-0.24***
husband_earnings_manager	0.37	0.31	0.45	-0.15***
Observations	**9697**	**5491**	**4206**	

Notes: **FNOP** and **FOP** stand for "Female-Not-Owned Plots" and "Female-Owned-Plots" respectively. *, ** and *** indicate significance at 10, 5 and 1 percent level, respectively.

Table 2: Means of plot productivity by plot ownership and decision-making on the plot .

Plot productivity = Gross Output Value (in TSH) / plot area (in acres)
The means are computed on the log-version of the plot productivity
The full sample-based mean is 11.40

Criterion	Mean of Log(Output value/acre)		Diff
	NO	YES	
Wife (co-)owns the plot	11.47	11.35	0.12***
Wife (co-)decides to sell the plot...	11.44	11.35	0.081*
Wife has useright to the plot	11.37	11 65	-0.28***
Wife (co-)decides what to plant on the plot	11.36	11.41	-0.05
Wife (co-)decides about input use on the plot	11.36	11.41	-0.05
Wife (co-)decides about the use of the crop	11.21	11.48	-0.27***
Wife is crop sale negociator	11.32	11.65	-0.33***
Wife is crop sale earnings manager	11.31	11.65	-0.34***

Note: *, ** and *** indicate signicance at 10, 5 and 1 percent level respectively.

Table 3: **Descriptive Statistics of other covariates by whether the wife owns the plot.**

Variable Names	All plots	By plot ownership		
		FNOP	FOP	Diff p-value
Plot characteristics				
plot_area_gps	3.08	3.16	3.03	0.55
cultivation_intercropped_d	0.36	0.26	0.51	0.00
distance_plot_home	6.76	6.98	6.57	0.60
distance_plot_road	2.46	2.44	2.47	0.81
distance_plot_market	10.93	11.57	10.36	0.00
plot_cultivated_d	0.68	0.59	0.77	0.00
soil_quality_good_d	0.31	0.27	0.36	0.00
erosion_control_d	0.08	0.07	0.08	0.21
erosion_problems_d	0.10	0.11	0.10	0.30
plot_irrigation_d	0.02	0.02	0.02	0.59
HH Labor inputs				
husband_labor_incidence_all	0.44	0.44	0.45	0.06
wife_labor_incidence_all	0.53	0.45	0.64	0.00
husband_labor_supply_all	13.83	13.70	14.00	0.52
husband_labor_supply_all_bis	20.03	24.46	16.62	0.00
wife_labor_supply_all	17.00	14.39	20.40	0.00
wife_labor_supply_all_bis	36.36	37.43	35.53	0.75
Hired Labor inputs				
hired_labor_man_all	2.81	2.78	2.84	0.81
hired_labor_man_all_bis	1.50	1.60	1.42	0.30

Continued on next page...

... table 3 continued

Variable Names	All plots	By plot ownership		
		FNOP	FOP	Diff p-value
hired_labor_woman_all	2.36	2.21	2.53	0.15
hired_labor_woman_all_bis	1.64	1.49	1.74	0.45
hired_labor_child_all	0.21	0.26	0.16	0.22
hired_labor_child_all_bis	0.08	0.06	0.10	0.35
hired_labor_all_all	5.38	5.25	5.53	0.47
hired_labor_all_all_bis	3.22	3.16	3.26	0.80
Non-Labor inputs				
org_fert_use_d	0.12	0.10	0.13	0.00
inorg_fert_use_d	0.11	0.11	0.11	0.71
pest_use_d	0.10	0.10	0.09	0.23
org_fert_qty	876.50	800.24	930.95	0.32
org_fert_qty_bis	967.90	1061.40	910.12	0.48
ln_org_fert_qty_bis	5.71	5.80	5.65	0.24
inorg_fert_qty	8.15	6.63	9.97	0.02
inorg_fert_qty_bis	7.43	7.57	7.33	0.85
ln_inorg_fert_qty_bis	3.65	3.63	3.66	0.73
pest_qty	22.16	23.19	21.12	0.72
pest_qty_bis	23.26	42.15	7.36	0.06
ln_pest_qty_bis	-0.22	-0.20	-0.25	0.83
HH characteristics				
hhh_is_male_d	0.78	0.84	0.69	0.00
hhh_is_female_d	0.22	0.16	0.31	0.00
hh_size	5.62	5.75	5.46	0.00
kids_own_size	2.51	2.64	2.35	0.00
kids_ext1_size	2.62	2.76	2.45	0.00
kids_ext2_size	3.28	3.27	3.30	0.57
Individual characteristics				
husband_age	46.04	44.59	48.30	0.00
wife_age	41.91	38.38	47.29	0.00
husband_read_write_kiswahili_d	0.79	0.80	0.78	0.04
wife_read_write_kiswahili_d	0.52	0.63	0.45	0.00
husband_went_to_school_d	0.83	0.84	0.82	0.02
wife_went_to_school_d	0.58	0.68	0.52	0.00
husband_years_schooling	7.06	7.23	6.78	0.00
wife_years_schooling	6.53	7.09	6.02	0.00
husband_adult_class_d	0.06	0.05	0.07	0.00
wife_adult_class_d	0.02	0.01	0.03	0.00
husband_adult_class_duration	9.18	7.56	10.70	0.00
wife_adult_class_duration	5.82	7.42	5.13	0.05
Experience of shocks				
plot_less_area_harvested_d	0.21	0.16	0.29	0.00

Continued on next page...

... table 3 continued

Variable Names	All plots	By plot ownership		
		FNOP	FOP	Diff p-value
hh_shocks_d	0.78	0.76	0.81	0.00
hh_shocks_nr	2.40	2.27	2.57	0.00
hh_agri_shocks_d	0.57	0.53	0.63	0.00
hh_agri_shocks_nr	1.27	1.15	1.43	0.00
hh_agri_shocks_noloss_d	0.04	0.04	0.04	0.76
hh_agri_shocks_noloss_nr	0.04	0.04	0.04	0.91
hh_agri_shocks_incomeloss_d	0.37	0.31	0.44	0.00
hh_agri_shocks_incomeloss_nr	0.52	0.43	0.64	0.00
hh_agri_shocks_assetloss_d	0.08	0.07	0.08	0.08
hh_agri_shocks_assetloss_nr	0.08	0.08	0.09	0.18
hh_agri_shocks_bothloss_d	0.14	0.15	0.14	0.86
hh_agri_shocks_bothloss_nr	0.18	0.19	0.18	0.14

Notes: FNOP and FOP stands for Female-Not-Owned Plots and Female-Owned Plots respectively.

Table 4: Naive regression of plot productivity with no fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
wife_own_plot	-0.122**								-0.133*	-0.0948*	-0.166***	-0.170***	-0.239***	-0.197***	-0.207***
	(-2.31)								(-1.78)	(-1.76)	(-2.72)	(-2.86)	(-4.32)	(-3.89)	(-4.08)
wife_decide_sell_plot		-0.0813							0.0150						
		(-1.51)							(0.20)						
wife_has_useright			0.283***							0.260***					
			(4.01)							(3.60)					
wife_decide_what2plant				0.0536							0.131*				
				(0.87)							(1.85)				
wife_decide_inputuse					0.0566							0.135**			
					(1.01)							(2.13)			
wife_decide_cropuse_t1						0.281***							0.369***		
						(4.56)							(5.80)		
wife_sale_negociator							0.464***							0.498***	
							(8.87)							(9.65)	
wife_earnings_manager								0.474***							0.513***
								(9.03)							(9.87)
_cons	11.47***	11.44***	11.37***	11.36***	11.36***	11.21***	11.26***	11.25***	11.47***	11.43***	11.40***	11.40***	11.28***	11.36***	11.36***
	(233.76)	(254.59)	(285.50)	(187.73)	(207.30)	(193.30)	(276.25)	(273.74)	(233.54)	(221.09)	(189.12)	(203.21)	(187.64)	(227.11)	(228.19)
N	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636
R^2	0.002	0.001	0.005	0.000	0.000	0.009	0.026	0.028	0.002	0.006	0.003	0.004	0.016	0.031	0.033
ll	-6191.7	-6193.7	-6186.8	-6194.9	-6194.8	-6178.2	-6147.1	-6144.3	-6191.6	-6184.5	-6189.1	-6188.7	-6165.2	-6137.2	-6133.5

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Naive Regression of plot productivity with fixed effects.

Panel A. Naïve estimates with district fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
wife_own_plot	-0.118**								-0.127*	-0.0910*	-0.164***	-0.168***	-0.236***	-0.193***	-0.203***
	(-2.27)								(-1.71)	(-1.72)	(-2.70)	(-2.84)	(-4.28)	(-3.86)	(-4.06)
wife_decide_sell_plot		-0.0797							0.0121						
		(-1.51)							(0.16)						
wife_has_useright			0.279***							0.256***					
			(4.02)							(3.64)					
wife_decide_what2plant				0.0590							0.137*				
				(0.95)							(1.90)				
wife_decide_inputuse					0.0604							0.138**			
					(1.08)							(2.17)			
wife_decide_cropuse_t1						0.285***							0.372***		
						(4.70)							(5.89)		
wife_sale_negociator							0.468***							0.502***	
							(8.94)							(9.67)	
wife_earnings_manager								0.478***							0.516***
								(9.09)							(9.91)
_cons	11.51***	11.48***	11.42***	11.41***	11.41***	11.26***	11.33***	11.32***	11.51***	11.47***	11.43***	11.44***	11.32***	11.42***	11.41***
	(111.84)	(114.10)	(118.52)	(104.20)	(110.53)	(104.16)	(119.84)	(120.45)	(111.74)	(109.37)	(104.94)	(109.60)	(103.77)	(114.12)	(114.94)
N	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636
R^2	0.006	0.004	0.008	0.004	0.004	0.013	0.030	0.032	0.006	0.009	0.007	0.007	0.020	0.035	0.037
ll	-6185.4	-6187.3	-6180.5	-6188.3	-6188.2	-6171.1	-6139.9	-6137.2	-6185.4	-6178.5	-6182.5	-6182.2	-6158.5	-6130.5	-6126.8

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel B. Naïve estimates with region fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
wife_own_plot	-0.156***								-0.189***	-0.137***	-0.182***	-0.192***	-0.244***	-0.216***	-0.226***
	(-3.15)								(-2.73)	(-2.72)	(-3.21)	(-3.49)	(-4.73)	(-4.42)	(-4.61)
wife_decide_sell_plot		-0.0926*							0.0445						
		(-1.94)							(0.67)						
wife_has_useright			0.222***							0.190***					
			(3.34)							(2.82)					
wife_decide_what2plant				-0.00842							0.0773				
				(-0.15)							(1.17)				
wife_decide_inputuse					0.0101							0.0983*			
					(0.19)							(1.65)			
wife_decide_cropuse_t1						0.198***							0.287***		
						(3.45)							(4.89)		
wife_sale_negociator							0.394***							0.429***	
							(7.60)							(8.32)	
wife_earnings_manager								0.408***							0.448***
								(7.78)							(8.53)
_cons	11.27***	11.22***	11.15***	11.18***	11.16***	11.01***	11.06***	11.05***	11.27***	11.24***	11.22***	11.22***	11.10***	11.18***	11.18***
	(90.70)	(90.38)	(92.34)	(88.37)	(90.29)	(94.57)	(99.73)	(98.31)	(90.80)	(89.26)	(89.72)	(91.57)	(93.54)	(97.09)	(96.74)
N	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636
R^2	0.079	0.076	0.078	0.075	0.075	0.080	0.093	0.095	0.079	0.081	0.079	0.079	0.087	0.100	0.102
ll	-6046.6	-6050.9	-6047.5	-6053.1	-6053.1	-6044.3	-6017.1	-6014.0	-6046.4	-6042.6	-6045.7	-6044.9	-6030.1	-6004.7	-6000.5

