Feminist Economics

ISSN: 1354-5701 (Print) 1466-4372 (Online) Journal homepage: http://www.tandfonline.com/loi/rfec20

What Determines Women's Participation in Collective Action? Evidence from a Western Ugandan Coffee Cooperative

Felix Meier zu Selhausen

Feminist Economics, 2016
Vol. 22, No. 1, 130–157, http://dx.doi.org/10.1080/13545701.2015.1088960

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ABSTRACT

Women smallholders face greater constraints than men in accessing capital and commodity markets in Sub-Saharan Africa. Collective action has been promoted to remedy those disadvantages. Using survey data of 421 women members and 210 nonmembers of a coffee producer cooperative in Western Uganda, this study investigates the determinants of women's participation in cooperatives and women's intensity of participation. The results highlight the importance of access to and control over land for women to join the cooperative in the first place. Participation intensity is measured through women's participation in collective coffee marketing and share capital contributions. It is found that duration of membership, access to extension services, more equal intrahousehold power relations, and joint land ownership positively influence women's ability to commit to collective action. These findings demonstrate the embeddedness of collective action in gender relations and the positive value of women's active participation for agricultural-marketing cooperatives.

KEYWORDS

Women's agency, household bargaining power, collective action, cooperative, smallholder farmers, Uganda

JEL Codes: J16, Q13

INTRODUCTION

In many parts of the developing world women's greater representation among the poor mirrors the fact that women face persistent constraints that limit their further inclusion in agriculture and entrepreneurship (Ruth Meinzen-Dick, Agnes R. Quisumbing, Julia Behrman, Patricia Biermayr-Jenzano, Vicki Wilde, Marco Noordeloos, Catherine Ragasa, and Nienke Beintema 2011; World Bank 2011; Esther Duflo 2012). In Sub-Saharan Africa in particular, women face greater barriers than men in accessing agricultural markets to sell their produce (at reasonable prices) and to

access capital to raise their productivity and farm incomes (Janice Jiggins 1989; World Bank 2011; Amber Peterman, Agnes R. Quisumbing, and Julia A. Behrman 2014). Women are particularly vulnerable to exploitative trading practices and have weak bargaining positions with predominantly male networks in the value-chain (Paineto Baluku, Linda Mayoux, and Thies Reemer 2009; Elaine Jones, Sally Smith, and Carol Wills 2012), which limits women's agricultural productivity (Markus Goldstein and Christopher Udry 2008; Amber Peterman, Agnes R. Quisumbing, Julia A. Behrman, and Ephraim Nkonya 2011) and constrains their ability to move from subsistence agriculture to more profitable higher value chains (World Bank and Food and Agriculture Organization of the United Nations [FAO] 2009).

Against this background, participation in collective action through cooperatives has been promoted as one promising strategy for women smallholders to overcome market imperfections and increase productivity and farm incomes (Johnston Birchall 2003; Lauren Pandolfelli, Ruth Meinzen-Dick, and Stephan Dohrn 2008; Helen Markelova, Ruth Meinzen-Dick, Jon Hellin, and Stephan Dohrn 2009; Agnes R. Quisumbing and Lauren Pandolfelli 2010; Punita B. Datta and Robert Gailey 2012; Eva Majurin 2012). Agricultural marketing cooperatives pool smallholder farmers' produce and link them to international and domestic markets. Collective marketing realizes economies of scale and enhances farmers' power to negotiate better prices and tap into high-value markets, otherwise unreachable through intermediary buyers (Meike Wollni and Manfred Zeller 2007; Helen Markelova and Esther Mwangi 2010; Bekele Shiferaw, Jon Hellin, and Geoffrey Muricho 2011; Nigel D. Poole, Maureen Chitundu, and Ronald Msoni 2013). Furthermore, cooperatives can raise members' productivity and social inclusion through the provision of additional services (James Barham and Clarence Chitemi 2009; Majurin 2012), such as access to credit and thrift, technical assistance, and agricultural inputs.

Understanding what drives women's participation in collective action is important for cooperatives' survival and growth in the long run, as the organization crucially depends on members' produce to generate economies of scale in processing and marketing (Chris Bruynis, Peter D. Goldsmith, David E. Hahn, and William J. Taylor 2001; Johnston Birchall and Richard Simmons 2004). However, nominal participation alone does not explain how intensively women smallholders participate and commit themselves to their organization. Often producer groups are not successful because expected benefits do not materialize, resulting in members' passive participation or exiting, and groups dissolving (Markelova, Meinzen-Dick, Hellin, and Dohrn 2009; Shiferaw, Hellin, and Muricho 2011). Another factor that can undermine the success of agricultural marketing cooperatives is if members do not sell their entire

produce to their cooperative but instead engage in side selling to local traders due to temporal cash constraints, price variations, as well as unequal intrahousehold gender relations (Baluku, Mayoux, and Reemer 2009). Moreover, cooperatives rely on members' voluntary share-capital contributions as a primary source of capital to develop its cooperative business (J. D. Von Pischke and John G. Rouse 2004; Chiara Cazuffi and Alexander Moradi 2012). Therefore, cooperatives would benefit from a better understanding of how to improve women's degree of participation.

Various recent studies have explored African smallholders' determinants of membership in cooperatives (Tanguy Bernard and David J. Spielman 2009; Elisabeth Fischer and Matin Qaim 2012) as well as their intensity of participation (Joan R. Fulton and Wiktor L. Adamowicz 1993; Edouard R. Mensah, Kostas Karantininis, Anselme Adégbidi, and Julius J. Okello 2012; Gaudiose Mujawamariya, Marijke D'Haese, and Stijn Speelman 2013; Elisabeth Fischer and Matin Qaim 2014; Meike Wollni and Elisabeth Fischer 2015). However, although gender is held as a key determinant of people's ability to participate in collective action, a deeper understanding of the determinants of women's participation in and within cooperatives is still missing. In particular, whereas previous works have emphasized the institutional conditions, hitherto little attention has been paid to intrahousehold power dynamics as drivers of women's participation in collective action.

This contribution aims to fill this research gap utilizing a dataset of women smallholders from rural Uganda, comprising 421 members of a coffee-marketing cooperative as well as 210 randomly selected nonmembers from the same treatment area. The two main goals of the study are to better understand what factors influence women's membership in cooperatives and their intensity of participation within cooperatives. Women members' degree of participation within the cooperative is measured through collective marketing of coffee through the cooperative versus side selling, and members' share-capital contributions.

WOMEN'S PARTICIPATION IN COLLECTIVE ACTION

What influences women's participation in cooperatives?

