# DAIRY COOPERATIVES AND WOMEN'S ECONOMIC EMPOWERMENT, LESSONS FROM KARNATAKA

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## Abstract

Our paper studies effects of women empowerment through cooperative membership. Since the year 1997 the Government of Karnataka and the Karnataka Milk Federation (KMF) established over 800 women dairy cooperative societies with the objective to economically and socially empower and benefit women in Karnataka, India. We measure empowerment levels among 58 female dairy farmers from four different dairy cooperatives. Borrowing measurements from the Women's Empowerment in Agriculture Index (Alkire et al., 2013) we discriminate membership and non-membership status in single sex (women) versus mixed gender dairy cooperatives. We identify and describe the methodological difficulties with applying indexes and directly comparing women organized in one or the other group. We also find that in a context of rural poverty in which women cooperatives are promoted without offering additional development opportunities for men, the effects in our cases remained limited to perceived training and leadership effects. Programs that systematically exclude men from market access opportunities and measurable benefits from collective organization may even cause men to increase male control over dairy production, a sector which is traditionally characterized by management of women. We conclude that ongoing policies in support of women cooperatives may require more rigorous evaluation of impacts. Development policies in support of women empowerment may have to be redesigned.

**Dairy cooperatives and women's economic empowerment, lessons from Karnataka**

## Introduction

Our paper studies effects of women empowerment through cooperative membership. Since the year 1997 the Government of Karnataka and the Karnataka Milk Federation (KMF) established over 800 women dairy cooperative societies with the objective to economically and socially empower and benefit women in the State (Karnataka Milk Federation, 2014). In India, traditionally women are responsible for dairy farming. Dairy farming is predominantly a small-scale production activity with 80% of Indian dairy farmers keeping two to five dairy animals (Cunningham, 2009). Nevertheless, dairy production vitally contributes to farmers' household income and nutrition security. Dairy cooperatives are an important way to integrate small farmers into value chains (Markelova et al., 2009). From 1970 to 1996 the Government of India and international donors have promoted the establishment of dairy cooperatives all over the country by the policy program "Operation Flood". Nowadays, the Indian dairy cooperative system has around 13 million producer-members; mostly landless or small scale farmers with less than two hectares of land. Village collection points operated by dairy cooperative societies are essential to connect disperse producers to the national dairy value chain. The cooperative members obtain regular cash income, which is crucial for them to maintain the household and farming economy (Kurup, 2001; Candler and Kumar, 1998; Rajendran and Mohanty, 2004; Cunningham, 2009).

Though women typically perform the majority of activities related to milk production, they are underrepresented in the membership and board structures of the dairy cooperatives. Only 25% of members and 3% of managers of mixed-gender dairy cooperatives are female (Cunningham, 2009:21).

Considering the role of women in dairy production and their lack of participation in dairy organizations, the Government of Karnataka and the KMF established women dairy cooperative societies. The assumption being that women-only cooperatives can provide women with independent incomes, which in turn increases their participation in decision-making in the household and community, leads to their greater economic autonomy and gradually changes patriarchal norms.

The objective of this study is to explore empirically if membership in a dairy cooperative enhances women's economic empowerment and under which conditions.

**Literature Review: Gender and collective action**

Collective action and community-based development programs are increasingly promoted as a means to empower marginalized groups of the society (Thorp et al., 2005; Weinberger and Jütting, 2001). The gender composition of groups is a determinant of their performance and choice of specific group activities (Agarwal, 2009; Meinzen-Dick and Zwarteveen, 1998; Westermann et al., 2005; Molinas, 1998).

In behavioural experiments women frequently show a higher propensity for collaborative behaviour (Eckel and Grossman, 1998; Heinz et al., 2011) in accordance with prevailing gender stereotypes and expectations (Eckel et al., 2008). It is argued that women depend more on informal networks compared to men since they have less access to formal organizations and economic assets (Agarwal, 2000). Non-participation or exclusion from groups has a higher cost for women, which may induce women's groups to be more cohesive. In line with this, women's groups in natural resource management are found to have higher levels of collaboration, solidarity and capacity for conflict solving compared to men's and mixed-gender groups (Westermann et al., 2005).