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: **Full Model Regression of Plot Productivity With Region Fixed Effects.**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
wife_own_plot	-0.0609								-0.0956*	-0.0415	-0.0757	-0.0739	-0.0961**	-0.0662	-0.0671
	(-1.39)								(-1.69)	(-0.92)	(-1.60)	(-1.65)	(-2.12)	(-1.49)	(-1.51)
wife_decide_sell_plot		-0.0169							0.0494						
		(-0.39)							(0.90)						
wife_has_useright			0.159***							0.145**					
			(2.84)							(2.49)					
wife_decide_what2plant				0.0173							0.0488				
				(0.34)							(0.89)				
wife_decide_inputuse					0.0110							0.0406			
					(0.24)							(0.86)			
wife_decide_cropuse_t1						0.0892*							0.121**		
						(1.85)							(2.42)		
wife_sale_negociator							0.0126							0.0343	
							(0.24)							(0.64)	
wife_earnings_manager								0.0111							0.0360
								(0.21)							(0.67)
plot_maincrop_4_sale_d	0.639***	0.640***	0.641***	0.640***	0.640***	0.630***	0.632***	0.632***	0.640***	0.640***	0.639***	0.639***	0.625***	0.616***	0.615***
	(14.95)	(14.96)	(15.03)	(14.97)	(14.96)	(14.73)	(11.89)	(11.80)	(15.06)	(15.02)	(14.96)	(14.95)	(14.64)	(11.58)	(11.52)
ln_plot_area_gps	-0.533***	-0.534***	-0.532***	-0.534***	-0.534***	-0.532***	-0.534***	-0.534***	-0.533***	-0.532***	-0.533***	-0.533***	-0.530***	-0.533***	-0.533***
	(-29.85)	(-29.83)	(-29.78)	(-29.78)	(-29.75)	(-29.65)	(-29.83)	(-29.82)	(-29.83)	(-29.82)	(-29.78)	(-29.72)	(-29.65)	(-29.86)	(-29.83)
cultivation_intercropped_d	0.117***	0.117***	0.121***	0.117***	0.117***	0.124***	0.117***	0.117***	0.118***	0.121***	0.118***	0.118***	0.127***	0.118***	0.118***
	(2.91)	(2.90)	(3.00)	(2.90)	(2.90)	(3.07)	(2.90)	(2.90)	(2.91)	(3.00)	(2.91)	(2.92)	(3.16)	(2.92)	(2.92)
distance_plot_home	0.0188***	0.0188***	0.0184***	0.0187***	0.0187***	0.0185***	0.0188***	0.0188***	0.0187***	0.0185***	0.0187***	0.0186***	0.0185***	0.0189***	0.0189***
	(3.63)	(3.59)	(3.54)	(3.58)	(3.57)	(3.56)	(3.60)	(3.60)	(3.62)	(3.57)	(3.60)	(3.59)	(3.61)	(3.64)	(3.64)
distance_plot_market	-0.00113	-0.00107	-0.000910	-0.00105	-0.00105	-0.000935	-0.00107	-0.00107	-0.00116	-0.000962	-0.00108	-0.00107	-0.000975	-0.00114	-0.00111
	(-0.75)	(-0.72)	(-0.62)	(-0.71)	(-0.71)	(-0.63)	(-0.72)	(-0.72)	(-0.78)	(-0.65)	(-0.72)	(-0.71)	(-0.65)	(-0.76)	(-0.74)
soil_quality_good_d	0.184***	0.184***	0.187***	0.184***	0.184***	0.186***	0.184***	0.184***	0.183***	0.187***	0.185***	0.185***	0.187***	0.184***	0.184***
	(4.97)	(4.98)	(5.05)	(4.94)	(4.95)	(4.99)	(4.95)	(4.95)	(4.95)	(5.05)	(4.97)	(4.97)	(5.03)	(4.95)	(4.96)
erosion_control_d	0.0726	0.0724	0.0683	0.0718	0.0716	0.0682	0.0715	0.0715	0.0718	0.0691	0.0723	0.0712	0.0678	0.0712	0.0711
	(0.90)	(0.89)	(0.83)	(0.88)	(0.88)	(0.84)	(0.88)	(0.88)	(0.89)	(0.85)	(0.89)	(0.88)	(0.84)	(0.88)	(0.88)
erosion_problems_d	-0.0234	-0.0230	-0.0167	-0.0219	-0.0222	-0.0173	-0.0223	-0.0221	-0.0228	-0.0178	-0.0219	-0.0222	-0.0167	-0.0227	-0.0221
	(-0.35)	(-0.34)	(-0.25)	(-0.33)	(-0.33)	(-0.26)	(-0.33)	(-0.33)	(-0.34)	(-0.26)	(-0.33)	(-0.33)	(-0.25)	(-0.34)	(-0.33)
plot_irrigation_d	0.480***	0.481***	0.480***	0.481***	0.482***	0.493***	0.481***	0.482***	0.480***	0.479***	0.480***	0.482***	0.496***	0.481***	0.482***
	(3.01)	(3.00)	(3.00)	(2.99)	(3.00)	(3.07)	(3.00)	(3.00)	(3.01)	(3.01)	(3.01)	(3.02)	(3.11)	(3.02)	(3.02)
plot_seed_improved_d	0.0457	0.0428	0.0444	0.0416	0.0417	0.0374	0.0417	0.0417	0.0451	0.0468	0.0461	0.0462	0.0420	0.0458	0.0457
	(1.00)	(0.94)	(0.98)	(0.92)	(0.92)	(0.82)	(0.92)	(0.92)	(0.99)	(1.03)	(1.01)	(1.01)	(0.92)	(1.01)	(1.00)
husband_labor_incidence_all	-0.0686	-0.0678	-0.0710	-0.0665	-0.0667	-0.0633	-0.0674	-0.0674	-0.0683	-0.0714	-0.0661	-0.0660	-0.0636	-0.0684	-0.0686

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	(-1.00)	(-0.98)	(-1.03)	(-0.97)	(-0.97)	(-0.92)	(-0.98)	(-0.98)	(-0.99)	(-1.04)	(-0.96)	(-0.96)	(-0.93)	(-1.00)	(-1.00)
wife_labor_incidence_all	0.0550	0.0584	0.121**	0.0591	0.0602	0.0519	0.0636	0.0631	0.0590	0.112*	0.0488	0.0511	0.0395	0.0620	0.0617
	(0.98)	(1.04)	(1.99)	(1.07)	(1.09)	(0.94)	(1.10)	(1.10)	(1.04)	(1.80)	(0.87)	(0.92)	(0.71)	(1.07)	(1.06)
hired_labor_man_all_bis	0.0232***	0.0233***	0.0231***	0.0233***	0.0233***	0.0233***	0.0233***	0.0233***	0.0232***	0.0230***	0.0232***	0.0232***	0.0232***	0.0232***	0.0232***
	(3.72)	(3.71)	(3.64)	(3.70)	(3.70)	(3.70)	(3.71)	(3.71)	(3.71)	(3.66)	(3.71)	(3.71)	(3.72)	(3.72)	(3.72)
hired_labor_woman_all_bis	0.00467**	0.00465**	0.00474**	0.00464**	0.00464**	0.00463*	0.00464**	0.00464**	0.00465**	0.00475**	0.00468**	0.00468**	0.00466**	0.00468**	0.00467**
	(2.00)	(1.98)	(2.00)	(1.97)	(1.97)	(1.97)	(1.97)	(1.98)	(2.00)	(2.02)	(2.00)	(2.01)	(2.01)	(2.01)	(2.01)
hired_labor_child_all_bis	0.0166***	0.0164***	0.0163***	0.0162***	0.0162***	0.0169***	0.0163***	0.0164***	0.0166***	0.0165***	0.0162***	0.0162***	0.0175***	0.0165***	0.0168***
	(2.76)	(2.70)	(2.71)	(2.63)	(2.64)	(2.76)	(2.69)	(2.68)	(2.78)	(2.75)	(2.67)	(2.68)	(2.89)	(2.75)	(2.76)
org_fert_use_d	0.119**	0.116**	0.119**	0.115**	0.114**	0.111**	0.115**	0.115**	0.120**	0.122**	0.120**	0.119**	0.117**	0.119**	0.119**
	(2.30)	(2.23)	(2.31)	(2.21)	(2.21)	(2.16)	(2.21)	(2.21)	(2.31)	(2.36)	(2.31)	(2.30)	(2.28)	(2.30)	(2.31)
inorg_fert_use_d	0.415***	0.417***	0.413***	0.418***	0.418***	0.415***	0.418***	0.418***	0.416***	0.412***	0.415***	0.413***	0.409***	0.414***	0.414***
	(6.28)	(6.27)	(6.19)	(6.28)	(6.25)	(6.22)	(6.27)	(6.28)	(6.28)	(6.20)	(6.29)	(6.21)	(6.20)	(6.27)	(6.28)
pest_use_d	0.340***	0.341***	0.342***	0.342***	0.342***	0.350***	0.342***	0.342***	0.339***	0.341***	0.341***	0.341***	0.349***	0.341***	0.341***
	(5.13)	(5.16)	(5.19)	(5.18)	(5.18)	(5.35)	(5.17)	(5.17)	(5.12)	(5.17)	(5.17)	(5.17)	(5.34)	(5.16)	(5.16)
hhh_is_female_d	-0.139*	-0.155**	-0.162**	-0.162**	-0.162**	-0.170**	-0.160**	-0.160**	-0.141*	-0.148*	-0.142*	-0.143*	-0.142*	-0.139*	-0.139*
	(-1.85)	(-2.08)	(-2.20)	(-2.15)	(-2.14)	(-2.26)	(-2.16)	(-2.16)	(-1.87)	(-1.95)	(-1.87)	(-1.87)	(-1.87)	(-1.84)	(-1.84)
hh_size	0.0317***	0.0319***	0.0340***	0.0322***	0.0322***	0.0327***	0.0321***	0.0321***	0.0319***	0.0336***	0.0320***	0.0320***	0.0324***	0.0319***	0.0320***
	(4.42)	(4.48)	(4.76)	(4.58)	(4.57)	(4.68)	(4.54)	(4.55)	(4.43)	(4.62)	(4.51)	(4.51)	(4.58)	(4.45)	(4.47)
hh_shocks_d	0.0421	0.0387	0.0324	0.0362	0.0360	0.0278	0.0371	0.0371	0.0416	0.0359	0.0393	0.0371	0.0313	0.0411	0.0409
	(0.65)	(0.60)	(0.50)	(0.56)	(0.55)	(0.42)	(0.57)	(0.57)	(0.64)	(0.55)	(0.60)	(0.57)	(0.48)	(0.63)	(0.63)
hh_agri_shocks_d	-0.103*	-0.104*	-0.0989*	-0.104**	-0.104**	-0.105**	-0.105**	-0.105**	-0.103*	-0.0983*	-0.102*	-0.101*	-0.103*	-0.103*	-0.103*
	(-1.94)	(-1.96)	(-1.87)	(-1.97)	(-1.97)	(-1.99)	(-1.98)	(-1.98)	(-1.95)	(-1.85)	(-1.93)	(-1.91)	(-1.95)	(-1.96)	(-1.95)
less_area_harvested_plot_d	-0.222***	-0.225***	-0.230***	-0.227***	-0.227***	-0.230***	-0.226***	-0.226***	-0.223***	-0.227***	-0.225***	-0.224***	-0.226***	-0.223***	-0.223***
	(-4.68)	(-4.71)	(-4.87)	(-4.75)	(-4.72)	(-4.80)	(-4.75)	(-4.75)	(-4.71)	(-4.80)	(-4.72)	(-4.69)	(-4.74)	(-4.68)	(-4.69)
_cons	10.89***	10.87***	10.78***	10.85***	10.85***	10.80***	10.86***	10.86***	10.89***	10.81***	10.87***	10.87***	10.83***	10.89***	10.89***
	(75.05)	(74.85)	(74.49)	(74.32)	(74.37)	(76.59)	(76.91)	(76.63)	(74.66)	(71.42)	(73.99)	(73.87)	(75.47)	(75.18)	(74.94)
Region Fixed effects	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
N	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634	3634
R^2	0.417	0.416	0.417	0.416	0.416	0.417	0.416	0.416	0.417	0.418	0.417	0.417	0.418	0.417	0.417
ll	-5210.5	-5211.8	-5208.1	-5211.8	-5211.9	-5209.3	-5211.9	-5211.9	-5210.0	-5207.5	-5209.9	-5210.1	-5206.2	-5210.3	-5210.3

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Full model OLS estimates of plot productivity with pair-interaction of relevant empowerment variables.

