

The Impact of Lending to Women on Household Vulnerability and Women's Empowerment: Evidence from India

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Summary. — Impact evaluation studies routinely find that lending to women benefits their households. However, a number of them also find that this **may not empower the women concerned**. This seemingly paradoxical conclusion is confirmed by our study with respect to a lending program in rural India. We investigate this result by examining a combination of loan-use data and borrower-testimonies. We find that loans procured by women are often diverted into enhancing household's assets and incomes. This combined with woman's lack of co-ownership of family's productive assets, we conclude, results in her disempowerment. **If empowering women is a crucial objective, then the patriarchal hold on productive assets must be challenged.**

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1. INTRODUCTION

Microcredit programs, an increasingly common intervention against poverty, generally target poor rural women. The basic argument behind lending to women is that they are good credit risks, are less likely to misuse the loan, and are more likely to share the benefits with others in their household, especially their children. In addition to the economic benefits, it is argued that women's increasing role in the household economy will lead to their empowerment. During the past few decades, microcredit has enjoyed tremendous growth and women continue to be the major beneficiaries. During December 1997–December 2005, the number of people receiving microcredit increased from 13.5 million to 113.3 million with 84% of them being women (Daley-Harris, 2006). It is anticipated that such programs will contribute to the achievement of the Millennium Development Goals which, among other things, aim to promote gender equality and empower women (see Kabeer, 2005).

Despite methodological variations, evaluation studies fairly widely accept that lending to women does improve household incomes

and is also linked with other associated benefits like increased livelihood diversification, more labor market activity, more education and better health (see, for instance, Hulme & Mosley, 1996, Vols.1 & 2; Khandker, 1998; Morduch & Haley, 2002; Mosley & Rock, 2004; Todd, 1996; Zaman, 2004). However, **there is little consensus regarding the empowerment potential of such schemes and studies make diametrically opposite claims.** Some find that microcredit has helped women increase their income earning capabilities, leading to greater confidence and ability to overcome cultural

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asymmetries (see, for instance, Hashemi, Schuler, & Riley, 1996; Kabeer, 2001; Pitt & Khandker, 1998; Pitt, Khandker, & Cartwright, 2006; Rahman, 1986). Others find that loans made to women are usually controlled by their husbands, leading to women's dependence on them for loan installments and at times in domestic dissension and violence (see, for instance, Goetz & Gupta, 1996; Leach & Sitaram, 2002; Rahman, 1999). Ignoring the conceptual and methodological differences among these studies, the suggestion here is that although lending to women benefits their households, its beneficial impact on women themselves is somewhat uncertain.¹ By focusing on a case study, this paper seeks to unravel some of the reasons behind this paradoxical conclusion.

In this study, we separately examine the impact of microcredit on beneficiary households and on the women concerned. We use data from two villages in Andhra Pradesh (AP), India, that participate in the Self Help Group (SHG) program which lends mainly to rural women. We find the same paradoxical results that haunt the microcredit literature: that while lending to women has helped households across income groups to diversify livelihoods and reduce their vulnerability to shocks, it has failed to empower the women concerned. We refer to this result as the "impact-paradox" and investigate the reasons behind it by examining a combination of loan-related data from a sample survey and borrower-testimonies. Our findings suggest that woman's loan may easily get diverted into enhancing household assets and incomes but given her lack of co-ownership of family's productive assets, access to credit may not result in her empowerment. In such a situation, the household may benefit, but the woman herself is likely to see further deepening of the resource division between her and her husband.

The remainder of this paper is organized as follows. Section 2 briefly discusses India's rural financial system and Section 3 discusses its microcredit program. Section 4 describes the questionnaires used in our fieldworks and the resulting data sets used in the empirical parts of this paper. The empirical analysis is carried out in two parts: in the first part we analyze the impact of microcredit on household vulnerability and female empowerment and in the second part, we examine loan-use and repayment data to understand the paradoxical results obtained. Section 5 presents the empirical models used to examine the impact of microcredit on

beneficiary households and the women concerned. It also provides the descriptive statistics of the variables and discusses the outcomes of the first part of the empirical analysis. Similarly, Section 6 presents the models used to investigate the "impact-paradox." In addition to providing the descriptive statistics of the sample and the results of the second part of the empirical work, it also summarizes the testimonial evidence collected from the loanee women. Section 7 concludes.

2. A BRIEF OVERVIEW OF INDIA'S RURAL FINANCIAL SYSTEM

India has a long history of rural credit institutions. The rural cooperatives were initiated in 1904 to be a major source of rural finance. These were unable to cope with the steep increase in rural credit requirements caused by the advent of green-revolution in the 1960s. Privately owned commercial banks also played only a very nominal role in rural finance, both in matters of outreach and share. This ostensibly led to the nationalization of 14 major commercial banks in 1969 which were then compelled to open rural branches. This marked the beginning of the state intervention which became a constant feature in India's rural financial system.

Intervention was justified mainly on grounds of market-failure, which was also the reason for making credit an integral component of the state's numerous poverty-alleviation schemes. Handing out credit was largely preferred over other politically sensitive measures like land redistribution and implementation of tenancy laws. State intervention in the banking sector, mainly driven by short-term political gains, resulted in policies for bank branching, directed credit, frequent loan waivers, subsidies, and the refinancing of loss-making institutions. Although these policies resulted in expansion of commercial banks into rural areas and significant lending to rural population they also contributed to erosion in borrower discipline and a weakened financial sector (Meyer & Nagarajan, 2000).

During the 1970s, two major initiatives with significant bearing on the rural financial system were launched. First, the Regional Rural Banks (RRBs) were established in 1975 as a subsidiary of the public-sector commercial banks to service the rural poor so far excluded from formal credit. This resulted in widening of the

geographical spread and functional reach of banks in rural areas and vastly improved access of rural poor to formal credit (Chavan & Ramakumar, 2002). The average population covered by a bank branch declined from 65,000 in 1969 to 12,800 in 2003 (Basu & Srivastava, 2005).²

Second, the Integrated Rural Development Program was launched in 1978 [this was replaced by the Swarnajayanti Gram Swarozgar Yojana (SGSY) in 1999]. This was a credit based poverty-alleviation program implemented through the commercial banks targeted at households with income below the poverty line. The program is estimated to have reached about 51 million people since its inception but came under sever criticism mainly on account of large proportion of non-performing loans (Narasimham Committee, 1991). Loans to the priority sectors (agriculture and cottage industry) were frequently waived, especially during the times of elections and this did not help matters since subsequent borrowers expected loan waivers and did not repay even where they could (Mahajan & Ramola, 1996).