Pandolfelli et al. (2008) identify gender as a key aspect of a person's willingness and ability to participate in groups and one source of identity around which collective action can be organized. Motivations to join collective action depend on the gendered labour division within the household and community. Even when men and women participate in the same groups, they may have different interests and roles because of their socially ascribed responsibilities and attributes (Schroeder et al., 2013). The benefits and costs of participation in collective action are mediated by gender relations and power structures within the society (Agarwal, 2000; Pandolfelli et al., 2008). From the perspective of the targeted women, collective action may not always be desirable because of high opportunity cost and time constraints (Mayoux, 1995; Weinberger and Jütting, 2001). In India, rural women often face high work burdens of domestic and agricultural duties and patriarchal norms continue to limit their participation in economic and political activities outside the domestic sphere (Bennett, 1991; Kishor and Gupta, 2009). Therefore, women usually face more difficulties to participate in collective action then men (Das, 2014; Agarwal, 2009; Sanyal, 2009).

Mixed-gender participatory organizations often tend to marginalize women (Mayoux, 1995; Cornwall, 2003) and can even lead to a decrease in women's control over income and production activities if they do not explicitly tackle gender inequalities (Fischer and Qaim, 2012). Cunningham (2009) offers an overview over studies considering the impact of mixed-gender dairy cooperatives in India on women. Most of them date back to the 1980s and 1990s and focus on female employment, work load and nutritional benefits rather than on a broader

concept of empowerment (Sharma and Vanjani, 1993; Terhal and Doornbos, 1983). Considering women's control over income, Bennett (1991) concludes that: "for non-member women producers, Operation Flood has too often meant more dairy work but no increase, and sometimes even a decrease, in their access to dairy income" (Bennett, 1991: 51). More recent assessments of dairy value chain upgrading through producer groups, find no significant improvement in women's control over dairy income and asset ownership but an increase in women's work load. The dairy producer groups, however, have some potential for empowering women by increasing their mobility, building social and human capital and changing perceptions about women's roles and capabilities (Quisumbing et al., 2015). Women's participation in mixed agricultural producer organizations is sometimes found to have a positive impact on women's relative decision-making power within the household and their economic autonomy (Schroeder et al., 2013; Burchi and Vicari, 2014). It is important to note that the studied cooperatives have a majority of female members. This supports the argument that a larger number of female members may encourage other women to actively participate in groups and decision-making bodies (Agarwal, 2014).

Consequentially, in environments, where cultural barriers to men and women working together are high, women groups may be the most feasible way to target women's needs and allow their full participation in collective action (Pandolfelli et al., 2008; Agarwal, 2000).[1]

Women's groups are prominent in the microfinance sector since it is often assumed that women use credit more effectively to increase the welfare of the family and have higher pay-back rates (Kabeer, 2001; Pitt et al., 2006; Mayoux, 1999). The impact of women's groups in microfinance on different dimensions of women's empowerment has been extensively researched with varying results: Participation in microfinance groups was found to improve women's position in the household and community, their mobility and participation in decision-making (Holvoet, 2005; Hashemi et al., 1996; Husain et al., 2014; Kabeer, 2001; Pitt et al., 2006) as well as increasing women's social capital and their ability to collectively tackle community problems (Sanyal, 2009; Janssens, 2010; Kabeer, 2011). But other studies found rather negative impacts of micro-credit programs on the emotional well-being of women (Ahmed et al., 2001), possibly increased domestic violence against women (Hunt and Kasynathan, 2001; Rocca et al., 2009), a lack of women's control over the use of credit (Garikipati, 2012; Goetz and Gupta, 1996) and insignificant improvements of women's status within the household (Garikipati, 2008).

[1] It is important to acknowledge women's heterogeneity in terms of class, ethnicity or social status, leading to conflicts and hierarchies within women's groups (Razavi and Miller, 1995).

In contrast to microfinance groups, there has been relatively little research on women's groups in the agricultural sector and their impact on women's empowerment (Alkire et al., 2013).

Even though in the last two decades many women dairy cooperatives have been set-up in India, research on the impact of membership in such cooperatives on women's economic autonomy, time use and decision-making power is scarce (for example; Kaur, 2010; Meera and Gowda, 2013).

Drawing on the experience from women microfinance groups we expect that similar challenges may characterize collective action and empowerment in women dairy cooperatives. In what follows we will conceptualize empowerment and introduce means to measure and compare it, describe the cases we have used in our analysis and present the findings. Analysis is guided by three research questions: In how far can collective action organizations in the Indian dairy sector economically empower rural women? Are women-only dairy cooperatives more effective for women's empowerment compared to mixed-gender cooperatives and, does membership in women dairy cooperatives increase women's participation in household decision-making?