	(1)	(2)	(3)	(4)	(5)	(6)
The wife owns the plot *versus* She has use right to the plot.						
NO_NO	0	0	0			
	(.)	(.)	(.)			
NO_YES	0.248***	0.229***	0.172**			
	(3.22)	(3.01)	(2.36)			
YES_NO	-0.0149	-0.0188	-0.0306			
	(-0.30)	(-0.38)	(-0.64)			
YES_YES	0.0675	0.0674	0.0478			
	(0.60)	(0.61)	(0.42)			
YES_YES_bis	-0.165	-0.142	-0.0941			
	(-1.18)	(-1.05)	(-0.69)			
The wife owns the plot *versus* She decides about the use of harvested crops.						
NO_NO				0	0	0
				(.)	(.)	(.)
NO_YES				0.107*	0.102*	0.0771
				(1.80)	(1.72)	(1.31)
YES_NO				-0.232***	-0.239***	-0.172**
				(-2.75)	(-2.83)	(-2.05)
YES_YES				0.0404	0.0387	0.0121
				(0.69)	(0.66)	(0.21)
YES_YES_bis				0.165*	0.176*	0.107
				(1.82)	(1.95)	(1.19)
_cons	10.73***	10.76***	10.83***	10.78***	10.80***	10.85***
	(79.93)	(74.49)	(70.20)	(86.37)	(80.23)	(74.34)
Other covariares	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Fixed effects	**NO**	**District**	**Region**	**NO**	**District**	**Region**
N	3634	3634	3634	3634	3634	3634
R^2	0.386	0.390	0.418	0.388	0.392	0.418
ll	-5303.6	-5290.6	-5207.3	-5298.9	-5284.7	-5205.3

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

YES_YES and **YES_YES_bis** are underlied by different parameterizations: **YES_YES** is the difference in productivity between two subsamples defined by [(wife_decide_d = 1) | wife_own = 1] and [(wife_decide_d = 0) | wife_own = 0]. **YES_YES** is the difference in productivity between two subsamples defined by [(wife_decide_d = 1) - (wife_decide_d = 1) at wife_own = 1] and [(wife_decide_d = 1) - (wife_decide_d = 1) at wife_own = 0].

Table 8: **Full Model Regression of Plot Productivity by Plot Ownership-Based Subsamples With Region Fixed Effects.**

	Female-Not-Owned Plots [(1) to (7)]							Female-Owned Plots [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
wife_decide_sell_plot	0.223							0.0306						
	(1.58)							(0.51)						
wife_has_useright		0.140*							0.0805					
		(1.69)							(0.61)					
wife_decide_what2plant			0.00126							0.162				
			(0.02)							(1.42)				
wife_decide_inputuse				-0.0379							0.180**			
				(-0.64)							(2.12)			
wife_decide_cropuse_t1					0.0398							0.219***		
					(0.64)							(2.84)		
wife_sale_negociator						0.0140							0.0261	
						(0.17)							(0.33)	
wife_earnings_manager							-0.0102							0.0385
							(-0.12)							(0.54)
plot_maincrop_4_sale_d	0.624***	0.623***	0.623***	0.623***	0.619***	0.615***	0.628***	0.650***	0.648***	0.644***	0.643***	0.618***	0.628***	0.617***
	(11.04)	(10.97)	(10.96)	(10.95)	(10.75)	(8.36)	(8.50)	(11.51)	(11.42)	(11.42)	(11.37)	(11.10)	(7.81)	(8.00)
ln_plot_area_gps	-0.528***	-0.526***	-0.529***	-0.531***	-0.528***	-0.529***	-0.530***	-0.539***	-0.539***	-0.540***	-0.540***	-0.537***	-0.539***	-0.539***
	(-18.94)	(-18.70)	(-19.00)	(-18.92)	(-18.56)	(-18.67)	(-18.66)	(-25.18)	(-25.20)	(-25.22)	(-25.17)	(-25.35)	(-25.14)	(-25.20)
cultivation_intercropped_d	0.0224	0.0317	0.0239	0.0236	0.0278	0.0242	0.0238	0.197***	0.197***	0.197***	0.201***	0.212***	0.197***	0.197***
	(0.38)	(0.54)	(0.41)	(0.40)	(0.47)	(0.41)	(0.40)	(3.91)	(3.92)	(3.93)	(3.98)	(4.27)	(3.92)	(3.92)
distance_plot_home	0.0192**	0.0173*	0.0187**	0.0190**	0.0185**	0.0187**	0.0187**	0.0162**	0.0164**	0.0163**	0.0159**	0.0161**	0.0164**	0.0164**
	(2.12)	(1.91)	(2.07)	(2.10)	(2.04)	(2.07)	(2.07)	(2.51)	(2.53)	(2.51)	(2.45)	(2.57)	(2.53)	(2.53)
distance_plot_market	-0.00164	-0.00148	-0.00181	-0.00190	-0.00171	-0.00181	-0.00182	-0.000537	-0.000481	-0.000457	-0.000414	-0.000575	-0.000504	-0.000484
	(-0.76)	(-0.68)	(-0.84)	(-0.89)	(-0.78)	(-0.84)	(-0.85)	(-0.26)	(-0.23)	(-0.22)	(-0.20)	(-0.28)	(-0.24)	(-0.23)
soil_quality_good_d	0.248***	0.254***	0.252***	0.252***	0.253***	0.252***	0.253***	0.142***	0.144***	0.148***	0.144***	0.146***	0.143***	0.144***
	(4.31)	(4.39)	(4.37)	(4.36)	(4.37)	(4.35)	(4.38)	(2.94)	(2.98)	(3.08)	(2.99)	(3.05)	(2.96)	(2.97)
erosion_control_d	0.153	0.160	0.163	0.167	0.161	0.163	0.163	0.0331	0.0313	0.0370	0.0380	0.0263	0.0320	0.0315
	(1.44)	(1.43)	(1.47)	(1.51)	(1.46)	(1.46)	(1.47)	(0.28)	(0.27)	(0.32)	(0.32)	(0.23)	(0.27)	(0.27)
erosion_problems_d	0.0684	0.0718	0.0645	0.0611	0.0665	0.0647	0.0640	-0.115	-0.112	-0.114	-0.119	-0.101	-0.114	-0.113
	(0.71)	(0.74)	(0.67)	(0.63)	(0.69)	(0.67)	(0.66)	(-1.32)	(-1.28)	(-1.33)	(-1.37)	(-1.16)	(-1.31)	(-1.31)
plot_irrigation_d	0.638***	0.643***	0.650***	0.647***	0.656***	0.650***	0.650***	0.286	0.287	0.287	0.281	0.314	0.286	0.288
	(2.97)	(2.96)	(3.03)	(3.01)	(3.05)	(3.02)	(3.03)	(1.42)	(1.43)	(1.44)	(1.41)	(1.56)	(1.42)	(1.43)
plot_seed_improved_d	0.0345	0.0340	0.0332	0.0308	0.0328	0.0335	0.0329	0.0648	0.0660	0.0634	0.0627	0.0564	0.0649	0.0646
	(0.48)	(0.48)	(0.46)	(0.43)	(0.46)	(0.46)	(0.45)	(1.09)	(1.12)	(1.08)	(1.07)	(0.95)	(1.10)	(1.10)
husband_labor_incidence_all	-0.0574	-0.0571	-0.0623	-0.0666	-0.0598	-0.0616	-0.0629	-0.0546	-0.0589	-0.0473	-0.0465	-0.0481	-0.0556	-0.0565
	(-0.64)	(-0.63)	(-0.69)	(-0.74)	(-0.66)	(-0.68)	(-0.69)	(-0.53)	(-0.58)	(-0.47)	(-0.46)	(-0.47)	(-0.54)	(-0.55)
wife_labor_incidence_all	0.116	0.120	0.115	0.126	0.103	0.114	0.116	0.00497	0.0476	-0.00205	0.00306	-0.00370	0.0110	0.0144

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	Female-Not-Owned Plots [(1) to (7)]							Female-Owned Plots [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	(1.26)	(1.28)	(1.23)	(1.34)	(1.08)	(1.22)	(1.24)	(0.07)	(0.44)	(-0.03)	(0.05)	(-0.05)	(0.14)	(0.19)
hired_labor_man_all_bis	0.0258***	0.0256***	0.0256***	0.0255***	0.0256***	0.0256***	0.0256***	0.0200***	0.0199***	0.0200***	0.0200***	0.0198***	0.0200***	0.0200***
	(6.75)	(6.71)	(6.69)	(6.59)	(6.72)	(6.68)	(6.69)	(2.75)	(2.74)	(2.75)	(2.74)	(2.77)	(2.77)	(2.77)
hired_labor_woman_all_bis	0.0179***	0.0178***	0.0179***	0.0179***	0.0179***	0.0179***	0.0179***	0.00328**	0.00332**	0.00326**	0.00327**	0.00323**	0.00329**	0.00330**
	(5.06)	(4.95)	(4.96)	(4.97)	(4.95)	(4.97)	(4.97)	(2.50)	(2.50)	(2.48)	(2.47)	(2.50)	(2.50)	(2.51)
hired_labor_child_all_bis	0.0194***	0.0188***	0.0195***	0.0200***	0.0197***	0.0194***	0.0194***	0.0148**	0.0149**	0.0141*	0.0138*	0.0170**	0.0147**	0.0148**
	(3.71)	(3.44)	(3.57)	(3.69)	(3.62)	(3.61)	(3.57)	(2.09)	(2.12)	(1.96)	(1.92)	(2.49)	(2.09)	(2.09)
org_fert_use_d	0.0398	0.0384	0.0358	0.0334	0.0355	0.0359	0.0353	0.163**	0.163**	0.159**	0.155**	0.156**	0.162**	0.162**
	(0.47)	(0.45)	(0.42)	(0.39)	(0.42)	(0.42)	(0.41)	(2.48)	(2.48)	(2.42)	(2.35)	(2.43)	(2.46)	(2.46)
inorg_fert_use_d	0.470***	0.468***	0.468***	0.470***	0.465***	0.468***	0.468***	0.360***	0.358***	0.365***	0.357***	0.357***	0.359***	0.359***
	(4.59)	(4.56)	(4.57)	(4.62)	(4.53)	(4.57)	(4.57)	(4.37)	(4.38)	(4.50)	(4.35)	(4.39)	(4.38)	(4.38)
pest_use_d	0.226**	0.222**	0.221**	0.221**	0.225**	0.221**	0.221**	0.429***	0.430***	0.438***	0.436***	0.447***	0.431***	0.431***
	(2.14)	(2.12)	(2.10)	(2.10)	(2.15)	(2.11)	(2.10)	(5.42)	(5.44)	(5.59)	(5.55)	(5.74)	(5.43)	(5.45)
hhh_is_female_d	-0.00563	-0.0995	-0.0206	-0.0135	-0.0278	-0.0206	-0.0201	-0.140	-0.134	-0.143	-0.151	-0.135	-0.138	-0.138
	(-0.04)	(-0.67)	(-0.15)	(-0.10)	(-0.20)	(-0.15)	(-0.15)	(-1.35)	(-1.31)	(-1.38)	(-1.45)	(-1.31)	(-1.34)	(-1.34)
hh_size	0.0231***	0.0236***	0.0224***	0.0221***	0.0225***	0.0224***	0.0223***	0.0498***	0.0506***	0.0501***	0.0507***	0.0508***	0.0499***	0.0500***
	(2.91)	(2.98)	(2.88)	(2.85)	(2.90)	(2.89)	(2.89)	(5.50)	(5.33)	(5.56)	(5.64)	(5.63)	(5.50)	(5.52)
hh_shocks_d	0.0502	0.0430	0.0521	0.0606	0.0456	0.0518	0.0528	0.0127	0.0121	0.0128	0.00595	0.0101	0.0125	0.0126
	(0.53)	(0.45)	(0.55)	(0.64)	(0.47)	(0.54)	(0.55)	(0.14)	(0.13)	(0.14)	(0.06)	(0.11)	(0.14)	(0.14)
hh_agri_shocks_d	-0.126	-0.114	-0.122	-0.126	-0.122	-0.123	-0.122	-0.0848	-0.0834	-0.0857	-0.0849	-0.0872	-0.0850	-0.0851
	(-1.39)	(-1.26)	(-1.34)	(-1.38)	(-1.34)	(-1.35)	(-1.35)	(-1.24)	(-1.22)	(-1.25)	(-1.24)	(-1.27)	(-1.24)	(-1.24)
less_area_harvested_plot_d	-0.206***	-0.210***	-0.202***	-0.200***	-0.203***	-0.203***	-0.202***	-0.230***	-0.230***	-0.233***	-0.234***	-0.233***	-0.229***	-0.230***
	(-3.03)	(-3.01)	(-2.91)	(-2.88)	(-2.93)	(-2.91)	(-2.91)	(-3.92)	(-3.92)	(-3.95)	(-3.98)	(-3.97)	(-3.91)	(-3.91)
_cons	10.98***	10.96***	10.99***	11.01***	10.98***	10.99***	10.99***	10.70***	10.67***	10.57***	10.57***	10.53***	10.71***	10.71***
	(53.20)	(53.18)	(52.30)	(52.54)	(53.01)	(53.41)	(53.37)	(57.31)	(53.22)	(57.06)	(57.03)	(60.21)	(59.47)	(59.32)
N	1583	1583	1583	1583	1583	1583	1583	2051	2051	2051	2051	2051	2051	2051
R^2	0.429	0.429	0.428	0.428	0.428	0.428	0.428	0.426	0.426	0.427	0.427	0.429	0.426	0.426
ll	-2256.5	-2256.2	-2257.8	-2257.5	-2257.5	-2257.7	-2257.8	-2917.1	-2917.1	-2915.4	-2914.4	-2911.5	-2917.2	-2917.2