In order to rationalize the provision of rural financial services, the National Bank for Agriculture and Rural Development (NABARD) was formed in 1982. This is an apex refinancing institution for cooperatives, RRBs, and rural banks and is mandated to coordinate and build their institutional capacities (Meyer & Nagaranjan, 2000). Although its creation provided the rural financial system with a clear institutional structure, it did little to mitigate the inherent weakness that had crept into the system. The loan recovery rate measured as a percentage of loans collected to total amount due was 50–60% throughout the 1980s to mid-1990s (NABARD, 1999). By early 1990s, it became apparent that refinancing of a large number of loss-making units within the extensive state rural banking apparatus could not continue and that monitoring and enforcing repayments could not be sustained in a centralized setting.

3. MICROCREDIT IN INDIA

In response to the imminent crisis facing the rural financial system and inspired by the global success of the microcredit movement, the SHG-bank linkage program was initiated in 1992 (Karmakar, 1999).³ A significant share of the SHG scheme was later tied into the

SGSY. The program uses the existing extensive state banking apparatus to provide credit to the rural poor while at the same time uses innovations like group-lending and peer-monitoring to cultivate the much needed borrower discipline. In this respect, it endeavors to build on the good aspects of the rural financial sector while finding a solution to the malady of non-performing loans.

An SHG typically consists of around 10–15 women from poor communities. While there are some urban groups, the main emphasis is on rural SHGs. Women take advantage of their social networks to come together as an SHG. Group formation is generally facilitated by NGOs or government agencies that arrange meetings and give information (72% of the existing SHGs are formed this way). In some cases, the credit institutions may directly facilitate group formation (20%) and in yet others the NGOs may act as both facilitators and financial intermediaries (8%) (NABARD, 2004). The scheme primarily focuses on credit and there is little explicit attempt to encourage group building. Even where NGOs get involved, their role is limited to that of facilitators rather than capacity builders. The rules on eligibility are vague but because the savings and loan amounts are very small, there is little incentive for the very wealthy to participate in the program. The group begins its credit activity with members' own savings of 1 rupee per day per member, which are collectively used as a revolving fund to provide loans to individual members. After six months of regular saving, the SHG is eligible to enhance its revolving fund by obtaining loans (also grants and interest-free loans) from NGOs, RRBs, and other financial institutions. These institutions are in turn 100% re-financed by NABARD. The existing institutional structure is thus used to link individual SHGs to the rural financial institutions and is popularly referred to as the SHG-bank linkage program.

Table 1 provides the growth rates of the SHG-bank linkage program over the last few years. It shows that by March 2007 there were over 2.5 million SHGs, serving approximately 40 million households. Moreover, the number of SHGs linked to banks was growing at an annual rate of around 90%. This makes it the largest and fastest growing microcredit program in the world. The repayment rates by SHGs have consistently been over 95% when compared to other rural modalities which are in the range of 40% (for loans by rural

Table 1. *Growth in volume of SHG-bank linkage program (1999–2007)*

By 31st March	Number of SHGs linked to banks (% change over previous year)	Cumulative bank loans in million US\$ (% change over previous year)
1999	32,995 (130.48)	13.57 (112.03)
2000	114,775 (247.85)	44.53 (228.15)
2001	263,825 (129.86)	105.26 (136.38)
2002	461,478 (74.92)	215.20 (104.45)
2003	717,306 (55.45)	455.00 (111.43)
2004	1,079,091 (50.43)	867.00 (90.55)
2005	1,618,456 (49.98)	1900 (119.15)
2006	2,238,565 (38.31)	2850 (50)
2007	2,894,505 (29.30)	4493 (57.63)

Sources: World Bank (2003), Sankaran (2005) and NABARD (2006, 2007).

cooperatives) to 65% (for general loans to the poor by commercial banks and RRBs) (NABARD, 2003). This gives further cause for euphoria despite the fact that the program remains regionally clustered [AP alone accounts for 40% of all SHGs (Bansal, 2003)] and serves a disproportionate number of relatively better-off households.

There are a growing number of studies exploring the economic and social impact of India's microcredit schemes. Broadly, the economic impact is usually examined at the household level and the social impact at the client level. Particularly illustrative in the former category are the spate of studies sponsored by the NABARD that use data from a comprehensive impact evaluation exercise comprising 223 SHGs sampled in 11 states from five different regions. These studies broadly conclude that the SHG-bank linkage program has made a significant economic impact on its clients (Puhazhendi, 2000; Puhazhendi & Badatya, 2002; Puhazhendi & Satyassi, 2000). For instance, members are found to have experienced an increase of 17% in employment, 33% in net income per household, 72% in assets, and 200% in savings *per capita* post-group formation (Puhazhendi & Satyassi, 2000).⁴

Other studies that examine the economic impact of microcredit in India focus on NGO-led institutions. A study of 20 microfinance institutions reported that on nearly all indicators of comparison, clients showed significant gains over non-clients, with greater impact on poorer households (EDA, 2005). Comparison of wealth ranks of non-clients with recent clients, possible in four of the 20 institutions, revealed a movement of client households into less poor wealth categories. However, the study also

finds that 30% of long-term clients remained poor—suggesting that the potential benefits of microcredit are not evenly spread. Examining the impact of microcredit on the clients of SHARE in AP, Todd (2001) found that there is a noticeable shift in their employment patterns—from irregular, low-paid daily labor to family business, with livestock being the most widely acquired productive asset.

There is increasing evidence that suggests a linkage between microcredit and women's empowerment in India but the findings are more mixed when compared to the economic impact of microcredit. The findings of the NABARD sponsored studies mentioned earlier also claim that SHG clients have experienced significant externalities into personal and social relations. These studies carry out most of the systematic quantitative analysis at the household level only and there is little concerted effort to collate information that might be pertinent for evaluating the program's impact on the women recipients. They nevertheless conclude that women were found to be more assertive in confronting social evils and family situations which may have resulted in a fall in domestic violence (Puhazhendi & Badatya, 2002; Puhazhendi & Satyassi, 2000). A study by Swain and Wallentin (2007) uses recall data to compare women from SHG groups with non-SHG women from five different states of India. They construct several ordinal variables indicating women's empowerment and compare the changes experienced by the two groups over time. The empowerment indicators include women's primary activity, access to independent saving, her hypothetical response to possible verbal, physical, and emotional abuse, awareness of rights, and whether she is politically

active. Their findings indicate that while both groups have become more empowered over time, the change for the SHG members is dramatic.

Other studies examine the impact of NGO-led microfinance programs on women's empowerment. For instance, the study by EDA (2005) remarks on the supportive approach of the microfinance institutions which may help in the capacity building of women members via social networking. It, however, finds that cultural burden may restrain the potential for women's empowerment, rather more emphatically in the north of the country as compared to the south. Hunt and Kasynathan (2001) investigated three NGOs in Bangladesh and one in Bihar that use microcredit to empower women. They conclude that if credit programs are to support empowerment, then there must be a greater emphasis on strategies that transform gender relations. Leach and Sitaram (2002) examine an NGO-led credit program for the scheduled caste women working in India's silk-reeling industry. They highlight the negative consequences of excluding male relatives from having a meaningful role and concludes that antagonizing men can ultimately be detrimental to female empowerment. A study by Holvoet (2005) investigates the importance of borrower's gender and different lending technologies for one dimension of empowerment: decision-making agency. She compares direct-bank lending to individual men and women by IRDP with group-based NGO supported schemes that lend to women. Her findings suggest that credit delivery to individual women alone is insufficient to produce a substantial impact on decision-making patterns and that it is most beneficial when channeled through women's groups and combined with technical and social awareness training.