**Method: Defining and measuring empowerment**

There are different definitions of empowerment in the context of gender and international development (Narayan-Parker, 2005; Kabeer, 1999; Mosedale, 2005; Alsop et al., 2006). The various concepts have, however, some common elements. First, empowerment as a process is defined as a change towards greater gender equality rather than a final outcome. Second, empowerment implies agency; understood as the ability to act on behalf of oneself. In other words, women themselves need to be actors of change (Malhotra et al., 2002). Empowerment is a multidimensional concept and can be operationalized at different levels, such as the household, the community or the state, and in different domains such as the economic, political and socio-cultural environment.

In this study, the focus is on economic empowerment of women in the field of agriculture. Therefore, the conceptual framework is based on the Women's Empowerment in Agriculture Index (WEAI) developed by Alkire et al.(2013). The index is constructed as an aggregated measure of five domains and respective sub-domains:

(1) Production: decision-making regarding agricultural production

a. Dairy production
b. Crop production

(2) Resources: access to and control over resources and credits

a. Land ownership
b. Control over assets
c. Access to and control over credit

(3) Income: control over the use of income and expenditures

(4) Leadership: membership in economic or social groups and comfort speaking in public as proxies for leadership in the community

(5) Time use: allocation of time to productive and domestic tasks

These five domains are derived from theoretical concepts of empowerment developed by Alsop et al. (2006), Kabeer (1999) and Narayan-Parker (2002). The ability to make effective choices (Alsop et al., 2006; Kabeer, 2001 and 1999) is reflected by the woman's decision-making power in various aspects of the household and farming activities as well as by her access to financial and productive resources. Women's inclusion and participation in local organizations as described by Narayan-Parker (2002) is captured by the domain "Leadership". Women's time use is another aspect of women's empowerment as women often face conflicting labour burdens of childcare, agricultural activities and wage employment. A change in time use not only affects the woman herself but also her family. Therefore observable changes in women's time regimes and availabilities are an important indicator for the costs or benefits of policy interventions targeting women (Alkire et al., 2013).

Empowerment in the five domains is assessed at the individual level. The underlying assumption is that much of women's subordination, including unequal intra-household allocation of resources and participation in decision-making, arises within the household (Agarwal, 1997).

Apart from giving information about the women's individual empowerment, the WEAI has been used to compare the aggregate level of women's empowerment among countries (Alkire et al., 2013). Ravallion (2012) criticizes the approach of composite or "mash-up" indices because they often lack a theoretical base for weighting and aggregating different data sets. Moreover, such complex concepts as empowerment can have distinct meanings in different cultural settings and contexts.

In this study, the WEAI is used to compare women's empowerment among cooperatives in a particular region; the assumption being that the contexts are sufficiently comparable. Consequently, the WEAI index has been modified according to the regional and sector specific focus of the study and was used as a basis for questionnaire development. The idea is that we use the comprehensive categories and respective questions provided by the WEAI to

operationalize empowerment assessment but considerably reduce the WEAI´s comparative claim.

For all questions regarding participation in decision-making in the domains of Production, Resources and Income, a decision-making score was assigned. This score ranges between 0%, if the decision is taken without the involvement of the woman, and 100%, if the decision is taken by the woman alone. A woman who participates at least equally in decision making (50%) is considered empowered in that domain. At the aggregate level, the percentage indicates the average decision-making power of women in each domain. For land ownership the percentage of land registered in the woman's name is considered. The domain Leadership indicates in how far women achieve leadership abilities according to four selected criteria; group participation, leadership position, speaking in women groups, and speaking in mixed groups. The aggregate value was calculated as the average percentage of women who fulfil each of the criteria. For the domain Time Use the working hours as well as free and resting time are documented. A woman can be considered empowered in this domain if her working time does not exceed 10.5 hours (Alkire et al., 2013).

**Data**

The data was collected in February and March, 2014 in Mandya and Chickballapur district in the South Indian state Karnataka. Both districts have a tropical semi-arid climate. Along with agricultural and horticulture production, dairy farming is a mayor income source for most of the rural population.

With 66% and 25% the rates of female literacy and rural poverty in Karnataka, compare reasonably well to national average rates (Table 1).

