

Empowering women in dairy cooperatives in Bihar and Telangana, India: a gender and caste analysis

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Dairy animals enable women to put food on the table and to earn money. India is a leading dairy economy with a vast number of milk producers organized into women-only and mixed-gender cooperatives. We use focus group discussions, interviews, and ethnography to analyze four dairy cooperatives in Bihar and Telangana and to investigate the effectiveness of these cooperatives in including women and in strengthening women's control over dairy income. In three of the four cooperatives analyzed, gender and caste norms restrict women's inclusion and limit their control over income. The fourth cooperative emerged from self-help groups and is part of a women-only dairy union. In this cooperative, we find women-only leadership, empowerment of women of all castes, and successful engagement of men as supporters. Our findings suggest that dairy cooperatives can be empowering for women when they emerge from women's activism.

Keywords: Gender Inequality, Caste Norms, Women's Economic Empowerment, Governance, Income Generation.

Introduction

Women are the majority of the world's poor livestock keepers (FAO 2011). Since women are generally responsible for putting food on the table and they typically spend a higher proportion of their income on food compared to men, enhancing women's control over livestock and their products can improve household nutrition security (Smith et al. 2003; FAO 2011; De Schutter 2012; Galiè et al. n.d.). Women also sell livestock and their products. This can be important for female dairy keepers and traders with limited alternative sources of income (Galiè et al. 2021). More broadly, livestock can contribute to strengthening women's economic empowerment. This is because it is often easier for poor women to acquire livestock – whether through inheritance, markets, or collective action – compared to other assets such as land and machinery (Kristjanson et al. 2010; Rubin et al. 2010; Farnworth et al. 2015). Livestock are particularly valuable since they constitute a self-perpetuating asset, thereby generating a regular stream of food and income for women. Moreover, livestock can be accumulated and sold to purchase more valuable assets. However, when livestock becomes commercialized, women may lose control over livestock and their products, with income passing directly to men (Walugembe et al. 2016; Tavenner et al. 2019). Cooperatives have the potential to counter men's and elites' appropriation of women's income, by helping poor female members to organize, commercialize, and keep control over their income. Indeed, evi-

dence shows that cooperatives can be successful in linking female livestock keepers to markets and in providing them with direct access to a steady source of income that they can control (Basu and Scholten 2012).

In this article, we present research conducted in four village-level dairy cooperatives in Bihar and Telangana, India, in 2016–7. Two of these cooperatives are women-only, while two are mixed-gender. India is a leading dairy nation and it has long supported dairy cooperatives. Operation Flood (1970–96), the world's largest dairy development program and a landmark project of the National Dairy Development Board (NDDB), aimed at reducing rural poverty by providing livestock keepers with a guaranteed market for milk and ensuring, at the same time, a reliable supply of milk to urban consumers (Basu and Scholten 2012; Sudan 2019). The NDDB has long paid attention to women's inclusion, establishing women-only as well as mixed-gender dairy cooperatives at the village level (Basu and Chakraborty 2008). In this article, we consider two key questions:

1. How do women-only and mixed-gender dairy cooperatives promote women's participation?
2. In which ways do women-only and mixed-gender dairy cooperatives strengthen women's control over dairy income?

We assess the first question by analyzing women's participation in cooperative meetings and training events and their representation in leadership roles within the four cooperatives. The second question is evaluated on the basis of which gender claims decision-making control over dairy income. We look at both the outcomes of these questions and at the factors that lie behind these outcomes. In this way, we unpack the gender and caste norms that determine the extent to which women are empowered through their cooperative, and the degree to which they are challenging unfavorable norms through their cooperative.

We focus primarily on gender relations, but we also examine caste-gender interactions. We are interested in understanding whether the four selected cooperatives challenge or reflect local caste biases. This leads us to ask: Which women participate more? Which women benefit more from dairy cooperatives? Caste is an important means of social differentiation in India. It relies on a highly complex hierarchy of endogamous groups wherein caste identity is transmitted on a hereditary basis (Dumont 1980; Bidner and Eswaran 2015). Marginalized castes are termed Scheduled Castes (SCs) and are followed by Other Backward Castes (OBCs). The OBCs include mid-level castes and vary in the degree of their advantages and disadvantages. The General Caste (GC) – sometimes called Forward Caste – is constituted by castes that are not economically and socially marginalized. Thousands of sub-castes exist within each caste, and each caste/sub-caste has its own social norms, traditions, and belief systems shaping everyday life and determining, among other things, women's roles, responsibilities, benefits, and agency (Lamb, 2013). Indigenous (*Adivasi*) people are categorized as Scheduled Tribes (STs) and are considered marginalized.

Literature Review

The International Cooperative Alliance (ICA) and the International Labour Organization (ILO) define a cooperative as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise” (ILO and Coop, 2015: 4). A review of market links between value chain actors and small-scale producers in developing countries showed that cooperatives deliver important economic benefits to farmers and livestock keepers, by providing extension services, inputs, and product transportation arrangements (Liverpool-Tasie et al. 2020). Cooperatives can also serve as a mechanism for facilitating a more equal inclusion of smallholders in markets, thus promoting a fairer distribution of wealth across the value chain (Kaaria et al. 2016; AgriCord 2017). Poole (2017) argues that fairness should be a central pillar of our economic systems and he refers to this ethnical issue as the “necessity of equality”. In Poole's words, inequality “leads to inequity, which is ‘unfairness’ and, in most ethical frameworks, is considered to be bad” (2017, 23). In this light, cooperatives can open a valuable pathway to more gender equality and, ultimately, more fairness.