Overall the impact evaluation literature that is emerging from India once again reiterates the central paradox that we attempt to investigate in this paper; while the economic benefits of microcredit at the household level are somewhat predictable (if not guaranteed), the benefits for women clients are much more ambiguous and may depend on other factors exogenous to lending.

4. THE DATA

During 2001–03 we carried out fieldwork in two villages, Vepur and Gudimalakapura, of

the Mahabubnagar district in the southern state of AP, India. Mahabubnagar is a compelling case study because it has one of the oldest, biggest and fastest growing SHG programs in the state of AP (NABARD, 2003). Being drought-prone, it is also one of the poorest districts of AP, with 45% of its rural households living below the poverty line (Government of AP, 1996). The state government has pursued the SHG program as part of its poverty-alleviation strategy with the primary objective of helping households to diversify incomes.

With regard to generalization of survey results, there are at least two reasons why this may be possible. First, the SHG-bank linkage program is India's largest microcredit scheme and the organizational structure and the rules surrounding eligibility are very similar across the country. Our survey villages, moreover, follow the most common linkage modality whereby SHGs formation is facilitated by the NGOs without involvement from the credit institutions. Second, our survey villages are in the state of AP, which is widely acknowledged as the undisputed leader of India's microcredit movement. The achievements in AP are put forward as exemplary and are considered worth replicating elsewhere in the country (see NABARD, 2004). Hence, a careful impact assessment is essential from the policy point of view.

During 2001 and again in 2002, we conducted detailed surveys among 291 married couple households from the two villages, of which 117 participated in the SHG program (completed at least one loan cycle) and the remaining 174 although eligible were not in the program.⁵ In the surveys, we asked questions about the socio-economic characteristics of the household and details of its economic activities. In addition, we included questions on male and female asset holdings, time-use and household decisions. We randomly interviewed either the head of the household or his/her spouse such that equal number of men and women were consulted.⁶ On average, households consisted of 6.20 members, ranging from 2 to 21 members. The average landholding was 2.50 acres, with the maximum holding of 13.00 acres. Although on an average 63.02% of the household income was from agriculture and related wage work, there is a clear trend toward income diversity with 59.31% of the households receiving over 1/4th of their incomes from off-farm sources (mainly from seasonal off-farm work and livestock). The average monthly net *per capita* income was

206.45 Rs. which is considerably below the monthly *per capita* poverty threshold of 262.90 Rs. for rural AP (Planning Commission, 2001).⁷ Around 60.32% of our survey households fall below this threshold. Data from this survey are used to analyze the SHG program's impact on household vulnerability and female empowerment.

During 2002, we also conducted a survey among 27 SHGs (which had completed at least one loan cycle) from the same villages and obtained information from 397 group members also from married couple households (this included 106 of the 117 SHG member households interviewed earlier). This survey was carried out mainly with the objective to investigate the paradoxical findings that emerged from the fieldwork mentioned earlier. In this survey, we asked questions about the socioeconomic characteristics of the respondents and their households, as well as details about the use, control, and repayment of their most recent loan. On average, groups were composed of 14.70 members and had completed an average of 3.78 loan cycles, ranging from a minimum of one to a maximum of six cycles. Loan terms varied from 6 to 24 months and the average loan amount received by a group was 26138.20 Rs. and ranged from 18,000 Rs. to 91,500 Rs. Only occasionally did loan amounts vary from cycle to cycle. Loans were usually divided equally among group members and in just two SHGs did members pool their loans for investment in a group project. **Individual loans were mainly used to meet household's productive and consumption requirements and in some cases to finance self-managed enterprises.** Repayment rate was reported to be 100%. The average landholding among members was 2.50 acres, with the maximum holding of 13.50 acres. The average monthly net *per capita* income was 219.61 Rs. and 52.10% of the respondents fall below the poverty threshold. Data from this survey are used to investigate the findings on household vulnerability and female empowerment.

Finally, during 2002–03, we also carried out several individual and focus group interviews with borrowers who had also participated in the above survey(s). These interviews were typically unstructured and were designed to capture the nuances behind several discernible experiences within borrower groups. Data from these interviews are also used to further our understanding of the findings on vulnerability and empowerment.

5. LENDING TO WOMEN, HOUSEHOLD VULNERABILITY, AND FEMALE EMPOWERMENT

(a) *The empirical models and description of the variables*

As mentioned in the introduction, studies routinely find that lending to women benefits their households but whether the women themselves benefit is a much more debated issue. In this section, we separately investigate the impact of India's microcredit program on recipient households and women from two participating villages. More specifically, we evaluate the program's impact on household's vulnerability to crises and on women's empowerment by comparing the 117 participants with 174 non-participants. We use five "vulnerability" and seven "empowerment" logit models to estimate the effects of independent variables measuring program participation in reducing household vulnerability and enhancing female empowerment, respectively. The dependent variables in these models are measures of vulnerability and empowerment. These have been constructed similarly to Hashemi *et al.*'s (1996) empowerment indicators. We first describe these measures and then the independent variables used in the empirical models.

Measures of vulnerability and empowerment are highly contextual and indicators relevant to a certain society may be of little consequence to another. With this in mind we developed a series of detailed questions relating to various aspects of vulnerability and empowerment relevant to the particular situation in the survey villages. In the end while some of the measures used were specific to the survey villages, most had a much wider appeal. The responses to these questions were collated to construct the vulnerability and empowerment indicators. Each indicator consists of a number of components. To minimize subjectivity, as far as possible, we have assigned equal weights to all components. If the condition(s) set out in the component were satisfied, one point (or two, if weights were used) was given to the household or the woman, as appropriate. The final score was calculated by adding the points secured on all components within the variable. For each variable, a cut-off point was decided and all observations with a score equal to the cut-off point or better were classified as "not-vulnerable" or "empowered" as appropriate and coded as one while the remaining were

coded as zero. Hence, the variables used in the analysis were reduced to dichotomous variables with a score of one or zero. In choosing the cut-off points for each variable, we attempted to distinguish between relatively less vulnerable households and more empowered women than most others in similar situations, rather than only identifying those at the extremes. The cut-off points for most variables were made at around 30th to 35th percentile.

(i) *Vulnerability indicators*

One of the big problems that poor households encounter in the survey area is vulnerability to the risk of drought which dishevels their already limited coping strategies. Recurrent exposure to drought is likely to impact on agricultural output and hence on the household's ability to feed and maintain the health of its members during lean periods. The vulnerability indicators developed here focus on the household's ability to cope with drought in the short run and on its ability to diversify away from agricultural incomes in the long run. These are described below.