Table 1: Socio-economic indicators at district, state and national level (Year 2010 – 2011)

| | **Mandya** | **Chickballapur** | **Karnataka** | **India** |
|---|---|---|---|---|
| Rural population | 82.92% | 77.60% | 61.3% | 68% |
| Sex ratio (females for every 1000 males) | 995 | 968 | 973 | 925 |
| Female literacy rate (%) | 62.5% | 61.5% | 66% | 65.5% |
| Average farm size (ha) | 0.61 | 1.21 (Kolar) | 1.55 | 1.15 |
| Rural poverty rate (%) | N.A. | N.A. | 24.5% | 25.7% |

Sources: Agriculture Census Commission, 2014; Government of India, Planning Commission, 2013; Anonymous, 2015; CIA, 2015

We conducted interviews with 58 women. Fourteen of them are members in women dairy cooperatives; fifteen are members in mixed-gender dairy cooperatives and 29 women are non-

members, selling milk at the private market (ANNEX). A structured questionnaire was designed for the interviews, containing questions about socio-economic characteristics of the respondents, characteristics of the household, crop production, dairy production, dairy cooperative membership and questions regarding empowerment. We used a purposive snowball sampling technique to approach the interviewees (Atkinson and Flint, 2001). Each interview required around 45 minutes. All interviews were conducted in the local language with the help of female translators. Interviews were mostly realized in the absence of male family members to minimize bias. Discussions with members of the management boards of each of the four dairy cooperatives provided background information.

## Results and discussion

### Socio-economic characteristics

All interviewed women were Hindus and belonged to backward castes. 50 women were married, seven widows and one was never married. Corresponding to the regional average, 57% of the respondents were literate. Socio-economic characteristics of the women and their households are presented in the following table.

Table 2: Socio-economic characteristics

| | **All respondents** | | | **Women-coop** | **Mixed-coop** | **Non-members** |
|---|---|---|---|---|---|---|
| | **Mean** | **Min** | **Max** | **Mean** | **Mean** | **Mean** |
| Schooling (years) | 4.6 | 0 | 12 | 5.9 | 6.3 | 3.2 |
| Age (years) | 41 | 25 | 65 | 37 | 43 | 41 |
| Farm size (ha) | 1.24 | 0 | 8.5 | 5.57 | 1.87 | 1.06 |
| Irrigated farm area (ha) | 0.69 | 0 | 2.43 | 2.29 | 1.6 | 0.60 |
| Household members | 5 | 2 | 13 | 6.5 | 4.4 | 4.6 |
| Gross income (‘000 INR[2]/year) | 258 | 16 | 1,989 | 485 | 199 | 179 |

As pointed out before, we describe access to economic resources and income as a pre-condition for empowerment. Therefore, we start from the proposition that economic benefits of cooperative membership may contribute to women’s empowerment.

[2] Indian Rupees; at the time of study one US dollar was equal to 61 Indian Rupees.

**Economic benefits for cooperative members**

In the sample, women who were cooperative members produced and sold larger amounts of milk per day compared to non-members. Members kept a larger number of animals, especially cross-breed cows, increased the use of concentrated feed stuff and had higher expenses for veterinary services. Consequently, they had achieved a significantly higher productivity per animal and dairy income became more and more important in their total household income. Cooperative members were commercially oriented, kept a smaller share of the produced milk for home consumption but, given their higher productivity, they obtained a higher amount of milk per person in absolute terms, indicating nutritional benefits for their families.

Table 3: Economic benefits for cooperative members

| | **Women-coop** | | **Mixed-coop** | | **Non-members** | |
|---|---|---|---|---|---|---|
| | **Mean** | **S.D.** | **Mean** | **S.D.** | **Mean** | **S.D.** |
| Herd size (heads) | 5.6 | 4.6 | 4.1 | 2.1 | 3 | 1.0 |
| Buffaloes | 0.7 | 1 | 0.9 | 0.96 | 1.6 | 0.95 |
| Cross bred cows | 2.9 | 2.3 | 1.9 | 1.6 | 0.4 | 0.82 |
| Yield per animal (litres/day) | 8.6 | 2.3 | 6.6 | 3.1 | 3.4 | 1.64 |
| Total milk produced (litres/day) | 24.9 | 24.9 | 13.3 | 7.97 | 5 | 4.7 |
| Avg. price in the cooperative (INR/litre) | 21.14 | 1.03 | 22.9 | 1.3 | - | - |
| Cost of dairy production (INR/day/animal) | 33 | 17.5 | 38 | 21.3 | 10 | 20 |
| Share of milk for home consumption (%) | 9.36 | 6.44 | 13.67 | 6.86 | 25.34 | 14.95 |
| Available milk (ml/per person/day) | 388 | 187 | 337 | 192 | 218 | 118 |