Figure 1 presents a conceptual framework comprising factors that have been hypothesized to influence women farmers' membership and participation intensity in cooperatives. While marginal costs and benefits and group characteristics have been previously emphasized in the literature on collective action (Elinor Ostrom 2000; Birchall and Simmons 2004; Markelova et al. 2009), socioeconomic characteristics and intrahousehold power relations play an equally important role in women's participation within the context of patriarchy and poverty. In her oft-cited article,

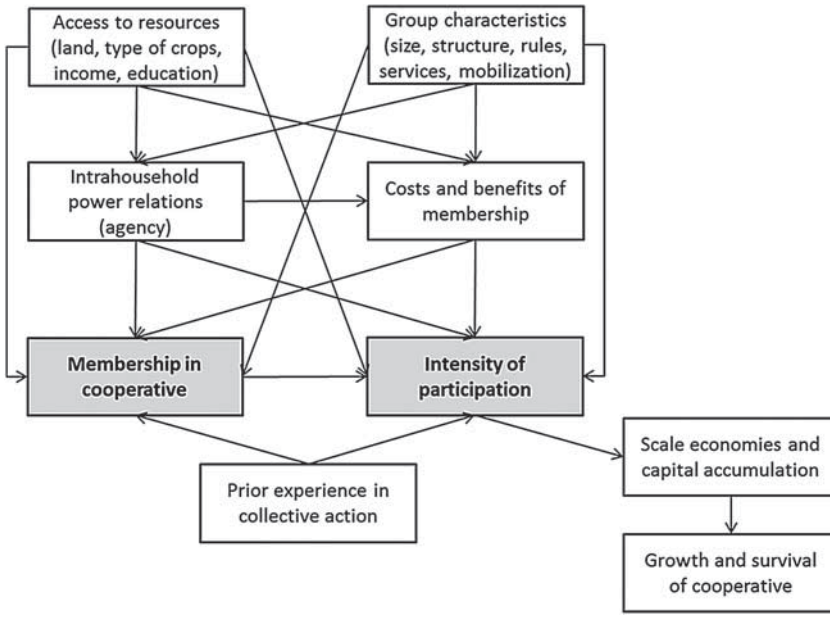

Figure 1 Factors influencing women's participation in cooperatives

Naila Kabeer (1999) highlights women's ability to exercise strategic life choices within three measurable and interrelated dimensions: resources, agency, and achievements. Participation in collective action clearly presents a (strategic) life choice. This analysis of women's participation in cooperatives focuses on women's access to resources and agency in particular.

Access to resources

African women's unequal access to productive resources often limits their opportunities to participate in collective action, leading to male-dominated cooperatives (Ruth Meinzen-Dick and Margreet Zwarteveen 1998; Chris Penrose-Buckley 2007; Degnet Abebaw and Megbib G. Haile 2013). One important aspect of smallholder farmers' membership in cooperatives is land ownership. Because land traditionally belongs to men, women are often not eligible to join cooperatives in cases where land ownership is a condition for joining. Even where women own land, tenure insecurity lowers women's agricultural productivity in the medium run (Goldstein and Udry 2008).

Women's ability to own productive resources within the household are likely to strengthen their bargaining position, given that access

to productive resources within the household is typically considered a function of women's bargaining power (Bina Agarwal 1997). Numerous studies find land size positively correlated with women smallholders' decisions to join agricultural-marketing cooperatives in Ethiopia (Bernard and Spielman 2009), Kenya (Fischer and Qaim 2012), and Costa Rica (Wollni and Zeller 2007), while land-security perceptions are lower among coffee-cooperative members in Rwanda (Mujawamriya, D'Haese, and Speelman 2013) and not significantly different between women members and nonmembers in Chad (Katinka Weinberger and Johannes P. Jütting 2001). Furthermore, women with more productive resources and entrepreneurial experience in crop cultivation may expect greater benefits from participation in cooperatives.

Beyond land, women's access to education may also affect their participation in collective action. On the one hand, the attainment of literacy skills may predetermine women's ability to work outside the agricultural sector in wage-labor markets, and thus the necessity of joining agricultural cooperatives. On the other hand, skilled smallholders may be able to process the benefits and costs regarding cooperative membership more effectively, possess a greater long-term horizon, and have a better relative social position within the household. Bernard and Spielman (2009) as well as Wollni and Zeller (2007) find that the level of education and entrepreneurial experience positively influenced participation in cooperatives in Nigeria, Ethiopia, and Costa Rica respectively, whereas Weinberger and Jütting (2001) and Fischer and Qaim (2012) find contrary evidence for Eastern and Western Africa.

Agency

Access to resources per se does not automatically lead to social change (Marta B. Calás, Linda Smircich, and Kristina A. Bourne 2009) but also depends on women's ability to take autonomous choices in life and to control resources, commonly referred to as agency (Kabeer 1999). In particular, culturally embedded patriarchal conditions may restrict women's agency, creating barriers to exploit their economic opportunities and personal capabilities (Amartya Sen 1999). Women's participation in cooperatives already reflects agency in itself, mirroring women's physical mobility and the freedom to participate in collective action. Hence, one needs to look for indicators that preconditioned this achievement.

One of the earliest and most important turning points in girls' lives is marriage. Whether the timing of marriage and the choice of husband were freely taken by the bride or whether they were arranged is a reasonable indicator for women's agency early in life (Robert Jensen and Rebecca Thornton 2003). Generally, young girls who are married off to much older men are likely to have little say in deciding the terms of

the union, drop out of school earlier, and start having children at an earlier age. This lack of free choice is likely to translate into large age and educational gaps between spouses. This may further prevent women from gaining a better bargaining position within the household (Sarah Carmichael 2011), thus constraining their freedom to engage in collective action. The practice of bridewealth and polygamy may introduce additional obstacles.

What influences women's intensity of participation within cooperatives?

So far, most studies on smallholder farmers' participation in cooperatives have treated participation as a binary-choice variable – equating membership with participation. However, within collective-action institutions the commitment of members varies. Commitment generally captures the extent to which members choose to maintain their membership (Iiro Jussila, Sanjay Goel, and Heidi Tuominen 2012).

Farmers' participation intensity has been measured in multiple ways in the agricultural-cooperative literature. For example, Fischer and Qaim (2014) analyze smallholders' intensity of participation in a Kenyan banana cooperative using frequency of participation in group meetings and both the quantity and share of marketable bananas sold through the cooperative. While they document that women's intensity of participation within banana groups is not significantly different from men, they do not explore the factors that affected men's and women's participation separately. They find that more specialized and medium-sized banana farmers, and past beneficiaries of group services, were more likely to participate in collective marketing and meetings. In another recent work, Wollni and Fischer (2015) find an inverse relationship between farm size and collective marketing among cooperative coffee farmers in Costa Rica. Also, Mujawamariya, D'Haese, and Speelman (2013) use the proportion of collectively marketed coffee versus side selling to traders as an indicator of member commitment in four Rwandan coffee cooperatives. They explain farmers' preferences for side selling through the existence of long-standing relationships between traders and farmers, the attractiveness of immediate cash payment, and the additional transaction costs involved in producing high-quality coffee. Similarly, Mensah et al. (2012) measure the share of marketable cashew nuts delivered to a cooperative in Benin. They find that the price offered by the cooperative compared to traders and additional transaction costs along the value chain negatively affected collective marketing. Lastly, Cazuffi and Moradi (2012) use members' share capital contributions of cocoa cooperatives in Ghana as a proxy for members' commitment, finding that members' capital accumulation was positively related to wealth and negatively to membership size.