— *Drought-related vulnerability (DROUGHT):*

One point was given if, during the last drought, the household met all its food needs, one point if it met all its health needs, one point if no livestock or other assets were sold, and one point if none in the house migrated (excludes routine seasonal migration for off-farm work). An additional point was given for each category if respondent expected the household to cope similarly in a future drought. One point was given if income enhancing plans were not postponed because of drought in the last three years. A household with a score of six or better was classified as "not-vulnerable" and coded as one.

— *Livelihood diversification (DIVERSE):*

One point was given if the household received income from a non-agro business, one point if it received income from livestock, and one point if it received income from non-farm labor work. An additional point was given in each category if approximately at least a quarter of its income came from this source. One point was given if the household was expected to cope with its main earner out of work. A household with a score of two or better was classified as "diversified" and coded as one.

— *Entrepreneurial behavior (ENTERPRISE):* One point each was given for leasing in extra land, one point for investing in irrigation, one point for investing in new farm equipment, one point for investing in draught animals, and one point for investing in a new business or upgrading an existing business. Only investments in the last three years were considered. One point was also given for regular use of hybrid seeds and one point for non-organic fertilizers. A household with a score of three or more was classified as "enterprising" and coded as one.

— *Investment in and access to social capital (SOCIAL):* One point was given if the household provided childcare and livestock care for neighbors (without explicit payment), one point for receiving such support, one point if neighbors were helpful in finding waged work, one point if household was positively affected by an auxiliary program like forest conservation and watershed. A household with a score of two or more was classified as "having access to social capital" and coded as one.

— *Composite not-vulnerable (NOTVUL):* A household was classified as "not-vulnerable" if it had a positive score on two or more of the indicators described above.

(ii) *Empowerment indicators*

In rural India, female empowerment is still largely an elusive concept and it is common to find discourses that conflate "women's welfare" with "household's welfare." Hence, instead of working with an exogenously derived definition of empowerment we attempted to understand its constituents for the context of our survey villages. The chances of capturing a notion of empowerment using a structured survey are at best limited and hence the indicators used here have been developed through a long process of interaction with enumerators from the survey villages and reflect the realities of women's lives in rural AP. **In general, women here control few productive assets and have little or no say in major household decisions.** However, they are not expected to follow the norms of *purdah* and face few mobility restrictions within their village and local markets. **Most women also contribute substantially to family incomes.** They work as wage laborers, work on family farms, run small businesses, and some even undertake seasonal migration. Women in the survey villages were found to

be heavily involved in agricultural wage laboring when compared to men (81.9% of women in our sample were farm laborers when compared to only 68.8% of men). Men, on the other hand, mainly worked on own assets or as non-farm wage laborer. This occupational difference between men and women is significant given that farm laboring is associated with undesirable characteristics like hard menial labor, low pay, and negligible ability to negotiate over working conditions and hence considered inferior to work on own assets or off-farm wage work (see Chowdhry, 1994; da Corta & Venkateshwarlu, 1999; Garikipati, 2008). Women in our survey villages, it seems, were less able to allocate their work time in a favorable way when compared to men. This is at least partly the reason why contributing to family support has not helped women challenge the cultural norms which, among other things, expect them to attend to all the household chores and care for family members without much assistance either from their husbands or in-laws.

Given these conditions, in constructing the empowerment indicators we focus on four specific aspects: her ownership and control over household assets and incomes, her say in household decisions, allocation of her work time, and her ability to share household chores. These facets closely reflect the conceptual thinking around the notion of women's empowerment. They capture the fairly widely accepted view that empowerment comprises three essential elements: preconditions, processes, and outcomes. The idea here is that empowerment requires preconditions or "resources" which can facilitate the "processes" that expand women's agency or ability to make choices which in turn determine "outcomes" that have direct implications for their welfare (Kabeer, 1999; Malhotra & Schuler, 2005). The empowerment measures operationalized from the survey data are described below.

- *Ownership of household assets and incomes (ASSETS)*: One point each was given if the woman owned the family home one point if she owned any agricultural land, and one point if she owned any livestock (excludes poultry). Two points were given if she contributed approximately at least a quarter of the household income (includes imputed income from work on family farm). A woman with a score of two or more was considered "empowered" and coded as one.
- *Control over minor finances (MINFIN)*: One point was given if she kept the money

from sale of livestock produce, one point from sale of poultry, one point if she had any regular personal spending money, and one point for having money for emergency use. A woman with a score of two or better was coded as one.

— *Control over major finances (MAJFIN)*: One point was given if she retains the money from the sale of crops, one point for money from sale of goats, one point for retaining her own wage earnings, one point for children's wages, and two points for husband's wages. A woman with a score of two or better was coded as one.

— *Say in household decisions (DECISIONS)*⁸: One point was given if the woman decided (individually or jointly with others) about children's education, one point for deciding on what crops to grow, one point for deciding to lease in/out agricultural land, one point for making a major financial decision (open a bank account, apply for a loan, and so on). One additional point was given for initiating the financial decision. One point was given for deciding to sell crops and one point for deciding to buy/sell large livestock and one point for deciding to buy agricultural inputs. An additional point was given in each category for participating in the sale negotiations. A woman with a score of three or better was classified as "empowered."

— *Work time allocation (WORKTIME)*: One point was given if the woman managed or helped manage any business, one point for work on family farm, and one point for non-farm wage work. One additional point if any one of these was also her primary work and one point if she did not want to change the way she spent her work time. A woman with a score of two or better was coded as one.

— *Division of domestic chores (CHORES)*: One point was given if the woman shared the tasks of fuel gathering and preparing with others in the family (expect with daughters), one point for water collection, one point for sweeping and cleaning, one point for cooking, one point for washing utensils, and one point for washing clothes. A woman with a score of three or better was coded as one.

— *Composite empowerment (EMPOWER)*: A woman was considered "empowered" and coded as one if she had a positive score on three or more of the above indicators.

(iii) *Independent variables*

Three sets of independent variables were included in the regression analysis: those relating to the credit program; control variables measuring household characteristics and those measuring women's personal characteristics. The reason why we include control variables is that personal characteristics may influence the measures of vulnerability and empowerment. The independent variables are described below.

— *DURATION*: Indicates the length of membership of the SHG in years. Non-members are coded as zero.⁹

— *HHSEX*: Coded as one if the head of the household is female.

— *HHAGE*: The age of the head of the household.

— *HHEDU*: Is a categorical variable indicating the educational background of the household head. It takes the values 0, 1, and 2 (where 0 = illiterate, 1 = secondary school or less, and 2 = high school or more).¹⁰

— *HOUSE*: Coded as one if the outer wall of the house is made of concrete and the house has a durable roof (tiles or other synthetic materials) and zero otherwise. This variable indicates the relative economic status of the household.

