Can private food standards promote gender equality in the small farm sector?

Eva-Marie Meemken[*1] and Matin Qaim[1]

[1]University of Goettingen, Germany

[*]Corresponding author: Eva-Marie Meemken, Heinrich Dueker Weg 12, 37073 Goettingen, Germany. Email: emeemke@uni-goettingen.de. Phone: +49 551 39 20209

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CAN PRIVATE FOOD STANDARDS PROMOTE GENDER EQUALITY IN THE SMALL FARM SECTOR?

Abstract. Agricultural commercialization can help to lift subsistence farmers out of poverty, but can also have adverse effects on gender equality. We explore whether private food standards – with their particular elements to regulate production and trade – could serve as a vehicle to promote gender equality in the small farm sector. We use gender-disaggregated data from coffee producers in Uganda and focus on two sustainability standards that explicitly address gender issues, namely Fairtrade and UTZ. Entropy balancing techniques, combined with estimates of farmers' willingness to accept standards, are used to control for possible selection bias when comparing certified and non-certified households. We find that standards and their certification programs increase wealth in male-headed and female-headed households. In male-headed households, standards also change the intra-household distribution of asset ownership: while in non-certified households, assets are predominantly owned by the male household head alone, in certified households most assets are jointly owned by the male head and his female spouse. Standards also improve access to agricultural extension for both male and female farmers. Effects on women's access to financial services are statistically insignificant. Private standards cannot completely eliminate gender disparities, but the findings suggest that they can contribute towards this goal.

Keywords: cash crops, certification, gender, sustainability standards, women's empowerment

1   Introduction

The United Nation's Sustainable Development Goals emphasize the importance of gender equality and women's empowerment for poverty reduction and food security (UN, 2016). Yet, achieving gender equality remains a challenge, especially in rural areas of developing countries (FAO, 2011). Agricultural commercialization and linking farmers to high-value markets are seen as promising strategies to lift subsistence farmers out of poverty (MAERTENS and SWINNEN, 2009; RAO and QAIM, 2011). However, as is well known, commercialization can also have adverse effects on women's empowerment and gender equality (von Braun and Kennedy, 1994). Given gender disparities in terms of access to land, farm inputs, and rural services, women farmers often find it more difficult to participate in modern value chains (MAERTENS and SWINNEN, 2012; QUISUMBING et al., 2015). Further, social norms and gender roles may limit women's engagement in cash crop production and marketing (HANDSCHUCH and WOLLNI, 2015; NJUKI et al., 2011; ORR et al., 2016). Several studies also show that women may lose control over agricultural income, when farming becomes more profitable and market-oriented (VON BRAUN and KENNEDY, 1994; CHEGE et al., 2015). This is problematic not only for women's empowerment, but also from a broader welfare perspective, because female-controlled income is often more important for family nutrition and child wellbeing than male-controlled income (DOSS, 2013; HODDINOTT and HADDAD, 1995; MALAPIT and QUISUMBING, 2015). Here, we explore whether private food standards could possibly serve to mitigate negative effects of agricultural commercialization on gender equality. Private food standards – such as Fairtrade – are gaining in importance in global food chains that involve smallholder farmers in developing countries (LEE et al., 2012; MAERTENS and SWINNEN, 2009). These standards cover a wide range of issues, such as food safety, human welfare, labor conditions, and environmental stewardship. We focus on two particular standards that are aimed at promoting sustainability, namely Fairtrade and UTZ. Fairtrade and UTZ also include specific components to promote gender equality and women's empowerment (FAIRTRADE INTERNATIONAL, 2009; UTZ, 2015). For instance, farmer organizations that are certified under these two standards need to comply with non-discrimination policies. Certified organizations are also encouraged to organize gender

equality awareness workshops, implement special programs tailored to women farmers, and promote female participation in agricultural training sessions. Understanding whether such components are really effective in improving gender equality can be useful for further developing food standards and related rural development initiatives.