All differences are significant at 5% level (Mann-Whitney-U test)

Prices paid by the cooperatives varied between 20 INR and 25 INR per litre according to the fat content, averaging 21 INR per litre for women dairy cooperatives and 23 INR for the mixed-gender cooperative. Additionally, there is a government subsidy of 4 INR per litre paid irregularly to the farmers. In the case of the mixed-gender cooperative, members receive a bonus payment at the end of the year. The other cooperatives do not pay out the members but save the money for future investments. Non-members sell at the private, mostly informal, market. Here the sales price lies between 20 INR and 40 INR per litre, on average 26 INR per litre. Out of the interviewed cooperative members, 80% perceive an improvement in their economic situation since they entered the cooperative. These results indicate that households of the participating women achieve economic gains by joining a dairy cooperative.

**Empowerment**

In the following section women's empowerment across the five domains is compared between members of women cooperatives, members of mixed cooperatives and non-members.

*Production*

In contrast to what has been expected, members of women cooperatives report to participate less in household decision-making about dairy production e.g. the feeding, the selection of cattle breed and the health care of animals, compared to members of mixed cooperatives and non-members.

Feeding, health care and the selection of breed come along with a higher level of commercialization, expenses and market transactions for cooperative members. Instead of using field residuals or grazing animals, feedstuff is purchased at the cooperative. Since women have lower propensity to involve in formalized market transactions, the purchase is mostly done by male family members, including sons and in-laws.

When women dairy cooperatives are established in a village, it seems that men increase their focus on controlling dairy production compared to a situation without the formation of a dairy cooperative. With increasing formalized market transactions and the higher economic importance of dairying for the household, involving in dairying becomes more attractive for males. This also is apparent when looking at the use of dairy income as discussed below.

KMF made the establishment of women cooperatives compulsory for villages joining the cooperative system after 2005. As a consequence of KMF's policy, households have to "use" women to get market access through the cooperative. During the data collection it became apparent, that in the studied cases, influential men, such as Panchayat members, encouraged women to come forward to build up a dairy cooperative. At the household level, it is usually the husband that "pushes" his wife to become a member of a cooperative in order to be able to use the service of the cooperative (Kaur, 2010; Holvoet, 2005). Women's indicated low participation in dairy-related decision-making suggests that they only formally participate in dairy cooperatives with their husbands actually taking over decision making (Makita, 2009). Decision-making about crop production is per se male dominated for all three groups. But members of women cooperatives involve notably less in such decisions compared to members of mixed cooperatives and non-members. These results are puzzling and deserve further interpretation.

Table 4: Participation in production related decision making

| **Domain** | Production | |
|---|---|---|
| **Sub-domain** | Crop production | Dairy production |
| Women cooperative | 8% | 37% |
| Mixed cooperative | 23% | 48% |
| Non-members | 18% | 51% |

*Resources*

In the study sample, 88% of the women do not own any land in their name. None of the members of the women cooperative has land registered in her name, whereas three women in the mixed cooperative have registered land titles; two of them are widows. It may now be argued that, given the small sample size, it is the difference in the amount of women members with formal ownership driving women's perceived empowerment through exercising control over land and other productive resources. Our data indicates that women in the mixed cooperative felt that they participated almost equally in decisions about the purchase and sale of land and livestock compared to male fellow members, while women cooperative members stated much less decision-making power (23%) in this regard.

In this case we tend to explain women's perception of higher participation in decision making by physical absence of a husband rather than by empowerment by democratic participation (Hunt and Kasynathan, 2001). In other words, female headed households, are often formed accidentally and the greater autonomy at the household-level may not be associated with more influence at society level (Waite, 2000). In the studied cases, there are at least five female heads of households among the women in the mixed cooperative. These women reported to have taken over their husband's cooperative share after his death. This underpins the role of barriers to women's participation in decision making in mixed-gender groups as long as they are part of a male-headed household. On the contrary, in pure women cooperatives even women who are not empowered within their households can become shareholders. But in that case holding a share does not support a perception of empowerment, because it cannot be related to decision making power. Holvoet (2005) finds similar explanations for empowerment factors in women-only and mixed-gender micro-credit programs (Holvoet, 2005). Cooperative members, both in women and in mixed cooperatives, have better access to and control over credits compared to non-members. 90% of cooperative member households have access to at least one loan compared to 66% of non-members. The higher access to credits is related to the presence of women's micro-credit self-help groups (SHGs) in the villages where dairy cooperatives exist. Around one third of all credits have been accessed through SHGs. Moreover, women have more control over credits obtained from a SHG than over credits from banks or agricultural credit cooperatives.