Gender inequalities contribute to economic underdevelopment and failures in human achievements (Sen 1999; FAO 2011; Ferrant 2015). A McKinsey Global Institute's study (2015), prepared before the COVID-19 pandemic, found that gender inequality is particularly high in India. If India were to follow the “best in region” scenario – in which all countries match the rate of improvement of the fastest-improving country in their region – with respect to women's participation in the economy, the country would increase its GDP by 16 percent by 2025 and, under the full potential scenario, whereby women are employed at the same rates as men, India's GDP could raise by 60 percent. However, current trends in India paint quite a different picture. India's workforce is masculinizing rapidly, following a trajectory that Kilby et al. (2019) term “neo-patriarchy”, referring to the new patriarchal norms which relegate women out of the workforce in order to sustain the notion of men as breadwinners. The female labor force participation rate (LFPR) for Indian women aged 15 to 65 fell from 33.87 percent in 2004-5 to 24.67 percent in 2017-8, placing India among the ten worst performers globally (Indexmundi, 2019). A notable exception is agriculture. Indeed, in many parts of India, women work on family fields and as hired laborers (Garikipati 2008; Guérin 2013; Ghosh and Ghosh 2014). The relative proportion of women working in agriculture has increased significantly since 1981 compared to the portion of men. Overall, however, Indian women are leaving *paid* agricultural occupations. During 2005-12, for instance, rural female employment declined by 23 million, registering a fall in absolute agricultural employment for women of 28 million (Mehrotra and Sinha 2017). While many of these women still remain in farming, the difference is that they are no longer receiving an income (D'Agostino, 2017; Pattnaik et al. 2017). This is a phenomenon that Pattnaik et al. (2017) term the “feminization of agrarian distress”.

Against this backdrop, a pressing question emerges: is it possible to ameliorate the feminization of agrarian distress by encouraging women to join dairy cooperatives? Women respondents to a global study (ILO and Coop 2015) suggested that they derive two clear benefits from cooperative membership. The first benefit is in terms of voice and participation. Specifically, women reported that cooperatives pay greater attention to gender equality and allow women to slowly, yet noticeably take on leadership roles. Relatedly, the report also found that there has been an increase in the number of women-owned cooperatives and that women are benefitting from collective bargaining power. The second benefit cooperative membership for women is related to income. Indeed, cooperatives can facilitate women's access to business capital and markets, particularly when financial, legal, and marketing services are developed and directly targeted at women. Despite these benefits, female respondents noted also important challenges. Gender norms may marginalize women from public spaces and reduce their ability to actively participate in cooperatives or to stand for election. Moreover, although many cooperatives embrace gender equity strategies, few offer training in gender equality and women's empowerment and technical training tailored to women (ILO and Coop 2015). Other studies suggest that when cooperatives are primarily governed by men, they tend to overlook women's interests, priorities, and needs (Gotschi et al. 2009; Kaaria et al. 2016).

Gendered cooperative experiences in India

India has 190,000 village level dairy cooperatives, and this number has been steadily increasing. In the 2018-9 fiscal year, membership of the Dairy Cooperative Network (part of the NDDB) was around 16.93 million dairy farmers of whom around 5.06 million were women, representing almost one-third of all members. In an attempt to increase women's membership, the Dairy Cooperative Network established 4,635 new women-only dairy cooperative societies in 2018-9 (NDDB 2015). This move was supported by data showing that dairy cooperatives in India have been historically male-dominated and have chiefly served men's interests (Dohmwirth and Liu 2020). Male dominance obscures the fact that women are overwhelmingly responsible for livestock care (Sinha 2007). Caste plays a significant role, with SC and ST women being more engaged in livestock care than OBC and GC women. Across caste, men are more likely to interact with extension advisors and other public officials due to gender norms that restrict women's interactions with men, particularly those in a public capacity (Raghunathan et al. 2018). ST and SC people are likely to encounter difficulties in accessing extension advisors, primarily due to their lower resource endowments (Krishna et al. 2019). High levels of seasonal out-migration by ST and SC men in some locations, including Bihar, imply that their spouses are more likely to experience day to day decision-making autonomy (Meher et al. 2016).

The Dairy Cooperative Network facilitates women's participation by ensuring that 30 percent of participating villages are assigned to women-only dairy cooperatives. It is important to point out that a village can only have either a women-only or a mixed-gender dairy cooperative. Two milk unions in India, Ichhamati Cooperative Milk Union in West Bengal and Mulukanoor Women's Mutually Aided Milk Producers Cooperative Union in Telangana, have naturally evolved in women-only dairy cooperative. This means that these cooperatives are managed and governed by women at all levels.

Thus far, the literature suggests that there is high female membership of dairy cooperatives. But do women participate actively in dairy cooperatives, as members and as leaders? And, does the type of participation vary between women-only and mixed-gender dairy cooperatives? While there is scant evidence on leadership, the available information suggests that female leadership is uncommon in village level, mixed-gender cooperatives, while women lead, by definition, women-only cooperatives (Dohmwirth and Hanisch 2017; Christie and Prasad Chebrolu 2020; Dohmwirth and Liu 2020).

Research on members' participation shows that caste dynamics can combine with gender norms to restrict the ability of marginalized women and men to actively participate at the village level. Basu and Chakraborty (2008) found that ST and SC women have little say in dairy cooperative meetings given that GC men tend to lobby dairy development officials to procure benefits for their own caste. In his case study on mixed-gender and women-only cooperatives, Stuart (2007) observed that although cooperative bylaws allow members of any caste to take on leadership roles, in practice nearly all cooperative presidents belong to a higher caste. The author concludes that rural cooperatives

operate within rural structures wherein caste and gender norms strongly determine which people can and cannot participate.

Yet, caste and gender biased structures can be challenged. This is shown by a study by Christie and Prasad Chebrolu (2020), which investigates the attempts made by a milk union in Gujarat to include ST women. The authors show that the union initially struggled to convince women to participate. Even when sufficient women were on board, the project incurred considerable resistance from the village *panchayat* (village council) and other political leaders. For instance, some local leaders prevented women from accessing electricity and water to build milk collection centers, thus forcing women to find alternative solutions. Some women also faced verbal abuse. The intervention was, eventually, successful: of 1526 functional dairy collection centers in the milk union, 1238 became women-only.

Dohmwirth and Liu (2020) review previous studies on the differential effects of women-only and mixed-gender village level cooperatives on women's empowerment. The review finds that women-only cooperatives can strengthen women's social networks, participation in training, and likelihood of becoming leaders. However, the authors also show that mixed-gender cooperatives provide structural advantage and market benefits to women, due to the power of male social capital. Men members can find it easier to access extension advisors, public officials and markets. In turn this can provide women with gateways to markets and other benefits. In dairy cooperatives in Karnataka, South India, Dohmwirth and Liu also find that women in both type of cooperatives acquire some agency in intra-household decision-making, but they gain significantly more power in mixed-gender than in women-only cooperatives. However, women face significant barriers to join mixed-gender dairy cooperatives, thus making women-only cooperatives more accessible to most women.