A growing body of literature has analyzed welfare effects of sustainability standards on farmers in different developing countries (e.g. BOLWIG et al., 2009; JONES and GIBBON, 2011; KLEEMANN et al., 2014; CHIPUTWA and QAIM, 2016; MITIKU et al., 2017). However, these existing studies typically focus on the farm or the farm household as the unit of observation. Issues of intra-household distribution of costs and benefits have hardly been analyzed. Hence, it remains unclear how sustainability standards affect gender equality (TERSTAPPEN et al., 2013). A few quantitative studies have looked at gender aspects from a broad perspective (RUBEN and FORT, 2012; CHIPUTWA and QAIM, 2016), yet without analyzing details of intra-household distribution. A few qualitative studies have investigated experiences of female farmers or of employed female workers in certified value chains (e.g. BACON, 2010; LOCONTO, 2015; LYON et al., 2010). Our study is the first to analyze gendered implications of sustainability standards in the small farm sector in more detail with quantitative approaches. The research objectives are to evaluate (1) whether standards benefit women and men in male-headed households, (2) whether costs and benefits are equally distributed within male-headed households, and (3) whether female-headed households can benefit as well. The analysis is based on gender-disaggregated data from a survey of coffee producers in Uganda. Some of the sample households are certified under Fairtrade or UTZ standards, while others are not certified. For the impact analysis, we use outcome variables that capture different dimensions of women's empowerment, such as gendered asset ownership, time allocation, participation in farmer group meetings, and access to financial services. Entropy balancing techniques (HAINMUELLER, 2012) are employed to reduce possible selection bias due to observed differences between certified and non-certified farmers. To reduce possible bias from unobserved heterogeneity, we additionally use estimates of farmers' willingness to accept (WTA) standards as a conditioning variable in reweighting the data.

2 Research context and household survey

The empirical analysis builds on a survey of coffee-producing households in Uganda conducted in 2015. We employed a two-stage sampling strategy. First, we purposively selected two coffee farmer organizations in central Uganda. One of these organizations was certified under Fairtrade, the other under the UTZ standard. However, not all members of these farmer organizations were actually certified; participation is a voluntary decision. Second, we randomly selected certified and non-certified households from complete membership lists provided by both farmer organizations. The total sample includes 346 households, 174 of which were certified and 172 were non-certified.

In all sample households, we collected data at household and individual levels through face-to-face interviews. Whenever available, we interviewed the male or female household head. Additionally, in male-headed households we interviewed the female spouse. The interviews with male and female household members were conducted separately. In the 346 sample households, we interviewed a total of 548 individuals, including 233 male household heads, 244 female spouses, and 71 female household heads. The interviews were conducted by local enumerators, who were trained and supervised by the researchers. The questionnaire covered farm, household, and contextual characteristics. We also collected detailed information on household assets and individual asset ownership, individual time allocation, and participation in training sessions and other services offered by the farmer organizations.

2.1 Gender measures implemented by farmer organizations

Fairtrade and UTZ standards cover a wide range of issues, such as environmental stewardship, prohibition of child labor, occupational safety, and gender equality. While some of these requirements have to be met by individual farmers (e.g. employing environmentally-friendly farming practices) others have to be met by farmer organizations. The later applies for gender policies. Our sample farmer organizations implement the following activities. Both organizations organize workshops to raise awareness on gender equality. The specific purpose of these workshops is to help household heads, spouses, and other household members to work as a team and appreciate the work of others. Further, both men and women are recruited as extension and certification officers, and also for administrative positions.

Additionally, both organizations provide agricultural services to their members, including credits and agricultural trainings. In principle, any person from member households can join the training sessions, regardless of whether or not the household is actually certified. However, certified households are particularly encouraged to participate. Training sessions and regular interactions with certification officers serve to ensure that certified farmers understand and comply with the certification requirements. Compliance is important, because otherwise not only the individual household but also the farmer organization as a whole may lose its certification status.

3 Empirical strategy

Our goal is to analyze how certification under Fairtrade and UTZ standards affects female household heads (in female-headed households), male household heads, and female spouses (in male-headed households). We are particularly interested in the effects on female economic empowerment, division of labor and workload, social capital, and access to different types of rural services. We first describe the concrete outcome variables, before explaining the identification strategy.

3.1 Definition and measurement of outcome variables

We use asset ownership as an indicator of women's economic empowerment. Asset ownership is a suitable proxy, as it determines individual economic options and livelihood opportunities (Doss et al., 2014; Quisumbing et al., 2015). For instance, assets can serve as collateral when seeking credit. In traditional societies, assets are predominantly owned by the male household head or by other male household members, hence more assets being held by females can be interpreted as a trend towards women's empowerment (Doss et al., 2014).