The studies cited above largely pay attention to marginal costs and benefits influencing members' level of commitment to their cooperative. However, socioeconomic factors within the household and at the group level are also important predictors within the context of poverty and patriarchy, in particular when studying women's participation (Kabeer 1999; Fischer and Qaim 2014). Although most studies cited above control for gender, as a binary variable in regression analysis, a deeper analysis of the gender-based determinants of women's participation within cooperatives is still missing.

As for nominal membership, women's access to and control over household resources is expected to influence women's intensity of participation. Within households, preferences over resource allocation are typically not identical, and largely depend on spouses' decision-making power (Carmen D. Deere and Cheryl Doss 2006). In this regard, the mutual sharing (or pooling) of income, women's participation in various types of household decisions, and joint ownership of land by spouses would signal cooperation between spouses with potential gains for women's active participation within cooperatives. Also, household caring duties and particularly the number of dependent children may constrain women's time to participate in group meetings (Meinzen-Dick and Zwarteveen 1998).

In addition, it is hypothesized that group characteristics, including the size and gender composition of groups, influence women's decisions on their degree of participation. Smaller groups are typically presumed to allow for greater interaction and social cohesion, which ensures cooperation and avoids free riding (Mancur Olson 1965). According to Amy R. Poteete and Elinor Ostrom (2004) no consensus exists over the role of heterogeneity in collective action. In relation to the context of patriarchy, it is hypothesized that women may feel more open to speak out and participate more confidently within groups with greater female conformity. Length of membership (in particular, being a founding member) and the magnitude of past group benefits (credit, extension services) also influence women's attitudes toward participation. Physical distance to the cooperative may influence the decision of collective marketing, taking into account opportunity costs.

Also, husband's comembership in his wife's group is presumed to matter (Helen Hambly Odame 2002), although the direction of the effect is debated. Husbands' comembership entails a tradeoff between reducing household frictions (Anne M. Goetz and Rina SenGupta 1996) on the one hand and loss of autonomy over marketing and borrowing decisions on the other. Joint membership could enhance women's participation, reflecting spousal mutual sharing of preferences and trust toward the cooperative. On the other hand, husbands might dominate group participation and thus hamper their wives' abilty to speak out at group meetings (Felix

Meier zu Selhausen and Erik Stam 2013). Also, the division of labor along the coffee value chain may affect women's intensity of participation in their cooperative, as it reflects their workload and control over cash-crop production.

BACKGROUND

Coffee production and cooperatives in Uganda

In 2012, 84 percent of the Ugandan population lived in rural areas. Agriculture is the most important sector of Uganda's economy, employing around 65 percent of the labor force (World Bank 2014). Coffee accounted for almost a third of Uganda's export earnings in 2012 (African Development Bank [AfDB] and Organisation for Economic Co-operation and Development [OECD] 2014). Next to Ethiopia, Uganda is Africa's top coffee exporter, producing 22 percent of African coffee in 2013 (International Coffee Organization 2014). The coffee sector in Uganda almost entirely depends on approximately 500,000 smallholder households – 90 percent of whose average farm sizes ranges between one and six acres (Uganda Coffee Development Authority [UCDA] 2012).

Over the last decade the cooperative movement has been experiencing a renaissance in both Uganda as well as in other African economies (Patrick Develtere, Ignace Pollet and, Frederick Wanyama 2008), supplying growing African urban markets (Elly Kaganzi, Shaun Ferris, James Barham, Annet Abenakyo, Pascal Sanginga, and Jemimah Njuki 2009). In 2012, there were 9,967 permanently registered cooperatives in Uganda with a membership subscription of over 1.23 million (Ministry of Trade, Industry, and Cooperatives [MTIC] 2012) – 47 percent being agricultural marketing cooperatives and 28 percent savings and credit cooperatives (SACCOs). Average representation of women in cooperatives was estimated at 42 percent (Majurin 2012).

The cooperative under study

Bukonzo Joint Cooperative Microfinance Society (BJC) is a joint microfinance and coffee-marketing cooperative, operating in Bukonzo County along the northern slopes of the Rwenzori Mountains in Western Uganda, near the Democratic Republic of the Congo (see Figure A1 in the online supplemental appendix for a map of the region). Bukonzo County comprises a population of 280,500 and is an exclusively agricultural area with poor communication infrastructure and large distances to producer markets. The area was further marginalized in the 1990s due to civil strife and abductions by rebel groups. Most settlements lie between 1,300 and 2,300 above sea level, ideal for the growing of Arabica coffee. Annually,

Table 1 Average group characteristics

	Obs.	*Mean*	*SD*	*Min.*	*Max.*
Year group was formed	74[a]	2004[c]		2000	2010
Year group was formed (sample)	26[b]	2004[c]		2000	2010
No. of group members	66[a]	31.03	15.13	15.00	114.00
No. of group members (sample)	26[b]	35.39	18.06	22.00	108.00
Share of women members in group	66[a]	0.76	0.12	0.46	1.00
Share of women members in group (sample)	26[b]	0.79	0.10	0.50	1.00
Average savings per group member (in Ush)[d]	66[a]	96,753	74,390	1,790	302,273
Average share capital per member (in Ush)[d]	64[a]	135,213	83,262	19,063	344,642
Distance to cooperative (in walking min.)	26[b]	33.27	30.56	0.00	120.00
Frequency of meetings per month	26[b]	3.80	0.54	2.00	4.00

Notes: [a]Based on cooperative statistics from March 2012. [b]Based on July/Aug. 2012 survey of twenty-six groups. [c]Median. [d]The US dollar amount is calculated at the July 2012 exchange rate of $1 = 2,450 Ush.

the area experiences two rainy seasons, resulting in two coffee-harvesting seasons that occupy farmers almost all year round in the cycle of coffee cultivation, namely planting, tending, harvesting, processing, and selling the crop.

The cooperative was founded in 1999 and initially started off as a microfinance cooperative that organized its members into self-help groups in order to provide access to credit and thrift facilities and establish a network of mutual support within a context of poverty. There are no official selection criteria for membership in farmer groups related to gender, age, or land ownership, except that existing group members need to accept new members who then pay a membership fee and subscribe to at least one cooperative share worth 10,000 Ush (US$4). Table 1 presents the descriptive statistics of the sampled and total producer groups. Initially, in 1999 the cooperative comprised eleven women-only groups. By 2012, BJC had grown to serve 2,220 local small-scale farmers, distributed across seventy-four groups. On average, each farmer group comprises thirty-one members and ranges from fifteen to 114 members. On average, 76 percent of the members are women. The share of women members is negatively correlated with group size, which suggests that they prefer smaller groups with closer social ties. Group meeting locations are situated 33 minutes average walking distance from the nearest main road. On average, group members saved US$39, while the average share capital per member amounted to US$55. As a collateral substitute, loans (with a monthly interest rate of 2 percent) are tied to member savings and require the guarantee of at least three members within each producer group.