— *LABORSHARE*: Household members aged 13 or over as percentage of total number in household divided by household size. This number indicates the household's demand for credit as well as general pressure on resources. A low share denotes greater demand for credit and other resources.

— *OLOAN*: Coded as one if the household received credit from other sources in the last three years.

— *CASTE*: Coded as one if the household is from the Scheduled Caste or Scheduled Tribe (low caste) and zero for all other caste.

— *VILLAGE*: Coded as one if household is from Vepur and zero if it is from Gudimalakapura.

— *WOMAGE*: The age of the woman in years.

— *WOMEDU*: Is a categorical variable indicating the educational background of the woman similar to that of the household head.

— *MALECHILD*: Coded as one if the woman has one or more sons.

For *DURATION* we expect a positive sign of the coefficient in all the models: as length of SHG membership increases, the probability of insulating the household against crises increases and so does the probability of empowering women. In the vulnerability models, for *HOUSE* we expect a positive sign of the coefficient: if the household enjoys better economic status, the probability of vulnerability to weather-related shocks decreases while the probabilities of diversifying livelihood and accessing social capital increase. In the empowerment model, for *WOMEDU* and *MALECHILD* we expect a positive sign of the coefficient: as woman's educational background improves and if she has male children, the probability of her enjoying better status increases. We have no explicit expectations on the signs of the remaining variables.

Note that given the possibility of selection bias, *DURATION* is not used directly but is estimated using the instrumental variable (IV) technique.¹¹ Given the nature of the data and rules surrounding SHG formation we were able to identify two instruments: (i) *CLUSTER-SIZE*: The approximate size of the respondent's neighborhood cluster and (ii) *MINORCASTE*: A dummy variable coded as one if respondent belongs to a caste other than the dominant caste within the cluster (defined as the one with the largest membership).

Given that 15 members are required to form an SHG, women from bigger neighborhood clusters are more likely to form one. Women may prefer to group with others living close by to minimize the transaction costs associated with screening and monitoring group members. Also, belonging to the dominant caste within a cluster increases the probability of forming a group and vice versa. This may be due to reasons of trust and cultural affinity. Neighborhood cluster maps were constructed using the village electoral lists. This information was then combined with the precise household location to identify the cluster for each household in the sample. This information was also used to identify the dominant caste in the cluster. In 12.59% ($N = 397$) of the cases did SHG members not belong to the same cluster as the majority in their group and in 17.63% of the cases did they belong to a caste other than the dominant one in the cluster.¹²

A two-stage estimation procedure was employed because we have multiple instruments.¹³ Given that *DURATION* is limited to taking non-negative values, we select a

first-stage estimation procedure such that a positivity condition could be imposed. We use a tobit model to estimate *DURATION* and predict its observed values in the first-stage. As the control variables used in the vulnerability models differ from those used in the empowerment models, *DURATION* was estimated separately for both types of models. Table A1 (Appendix A) reports the first-stage regressions. In the second-stage, the regressions of interest are estimated as usual, except that *DURATION* is replaced with its approximation *DURATION(est)* as estimated in the first-stage. Because we use estimated coefficients to predict *DURATION* we need to bootstrap the standard errors. We compute standard errors using up to 10,000 replications of the bootstrap for each model.¹⁴

Two additional points pertinent to estimation procedure are noteworthy. First, high correlation between variables of interest meant that some had to be dropped. For instance, there was high correlation between *DURATION* and *VILLAGE* ($r = 0.148, p = 0.011$) and between *HHHAGE* and *HHHEDU* ($r = -0.204, p = 0.000$). In each case, we use the likelihood-ratio test to decide on which of the correlated variables to delete.¹⁵ Second, because of high correlation between *HHHSEX* and *WOMAGE* ($r = 0.119, p = 0.043$) and *HHHAGE* and *WOMAGE* ($r = 0.499, p = 0.000$); the variables relevant to the head of the household are used in the vulnerability models only and those relevant to women's personal characteristics are used in the empowerment models only. These choices are consistent with the likelihood-ratio tests.

(b) Data description and empirical results

Table 2 provides the descriptive statistics of all the variables used in the regression models for both the SHG ($N = 117$) and the non-SHG households ($N = 174$). With respect to vulnerability indicators the first panel of the table shows significant differences for *DROUGHT*, *DIVERSE* and *NOTVUL*. For these variables, the *t*-statistic of comparing the mean of the SHG households versus other households differs significantly. The SHG households are less vulnerable to drought, are more diversified, and can be considered somewhat less vulnerable overall as compared to the averages of these three variables for other households. With respect to the empowerment indicators, the second panel of the table shows significant differences for *ASSETS*, *MINFIN*, *MAJFIN*, *WORK-*

TIME, and *EMPOWER*. While the *t*-statistic for *ASSETS* is positive, it is negative for the other four variables. Although the women in the SHG households are more economically secure, they are less able to spend their work time in a favorable way, they exert lesser control over minor and major household finances, and can be considered somewhat less empowered overall as compared to the averages of these variables for the other women. With respect to the control variables, the third panel of the table shows that when comparing the characteristics of the SHG households with others, the only significant differences are with respect to the variable *VILLAGE*. This implies that the SHG households are more concentrated in the village Vepur as compared to the averages of these variables for the non-SHG ones. The final panel similarly shows that none of the variables measuring woman's personal characteristics differ much when comparing the SHG and non-SHG households. This may at least partly be because all eligible women from the participating villages are encouraged to form SHGs.

Table 3 presents the results of the second-stage logit models that examine how exposure to the credit program impacts on household vulnerability. Each column represents a separate model and the Z-statistics are given between parentheses. Our results indicate that the length of SHG membership plays a role in reducing household's vulnerability based on these indicators. In particular, we find statistically significant coefficient for *DURATION(est1)* in (3-1), (3-2), and (3-5). All three variables have the expected sign. Of the control variables, we find statistically significant coefficients for *HHHAGE* and *ENTERPRISE* in (3-2) and for *CASTE* in (3-3) and (3-5).

With respect to exposure to the SHG program, the results suggest that as length of participation in the credit program increases, the probability of the household coping with drought and diversifying income increases. This also increases the probability of its overall preparedness for crises as measured by the composite vulnerability score.