We compare the gendered distribution of asset ownership in certified and non-certified households to evaluate the possible impact of standards. Assets are measured in terms of their current market value expressed in thousand Ugandan Shillings (UGX), as reported by survey respondents. The assets considered include productive assets, such as agricultural equipment, livestock, and means of transportation, as well as consumptive assets, such as furniture and electronic devices. Very long-term assets, such as land and houses, are not considered in the analysis. The reason is that most of these long-term assets were acquired long before certification started in the study region. In most cases, the question who within the households owns a particular asset is implicitly or explicitly determined when the asset is acquired. Hence, for very long-term assets, measurable effects of standards on changes in the gendered structure of ownership cannot yet be expected.

One challenge with using asset ownership as an empowerment indicator is that certain assets can also be held jointly by male and female household members (Quisumbing et al., 2015).

In those cases, it is often unclear for the researcher who exactly has what types of rights, for instance, when it comes to selling these assets (JOHNSON et al., 2016). We address this challenge by looking at individual asset ownership and joint asset ownership separately. In male-headed households, we look at the (1) total value of household assets, (2) the value of assets owned by the male household head alone, (3) the value of assets owned by the female spouse alone, and (4) the value of assets jointly owned by the head and his spouse. In addition to absolute values in monetary terms, we also consider relative shares, such as the percentage of assets owned by the male head relative to total household assets. In female-headed households, we look at the value of assets owned by the female household head, both in absolute terms and as a share of total household assets. This share can be lower than 100 percent when other household members, such as the brother or son of the female household head, also own some of the assets.

To analyze how standards may affect the workload of male and female household members, the questionnaire for the individual interviews included a 24-hour time recall, capturing all the activities of the interviewed individual during the one day prior to the survey (ALKIRE et al., 2013). To construct an objective indicator of gendered workload, we added up the time spent on farm, off-farm, and domestic work to obtain the total daily number of hours worked by male and female respondents. In addition to this objective indicator, we also use a subjective measure. Following ALKIRE et al. (2013), we asked respondents how satisfied they are with their own time available for leisure activities. This variable is expressed in terms of a five-point scale, where one indicates "very unsatisfied" and five "very satisfied".

To measure social capital, we asked respondents whether they had participated in any meetings of the farmer organization during the past twelve months. The answers are expressed as a simple binary variable. In addition, we asked respondents whether they held a leadership position in any group (e.g. the famer organization, women's groups, religious groups) at the time of the survey in 2015.

To analyze the effects of standards on access to agricultural services, we asked respondents whether they had interacted with an extension officer during the past 12 months. We also asked whether they had participated in field days or agricultural training sessions during the past twelve months. For the training sessions, we differentiated between sessions on soil fertility, pest management, and coffee quality improvement. Regarding access to financial services, we asked respondents whether they had a personal savings account, used mobile money services, or were member of a savings group at the time of the survey. All these indicators of access to services are expressed as binary variables.

3.2 Identification strategy

To assess the effects of standards on the outcome variables described, we compare certified and non-certified households. Specifically, we compare (1) male household heads in certified and non-certified households, (2) female spouses in certified and non-certified households, and (3) female household heads in certified and non-certified households.

As households decided themselves whether or not to participate in certification, we have to account for the fact that certified and non-certified observations may differ systematically, which would lead to selection bias in the impact analysis. To reduce such bias, we use a technique called "entropy balancing" (HAINMUELLER, 2012). Entropy balancing belongs to the family of weighting and matching approaches, such as inverse probability weighting (IPW) and propensity score matching (PSM) (HIRANO et al., 2003; PIRRACCHIO et al., 2012). Weighting and matching approaches are used to address systematic differences (imbalances) in the distribution of covariates between the treatment group (in our case certified households)

and the control group (in our case non-certified households). When such systematic differences are controlled for, the two groups become sufficiently similar so that remaining differences in the outcome variables can be interpreted as "treatment effects" of certification.