Methods

Study sites

Field research was conducted in four village-level dairy cooperative societies in Bihar and Telangana states. In each state, we selected one women-only and one mixed-gender cooperative. In Telangana, the heads of the dairy market channels for Vijaya and Mulukanoor assisted us in the selection of representative village level cooperatives. In Bihar, the Sudha Dairy Cooperative's head office helped us to select representative cooperatives using the same criteria as in Telangana. In each selected village, all producers sell their milk through only one dairy market channel. The identities of the village level cooperatives are not disclosed in order to protect respondents' privacy. Figure 1 provides an overview of the typical dairy cooperative structure in India. The cooperatives we worked with are at Level 2 (village) and our research was carried out at Level 1 (individual members).

1. **Dairy Farmers (individual level):** Every individual member sells milk to the dairy cooperative.
2. **Dairy Cooperative Society (DCS) (village level):** The society collects the milk, measures fat and Solid Not Fat (SNF) levels of milk, and fixes the selling price for each individual member.
3. **Dairy Milk Unions (district level):** Unions arrange transport logistics from village to state level, pay the DCS, and provide livestock extension services to cooperative members. Mulakanoor Women Dairy Cooperative operates up to this level.
4. **Dairy Federation (state level):** Federations market milk, connect milk unions, and fix the selling price of milk. The board of directors includes directors of the various milk unions as well as government officials. Vijaya and Sudha operate up to this level.

Figure 1 Typical structure of dairy cooperatives in India.

i. Bihar dairy cooperatives

The Bihar State Milk Cooperative Federation Ltd. (called the Sudha Dairy Cooperative) was established in 1983 as the implementing agency of the NDDB's Operational Flood project in Bihar. The Sudha Dairy Cooperative is a public dairy cooperative and it markets all Bihar's milk, given that there are no private sector dairy companies in this state. Women-only dairy cooperative societies were formed as early as 1967. This was due to a Bihar government's directive according to which 30 percent of all dairy cooperatives should be women-only. There are approximately 8,823 village level dairy cooperative societies, both women-only and mixed-gender, with a total of 629,200 members (Sudha Dairy Cooperative, n.d).

The Bihar women-only dairy cooperative society studied in this article was founded 30 years ago and is a member of the Sudha Dairy Cooperative. The village where this cooperative operates is located 150 km from Patna, Bihar's capital, and 8 km from the nearest town. Four in five households (79 percent) belong to this cooperative, which counts a total of 450 households and 357 members. The village has 500 cows and 200 buffalos, and the average herd size is 1.7 animals. Key crops include rice, maize, wheat, and lentils and 90 percent of these crops are rain-fed. All the land is owned by the GC and OBC, with the average holding per household being less than two hectares. Since SC and ST households are landless, men from these castes out-migrate seasonally and return to work as hired agricultural laborers at peak harvest times.

The Bihar mixed-gender dairy cooperative society is located 10 km from the nearest town. It was founded 15 years ago and it also belongs to the Sudha Dairy Cooperative. One in three households (32 percent) in this village belong to this cooperative society, which counts a total of 700 households and 225 members. There are 1000 cows and 300 buffalos and the average herd size is 2.3 animals. Key crops include wheat and maize, and only a few GC households are wealthy enough to irrigate. Male out-migration is low.

ii. Telangana dairy cooperatives

Telangana is a new state carved out of Andhra Pradesh in 2014 and is considered progressive due to its high degree of market

innovation. For instance, business models which combine private sector companies and cooperatives are being developed in the dairy sector of this state. In Telangana, the government does not stipulate that women should be grouped into women-only cooperatives. However, in the Warangal District, a women-only cooperative, namely Mulukanoor Women's Mutually Aided Milk Producers Cooperative Union Limited (to which we refer to as Mulukanoor), emerged from women's self-help groups (SHGs) in 2002. Mulukanoor markets milk under the name of *Swakrushi* (self-empowered). Around 1997, a number of SHGs decided to collectively invest in the dairy business and received support from the NDDB. Mulukanoor thus emerged organically from existing women's groups who were already familiar with managing money and collaborative modes of working. Mulukanoor has a women-only decision-making structure, operating horizontally through village level cooperatives and vertically up to the union level (Swamy et al. 2014). Some men are employed in technical positions. Mulukanoor is independent from state government and counts 32,000 members in 132 villages. The public sector Vijaya Dairy Cooperative counts 15,000 village level dairy cooperatives and 900,000 members, and it operates across the Telangana state. All the cooperatives belonging to the Vijaya Dairy Cooperative are mixed-gender.

The Telangana women-only dairy cooperative society studied in this article is a member of Mulukanoor and was founded 15 years ago. It is located 100 km from the state capital Hyderabad and 15 km from the nearest town. Over half of the households (58 percent) in this village belong to this cooperative (751 households and 440 members in total). There are 400 cows and 500 buffalos and the average herd size is 3.3 animals. Key crops include rice, cotton, maize, and sorghum. Around 30 percent of the households have access to irrigation and 80 percent of farmers own less than two hectares of land.

The Telangana mixed-gender dairy cooperative society is a member of the Vijaya Dairy Cooperative and was founded 30 years ago. One third of the households (33 percent) in the village are members of this cooperative (350 households and 117 members in total). Despite being mixed-gender, only men currently belong to this cooperative. There are 220 cows and 180 buffalos in the village and the average herd size is 2.3 animals. The village is located 120 km from Hyderabad and 5 km from the local town. Villagers grow the same crops as in the village with

the women-only cooperative, but farm sizes are slightly larger, with 30 percent of farmers having at least 2 hectares.