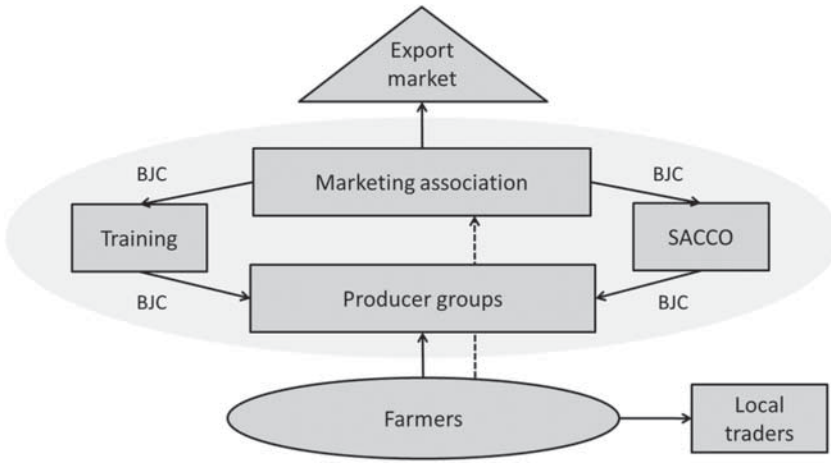

Figure 2 Value chain and marketing activities of BJC

Figure 2 shows that over the years, the group model offered the opportunity for BJC to integrate complementary services for its members. Since 2005, an internal marketing association pools and markets internationally members' coffee. As a result, members can expect higher and more stable prices for their coffee. In 2010, BJC bulked 300 tons of organically grown coffee. To maximize the utility of washing stations and increase the quantity of coffee BJC also buys coffee from nonmembers. However, nonmembers are excluded from access to financial services and agricultural training, or rebate distribution at the end of the sales season. Before export, BJC provides the final stage in the green-coffee value chain by hulling (removing the dried husk) members' coffee.

DATA

The data for this analysis was collected using a structured survey of women cooperative members and nonmembers which was carried out between June and August 2012 in seven subcounties of Bukonzo County in Western Uganda. All subcounties are major coffee-producing regions located on the slopes of the Rwenzori Mountains within the same agroecological zone and altitude.

First, women cooperative members were selected through stratified random sampling. Using a list of all sixty-five producer groups of BJC that formed between 1999 and 2010, they were grouped into four year clusters according to their year of formation (1999–2001, 2002–4, 2005–7, and 2008–10) to capture time variation. From each cluster, six producer groups were randomly selected. Additionally, two extra groups were sampled from

the year clusters 2002–4 and 2005–7 to account for the comparatively larger number of newly formed groups in those periods. In total, twenty-six groups were randomly selected. Next, within each producer group, sixteen women members who had a husband at the time were randomly drawn using a lottery game, resulting in a total of 421 group member observations.[1] Moreover, within the treatment area of each sampled producer group, eight married women were randomly drawn, totaling 210 noncooperative observations. Interviews were conducted in private, without the husband present, by trained enumerators speaking the local language of Lukonzo. I control for enumerators' gender in the following regression analysis to account for systematic response differences.

Table 1 inspires confidence that the twenty-six randomly sampled groups make a fairly representative match concerning average group characteristics: size, gender composition, and length of existence. The sample only contains BJC members that were active at the time of the survey. Information on those members who exited their group in the past was not possible to survey. "Surviving" members may have a higher average social standing than members who dropped out.

METHODS AND VARIABLES

Multivariate regression analysis is used to investigate the determinants of women smallholders' participation in the cooperative, as well as their participation intensity within the institution. The study follows a two-fold empirical strategy.

The first objective is to identify what determines women's cooperative membership. For that purpose a probit model is estimated. The sample is restricted to cooperative members and nonmembers from treatment regions. Because present-day income, decision-making power, asset endowments may be endogenously affected by participation, such indicators have not been included. Only variables that can be measured ex-ante cooperative membership are included in the model. Women's agency is proxied though age at first marriage, spousal age difference, and women's capacity to exercise choice over her marriage partner. We also include a dummy for husband's control over coffee sales before membership as well as control for polygamous marriages by including the number of co-wives. In addition, because 34 percent of non-BJC members claimed to be members of local savings and credit cooperatives (SACCO), another binary-dependent variable was constructed for robustness, which includes both BJC and non-BJC SACCO membership to investigate the determinants of women's access to capital through cooperatives in the region.

The second objective is to explore the factors that determine cooperative members' level of participation within the organization. After farmers have

decided to join the cooperative, they choose their degree of participation within the organization. Active participation in the cooperative's operations is critical to cooperatives' performance, as it depends on members sale of produce and share capital contributions. Women's intensity of participation in the cooperative is measured twofold.

First, cooperatives depend on members selling their produce exclusively through the cooperative to achieve economies of scale and fetch higher market prices for members' bulk produce. We use members' coffee sales through BJC versus side selling from those 387 women members (92 percent) who cultivated coffee and earned an income from it during the last year. Among those coffee-selling cooperative members, 79 percent sold their produce through the cooperative in the last year, while 21 percent side sold to private traders.[2] This finding indicates that BJC competes with local buyers for members' coffee. Cooperative members may opt to sell to private buyers because of immediate cash requirements to pay school and hospital fees. Spousal competition over coffee sales may also tempt members to side sell, rather than to wait weeks of identification of a bulk buyer by the cooperative. Conversely, local buyers usually pay promptly in cash (Marcel Fafchamps and Ruth V. Hill 2005). The quantity and marketable share of a member's produce delivered to their cooperative has been commonly applied as a measure of commitment to cooperatives (Mensah et al. 2012; Fischer and Qaim 2014; Wollni and Fischer 2015). This study uses the more extreme cases to construct a binary dependent variable of coffee-growing members who sold their coffee to BJC versus those members who decided to avoid participating in collective marketing.