Entropy balancing is a novel approach that has recently been used for policy impact evaluation in various sectors (FREIER et al., 2015; NEUENKIRCH and NEUMEIER, 2016), but – to our knowledge – not yet in the context of agriculture and rural development. Entropy balancing calculates weights for each untreated individual such that differences in the distribution of covariates between treatment and control group are reduced. Technically speaking, this is a minimization problem, subject to the balancing and non-negativity constraints. Entropy balancing has advantages over more established methods of weighting and matching, such as PSM. With PSM, simultaneously balancing a larger number of covariates can be challenging. Observations for which a proper match cannot be found have to be dropped from the PSM analysis, sometimes resulting in small comparison groups that are not representative anymore. With entropy balancing, low levels of covariate balancing can be avoided, and information from all observations is used, because no observation is given a zero weight (HAINMUELLER, 2012).

To obtain entropy weights, we first have to select conditioning variables, i.e., variables that are accounted for in reweighting control group observations to make the treatment and control groups more similar. All factors that may simultaneously affect households' certification decision and the outcome variables should be included. We condition on a rich set of covariates, such as household members' age, education, religion, and other socioeconomic variables. Reweighted data are then used to calculate the average treatment effect on the treated (ATT) for each outcome variable. For continuous outcome variables, we use ordinary least squares (OLS) models in the second stage. For binary outcome variables, we use probit models. In all second-stage regressions, we include certification status as the only explanatory variable. As the observations are balanced, other control variables are not required in the second stage regressions.

One shortcoming of all weighting and matching approaches (including entropy balancing) is that they can only control for selection bias resulting from observed differences between the treatment and control groups. In our case, it is also possible that certified households differ from non-certified households in terms of unobserved factors, such as personal motivation or entrepreneurial skills of household members. When there is such unobserved heterogeneity, the estimated ATT could still be biased. To reduce possible bias from unobserved factors, we include estimates on farmers' willingness to accept (WTA) sustainability standards as one of the conditioning variables for entropy balancing estimation. These estimates on farmers' WTA were obtained from a choice experiment carried out with male and female respondents in all certified and non-certified households (MEEMKEN et al., 2017). The choice experiment was conducted to better understand farmers' preferences for sustainability standards and certification requirements. The farmer-specific WTA estimates are very useful for our impact analysis, because these estimates are likely correlated with a range of unobserved factors that influence farmers' certification decision. Hence, using the WTA estimates as a conditioning variable is a neat way to control for unobserved heterogeneity.

4 Results

We start the regression analysis by looking at the effect of sustainability standards on asset ownership, before focusing on the impact on farmers' workload, social capital, and access to services. In each table we show descriptive statistics (column 1-3) and average treatment effects (ATT) (column 4).

In male-headed households, sustainability standards increase total household assets by 1163 thousand UGX (Table 1, column 4), which is equivalent to a gain in wealth of about 50 percent. The largest increase (913 thousand UGX) is found for assets that are jointly owned by the household head and his female spouse. Standards also have a statistically significant and economically relevant positive effect on assets owned by female spouses alone (147 thousand UGX, equivalent to an increase by 71 percent). The ATT for assets owned by male household heads alone is positive but statistically insignificant (column 4). The results suggest that standards reduce the share of assets owned by male household heads alone, whereas standards increase the share of assets owned jointly by about 13 percentage points.

Table 1: Asset ownership (in 1000 UGX)

	Descriptive statistics			Entropy balancing
	(1)	(2)	(3)	(4)
	Certified Mean [a]	Non-cert. Mean [a]	Mean Diff. [b]	ATT [c]
Male-headed households	(N=137)	(N=131)	(N=268)	(N=268)
Value household assets	3684.52	2299.45	1385.07***	1162.94***
	(2896.86)	(2358.02)	(0.00)	(376.62)
Asset ownership male head				
Value	1434.89	1160.90	273.99	229.14
	(1842.77)	(1697.26)	(0.21)	(250.40)
Percent of total household assets	37.80	46.71	-8.91**	-9.04*
	(32.67)	(31.08)	(0.02)	(5.46)
Asset ownership female spouse				
Value	322.90	205.95	116.95	146.78**
	(782.05)	(417.41)	(0.13)	(74.08)
Percent of total household assets	9.80	11.69	-1.88	-1.16
	(18.93)	(19.39)	(0.42)	(2.81)
Joint asset ownership				
Value	1842.12	846.99	995.12***	912.63***
	(2089.72)	(1348.84)	(0.00)	(261.63)
Percent of total household assets	50.32	38.48	11.83***	13.18**
	(32.27)	(29.71)	(0.00)	(5.62)
Female-headed households	(N=37)	(N=41)	(N=78)	(N=78)
Value household assets	2899.39	1106.97	1792.42***	2137.64***
	(3371.77)	(1873.99)	(0.00)	(617.88)
Asset ownership female head				
Value	2430.50	922.45	1508.05***	1741.91***
	(3272.33)	(1529.37)	(0.01)	(601.53)
Percent of total household assets	77.67	78.67	-1.00	-0.94
	(29.61)	(30.61)	(0.88)	(12.83)