Research design

In order to study the four village level dairy cooperatives selected, we developed a qualitative explorative research design based on institutional ethnography (Smith 2005). Our key aim was to understand women's and men's rationale for their participation in dairy cooperatives (Glaser and Strauss 2009). Analyzing the perceptions of respondents allows to produce thick descriptions, gain a nuanced understanding of specific issues, and develop new frameworks for thinking about specific problems. With caution, exploratory studies with small sample sizes can be extrapolated to similar settings and inform development interventions, provided that they are subject to further testing and analysis (Farnworth 2009; Donmoyer 2012; Galiè 2013).

To start with, we held eight focus group discussions (FGDs), two per cooperative, with milk producers. The resulting thick descriptions were then investigated further through a semi-structured household questionnaire. One of the three authors of this article stayed in each village for two weeks. The study took place over a two-year period, from 2016 to 2018.

We put additional efforts to ensure that female respondents were interviewed alone rather than in the presence of their husbands. This is because some women might feel inhibited when their husbands are present, thus raising concerns that their answers might not reflect their true opinions. Yet, some interviews still had to be conducted jointly. In the cases in which the ethnographer felt that the husband's presence had constrained the female respondent's openness, follow up visits were arranged during which participant observation was leveraged. In this way,

the ethnographer was able to pose questions more naturally while women were working. On top of this, participant observation was selected as a research method in order to obtain non-verbal information and assist the ethnographer in understanding women's daily activities in relation to dairy management. Furthermore, the ethnographer took part in two dairy cooperative monthly meetings and in one dairy event, namely the "best dairy cow".

Sampling strategy

Households were selected randomly on the basis of land size, number of dairy animals, quantity of milk sales, and caste. On top of random sampling, purposive sampling was conducted to identify widows and women who were known to be particularly open when expressing their views. In this way, we aimed to diversify the sample and gather additional insights. Spouses as well as cooperative members were interviewed in order to gain a broader picture of the perceived benefits of cooperative membership to the family. All respondents were informed about the objective of the study and gave their consent in anonymously participating in it. Each individual interview lasted between 60 to 90 minutes.

Table 1 provides an overview of the respondents. In total, 153 interviews were conducted with 81 women, 61 men, and 11 wives/husbands. The majority of the interviews were held with OBC (66), followed by SC (42), GC (29), and ST (16). The differences in numbers reflect the membership pattern of caste in each dairy cooperative. Respondents included cooperative members and non-members. In the women-only cooperatives, the men interviewed were spouses of female cooperative members. In the Telangana mixed-gender cooperative – where there are only men – the women interviewed were members' spouses, while in the Bihar mixed-gender cooperative both female and male members were interviewed.

Name of dairy cooperative	Caste	Women	Men	Both
Telangana women-only cooperative	GC	3	3	1
	OBC	8	8	–
	SC	6	6	–
	ST	6	6	–
Bihar women-only cooperative	GC	1	–	2
	OBC	11	5	2
	SC	12	1	3
	ST	–	–	–
Telangana mixed-gender cooperative	GC	9	9	–
	OBC	3	3	–
	SC	4	4	–
	ST	2	2	–
Bihar mixed-gender cooperative	GC	–	1	–
	OBC	14	9	3
	SC	2	4	–
	ST	–	–	–
Total respondents		81	61	11

Table 1 Overview of respondents by gender and caste.

Cooperative	Total HH in village	Total members	Women %	Men %	GC	OBC	SC	ST
Telangana women-only cooperative	751	440	100	0	84	172	106	78
Bihar women-only cooperative	450	357	100	0	257	40	60	0
Telangana mixed-gender cooperative	350	177	0	100	110	25	42	0
Bihar mixed-gender cooperative	700	225	20	80	15	87	123	0

Table 2 Cooperative membership by gender and caste.

Data analysis

The interviews were recorded to ensure completeness of information and were then translated into English. The transcripts were uploaded into a qualitative analysis software package (NVivo Version 11). Coding was based on a codebook of deductive codes developed by the authors. We also checked whether and how caste could explain differences among the experiences of different women. Consensus analysis was undertaken and patterns were synthesized and interpreted.

Results

The findings are arranged according to our two research questions: (1) How do women-only and mixed-gender dairy cooperatives promote women's participation? This question is answered by looking at women's participation in leadership, decision-making, and training events; (2) In which ways do women-only and mixed-gender dairy cooperatives strengthen women's control over dairy income? This question is assessed by investigating gender claims to decision-making.

We examine each of these questions in turn, first by considering the outcome and then by taking a closer look at the factors facilitating each outcome.

Question 1: women's participation in cooperative membership, decision-making, leadership, and training

i. Women's membership

In the Telangana women-only cooperative, OBC and SC women comprise the large majority of the members. In the Bihar women-only cooperative, GC women are the majority, followed at some distance by SC women.

As shown in Table 2, mixed-gender cooperatives are *de facto* men's cooperatives. In fact, men represent 80 percent of the members in the Bihar mixed-gender cooperative, and 100 percent in the Telangana one. The latter exhibits a high rate of GC membership, whereas the Bihar mixed-gender cooperative has a high rate of SC membership. When women were asked why they do not join the Telangana mixed-gender cooperative, they explained that cultural norms had fossilized into institutional norms, barring them from seeking membership:

Even though women want to become members, the dairy cooperative doesn't give women the permission to become members. They only take into consideration men and this has been the case for the last 30 years.

(Focus Group Discussion, Telangana, 23 November 2017)

ii. Women's participation in decision-making

Women-only cooperatives do not automatically promote women's participation (see Table 3). While the Telangana women-only cooperative experiences a high rate of active participation (87 percent) by female members in both meetings and in voting for leaders, the Bihar cooperative registers considerably lower participation of women (25 percent).

However, men do not necessarily participate actively either. Only one in four men (28 percent) in the Telangana mixed-gender cooperative participate in meetings. Members lack enthusiasm for these meetings because they feel that they are top-down meetings run remotely by public officials. Interestingly, women participate more than men in the Bihar mixed-gender cooperative. This is due to the male secretary's willingness and ability to engage women. Women respondents explained that:

We joined the dairy cooperative as members due to the motivation of the secretary. He always encourages women to participate in meetings and training programmes.

(Focus Group Discussion, Bihar, 20 January 2018)

Type of dairy cooperative	Women %	Men %	Members who do not participate %
Telangana women-only cooperative	87	0	13
Bihar women-only cooperative	25	0	75
Telangana mixed-gender cooperative	0	28	72
Bihar mixed-gender cooperative	44	36	20

Table 3 Participation of women and men in decision-making.