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: **Full Model Regression of Plot Productivity by Plot Use Rights-Based Subsamples With Region Fixed Effects.**

	Plots to which the female has no use rights [(1) to (7)]							Plots to which the female has use rights [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
wife_own_plot	-0.0176							0.439**						
	(-0.36)							(2.07)						
wife_decide_sell_plot		0.0262							0.372*					
		(0.55)							(1.78)					
wife_decide_what2plant			0.0164							0.130				
			(0.31)							(0.60)				
wife_decide_inputuse				0.0189							0.0235			
				(0.38)							(0.12)			
wife_decide_cropuse_t1					0.0901*							0.0977		
					(1.75)							(0.63)		
wife_sale_negociator						-0.00652							0.0466	
						(-0.10)							(0.31)	
wife_earnings_manager							-0.0152							0.0471
							(-0.23)							(0.31)
plot_maincrop_4_sale_d	0.655***	0.656***	0.654***	0.655***	0.643***	0.659***	0.666***	0.461***	0.465***	0.461***	0.456***	0.452***	0.436***	0.435***
	(14.75)	(14.84)	(14.79)	(14.76)	(14.60)	(11.23)	(10.96)	(4.27)	(4.32)	(4.22)	(4.20)	(4.16)	(3.55)	(3.40)
ln_plot_area_gps	-0.529***	-0.528***	-0.528***	-0.528***	-0.527***	-0.529***	-0.529***	-0.596***	-0.595***	-0.584***	-0.587***	-0.586***	-0.587***	-0.587***
	(-29.68)	(-29.65)	(-29.66)	(-29.64)	(-29.48)	(-29.71)	(-29.67)	(-10.35)	(-10.27)	(-9.82)	(-9.93)	(-9.99)	(-9.93)	(-9.92)
cultivation_intercropped_d	0.105**	0.106**	0.106**	0.106**	0.112***	0.106**	0.106**	0.199*	0.199*	0.211*	0.207*	0.212*	0.205*	0.205*
	(2.47)	(2.48)	(2.47)	(2.47)	(2.63)	(2.47)	(2.47)	(1.82)	(1.82)	(1.89)	(1.87)	(1.97)	(1.86)	(1.85)
distance_plot_home	0.0156***	0.0154***	0.0155***	0.0155***	0.0153***	0.0156***	0.0156***	0.0383**	0.0378**	0.0340**	0.0342**	0.0347**	0.0347**	0.0347**
	(2.98)	(2.93)	(2.96)	(2.94)	(2.94)	(2.97)	(2.97)	(2.29)	(2.24)	(1.98)	(2.00)	(2.04)	(2.03)	(2.03)
distance_plot_market	-0.000816	-0.000779	-0.000771	-0.000761	-0.000652	-0.000788	-0.000796	0.00324	0.00317	0.00333	0.00322	0.00329	0.00322	0.00321
	(-0.51)	(-0.49)	(-0.49)	(-0.48)	(-0.41)	(-0.50)	(-0.50)	(0.70)	(0.68)	(0.70)	(0.68)	(0.70)	(0.68)	(0.67)
soil_quality_good_d	0.191***	0.191***	0.192***	0.192***	0.193***	0.192***	0.192***	0.200*	0.197*	0.198*	0.198*	0.201*	0.197*	0.197*
	(5.01)	(5.04)	(5.01)	(5.03)	(5.06)	(5.02)	(5.03)	(1.84)	(1.80)	(1.82)	(1.82)	(1.85)	(1.80)	(1.81)
erosion_control_d	0.0583	0.0579	0.0585	0.0581	0.0558	0.0584	0.0587	0.168	0.176	0.185	0.192	0.188	0.189	0.190
	(0.65)	(0.64)	(0.65)	(0.65)	(0.62)	(0.65)	(0.65)	(0.77)	(0.81)	(0.84)	(0.87)	(0.87)	(0.88)	(0.88)
erosion_problems_d	-0.0342	-0.0336	-0.0336	-0.0339	-0.0291	-0.0340	-0.0344	0.102	0.0992	0.118	0.121	0.119	0.120	0.121
	(-0.51)	(-0.50)	(-0.50)	(-0.51)	(-0.43)	(-0.51)	(-0.51)	(0.40)	(0.39)	(0.47)	(0.48)	(0.47)	(0.48)	(0.48)
plot_irrigation_d	0.533***	0.532***	0.533***	0.534***	0.547***	0.533***	0.532***	0.0936	0.0809	0.00138	0.0127	0.0153	0.00943	0.0114
	(3.62)	(3.59)	(3.61)	(3.61)	(3.70)	(3.61)	(3.60)	(0.19)	(0.16)	(0.00)	(0.03)	(0.03)	(0.02)	(0.02)
plot_seed_improved_d	0.0509	0.0482	0.0495	0.0495	0.0449	0.0498	0.0500	-0.0682	-0.0632	-0.0613	-0.0620	-0.0645	-0.0623	-0.0635
	(1.04)	(0.98)	(1.02)	(1.02)	(0.91)	(1.02)	(1.03)	(-0.57)	(-0.53)	(-0.50)	(-0.51)	(-0.53)	(-0.52)	(-0.52)
husband_labor_incidence_all	-0.0637	-0.0606	-0.0611	-0.0608	-0.0553	-0.0628	-0.0632	-0.0526	-0.0599	-0.0233	-0.0326	-0.0373	-0.0340	-0.0356
	(-0.85)	(-0.80)	(-0.82)	(-0.81)	(-0.74)	(-0.84)	(-0.84)	(-0.30)	(-0.34)	(-0.13)	(-0.18)	(-0.21)	(-0.20)	(-0.21)
wife_labor_incidence_all	0.0426	0.0356	0.0337	0.0336	0.0132	0.0403	0.0417	0.599***	0.541**	0.274*	0.260*	0.257*	0.283*	0.283*

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... table 9 continued

	Plots to which the female has no use rights [(1) to (7)]							Plots to which the female has use rights [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	(0.53)	(0.44)	(0.41)	(0.41)	(0.16)	(0.51)	(0.52)	(2.73)	(2.57)	(1.86)	(1.79)	(1.83)	(1.74)	(1.73)
hired_labor_man_all_bis	0.0362***	0.0363***	0.0363***	0.0363***	0.0363***	0.0362***	0.0363***	0.00932***	0.00941***	0.00977***	0.00972***	0.00966***	0.00972***	0.00973***
	(11.06)	(11.14)	(11.06)	(11.03)	(11.22)	(11.05)	(11.09)	(4.84)	(4.85)	(4.85)	(4.89)	(4.91)	(4.96)	(4.96)
hired_labor_woman_all_bis	0.00389**	0.00386**	0.00388**	0.00388**	0.00385**	0.00388**	0.00388**	0.0215***	0.0211**	0.0196**	0.0195**	0.0197**	0.0192**	0.0190**
	(2.17)	(2.15)	(2.16)	(2.16)	(2.15)	(2.16)	(2.16)	(2.62)	(2.59)	(2.53)	(2.49)	(2.50)	(2.46)	(2.39)
hired_labor_child_all_bis	0.0123*	0.0121*	0.0121	0.0120	0.0126*	0.0123*	0.0122*	0.0239**	0.0237**	0.0234**	0.0235**	0.0250**	0.0240**	0.0239**
	(1.71)	(1.67)	(1.64)	(1.63)	(1.71)	(1.69)	(1.68)	(2.08)	(2.06)	(2.05)	(2.06)	(2.09)	(2.07)	(2.06)
org_fert_use_d	0.117**	0.115**	0.116**	0.115**	0.113**	0.116**	0.116**	0.267*	0.274*	0.267*	0.273*	0.263*	0.269*	0.269*
	(2.18)	(2.14)	(2.15)	(2.14)	(2.11)	(2.15)	(2.15)	(1.83)	(1.87)	(1.82)	(1.85)	(1.79)	(1.80)	(1.81)
inorg_fert_use_d	0.409***	0.411***	0.410***	0.409***	0.408***	0.410***	0.410***	0.102	0.113	0.131	0.137	0.128	0.138	0.138
	(5.52)	(5.51)	(5.53)	(5.49)	(5.48)	(5.51)	(5.51)	(0.54)	(0.60)	(0.69)	(0.73)	(0.68)	(0.74)	(0.73)
pest_use_d	0.321***	0.322***	0.322***	0.322***	0.330***	0.321***	0.321***	0.531**	0.521**	0.539***	0.530**	0.538**	0.530**	0.531**
	(4.64)	(4.65)	(4.66)	(4.67)	(4.81)	(4.65)	(4.64)	(2.52)	(2.48)	(2.61)	(2.53)	(2.54)	(2.52)	(2.51)
hhh_is_female_d	-0.172**	-0.188**	-0.182**	-0.183**	-0.190**	-0.179**	-0.178**	-0.0653	-0.0704	-0.0729	-0.0659	-0.0741	-0.0647	-0.0654
	(-2.15)	(-2.40)	(-2.29)	(-2.30)	(-2.41)	(-2.30)	(-2.29)	(-0.33)	(-0.35)	(-0.36)	(-0.33)	(-0.36)	(-0.32)	(-0.32)
hh_size	0.0321***	0.0323***	0.0322***	0.0323***	0.0325***	0.0321***	0.0321***	0.0564**	0.0562**	0.0508**	0.0507**	0.0505**	0.0517**	0.0516**
	(4.32)	(4.35)	(4.38)	(4.38)	(4.45)	(4.35)	(4.35)	(2.51)	(2.49)	(2.25)	(2.26)	(2.24)	(2.25)	(2.26)
hh_shocks_d	0.0627	0.0589	0.0596	0.0580	0.0519	0.0612	0.0616	-0.125	-0.120	-0.100	-0.0957	-0.103	-0.0973	-0.0974
	(0.90)	(0.84)	(0.85)	(0.82)	(0.74)	(0.88)	(0.88)	(-0.82)	(-0.79)	(-0.65)	(-0.62)	(-0.67)	(-0.64)	(-0.64)
hh_agri_shocks_d	-0.116**	-0.116**	-0.116**	-0.115**	-0.119**	-0.116**	-0.115**	-0.115	-0.103	-0.0953	-0.0955	-0.0900	-0.0978	-0.0986
	(-2.00)	(-2.01)	(-2.00)	(-1.99)	(-2.05)	(-2.00)	(-2.00)	(-0.83)	(-0.75)	(-0.69)	(-0.69)	(-0.65)	(-0.70)	(-0.70)
less_area_harvested_plot_d	-0.223***	-0.226***	-0.225***	-0.225***	-0.229***	-0.224***	-0.224***	-0.217	-0.215	-0.235*	-0.233*	-0.224*	-0.231*	-0.232*
	(-4.35)	(-4.42)	(-4.42)	(-4.41)	(-4.49)	(-4.40)	(-4.39)	(-1.60)	(-1.59)	(-1.74)	(-1.72)	(-1.66)	(-1.71)	(-1.73)
_cons	10.85***	10.84***	10.84***	10.84***	10.80***	10.84***	10.84***	10.32***	10.39***	10.59***	10.70***	10.64***	10.69***	10.69***
	(67.25)	(67.73)	(67.83)	(67.83)	(68.21)	(67.81)	(67.89)	(30.89)	(31.61)	(29.90)	(30.70)	(36.46)	(34.78)	(35.31)
N	3203	3203	3203	3203	3203	3203	3203	431	431	431	431	431	431	431
R^2	0.425	0.425	0.425	0.425	0.426	0.425	0.425	0.445	0.444	0.440	0.440	0.440	0.440	0.440
ll	-4574.9	-4574.8	-4574.9	-4574.9	-4572.6	-4575.0	-4575.0	-593.4	-593.9	-595.2	-595.5	-595.2	-595.4	-595.4

