The Gender Gap in Smallholder Agricultural Productivity: The Case of Cameroon.

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Abstract

Using plot-level data from Cameroon, we document how gender disparity in productivity varies according to how plot headship is defined and distinguished by gender. We account for selectivity bias and obtain direct and indirect drivers of gender disparities through the implementation of an extended Oaxaca-Blinder decomposition and distributional decomposition using percentile-weighted regressions. We find that gender disparities differ by headship and result from unobserved factors with women's structural disadvantage exceeding men's structural advantage. Direct contributors to gender disparities are gender-specific: (i) such non-labor inputs as fertilizer (plot head and plot owner) and cost of irrigation (de jure plot head); (ii) age (migrant plot head); and (iii) plot size (plot manager). Factors that drive these major contributors and, thus, indirectly affect the components of gender disparities differ by gender and include (i) cost of fertilizer (plot head and plot owner); (ii) years of education and growing a single crop on the plot (all plot heads); (iii) access to subsidized inputs (plot head, plot owner and plot migrant); (iv) household tools and ethnicity (plot manager); (v) plot size (plot migrant) and (vi) age (plot owner). We also find that the endowment effect is more pronounced for the poorest and wealthiest farmers. The gender differences in the results suggest that policies should be gender specific.

Keywords: Smallholder agriculture; Productivity; Gender; Shapley decompositions; Cameroon

JEL Classification : D13, J16, O13, Q12, Q18

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I. Introduction

In sub-Saharan Africa, most of the extreme poor reside in rural areas, and agriculture constitutes their main occupation. The agricultural sector in Africa has three main characteristics. First, it is grossly fragmented into a myriad of small-scale farms. Second, it is a major area of economic activity for women. Finally, productivity is generally low and even lower for women farmers compared to men (Kilic, Palacios-López & Goldstein, 2015). As a result, providing improved access to productive resources for women, along with strategies for reducing gender disparities, are priorities for policy makers. In Africa, gender disparities in agricultural productivity are estimated in recent econometric studies to be in the range of 20-30% (Food and Agriculture Organization, 2011). Therefore, concerns remain on the continent that poverty and one of its fundamental causes—gender-based discrimination—is falling at a much slower pace that in other developing continents.

Variations in definitions of the gender of plot headship (Kassie, Ndiritu & Stage, 2014) imply differing gender-related aspects of decision-making that are likely to affect agricultural productivity. Moreover, women farmers constitute a heterogeneous group: women farmers face a range of interests, problems, constraints, and forms of inequality (Anunobi, 2002), and women farmers may be disadvantaged in access to land (both land size and soil richness), crop choice, tenure security, livestock, education, extension services, and legal and social traditions, among other factors. Such disparities may worsen outcomes for women farmers, and their magnitude varies according to gender indicator. If the gender of the plot head or manager is misidentified, then estimates of gender gaps will be misleading and well-informed agricultural policies cannot be developed.

In order to document, first, whether definitions of plot headship changed gender disparities, and, second, whether gender disparities resulted from endowment effects (the result of observable differences in inputs) or structural effects (gender disparities caused by differences in returns to the same observed inputs), we used five different gender-based definitions of plot headship: woman-headed; de jure woman-headed (i.e., women who were the sole heads of their plots because they were single, separated, divorced, or widowed); migrant-woman-headed; woman-managed; and woman-owned.

Further, we wondered what factors contributed the most to the components of gender disparities. Our empirical analysis was linked to cross-sectional survey data from smallholder farmers in Cameroon, who provided a particularly interesting case: agriculture is the backbone of the economy; the sector is dominated by subsistence farming in which small-scale farmers are the majority of producers; and women farmers predominate and play an indispensable role in food production. We based our econometric approach first on an extended Oaxaca-Blinder (EOB) decomposition of gender disparities into endowment and structural effects in order to account for selectivity bias, and we then applied distributional decomposition using percentile-weighted regressions to explore gender disparities at different levels of well-being.

Four main findings emerge from our study. First, strong evidence exists of gender disparities that are not uniform across plot headships; second, unobserved factors contribute significantly in gender disparities, with women's structural disadvantage exceeding men's structural advantage in almost all plots. Third, the most direct contributors to gender-gap components are gender-specific: (i) non-labor input such as fertilizer (plot head and plot owner) and cost of irrigation (plot de jure head); (ii) age (migrant plot head); and (iii) cultivated plot size (plot manager). Further, the factors that influence these major contributors and thus indirectly affect the components of gender disparities differ by gender: (i) cost of fertilizer (plot head and plot owner); (ii) years of education and growing one crop on the plot (all plot heads); (iii) access to credit-in-kind—i.e., access to subsidized inputs (plot head, plot owner, and plot migrant); (iv) household tools and ethnicity (plot manager); (v) plot size (plot migrant); and (vi) age (plot owner). The endowment effect, finally, is more pronounced among the poorest and wealthiest farmers.

Across Africa, a wide range of empirical studies has examined the magnitude and drivers of gender disparities using the sex of the household head as the gender indicator (Chavas, Petrie & Roth et al, 2005). The evidence from this strand of literature has been mixed and has implicated many potential candidates: unclear definitions of headship, the nuances of different types of households, and the implicit assumption of the existence of a Pareto-efficient, intra-household decision-making process regarding the allocation of productive resources (Udry, 1996; Quisumbing, 1996; Doss, 2001; Peterman et al., 2011).

A plot-level approach is likely more appropriate in analyzing gender gaps (Kazinaga & Wahhaj, 2013; Doss, 2018), but an exploration of whether varying definitions of plot headship affect the estimation of gender disparities has not been carried out. An exception, to our knowledge, is De la O Campos, Covarrubias and Patron (2016) for Uganda. In contrast to that study, we applied five different definitions of plot headship, allowing a better understanding of how the factors that underlie gender disparities vary along with gender indicator as well as robust results. In addition, unlike previous literature, we controlled for sample-selection bias and implemented an EOB decomposition of gender disparities and a distributional decomposition using weighted percentile regressions to obtain both direct and indirect sources of gender gap. Finally, past studies on gender disparities have been conducted across Africa but mostly in the context of Eastern, Southern, and Western Africa. To our knowledge, the evidence in the Central-African context is rather limited. Providing evidence on the size and drivers of gender disparities through the use of varying definitions of plot headship could help policymakers to (i) design policies intended to increase agricultural productivity and reduce gender inequality in agriculture, and (ii) decide where efforts are most needed (e.g., making current agricultural policies more gender-responsive or designing new agricultural policies that are gender-targeted). A distributional decomposition of gender disparities could help policymakers understand where the largest gender disparities exist in productivity distribution.

The rest of the paper is structured as follows. Section 2 elaborates on the implications for gender disparities of various types of household decision-making processes. Section 3 provides an overview of programs to boost agricultural productivity and address gender disparities in Cameroon. Section 4 presents the data. Section 5 presents the methodology. Section 6 presents and discusses the study results. Section 7 concludes and provides the policy implications of the findings.

II. Household Decision-Making and Headship

The building block of the theoretical literature on intra-household allocation is the premise that households behave as though they were single individuals. In this context, workers have used the sex of the household head as the gender indicator and have adopted the implicit assumption of Pareto-efficient, intra-household decision-making with regard to the allocation of resources (Udry, 1996; Kazianga & Wahhaj, 2013). The bulk of evidence for this unitary model of household decision-making is mixed (Chavas, Petrie & Roth, 2005; Horell & Krishnan, 2007), and the reasons are manifold. Even acknowledging that definitions of headship are unclear (i.e., they do not indicate who makes decisions in agriculture or who owns land, crops, or trees; see Doss, 2001), the biggest shortfall in this literature remains the assumption of a Pareto-efficient, intra-household allocation process. (Quisumbing, 1996), and

Indeed, crop preferences differ across household decision-makers. For example, decision-making in agricultural production is partly contingent upon men's and women's entitlements and bargaining power (Agarwal, 2003; Goldstein & Udry, 2008; Kleinjans, 2013). If household production is noncooperative, the choice of the gender indicator is of a paramount importance because it helps capture heterogeneity in household decision-making that affects agricultural productivity.

The sources of gender disparities may be many, including legal frameworks, ethnic customs, inheritance norms, etc. (in most African societies, for example, widows face discrimination in asset inheritance, leading to poverty and disadvantage with regard to productive resources that affect agricultural productivity; see Peterman, 2012). Other sources include differences in the quantity and quality of inputs and in cultivation arrangements (gendered crop choice as a result of cultural norms, women's lack of resources to cultivate specific crops, culturally appropriate division of labor, etc.; see Doss, 2002; Peterman, Behrman & Quisumbing, 2010; and Peterman et al., 2011). Finally, gender disparities exist in access to land and land quality (low rates of landowning by women, women's higher tenure insecurity, women's smaller or lower-quality plots, women's plots located farther from the compound, for example; see (Croppenstedt, Goldstein & Rosas , 2013; Doss et al., 2015).

Empirical evidence from West African plot-level data suggests substantial allocative inefficiencies within the households (Udry et al., 1995), productivity differences between plots managed by men and those managed by women (Udry, 1996; Akresh, 2005), or no difference between plots managed by men and those managed by women (Kazianga & Wahhaj, 2013). Peterman et al. (2011) found persistent lower productivity on plots owned by women and among women-headed households in Nigeria and Uganda while Oseni et al. (2015) reported variations in gender gaps across the northern and southern regions of Nigeria. Using plot-level data from Eastern and Southern Africa, Aguilar et al. (2015) found clear evidence that unmarried women managers were, on average, less productive than men in Ethiopia; Palacios-López and López (2015) and Kilic, Palacios-López and Goldstein (2015) found that plots managed by women were less productive in Malawi. This echoes the findings of Slavchevska (2015) and Ali et al. (2016) for Tanzania and Uganda, respectively.

Still in Uganda, De la O Campos, Covarrubias and Patron (2016) used three gender indicators (women-headed households, women-held plots, and women-managed plots) to investigate how the choice of the gender indicator affected the calculation of gender disparities. They obtained different results depending on the gender indicator. Our study is in line with the approach of De la O Campos, Covarrubias and Patron (2016), but we investigated the robustness of gender disparities to different definitions of plot headship. Finally, thus far research has been skewed toward Western, Eastern, and Southern African countries. We fill this gap using a different setting: Central Africa with potential different sets of cultural norms, rights, and obligations within households compared to other African settings (e.g., individualization of decision-making power in Western Africa, joint decision-making power in most parts of Eastern and Southern Africa, and a mix of both in most parts of the Central Africa).[1]

In sum, we hypothesize,

H1: The choice of gender indicator affects the calculation of gender disparities.

III. Cameroon's Productivity Enhancing Programs and gender Disparities.

Cameroon is an agriculture-based economy (see Figure 1). The country depends especially upon the agricultural sector for the employment, income, and food security of most rural households as well as for poverty reduction (Yengoh, 2012; Njikam & Alhadji, 2017). Additionally, the productivity of women farmers is lower compared to men farmers because of various constraints e.g., access to physical and financial resources, cultural and legal hurdles, etc. In recognition of this gender bias and the critical role of the sector the country's economic development process, the government implemented various agricultural policies.

First, the policy of indirectly assisting farmers by providing economic, business, scientific, and technical information was implemented. Hence, in conjunction with international organizations,

[1] As Kilic, Palacios-López, and Goldstein (2015) have pointed out, "Another limitation observed in the relevant literature is the disproportional focus on West Africa. It is important to investigate the extent and correlates of the gender gap in alternative sub-Saharan African setting with different sets of rights and obligations that differently affect the distribution of productive resources across men and women" (418).

government structures (for example, the National Project for Extension Work and Agricultural Training, Support for Peasant Strategies, and Professionalism in Agriculture) were set up. Second, the policy of promoting and providing subsidized inputs to farmers was adopted. Within this framework, the National Fertilizer Program was established in the 1960s and replaced in 1980 by the National Rural Development Fund. These approaches proved ineffective in distributing inputs, however, and became increasingly costly (Ingco, Nash & Njinkeu, 2003). Since the early 1990s, a new strategy has sought to liberalize and privatize the fertilizer sector through an efficient and sustainable program for the import, distribution, and use of fertilizers.

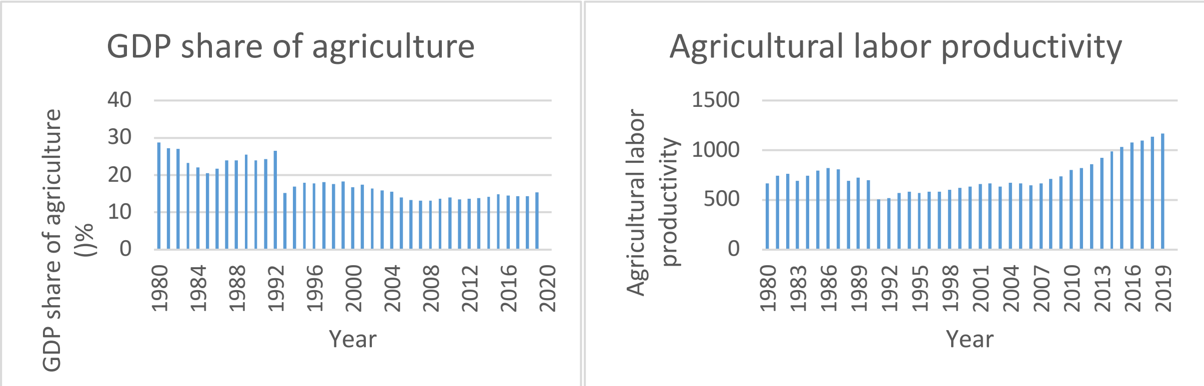
Third, good-quality seeds have proven to be instrumental to improving yields. In order to stimulate local interest in producing and selling high-quality seeds at affordable prices to smallholder farmers, the government created the Support Program for Production and Distribution of Seeds and Planting Materials in 2005. Seed production is a source of income for rural households and encourages the use of higher-quality seeds by food crop farmers (Ministère de l'Agriculture et du Développement Rural, 2006). The funds mobilized have remained far below the needs of farmers, however, and have been badly managed.

In conjunction with the European Union, the CD2 (Contract for Debt Relief and Development) Project was introduced in 2006; it targets, among other issues, improvements in fertilizer use, crop production, and yields among smallholder farmers. Lastly, a policy of eliminating all types of gender discrimination in small-scale farming was implemented. For example, elements of gender inequality in access to productive resources were addressed by creating two projects: the Support Program for Agricultural Organizations and the Project for Capacity Building of Communities. Both projects were intended to increase women's access to a number of inputs that would otherwise not have been available to them and to revitalize local-level cooperation between women within initiative groups and cooperatives. Likewise, the CD2 Project includes provisions to address gender bias in small-scale farming. In the sampling procedure, for example, farmers' associations with more than 30% of both women and vulnerable farmers were selected from communities across the country.[2]

However, policy makers have paid relatively less attention to access to property and land titles, an area in which gender imbalances still prevail, especially in rural areas.