Further, many SC and ST men out-migrate for work and thus cannot be present in most meetings.

iii. Women's participation in decision-making and leadership roles

Regarding leadership (i.e., chair and secretary positions), there are stark differences between the women-only dairy cooperatives in Bihar and Telangana. In Telangana, women lead at all levels, from the village level to the union level, autonomously exercising power. In Bihar, instead, men wield decision-making power – despite this being a women-only cooperative. While women occupy the roles of chair and secretary, they are considered “shadow leaders”. This means that their husbands are actually responsible for all the decisions, bookkeeping, and payments. Women explained that:

Even though the chairperson and secretary are women, their husbands take decisions, leaving other women without the possibility to express their voices and opinions.

(Focus Group Discussion, Bihar,
15 January 2018)

Higher caste (GC and OBC) women and men cover leadership roles in all the dairy cooperatives but the Telangana women-only one. In the latter one, a SC woman is chair and an OBC woman is secretary. In the Telangana mixed-gender cooperative, there is a male OBC chair and a male GC secretary. In the Bihar women-only cooperative, a GC woman is chair and an OBC woman is secretary, while in the Bihar mixed-gender cooperative, an OBC man is secretary and a GC woman holds the role of chair. This latter fact is striking given that GC membership in the Bihar mixed-gender cooperative is very low (15 individuals) and that SC dominate (123 members), albeit not being represented.

iv. Women's participation in training events

Cooperative bylaws in all four cooperatives stipulate that anyone belonging to the cooperative member's household can attend training events – irrespective of a person's gender. Women's participation in training events is much higher in women-only than in mixed-gender cooperatives. More than half of the members of women-only cooperatives participate in these events, specifically 55 percent in Telangana and 57 percent in Bihar (see Table 4). This figure falls to 0 percent for women in the Telangana mixed-gender cooperative, and to one in four (24 percent) for women in the Bihar mixed-gender cooperative. Women's fairly high participation in the Telangana women-only cooperative is due to the gender responsiveness of its women leaders who, aware of the constraints that female members face, carefully schedule training events around women's other activities. For instance, meetings are conducted after 11 am or 3 pm and are mainly held within the village. In Bihar, officials of the Sudha Dairy Cooperative organize training events for both the mixed-gender and women-only cooperatives. Although women's participation is fairly high, women nonetheless complained that meetings were held at inconvenient times and often in distant locations. This prevents many women who wish to attend training events from participating. Numerous men, particularly SC, cannot attend as they are away from the village for most of the year. In the Telangana mixed-gender cooperative, participation in training events by both genders is close to zero because training content is planned and delivered by cooperative management – without any local consultation – and it is thus considered irrelevant. Moreover, venues are inconvenient for both women and men, since women are bound by household tasks and men by agricultural work.

Type of dairy cooperative	Women %	Men %	Anyone in the household of the cooperative member %	Members who do not participate %
Telangana women-only cooperative	55	0	13	32
Bihar women-only cooperative	57	5	8	30
Telangana mixed-gender cooperative	0	3	3	94
Bihar mixed-gender cooperative	24	36	3	37

Table 4 Women's participation in training events.

Household level factors	Overall Ranking
Woman's status within the household	1
Woman's formal education	3
Woman's experience and knowledge	4
Woman's mobility	5
Levels of household work	6
Levels of male support to female membership	7
Woman's health status	8
Female land ownership	9
Community level factors	
Membership of SHGs and other networks	9
Male out-migration	8
Cooperative level factors	
Membership bylaws (mixed-gender/ women-only)	2
Efficacy of cooperative governance	7
Efficacy of leadership	8
Access to inputs and services	8
Union level regulations	8

Table 5 Factors affecting women's participation in cooperatives.

v. Factors influencing women's participation

In the semi-structured household survey, we asked women and men to elaborate on the reasons women participate or do not participate in their dairy cooperative (see Table 5). Women's and men's responses from all four cooperatives are merged, since their opinions did not diverge significantly from each other. Responses are divided across factors at the household, community, and dairy cooperative levels.

Household level factors were the most important in explaining women's participation in cooperatives. More precisely, one key factor was the recognition by other household members that a specific woman in the household has a high status and, thus, decision-making authority. Women with a high status include elderly women, first daughters-in-law, and recognized household heads. Such women are much more likely to be able to exercise their agency and to join the dairy cooperative, particularly if it is women-only, and other community members generally respect these women's authority. Other factors which significantly affect women's membership include their level of formal education, perceived experience and knowledge, mobility, and whether men actively support their membership. A clear example of how gender norms can affect women's participation is provided by a male member of the Bihar mixed-gender cooperative, who explained that he himself joined the cooperative instead of his wife because:

The dairy collection center is located 2 km away from this village and we have to cross the river. This is not possible for her [my wife]. She cannot travel to the nearby town to attend any training either. This is the reason I have become a member.

(Interview, Bihar, 2 February 2018)

Community level factors are mentioned less often, with only some respondents reporting that membership in self-help groups, support from fellow members and NGOs, and male out-migration

are key factors in facilitating women's participation in dairy cooperatives. Cooperative level factors rank below household level factors. These factors include the efficacy of cooperative leadership in terms of identifying and working with women members to support their needs, and the efficacy of support in terms of relevance to women members from the dairy union. Membership bylaws are obviously key factors governing access to cooperatives.

Question 2: women's control over dairy income

The second question that we address is whether respondents identify any casual relationships between the type of cooperative and women's ability to control income from the sale of milk through the cooperative. Before examining this question in detail, we first show how women and men spend dairy income in the household (see Table 6).

Women who control dairy income prioritize SHG savings, school fees, agricultural inputs, and loan repayments for dairy cows. These expenses are followed by expenses on food, health care needs of their families, and asset building (building a house, buying animals, buying land, farm machinery or other vehicles, buying gold, etc.). Men who control dairy income spend it on agricultural inputs, followed by savings and school fees, and then loan repayments for dairy cows. Men allocate less money than women to family health care and broader asset building. The proportion of decisions taken jointly varies by household. When joint decisions are taken, women and men primarily discuss how to best allocate dairy income to savings, school fees, and agricultural inputs.