[a] Standard deviations in parentheses
[b] p-values in parentheses
[c] Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The lower part of Table 1 shows results for female-headed households. In female-headed households, standards increase the total value of assets by 2138 thousand UGX, which is equivalent to almost a tripling of wealth. Most of these gains in assets accrue to the female household heads themselves.

In table 2, we compare women's and men's workload. Especially in male-headed households, female spouses work longer hours than their husbands, irrespective of the certification status (columns 1-2). Overall, the workload seems to be somewhat higher in certified households, although the differences (column 3) and the estimated ATTs (column 4) are not statistically significant. Also in terms of satisfaction with the time available for leisure activities, certification has no significant effects in male-headed households. In female-headed

households, certification seems to have a negative effect on the level of satisfaction of the female household heads (column 4).

Table 2: Workload and social capital

	Descriptive statistics			Entropy balancing
	(1)	(2)	(3)	(4)
	Certified Mean [a]	Non-cert. Mean [a]	Mean Diff. [b]	ATT [c, d]
Workload and satisfaction				
Farm, off-farm, and domestic work (hrs./day)				
Male heads	8.57	8.48	0.09	0.11
	(3.28)	(3.69)	(0.85)	(0.64)
Female spouses	10.32	9.95	0.38	0.41
	(2.66)	(2.68)	(0.27)	(0.59)
Female heads	8.93	8.20	0.73	1.04
	(3.09)	(3.82)	(0.39)	(1.27)
Satisfaction leisure time (1-5)				
Male heads	2.12	2.30	-0.18	0.04
	(1.10)	(1.17)	(0.23)	(0.20)
Female spouses	2.49	2.42	0.07	0.06
	(1.14)	(1.14)	(0.64)	(0.26)
Female heads	2.30	2.37	-0.07	-0.93[*]
	(1.31)	(1.32)	(0.84)	(0.51)
Social capital				
Participation in farmer meetings (1/0)				
Male heads	0.85	0.84	0.01	-0.05
	(0.36)	(0.37)	(0.89)	(0.05)
Female spouses	0.64	0.58	0.07	0.12
	(0.48)	(0.50)	(0.29)	(0.10)
Female heads	0.64	0.58	0.06	0.00
	(0.49)	(0.50)	(0.63)	(0.19)
Administrative / leadership position (1/0)				
Male heads	0.67	0.47	0.20[***]	0.15
	(0.47)	(0.50)	(0.00)	(0.10)
Female spouses	0.48	0.24	0.25[***]	0.10
	(0.50)	(0.43)	(0.00)	(0.10)
Female heads	0.48	0.34	0.14	-0.06
	(0.51)	(0.48)	(0.23)	(0.19)

[a] Standard deviations in parentheses
[b] p-values in parentheses
[c] Standard errors in parentheses
[d] Probit regressions for social capital variables. Marginal effects are shown.
[*] $p < 0.1$, [**] $p < 0.05$, [***] $p < 0.01$

In the lower part of Table 2, we look at social capital. Male household heads are more likely to attend meetings of the farmer organization than female spouses and female household heads (columns 1-2). Standards and certification do not seem to change this pattern. Concerning group leadership positions, the simple comparisons in column (3) suggest that male household heads and their female spouses are more often involved when the household is certified than when it is not certified. However, these differences do not seem to be caused by certification, as the estimated ATTs in column (4) are statistically insignificant.