[2] Groups of vulnerable farmers included widow-headed households, households with chronic food insecurity, and households headed by individuals who were both young and HIV/AIDS-infected.

Figure 1. Importance of Agriculture in Cameroon



Source: Authors' calculations based on 2019 World Bank Indicators for Cameroon (World Bank (n.d.).

IV. Data

We used plot-level data from the Cameroon Institute of Agricultural Research for Development (IRAD),[3] a survey of smallholder multi-crop farmers conducted between April and December 2009. This survey was a nationally representative dataset that covered five of the ten regions and three of the five main agroecological zones of the country. Data were collected using a structured questionnaire administered to farmers and included information necessary for plot-level productivity analysis. The survey's three modules were household, producer, and complementary.

One of the advantages of IRAD's survey is that it allowed five gender indicators. In addition to the gender of the plot head and of the de jure plot head, we drew upon questions of the survey to construct three additional gender variables: (i) migrant plot headship (in response to the question, "Is the farmer a native of the village?"); (ii) plot manager (in response to the question, "Person in charge of the plot?," allowing the identification of the person responsible for growing the crops and making such day-to-day decision on crop management as type of crop, when to plant, which inputs to use, etc.); and (iii) plot holders (in response to the question, " Land tenure?"), and the responses of (1) owner, (2) tenant, (3) temporary transfer, (4) donation, and (5) other were recorded. When we combined these data with information in the household module, we were able

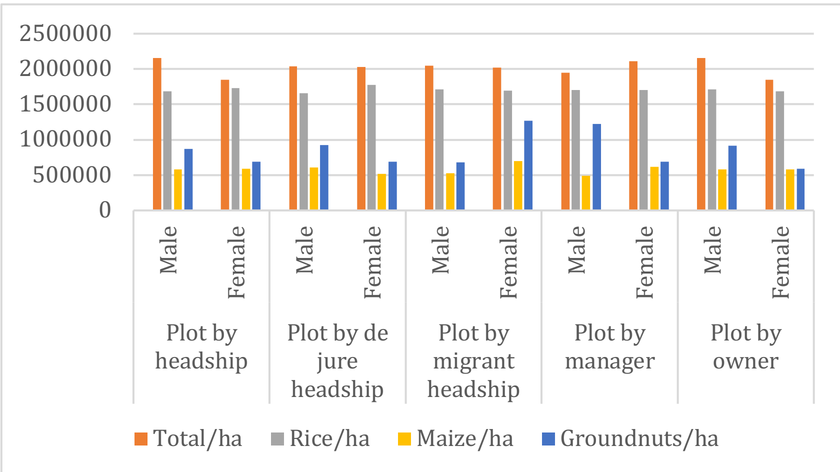
[3] Research and development regarding various crops in Cameroon is undertaken by the Cameroon Institute of Agricultural Research for Development. It is also a repository for seed breeding and production and for support technology transfer while ensuring a strong linkage among the various stakeholders, farmers, extension workers, and private sector. We thank Mrs Dorothy Malaa for making the data available.

to determine the gender and socioeconomic characteristics of each plot headship.

The initial sample consists of 1,488 households responsible for the farming of 4,026 plots across 166 villages. We focused on active producers and restricted our sample to plots for which non-zero crop harvest was reported.[4] We also considered plots for which none of our gender indicators were missing values. Our final sample included 1,200 household farmers and 3,075 plots in 125 villages across all three agro-ecological zones. Because ignoring missing observations may lead to inconsistent estimations, we estimated missing independent observations through the Predictive Mean Matching approach. Details of the selection are reported in Appendix Table A1. A full list of the variables, along with their meanings, is provided in Appendix Table A2.

Appendix Table A3 provides descriptive statistics and the t-tests of the difference in means. Women-headed and women-held plots achieved significantly lower harvests or output per hectare of land than did similarly situated men. Conversely, we observed differences in average productivity of maize that favored migrant women-headed and women-managed plots; the gap was statistically significant (Figure 2).

Figure 2. Agricultural Productivity by Gender Definition



Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Differences in agricultural production and productivity may result from differences in household characteristics. The distinctive attributes of women-headed, migrant women-headed, women-managed, and women-held plots were age and education: they are on average younger and had more years of education whereas women managers were older on average. In addition,

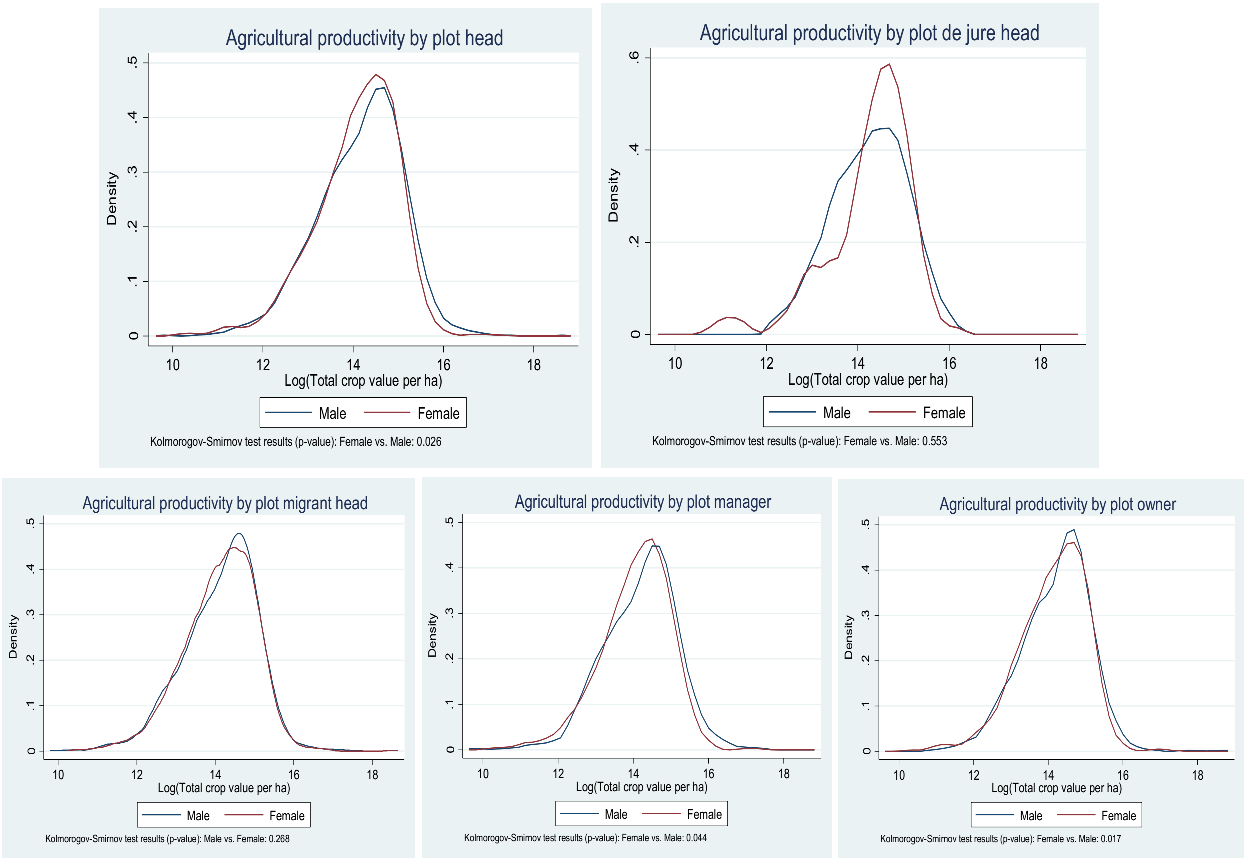
[4] Therefore, our data cleaning process did not raise any selection bias. There were 179 missing dependent observations that represented approximately 5.8% of our sample observations.

women-headed and women-held plots had more family adult men, belonged to bigger households, and experienced lower child dependency ratio; in addition, women-held plots had more non-farm income. In contrast, women managers came from households with fewer adult members and lower non-farm income. The remaining women belonged to households with both more young children and more adult members. Relative to men, women farmers and de jure women were less likely to be heads of their households while the reverse was true for women managers (52.3% vs. 24.5%). Migrant men were more likely to be heads of their households. Also, women farmers and migrant men belonged to households with more adult members.

Plot characteristics were also key determinants of gender disparities. Except the women-managed plots, the remaining women plots were significantly smaller in size and showed a greater (lower) prevalence of main cropping (intercropping) system. Overall, and excluding women managers who had higher access to credit relative to men (15.4% vs. 12.1%), women's access to credit was lower compared with men: women heads (12.7% vs. 14.7%), de jure women heads (12.5% vs. 14.9%), migrant women heads (12% vs. 15.2%), and women owners (12.8% vs. 14.6%). With the exception of women-held plots, the differences were statistically significant in all cases. In terms of labor and inputs, all women's plots used more family members and hired men as labor, except the plots managed by women, which had less access to family children and hired men. In addition, plots headed by women used fewer herbicides per hectare.

Gender disparities may also be linked to non-random crop allocation between men and women. In this regard, we also provide a detailed account of the frequency of crops grown across plots as well the distribution of crops cultivated along the gender indicator. Rice, maize, and groundnuts were listed as the main crop on about 34.3%, 15.7% and 17.3% of the plots, respectively. There were significant differences in crop choice across gender indicators. For example, plots headed by women were significantly more likely to be used to grow rice (8.1%) and maize (2.5%) than for the cultivation of groundnuts (0.8%). The de jure plots headed by women were more likely used to grow rice (0.1%) and maize (3.4%) than groundnuts (0.3%). The migrant plots headed by women plots were significantly less likely to plant rice and maize (0.4% and 2.8%, respectively). Plots managed by women were significantly less likely to be planted with rice (13%) and groundnuts (4.4%) and more likely to be planted with maize (2.6%). Finally, plots owned by women were strongly more likely to be planted with maize (3.3%) and groundnuts (2.7%) and significantly less likely to be planted with rice (2.5%). Finally, gender differences in agricultural productivity were also evident when comparing kernel-density estimates under all five definitions of gender (Figure 3).

Figure 3. Kernel-Density Estimates of Agricultural Productivity by Gender Definition



Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

V. Econometric Specification

The focus of our analysis was smallholder farmers. These full-time farmers may differ in both observed and unobserved characteristics from individuals whose main activity is not farming (non-full-time farming). Therefore, estimating the crop production function with OLS directly may have caused a selection bias. To overcome this bias, we followed the approach of Ahmed and McGillivray (2015) and corrected this selection bias with the Heckman's (1979) two-step approach. In the first step, we estimated the inverse Mill's ratio (denoted by λ) from a probit equation determining participation in the smallholder farming. To do so, we estimate the following equation separately for men and women,

$$F_{ij} = Z_{ij}\gamma_j + \varepsilon_{ij} \quad (1)$$

where i denotes the plot and j the gender group (men or women). F_{ij} is a dummy variable equal to 1 if full-time farming and 0 otherwise. Z_{ij} represents the set of covariates and that of the instrumental variables[5] e.g., (1) number of children under 6 years and number of adults aged 15 and older in the household, (2) a dummy variable for being head of the household, (3) household non-farm income, (4) household wealth, and (5) region of residence.[6] ε_{ij} ~IID $N(0,1)$. Estimation of equation (1) allows us to compute the inverse Mill's ratio ($\left(\lambda_i = \frac{\phi\,(\gamma Z_i)}{1-\Phi\,(\gamma Z_i)}\right)$), which is then added as an additional regressor in the agricultural productivity equation. ϕ and Φ represent, respectively, the density and the cumulative density functions.

5.1. The Oaxaca-Blinder Approach

We then focus on the decomposition of the gender productivity gap (D) using the classical Oaxaca-Blinder (OB) decomposition at the mean (Oaxaca, 1973; Blinder, 1973). Assume the agricultural productivity (Y) for a gender $G \in \{M, F\}$ where M and F indicate men and women, respectively,

$$Y_G = \sum_{k=1}^{K} \beta_{G,k} X_{G,k} + \varepsilon_G \quad (2)$$

where X is a vector of k observable, individual-, household-, and plot-level explanatory variables; β is the vector of intercept and slope coefficients; and ε is the error term under the assumption that $E(\varepsilon_M) = E(\varepsilon_F) = 0$. To decompose gender disparities (D), we have that

$$D = E[Y_M] - E[Y_F] \quad (3)$$

[5] In order to identify the appropriate exclusion restrictions, we incorporated a set of variables that belonged to the selection equation but not to the agricultural productivity equation.

[6] We included five regional dummy variables: far north, north, northwest, west, and centre. The reference region is center.

Equations (2) and (3) imply that,

$$D = E\left[\sum_{k=1}^{K} \beta_{M,k}X_{M,k}\right] - E\left[\sum_{k=1}^{K} \beta_{F,k}X_{F,k}\right] = \sum_{k=1}^{K} \beta_{M,k}\overline{X}_{M,k} - \sum_{k=1}^{K} \beta_{F,k}\overline{X}_{F,k} \quad (4)$$

By selecting women as a reference group and rearranging Equation (4), we can write:

$$D = \sum_{k=1}^{K} \left(\overline{X}_{M,k} - \overline{X}_{F,k}\right)\beta_{F,k} + \sum_{k=1}^{K} \left(\beta_{M,k} - \beta_{F,k}\right)\overline{X}_{F,k} + \sum_{k=1}^{K} \left(\overline{X}_{M,k} - \overline{X}_{F,k}\right)\left(\beta_{M,k} - \beta_{F,k}\right) \quad (5)$$

On the other hand, if men are the reference group, we can write:

$$D = \sum_{k=1}^{K} \left(\overline{X}_{M,k} - \overline{X}_{F,k}\right)\beta_{M,k} + \sum_{k=1}^{K} \left(\beta_{M,k} - \beta_{F,k}\right)\overline{X}_{M,k} + \sum_{k=1}^{K} \left(\overline{X}_{M,k} - \overline{X}_{F,k}\right)\left(\beta_{M,k} - \beta_{F,k}\right) \quad (6)$$

However, the OB method raises the well-known index number problem. Indeed, the endowment component (i.e., the first arguments in Equations 5 and 6) is sensitive to the selection of the reference group.