We now turn to examine the issue of control over dairy income. The data show significant variation. The Telangana women-only cooperative pays members directly, with about nine out of ten women (87 percent) reporting that they enjoy full control over dairy income, one in ten households taking joint decisions, and one in twenty households where men have sole decision-making power (Table 7). There are no female members in the Telangana mixed-gender cooperative and men are paid directly. This results in very different levels of control over dairy income, with only 6 percent of female respondents (i.e., spouses) saying that they control dairy income. Yet, some women still have a say on how dairy income is spent, with 30 percent of women claiming joint decision-making.

In contrast, nearly half of the female respondents (49 percent) in the Bihar women-only cooperative report that they control milk income. Interestingly, several men (43 percent) in this cooperative also report absolute control over dairy income – albeit not being members of this cooperative. A plausible explanation for this finding is that members are not paid directly. This cooperative. A plausible explanation for this finding is that members are not paid directly. Indeed, anyone from their family who goes to the cooperative to collect a member's income – including men – is paid. Although only 20 percent of the members of the Bihar mixed-gender cooperative are women, around one-quarter (27 percent) report that they enjoy sole decision-making power over dairy income. This may be because the male secretary pays the wives of male members directly. Levels of joint decision-making

Spending patterns	Ranking		
	Women control income	Men control income	Joint decision-making
Savings	1	2	2
School fees	2	2	1
Agricultural inputs	3	1	3
Loan repayment for dairy cow/buffalo	4	3	4
Food expenses	5	4	5
Healthcare family	6	5	4
Asset building	7	5	4
Clothes	8	5	6

Note: Multiple answers were possible for expenditures.

Table 6 Spending of dairy income by women and men.

Type of dairy cooperative	Women decide %	Men decide %	Women and men decide together %
Telangana women-only cooperative	87	4	9
Bihar women-only cooperative	49	43	8
Telangana mixed-gender cooperative	6	64	30
Bihar mixed-gender cooperative	27	64	9

Table 7 Women's decision-making power over dairy income in the household.

Caste	Scheduled Tribe (ST)			Scheduled Caste (SC)			Other Backward Caste (OBC)			General Caste (GC)		
	women	men	both	women	men	both	women	men	both	women	men	both
Telangana women-only cooperative	12			8		4	15	1		6	1	
Bihar women-only cooperative				9	6	1	7	9	2	2	1	
Telangana mixed-gender cooperative	2	2			6	2		4	2		11	7
Bihar mixed-gender cooperative				2	4		6	16	3		1	

Table 8 Who controls dairy income at household level by caste.

in both Bihar cooperatives, and in the Telangana women-only cooperative, are low (less than one in ten households).

Caste status affects the degree to which women claim full control over dairy income (Table 8). In the Telangana women-only cooperative, ST women claim full control, SC women claim either sole or joint decision-making power, while OBC and GC women claim high levels of control. In the Bihar women-only cooperative, approximately half of the women in all caste categories pass control over income directly to men and levels of joint decision-making are low. In the Telangana mixed-gender cooperative, where only men are members, some ST men pass decision-making power directly to women, while some SC, OBC, and particularly GC men claim sole joint decision-making power. In the Bihar mixed-gender cooperative, OBC men overwhelmingly claim control over their wives' dairy income.

i. Factors influencing women's control over dairy income

Respondents were asked which factors influence the ability of women to control dairy income (see Table 9). Since responses did not differ significantly by type of cooperative, they are aggregated. The factors mentioned by respondents are, to some extent, similar to the ones reported with respect to women's membership and participation.

First, women's status within the household remains an important factor in explaining their control over dairy income. An interview with one non-member woman whose husband controls dairy income revealed that neither her husband nor her mother-in-law show her any respect, given that she has given birth to six girls but no boy. As a consequence, she explained that she was required to do all the household work and to be submissive to her husband. Other interviews showed that women with sons experienced considerably more respect from their mothers-in-law and more decision-making power – including over dairy income – than women without sons.

Household level factors	Ranking
Woman's status within the household	1
Levels of male support to female membership	2
Woman's formal education	2
Woman's experience and knowledge	2
Income	5
Woman's health status	6
Levels of household work	7
Female land ownership	10
Community level factors	
Social norm: "cash to men, labor to women" / ATM	11
Membership of SHG and other networks	4
Male out-migration	7
Caste identity	9
Cooperative level factors	
Access to inputs and services	7
Efficacy of cooperative governance	6

Table 9 Factors affecting intra-household control over dairy income.

Second, caste norms play a role in determining women's control over dairy income. Specifically, GC women generally experience lower control over dairy income than OBC, ST, and SC women. This finding reflects widely prevalent caste norms which attribute less agency to GC women. The exception to male dominance and the prevalence of caste norms over spending decisions is in the Telangana women-only cooperative, where almost all women experience high levels of control over income – irrespective of their caste status.

Third, in many households, men are considered the household head and are thus entitled to receive and spend dairy income – irrespective of whether or not they are members of the cooperative and directly engage with dairy cows. Male respondents commonly justified their control over the income earned by women with the phrases, "cash to men and labor to women" (*paise mard kha hai, kham auradh kha hai*) and "women are Any Time Money (ATM)" (*auradh ghar kha ATM*). These expressions signal that men see women as a source of ready income and that women are not entitled to decide how their money is spent. Yet, the Telangana women-only cooperative has been successful in challenging these entrenched norms. Here, some men take on "women's work", such as looking after children and cleaning the cowshed, when their wives are attending dairy cooperative meetings or training outside the village. Men note that women's participation brings more money to the household. Also, many men are confident that their wives can handle money effectively. One man explained:

Initially, I was against female membership as I feared losing control over income, but now I feel it is good for household welfare as women manage dairy income well – especially when it comes to school fees and family nutrition, and my wife supports agricultural expenses as well.

(Interview, Telangana, 15 December 2018)

Women's improved capabilities are considered direct consequences of the training, leadership skills, and, more generally, their active participation in the cooperative. Female members of the Telangana women-only cooperative also experience higher mobility, including outside the village, than women in the other three cooperatives. This is because female leaders pay attention to logistical issues, including women's safety and comfort during travel when arranging their transport, and they ensure that meetings can fit women's schedules.