In table 3, we look at the effects of standards on access to rural services. Farmers in certified households are more likely to have interactions with agricultural extension officers than farmers in non-certified households. The effects are significant for male household heads and also for female spouses in male-headed households; in both cases sustainability standards increase the probability of interactions with extension officers by 31 percentage points

(column 4). Strikingly, the effect of standards is even stronger for female household heads, whose likelihood of interactions with extension officers increases by 58 percentage points.

Table 3: Access to extension and financial services

	Descriptive statistics			Entropy balancing
	(1) Certified Mean [a]	(2) Non-cert. Mean [a]	(3) Mean Diff. [b]	(4) ATT [c,d]
Interaction extension officer (1/0)				
Male heads	0.72	0.35	0.37***	0.31***
	(0.45)	(0.48)	(0.00)	(0.10)
Female spouses	0.53	0.21	0.32***	0.31***
	(0.50)	(0.41)	(0.00)	(0.10)
Female heads	0.64	0.24	0.40***	0.58***
	(0.49)	(0.43)	(0.00)	(0.13)
Participation in field days (1/0)				
Male heads	0.48	0.11	0.36***	0.39***
	(0.50)	(0.32)	(0.00)	(0.07)
Female spouses	0.23	0.10	0.13***	0.17***
	(0.42)	(0.30)	(0.01)	(0.04)
Female heads	0.27	0.11	0.17*	0.19*
	(0.45)	(0.31)	(0.07)	(0.10)
Training on soil fertility (1/0)				
Male heads	0.76	0.40	0.35***	0.29***
	(0.43)	(0.49)	(0.00)	(0.10)
Female spouses	0.48	0.25	0.23***	0.09
	(0.50)	(0.43)	(0.00)	(0.10)
Female heads	0.73	0.26	0.46***	0.54***
	(0.45)	(0.45)	(0.00)	(0.17)
Training pest management (1/0)				
Male heads	0.76	0.31	0.46***	0.42***
	(0.43)	(0.46)	(0.00)	(0.10)
Female spouses	0.49	0.19	0.31***	0.16
	(0.50)	(0.39)	(0.00)	(0.10)
Female heads	0.70	0.21	0.49***	0.59***
	(0.47)	(0.41)	(0.00)	(0.16)
Training on coffee quality (1/0)				
Male heads	0.76	0.43	0.33***	0.32***
	(0.43)	(0.50)	(0.00)	(0.10)
Female spouses	0.48	0.23	0.25***	0.21**
	(0.50)	(0.42)	(0.00)	(0.10)
Female heads	0.73	0.26	0.46***	0.59***
	(0.45)	(0.45)	(0.00)	(0.17)
Financial services (1/0)				
Male heads	0.85	0.64	0.21***	0.22**
	(0.36)	(0.48)	(0.00)	(0.09)
Female spouses	0.64	0.48	0.16**	-0.02
	(0.48)	(0.50)	(0.01)	(0.09)
Female heads	0.76	0.58	0.18	0.05
	(0.44)	(0.50)	(0.12)	(0.15)

[a] Standard deviations in parentheses
[b] p-values in parentheses
[c] Standard errors in parentheses
[d] Probit regressions. Marginal effects are shown.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Similar patterns are also observed for the other outcome variables related to agricultural information and training in Table 3. Male and female heads of certified households are significantly more likely to participate in agricultural field days or training sessions on soil fertility, pest management, or coffee quality than their counterparts in non-certified households. For female spouses in male-headed households the effects are more varied.

Standards significantly increase the probability of female spouses to participate in field days and trainings on coffee quality, but not in trainings on soil fertility and pest management. These patterns reflect the gendered division of agricultural tasks in male-headed households.

5   Discussion and conclusion

Achieving gender equality remains a challenge, especially in rural areas of developing countries. The literature suggests that agricultural commercialization may further increase gender disparities, even though gender-sensitive approaches may possibly prevent such undesirable trends. We have analyzed whether private sustainability standards can contribute to more gender equality in the semi-commercialized small farm sector. We have particularly looked at two standards that try to address gender issues in cash crop production, namely Fairtrade and UTZ. Using gender-disaggregated data from male-headed and female-headed coffee-producing households in Uganda, we have analyzed the effects of these standards on a set of outcome variables that characterize various dimensions of women's empowerment. The results suggest that private standards may not completely eliminate gender disparities, but they can at least contribute towards this goal.