Secondly, members' share capital is used as a measure of participants' long-term commitment to the cooperative. Mobilizing members to voluntarily invest in share capital is critical for the growth of cooperatives, representing the most important source of capital to enhance efficiency and expand the value-chain frontier (Von Pischke and Rouse 2004). After becoming a member at BJC, and thus having subscribed to the required minimum of one capital share, every member obtains the full benefits from membership irrespective of their equity invested. The size of loans of BJC to its members is not conditioned by share ownership, and no limit to the number of annual share purchases exists. Also, BJC permits withdrawal of shares, once a new buyer has been identified. Motivations for share capital investment comprise commercial interests, as cooperative annual surplus earnings from microfinance services are distributed proportionally to members' financial patronage. In contrast, coffee rebates are distributed according to members' marketable share of coffee sales to the cooperative. Furthermore, because each producer group is entitled to send one member per ten group shares to the annual general assembly, members' can increase their likelihood of being able to vote on behalf of their group through share acquisitions. However, 101 out of the 421 sampled women

cooperative members did not disclose the number of capital shares owned for reasons unknown.

Using the truncated sample of 320 non-censored observations could lead to biased OLS estimators. Potential selection bias between the censored and non-censored samples is investigated by testing for the equality of means between members who disclosed share ownership versus those who did not (see Table A1 in the online supplemental appendix on publisher's website). No statistically significant differences are found, except for length of membership, indicating that veteran members were more likely to disclose share ownership. Yet, the marginal effect is relatively minor and additional robustness tests presented in Table A2 in the online appendix inspire confidence that the estimators of the following probit and OLS regressions are to be trusted.

To investigate what influences women's degree of participation in the cooperative a wide set of agency, household, and group characteristics are used in the model. Women's intrahousehold decision-making agency is measured through an index of four areas of decision making concerning household expenditures (health, education, food, and household). The bargaining score is constructed to take into account women's autonomous decision making, joint decision making, and no decision making. One concern is that the purchase of shares precedes the contemporaneous index of decision-making autonomy, which is measured at the time of the survey. However, while gender norms are not static they do not change overnight. The process of challenging such norms typically has a long time horizon (Agarwal 1997; Kabeer 1999; Pandolfelli, Meinzen-Dick, and Dohrn 2008). Therefore, the contemporaneous measure of women's relative bargaining power is likely to capture women's bargaining positions ex-ante the moment of the survey.

Spousal income pooling measures the mutual sharing of financial resources between spouses and is constructed as a binary variable of each of the spouses sharing at least half of their income. Correlation matrices in Tables A3 and A4 (in online supplemental appendix) reveal that these three variables capturing household gender dynamics barely correlate with each other. Further, we are also interested in the level of sharing of productive resources between spouses, which is measured as a binary variable of joint land ownership. Farm size of both wife and husband is used as gendered wealth indicators over productive resources. Furthermore, we include households' annual income from coffee to account for the quantity of coffee produced. In the conceptual framework the hypothetical ambiguous role of husbands being comembers in wives' groups was emphasized. To investigate matters, a binary variable for husband's comembership is utilized. Lastly, it is controlled for members having received a loan from the cooperative over the past year, as they hypothetically attach greater value to coffee marketing through the

cooperative, showing reciprocity in their behavior. Also, various group-level characteristics are included, such as group size, gender homogeneity, and distance to the cooperative.

EMPIRICAL ANALYSIS

Table 2 presents the various ways sampled women members participated within the cooperative in the year 2011/2012. Almost all members saved money in individual saving accounts, three-quarters marketed their coffee through the cooperative, two-fifth received credit, and about one in five attended participatory gender or technical coffee trainings.

Furthermore, 70 percent of sampled BJC members stated that coffee constitutes their primary source of income, followed by the sale of food crops, barter trading, and farming activities. Access to financial means was the most important motivation for members to join BJC (62 percent), followed by coffee-market access (21 percent). Interestingly, 88 percent of nonmembers reported that they would like to become a member of BJC but that lack of money and time (42 percent), a limited understanding and trust in the functioning of cooperatives (25 percent), as well as their husbands' disapproval (4 percent) has impeded them thus far.

There is evidence for competition and noncooperation between spouses over coffee sales, as 24 percent of wives sold unprocessed coffee at a lower price (to private buyers) to avoid their husband "stealing" the coffee. In turn, 17 percent of husbands took coffee in the last year and sold it at a lower price to get the money before their wife. Lack of cooperation in home coffee production can reduce households' quality and quantity of coffee to be sold to the cooperative (Baluku, Mayoux, and Reemer 2009). This problem is exacerbated by the fact that 21 percent of coffee-growing cooperative members decided not to sell any coffee through the cooperative but preferred to sell to local buyers.[3] Thus, a relevant question is why individual marketing continues to represent such an important strategy?

In all coffee-producing households, women are significantly involved in coffee cultivation and processing tasks (see Table A5 in online

Table 2 Types of BJC member participation in 2011/12

	Total	*%*
Saving deposits	375	89.1
Coffee sales to cooperative	317	75.3
Microcredit	168	39.9
Particpatory gender training	82	19.5
Technical coffee training	70	16.6
Observations	421	

supplemental appendix). Men are particularly involved in the initial heavy-duty tasks of clearing the land, digging terraces, and planting coffee trees. Harvesting of coffee is largely organized jointly. Processing, the more time-intensive task, is largely done together, although a third is exclusively done by the wife. Despite the fact that transport of coffee to the cooperative is largely performed by the wife or jointly, 40 percent of husbands received the payment. Overall, it appears that members are more likely to join forces with their husband than nonmembers.

Descriptive statistics of individual and household characteristics used in the following multivariate regression analysis for the samples of currently partnered women cooperative members and nonmembers are presented in Table 3.

RESULTS

What determines women's cooperative membership?

Estimation results of women's cooperative membership are presented in Table 4. It shows that the size of land owned before membership, has a positive and highly significant effect on women's probability of membership. One additional acre of land owned increases women's probability of becoming a member of BJC by about 30 percentage points (column 1) compared to 20 percentage points for any other cooperative members (column 2). The positive effect of smallholders' resource endowment on participation in cooperatives aligns with previous findings of Wollni and Zeller (2007), Bernard and Spielman (2009), and Fischer and Qaim (2012). This is plausible because women with larger farms may be more inclined to participate in collective marketing because of the larger perceived gains from improved access to markets, related inputs, and extension services. Another reason might be that women with greater possession over arable land have more power to choose whether to participate in cooperatives (Agarwal 1997). The importance of land for women's access to cooperatives also resonates with recent literature that highlights the importance of women's acquisition of formal land titles of their customary tenure systems in order to ensure that their future resource claims are not threatened by the rapid growth of demand for African agricultural land (Cheryl R. Doss, Ruth Meinzen-Dick, and Allan Bomuhangi 2014). Also, older women are more likely to join the cooperative, potentially having been growing coffee for a longer time and thus more likely to value the benefits that come with membership.