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: **Full Model Regression of Plot Productivity by Crop Use-Based Subsamples With Region Fixed Effects.**

	Plots on which the female does not decide about the use of crops [(1) to (7)]							Plots on which the female decides about the use of crops [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
wife_own_plot	-0.0931							-0.0714						
	(-0.93)							(-1.49)						
wife_decide_sell_plot		-0.0416							-0.0245					
		(-0.38)							(-0.51)					
wife_has_useright			0.0590							0.191***				
			(0.43)							(3.01)				
wife_decide_what2plant				0.0167							0.0116			
				(0.20)							(0.16)			
wife_decide_inputuse					-0.0237							0.0390		
					(-0.27)							(0.61)		
wife_sale_negociator						-0.0186							0.0164	
						(-0.14)							(0.22)	
wife_earnings_manager							-0.0633							0.0509
							(-0.58)							(0.70)
plot_maincrop_4_sale_d	0.665***	0.673***	0.677***	0.678***	0.674***	0.681***	0.690***	0.600***	0.600***	0.603***	0.601***	0.600***	0.588***	0.559***
	(9.07)	(9.11)	(9.24)	(9.06)	(9.01)	(8.86)	(8.92)	(11.30)	(11.30)	(11.40)	(11.30)	(11.29)	(7.68)	(7.55)
ln_plot_area_gps	-0.527***	-0.527***	-0.527***	-0.527***	-0.527***	-0.526***	-0.527***	-0.529***	-0.531***	-0.528***	-0.531***	-0.531***	-0.531***	-0.531***
	(-15.72)	(-15.68)	(-15.65)	(-15.67)	(-15.72)	(-15.72)	(-15.72)	(-26.83)	(-26.86)	(-26.74)	(-26.75)	(-26.72)	(-26.77)	(-26.82)
cultivation_intercropped_d	0.138	0.137	0.134	0.134	0.136	0.135	0.135	0.130***	0.129***	0.135***	0.129***	0.129***	0.129***	0.129***
	(1.61)	(1.61)	(1.56)	(1.55)	(1.58)	(1.57)	(1.58)	(3.10)	(3.08)	(3.21)	(3.08)	(3.07)	(3.08)	(3.09)
distance_plot_home	0.0106	0.0105	0.0103	0.0104	0.0107	0.0105	0.0104	0.0212***	0.0214***	0.0211***	0.0213***	0.0213***	0.0213***	0.0214***
	(0.95)	(0.93)	(0.91)	(0.91)	(0.94)	(0.93)	(0.93)	(4.67)	(4.65)	(4.64)	(4.63)	(4.60)	(4.63)	(4.63)
distance_plot_market	0.00152	0.00167	0.00178	0.00178	0.00168	0.00173	0.00166	-0.00269	-0.00271	-0.00252	-0.00275	-0.00273	-0.00275	-0.00274
	(0.50)	(0.56)	(0.60)	(0.61)	(0.56)	(0.59)	(0.56)	(-1.46)	(-1.48)	(-1.37)	(-1.49)	(-1.48)	(-1.48)	(-1.48)
soil_quality_good_d	0.231***	0.233***	0.233***	0.233***	0.232***	0.233***	0.235***	0.179***	0.179***	0.183***	0.178***	0.178***	0.178***	0.179***
	(3.39)	(3.42)	(3.41)	(3.39)	(3.38)	(3.41)	(3.43)	(3.93)	(3.93)	(4.03)	(3.90)	(3.90)	(3.90)	(3.91)
erosion_control_d	0.0288	0.0316	0.0297	0.0294	0.0294	0.0292	0.0301	0.0832	0.0832	0.0792	0.0839	0.0833	0.0836	0.0831
	(0.18)	(0.19)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.88)	(0.87)	(0.82)	(0.87)	(0.87)	(0.87)	(0.86)
erosion_problems_d	-0.0754	-0.0786	-0.0748	-0.0761	-0.0778	-0.0771	-0.0800	-0.0116	-0.0111	-0.00464	-0.0115	-0.0118	-0.0115	-0.0110
	(-0.60)	(-0.62)	(-0.59)	(-0.60)	(-0.61)	(-0.60)	(-0.63)	(-0.15)	(-0.15)	(-0.06)	(-0.15)	(-0.16)	(-0.15)	(-0.14)
plot_irrigation_d	0.541*	0.541*	0.537*	0.536*	0.536*	0.537*	0.537*	0.485***	0.484***	0.480***	0.484***	0.484***	0.485***	0.489***
	(1.89)	(1.86)	(1.86)	(1.85)	(1.85)	(1.85)	(1.85)	(2.88)	(2.86)	(2.83)	(2.86)	(2.85)	(2.86)	(2.88)
plot_seed_improved_d	-0.0215	-0.0219	-0.0216	-0.0219	-0.0224	-0.0224	-0.0234	0.0472	0.0441	0.0473	0.0429	0.0434	0.0427	0.0422
	(-0.24)	(-0.24)	(-0.24)	(-0.24)	(-0.25)	(-0.25)	(-0.26)	(0.95)	(0.88)	(0.96)	(0.87)	(0.88)	(0.86)	(0.86)
husband_labor_incidence_all	-0.152	-0.155	-0.155	-0.153	-0.155	-0.155	-0.155	-0.0219	-0.0211	-0.0257	-0.0209	-0.0191	-0.0215	-0.0227
	(-1.06)	(-1.08)	(-1.08)	(-1.06)	(-1.08)	(-1.07)	(-1.08)	(-0.29)	(-0.28)	(-0.34)	(-0.28)	(-0.25)	(-0.28)	(-0.30)
wife_labor_incidence_all	-0.0830	-0.0817	-0.0721	-0.0853	-0.0794	-0.0834	-0.0855	0.112	0.119	0.226***	0.127*	0.128*	0.133*	0.145*

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... table 10 continued

	Plots on which the female does not decide about the use of crops [(1) to (7)]							Plots on which the female decides about the use of crops [(8) to (14)]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	(-0.88)	(-0.87)	(-0.74)	(-0.90)	(-0.83)	(-0.89)	(-0.91)	(1.56)	(1.64)	(2.99)	(1.80)	(1.81)	(1.67)	(1.87)
hired_labor_man_all_bis	0.0269***	0.0269***	0.0272***	0.0273***	0.0270***	0.0272***	0.0272***	0.0224***	0.0224***	0.0221***	0.0224***	0.0225***	0.0224***	0.0224***
	(5.03)	(5.00)	(5.10)	(5.08)	(4.95)	(5.09)	(5.11)	(3.07)	(3.06)	(3.01)	(3.06)	(3.05)	(3.06)	(3.07)
hired_labor_woman_all_bis	0.00551	0.00575	0.00563	0.00565	0.00558	0.00558	0.00565	0.00441**	0.00438**	0.00450**	0.00436**	0.00436**	0.00437**	0.00437**
	(0.96)	(1.00)	(0.98)	(0.98)	(0.97)	(0.96)	(0.98)	(2.07)	(2.04)	(2.06)	(2.03)	(2.03)	(2.03)	(2.03)
hired_labor_child_all_bis	0.0141**	0.0137**	0.0130*	0.0129*	0.0137**	0.0133**	0.0132**	0.0103	0.00993	0.0115	0.00992	0.00991	0.00997	0.0103
	(2.13)	(2.03)	(1.94)	(1.88)	(2.01)	(2.01)	(1.98)	(1.07)	(1.04)	(1.25)	(1.04)	(1.04)	(1.05)	(1.08)
org_fert_use_d	-0.0388	-0.0415	-0.0381	-0.0409	-0.0409	-0.0414	-0.0426	0.174***	0.169***	0.174***	0.168***	0.168***	0.168***	0.168***
	(-0.37)	(-0.39)	(-0.36)	(-0.39)	(-0.39)	(-0.39)	(-0.40)	(2.85)	(2.79)	(2.86)	(2.77)	(2.76)	(2.76)	(2.76)
inorg_fert_use_d	0.474***	0.476***	0.478***	0.478***	0.474***	0.475***	0.473***	0.366***	0.370***	0.363***	0.372***	0.370***	0.372***	0.371***
	(3.04)	(3.02)	(3.02)	(3.04)	(3.02)	(3.01)	(3.00)	(5.47)	(5.50)	(5.34)	(5.49)	(5.44)	(5.48)	(5.48)
pest_use_d	0.215*	0.215*	0.212*	0.212*	0.213*	0.212*	0.213*	0.475***	0.476***	0.477***	0.477***	0.478***	0.477***	0.479***
	(1.92)	(1.92)	(1.89)	(1.90)	(1.91)	(1.90)	(1.91)	(6.11)	(6.12)	(6.20)	(6.19)	(6.18)	(6.14)	(6.16)
hhh_is_female_d	-0.286	-0.318*	-0.334*	-0.337*	-0.327*	-0.334*	-0.334*	-0.0738	-0.0858	-0.0915	-0.0920	-0.0950	-0.0912	-0.0920
	(-1.49)	(-1.73)	(-1.84)	(-1.84)	(-1.79)	(-1.84)	(-1.84)	(-0.88)	(-1.03)	(-1.11)	(-1.10)	(-1.14)	(-1.10)	(-1.11)
hh_size	0.0197*	0.0196*	0.0202*	0.0199*	0.0197*	0.0197*	0.0195*	0.0456***	0.0457***	0.0484***	0.0458***	0.0461***	0.0458***	0.0460***
	(1.76)	(1.76)	(1.82)	(1.80)	(1.77)	(1.78)	(1.77)	(5.53)	(5.58)	(5.84)	(5.59)	(5.65)	(5.57)	(5.60)
hh_shocks_d	0.0452	0.0411	0.0387	0.0365	0.0403	0.0361	0.0352	0.0353	0.0351	0.0277	0.0348	0.0323	0.0348	0.0340
	(0.35)	(0.32)	(0.30)	(0.28)	(0.31)	(0.28)	(0.27)	(0.43)	(0.43)	(0.34)	(0.42)	(0.39)	(0.42)	(0.41)
hh_agri_shocks_d	-0.0852	-0.0907	-0.0906	-0.0890	-0.0889	-0.0881	-0.0877	-0.124**	-0.125**	-0.114**	-0.126**	-0.125**	-0.126**	-0.126**
	(-0.71)	(-0.76)	(-0.75)	(-0.74)	(-0.73)	(-0.73)	(-0.72)	(-2.16)	(-2.17)	(-1.98)	(-2.18)	(-2.16)	(-2.19)	(-2.19)
less_area_harvested_plot_d	-0.195**	-0.196**	-0.200**	-0.199**	-0.196**	-0.196**	-0.194**	-0.246***	-0.248***	-0.252***	-0.249***	-0.250***	-0.249***	-0.250***
	(-2.24)	(-2.23)	(-2.29)	(-2.27)	(-2.22)	(-2.23)	(-2.23)	(-4.61)	(-4.61)	(-4.72)	(-4.62)	(-4.65)	(-4.64)	(-4.66)
_cons	11.13***	11.12***	11.09***	11.10***	11.11***	11.11***	11.12***	10.78***	10.74***	10.59***	10.71***	10.69***	10.72***	10.71***
	(41.96)	(41.66)	(41.35)	(41.71)	(41.85)	(41.81)	(41.94)	(63.10)	(63.30)	(60.66)	(61.00)	(62.12)	(64.51)	(64.36)
N	1106	1106	1106	1106	1106	1106	1106	2528	2528	2528	2528	2528	2528	2528
R^2	0.417	0.417	0.417	0.416	0.416	0.416	0.417	0.427	0.426	0.428	0.426	0.426	0.426	0.426
ll	-1623.1	-1623.7	-1623.7	-1623.8	-1623.7	-1623.8	-1623.7	-3545.2	-3546.3	-3542.1	-3546.4	-3546.3	-3546.4	-3546.2