Our findings related to economic empowerment are promising and challenge earlier conclusions that economic benefits from sustainability standards are primarily captured by men (SEN, 2014; LOCONTO, 2015). In female-headed households, sustainability standards increase total household assets (our proxy for wealth) and thus also the assets that are individually owned by women. The positive welfare effects are the result of higher coffee revenues in households that are certified under a sustainability standard.

In male-headed households, standards also increase total household assets, but additionally they also affect the gendered distribution of wealth. In our case, standards have particularly strong positive effects on assets owned by female spouses and on assets that are jointly owned by male household heads and their spouses. In other words, standards decrease the share of assets that are owned by male household heads alone. These effects can be explained by women in certified households having greater control over cash revenues from coffee and other crops than their counterparts in non-certified households. Obviously, women can benefit from standards, even when they are not directly involved in marketing. In fact, our data suggest that standards do not reduce the dominant role of male household heads in coffee production and marketing. Hence, other aspects of standards seem to be more important drivers of women's empowerment in male-headed households. One likely explanation are non-discrimination policies and workshops on gender equality that are implemented by certified farmer organizations. Such policies and measures may gradually contribute to behavioral change among males and females in certified households (Chiputwa and Qaim, 2016).

Unlike a few previous studies (LYON et al., 2010; BOLWIG, 2012), we find no evidence that sustainability standards significantly increase the workload of women. Our results may differ from previous studies, because we did not look at Organic standards. Hence, in our sample of certified households we do not observe a substitution of manual labor for chemical inputs. However, the finding of no significant effects of standards on labor should not be over-interpreted. Labor use in farming varies seasonally. Such variation is not captured in our cross-section data, so the effects during other times of the year may be different. For instance, Fairtrade and UTZ have specific requirements on coffee quality that involve higher labor requirements for harvest and post-harvest operations. While harvesting is usually an activity undertaken by all household members, the workload during the harvest seasons may be unequally distributed within households.

Our results further indicate that sustainability standards improve farmers' access to agricultural extension services and related information, irrespective of gender. However, male and female household heads benefit more in this regard than female spouses. Female spouses are less likely than their husbands to be a registered member of the farmer organizations and to participate in group meetings. As LYON (2008) points out, being a registered and active member is a precondition to influence decisions on the types of services offered by certified farmer organizations. In terms of access to financial services, we find that standards have positive and significant effects for males, but not for females. More could be done to improve access to rural services for female spouses in particular and to encourage their registration as formal members of the farmer organizations.

One could argue that sustainability standards fail to challenge traditional gender roles and inequalities, if men's dominance in farmer organizations and in cash crop marketing persists (SEN, 2014; LOCONTO, 2015). However, traditional social norms can change only gradually, so a quick fix through sustainability standards cannot be expected. Standards alone will not eliminate gender disparities, but our results clearly suggest that they can instigate and support trends in the right direction. In terms of the design of sustainability standards, it should be emphasized that many of the gender measures are suggestions to certified farmer organizations rather than mandatory certification requirements. As a result, it depends on the particular farmer organization whether or not such gender measures are really taken up. In the farmer organizations that we studied in Uganda, gender policies were effectively implemented. Elsewhere this may not always be the case. Hence, we agree with previous qualitative studies (LYON, 2008; HUTCHENS, 2010) that gender issues could be addressed more explicitly in standards – for instance in the form of mandatory certification requirements.

Two limitations of our study should be mentioned. First, we have used cross-section observational data, which are less suitable for inferences on causal effects than panel data or experimental approaches. While we have tried to control for observed and unobserved confounding factors, the possibility of remaining bias in the estimated effects cannot be ruled out completely. Second, with our data we were not able to analyze possible spillover effects. Certified households are strongly encouraged to participate in trainings on gender equality and farm management, but non-certified households from the same farmer organizations are not excluded when they also wish to participate in these trainings. Hence, positive spillovers to these non-certified households in the control group could occur, which would lead to underestimation of the effect of standards on gender equality. Against this background, the exact magnitude of the estimated effects should be interpreted with caution. Our study is the first to use a quantitative approach in evaluating the effects of private standards on gender equality. Follow-up research will be useful to test the findings and further add to the knowledge base.

6   Bibliography

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