Table 5: Credit and asset related participation in decision making

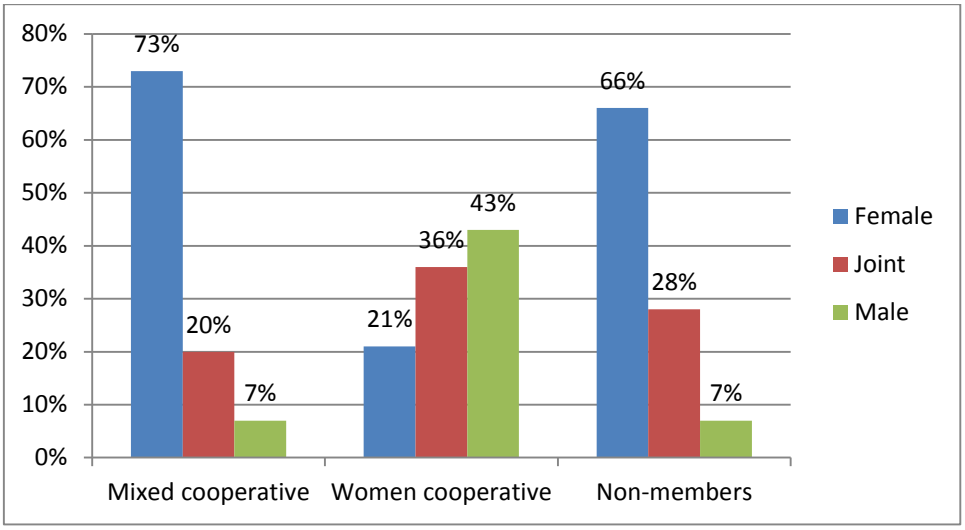
| **Domain** | Resources | | |
|---|---|---|---|
| **Sub-domain** | % land owned by woman | Decision-making over purchase and sale of assets | Access to and decision on credit |
| Women cooperative | 0% | 23% | 35% |
| Mixed cooperative | 20% | 48% | 43% |
| Non-members | 8% | 40% | 29% |

*Income*

Corresponding to their relatively high decision-making power over production activities and economic resources, women in mixed-gender cooperatives have high levels of control over income.

On the other side, members of women cooperatives participate little in decisions about the use of income. These results indicate that incomes derived from participation in dairy cooperatives do not automatically translate into more control over income for women (Figure 1). In fact, women who participated in dairy cooperatives are less likely to receive payments themselves and may even lose part of control over the income. This is partly caused by the fact that usually private traders or neighbours who want to purchase milk come directly to the house of the producer and pay. On the other side, the cooperative will pay out the money to farmers only weekly or fortnightly. Often husbands or other male family members go to collect the money at the day of the payment instead of the female members. Even if this does not necessarily imply a loss of control over the dairy income, the data here suggests that the person who receives the payment is more likely to take decisions about the money received. Moreover, in villages with women dairy cooperatives men rather than women seem to focus attention on decision making on dairy income and appropriate a domain traditionally occupied by women (see figure 1 and Hashemi et al., 1996).

Figure 1: Decision-making about the use of dairy income




*Leadership*

In the studied area, perception of leadership is related to women's access to credit. The groups, in which most women participate apart from dairy cooperatives, are SHGs that provide loans to members. In the studied sample, villages with dairy cooperatives also have functioning SHGs, whereas in villages without cooperative there is a lack of such groups. One reason might be the synergetic effects between SHGs and dairy cooperatives, so that the existence of one group makes the establishment of the other more likely, e.g. by creating networks among women (Markelova et al., 2009). Generally, non-members show less leadership characteristics compared to members of women and mixed cooperatives. Six of the interviewed members of women cooperatives have a leadership position in the dairy cooperative. Members of women cooperatives participate more often in trainings and meetings compared to women in mixed cooperatives.