5.2. The Neumark (1988) Approach

Different approaches have been proposed to overcome the index number problem. All of them, however, are based on the use of a nondiscriminatory coefficient vector denoted by β^*. Chronologically, Reimers (1983) proposed using the average coefficients over groups of women and men, an approach that was followed by Cotton (1988) who suggested weighing coefficients by group sizes. Neumark (1988) suggested instead the use of the coefficients from a pooled regression. Oaxaca and Ransom (1994) develop a general framework to weight coefficients. Also, this approach and for a desired special gives the same Neumark (1988) decomposition. However, Neumark (1988) and Oaxaca and Ransom (1994) have been criticized because there may be cases in which the unexplained parts of the differential are in the explained component (see Fortin, 2006). To overcome this drawback, the addition of a gender dummy in the pooled regression has been suggested (see Jann, 2008).

We have exactly followed the method of Kilic, Palacios-López, and Goldstein (2015), whose roots lie in the work of Neumark (1988). For our pooled data sample, we have,

$$Y = \sum_{k=1}^{K} \beta_k^* X_k + \varepsilon \tag{7}$$

where $\overline{X}_{G,k}$ refers to the average of the explanatory variable within gender G. Rearranging Equation (5) by adding and subtracting the return to the observable covariates of each group valued at β^*:

$$D = \underbrace{\sum_{k=1}^{K} (\overline{X}_{M,k} - \overline{X}_{F,k})\beta_k^*}_{\substack{Component\ 1: \\ Endowment\ Effect}} + \underbrace{\underbrace{\sum_{k=1}^{K} (\beta_{M,k} - \beta_k^*)\overline{X}_{M,k}}_{\substack{Male\ Structural \\ Advantage}} + \underbrace{\sum_{k=1}^{K} (\beta_k^* - \beta_{F,k})\overline{X}_{F,k}}_{\substack{Female\ Structural \\ Advantage}}}_{\substack{Component\ 2: \\ Structural\ Effect}} \tag{8}$$

As we can observe, the expected average covariates of the model ($\overline{X}_{G,k}$) contributes in each of the two main gender-gap components.

5.3. The Extended Oaxaca-Blinder Approach

For deeper analysis, we have developed an innovative method that can be used to study the determinants of a given endowment of interest and its contribution to gender disparities. For example, if we observe that education contributes significantly in the endowment effect component, we may be interested to study the estimation model and to show how its explanatory variables contribute indirectly to gender disparities. We denote the explanatory variables of the covariate of interest ($X_{G,I}$). Thus, we have that:

$$X_{G,I} = \sum_{l=1}^{L} \beta_{G,l} Z_{G,l} + \vartheta_G \tag{9}$$

Let AD_I denotes the absolute contribution of variable of interest if $X_I$to gender disparities:

$$AD_I = \underbrace{(\overline{X}_{M,I} - \overline{X}_{F,I})\beta_I^*}_{\substack{SUB-Component\ 1: \\ Endowment\ Effect}} + \underbrace{\underbrace{(\beta_{M,I} - \beta_I^*)\overline{X}_{M,I}}_{\substack{Male\ Structural \\ Advantage}} + \underbrace{(\beta_I^* - \beta_{F,I})\overline{X}_{F,I}}_{\substack{Female\ Structural \\ Advantage}}}_{\substack{SUB-Component\ 2: \\ Structural\ Effect}} \tag{10}$$

Because $\overline{X}_{G,I} = \sum_{l=1}^{L} C_{G,l}$ and $C_{G,l} = \beta_{G,l}\overline{Z}_{G,l}$, we can write:

$$AD_I = \underbrace{\sum_{l=1}^{L} (C_{M,l} - C_{F,l})\beta_I^*}_{\substack{SUB-Component\ 1: \\ Endowment\ Effect}} + \underbrace{\underbrace{(\beta_{M,I} - \beta_I^*)\sum_{l=1}^{L} C_{M,l}}_{\substack{Male\ Structural \\ Advantage}} + \underbrace{\sum_{k=1}^{K} (\beta_I^* - \beta_{F,I})\sum_{l=1}^{L} C_{F,l}}_{\substack{Female\ Structural \\ Advantage}}}_{\substack{SUB-Component\ 2: \\ Structural\ Effect}} \tag{11}$$

This nested decomposition enables to examine how indirect factors (e.g., ethnicity) contribute to the main gender-gap components. Let AD_k=EE_k + SE_k and where EE_k, SE_k refer to the endowment effect and structural effect respectively. We have that:

$$D = \sum_{k=1}^{K} AD_k = \sum_{k=1}^{K} EE_k + \sum_{k=1}^{K} SE_k \quad (12)$$

If we distinguish our explanatory variable of interest (education for instance), we can write:

$$D = \sum_{k=1,k\neq I}^{K} EE_k + \sum_{k=1,,k\neq I}^{K} SE_k + \sum_{l=1}^{L} EE_{I,l} + \sum_{l=1}^{L} SE_{I,l} \quad (13)$$

5.4. Gender Gap Decomposition and Heterogeneity

The decompositions presented above give a general view of the extent of the different decomposition components based on reference men and women, supposed to form average endowments. But did the relative contribution of components vary largely from poor to rich? To examine the potential presence of heterogeneity, we decomposed percentile gender gaps. Instead of the usual quantile regression, we used percentile-weighted regressions, which provided consistent estimated percentile coefficients compared to the quantile and unconditional quantile models of Araar (2016) and Firpo, Fortin, and Lemieux (2009). Looking across the productivity distribution helps to determine whether the extent of gender gap is more of an issue at the bottom or top of distribution, a distinction that has different policy implications.[7]

VI. Estimation Results

6.1. Probit Results

Appendix Table A4 presents results for probit estimation of the determinants of participation in smallholder farming for males and women, respectively. Non-farm income has a positive and statistically significant effect on the farming probability of men, which could reflect the relaxation of constraints on cash flow to cover fixed input costs. An increase in education increases women's

[7] For the computations, we used the Stata decgeng, which is available upon request.

likelihood of farming up until about four years of schooling and starts to decrease after that point. This indicates that additional human capital invites more farming responsibilities whereas more education increases job opportunities. The presence of children under the age of five in the household significantly increases women's probability of farming. Finally, three regions of residence (e.g., north, northwest, and west) strongly increase the likelihood that both men and women will be farming.

Aggregate and Detailed Decomposition Results

Pooled and separate gender-plot regression results (Appendix Table A5) provide information about the different factors that increase or decrease agricultural productivity in the different plots. In all plots, age had a positive and significant effect on productivity (with a decreasing effect—that is, productivity increased with farmers' age up to a point and declined after. This corroborates the results of Oseni et al. (2015), Aguilar et al. (2015), Slavchevska (2015), and Singbo et al. (2020) for Nigeria, Ethiopia, Tanzania, and Mali, respectively. The child dependency ratio slowed productivity in all plots, but the effect was counterintuitively significant only for managers who are men.

In all plots and for both men and women, the coefficient associated with plot size was negative and statistically significant, indicating that productivity drops with cultivated plot area. This is consistent with the inverse-yield hypothesis and the findings of Carletto, Svastano, and Zezza (2013); Kilic, Palacios-López, and Goldstein (2015); and Rada and Fugile (2019). We also observed that the coefficient of women-managed plot size was larger than in the case of plots managed by men, implying that plots managed by women were less productive when they were larger. This result helps allay concerns that smallholders constitute a drag on growth in Africa. As expected, the quantity of seed used had a positive and significant effect on productivity in all plots. In addition, the positive influence of seed on productivity was stronger for women as compared with men, except in women-headed and women-migrant plots. The use of labor by children in the family negatively affected productivity in all plots, and the effect was significant in most cases. The coefficient of hired men laborers was positive and statistically significant in the pooled regression of all plots and for women-migrant and women-owned plots. Growing one crop on a plot had a differential effect across genders: (i) a negative but insignificant effect for plots headed by women and positive and strongly significant effect for plots headed by men, and (ii) a positive and significant effect for plots managed by women and a negative and marginally significant effect for plots managed by men.

Appendix Table A6 Panels A-B reports decomposition results. Panels A and B show the aggregate and detailed decomposition, respectively. The conditional gender gap indicates that women, women migrants, and women owners were about 5.2%, 1.1%, and 5.1% significantly less productive than their men counterparts, respectively. In contrast, the productivity of de jure women and women managers was 1.9% and 5.2% higher than that of de jure men and men managers, respectively. These results signal the sensitivity of gender disparities to the different gender indicators of plot head. The aggregate decomposition reveals that the endowment effect is positive and significant for plot managers and negative and significant in the remaining cases; further, it is highest for de jure plot heads (186.5% of the gap) and lowest for migrant plot heads (-329.7% of the gap) and explains a very low portion of gender disparities in all plots.

Therefore, with the exception of plot de jure head, gender disparities were driven by structural factors with women's structural disadvantage exceeding men's structural advantage. Additionally, women's structural disadvantage differed across gender definitions: it was largest within migrant plot heads (429.7% of the gap) and lowest among de jure plot heads (-87% of the gap). This echoes Singbo et al. (2020), who found that more than half of the agricultural productivity gap among farm households in Mali resulted from women-specific structural disadvantage.

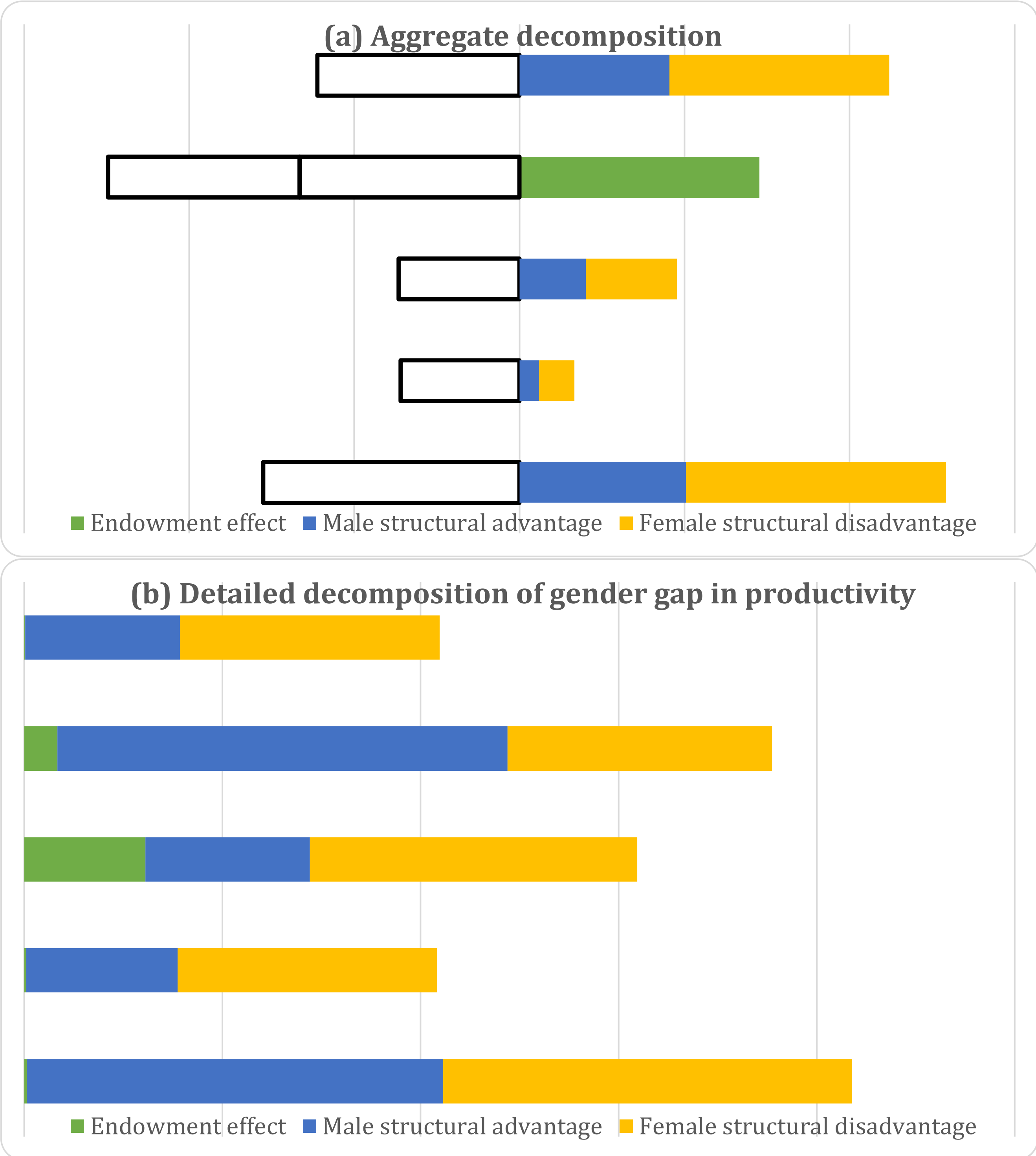
This result may be explained by various factors. First, summary statistics indicate that women generally have higher child-dependency ratios. Hence, women are relatively disadvantaged because of reproductive activities (i.e., they have lower returns from having children). Second, the data also revealed that women's plots were significantly smaller in size. Further, the inverse land-productivity relationship was evident in our results, indicating that any increase in land would decrease gender disparities, all other things being equal. Another reason for women's lower returns to factors of production, then, was their limited access to land assets because of sociocultural norms and sociolegal factors. For example, Vitalis Pemunta (2017) pointed out that, in Cameroon, both customary law, which opposes gender equality, and inheritance law that explicitly favors male children explicitly and severely limit women's ability to claim or inherit land. Furthermore, the land-access rights of women in Cameroon are undermined by such obstacles as a cumbersome and bureaucratic land-registration procedure, gendering of land-tenure legislation, and a Land Consultative Board that is skewed toward men. Finally, descriptive statistics show that women have a significant lower access to credit-in-kind or subsidized inputs relative to men. Therefore, because of discrimination, women face hurdles accessing subsidized inputs, reducing their returns to productive resources. This result is inconsistent with the view that large and significant gender differences in access to factors of production are the main factors behind gender disparities (Kilic, Palacios-López & Goldstein, 2015). This result, however, echoes Mbratana and Fotié Kenne (2017) who found that the gender disparities in self-employment in Cameroon were the result of unobserved characteristics.