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: **Decomposition of the Gender Gap in Agricultural Productivity Against Female-Owned Plots**

	Variable that specify the two sub-groups: "wife_own_plot"											
	Other empowerment variables included:											
	("None")				("wife_has_useright")				("wife_decide_cropuse_t1")			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)
Prediction_1	11.47***				11.47***				11.47***			
	(217.55)				(219.99)				(218.16)			
Prediction_2	11.35***				11.35***				11.35***			
	(237.63)				(237.65)				(240.36)			
Difference	0.123**				0.123**				0.123**			
	(2.28)				(2.28)				(2.28)			
Total		0.0615	-1.35e-16	0.0617		0.0891**	-1.01e-15	0.0341		0.00841	1.34e-15	0.115**
		(1.54)	(-0.00)	(1.37)		(2.16)	(-0.00)	(0.73)		(0.20)	(0.00)	(2.44)
wife_has_useright						0.0207***	0.00633	0.00741				
						(2.98)	(0.61)	(0.79)				
wife_decide_cropuse_t1										-0.0561***	-0.0507**	-0.108**
										(-3.32)	(-2.32)	(-2.42)
plot_maincrop_4_sale_d		0.0200	-0.00427	-0.00550		0.0200	-0.00472	-0.00484		0.0193	0.00142	0.00466
		(1.50)	(-0.23)	(-0.40)		(1.50)	(-0.25)	(-0.36)		(1.50)	(0.08)	(0.33)
ln_plot_area_gps		-0.0300	0.00519	0.00448		-0.0298	0.00612	0.00503		-0.0297	0.00505	0.00501
		(-0.94)	(0.90)	(1.24)		(-0.94)	(1.05)	(1.39)		(-0.94)	(0.87)	(1.38)
cultivation_intercropped_d		-0.00233	-0.0529**	-0.0477**		-0.00253	-0.0480**	-0.0449**		-0.00305	-0.0587***	-0.0568***
		(-1.12)	(-2.44)	(-2.48)		(-1.19)	(-2.18)	(-2.35)		(-1.34)	(-2.73)	(-2.95)
distance_plot_home		-0.000815	-0.00261	0.00251		-0.000799	-0.00569	0.00179		-0.000802	-0.00306	0.00149
		(-0.53)	(-0.18)	(0.40)		(-0.53)	(-0.39)	(0.29)		(-0.53)	(-0.21)	(0.25)
distance_plot_market		0.00198	-0.000911	-0.00161		0.00219	0.00154	-0.000155		0.00203	0.000341	0.00306
		(0.88)	(-0.06)	(-0.12)		(0.95)	(0.10)	(-0.01)		(0.90)	(0.02)	(0.23)
soil_quality_good_d		-0.000302	0.0278	0.0156		-0.000312	0.0280	0.0174		-0.000308	0.0269	0.0149
		(-0.09)	(1.40)	(0.99)		(-0.09)	(1.40)	(1.11)		(-0.09)	(1.36)	(0.95)
erosion_control_d		-0.000334	0.00742	0.00470		-0.000317	0.00723	0.00436		-0.000311	0.00777	0.00507
		(-0.26)	(1.02)	(0.69)		(-0.26)	(1.00)	(0.65)		(-0.26)	(1.06)	(0.76)
erosion_problems_d		-0.000243	0.0115	0.00919		-0.000194	0.0122*	0.00978		-0.000195	0.0110	0.00819
		(-0.39)	(1.59)	(1.37)		(-0.36)	(1.70)	(1.48)		(-0.36)	(1.50)	(1.23)
plot_irrigation_d		0.00297	0.00112	0.00190		0.00295	0.000966	0.00178		0.00308	0.000873	0.00166
		(1.07)	(0.32)	(0.82)		(1.07)	(0.27)	(0.76)		(1.07)	(0.25)	(0.72)
plot_seed_improved_d		-0.00231	-0.00127	-0.00279		-0.00233	-0.00135	-0.00264		-0.00217	0.0000786	-0.000510
		(-1.06)	(-0.08)	(-0.22)		(-1.06)	(-0.09)	(-0.21)		(-1.04)	(0.01)	(-0.04)
husband_labor_incidence_all		-0.0127	0.00838	-0.00258		-0.0135	0.0217	-0.00168		-0.0113	0.00741	-0.00316
		(-0.82)	(0.13)	(-0.07)		(-0.87)	(0.33)	(-0.04)		(-0.73)	(0.11)	(-0.08)

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... table 11 continued

	Variable that specify the two sub-groups: "wife_own_plot"											
	Other empowerment variables included: "None"				"wife_has_useright"				"wife_decide_cropuse_t1"			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Disadvantage)
wife_labor_incidence_all		0.000415	0.0408	0.0424		0.00272	-0.0227	0.0605		-0.000228	0.0385	0.0270
		(0.23)	(0.58)	(0.99)		(1.14)	(-0.33)	(0.72)		(-0.13)	(0.52)	(0.64)
hired_labor_man_all_bis		0.00701	0.00744	0.00596*		0.00695	0.00771	0.00571*		0.00698	0.00772	0.00626**
		(1.16)	(0.56)	(1.92)		(1.15)	(0.58)	(1.88)		(1.16)	(0.59)	(2.12)
hired_labor_woman_all_bis		-0.00136	0.0215***	0.00284		-0.00139	0.0212***	0.00297		-0.00136	0.0215***	0.00303
		(-0.59)	(2.95)	(1.13)		(-0.59)	(2.94)	(1.16)		(-0.59)	(2.94)	(1.19)
hired_labor_child_all_bis		-0.000763	0.000311	0.000400		-0.000749	0.000208	0.000326		-0.000810	0.000237	0.000195
		(-0.96)	(0.54)	(0.96)		(-0.96)	(0.40)	(0.84)		(-0.96)	(0.41)	(0.47)
org_fert_use_d		-0.00452*	-0.00967	-0.00668		-0.00460*	-0.00967	-0.00620		-0.00431*	-0.00910	-0.00527
		(-1.82)	(-1.13)	(-1.03)		(-1.84)	(-1.14)	(-0.96)		(-1.80)	(-1.08)	(-0.83)
inorg_fert_use_d		0.00241	0.0100	0.00703		0.00237	0.00942	0.00625		0.00232	0.0106	0.00643
		(0.31)	(1.06)	(1.00)		(0.31)	(0.99)	(0.90)		(0.31)	(1.12)	(0.91)
pest_use_d		0.00897*	-0.0168**	-0.00934		0.00898*	-0.0167*	-0.00944		0.00933*	-0.0177**	-0.0101*
		(1.86)	(-1.96)	(-1.58)		(1.86)	(-1.96)	(-1.60)		(1.87)	(-2.06)	(-1.72)
hhh_is_female_d		0.0289	0.00854	0.00307		0.0321*	-0.00119	-0.00249		0.0298	0.00768	0.00107
		(1.49)	(0.89)	(0.17)		(1.66)	(-0.11)	(-0.14)		(1.54)	(0.79)	(0.06)
hh_size		0.0316***	-0.0789**	-0.107**		0.0332***	-0.0838***	-0.0999**		0.0323***	-0.0836***	-0.108**
		(2.72)	(-2.54)	(-2.32)		(2.75)	(-2.67)	(-2.12)		(2.75)	(-2.71)	(-2.37)
hh_shocks_d		-0.00369	-0.00101	0.0173		-0.00321	-0.00649	0.0104		-0.00299	0.000949	0.00701
		(-1.05)	(-0.02)	(0.36)		(-0.93)	(-0.11)	(0.21)		(-0.87)	(0.02)	(0.14)
hh_agri_shocks_d		0.00481	0.00620	0.00499		0.00452	0.0102	0.00893		0.00474	0.00578	0.00599
		(1.45)	(0.15)	(0.16)		(1.41)	(0.24)	(0.28)		(1.44)	(0.14)	(0.19)
less_area_harvested_plot_d		0.0118**	0.00800	0.00308		0.0121**	0.00702	0.00120		0.0121**	0.00876	0.00342
		(2.25)	(0.56)	(0.26)		(2.27)	(0.48)	(0.10)		(2.27)	(0.61)	(0.29)
_cons			0.00408	0.119			0.0605	0.0625			0.0604	0.302***
			(0.03)	(1.18)			(0.47)	(0.47)			(0.46)	(2.82)
N	3634				3634				3634			

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: **Decomposition of the First Pro-Female Gender Gap in Agricultural Productivity.**