Table 4 provides the results of the second-stage logit models that examine the affect of the credit program on female empowerment. The results indicate that participation in the credit program delimits women's status. In particular, the table shows that the coefficient for *DURATION(est2)* is statistically significant in (4-3), (4-5), (4-6), and (4-7). It has the wrong sign in all these models.¹⁶ Of the control variables, we find statistically sig-

Table 2. Descriptive statistics of the variables used in the "vulnerability" and "empowerment" models

	SHG households (n = 117)		Control households (n = 174)		
	Mean	Standard deviation	Mean	Standard deviation	t-Statistic ^a
<i>Dependent variables</i>					
(1) Vulnerability indicators					
<i>DROUGHT</i>	0.40	0.49	0.26	0.44	2.54**
<i>DIVERSE</i>	0.40	0.49	0.24	0.43	2.98***
<i>ENTERPRISE</i>	0.37	0.48	0.34	0.48	0.50
<i>SOCIAL</i>	0.42	0.50	0.34	0.48	1.27
<i>NOTVUL</i>	0.57	0.50	0.39	0.49	3.09***
(2) Empowerment indicators					
<i>ASSETS</i>	0.45	0.50	0.34	0.48	1.95*
<i>MINFIN</i>	0.27	0.45	0.37	0.49	-1.81*
<i>MAJFIN</i>	0.31	0.46	0.41	0.49	-1.86*
<i>DECISIONS</i>	0.42	0.50	0.36	0.48	0.97
<i>WORKTIME</i>	0.33	0.47	0.47	0.50	-2.44**
<i>HHCHORES</i>	0.31	0.46	0.33	0.47	-0.36
<i>EMPOWER</i>	0.22	0.42	0.31	0.46	-1.69*
<i>Household characteristics</i>					
<i>HHHSEX</i>	0.04	0.20	0.09	0.28	-1.53
<i>HHHAGE</i>	44.51	9.82	45.81	11.90	-1.02
<i>HOUSE</i>	0.16	0.37	0.15	0.36	0.29
<i>LABORSHARE</i>	16.22	10.45	18.02	10.12	-1.47
<i>OLOAN</i>	0.27	0.44	0.25	0.44	0.23
<i>CASTE</i>	0.33	0.47	0.26	0.44	1.25
<i>VILLAGE</i>	0.62	0.49	0.43	0.50	3.29***
<i>Woman's personal characteristics</i>					
<i>WOMAGE</i>	35.74	11.53	33.94	11.13	1.33
<i>WOMEDU</i>	0.70	0.58	0.68	0.55	0.34
<i>MALECHILD</i>	0.86	0.35	0.87	0.33	-0.46

^a t-Statistic refers to comparing mean values of variables for SHG and control group households.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

nificant coefficients for *HOUSE* in (4-1) and (4-7) and for *WOMEDU*(2) in (4-4). We also find that the coefficient for *HOUSE* is almost statistically significant in (4-2) and (4-6).

With respect to exposure to the SHG program the results suggest that as the length of program membership increases, the probability of her control over major household finances is reduced. Increase in the length of membership also reduces the probability of woman's work time being allocated in a favorable way and that of her sharing domestic chores with others. It also reduces the probability of her overall empowerment as indicated by the composite score. With respect to the control variables, the results suggest that if the family enjoys better economic status, the probabilities of wo-

men's ownership of its assets and minor finances increase, as do the probabilities of her sharing domestic chores with others and of her overall empowerment. Taken together, these results suggest that household's economic status rather than the length of SHG membership helps enhance women's relative power.

Overall our estimates indicate that while lending to women helps their households diversify and strengthen their coping strategies, it may have a perverse impact on their own relative status. These results compare with the overall suggestion that emerges from the evaluation literature discussed in the introduction. We refer to these results as the "impact-paradox," and investigate the possible reasons behind them in the next section.

Table 3. *Logit estimation of determinants of household vulnerability: Second-stage (N = 291)*

	Dependent variables: Vulnerability indicators				
	3-1 <i>DROUGHT</i>	3-2 <i>DIVERSE</i> ^b	3-3 <i>ENTERPRISE</i>	3-4 <i>SOCIAL</i>	3-5 <i>NOTVUL</i> ^c
Program-related variable					
<i>DURATION(est1)</i>	0.195 (3.89) ^{***a}	0.194 (3.75) ^{***}	-0.005 (-0.10)	-0.010 (-0.20)	0.141 (2.80) ^{***}
Household characteristics					
<i>HHHSEX</i>	0.377 (0.67)	-0.027 (-0.04)	-0.563 (-0.91)	-0.543 (-0.92)	-0.646 (-1.15)
<i>HHHAGE</i>	0.015 (1.28)	-0.039 (-2.73) ^{***}	-0.003 (-0.27)	0.003 (0.22)	-0.012 (-0.93)
<i>HOUSE</i>	-0.342 (-0.80)	0.456 (1.17)	0.361 (1.01)	-0.309 (-0.83)	-0.112 (-0.31)
<i>LABORSHARE</i>	0.002 (0.12)	0.013 (0.93)	-0.001 (-0.07)	0.015 (1.17)	0.011 (0.89)
<i>OLOAN</i>	0.219 (0.72)	-0.276 (-0.76)	0.101 (0.34)	-0.024 (-0.08)	-0.068 (-0.24)
<i>CASTE</i>	-0.040 (-0.13)	-0.386 (-1.14)	-0.717 (-2.34) ^{**}	-0.216 (-0.75)	-0.604 (-2.14) ^{**}
Other variables					
<i>ENTERPRISE</i>	-	0.544 (1.87) [*]	-	-	-
<i>CONSTANT</i>	-1.907 (-2.93) ^{***}	0.164 (0.23)	-0.299 (-0.48)	-0.733 (-1.16)	0.173 (0.27)
Observations with dependent = 1	92	88	102	109	135
Number of bootstrap replications	9991	9980	9936	9974	9992
Log likelihood	172.293	162.327	184.173	190.449	192.646

^a Z-statistics are given between parentheses.

^b *DURATION(est1)* was estimated separately for (3-2) since it includes *ENTERPRISE* as one of the explanatory variables. *ENTERPRISE* is used as an explanatory variable in (3-2) because whether a household is enterprising or not can have a bearing on the extent of its livelihood diversification and not including a variable that measures this can lead to an overestimation of the impact of the credit program.

^c The results were robust even when any one of the vulnerability indicators was disregarded in the computation of *NOTVUL*. This could at least partly be attributed to significant correlation between *DROUGHT* and *ENTERPRISE* ($r = 0.120, p = 0.041$) and *DIVERSE* and *ENTERPRISE* ($r = 0.128, p = 0.029$).

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Before that, we test for the robustness of our results in three ways. First, we check whether the results are robust to the estimation procedure used. We re-estimate each of the models using ivprobit—this is a two-stage estimation procedure that fits models with dichotomous dependent variables where one (or more) of the regressors is endogenously determined. In the first-stage the endogenous regressor is instrumented using ordinary least squares and in the second-stage a probit model is used to estimate the main regression (hence the name “iv”probit). Although ivprobit is a “ready made” two-step procedure, the drawback of using it for this study is that we cannot usefully predict the observed *DURATION* in the first-stage due to the positivity condition on the dependent variable. As mentioned earlier, it is

for this reason that we use a tobit model to estimate *DURATION*. The ivprobit method, however, is useful to check our results for robustness to estimation procedure. Using this method suggests that our results for the impact of duration of SHG membership on household vulnerability and female empowerment are robust. There is, however, one important exception. The ivprobit results suggest that the coefficient for *DURATION(est2)* is statistically significant in (4-2) while the results using tobit in the first-stage as reported earlier do not confirm this relationship. In both cases, however, the variable retains its negative sign. This suggests that while our specific results may be sensitive to the estimation procedure, the inferred qualitative characteristics are mutually consistent.