A fourth key factor in explaining women's control over income is education. Education is considered necessary in order to perform bookkeeping for the dairy business and to take effective decisions with respect to dairy animal care, including feeding, breeding, and purchasing animals. Respondents also argued that people who are more literate, women included, felt more comfortable in dealing with male extension workers. Overall, our data show that women with at least four years of formal education had more control over dairy income than women with fewer years of education.

Fifth, several factors can combine to diminish women's agency. In some homes, women's poor health, low levels of overall household income, and the burden of household work negatively influence women's ability to control income.

	Outcomes of participation		Factors affecting outcomes	
	Women's effective participation in the cooperative	Women's control over dairy income in the household	Supportive female leadership	Supportive male leadership
Telangana women-only cooperative	XX	XX	XX	–
Bihar women-only cooperative	X	X	–	–
Telangana mixed-gender cooperative	X	X	–	–
Bihar mixed-gender cooperative	X	X	–	X

Legend: X = moderate; XX = large; – = not applicable

Table 10 Summary of women's outcomes from participation and of the factors affecting those outcomes in both women-only and mixed gender cooperatives.

Sixth, land is also important. While owning land *per se* does not affect women's entitlement to join the dairy cooperative, when women do own land, their ability to negotiate control over dairy income is stronger. Land ownership also increases women's social standing in the community, their confidence, and their ability to obtain micro-credit as well as access the formal banking system.

Seventh, women who milk their own cows and take the milk to the cooperative themselves are more likely to exercise decision-making power over dairy income.

Finally, across all four research sites, female cooperative members who are also members of SHGs are considerably more likely to be able to control dairy income than women who do not belong to SHGs. Two key factors explain this result: first, women who are members of SHGs have high financial literacy and, second, they are also more aware and confident with respect to household bargaining over dairy income due to their SHG membership. Women also explained that by becoming more knowledgeable through their SHG membership, their bargaining power is strengthened. Male out-migration is another enabling factor for some women as they feel more able to make decisions in their husbands' absence. This factor is particularly empowering for women in the ST, SC, and OBC castes, given that their husbands are more likely to out-migrate than men in the GC caste due to their relative poverty.

It should be noted that female respondents remarked that cooperative membership provides them with several benefits beyond dairy income. These benefits include better relations with other community members, including assistance with household issues, higher knowledge of livestock management, and increased leadership opportunities in other fields.

We summarize our results in Table 10. Overall, our results show that the Telangana women-only cooperative delivers the highest level of benefits to female members. We delve deeper into this headline statement and other findings in the following section.

Discussion

We opened this article by suggesting that investing in female livestock keepers has the potential to empower women. This is because women's control over and benefits from livestock tend to be less contested than with other assets. We further suggested that cooperatives offer an institutional mechanism to ensure more gender equality give that they are, at least in theory, committed to the principles of economic and social fairness. The vast scope of the dairy sector in India, combined with the strong engagement of Indian women in dairying and the fact that nearly all Indian producers are organized into cooperatives, makes of India a fascinating case for testing the empowerment potential of cooperatives. Our study provided a qualitative assessment of associations between dairy cooperatives and women's empowerment.

Our research focused on two key domains of inquiry, namely women's participation in dairy cooperatives (defined as active participation in meetings, representation in leadership roles, and participation in training events) and women's control over dairy income. Turning first to women's participation, we found that just one cooperative, namely the Telangana women-only cooperative, provides women – regardless of their caste – with the opportunity to fully participate as members and as leaders. The fact that this cooperative is a member of Mulukanoor, which is women-only from the village level to the union level, turned out

to be a determining feature. By creating women-only decision-making spaces both within and beyond the village setting, female members are able to successfully challenge the caste and gender norms that restrict women's voice and leadership in the other three selected cooperatives. The history of Mulukanoor provides an explanation for the success of this women-only cooperative. As noted in the literature review, this umbrella body grew organically out of multiple SHGs. Activist women came together to define new and expanded spaces for women to speak out and act. The objective of strengthening women's economic empowerment by investing in dairy was embedded within a much larger institutional history of challenging the status quo. Our findings suggest that this knowledge is being transmitted and institutionalized in new member cooperatives. Furthermore, Mulukanoor's ability to contest entrenched norms push the envelope of creating women-only spaces. Our evidence shows that men are generally supportive of this women-only cooperative, rarely challenging women's control over dairy income and, in some instances, even taking on women's work to enable their wives to attend cooperative meetings. In a way, then, women are taking their empowerment in the cooperative back to their homes: indeed, women are able to translate the "power-with" empowerment they experience in a group setting in relation to governance to a sense of "power within" in intra-household decision-making in relation to dairy income.

The Bihar women-only cooperative shows a very different picture. Here, women are "shadow-leaders" (Birner 2010), with their husbands making all significant decisions. This discourages female members from participating actively in their cooperative. A clear signal of women's limited agency is found in the fact that women do not have the possibility to determine the logistics of training events. This restricts their ability to participate in these events, ultimately barring women from acquiring necessary knowledge and thus strengthening their decision-making power within the household and community. Women in this cooperative appear to be caught in a stasis from which they are unable to escape. A potential explanation for the difference in terms of women's empowerment between the Telangana women-only cooperative and the Bihar one is that the latter was imposed from the top upon the host village. Lacking a history of activism supporting women's empowerment, cultural norms that privilege male decision-making power could not be challenged in this cooperative. This means that the Bihar women-only cooperative is a mixed-gender or even a men's cooperative in all but its name. Comparable findings are reported in a study of dairy cooperatives in Karnataka, where women were enrolled in dairy cooperatives but men received their dairy income (Dohmwirth and Hanisch 2017). Birner (2010) similarly finds that when norms privilege men as economic actors and decision-makers, a sizeable number of women-only cooperatives are, *de facto*, run by men.