	Variable that specify the two sub-groups: "wife_has_useright"											
	Other empowerment variables included:											
	"None"				**"wife_own_plot"**				**"wife_decide_cropuse_t1"**			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)
Prediction_1	11.37***				11.37***				11.37***			
	(263.07)				(263.06)				(264.90)			
Prediction_2	11.65***				11.65***				11.65***			
	(164.06)				(163.42)				(163.92)			
Difference	-0.284***				-0.284***				-0.284***			
	(-4.14)				(-4.12)				(-4.14)			
Total		-0.0723	-1.29e-15	-0.212***		-0.0841	-1.69e-15	-0.200***		-0.0968*	-3.11e-15	-0.187***
		(-1.28)	(-0.00)	(-3.62)		(-1.43)	(-0.00)	(-3.24)		(-1.69)	(-0.00)	(-3.17)
wife_own_plot						-0.00829	0.0184*	-0.121*				
						(-0.73)	(1.68)	(-1.67)				
wife_decide_cropuse_t1										-0.0202**	0.0152*	0.0645
										(-2.28)	(1.72)	(0.54)
plot_maincrop_4_sale_d		0.0153	0.00508	0.0590		0.0153	0.00514	0.0573		0.0150	0.00312	0.0542
		(0.83)	(0.95)	(1.62)		(0.83)	(0.95)	(1.58)		(0.83)	(0.57)	(1.50)
ln_plot_area_gps		-0.157***	0.000245	-0.0000805		-0.157***	0.000204	-0.0000950		-0.157***	0.000484	-0.0000860
		(-3.92)	(0.15)	(-0.03)		(-3.92)	(0.13)	(-0.03)		(-3.92)	(0.29)	(-0.03)
cultivation_intercropped_d		0.00391	-0.0107	-0.0647		0.00391	-0.0107	-0.0632		0.00460	-0.00946	-0.0611
		(1.26)	(-1.48)	(-1.36)		(1.26)	(-1.49)	(-1.34)		(1.42)	(-1.30)	(-1.31)
distance_plot_home		-0.000639	-0.00379	-0.0223		-0.000644	-0.00390	-0.0277		-0.000629	-0.00415	-0.0229
		(-0.29)	(-1.35)	(-0.78)		(-0.29)	(-1.39)	(-0.94)		(-0.29)	(-1.47)	(-0.80)
distance_plot_market		0.00332	-0.00139	-0.0341		0.00325	-0.00107	-0.0350		0.00338	-0.00144	-0.0345
		(1.04)	(-0.31)	(-0.97)		(1.02)	(-0.24)	(-1.02)		(1.06)	(-0.32)	(-0.98)
soil_quality_good_d		0.0101*	0.000237	-0.00187		0.0101*	0.000159	-0.000940		0.0101*	0.000441	-0.00179
		(1.91)	(0.04)	(-0.05)		(1.91)	(0.03)	(-0.02)		(1.91)	(0.08)	(-0.05)
erosion_control_d		-0.000130	-0.000340	-0.00331		-0.000132	-0.000446	-0.00185		-0.000123	-0.000309	-0.00355
		(-0.06)	(-0.14)	(-0.23)		(-0.06)	(-0.19)	(-0.13)		(-0.06)	(-0.13)	(-0.24)
erosion_problems_d		-0.00112	-0.00278	-0.0139		-0.00117	-0.00264	-0.0128		-0.000933	-0.00270	-0.0135
		(-0.48)	(-1.09)	(-0.91)		(-0.49)	(-1.05)	(-0.82)		(-0.40)	(-1.05)	(-0.88)
plot_irrigation_d		-0.00283	0.000997	0.0111		-0.00282	0.00102	0.00913		-0.00291	0.00107	0.0114
		(-0.60)	(0.64)	(0.92)		(-0.60)	(0.66)	(0.79)		(-0.60)	(0.69)	(0.94)
plot_seed_improved_d		0.000867	0.000202	0.0334		0.000881	-0.000211	0.0354		0.000811	-0.000324	0.0319
		(0.35)	(0.05)	(1.04)		(0.35)	(-0.05)	(1.11)		(0.35)	(-0.07)	(0.99)
husband_labor_incidence_all		-0.00201	0.0109	-0.0410		-0.00201	0.0110	-0.0421		-0.00183	0.0142	-0.0374
		(-0.69)	(0.56)	(-0.35)		(-0.69)	(0.56)	(-0.36)		(-0.65)	(0.73)	(-0.32)

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... table 12 continued

	Variable that specify the two sub-groups: "wife_has_useright"											
	Other empowerment variables included:											
	"None"				"wife_own_plot"				"wife_decide_cropuse_t1"			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)
wife_labor_incidence_all		0.0359	-0.0879**	-0.0993		0.0332	-0.0802*	-0.244**		0.0285	-0.107**	-0.111
		(1.53)	(-1.97)	(-1.41)		(1.39)	(-1.79)	(-1.98)		(1.22)	(-2.33)	(-1.59)
hired_labor_man_all_bis		-0.0309	0.0213**	0.0384**		-0.0309	0.0213**	0.0392**		-0.0310	0.0214**	0.0386**
		(-1.57)	(1.98)	(2.07)		(-1.57)	(2.00)	(2.09)		(-1.57)	(1.98)	(2.06)
hired_labor_woman_all_bis		-0.00000125	-0.00172	-0.0214		-0.00000125	-0.00172	-0.0238		-0.00000125	-0.00174	-0.0217
		(-0.00)	(-1.18)	(-1.49)		(-0.00)	(-1.20)	(-1.62)		(-0.00)	(-1.19)	(-1.50)
hired_labor_child_all_bis		-0.00000302	-0.000690	-0.00100		-0.00000305	-0.000710	-0.00106		-0.00000312	-0.000722	-0.00102
		(-0.00)	(-1.56)	(-0.76)		(-0.00)	(-1.58)	(-0.80)		(-0.00)	(-1.51)	(-0.74)
org_fert_use_d		0.00257	-0.000983	-0.0132		0.00261	-0.00130	-0.0110		0.00244	-0.00104	-0.0136
		(0.79)	(-0.41)	(-0.73)		(0.80)	(-0.55)	(-0.61)		(0.79)	(-0.44)	(-0.75)
inorg_fert_use_d		-0.0149	-0.000119	0.0150		-0.0150	-0.000204	0.0165		-0.0146	-0.000228	0.0142
		(-1.41)	(-0.04)	(0.57)		(-1.41)	(-0.06)	(0.62)		(-1.41)	(-0.07)	(0.54)
pest_use_d		-0.00132	-0.00234	-0.0110		-0.00132	-0.00220	-0.0101		-0.00137	-0.00217	-0.0101
		(-0.19)	(-0.93)	(-0.58)		(-0.19)	(-0.88)	(-0.53)		(-0.19)	(-0.87)	(-0.53)
hhh_is_female_d		0.00200	-0.00267	-0.0199		0.00184	-0.00492	-0.0203		0.00220	-0.00349	-0.0223
		(0.53)	(-0.49)	(-0.45)		(0.53)	(-0.85)	(-0.47)		(0.54)	(-0.63)	(-0.50)
hh_size		0.0647***	-0.0151	-0.0878		0.0641***	-0.0126	-0.116		0.0657***	-0.0156	-0.0856
		(4.14)	(-1.40)	(-0.95)		(4.10)	(-1.19)	(-1.21)		(4.20)	(-1.44)	(-0.93)
hh_shocks_d		-0.000738	0.0298	0.187*		-0.000766	0.0280	0.207*		-0.000613	0.0283	0.181
		(-0.41)	(1.47)	(1.69)		(-0.42)	(1.37)	(1.87)		(-0.40)	(1.39)	(1.63)
hh_agri_shocks_d		-0.00761	-0.0142	-0.0617		-0.00756	-0.0147	-0.0536		-0.00769	-0.0159	-0.0643
		(-1.53)	(-0.92)	(-0.87)		(-1.52)	(-0.96)	(-0.75)		(-1.54)	(-1.04)	(-0.91)
less_area_harvested_plot_d		0.00862	0.000909	0.00419		0.00854	0.000343	0.00415		0.00885	-0.000141	0.00138
		(1.33)	(0.19)	(0.12)		(1.33)	(0.07)	(0.12)		(1.33)	(-0.03)	(0.04)
_cons			0.0751	-0.0636			0.0519	0.216			0.0821	-0.0799
			(1.38)	(-0.26)			(1.01)	(0.72)			(1.54)	(-0.31)
N	3634				3634				3634			

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: **Decomposition of the Second Pro-Female Gender Gap in Agricultural Productivity.**

Variable that specify the two sub-groups: "wife_decide_cropuse_t1"												
	Other empowerment variables included:											
	"None"				**"wife_own_plot"**				**"wife_has_useright**			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)
Prediction_1	11.21*** (189.20)				11.21*** (189.36)				11.21*** (190.76)			
Prediction_2	11.49*** (255.87)				11.49*** (256.05)				11.49*** (257.35)			
Difference	-0.284*** (-4.75)				-0.284*** (-4.75)				-0.284*** (-4.77)			
Total		-0.147*** (-3.79)	-5.02e-15 (-0.00)	-0.137*** (-2.79)		-0.108*** (-2.59)	-7.52e-15 (-0.00)	-0.176*** (-3.40)		-0.164*** (-4.24)	-4.00e-15 (-0.00)	-0.119** (-2.42)
wife_own_plot						0.0426** (2.42)	-0.00691 (-0.29)	-0.0356* (-1.86)				
wife_has_useright										-0.0156*** (-2.93)	0.00336 (0.45)	-0.00401 (-0.82)
plot_maincrop_4_sale_d		-0.0779*** (-5.01)	0.0426* (1.91)	0.0231** (2.04)		-0.0774*** (-5.01)	0.0378* (1.67)	0.0207* (1.83)		-0.0783*** (-5.02)	0.0407* (1.83)	0.0229** (2.04)
ln_plot_area_gps		-0.121*** (-3.79)	0.00803 (0.68)	0.00164 (0.67)		-0.120*** (-3.79)	0.00698 (0.60)	0.00170 (0.70)		-0.120*** (-3.79)	0.00751 (0.64)	0.00142 (0.58)
cultivation_intercropped_d		0.00726 (1.57)	-0.0217 (-0.49)	-0.0177 (-1.30)		0.00776* (1.67)	-0.0198 (-0.45)	-0.0156 (-1.16)		0.00760* (1.65)	-0.0245 (-0.55)	-0.0192 (-1.40)
distance_plot_home		-0.000914 (-0.60)	-0.0222 (-1.47)	-0.0119 (-1.44)		-0.000928 (-0.60)	-0.0217 (-1.46)	-0.0116 (-1.43)		-0.000903 (-0.60)	-0.0228 (-1.53)	-0.0119 (-1.44)
distance_plot_market		0.00149 (0.80)	0.0587*** (2.87)	0.0330*** (2.93)		0.00142 (0.78)	0.0557*** (2.73)	0.0320*** (2.85)		0.00160 (0.84)	0.0576*** (2.83)	0.0319*** (2.85)
soil_quality_good_d		0.00172 (0.48)	0.00604 (0.21)	-0.00388 (-0.33)		0.00175 (0.48)	0.00518 (0.18)	-0.00339 (-0.29)		0.00178 (0.48)	0.00532 (0.19)	-0.00503 (-0.43)
erosion_control_d		-0.00138 (-0.84)	0.000746 (0.07)	-0.000536 (-0.10)		-0.00139 (-0.85)	0.000633 (0.06)	-0.000509 (-0.10)		-0.00133 (-0.83)	0.000999 (0.09)	-0.000505 (-0.10)
erosion_problems_d		-0.000407 (-0.44)	0.00110 (0.09)	0.00218 (0.41)		-0.000415 (-0.45)	0.00145 (0.12)	0.00224 (0.42)		-0.000330 (-0.37)	0.00119 (0.10)	0.00198 (0.37)
plot_irrigation_d		0.00429 (1.15)	0.00289 (0.57)	0.00130 (0.67)		0.00429 (1.15)	0.00292 (0.58)	0.00133 (0.69)		0.00424 (1.15)	0.00284 (0.56)	0.00128 (0.65)
plot_seed_improved_d		-0.00400 (-1.48)	-0.00517 (-0.29)	0.00143 (0.17)		-0.00416 (-1.51)	-0.00622 (-0.35)	0.00166 (0.20)		-0.00413 (-1.51)	-0.00546 (-0.31)	0.00116 (0.14)
husband_labor_incidence_all		-0.00592 (-0.72)	-0.0325 (-0.35)	-0.0136 (-0.38)		-0.00592 (-0.72)	-0.0307 (-0.33)	-0.0133 (-0.37)		-0.00642 (-0.78)	-0.0296 (-0.32)	-0.0132 (-0.36)