Table 4. Logit estimation of determinants of female empowerment: Second-stage ($N = 291$)

	Dependent variables: Empowerment indicators						
	4-1 <i>ASSETS</i>	4-2 <i>MINFIN</i>	4-3 <i>MAJFIN</i>	4-4 <i>DECISIONS</i>	4-5 <i>WORKTIME</i>	4-6 <i>HHCHORES</i>	4-7 <i>EMPOWER</i>
Program-related variable <i>DURATION(est2)</i>	0.027 (0.54) ^a	-0.071 (-1.33)	-0.093 (-1.73)*	0.009 (0.19)	-0.103 (-1.91)*	-0.088 (-1.73)*	-0.131 (-2.33)**
Household characteristics							
<i>HOUSE</i>	0.631 (1.71)*	0.591 (1.61)	0.426 (1.17)	-0.165 (-0.43)	0.128 (0.34)	0.575 (1.55)	0.674 (1.73)*
<i>LABORSHARE</i>	0.004 (0.28)	-0.007 (-0.48)	0.014 (1.06)	-0.008 (-0.58)	0.007 (0.55)	0.013 (0.96)	0.010 (0.70)
<i>OLOAN</i>	0.248 (0.84)	-0.188 (-0.59)	0.098 (0.33)	-0.004 (-0.01)	-0.215 (-0.73)	0.012 (0.04)	0.140 (0.42)
<i>CASTE</i>	-0.116 (-0.40)	-0.057 (-0.19)	-0.160 (-0.54)	0.195 (0.67)	0.406 (1.42)	0.143 (0.48)	0.126 (0.40)
Woman's personal characteristics							
<i>WOMAGE</i>	0.005 (0.47)	-0.008 (-0.67)	0.018 (1.45)	-0.003 (-0.27)	-0.007 (-0.52)	-0.004 (-0.33)	0.017 (1.30)
<i>WOMEDU(1)</i>	-0.138 (-0.51)	0.058 (0.21)	-0.155 (-0.55)	-0.075 (-0.27)	0.287 (1.06)	-0.093 (-0.33)	-0.119 (-0.39)
<i>WOMEDU(2)</i>	0.336 (0.47)	-0.298 (-0.43)	0.481 (0.72)	1.834 (2.59)**	-0.369 (-0.48)	-1.213 (-1.62)	-0.013 (-0.02)
<i>MALECHILD</i>	-0.229 (-0.59)	0.036 (0.09)	-0.075 (-0.18)	-0.015 (-0.04)	-0.002 (-0.00)	-0.147 (-0.37)	-0.343 (-0.84)
<i>CONSTANT</i>	-0.641 (-1.03)	-0.265 (-0.40)	-1.143 (-1.67)*	-0.289 (-0.45)	-0.315 (-0.48)	-0.598 (-0.95)	-1.326 (-1.99)**
Observations with dependent = 1	112	97	108	112	119	93	80
Number of bootstrap replications	9981	9806	9985	9516	9827	8710	9787
Log likelihood	190.679	181.987	186.588	188.303	191.213	177.720	165.389

^a Z-statistics are given between parentheses.

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.



Second, we test for the robustness of the variable *DURATION(est1)* and *(est2)* using “backward stepwise regression” which begins with a full model (reported) and eliminates variables in an iterative process. The fit of the model is tested after the elimination of each variable to ensure that the model still adequately fits the data. When no more variables can be eliminated from the model, the analysis is complete. We use the likelihood-ratio test to decide on deletion of variables.¹⁷ Stepwise regression shows that the values of our coefficients for *DURATION(est1)* and *(est2)* remain relatively stable through the deletion process suggesting that our conclusions regarding the implications of participation in the credit program are robust.

Finally, we check whether our findings hold at the level of the components that were used to construct the vulnerability and the empowerment indicators. We repeat the two-stage procedure with the individual components used to construct the dependent variables for models in which the coefficient for *DURATION(est)* was found to be statistically significant. Broadly, this gives us the same storyline, that is, models in which coefficient for *DURATION(est)* was found to be statistically significant retained the sign of the main models.

6. LOAN-USE AND ISSUES SURROUNDING REPAYMENT

(a) *The empirical models and description of the variables*

As mentioned before, in this section we investigate the paradoxical results obtained earlier by closely examining loan-related data collected from 397 SHG members. Women in our sample use their loans in broadly four different ways: as working capital in family farm or enterprise (*FAMFARM*), to purchase or improve family land (*LAND*), toward household maintenance (*CONSUME*), and in enterprises that they manage or help manage (*OWNBUSINESS*). According to our data, 79.35% of the loans procured by women were diverted into household activities. Loans were primarily used in farms or businesses controlled by their husbands (57.18%). Loans were also used to buy or improve land (10.08%—in all cases land was bought in husband’s name except in one case where gold was purchased) and to meet household’s consumption needs (12.09%). This

suggests that the demand for credit within the household, both for productive and for consumption purposes, is high and that households are able to divert women’s loans into such activities.¹⁸ Also, loans procured by women are mainly used to enhance or create assets controlled primarily by their husbands, indicating that lending to women may actually amplify the existing resource divide between men and women. A mere 20.66% of the loans were used in enterprises that women manage or help manage. Some of these were managed jointly by the SHG (37%) but the majority was controlled by individual women (63%).¹⁹

We use a multinomial logit model with *OWNBUSINESS* as the reference category to estimate the effects of independent variables in determining loan-use. In addition to the independent variables described earlier, we use two further program-related variables.

— *PEERP*: Indicates the percentage of women in the respondent’s group who use their loans for an enterprise they manage or help manage. The higher this percentage the greater is the (passive) peer-pressure she faces for investing similarly.

— *CONTROL*: One point was given if the respondent decided (individually or with others) to join the SHG, one point for deciding on loan-use, one point for deciding on marketing aspects of the loan, one point for maintaining/helping with loan accounts, one point if she controlled income from loan enterprise. A woman with a score of three or more was considered to be in significant control of her loan and was coded as one.

Given that *OWNBUSINESS* is the reference category for *PEERP* and *CONTROL* we expect a negative sign in (6-1), (6-2), and (6-3): women who encounter peer-pressure and are in control of their loans are less likely to use it in family enterprise or for purchasing land and consumption when compared to the probability of using it in self-managed business. For *HOUSE*, we expect a negative sign of the coefficient in (6-3): as the households’ economic status improves, women are less likely to use loans for consumption. We have no expectations on the signs of the remaining variables.²⁰

The estimation procedure is similar to that outlined earlier. Table A1 (Appendix A) reports the first-stage regression. Once again we use the bootstrap procedure to correct for the standard errors. As before, the data are resampled 10,000 times.