Concerning the detailed decomposition, it is worth noting that a positive (negative) coefficient of the endowment effect widens (reduces) gender disparities. Regarding the structural component, a positive sign on men's structural advantage (women's structural disadvantage) indicates that men (women) obtain a higher (lower) return than average. Thus, for plot heads (owners) the quantity of fertilizer used per hectare drives gender disparities (i.e., it explains 405.4% (208.1%) of the gap). Fertilizer use fuels gender disparities among plot heads and plot owners by enlarging the endowment effect by -0.8% and -0.5%, men's structural advantage by 207.9% and 86.1% and women's structural disadvantage by 131% and 98.3%, respectively.

The results also reveal that a second major driver of gender disparities among plot owners was hired women laborers, which explained 73% of the gap, -0.3% of the endowment effect, 37% of men's structural advantage, and 29.9% of women's structural disadvantage. We found farmers' age to be a significant contributor to gender disparities among migrant plot heads (394.5%) by significantly enlarging the endowment effect (-83.4%), men's structural advantage (206.5%), and women's structural disadvantage (298.6%). In the case of de jure plot heads (plot managers), where women were rather more productive than men, detailed decomposition demonstrated that the cost of irrigation (plot size) explained -1.4% (11.5%) of the endowment effect, 636.7% (-170.6%) of men's structural advantage, and 606.5% (-115%) of women's structural disadvantage. Figure 4ab further illustrates the aggregate and detailed decomposition of gender disparity in productivity.

In summary, the productivity gap differed across genders of plot headship and is the result of gender returns to observable attributes, except for de jure heads of plots. The returns to endowment also differed across genders with women's structural disadvantage exceeding men's structural advantage in all plots except for de jure heads of plots. The covariates that contributed the most to the main gender-gap components also differed across genders: fertilizer (plot heads and owner), cost of irrigation (de jure plot head), age (migrant plot head), and cultivated plot size (plot manager).

Figure 4ab. Aggregate and Detailed Decompositions of Gender Gap



Notes: For each plot headship, the primarily contributing covariate to the components of the components of gender disparities are within parentheses. *Source:* Authors' construction based on data from the Cameroon Institute of Agricultural Research for Development.

One of the main contributions of this paper is that we develop a better understanding of the factors that influence the components of gender disparities. In particular, we delve deeper into the analysis and examine how the explanatory variables of the aforementioned major contributors to gender gap contribute indirectly to gender disparities. Appendix Table A7 shows the estimates by gender indicator.[8]

Fertilizer (plot head and plot owner). Age positively and significantly affected the use of fertilizer on plots owned by men, but the effect decreased with age. As expected, a decrease in cost fueled the use of fertilizer, and the effect was larger for men-headed relative to plots headed by women. Counterintuitively, the impact of access to credit-in-kind on the use of fertilizer was negative and significant on both women-headed and women-owned plots. The estimates suggest that access to credit-in-kind was associated with a 16.4% and 22% drop in the quantity of fertilizer used per hectare for both plots, respectively.[9] This result indicates a potential moral hazard issue on those plots. For both plot heads and plot owners, the effect of schooling was positive and highly significant (except for women-headed and plots owned by women). This indicates that the use of fertilizer increased with those farmers' years of schooling. Finally, growing only one crop on a plot had a sizeable and negative effect in the pooled regressions and for men-headed and plots owned by men.

Cost of irrigation (plot de jure *head)*. The coefficient for education of de jure plots headed by women is positive and marginally significant. This indicates that the level of technology development e.g., irrigation increased with the years of education of de jure women farmers.

Age (migrant plot head). The coefficients for education and plot size are negative and statistically significant in almost all specifications. This suggests that years of schooling had a decreasing effect on migrant farmers' age, and the cultivated plot size dropped as migrant farmers aged. The coefficient on access to credit-in-kind is positive and insignificant for women migrants and negative in the remaining cases but is significant only for men migrants. This suggests that access to credit-in-kind had a differential effect across migrants' genders (i.e., it increased/decreased with the age of women (men) migrants. The maincropping system (i.e., growing a single crop on a plot) positively affected the age of migrant farmers, which suggests that this agricultural practice increased with the age of migrant farmers.

Plot size (plot manager). The effect of ethnicity[10] on cultivated areas is positive and

[8] Because better access to credit and finance allows greater access to inputs (fertilizer, in our case), we used access to credit-in-kind as one of the explanatory variables in the fertilizer function.
[9] We obtained the percentage by calculating [exp (coefficient of the dummy variable for access to credit in kind)-1]*100.
[10] Following past studies (e.g. Filmer & Pritchett, 2001 and Fisher & Kandiwa, 2014), the ethnicity index was constructed using principal component analysis (PCA) based on forty ethnic groups.

significantly different from zero in all cases. This indicates that cultural practices related to cultivated land size increased with ethnicity and that the effect was larger for plots managed by men. In all specifications, the coefficient for education is negative and statistically significant, suggesting that cultivated plot size dropped as plot managers gained more years of schooling. Other factors that increased the manager-cultivated area were the maincropping system and household equipment, but both effects were insignificant for men who managed plots.

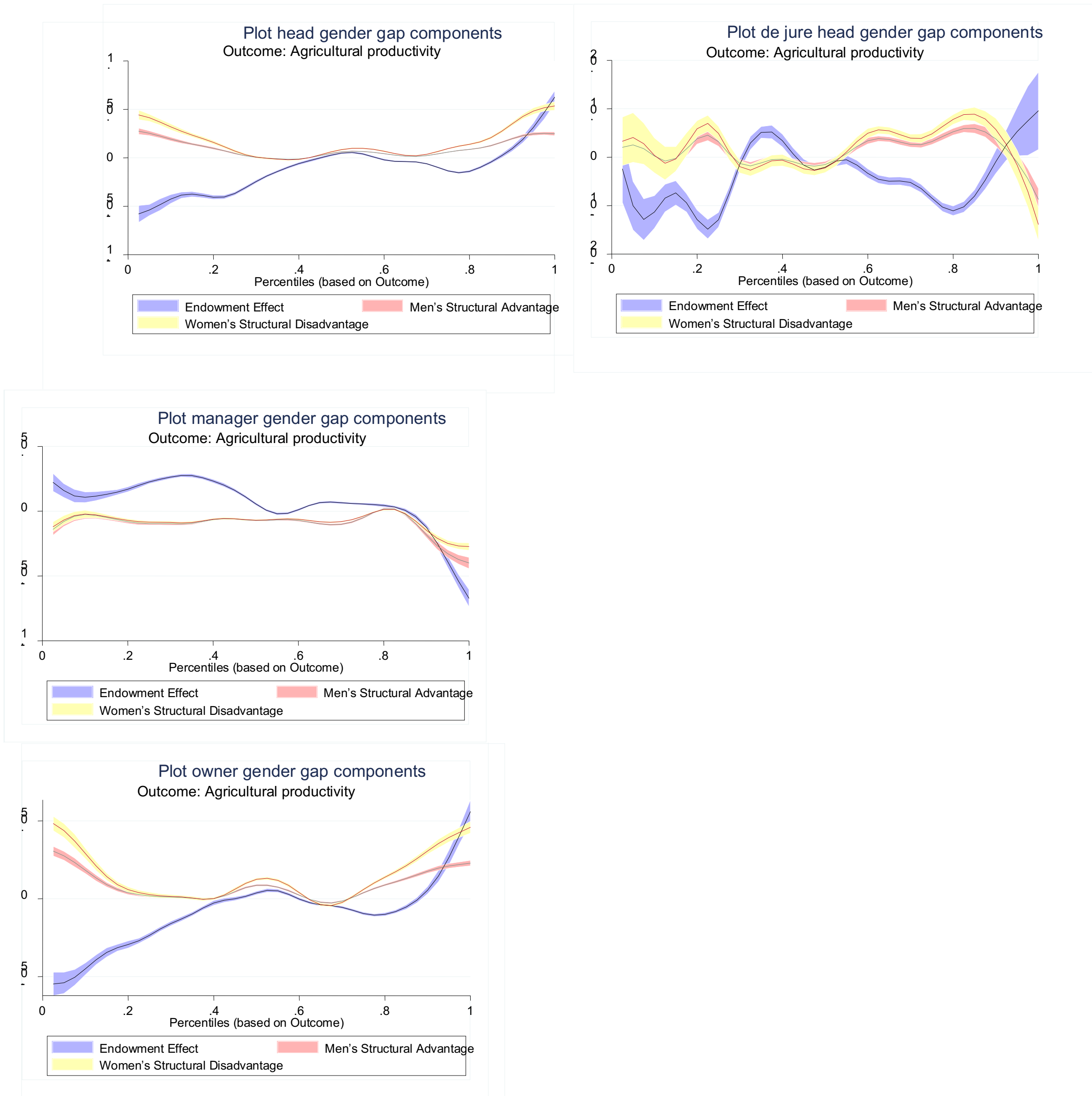
Distributional Decomposition Results

The results of the decomposition are shown in Appendix Table A8. Figure 5 illustrates the components of gender disparities at different percentiles of the productivity distribution. The different components show different trends across gender indicators. Except for plot manager, the different components increase with the outcome in the remaining cases. For those four gender indicators, the endowment effect tends to be largest at the lower and higher percentiles of the distribution.

This result is relevant from a policy perspective: it shows that reducing the unequal access to productive resources has the highest impact on gender disparities at the bottom and top levels of the productivity. Further, the endowment effect is generally lower than both men's structural advantage and women's structural disadvantage across different percentiles. This suggests that, among the different plots, return to resources (rather than resources) matters more. Thus, we obtained similar results as those from the aggregate decomposition. Again, this result is in sharp contrast with past studies that found that access to factors of production (rather than returns to farmer characteristics) helped alleviate gender disparities in productivity.

Likewise, and for all gender indicators, women's structural disadvantage was more pronounced in the bottom and top percentiles of the distribution with the sample of de jure plots headed by women experiencing the largest effect compared to other women farmers. In other words, discrimination against women farmers is more severe among the poorest and wealthiest women. This reflects Cameroonian society in which there is no middle class in all economic activities, and discrimination in general affects the poor as well as the rich. Men's structural advantage is larger at the lower part of the distribution (0.15-0.25 percentiles) and top end (0.75-0.875 and 0.9-1 percentiles) in the sample of plot de jure head. The same goes for plot managers at the higher percentiles.

Figure 5. Components of Gender Disparities by Percentile of Productivity



Source: Authors' construction based on data from the Cameroon Institute of Agricultural Research for Development.

VII. Conclusion and Policy Implications

The objective of this study was threefold. First, we examined whether the use of different definitions of the gender of the plot head affected the extent of gender disparities. The analysis applied five definitions of plot headship: (i) plot head, (ii) de jure plot head, (iii) migrant plot head, (iv) plot manager, and (v) plot owner. Second, we examined whether gender disparities were explained by factors of production or by returns to those factors of production (observed or unobserved factors). Finally, we developed a better understanding of factors that influenced gender components by assessing the covariates that contributed directly and indirectly to the components of gender gaps. The analysis relied on Cameroonian plot-level survey data of smallholder farmers from 2009. To account for sample selection bias, we first used an extended Oaxaca-Blinder (EOB) decomposition to adduce empirical evidence (e.g., to divide gender disparities into two components: the endowment effect and the structural effect [women's (men's) structural dis(advantage)]. We then identified the explanatory variables that contributed indirectly to gender disparities. Finally, we estimated percentile-weighted regressions and decomposed gender disparities at different percentiles of the productivity distribution.

The main results of the study are as follows. First, strong evidence exists of gender gaps, and these estimates vary across plot headships. Second, we found gender disparities as a result of unobserved factors (i.e., returns to gender-observable attributes with women's structural disadvantage exceeding men's structural advantage in almost all plots). Third, the covariates that directly contribute the most to the components of gender disparities are gender-specific: (i) non-labor inputs such as fertilizer (plot head and plot owner) and cost of irrigation (de jure plot head); (ii) farmer age or farming experience (migrant plot head); and (iii) cultivated plot size (plot manager). The factors that influence these major contributors and, thus, indirectly affect the components of gender disparities are also gender-specific: (i) cost of fertilizer (plot head and plot owner); (ii) years of education and growing one crop on the plot (all plot heads); (iii) access to credit-in-kind (plot head, plot owner and plot migrant); (iv) household tools and ethnicity (plot manager); (v) plot size (plot migrant); and (vi) age (plot owner). Finally, we found that, in all plots, the endowment effect was more pronounced for the poorest and wealthiest farmers.

These findings suggest a number of avenues for agricultural policy. First, the extent of gender gap varies across gender indicators, suggesting that policy should vary by the gender of plot headship. Second, the gender imbalance in returns to resource endowments can be addressed by (i) increasing the level of technology development in the agricultural sector (fertilizer use, irrigation in the case of plot heads, owners, and de jure heads); (ii) improving migrant plot heads' farming experience; and (iii) expanding the cultivated areas of plot managers.

Third, given the primary contribution of women's structural disadvantage to gender disparities, attention to gender differences in returns to resource endowment could have large payoffs. In particular, policies to reduce gender disparities through the reduction of women's structural disadvantage should vary by gender indicator and could be: (i) reduction in the cost of fertilizer (women-headed and plots owned by women); (ii) improvement in the level of education of women farmers in general and encourage them to grow one crop on the plot; (iii) improvement in access to subsidized inputs (women-headed, women-owned, and women-migrant plots); and (iv) attention to ethnicity associated with access to land (women-managed plots). Finally, access to productive resources matters more at lower and upper levels of productivity. Hence, the provision of factors of production to the poorest and wealthiest farmers (i.e., non-labor inputs such as fertilizer, livestock, tools, and irrigation for the former and extension services for the latter) would have a larger impact on gender disparities.

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Appendix

Table A1. Sample Selection

Plot heads	Men	Women	Total
Plots by headship	1,875	1,200	3,075
Plots by de jure headship	1,857	1,218	3,075
Plots by migrant headship	1,845	1,230	3,075
Plots by manager	1,424	1,651	3,075
Plots by holder	1,864	1,211	3,075

Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A2. Definition of Variables

Variables	Definitions of variables
Production and productivity	
Agricultural production	Following past studies (e.g., Owens, Hoddinott & Kinsey, 2003; Peterman et al., 2011; Ragasa et al., 2015), we calculated gross revenues from crop production by multiplying the quantity of harvest (in kilograms) of each crop on the plot by the median price received by farmers in a specific village for each crop.[11] The gross value of harvest was calculated by summing the values of all crops harvested on the plot.
Agricultural productivity	Our main dependent variable, agricultural productivity, was measured by dividing the value of harvest (in CFA) by the plot size expressed in hectare (ha).[12]
Household characteristics	
Age	Age of the plot head
Education	Number of schooling years of plot head
Married	1 if individual is married
Single	1 if individual is single
Widowed	1 if individual is widowed
Divorced	1 if individual is divorced
Adult women	Number of adult women in the household (persons)
Adult men	Number of adult men in the household (persons)
Household size	Number of adult men and women in the household
Child dependency ratio	Number of household members aged below 15 and above 64 over those in the labor force (i.e., 15-64, inclusive)
Head of the household	1 if individual is head of the household
Number of children, aged 0-5 in the household	Number of children aged between 0 and 5 in the household
Number of adults, aged 15 and higher in the household	Number of adults aged 15 or higher in the household
Non-farm income	Value of non-farm income at the household level in CFA
Livestock	Number of livestock owned by the household

[11] The value of production is used because most plots were intercropped, and area estimates for each crop were difficult to calculate.