Against our expectations, women nonmembers are more likely to be able to read and write than cooperative members (see Table 4, column 1). Possibly, better-educated women depend less on cooperatives for gaining access to financial and agricultural markets, but rely on

Table 3 Summary statistics of variables used in regressions by respondent groups

		Members (n = 421)		*Nonmembers (n = 210)*		
Variable	*Description*	*Mean*	*S.E.*	*Mean*	*S.E.*	*Dif.*
Member coop†	Member of BJC or any other SACCO (1 = yes)	1.00	0.00	0.34	0.48	***
Wife's age	Age of wife (years)	36.92	11.57	30.24	10.28	***
Spousal age difference	Age difference husband and wife (years)	6.10	5.63	5.64	5.56	
Wife's literacy	Wife able to write name (1 = yes)	0.59	0.49	0.80	0.77	***
Husband's literacy	Husband able to write name (1 = yes)	0.86	0.34	0.92	0.32	**
Skill training	Agriculture skill training > 2 months (1 = yes)	0.15	0.36	0.07	0.25	***
Marriage age	Age at first marriage (in years)	18.25	3.23	18.24	2.89	
Catholic	Catholic faith (1 = yes)	0.52	0.50	0.55	0.49	
Arranged marriage	Husband not chosen by wife (1 = yes)	0.17	0.38	0.16	0.37	
Co-wives	Number of co-wives in polygamous marriages	0.43	0.65	0.33	0.60	
Land prior BJC wife (ln)	Ln land owned by wife before BJC (in acres)	0.50	0.57	0.17	0.333	***
Husband controls coffee sales	Husband's control over coffee before BJC Membership (1 = yes)	0.36	0.55	0.30	0.46	
Mobility	Born in Bukonzo county (1 = yes)	0.86	0.34	0.90	0.29	
Additional variables used in members' intensity of participation regression						
Collective sales[a]†	Member sells coffee to BJC last year (1 = yes)	0.75	0.02			
Coop shares (ln)†	Number of capital shares purchased (ln)	1.64	0.06			
Wife's land (ln)	Wife's land ownership in acres (ln)	0.19	0.41			
Husband's land (ln)	Husband's land ownership in acres (ln)	0.79	0.54			
Income from coffee (ln)[a]	Annual coffee income in Ush (ln)	13.16	0.94			
Household size	Number of individuals eating from same pot	7.53	4.93			
Coffee grower	Cultivates coffee on own land (1 = yes)	0.97	0.16			

(*Continued*).

Table 3 Continued

		Members ($n = 421$)		*Nonmembers* ($n = 210$)		
Variable	*Description*	*Mean*	*S.E.*	*Mean*	*S.E.*	*Dif.*
Coffee-processing wife[a]	Member responsible for processing coffee (index)	0.61	0.25			
Wet process[a]	Member wet processes coffee (1 = yes)	0.36	0.48			
Control: wife's coffee sales[a]	Member in control of delivery of coffee to market and receives payment (1 = yes)	0.57	0.37			
Prior coop member	Member of other cooperative before BJC (1 = yes)	0.22	0.43			
Motivation BJC: coffee sales	Motivation for membership: coffee sales (1 = yes)	0.20	0.40			
Credit BJC wife	Member received BJC loan last year (1 = yes)	0.46	0.50			
Decision-making wife	Index variable of four household women's decision making (1), joint (0.5), or husband's (0) decision making	0.18	0.28			
Spousal income pooling	Spouses share at least half of his/her incomes (1 = yes)	0.26	0.43			
Joint land ownership	Spouses have joint land agreement (1 = yes)	0.29	0.45			
Husband comember	Husband is co-member at BJC (1 = yes)	0.35	0.47			
Length BJC member (ln)	Number of years as BJC member					
Gender enumerator	Enumerator is a man (1 = yes)	0.62	0.48			
	Observations	421		210		

Notes: *, **, and *** denote statistical significance between the mean values of non-cooperative members and cooperative members at the 10, 5, and, 1 percent levels respectively. [†]Dependent variables: [a]Coffee growers with reproducible coffee plants (for example, with any income from coffee in the last year; $n = 387$).

formal labor opportunities, which improve their chances of receiving bank loans. However, women highly committed to advance their agricultural-production skills through training are more likely to be aware of and attracted to perceived gains of cooperative membership. This holds for both specifications in column 1 and 2 of Table 4, and controlling for educational difference with the husband.

Table 4 Determinants of women's membership in cooperative (probit model)

	(1)			(2)		
	BJC participation			*Any coop participation*		
	Coef.	*S.E.*	*M.E.*	*Coef.*	*S.E.*	*M.E.*
Wife's age	0.025***	0.006	0.009***	0.015**	0.006	0.004**
Wife literacy	−0.226**	0.095	−0.072**	−0.110	0.091	−0.030
Husband's literacy	−0.002	0.186	−0.000	−0.107	0.199	−0.029
Agri. skill training	0.590***	0.184	0.175***	0.637***	0.215	0.135***
Land prior BJC: wife (ln)	0.856***	0.127	0.295***	0.766***	0.131	0.205***
Arranged marriage	−0.108	0.155	−0.038	−0.090	0.162	−0.024
Marriage age	−0.008	0.018	−0.003	0.003	0.019	0.001
Spousal age difference	0.005	0.011	0.002	0.004	0.012	0.001
Co-wives	−0.054	0.095	−0.019	−0.061	0.103	−0.016
Husband controls coffee sale	0.135	0.105	0.046	0.072	0.109	0.019
Catholic	−0.072	0.111	−0.025	0.073	0.117	0.019
Mobility	−0.273	0.180	−0.088	−0.181	0.187	−0.046
Constant	−0.206	0.450		0.206	0.472	
Observations		631			631	
Pseudo R^2		0.149			0.101	

Notes: Robust standard errors are reported. *, **, and *** denote statistical significance at the 10, 5, and, 1 percent levels respectively. M.E. denotes marginal effects.

Surprisingly, women members and nonmembers are not statistically different regarding the three measures of women's agency, indicating that initial conditions under which their marriages took place seem to matter less for subsequent participation in collective action while power over productive resources play an important role. Further, women in polygamous households and where the husband's controlled coffee sales before membership are not statistically different for members and nonmembers.