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... table 13 continued

	Variable that specify the two sub-groups: "wife_decide_cropuse_t1"											
	Other empowerment variables included:											
	"None"				"wife_own_plot"				"wife_has_useright			
	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)	Differential	Explained (Endowment Effect)	Unexplained_1	Unexplained_2 (Female Structural Advantage)
wife_labor_incidence_all		-0.000302	-0.135**	-0.0824**		0.000340	-0.123*	-0.0843*		-0.00350	-0.163**	-0.117**
		(-0.12)	(-1.98)	(-1.97)		(0.13)	(-1.77)	(-1.95)		(-1.10)	(-2.34)	(-2.44)
hired_labor_man_all_bis		-0.00298	0.00614	0.00172		-0.00295	0.00581	0.00147		-0.00295	0.00715	0.00198
		(-0.52)	(0.46)	(0.61)		(-0.52)	(0.44)	(0.51)		(-0.52)	(0.54)	(0.71)
hired_labor_woman_all_bis		-0.00186	0.00325	0.000550		-0.00187	0.00283	0.000550		-0.00189	0.00297	0.000500
		(-0.91)	(0.33)	(0.56)		(-0.92)	(0.29)	(0.58)		(-0.92)	(0.30)	(0.51)
hired_labor_child_all_bis		0.00118	-0.00154	0.000416		0.00123	-0.00144	0.000455		0.00116	-0.00168	0.000225
		(0.60)	(-1.16)	(0.62)		(0.61)	(-1.12)	(0.68)		(0.61)	(-1.26)	(0.35)
org_fert_use_d		-0.00294	-0.00978	-0.00494		-0.00307	-0.0106	-0.00466		-0.00306	-0.00938	-0.00511
		(-1.32)	(-0.94)	(-0.98)		(-1.34)	(-1.03)	(-0.93)		(-1.34)	(-0.89)	(-1.01)
inorg_fert_use_d		-0.0179**	0.00718	0.00419		-0.0178**	0.00754	0.00417		-0.0178**	0.00842	0.00492
		(-2.30)	(0.55)	(0.73)		(-2.31)	(0.58)	(0.73)		(-2.30)	(0.64)	(0.86)
pest_use_d		0.0140**	-0.0284**	-0.0120**		0.0140**	-0.0278**	-0.0119**		0.0139**	-0.0287**	-0.0121**
		(2.34)	(-2.45)	(-2.22)		(2.34)	(-2.40)	(-2.22)		(2.34)	(-2.46)	(-2.25)
hhh_is_female_d		0.0201*	-0.0318	-0.0189		0.0158	-0.0270	-0.0140		0.0203*	-0.0318	-0.0186
		(1.92)	(-1.63)	(-1.40)		(1.51)	(-1.30)	(-1.04)		(1.94)	(-1.63)	(-1.38)
hh_size		0.0328**	-0.0964**	-0.0545		0.0323**	-0.0932**	-0.0561		0.0340**	-0.0991**	-0.0576
		(2.54)	(-2.05)	(-1.18)		(2.52)	(-1.98)	(-1.22)		(2.55)	(-2.09)	(-1.24)
hh_shocks_d		-0.00365	0.0430	0.00770		-0.00382	0.0492	0.0106		-0.00328	0.0495	0.0107
		(-0.86)	(0.50)	(0.19)		(-0.90)	(0.57)	(0.27)		(-0.77)	(0.57)	(0.27)
hh_agri_shocks_d		0.00488	0.0116	0.00580		0.00471	0.0114	0.00701		0.00456	0.00202	0.00106
		(1.39)	(0.18)	(0.22)		(1.37)	(0.18)	(0.27)		(1.35)	(0.03)	(0.04)
less_area_harvested_plot_d		0.00579	0.0289	0.0106		0.00569	0.0285	0.0111		0.00589	0.0269	0.0101
		(1.23)	(1.40)	(1.16)		(1.23)	(1.39)	(1.22)		(1.23)	(1.30)	(1.11)
_cons			0.165	-0.00983			0.153	-0.0196			0.199	0.0551
			(1.07)	(-0.12)			(1.00)	(-0.23)			(1.27)	(0.59)
N	3634				3634				3634			

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: **Investigating Heterogeneity of the main results by female marital status.**

Dependent variable: Log[plot agricultural productivity]					
PANEL A. Married *versus* Not-Married Female.					
	(1)	(2)	(3)	(4)	(5)
wife_own_plot				-0.0262	-0.0847*
				(-0.57)	(-1.86)
(wife_own_plot == 0) & (wife_married_d == 0)	0				
	(.)				
(wife_own_plot == 0) & (wife_married_d == 1)	0.00528				
	(0.04)				
(wife_own_plot == 1) & (wife_married_d == 0)	-0.143				
	(-1.38)				
(wife_own_plot == 1) & (wife_married_d == 1)	-0.0365				
	(-0.29)				
(wife_has_useright == 0) & (wife_married_d == 0)		0		0	
		(.)		(.)	
(wife_has_useright == 0) & (wife_married_d == 1)		0.208**		0.199**	
		(2.11)		(2.01)	
(wife_has_useright == 1) & (wife_married_d == 0)		0.254***		0.246**	
		(2.63)		(2.51)	
(wife_has_useright == 1) & (wife_married_d == 1)		0.376***		0.354***	
		(3.02)		(2.74)	
(wife_decide_cropuse_t1 == 0) & (wife_married_d == 0)			0		0
			(.)		(.)
(wife_decide_cropuse_t1 == 0) & (wife_married_d == 1)			0.189		0.160
			(1.48)		(1.23)
(wife_decide_cropuse_t1 == 1) & (wife_married_d == 0)			0.161		0.174*
			(1.56)		(1.69)
(wife_decide_cropuse_t1 == 1) & (wife_married_d == 1)			0.259**		0.259**
			(2.17)		(2.16)
_cons	10.93***	10.64***	10.68***	10.66***	10.73***
	(61.29)	(64.76)	(63.64)	(61.69)	(61.60)
N	3634	3634	3634	3634	3634
PANEL B. By female "detailed" marital status.					
	(1)	(2)	(3)	(4)	(5)
wife_own_plot				-0.0360	-0.0961**
				(-0.74)	(-2.10)
(wife_own_plot == 0) & (wife == married (monogamous))	0				
	(.)				
(wife_own_plot == 1) & (wife == separated)	-0.306*				
	(-1.87)				
(wife_own_plot == 1) & (wife == divorced)	-0.451**				
	(-2.43)				
(wife_own_plot == 1) & (wife == widow)	-0.256*				
	(-1.96)				
(wife_has_useright == 0) & (wife == married (monogamous))		0		0	
		(.)		(.)	
(wife_has_useright == 0) & (wife == separated)		-0.256		-0.257*	
		(-1.64)		(-1.65)	
(wife_has_useright == 0) & (wife == divorced)		-0.382**		-0.382**	
		(-2.15)		(-2.15)	
(wife_has_useright == 1) & (wife == married (monogamous))		0.196*		0.176	
		(1.81)		(1.57)	
(wife_decide_cropuse_t1 == 0) & (wife == married (monogamous))			0		0
			(.)		(.)
(wife_decide_cropuse_t1 == 0) & (wife == separated)			-0.626**		-0.603**
			(-2.23)		(-2.12)
_cons	10.89***	10.85***	10.85***	10.86***	10.86***
	(70.28)	(71.36)	(69.64)	(70.06)	(68.98)
Other Covaraites	**YES**	**YES**	**YES**	**YES**	**YES**
Region Fixed Effects	**YES**	**YES**	**YES**	**YES**	**YES**
N	3457	3457	3457	3457	3457

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
The marital status is composed of seven categories, namely: (1) monogamous married, (2) polygamous married, (3) living together, (4) separated, (5) divorced, (6) never married and (7) widow. In Panel A, we consider the three first categories as referring to simply "married". In Panel B, only significant coefficients are reported.

Table 15: Sensitibity of the OB decomposition results to subsamples restriction.

PANEL A: Variable that specifies the two sub-groups: "wife_own_plot"

	Other empowerment variable(s) included as covariate(s):									
	"None" [col(1) to col (2)]		"wife_has_useright" [col(3) to col (6)]				"wife_decide_cropuse_t1" [col(7) to col (10)]			
	Sample Restrictions Applied:									
	Sample Restriction 1 [col(1) to col (2)]		Sample Restriction 1 [col(3) to col (4)]		Sample Restrictions 1 & 2 [col(5) to col (6)]		Sample Restriction 1 [col(7) to col (8)]		Sample Restrictions 1 & 3 [col(9) to col (10)]	
	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Prediction_1	11.40***		11.40***		11.60***		11.40***		11.46***	
	(196.39)		(196.99)		(84.06)		(196.60)		(186.65)	
Prediction_2	11.35***		11.35***		11.29***		11.35***		11.39***	
	(237.62)		(237.63)		(171.91)		(239.72)		(233.82)	
Difference	0.0546		0.0546		0.317**		0.0546		0.0701	
	(0.91)		(0.91)		(2.26)		(0.91)		(1.10)	
Explained		0.0112		0.0199		0.401**		-0.0340		0.0154
		(0.26)		(0.45)		(2.57)		(-0.73)		(0.31)
Unexplained_1		2.01e-15		1.19e-15		2.89e-15		3.09e-15		-9.44e-16
		(0.00)		(0.00)		(0.00)		(0.00)		(-0.00)
Unexplained_2		0.0434		0.0347		-0.0837		0.0886*		0.0547
		(0.92)		(0.72)		(-0.57)		(1.76)		(1.08)
N	3323		3323		921		3323		2985	

PANEL B: Variable that specifies the two sub-groups: "wife_has_useright"

	Other empowerment variable(s) included as covariate(s):									
	"None" [col(1) to col (2)]		"wife_own_plot" [col(3) to col (6)]				"wife_decide_cropuse_t1" [col(7) to col (10)]			
	Sample Restrictions Applied:									
	Sample Restriction 2 [col(1) to col (2)]		Sample Restriction 2 [col(3) to col (4)]		Sample Restrictions 2 & 1 [col(5) to col (6)]		Sample Restriction 2 [col(7) to col (8)]		Sample Restrictions 2 & 3 [col(9) to col (10)]	
	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Prediction_1	11.32***		11.32***		11.27***		11.32***		11.32***	
	(169.41)		(170.77)		(154.54)		(171.03)		(167.88)	
Prediction_2	11.65***		11.65***		11.50***		11.65***		11.66***	
	(164.01)		(163.36)		(126.19)		(164.21)		(162.64)	
Difference	-0.335***		-0.335***		-0.228**		-0.335***		-0.336***	
	(-3.94)		(-3.94)		(-2.18)		(-3.93)		(-3.85)	
Explained		-0.0980		-0.0722		0.132		-0.128		-0.137
		(-1.21)		(-0.81)		(0.77)		(-1.51)		(-1.56)
Unexplained_1		1.72e-15		2.61e-15		7.22e-16		7.77e-16		6.66e-16
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)
Unexplained_2		-0.237***		-0.263***		-0.360**		-0.207**		-0.199**
		(-2.95)		(-2.96)		(-2.17)		(-2.44)		(-2.28)
N	1211		1211		921		1211		1180	

PANEL C: Variable that specifies the two sub-groups: "wife_decide_cropuse_t1"

	Other empowerment variable(s) included as covariate(s):									
	"None" [col(1) to col (2)]		"wife_own_plot" [col(3) to col (6)]				"wife_has_useright" [col(7) to col (10)]			
	Sample Restrictions Applied:									
	Sample Restriction 3 [col(1) to col (2)]		Sample Restriction 3 [col(3) to col (4)]		Sample Restrictions 3 & 1 [col(5) to col (6)]		Sample Restriction 3 [col(7) to col (8)]		Sample Restrictions 3 & 2 [col(9) to col (10)]	
	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition	Differential	Decomposition
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Prediction_1	11.32***		11.32***		11.31***		11.32***		11.11***	
	(167.62)		(167.71)		(158.86)		(168.72)		(108.25)	
Prediction_2	11.49***		11.49***		11.45***		11.49***		11.51***	
	(253.81)		(253.98)		(248.23)		(255.17)		(189.25)	
Difference	-0.164**		-0.164**		-0.138**		-0.164**		-0.406***	
	(-2.48)		(-2.48)		(-1.97)		(-2.49)		(-3.50)	
Explained		-0.115***		-0.0831*		-0.0740		-0.131***		-0.223***
		(-2.65)		(-1.78)		(-1.47)		(-3.05)		(-2.79)
Unexplained_1		2.58e-15		1.75e-15		-1.73e-15		2.28e-15		-1.04e-15
		(0.00)		(0.00)		(-0.00)		(0.00)		(-0.00)
Unexplained_2		-0.0492		-0.0807		-0.0642		-0.0324		-0.183**
		(-0.92)		(-1.48)		(-1.13)		(-0.60)		(-2.10)
N	3256		3256		2985		3256		1180	