[12] This procedure is meant to limit bias resulting from differences in self-reported and actual sale price received by farmers. Another concern in using farmers' own valuation of production is that farmers who do not sell crops or who only sell a few crops may not be able to accurately value their production. Last but not least, self-reported prices by farmers may be biased because of lack of storage or cultural hurdles that make it harder for women farmers to bargain for higher prices.

Table A2 continued

Variables	Definitions of variables
Household wealth	Total value of the household's physical assets (e.g., the number of physical assets times price of acquisition). Components that reflected household ownership of physical assets were bathtub, mirror, library, cabinet/drawers, bucket, radio-cassette, drum or barrel, sofa, spoon/fork, bed sheet, jerry can, vehicle, pots, broom, straw mattress, radio, motorcycle, stockpots, rifle, TV, bed, bike, modern mattress, mat, stools, chairs, plates, basins, and moped.
Plot characteristics	
Land area	Area of plot in hectares
Main cropping	1 if main crop is cultivated
Intercropping	1 if plot is intercropped
Plot distance to home	Distance from homestead to plot in km
Cost of irrigation	Cost of irrigation in CFA
Access to credit	1 if access to credit-in-kind (i.e., access to subsidized inputs)
Labor and Inputs	
Labor by adult men in family	Number of men in family who provide labor on plot
Labor by adult women in family	Number of women in family who provide labor used on plot
Labor by children in family	Number of children in family who provide labor used on plot
Labor by hired men	Number of hired men who provide labor used on plot
Labor by hired women	Number of hired women who provide
Labor by hired children	Number of hired children who provide
Fertilizer per ha	Quantity of fertilizer (kg) per ha
Herbicide per ha	Quantity of herbicide (kg) per ha
Seed per ha	Quantity of seed (kg) per ha
Household agricultural equipment	Total cost of agricultural equipment (i.e., number of items of agricultural equipment times the unit price of purchase). Household agricultural tools included knife, machete, agricultural stores, pickaxe, watering can, wheelbarrow, shovel, rake, hatchet, motor cultivator, file, plough, sewing machine, cart, sprayers, disk harrow/harrow, ox for farm work, donkeys, hoes, and tractors.

Table A3. Descriptive Statistics of Plot Headship, by Gender

	Plot by headship				Plot by de jure headship			
	All	Men	Women	Difference	All	Men	Women	Difference
Observations	3,075	1,875	1,200	/	3,075	1,857	1,218	/
Production and Productivity								
Total	1625894	1677128	1545124	132003.9**	1625894	1622057	1631712	9655.45
Total/ha	2036414	2158634	1843950	314684.4***	2036414	2041518	2028684	12833.81
Rice/ha	1703941	1686502	1731058	44555.3	1703941	1654224	1779000	124776.4
Maize/ha	579044.5	576454.3	592633.3	16179.0	579044.5	611735.4	521446.2	90289.19
Groundnuts/ha	841625.9	869929.2	685958.1	183971.1	841625.9	923747.2	691291.1	232456.1
Household characteristics								
Age (years)	34.373	36.743	30.668	6.075***	34.373	34.439	34.271	0.168
Years of schooling	2.834	2.678	3.079	0.401***	2.834	2.787	2.906	0.119
Married	0.611	0.615	0.604	0.011	/	/	/	/
Unmarried	0.389	0.385	0.396	0.011	/	/	/	/
Adult women	2.737	2.668	2.846	0.178	2.737	2.736	2.740	0.004
Adult men	3.007	2.907	3.163	0.257**	3.007	2.992	3.029	0.036
Household size	5.744	5.574	6.009	0.435**	5.744	5.728	5.768	0.040
Child dependency	0.695	0.718	0.659	0.059***	0.695	0.696	0.693	0.003
Non-farm income	96319.9	93389.17	100899.2	7510.01	96319.9	93209.3	101062.4	7853.1
Livestock	3.001	3.061	2.907	0.154	3.001	3.017	2.975	0.042
Household wealth	151481.5	161239.5	136234.6	25004.9	151481.5	170704.3	122173.8	48530.5
Head of household	0.394	0.523	0.194	0.329***	0.394	0.413	0.366	0.047***
No children aged 0-5	0.248	0.215	0.300	0.085***	0.248	0.236	0.266	0.030
No adults aged 15+	4.081	3.728	4.631	0.902***	4.081	4.064	4.107	0.043

Table A3 continued

	Plot by headship				Plot by de jure headship			
	All	Men	Women	Difference	All	Men	Women	Difference
Plot characteristics								
Land area	0.966	0.984	0.939	0.045**	0.966	0.969	0.962	0.007
Main cropping	0.371	0.339	0.422	0.083***	0.371	0.369	0.374	0.006
Intercropping system	0.629	0.661	0.578	0.083***	0.629	0.631	0.626	0.006
Plot distance to home	2.919	2.930	2.900	0.030	2.919	2.971	2.837	0135
Cost of irrigation	78998.86	78887.73	79172.50	284.767	78998.86	78625.47	79568.14	942.67
Access to credit	0.139	0.147	0.127	0.021*	0.139	0.149	0.125	0.024**
Labor and Inputs								
Labor by adult men in family	7.689	7.802	7.513	0.289*	7.689	7.778	7.555	0.223
Labor by adult women in family	4.727	4.933	4.406	0.527***	4.727	4.815	4.594	0.221
Labor by children in family	4.321	4.491	4.057	0.434***	4.321	4.432	4.153	0.279**
Labor by hired men	3.663	3.766	3.503	0.262**	3.663	3.774	3.495	0.279**
Labor by hired women	3.072	3.105	3.022	0.083	3.072	3.016	3.158	0.143
Labor by hired children	2.991	2.977	3.013	0.036	2.991	3.001	2.976	0.025
Fertilizer (kg)/ha	170.712	173.241	166.760	6.480	170.712	166.512	177.115	10.603
Herbicide (kg)/ha	8.325	9.378	6.680	2.697**	8.325	8.060	8.729	0.669
Seed (kg)/ha	55.348	56.384	53.729	2.655	55.348	54.911	56.015	1.104
Agricultural tools	430231.3	423510.1	440733.1	17223	430231.3	625561.1	132425.5	493135.7

	Plot by migrant headship				Plot by manager			
	All	Men	Women	Difference	All	Men	Women	Difference
Observations	3,075	1,845	1,230	/	3,075	1,424	1,651	/
Production and Productivity								
Total	1625894	1630939	1618323	12615.41	1625894	1617063	1633448	16384.78
Total/ha	2036414	2044643	2024078	20564.95	2036414	1945438	2114319	168881
Rice/ha	1703941	1712665	1691057	21608.72	1703941	1706029	1702141	3888.39
Maize/ha	579044.5	529376.3	702469	173092.7**	579044.5	487058.2	616061.4	129003.2*
Groundnuts/ha	841625.9	680145.5	1270558	590412.9	841625.9	1224414	690184.8	534229.7
Household characteristics								
Age (years)	34.373	35.389	32.848	2.541***	34.373	33.367	35.240	1.873***
Years of schooling	2.834	2.743	2.972	0.230**	2.834	2.827	2.841	0.015
Married	0.611	0.603	0.624	0.021	0.611	0.626	0.598	0.027
Unmarried	0.389	0.397	0.376	0.021	0.389	0.374	0.402	0.027
Adult women	2.737	2.748	2.721	0.027	2.737	2.968	2.538	0.431***
Adult men	3.007	2.996	3.024	0.028	3.007	3.174	2.863	0.312***
Household size	5.744	5.744	5.745	0.001	5.744	6.143	5.400	0.742***
Child dependency	0.695	0.707	0.677	0.030	0.695	0.648	0.735	0.087***
Non-farm income	96319.9	95807.88	97087.94	1280.06	96319.9	101475.7	91872.97	9602.76*
Livestock	3.001	3.049	2.928	0.122	3.001	2.922	3.068	0.146
Household wealth	151481.5	170691.5	122666.6	48024.9	151481. 5	104683.4	191845.2	87161.8
Head of household	0.394	0.456	0.302	0.155***	0.394	0.245	0.523	0.278***

No children aged 0-5	0.248	0.219	0.298	0.084***	0.248	0.269	0.230	0.039
No adults aged 15+	4.081	3.842	4.438	0.596***	4.081	4.503	3.717	0.787***
Plot characteristics								
Land area	0.966	0.980	0.946	0.034*	0.966	0.956	0.976	0.020
Main cropping	0.371	0.352	0.400	0.048***	0.371	0.348	0.391	0.042***
Intercropping system	0.629	0.648	0.600	0.048***	0.629	0.652	0.609	0.042***
Plot distance to home (km)	2.919	2.942	2.883	0.059	2.919	2.892	2.941	0.050
Cost of irrigation (CFA)	78998.86	78795.93	79303.25	507.317	78998.86	79745.08	78355.24	1389.85
Access to credit	0.139	0.152	0.120	0.033***	0.139	0.121	0.154	0.033***
Labor and Inputs								
Labor by adult men in family	7.689	7.851	7.447	0.404**	7.689	7.513	7.841	0.328**
Labor by adult women in family	4.727	4.805	4.610	0.196	4.727	4.493	4.929	0.436***
Labor by children in family	4.321	4.390	4.218	0.172	4.321	4.218	4.410	0.192
Labor by hired men	3.663	3.660	3.669	0.009	3.663	3.789	3.555	0.235**
Labor by hired women	3.072	3.110	3.015	0.095	3.072	3.071	3.073	0.002
Labor by hired children	2.991	3.004	2.972	0.031	2.991	3.038	2.951	0.087
Fertilizer (kg)/ha	170.712	168.351	174.253	5.902	170.712	177.548	164.815	12.733
Herbicide (kg)/ha	8.325	7.335	9.810	2.475	8.325	7.929	8.667	0.738
Seed (kg)/ha	55.348	53.776	57.705	3.929	55.348	55.563	55.163	0.400
Agricultural tools	430231.3	344331	559081.7	214750.8	430231.3	436620.6	424720.5	11900.08

Table A3 continued

	Plot by owner			
	All	**Men**	**Women**	**Difference**
Observations	3,075	1,864	1,211	/
Production and Productivity				
Total	1625894	1680555	1541209	139345.3**
Total/ha	2036414	2155184	1852347	302836.7***
Rice/ha	1703941	1713825	1688797	25028.18
Maize/ha	579044.5	579254.3	578398.4	855.85
Groundnuts/ha	841625.9	918295.8	588098.2	330197.6
Household characteristics				
Age (years)	34.373	35.953	31.940	4.014***
Years of schooling	2.834	2.728	2.998	0.270***
Married	0.611	0.612	0.610	0.001
Unmarried	0.389	0.388	0.390	0.001
Adult women	2.737	2.669	2.842	0.173
Adult men	3.007	2.908	3.159	0.250**
Household size	5.744	5.577	6.001	0.424**
Child dependency	0.695	0.715	0.663	0.052**
Non-farm income	96319.90	90151.44	105814.50	15663.10***
Livestock	3.001	3.033	2.950	0.083
Household wealth	151481.50	99139.65	232047.30	132907.70
Head of household	0.394	0.487	0.252	0.235***
No children aged 0-5	0.248	0.220	0.291	0.070**
No adults aged 15+	4.081	3.808	4.500	0.692***
Plot characteristics				
Land area	0.966	0.980	0.945	0.036**
Main cropping	0.371	0.344	0.413	0.069***
Intercropping system	0.629	0.656	0.587	0.069***
Plot distance to home (km)	2.919	2.894	2.956	0.062
Cost of irrigation (CFA)	78998.86	79127.68	78800.58	327.104
Access to credit	0.139	0.146	0.128	0.018
Labor and Inputs				
Labor by adult men in family	7.689	7.795	7.528	0.267
Labor by adult women in family	4.727	4.858	4.525	0.333***
Labor by children in family	4.321	4.470	4.092	0.379***
Labor by hired men	3.663	3.688	3.626	0.062
Labor by hired women	3.072	3.117	3.003	0.114
Labor by hired children	2.991	2.988	2.996	0.008
Fertilizer (kg)/ha	170.712	166.179	177.689	11.510
Herbicide (kg)/ha	8.325	9.146	7.063	2.083
Seed (kg)/ha	55.348	55.858	54.564	1.294
Agricultural tools	430231.300	416172.900	451870.300	35697.340

Notes: ***, **, and * indicate significant mean differences at the 1%, 5%, and 10% level, respectively. Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A4. Probit (Marginal Effect) Estimates for Likelihood of Smallholder Farming by Gender

Variable	Men		Women	
	Coeff.	**SE**	**Coeff.**	**SE**
Age	-0.004	0.003	0.004	0.004
Age squared	0.004	0.003	-0.006	0.005
Education	0.039	0.032	0.059**	0.030
Education squared	-0.472	0.353	-0.717**	0.343
Married	0.173	0.190	-0.049	0.152
Single	0.188	0.191	-0.004	0.154
Widowed	0.132	0.201	0.073	0.163
Number of children, aged 0-5	0.027	0.019	0.042**	0.020
Number of adults, aged 15+	0.001	0.004	-0.007	0.005
Non-farm income	1.92e-07***	0.000	8.84e-09	0.000
Wealth of the household	3.33e-09	0.000	-2.67e-08	0.000
Head of the household	0.039	0.029	0.001	0.040
Far north region	-0.054	0.058	-0.016	0.057
North region	0.066**	0.036	0.107***	0.038
Northwest region	0.239***	0.039	0.150***	0.062
West region	0.239***	0.039	0.236***	0.044
Pseudo-R^2	0.041		0.033	
No. observations	1,875		1,200	

Notes: *** and ** indicate statistical significance at the 1% and 5% level, respectively. *Source:* Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A5. Production Function Estimates by Definition of Gender
Dependent variable: log (Total crop value per hectare)