What determines women's participation *within* the cooperative

Participation in collective coffee marketing

Table 5 presents the regression results, reporting probit coefficients and marginal effects on women members' coffee sales to their cooperative. The empirical results highlight the importance of intrahousehold dynamics for women's commitment to collective marketing. When spouses pool

Table 5 Determinants of women's collective coffee marketing in cooperative (probit model)

Dependent variable: coffee sales through BJC	*Coef.*	*S.E.*	*M.E.*
Wife's age	− 0.008	0.009	− 0.002
Wife's literacy	0.037	0.179	0.009
Husband's literacy	0.067	0.228	0.017
Co-wives	0.079	0.118	0.019
Household size	− 0.013	0.013	− 0.003
Wife's land (ln)	− 0.050	0.215	− 0.012
Husband's land (ln)	− 0.240	0.183	− 0.058
Decision-making wife	0.137	0.308	0.033
Spousal income pooling	0.702***	0.208	0.143***
Joint land ownership	0.442**	0.204	0.097**
Credit BJC wife	− 0.130	0.168	− 0.032
Motivation BJC: coffee sales	0.649**	0.256	0.128**
Husband co-member	0.508***	0.183	0.113***
Length BJC member (ln)	0.243*	0.146	0.059*
Income coffee (ln)	0.160*	0.095	0.039*
Coffee processing wife	0.500	0.327	0.122
Wet processing coffee	0.377**	0.183	0.086**
Control: wife's coffee sales	0.130	0.226	0.031
Group size	0.010	0.007	0.002
Group distance	0.002	0.003	0.001
Group share female	3.105***	1.124	0.749***
Gender survey enumerator	0.735***	0.188	0.193***
Constant	− 5.546***	1.618	
Observations		387	
Pseudo R^2		0.200	

Notes: Robust standard errors are reported. *, **, and *** denote statistical significance at the 10, 5, and, 1 percent levels respectively. M.E. denotes marginal effects. Due to multicollinearity between group characteristics and group dummies the regression excludes group fixed effects. Statistical significance levels of the coefficients do not change when substituting group characteristics with group fixed effects.

their incomes, women are more likely to sell the family's coffee to the cooperative, suggesting that spouses' mutual sharing of resources increases the likelihood of trading with their cooperative. In a similar vein, joint land ownership positively predicts the likelihood of selling to the cooperative. This mechanism is reinforced by the fact that husband's increased land ownership adversely affected his wife's ability to sell household coffee to the cooperative, indicating that greater relative male ownership over productive resources (coffee plants) is likely to increase their control over crop marketing and side selling. This is in line with Wollni and

Fischer (2015) who found that members with larger farms were increasingly attracted to marketing a share of their coffee through private buyers. Husband's comembership in his wife's cooperative significantly increases the probability of collective marketing. This is plausible, as spousal comembership may suggest that spouses share the idea of collective coffee marketing. Therefore, encouraging spousal comembership and joint land ownership may be promising strategies for cooperatives to strengthen collective marketing. This resonates with the claims of earlier studies finding that the management of natural resources is more effective when both sexes are actively involved in community groups (Penrose-Buckley 2007; Parvin Sultana and Paul Thompson 2008; Elizabeth Were, Jessica Roy, and Brent Swallow 2008).

Length of membership positively affects the likelihood of selling to the cooperative at the 10 percent significance level. Each additional year of membership increases the probability of members' selling through the cooperative by 6 percentage points. Also, higher incomes from coffee in the last year positively predict trading with BJC. In other words, larger farms have an increased likelihood of trading with BJC. As expected, women for whom coffee marketing was the main determinant in their choice of joining the cooperative were also more committed to collective marketing. Interestingly, women's greater relative labor input in coffee production did not affect trading with their cooperative.

Group size and the groups' distance to markets, did not influence trading with the cooperative. However, female group homogeneity positively affected members' decision to sell their coffee to the cooperative, indicating that a greater share of women within producer groups can be particularly effective for ensuring (other) women members' loyalty to the organization. Moreover, wet-processing coffee has a positive effect, which reflects women's larger ability and incentive to invest in upgrading their coffee production through inputs and equipment. Because the cooperative supports the acquisition of mini washing stations and drying racks through credit and extension services, this result may also indicate that reprocity motives play a role here. Surprisingly, women who received credit from BJC in the last year were not more committed to sell their coffee beans to BJC than those who remained "unbanked."

Committing to share capital

Estimation results of the OLS regression of women members' share capital acquisitions are reported in Table 6. Column 1 presents the specification including personal characteristics. Columns 2 and 3 extend the model by including group characteristics and coffee production controls.

Table 6 Determinants of women's share capital accumulation (OLS)

Dependent variable:	*(1)*		*(2)*		*(3)*	
coop shares (ln)	*Coef.*	*S.E.*[a]	*Coef.*	*S.E.*[a]	*Coef.*	*S.E.*
Wife's age	0.001	0.006	0.003	0.007	0.017	0.007
Wife's literacy	0.423***	0.135	0.357***	0.143	0.307**	0.155
Husband's literacy	0.129	0.160	0.088	0.168	0.183	0.186
Co-wives	− 0.035	0.081	− 0.063	0.086	− 0.107	0.094
Household size	− 0.004	0.006	− 0.006	0.007	− 0.006	0.007
Wife's land (ln)	0.150	0.132	0.108	0.134	0.084	0.155
Husband's land (ln)	− 0.045	0.117	− 0.112	0.121	− 0.072	0.139
Decision-making wife	0.699***	0.191	0.687***	0.198	0.935***	0.227
Spousal income pooling	0.355***	0.140	0.335**	0.148	0.285*	0.163
Joint land ownership	− 0.062	0.132	− 0.172	0.135	− 0.099	0.154
Length BJC member (ln)	0.847***	0.090	0.770***	0.096		
Prior coop member	− 0.293**	0.140	− 0.251	0.155	− 0.183	0.159
Motivation BJC: coffee sales			− 0.047	0.152	− 0.097	0.157
Husband comember			0.028	0.120	0.004	0.130
Income coffee (ln)			0.013	0.029	0.043	0.036
Processing coffee wife			0.220	0.244	0.209	0.278
Wet processing coffee			0.334**	0.133	0.504***	0.141
Control coffee sales wife			0.058	0.157	0.128	0.180
Group size			0.000	0.005	0.000	0.005
Group distance			0.000	0.002	− 0.000	0.002
Group share women			0.637	0.854	0.634	0.925
Gender survey enumerator	− 0.085	0.128	− 0.071	0.139	− 0.167	0.151
Constant	− 0.563	0.284	− 1.324	0.971	− 1.257	1.080
Observations		320		306		306
R^2		0.318		0.325		0.191

Notes: Robust standard errors are reported. *, **, and *** denote statistical significance at the 10, 5, and, 1 percent levels respectively. S.E. denotes robust standard errors. Due to multicollinearity between group characteristics and group dummies the regression excludes group fixed effects. Statistical significance levels of the coefficients do not change when substituting group characteristics with group fixed effects.

Unlike recent studies that point to group characteristics, such as membership size, homogeneity, and market distance, group characteristics do not predict women's capital commitment within BJC. However, the results rather seem to point to intrahousehold power dynamics again. Women from households in which spouses pool at least half of their incomes tend to own a greater financial stake of the cooperative, which suggests that increased household cooperation is likely to enhance women's financial patronage within cooperatives. This argument is strengthened by the finding that wives' increased decision-making power

concerning household expenditures has a positive and highly significant influence on their commitment to cooperatives. This finding persists after I control for various group characteristics (column 2) and exclude length of membership (column 3).