Table: Women's participation in decision-making bodies of dairy cooperative

| | **Mixed-coop (N=1)** | **Women-coop (N=3)** |
|---|---|---|
| Number of respondents | 15 | 14 |
| Female members of BOD | 2 (quota) | all |
| Respondents who attended meetings | 2 | all |
| Respondents who received trainings | 3 | 7 |
| Respondents who are members of BOD | 0 | 6 |

It seems that cooperatives offer a possibility for women to exercise and improve their leadership abilities. Nevertheless, women who manage the cooperatives at the village level, often lack appropriate education and training. Therefore, they may easily be become shadow managers with actual decisions made by influential men in the community. At the higher

managerial level of the cooperative system, most positions remain occupied by men, e.g. all members of the board of directors of the milk federation are male (see Karnataka Milk Federation, 2014).

*Time Use*

Members of women dairy cooperatives spend on average 4 hours per day on dairy-related tasks, members in mixed cooperatives 4.4 hours and non-members 4.7 hours. The slightly lower time use for cooperative members, both in women and mixed-gender groups, seems surprising since they usually keep larger herd of animals. But cooperative members, especially in women dairy cooperatives, rely more on the support of their husbands and other family members for realizing dairy activities. Additionally, cooperative members tend to adopt more efficient production processes such as the use of purchased feeding stuff instead of herding grazing animals, which result in time-savings for women. According to this study, there is no increase in dairy-related work for cooperative members. Members of women cooperatives, however, did not enjoy more free and resting time compared to non-members.

Table 6: Income, leadership and time use

| **Domain** | Income | Leadership | Time Use |
|---|---|---|---|
| **Sub-domain** | Control over use of income | Group member and speaking in public | Free and resting time (in h) |
| Women cooperative | 37% | 75% | 10.9 |
| Mixed cooperative | 66% | 73% | 11.8 |
| Non-members | 51% | 52% | 11.2 |

**Summary of key findings**

In our study, women in mixed-gender cooperatives felt notably more empowered than women in single-sex cooperatives in all of the five domains we have explored. The difference in empowerment is especially important in the domains of income control, purchase and sale of assets and ownership of land. More interestingly, members of women dairy cooperatives felt less empowered than non-members in all but two domains: In the domains of leadership and access to credit, members of women cooperatives felt more empowered than women in the control group.

These result run against our initial proposition that membership in a cooperative and in particular membership in a women cooperative would enhance the empowerment of women in important dimensions. These somewhat puzzling results may partly be explained by methodological problems. In our sample there seems to be only limited comparability

between women registered as members in mixed dairy cooperatives and those women registered as members of women dairy cooperatives. This finding is an outcome rather than a wrong assumption in our approach: Traditionally men are members of dairies and other organizations. We found that women members in mixed cooperatives do usually represent households that lost their male household head and main decision maker, a situation not uncommon in poor rural India. Women inherit membership or become members in a mixed-cooperative, if they are considered to be "heads of the household".

Claiming higher empowerment in women only cooperatives seems to be a rather mal-specified proposition because, due to cultural and traditional aspects, such claims may lack a proper control group. In our study we have tried to control for collective organization and for sex in two different control groups. However, direct comparability has remained a challenge.

Results of our analysis do still challenge the thesis that women cooperatives empower women. The described selection effect cannot explain, why for example women in single-sex cooperatives indicate even lower levels of empowerment compared to unorganized non-member women in dairy farming. Looking at studies about other single-sex groups with similar findings, we support the following arguments: First, women in single-sex cooperatives may be 'pushed' by men to participate in an income-generating program even if they are non-motivated to join. Second, men may feel threatened to lose their bred-winner position within the household or village, if most important income-generating opportunities are exclusively provided to women. This politically driven effect may result in increased control of men over an agricultural activity traditionally surveyed by women resulting in weak empowerment perception of women members. Promoting women cooperatives may thus counter traditional forms of agricultural activity and increase conflicts within the household. Third, women dairy cooperatives are established with a top-down approach, lacking the participation of women in the planning and evaluation process and with very few women later on involved at the management levels of cooperatives and the implementation agencies. Finally, women who are supposed to manage the cooperatives at the village level often lack adequate education and training. Therefore, even for reasons of lack of capacity, they may become marginalised and are then allocated the roles of shadow managers in women only cooperatives.