Variable	**Plot head**			**Plot de jure head**		
	Pooled	Women	Men	Pooled	Women	Men
Age	0.012***	0.014**	0.011*	0.013***	0.014*	0.011*
Age squared	-0.011*	-0.019**	-0.009	-0.012*	-0.012	-0.010
Education	-0.009	-0.001	-0.008	-0.005	0.005	-0.014
Married	-0.002	-0.019	0.036	0.010	0.069	-0.018
Household size	0.002	-0.003	0.008	0.001	-0.002	0.006
Child dependency ratio	0.064**	-0.100*	-0.044	-0.064*	-0.067	-0.056
Livestock	-0.001	-0.016	0.004	-0.001	-0.005	0.002
Plot size	-0.429***	-0.368***	-0.460***	-0.427***	-0.395***	-0.451***
Maincropping	0.005	-0.057	0.174***	0.001	-0.066	0.046
Plot distance to home	-0.005	0.001	-0.009	-0.005	-0.006	-0.005
Cost of irrigation (log)	-0.016	-0.001	-0.027	-0.016	-0.022	-0.012
Labor by adult men in family	-0.003	-0.005	0.001	-0.003	-0.010	-0.001
Labor by adult women in family	0.001	0.007	-0.005	0.001	0.006	-0.001
Labor by children in family	-0.015**	-0.019*	-0.013*	-0.015**	-0.024**	-0.009
Labor by hired men	0.009*	0.010	0.006	0.008*	0.006	0.010
Labor by hired women	0.001	0.0001	0.002	0.001	-0.002	0.005
Labor by hired children	0.003	-0.007	0.011	0.003	-0.001	0.004
Fertilizer (kg)/ha (log)	-0.016	-0.039	0.008	-0.015	-0.016	-0.020
Herbicide (kg)/ha (log)	0.018	0.018	0.015	0.018	-0.011	0.046*
Seed (kg)/ha (log)	0.125***	0.068	0.140***	0.123***	0.156***	0.093**
Agricultural tools (log)	0.008	0.015	0.004	0.008	0.008	0.007
Mill's ratio	0.407	0.683*	0.077	0.407*	0.214	0.434
Constant	12.987***	13.327***	13.239***	13.119***	13.066***	13.193***
No. observations	2,892	1,123	1,769	2,893	1,150	1,743
R-squared	0.318	0.357	0.348	0.317	0.342	0.329

Variable	**Migrant plot head**			**Plot manager**		
	Pooled	Women	Men	Pooled	Women	Men
Age	0.012**	0.010	0.013**	0.013***	0.016***	0.010
Age squared	-0.011*	-0.008	-0.012*	-0.012*	-0.016**	-0.010
Education	-0.009	-0.006	-0.012	-0.005	-0.001	-0.009
Married	-0.002	0.008	-0.003	0.010	0.026	-0.002
Household size	0.002	-0.001	0.002	0.001	0.004	0.002

Child dependency ratio	-0.064*	-0.087	-0.051	-0.064*	0.044	-0.087*
Livestock	-0.001	-0.007	0.001	-0.001	-0.005	0.005
Plot size	-0.429***	-0.423***	-0.434***	-0.427***	-0.495***	-0.308***
Maincropping	0.005	-0.069	0.073	0.001	0.141**	-0.123*
Plot distance to home	-0.005	-0.007	-0.004	-0.005	-0.011	0.001
Cost of irrigation (log)	-0.016	0.019	-0.031	-0.016	-0.004	-0.035
Labor by adult men in family	-0.003	-0.009	0.002	-0.003	-0.001	-0.004
Labor by adult women in family	0.001	0.002	0.002	0.001	-0.005	0.004
Labor by children in family	-0.015**	-0.008	-0.020***	-0.015**	-0.010	-0.020**
Labor by hired men	0.009*	0.015*	0.007	0.008*	0.005	0.010
Labor by hired women	0.001	0.0003	0.003	0.001	-0.006	0.009
Labor by hired children	0.003	-0.011	0.013	0.003	0.020*	-0.012
Fertilizer (kg)/ha (log)	-0.016	-0.058*	0.015	-0.015	-0.024	-0.001
Herbicide (kg)/ha (log)	0.018	0.022	0.018	0.018	0.029	0.008
Seed (kg)/ha (log)	0.125***	0.115**	0.126***	0.123***	0.147***	0.097*
Agricultural tools (log)	0.008	0.008	0.008	0.008	0.008	0.007
Mill's ratio	0.407	0.183	0.586*	0.409**	0.383**	0.406**
Constant	12.987***	12.589***	12.768***	13.119***	13.317***	12.802***
No. observations	2,892	1,157	1,735	2,893	1,559	1,334
R-squared	0.318	0.339	0.343	0.317	0.349	0.349

Table A5 continued

Variable	Plot owner		
	Pooled	Women	Men
Age	0.012*	0.011*	0.012*
Age squared	-0.011*	-0.012	-0.010
Education	-0.009	0.001	-0.010
Married	-0.002	0.002	0.036
Household size	0.002	-0.004	0.007
Child dependency ratio	-0.064*	-0.083	-0.048
Livestock	-0.001	-0.012	0.005
Plot size	-0.429***	-0.363***	-0.474***
Maincropping	0.005	-0.035	0.082
Plot distance to home	-0.005	-0.002	-0.007
Cost of irrigation (log)	-0.016	-0.013	-0.022
Labor by adult men in family	-0.003	-0.004	-0.001
Labor by adult women in family	0.001	0.001	0.001
Labor by children in family	-0.015**	-0.014	-0.017**
Labor by hired men	0.009*	0.013*	0.005
Labor by hired women	0.001	-0.005	0.007
Labor by hired children	0.003	-0.008	0.011
Fertilizer (kg)/ha (log)	-0.016	-0.030	-0.007
Herbicide (kg)/ha (log)	0.018	0.013	0.021
Seed (kg)/ha (log)	0.125***	0.122**	0.119**
Agricultural tools (log)	0.008	0.020*	0.001
Mill's ratio	0.408**	0.752**	0.081
Constant	12.987***	13.189***	12.918***
No. observations	2,892	1,133	1,759
R-squared	0.318	0.345	0.340

Notes: District fixed effects but estimates not reported. ***, ** and * indicate significant at the 1%, 5%, and 10% level, respectively. *Source:* Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A6. Aggregate and Detailed Decomposition of the Gender disparities

	Plot headship				
	Plot head	Plot de jure head	Migrant plot head	Plot manager	Plot owner
A. Aggregate decomposition					
Gender gap	0.052***	-0.019***	0.011***	-0.052***	0.051***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Endowment effect	-0.078***	-0.036***	-0.037***	0.073***	-0.061***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Share of gender gap	-150.4%	186.5%	-329.7%	-140.1%	-120.5%
Structural effect	0.129***	0.017***	0.048***	-0.125***	0.112***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Share of gender gap	250.4%	-87%	429.7%	240.1%	220.5%
Men's structural advantage	0.051***	0.006***	0.020***	-0.067***	0.045***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Share of gender gap	97.9%	-31.1%	181.1%	128.3%	89.4%
Women's structural disadvantage	0.079***	0.011***	0.028***	-0.058***	0.067***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Share of gender gap	152.5%	-55.4%	248.6%	111.8%	131.1%
Number observations	3,075	3,075	3,075	3,075	3,075

Table A6 continued

B. Detailed decomposition					
B1. Endowment effect					
Age	0.073***	0.002***	0.031***	-0.025***	0.048***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)
Age squared	-0.049***	0.002***	-0.020***	0.018***	-0.032***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)
Education	0.004***	0.001***	0.002***	0.000	0.002***
	(0.0003)	(0.0001)	(0.0002)	(0.000)	(0.000)
Married	-0.000	0.000	0.000	0.000	-0.000
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Household size	-0.001***	-0.000	-0.000	0.001***	-0.001***
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Child dependency ratio	-0.004***	-0.0002**	-0.002***	0.006***	-0.003***
	(0.0002)	(0.0001)	(0.0002)	(0.000)	(0.0002)
Livestock	-0.0001	-0.000	-0.0001	0.000	-0.000
	(0.0001)	(0.0001)	(0.0001)	(0.000)	(0.000)
Plot size	-0.019***	-0.003***	-0.015***	0.008***	-0.015***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maincropping	-0.0004	-0.000	-0.000	-0.000	0.000
	(0.0003)	(0.000)	(0.000)	(0.000)	(0.000)
Plot distance to home	-0.0001	-0.001***	-0.0003***	0.000***	0.000***
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Cost of irrigation (log)	-0.0001	0.001***	0.000	0.000	-0.000
	(0.0001)	(0.0001)	(0.0001)	(0.000)	(0.000)
Labor by adult men in family	-0.001***	-0.001***	-0.001***	0.001***	-0.001***
	(0.0001)	(0.0001)	(0.0002)	(0.000)	(0.000)
Labor by adult women in family	0.001**	0.0002**	0.0002**	-0.000**	0.000**
	(0.0003)	(0.0001)	(0.0001)	(0.000)	(0.000)
Labor by children in family	-0.006***	-0.004***	-0.003***	0.003***	-0.006***
	(0.0003)	(0.0003)	(0.0002)	(0.000)	(0.000)
Labor by hired men	0.002***	0.002***	-0.000	0.002***	0.001***
	(0.0002)	(0.0002)	(0.000)	(0.000)	(0.000)
Labor by hired women	0.0001	-0.0002**	0.0001	-0.000	0.000**
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Labor by hired children	-0.0001	0.0001	0.000	0.000***	-0.000
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Fertilizer (kg)/ha (log)	0.001***	-0.0002**	-0.000	-0.000***	0.000***
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Herbicide (kg)/ha (log)	-0.0001	0.0003***	-0.002***	-0.000	-0.000***
	(0.0001)	(0.0001)	(0.0002)	(0.000)	(0.000)
Seed (kg)/ha (log)	-0.002***	-0.002***	0.000	0.004***	-0.000
	(0.0003)	(0.0003)	(0.000)	(0.000)	(0.000)
Agricultural tools (log)	0.001***	0.001***	0.000	0.000	0.001***
	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)
Mill's ratio	-0.620***	-0.608***	-0.708***	0.521***	-0.414***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Table A6 continued

B2. Men's Structural Advantage					
Age	-0.043***	-0.066***	0.042***	-0.108***	0.003
	(0.011)	(0.009)	(0.014)	(0.014)	(0.010)
Age squared	0.032***	0.026***	-0.024***	0.025***	0.007
	(0.006)	(0.005)	(0.008)	(0.008)	(0.006)
Education	0.003	-0.025***	-0.010***	-0.012***	-0.003
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Married	0.023***	-0.000	-0.001	-0.008***	0.023***
	(0.002)	(0.0001)	(0.002)	(0.003)	(0.002)
Household size	0.033***	0.027***	0.005**	0.003	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Child dependency ratio	0.014***	0.005***	0.009***	-0.015***	0.012***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Livestock	0.015***	0.009***	0.005***	0.016***	0.018***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Plot size	-0.030***	-0.023***	-0.005*	0.114***	-0.044***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.003)
Maincropping	0.057***	0.000	0.024***	-0.043***	0.027***
	(0.001)	(0.327)	(0.001)	(0.001)	(0.001)
Plot distance to home	-0.012***	0.001	0.003***	0.017***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cost of irrigation (log)	-0.120***	0.038***	-0.171***	-0.205***	-0.069***
	(0.012)	(0.012)	(0.012)	(0.018)	(0.012)
Labor by adult men in family	0.029***	0.015***	0.033***	-0.009***	0.011***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Labor by adult women in family	-0.028***	-0.008***	0.006***	0.013***	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Labor by children in family	0.007***	0.024***	-0.023***	-0.024***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Labor by hired men	-0.008***	0.005***	-0.007***	0.007***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Labor by hired women	0.003***	0.010***	0.006***	0.023***	0.017***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Labor by hired children	0.022***	0.002	0.028***	-0.045***	0.024***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Fertilizer (kg)/ha (log)	0.105***	-0.019***	0.137***	0.068***	0.039***
	(0.008)	(0.008)	(0.006)	(0.010)	(0.007)
Herbicide (kg)/ha (log)	-0.004***	0.030***	-0.000	-0.011***	0.002**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Seed (kg)/ha (log)	0.056***	-0.113***	0.005	-0.096***	-0.022***
	(0.007)	(0.008)	(0.008)	(0.009)	(0.008)
Agricultural tools (log)	-0.032***	-0.002	-0.001	-0.005	-0.056***
	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)
Mill's ratio	-0.336***	0.504***	0.183***	-0.431***	-0.334***
	(0.019)	(0.020)	(0.019)	(0.024)	(0.020)

Table A6 continued

B3. Women's Structural Disadvantage					
Age	-0.069***	-0.025	0.083***	-0.109***	0.042***
	(0.014)	(0.016)	(0.018)	(0.012)	(0.015)
Age squared	0.103***	-0.0001	-0.044***	0.063***	0.020***
	(0.008)	(0.009)	(0.010)	(0.006)	(0.008)
Education	-0.024***	-0.028***	-0.009***	-0.010***	-0.029***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Married	0.010***	-0.036***	-0.006***	-0.010***	-0.003
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Household size	0.026***	0.018***	0.013***	-0.016***	0.031***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Child dependency ratio	0.024***	0.002	0.015***	-0.016***	0.012***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.003)
Livestock	0.044***	0.014***	0.017***	0.014***	0.034***
	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)
Plot size	-0.058***	-0.031***	-0.005	0.067***	-0.063***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)
Maincropping	0.026***	0.025***	0.029***	-0.055***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Plot distance to home	-0.018***	0.001	0.006***	0.016***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Cost of irrigation (log)	-0.163***	0.066***	-0.376***	-0.131***	-0.033**
	(0.020)	(0.018)	(0.019)	(0.015)	(0.018)
Labor by adult men in family	0.014***	0.055***	0.051***	-0.013***	0.011***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Labor by adult women in family	-0.024***	-0.024***	-0.002	0.031***	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Labor by children in family	0.017***	0.039***	-0.028***	-0.019***	-0.004
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Hired men laborers	-0.006***	0.007***	-0.025***	0.011***	-0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Hired women laborers	0.004**	0.010***	0.003**	0.022***	0.020***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Labor by hired children	0.030***	0.012***	0.041***	-0.051***	0.032***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Fertilizer (kg)/ha (log)	0.103***	0.004	0.193***	0.037***	0.066***
	(0.011)	(0.012)	(0.011)	(0.008)	(0.010)
Herbicide (kg)/ha (log)	0.001	0.031***	-0.004**	-0.011***	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Seed (kg)/ha (log)	0.209***	-0.118***	0.036***	-0.084***	0.011
	(0.010)	(0.014)	(0.012)	(0.008)	(0.014)
Agricultural tools (log)	-0.062***	-0.011	-0.001	0.000	-0.107***
	(0.008)	(0.008)	(0.007)	(0.005)	(0.008)
Mill's ratio	-0.293***	0.226***	0.235***	0.447**	-0.363***
	(0.022)	(0.029)	(0.027)	(0.021)	(0.024)