Both results suggest that women's ability to intensify their participation within cooperatives would benefit from more gender-equal household relations. Thus, one way for cooperatives to strengthen women members' capacity and willingness to increase commitment, and contribute to the expansion of the cooperative's capital base, may lie in raising women's social position within the household. Because cooperatives are community-based and build on members' trust they present ideal entry points for additional activities that aim at challenging and changing intrahousehold gender inequalities, which, in turn, can increase women's participation in collective action (Linda Mayoux 1995a, 1995b).

Literate women were more inclined to purchase cooperative shares possibly because relatively better educated women have a stronger relative intrahousehold-bargaining position with regard to investment decisions, are more likely to have acquired numeracy skills, and possess a greater long-term investment horizon than less-educated women. Moreover, the ability of women farmers to contribute capital is likely to depend on their individual and family wealth. Members with larger farms may have had sufficient income to purchase shares and arguably be less risk averse than smaller farmers who might be more reluctant toward costly investments. Hence, it is somewhat surprising that the size of wives' and husbands' land holdings, as well as income from coffee, did not influence share capital contributions. I find that members who were committed to invest in new production techniques and to improve their coffee quality were not only more likely to sell their coffee through the cooperative, but also increasingly contributed capital. Hence, cooperatives' technical and financial support (through loans and extension services), encouraging members to switch to more efficient and viable processing methods, appear to be instrumental for cooperatives to retain members.

As one would expect, duration of membership is highly significant and positively affects members' share-capital investment. Over time members seem to extend their share capital beyond their required capital subscription, reflecting trust in the future functioning of the organization. Column 3 shows that the significant variables from the first specification remain robust when excluding length of membership – the main driver of differences between members that disclosed their shares and those who did not (see earlier discussion on methods and variables). Contrary to the positive effect of husband's comembership on collective marketing, husband's comembership has no statistically significant effect on women's capital commitment, suggesting that spouses do not compete for capital shares when they are both members.

CONCLUSION

Using survey data of women cooperative smallholder coffee farmers as well as women noncooperative smallholder farmers from Western Uganda, this contribution offers a first pass at analyzing and measuring the determinants of women's participation in cooperative producer groups and their intensity of participation within this collective-action institution.

First, the study explored the determinants for women's cooperative membership. The results highlight the importance of women's control over agricultural land for participating in collective action. The applied measures of women's agency prior to cooperative membership are not statistically different between women members and nonmembers. This suggests that initial marital gender imbalances can be reversed over time and do not necessarily constrain women's participation in cooperatives. Moreover, cooperative members were more likely to have attended agricultural-skill training prior to membership, indicating that voluntary agriculture value-chain training within the community may be one strategy for cooperatives to attract new members.

Second, women members' intensity of participation in collective action was modeled through their participation in collective coffee marketing and women's share-capital contributions. Women with larger investments into the quality of their coffee, through wet-processing methods, were more likely to commit to collective marketing and share capital. Because the cooperative financed members' wet-processing equipment and facilitated post-harvest training, it suggests that members reward these cooperative investments. Unlike recent studies that point to group characteristics, this contribution demonstrates the embeddedness of collective action in gender relations and the positive value of women's active participation for agricultural marketing cooperatives. The findings highlight the importance of intrahousehold power relations for women's ability to actively participate in cooperative producer groups. In each of the two regression models, estimating women's degree of participation in collective action, two out of three gender-equity measures are statistically significant. On the one hand, husbands' greater relative land ownership adversely affects wives' collective marketing, implying that men's relative control over productive resources is likely to decrease women's collective-marketing prospects. On the other hand, husbands' comembership in their wife's cooperative increases the probability of women's collective marketing. This suggests if cooperatives promote greater involvement of both partners in producer groups, they can boost the efficiency of cash-crop marketing. However, in order to achieve this in the short and medium run women-only groups might be necessary first steps, whereas underlying social norms that prevent women's participation on an equal basis are likely to be more effectively addressed in the long run in mixed groups. Another means of incorporating women

more effectively in cooperatives may include the promotion and assistance of registration of formal joint land titles accompanied by participatory gender trainings and learning approaches, including both partners (and potentially nonmembers), that emphasize the mutual advantages of spousal cooperation along the coffee value chain and more equal intrahousehold power relationships. For cooperatives this has the potential to enhance both women's (degree of) participation in collective action and the effectiveness of the cooperative itself.

Overall, the findings imply that gender inequalities on the household level matter considerably for women's participation in collective action. Hence, cooperatives that fail to address gender, or target women without a clear understanding of power relations (along the agricultural value chain), risk not to set the right conditions for women's active participation and thus fail to fully exploit the enormous potential of making the cooperative a more effective and inclusive organization. Because cooperatives are closely entrenched in their local community, they represent unique entry points for strategic programs to strengthen women's voice and agency in the market and at home.

Felix Meier zu Selhausen
University of Sussex - Economics
Jubilee Building 229 Visiting Faculty
Brighton BN1 9RH, UK
Utrecht University – History and Art History
Drift 6
3512 BS Utrecht, The Netherlands
e-mail: fm272@sussex.ac.uk

NOTES ON CONTRIBUTOR

Felix Meier zu Selhausen is Postdoctoral Researcher at the University of Southern Denmark, holding a PhD in economic and social history from Utrecht University (the Netherlands). Currently he is working on a research project on African economic history using nineteenth- and twentieth-century marriage registers to reconstruct the long-term development of African human capital, labor market participation, social mobility, and gender inequality. He has worked extensively on intrahousehold issues, microfinance and gender and collective action with fieldwork in Uganda. He also is a Visiting Research Fellow at Sussex University (UK) and Mountains of the Moon University (Uganda), as well as a member of the African Economic History Network.

ACKNOWLEDGMENTS

This contribution has benefitted from comments by Tine de Moor, Jan Luiten van Zanden, Erik Stam, Ellen Hillbom, Alexander Moradi, Ruth Meinzen-Dick, Auke Rijpma, Anna Salomons, Miguel Laborda Péman, Oliver Schmidt, and the conference participants of the Conference "Design and Dynamics of Institutions for Collective Action" (Utrecht, November 2012) and the 18th European Business History Congress (Utrecht, August 2014). I am grateful to Linda Mayoux for assisting with the draft of the field questionnaire. I wish to thank all eight field enumerators of Mountains of the Moon University (Uganda) for excellent research assistance, in particular Benard Asiimwe and Christopher Byomukama for data computation. I am grateful to Bukonzo Joint Cooperative, in particular Paineto Baluku, for their support and cooperation during field research. The study gained approval from the Uganda National Council for Science and Technology (UNCST) in April 2012 (No. SS 2767). The usual disclaimer applies.

NOTES

[1] Note that five additional respondents were included to account for the extraordinary size of one of the producer groups consisting of 108 members.
[2] Members do not face expulsion or financial penalty for coffee sold illicitly.
[3] The figure includes only smallholders who earned an income from coffee in the last year.

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