The two mixed-gender cooperatives also exhibit strong male dominance, even more so in Telangana where no women are and have ever been members. Interestingly, in the mixed-gender cooperative in Bihar, cultural norms appear partly overridden because the male secretary is able to exercise his agency – as a man – to encourage women into what is, effectively, a male space. As a direct consequence, women's participation in the Bihar mixed-

gender cooperative is fairly high. Women themselves recognize that the benefits they experience have been bestowed on them by a man (i.e., the male secretary), and they express gratitude to him. However, this "empowerment space" cannot be institutionalized given that it is inextricably tied to this one individual, and women do not seem to have captured this space to make it their own. Perhaps, as a consequence of this invitation, women's participation in meetings and training events is primarily restricted to women who are members and does not include non-member female spouses. The experience of this cooperative is still far from developing and promoting an understanding of women's empowerment as having an autonomous agentic character and from being led and defined from within by women themselves. Rather, women experience "power through" their relationship to a powerful man (Galiè and Farnworth 2019). Studies conducted in Nepal (Farnworth et al. 2018) and in India (Farnworth et al. 2020) similarly found that men championing women's empowerment can play a critical role at the village level, by opening more spaces for women. Yet, more research is needed in order to determine whether women are actually able to translate this "power through" delivered by a powerful male champion into a "power within" their households.

Our findings further show that women experience different forms of empowerment and disempowerment by virtue of their caste. Indeed, caste norms insinuate themselves into cooperative spaces, with the most powerful in society usually being also the most powerful within the cooperative. In three of the four selected cooperatives, only higher caste OBC and GC members occupy leadership positions. The Telangana women-only cooperative provides again a notable exception, with a SC woman occupying a leadership position. This fact gives more evidence of the transformative potential of the Telangana women-only cooperative. The implications for women's empowerment are also interesting. Within these communities, ST and SC women are generally more empowered in intra-household decision-making than OBC and GC women. The exclusion of OBC and GC women from cooperative leadership arguably reduces their ability to contribute to a more empowering environment for all women within the cooperative.

Our results further show that women who already enjoy privileges due to intra-household patriarchal structures are also more likely to join both women-only and mixed-gender cooperatives, and to experience more control over dairy income. These women include senior women and women with other forms of social status, such as first daughters-in-law and women who have had sons. Such women experience more decision-making power at the household level, which results in a higher likelihood of becoming members of a cooperative (without, however, necessarily having an active voice in it) and of retaining control over dairy income within the home. Other types of structural benefits, such as land ownership and higher educational levels, can also give women the possibility to derive significant benefits from cooperatives.

Yet, even within these male-dominated contexts, there still remains a place for women's individual agency. Indeed, our results show that women who are already members of SHGs are more likely to participate and to exercise control over dairy income than female non-members. Our findings unequivocally

show that some women in the mixed-gender cooperatives and in the Bihar women-only cooperative either exert sole control over dairy income or they actively participate in joint decision-making over that income. This happens in spite of the fact that widely shared cultural norms ascribe to men the role of heads of the home and the right to control women's income. We see here an example of what Galiè and Farnworth (2019) call "gender norms façade", referring to the fact that, in some cases, people in the safe space of their own homes may practice more gender equality than they are willing to demonstrate at the community level, including within the cooperative. Finally, our findings suggest that personality also plays a role. For one reason or another, some individual women are better able to express their agency than other women. Among others, this finding is echoed by Badstue et al. (2018), who highlight the importance of factors associated with personality in agricultural innovation processes. Finally, in line with broader data, our results underscore that women are more likely than men to spend dairy income on household welfare.

Conclusion

Cooperatives, as an institution, can offer women a gateway to empowering social structures. Pandey et al. (2020) argue that participation in markets provide women with passive forms of agency, while political representation helps them to transition to active forms of agency which can enable women to take some control over their lives. This observation holds true in the case of Mulukanoor.

Yet, one of the biggest challenges highlighted by the ILO and Coop (2015) study was that the prevalence of cultural norms continue to undermine the agentic potential of cooperatives. Our findings partly resonate with this assessment. Well-intentioned, top-down interventions aimed at empowering women by instituting women-only dairy cooperatives have limited transformative potential if entrenched gender (and caste) norms are not appropriately challenged. Cooperative bylaws, which are supposed to guarantee fairness and gender equality, cannot be by themselves transformative. At the same time, the lesson that Mulukanoor offers is that indigenously-led and bottom-up empowerment can be transformative. In a way, the Mulukanoor experience is reminiscent of earlier understandings of women's empowerment which were largely developed by feminists in the Global South. In the halcyon days of the 1980s and 1990s, the women's empowerment movement focused on redressing "power inequalities, asserting the right to have rights, and acting to bring about structural change in favor of equality" (Kabeer 1999; Cornwall 2016).

A crucial question remains open: how can gender and caste norms be transformed in locations without a strong women-led activist movement? Mulukanoor offers a potential way forward by providing a second, powerful lesson: women's agency and the empowerment of women of all castes is facilitated by women-only structures beyond the village level. From the top to the bottom, Mulukanoor is run by women. On the contrary, women-only cooperative structures which stops at the village level are not strong enough to withstand, let alone transform, disempow-

ering gender and caste norms. Rather, a dedication to women's empowerment throughout *all the levels* of cooperative structures is needed. This may be achieved either by giving women the control of cooperative structures at all levels or, alternatively, by ensuring that there is a passionate and true commitment for gender transformation in male-dominated cooperatives. For instance, TRIAS in El Salvador worked with farmer cooperatives for over ten years to develop a "Gender and Generation Route", which is a challenging road map and toolbox aimed at mainstreaming gender at three cooperative levels: organizational, person to person, and individual levels (TRIAS, n.d). Other ways forward include working with women to help them identify and promote their gender needs in cooperative meetings. Dedicated time should be set aside for women to speak during meetings. Men should be trained to listen to women and to be supportive of women's empowerment. Even though these are useful steps, Okali (FAO (2011)) warns against relying too heavily on approaches which primarily focus on individuals and on women's current roles, since these approaches will not enable women to "step up" into new roles. This feeds into the third lesson offered by Mulukanoor. This cooperative is the organizational outcome of women stepping up and transitioning out of multiple SHGs into a large economic enterprise. This example powerfully teaches us that in order to move forward on empowering women in dairy cooperatives in India, ambition is key.

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