Note. ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively; robust standard errors in parentheses; district fixed effects. *Source:* Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A7. Estimates of Indirect Contributors to Gender Disparities

Variable	Plot head (Dependent variable: fertilizer)			Plot de jure head (Dependent variable: cost of irrigation		
	Pooled	Women	Men	Pooled	Women	Men
Age	0.005	-0.007	0.012*	0.001	0.001	0.001
Age squared	-0.004	0.011	-0.012	-0.003	0.003	-0.006
Education	0.018**	0.009	0.025**	-0.001	0.025*	-0.018
Cost of fertilizer	-0.0003***	-0.0003***	-0.0004***			
Household tools	-0.001	-0.004	0.001	-0.001	0.003	-0.003
Access to credit-in-kind	-0.054	-0.180*	0.030	-0.069	-0.023	-0.095
Maincropping	-0.132***	-0.009	-0.231***	0.017	0.055	-0.012
Constant	4.664***	4.884***	4.503***	10.864***	10.680***	10.978***
Observations	3,075	1,200	1,875	3,075	1,218	1,857
R-squared	0.126	0.123	0.138	0.001	0.005	0.005

Variable	Migrant plot head (Dependent variable: age)			Plot manager (Dependent variable: plot size		
	Pooled	Women	Men	Pooled	Women	Men
Age				-0.004	-0.007*	0.001
Age squared				0.003	0.007	-0.001
Plot size	-1.144*	-0.598	-1.0634**			
Plot distance to home	0.107	0.072	0.132	-0.005	-0.003	-0.007
Ethnicity				0.106***	0.094***	0.116***
Education	-1.720***	-1.517***	-1.825***	-0.017***	-0.017**	-0.018***
Household tools	-0.054	-0.088	-0.034	0.003**	0.006***	0.0003
Access to credit-in-kind	-1.002	1.095	-2.537**	0.019	-0.027	0.079
Maincropping	8.324***	7.740***	9.252***	0.063*	0.124***	0.004
Constant	37.719***	35.505***	39.135***	1.068**	1.091***	1.036***
Observations	3,075	1,230	1,845	3,075	1,651	1,424
R-squared	0.186	0.170	0.204	0.049	0.062	0.047

Variable	Plot owner (Dependent variable: fertilizer)		
	Pooled	Women	Men
Age	0.005	-0.010	0.015**
Age squared	-0.004	0.014	-0.014*
Education	0.018**	0.003	0.028**
Cost of fertilizer	-0.0003***	-0.0003***	-0.0003***
Household tools	-0.001	-0.006	0.002
Access to credit-in-kind	-0.054	-0.248**	0.063
Maincropping	-0.132***	-0.071	-0.185***
Constant	4.664***	5.051***	4.414***
Observations	3,075	1,211	1,864
R-squared	0.126	0.122	0.140

*Notes: ***, **, and * indicate* significant at the 1%, 5%, and 10% level, respectively. Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.

Table A8. Distributional Decomposition of the Gap by Definition of Gender

	Plot head			Plot de jure head		
Percentile	Endowment effect	Men's structural advantage	Women's structural disadvantage	Endowment effect	Men's structural advantage	Women's structural disadvantage
0.025	-0.058 (-0.066,-0.051)	0.028 (0.025, 0.030)	0.045 (0.041, 0.049)	-0.003 (-0.009,0.004)	0.002 (-0.001,0.005)	0.003 (-0.002, 0.009)
0.050	-0.054 (-0.061,-0.048)	0.026 (0.023, 0.028)	0.042 (0.038, 0.046)	-0.010 (-0.016, 0.005)	0.003 (-0.001, 0.006)	0.004 (-0.001, 0.010)
0.075	-0.049 (-0.055, 0.043)	0.023 (0.020, 0.025)	0.037 (0.033, 0.041)	-0.013 (-0.018, 0.009)	0.002 (-0.001, 0.005)	0.003 (-0.001, 0.008)
0.100	-0.043 (-0.047,-0.038)	0.020 (0.018, 0.022)	0.032 (0.029, 0.036)	-0.012 (-0.015,-0.009)	0.0004 (-0.002, 0.003)	0.001 (-0.003, 0.004)
0.125	-0.039 (-0.043, 0.035)	0.017 (0.015, 0.019)	0.028 (0.025, 0.031)	-0.009 (-0.012, 0.006)	-0.001 (-0.002, 0.001)	-0.001 (-0.003, 0.002)
0.150	-0.038 (-0.040,-0.035)	0.014 (0.013, 0.016)	0.024 (0.021, 0.026)	-0.008 (-0.010, 0.005)	-0.0001 (-0.002, 0.002)	-0.0002 (-0.003, 0.002)
0.175	-0.039 (-0.042, 0.037)	0.012 (0.011, 0.013)	0.020 (0.018, 0.022)	-0.010 (-0.012, -0.008)	0.002 (0.001, 0.003)	0.003 (0.001, 0.005)
0.200	-0.041 (-0.044,-0.039)	0.010 (0.009, 0.011)	0.016 (0.014, 0.018)	-0.013 (-0.015, 0.011)	0.004 (0.003, 0.005)	0.006 (0.004, 0.008)
0.225	-0.041 (-0.043,-0.039)	0.007 (0.006, 0.009)	0.012 (0.010, 0.014)	-0.015 (-0.017, 0.014)	0.005 (0.004, 0.006)	0.007 (0.006, 0.009)
0.250	-0.037 (-0.039, 0.036)	0.005 (0.004, 0.006)	0.007 (0.006, 0.009)	-0.014 (-0.015, -0.012)	0.003 (0.002, 0.005)	0.005 (0.004, 0.007)
0.275	-0.031 (-0.033,-0.030)	0.002 (0.002, 0.003)	0.003 (0.002, 0.005)	-0.008 (-0.010, 0.007)	0.001 (-0.004, 0.002)	0.001 (-0.0001, 0.003)
0.300	-0.025 (-0,026, 0.023)	0.001 (-0.0001, 0.001)	0.001 (-0.002, 0.002)	-0.002 (-0.003, 0.001)	-0.001 (-0.002, -0.004)	-0.002 (-0.003, -0.001)

0.325	-0.019 (-0.021, 0.017)	-0.0005 (-0.001, 0.0004)	-0.001 (-0.002, 0.001)	0.003 (0.002, 0.004)	-0.002 (-0.002, -0.001)	-0.003 (-0.004, -0.001)
0.350	-0.014 (-0.015,-0.013)	-0.001 (-0.002, -0.0004)	-0.002 (-0.003, -0.001)	0.005 (0.004, 0.007)	-0.001 (-0.002, -0.001)	-0.002 (-0.003, -0.001)
0.375	-0.010 (-0.011, -0.008)	-0.002 (-0.002, -0.001)	-0.002 (-0.003, -0.001)	0.005 (0.004, 0.007)	-0.001 (-0.002, 0.003)	-0.001 (-0.002, 0.004)
0.400	-0.006 (-0.007, -0.004)	-0.001 (-0.002, -0.001)	-0.002 (-0.003, -0.001)	0.003 (0.002, 0.005)	-0.0004 (-0.001, 0.003)	-0.001 (-0.002, 0.005)
0.425	-0.003 (-0.005, -0.001)	0.0001 (-0.001, 0.001)	0.0001 (-0.001, 0.001)	0.001 (-0.001, 0.002)	-0.001 (-0.002, -0.002)	-0.001 (-0.002, -0.003)
0.450	-0.0002 (-0.002, 0.001)	0.002 (0.002, 0.003)	0.003 (0.002, 0.004)	-0.002 (-0.003, -0.004)	-0.002 (-0.002, -0.001)	-0.002 (-0.003, -0.001)
0.475	0.003 (0.001, 0.004)	0.005 (0.003, 0.005)	0.006 (0.005, 0.007)	-0.003 (-0.004, -0.002)	-0.002 (-0.003, -0.001)	-0.003 (-0.004, -0.002)
0.500	0.005 (0.004, 0.006)	0.006 (0.006, 0.007)	0.008 (0.008, 0.009)	-0.002 (-0.003, -0.001)	-0.002 (-0.002, -0.001)	-0.002 (-0.003, -0.001)
0.525	0.006 (0.004, 0.007)	0.007 (0.006, 0.007)	0.010 (0.009, 0.011)	-0.001 (-0.002, 0.001)	-0.001 (-0.001, -0.001)	-0.001 (-0.002, 5.19e-06)
0.550	0.004 (0.003, 0.005)	0.007 (0.006, 0.007)	0.010 (0.009, 0.011)	-0.0004 (-0.001, 0.004)	0.001 (0.001, 0.001)	0.001 (0.0002, 0.002)
0.575	0.001 (-0.0001, 0.002)	0.006 (0.006, 0.006)	0.009 (0.008, 0.010)	-0.002 (-0.003, -0.001)	0.002 (0.002, 0.003)	0.003 (0.002, 0.004)
0.600	-0.002 (-0.003, -0.001)	0.004 (0.004, 0.005)	0.007 (0.006, 0.008)	-0.003 (-0.004, -0.002)	0.003 (0.003, 0.004)	0.005 (0.004, 0.006)
0.625	-0.004 (-0.005, -0.003)	0.003 (0.002, 0.003)	0.004 (0.003, 0.005)	-0.004 (-0.005, -0.004)	0.004 (0.003, 0.004)	0.006 (0.005, 0.006)
0.650	-0.004 (-0.005, -0.003)	0.002 (0.001, 0.002)	0.003 (0.002, 0.004)	-0.005 (-0.006, -0.004)	0.004 (0.003, 0.004)	0.005 (0.005, 0.006)

0.675	-0.004 (-0.005, -0.003)	0.001 (0.001, 0.002)	0.002 (0.001, 0.003)	-0.005 (-0.006, -0.004)	0.003 (0.003, 0.004)	0.005 (0.004, 0.005)
0.700	-0.006 (-0.007, -0.005)	0.002 (0.002, 0.003)	0.004 (0.003, 0.005)	-0.005 (-0.006, -0.004)	0.003 (0.002, 0.003)	0.004 (0.003, 0.005)
0.725	-0.010 (-0.010, -0.009)	0.004 (0.004, 0.005)	0.006 (0.006, 0.007)	-0.007 (-0.008, -0.006)	0.003 (0.002, 0.003)	0.004 (0.003, 0.005)
0.750	-0.014 (-0.015, -0.013)	0.006 (0.005, 0.007)	0.010 (0.009, 0.011)	-0.009 (-0.010, -0.008)	0.003 (0.003, 0.004)	0.005 (0.004, 0.006)
0.775	-0.016 (-0.017, -0.015)	0.008 (0.007, 0.008)	0.012 (0.011, 0.013)	-0.011 (-0.012, -0.010)	0.004 (0.004, 0.005)	0.006 (0.005, 0.008)
0.800	-0.015 (-0.016, -0.014)	0.009 (0.008, 0.009)	0.014 (0.013, 0.015)	-0.011 (-0.013, -0.010)	0.005 (0.005, 0.006)	0.008 (0.007, 0.009)

Table A8 continued

Percentile	Plot head			De jure plot head		
	Endowment effect	Men's structural advantage	Women's structural disadvantage	Endowment effect	Men's structural advantage	Women's structural disadvantage
0.825	-0.011 (-0.012, -0.009)	0.010 (0.010, 0.011)	0.017 (0.016, 0.018)	-0.011 (-0.012, -0.010)	0.006 (0.005, 0.007)	0.009 (0.008, 0.010)
0.850	-0.005 (-0.007, -0.003)	0.013 (0.012, 0.014)	0.021 (0.020, 0.023)	-0.009 (-0.010, -0.007)	0.006 (0.005, 0.007)	0.009 (0.008, 0.011)
0.875	0.002 (-0.0003, 0.003)	0.016 (0.015, 0.017)	0.027 (0.026, 0.029)	-0.005 (-0.007, -0.003)	0.005 (0.004, 0.007)	0.008 (0.006, 0.010)
0.900	0.010 (0.007, 0.012)	0.020 (0.019, 0.021)	0.035 (0.033, 0.037)	-0.001 (-0.003, 0.002)	0.004 (0.002, 0.005)	0.006 (0.004, 0.008)
0.925	0.020 (0.017, 0.023)	0.023 (0.021, 0.024)	0.042 (0.039, 0.045)	0.004 (0.001, 0.007)	0.001 (-0.0004, 0.003)	0.002 (-0.001, 0.004)
0.950	0.032 (0.028, 0.038)	0.024 (0.023, 0.026)	0.047 (0.045, 0.050)	0.008 (0.003, 0.012)	-0.002 (-0.004, -0.005)	-0.003 (-0.006, -0.001)
0.975	0.048 (0.042, 0.055)	0.025 (0.023, 0.026)	0.051 (0.047, 0.055)	0.010 (0.005, 0.016)	-0.006 (-0.008, -0.003)	-0.009 (-0.012, -0.005)
1.000	0.064 (0.057, 0.071)	0.024 (0.022, 0.026)	0.052 (0.048, 0.057)	0.013 (0.005, 0.020)	-0.010 (-0.013, -0.008)	-0.016 (-0.019, -0.013)

Percentile	Migrant plot head			Plot manager		
	Endowment effect	Men's structural advantage	Women's structural disadvantage	Endowment effect	Men's structural advantage	Women's structural disadvantage
0.025	-0.043 (-0.049, -0.037)	0.008 (0.004, 0.012)	0.013 (0.007, 0.019)	0.022 (0.014, 0.030)	-0.014 (-0.018, -0.010)	-0.012 (-0.015, -0.009)
0.050	-0.038 (-0.042, -0.033)	0.004 (0.0002, 0.007)	0.006 (0.0003, 0.012)	0.016 (0.009, 0.023)	-0.008 (-0.012, -0.004)	-0.007 (-0.010, -0.003)