In the wider development dialogue on women empowerment it may thus be important to point out that women's participation in dairy cooperatives does not automatically lead to their greater economic autonomy and empowerment. Respective projects would have to be specified in terms of who is to be compared with whom prior and after project implementation. Likewise, prior to project formulation, the expected relation between organisation and specific dimensions of empowerment as well as the criteria on the basis of

which effectiveness is to be monitored must be specified. Our study shows that it is way too simple to generalize that female members, once they are collectively organized, would take control over decision making and additional incomes.

**Limitations and conclusions**

In this paper we empirically assessed women's economic empowerment over five domains comparing members of mixed-gender and women dairy cooperatives with non-members. We find that in our sample women dairy cooperatives are rather not achieving the objectives their promotors had in mind. Women in our sample cooperatives felt even less empowered when compared with unorganized dairy farmer women or members of mixed dairy cooperatives for most of the cases and most of the domains we assessed. A major methodological challenge in our study of empowerment is the difference in the amount of women household heads between dairy cooperatives and women dairy cooperatives. We find a disproportionate large number of female household heads (30%) in the mixed gender cooperatives and we can assume that statements about higher empowerment status in this group relates to their necessarily stronger position as female household heads. In our study these phenomena have obscured conclusion making on the direction of causality between cooperative membership and empowerment at this point.

Future studies on women empowerment through collective action must take these findings into account. Studies should incorporate a larger sample size and enable direct comparison between different membership groups such as women as household heads, different levels of education and training among women as a proxy for capacity and management talent. Another interesting option is to analyse on different levels and first compare collective action effects on organized and unorganized farmers, then specify on gender difference and finally on the different functions and household types of members. Methods of matching may help to account for necessary comparability of elements at all levels in the sample.

ANNEX

Table 7: Sample structure

| **District** | Mandya | | | |
|---|---|---|---|---|
| **Taluk** | Mandya | | K.R. Pet | |
| **Village** | Hullenahalli Mixed coop | VC farm Hullenahalli coop | Bommenayakanahalli No coop | Bandabovinahalli Women coop |
| **Members** | 11 | 3 | 1 | 6 |
| **Non-members** | 11 | 1 | 8 | 0 |
| **Total** | 22 | 4 | 9 | 6 |
| **District** | Chikballapur | | | |
| **Taluk** | Shidlaghatta | | Chikballapur | |
| **Village** | Dhanamittenahalli Women coop | Amooratimmanahalli Women coop | Mushtur | Dyavarahalli |
| **Members** | 4 | 4 | 0 | 0 |
| **Non-members** | 0 | 0 | 4 | 5 |
| **Total** | 4 | 4 | 4 | 5 |

Table 8: Modified Women's Empowerment in Agriculture Index

| **Domain** | **Question(s)** |
|---|---|
| **Production** | |
| Crops | E17 Who takes decisions about which inputs to buy? |
| | E18 Who takes decisions about which crops to grow? |
| | E19 Who takes decisions about when and who takes crops to market/sales-man? |
| Dairy | E10 Who takes decisions about construction of cattle shed? |
| | E11 Who takes decisions about selection of breeds? |
| | E12 Who takes decisions about management of fodder? |
| | E13 Who takes decisions about health care of animals? |
| **Resources** | |
| Ownership of land | E20A How much land does your household own? |
| | E20B How much land do you own yourself alone? |
| Purchase, sale and transfer of land and large animals | E20E Who can decide whether to sell/give away the land? |
| | E20F Who can decide whether to do new purchase of land? |
| | E21D Who can decide whether to sell/give away large livestock? |
| | E21E Who can decide whether to do new purchase of large livestock? |
| Access to and decision on credit | E30 Who made decision to borrow from (source)? |
| | E31 Who made the decision what to do with the money from (source)? |
| **Income** | |
| Control over the use of income | E5D Who takes decisions about the use of income from crop farming or major other income source? |
| | E8 Who takes decisions about minor household expenditures (e.g. food, cloth, cooking utensils, ornaments)? |
| | E9 Who takes decisions about large household expenditures (e.g. furniture, bike, ceremonies)? |
| | E15 Who takes decisions about the use of income from milk? |
| **Leadership** | |
| Group member and speaking in public | E34 Are you active member in any groups/association? |
| | E35 Have you ever had a leadership role in this group? |
| | E37 Do you feel comfortable speaking up in public, if only women are present? |
| | E38 Do you feel comfortable speaking up in public, if also men are present? |
| **Time** | |
| Workload | E41 Please describe what you did yesterday. |

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