0.075	-0.034 (-0.038, -0.029)	0.001 (-0.002, 0.004)	0.002 (-0.002, 0.006)	0.012 (0.007, 0.016)	-0.004 (-0.007, -0.001)	-0.003 (-0.006, -0.001)
0.100	-0.031 (-0.035, -0.028)	0.001 (-0.002, 0.003)	0.001 (-0.002, 0.005)	0.010 (0.007, 0.014)	-0.002 (-0.005, 0.0003)	-0.002 (-0.004, 0.0002)
0.125	-0.030 (-0.033, -0.027)	0.002 (0.0001, 0.004)	0.003 (0.0001, 0.006)	0.011 (0.008, 0.015)	-0.003 (-0.006, -0.001)	-0.003 (-0.005, -0.001)
0.150	-0.028 (-0.031, -0.026)	0.004 (0.002, 0.006)	0.006 (0.004, 0.008)	0.013 (0.011, 0.016)	-0.005 (-0.007, -0.003)	-0.004 (-0.006, -0.002)
0.175	-0.025 (-0.027, -0.023)	0.005 (0.004, 0.007)	0.008 (0.006, 0.009)	0.015 (0.013, 0.018)	-0.007 (-0.008, -0.005)	-0.006 (-0.007, -0.005)
0.200	-0.021 (-0.023, -0.019)	0.005 (0.004, 0.007)	0.008 (0.006, 0.009)	0.018 (0.016, 0.019)	-0.008 (-0.010, -0.007)	-0.007 (-0.009, -0.006)
0.225	-0.018 (-0.019, -0.016)	0.005 (0.003, 0.006)	0.006 (0.005, 0.008)	0.021 (0.019, 0.022)	-0.010 (-0.011, -0.008)	-0.008 (-0.010, -0.007)
0.250	-0.014 (-0.016, -0.013)	0.003 (0.002, 0.004)	0.005 (0.003, 0.006)	0.023 (0.022, 0.025)	-0.010 (-0.011, -0.009)	-0.009 (-0.010, -0.008)
0.275	-0.012 (-0.013, -0.010)	0.002 (0.001, 0.003)	0.003 (0.002, 0.004)	0.025 (0.024, 0.026)	-0.010 (-0.011, -0.009)	-0.009 (-0.010, -0.008)
0.300	-0.010 (-0.012, -0.009)	0.001 (0.003, 0.002)	0.002 (0.0004, 0.003)	0.026 (0.025, 0.028)	-0.010 (-0.011, -0.009)	-0.009 (-0.010, -0.008)
0.325	-0.010 (-0.011, -0.009)	0.001 (0.00004, 0.002)	0.001 (0.0001, 0.002)	0.028 (0.026, 0.029)	-0.010 (-0.011, -0.009)	-0.009 (-0.010, -0.008)
0.350	-0.010 (-0.011, -0.008)	0.0004 (-0.0005, 0.001)	0.0005 (-0.001, 0.002)	0.027 (0.026, 0.029)	-0.009 (-0.010, -0.008)	-0.009 (-0.010, -0.008)
0.375	-0.008 (-0.010, -0.007)	0.0001 (-0.001, 0.001)	0.0002 (-0.001, 0.001)	0.026 (0.024, 0.027)	-0.008 (-0.009, -0.007)	-0.008 (-0.008, -0.007)

0.400	-0.007 (-0.008, -0.006)	0.001 (0.0001, 0.001)	0.001 (0.0002, 0.002)	0.023 (0.022, 0.025)	-0.007 (-0.007, -0.006)	-0.006 (-0.007, -0.005)
0.425	-0.006 (-0.007, -0.004)	0.003 (0.002, 0.003)	0.004 (0.003, 0.005)	0.020 (0.019, 0.022)	-0.006 (-0.006, -0.005)	-0.006 (-0.007, -0.005)
0.450	-0.004 (-0.055, -0.003)	0.005 (0.005, 0.006)	0.007 (0.006, 0.008)	0.016 (0.015, 0.017)	-0.006 (-0.007, -0.005)	-0.006 (-0.007, -0.005)
0.475	-0.002 (-0.003, -0.001)	0.007 (0.007, 0.008)	0.010 (0.009, 0.011)	0.011 (0.010, 0.013)	-0.007 (-0.008, -0.006)	-0.007 (-0.007, -0.006)
0.500	0.0003 (-0.001, 0.001)	0.008 (0.007, 0.009)	0.012 (0.011, 0.012)	0.006 (0.005, 0.007)	-0.007 (-0.008, -0.006)	-0.007 (-0.008, -0.006)
0.525	0.002 (0.001, 0.003)	0.007 (0.007, 0.008)	0.011 (0.010, 0.012)	0.001 (-0.0003, 0.002)	-0.007 (-0.008, -0.006)	-0.007 (-0.008, -0.006)
0.550	0.003 (0.002, 0.004)	0.005 (0.004, 0.006)	0.008 (0.007, 0.009)	-0.002 (-0.003, -0.001)	-0.007 (-0.007, -0.006)	-0.006 (-0.007, -0.006)
0.575	0.002 (0.001, 0.003)	0.003 (0.002, 0.003)	0.004 (0.003, 0.005)	-0.002 (-0.003, -0.001)	-0.006 (-0.007, -0.006)	-0.006 (-0.007, -0.005)

Table A8 continued

Percentile	Migrant plot head: Endowment effect	Migrant plot head: Men's structural advantage	Migrant plot head: Women's structural disadvantage	Plot manager: Endowment effect	Plot manager: Men's structural advantage	Plot manager: Women's structural disadvantage
0.600	0.002 (0.001, 0.003)	0.0001 (-0.0005, 0.001)	0.0002 (-0.001, 0.001)	0.001 (0.00002, 0.002)	-0.007 (-0.008, -0.006)	-0.006 (-0.007, -0.005)
0.625	0.003 (0.002, 0.004)	-0.002 (-0.002, -0.001)	-0.003 (-0.004, -0.002)	0.004 (0.003, 0.005)	-0.008 (-0.009, -0.007)	-0.007 (-0.008, -0.006)
0.650	0.005 (0.004, 0.006)	-0.003 (-0.004, -0.002)	-0.005 (-0.006, -0.004)	0.006 (0.005, 0.007)	-0.010 (-0.010, -0.009)	-0.008 (-0.009, -0.007)
0.675	0.006 (0.005, 0.007)	-0.003 (-0.004, -0.002)	-0.005 (-0.006, -0.004)	0.007 (0.006, 0.008)	-0.010 (-0.011, -0.010)	-0.008 (-0.009, -0.008)
0.700	0.006 (0.005, 0.007)	-0.002 (-0.003, -0.001)	-0.004 (-0.005, -0.003)	0.007 (0.006, 0.007)	-0.010 (-0.011, -0.009)	-0.008 (-0.009, -0.007)
0.725	0.003 (0.002, 0.004)	-0.001 (-0.002, -0.0005)	-0.002 (-0.002, -0.001)	0.006 (0.005, 0.007)	-0.009 (-0.009, -0.008)	-0.007 (-0.007, -0.006)
0.750	-0.001 (-0.002, -0.0004)	0.0004 (-0.0002, 0.001)	0.001 (-0.0004, 0.002)	0.006 (0.005, 0.007)	-0.006 (-0.006, -0.005)	-0.004 (-0.005, -0.004)
0.775	-0.006 (-0.007, -0.004)	0.001 (0.001, 0.002)	0.002 (0.001, 0.003)	0.006 (0.005, 0.007)	-0.002 (-0.003, -0.001)	-0.001 (-0.002, -0.0005)
0.800	-0.008 (-0.010, -0.007)	0.002 (0.001, 0.002)	0.003 (0.002, 0.004)	0.005 (0.004, 0.006)	0.001 (0.0005, 0.002)	0.001 (0.0004, 0.002)
0.825	-0.009 (-0.010, -0.008)	0.002 (0.001, 0.003)	0.003 (0.002, 0.005)	0.004 (0.003, 0.005)	0.001 (0.0003, 0.002)	0.001 (0.0003, 0.002)
0.850	-0.008 (-0.010, -0.007)	0.003 (0.002, 0.004)	0.005 (0.004, 0.006)	0.001 (-0.0001, 0.002)	-0.002 (-0.004, -0.001)	-0.002 (-0.003, -0.001)

0.875	-0.005 (-0.008, -0.004)	0.005 (0.004, 0.006)	0.007 (0.005, 0.009)	-0.004 (-0.006, -0.002)	-0.010 (-0.011, -0.008)	-0.008 (-0.009, -0.006)
0.900	-0.002 (-0.004, 0.0005)	0.006 (0.005, 0.007)	0.009 (0.007, 0.012)	-0.013 (-0.015, -0.010)	-0.018 (-0.020, -0.016)	-0.015 (-0.016, -0.013)
0.925	0.003 (-0.001, 0.007)	0.007 (0.005, 0.009)	0.011 (0.008, 0.013)	-0.025 (-0.028, -0.022)	-0.026 (-0.029, -0.024)	-0.021 (-0.022, -0.019)
0.950	0.008 (0.002, 0.013)	0.007 (0.005, 0.009)	0.011 (0.008, 0.014)	-0.041 (-0.045, -0.037)	-0.032 (-0.035, -0.029)	-0.024 (-0.027, -0.022)
0.975	0.013 (0.007, 0.019)	0.006 (0.004, 0.008)	0.009 (0.006, 0.012)	-0.056 (-0.062, -0.051)	-0.036 (-0.040, -0.032)	-0.026 (-0.029, -0.023)
1.000	0.017 (0.010, 0.024)	0.004 (0.002, 0.006)	0.007 (0.003, 0.010)	-0.070 (-0.077, -0.063)	-0.038 (-0.043 -0.033)	-0.026 (-0.029, -0.023)

Percentile	Plot owner		
	Endowment effect	**Men's structural advantage**	**Women's structural disadvantage**
0.025	-0.055 (-0.063, -0.048)	0.031 (0.027, 0.034)	0.049 (0.043, 0.054)
0.050	-0.055 (-0.060, -0.049)	0.028 (0.025, 0.031)	0.044 (0.040, 0.049)
0.075	-0.051 (-0.056, -0.046)	0.023 (0.021, 0.026)	0.037 (0.033, 0.042)
0.100	-0.045 (-0.049, -0.041)	0.018 (0.016, 0.021)	0.029 (0.026, 0.033)
0.125	-0.039 (-0.042, -0.036)	0.013 (0.012, 0.015)	0.021 (0.019, 0.024)
0.150	-0.034 (-0.037, -0.032)	0.009 (0.007, 0.011)	0.014 (0.012, 0.016)
0.175	-0.031 (-0.033, -0.029)	0.006 (0.004, 0.007)	0.009 (0.007, 0.011)
0.200	-0.029 (-0.031, -0.027)	0.004 (0.003, 0.005)	0.006 (0.004, 0.007)

0.225	-0.026 (-0.028, -0.024)	0.002 (0.001, 0.003)	0.004 (0.002, 0.005)
0.250	-0.023 (-0.025, -0.021)	0.002 (0.001, 0.003)	0.002 (0.001, 0.004)
0.275	-0.019 (-0.021, -0.018)	0.001 (0.0005, 0.002)	0.002 (0.001, 0.003)
0.300	-0.016 (-0.017, -0.014)	0.001 (0.0001, 0.002)	0.001 (0.0002, 0.003)

Table A8 continued

Percentile	Plot owner Endowment effect	Men's structural advantage	Women's structural disadvantage
0.325	-0.013 (-0.014, -0.011)	0.001 (-0.0001, 0.002)	0.001 (-0.0002, 0.002)
0.350	-0.010 (-0.011, -0.008)	0.0003 (-0.001, 0.001)	0.0004 (-0.001, 0.002)
0.375	-0.006 (-0.007, -0.004)	-0.0003 (-0.001, 0.001)	-0.0003 (-0.001, 0.001)
0.400	-0.003 (-0.004, -0.001)	0.00004 (-0.001, 0.001)	0.00005 (-0.001, 0.001)
0.425	-0.001 (-0.002, 0.0004)	0.002 (0.001, 0.003)	0.002 (0.001, 0.004)
0.450	-0.00001 (-0.002, 0.002)	0.005 (0.004, 0.005)	0.006 (0.005, 0.007)
0.475	0.001 (0.0001, 0.003)	0.007 (0.007, 0.008)	0.010 (0.009, 0.011)
0.500	0.004 (0.003, 0.005)	0.009 (0.008, 0.009)	0.012 (0.011, 0.013)
0.525	0.005 (0.004, 0.006)	0.009 (0.008, 0.009)	0.013 (0.012, 0.014)
0.550	0.005 (0.004, 0.006)	0.007 (0.007, 0.008)	0.012 (0.010, 0.013)
0.575	0.003 (0.002, 0.004)	0.005 (0.005, 0.006)	0.009 (0.007, 0.010)
0.600	-0.0002 (-0.001, 0.001)	0.002 (0.002, 0.003)	0.004 (0.003, 0.005)
0.625	-0.002 (-0.003, -0.002)	-0.0004 (-0.001, 0.0002)	-0.001 (-0.002, 0.0003)
0.650	-0.004 (-0.004, -0.003)	-0.002 (-0.003, -0.002)	-0.004 (-0.005, -0.003)
0.675	-0.004 (-0.005, -0.003)	-0.003 (-0.003, -0.002)	-0.004 (-0.005, -0.004)
0.700	-0.006 (-0.006, -0.005)	-0.002 (-0.002, -0.001)	-0.002 (-0.003, -0.002)
0.725	-0.008 (-0.009, -0.006)	0.001 (0.0005, 0.002)	0.002 (0.001, 0.002)

0.750	-0.010 (-0.010, -0.009)	0.004 (0.003, 0.005)	0.006 (0.005, 0.007)
0.775	-0.011 (-0.012, -0.010)	0.007 (0.006, 0.007)	0.011 (0.010, 0.012)
0.800	-0.011 (-0.012, -0.010)	0.009 (0.008, 0.010)	0.014 (0.013, 0.015)
0.825	-0.009 (-0.010, -0.008)	0.011 (0.010, 0.012)	0.018 (0.016, 0.019)
0.850	-0.006 (-0.007, -0.004)	0.013 (0.012, 0.014)	0.022 (0.020, 0.023)
0.875	-0.001 (-0.003, 0.001)	0.015 (0.014, 0.016)	0.026 (0.024, 0.028)
0.900	0.006 (0.003, 0.008)	0.018 (0.016, 0.019)	0.031 (0.029, 0.033)
0.925	0.015 (0.011, 0.018)	0.020 (0.018, 0.021)	0.035 (0.033, 0.037)
0.950	0.027 (0.023, 0.031)	0.021 (0.019, 0.023)	0.039 (0.036, 0.042)
0.975	0.041 (0.035, 0.047)	0.022 (0.020, 0.024)	0.043 (0.039, 0.046)
1.000	0.056 (0.048 0.064)	0.023 (0.021, 0.025)	0.046 (0.042, 0.050)

Notes: 95% confidence intervals are in parentheses. Source: Authors' calculations based on data from the Cameroon Institute of Agricultural Research for Development.