(b) *Data description and empirical results*

Table 5 provides the descriptive statistics of all the variables used in the empirical analysis for the 397 SHG women. With respect to program-related variables, the table shows that on average nearly 20% of a group's members will use their loans for self-managed enterprise. This pattern, however, varies widely across groups. In some groups, not a single woman uses her loan in own enterprise while in some groups nearly 3/4th of the members do so.²¹

We also find that just over a third of the women retain significant control over their loans.²²

Table 6 provides the results of the empirical investigation that examines the determinants of loan-use. Each column in the table presents the results for a separate loan-use category. As before, the Z-statistics are given between parentheses. Our results indicate that peer-pressure and control over loan play a crucial role in determining loan-use. In particular, we find statistically significant coefficients for *PEERP* in (6-1), (6-2), and (6-3) and for *CONTROL* in (6-1) and (6-3). We also find that the coefficient for *CONTROL* is almost statistically significant in (6-2). All the variables have the expected sign. Of the control variables we find statistically significant coefficients for *HOUSE* in (6-1) and for *WOMAGE* in (6-3).

With respect to peer-pressure, the results show that as the number of women from the respondent's group who use their loans for self-run enterprise increases, the less is she

likely to use her loan in family enterprise, for purchasing land or toward household consumption.²³ With respect to control over loan, our results suggest that women who control their loans are less likely to use it in family-run enterprises, for buying land or for family maintenance. The resistance that women put up against using loans in family enterprise or for land purchases reflects their real lack of co-ownership of household's productive assets and the associated fear that this may bring with respect to loan repayment.²⁴ With respect to the control variables, the results suggest that if the family enjoys better economic status, then the loan is less likely to be used in family enterprise as compared to using it for woman's own enterprise. Also, younger woman are more likely to see their loans being diverted into family consumption. If younger women are also likely to be newer clients, then this suggests that some capacity building may be necessary before they are introduced to credit. In such cases, a BRAC type intervention that exclusively targets destitute women in rural Bangladesh may be much more beneficial. BRAC's Income-Generating Vulnerable Group Development Program (IGVGD) targets poor women to receive a monthly food ration over a two-year period (for details, see Ahmed *et al.*, 2007). The participants receive complementary training in income-generating activities, awareness-raising training on social, legal, health, and nutrition issues; and basic literacy and numeracy education through NGO partners.

Table 5. *Descriptive statistics of the variables used in the loan-use model^a (N = 397)*

	Minimum	Maximum	Mean	Standard deviation
Credit program-related variable				
<i>DURATION(est3)</i>	0 years	10.33 years	5.08	2.70
<i>PEERP</i>	0%	73.77%	19.24	20.70
<i>CONTROL</i>	0	1	0.32	0.47
Household characteristics				
<i>HHHSEX</i>	0	1	0.58	0.23
<i>HOUSE</i>	0	1	0.17	0.38
<i>LABORSHARE</i>	2.12%	50.00%	12.97	7.18
<i>OLOAN</i>	0	1	0.10	0.31
<i>CASTE</i>	0	1	0.28	0.45
<i>VILLAGE</i>	0	1	0.55	0.50
Woman's personal characteristics				
<i>WOMAGE</i>	15 years	73 years	31.10	9.88
<i>WOMEDU</i>	0	2	0.89	0.58
<i>MALECHILD</i>	0	1	0.87	0.34

^a If loan was used for more than one purpose (9.32%), the primary use was recorded.

Table 6. Multinomial logit estimation of determinants of loan-use ($N = 397$)

	DEPENDENT VARIABLE: LOAN-USE		
	6-1 <i>FAMFARM</i>	6-2 <i>LAND</i>	6-3 <i>CONSUME</i>
Program-related variable			
<i>DURATION</i> (est3)	-0.002 (-0.03) ^a	-0.051 (-0.56)	0.086 (0.91)
<i>PEERP</i>	-0.056 (-6.20) ***	-0.038 (-2.78) **	-0.054 (-3.51) ***
<i>CONTROL</i>	-1.562 (-4.23) ***	-1.997 (-1.63)	-1.516 (-2.91) ***
Household characteristics			
<i>HOUSE</i>	-0.761 (-1.90) **	-0.607 (-0.63)	-2.041 (-0.17)
<i>LABORSHARE</i>	-0.033 (-1.37)	0.001 (0.02)	-0.020 (-0.65)
<i>OLOAN</i>	-0.826 (-1.56)	-1.111 (-0.10)	0.115 (0.13)
<i>CASTE</i>	0.101 (0.24)	0.622 (1.15)	0.116 (0.20)
<i>VILLAGE</i>	0.119 (0.35)	0.149 (0.32)	0.237 (0.46)
Woman's personal characteristics			
<i>WOMAGE</i>	-0.027 (-1.58)	-0.027 (-1.18)	-0.049 (-1.84) *
<i>WOMEDU</i> (1)	-0.631 (-1.39)	0.059 (0.05)	-0.266 (-0.45)
<i>WOMEDU</i> (2)	-0.572 (-0.95)	-0.635 (-0.13)	-0.629 (-0.22)
<i>MALECHILD</i>	0.370 (0.73)	0.159 (0.13)	0.402 (0.32)
<i>CONSTANT</i>	4.780 (4.77) ***	2.156 (1.11)	2.834 (1.66) *
Number of cases	227	40	48
Number of bootstrap replications		1000	
Log likelihood		372.831	

^a Z-statistics are given between parentheses.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

In addition, the women are given access to personal savings and microcredit services upon graduation from the program. The idea is to build their economic capacity so that when loans are provided clients can engage in income-generating activities.

From the above results, we can comment conclusively on the link between control over loan and loan-use. Women with a firm control over their loans (and those from better-off households) are more likely to invest in businesses they manage, while majority of the others see their loans used in family enterprise, for land purchases, or for consumption purposes. This may not only leave them in a weaker position with respect to repayments and jeopardize their access to credit in the future, but also have adverse implications for their control over household's productive assets and hence their overall empowerment. In the next section, we examine the repayment data to explore some of these linkages.

We test the robustness of the variables for which we find significant coefficients as before. The values of the coefficients with respect to the credit program and household's economic

status remain relatively stable through the stepwise deletion suggesting that our conclusions regarding the determinants of loan-use are robust.

(c) *Loan-use and repayment experiences*

We examine repayment data in this section to understand the implications that loan-use may have for repayment. Table 7 reports the source of repayment by loan-use. As mentioned earlier, repayment rates in our sample are 100%, but as seen here this may camouflage the various problems women encounter in repaying loans. In particular, the table shows that **where loans were used for purposes other than self-managed enterprises women mainly relied on their own earnings from wage laboring to repay loans**. Significantly, majority of the women who use loans for own enterprise use the earnings from their business to repay loans. Using unstructured interview techniques, we gathered testimonial evidence from the loanee women to investigate these experiences further. We explore each specific experience in sequence.

Table 7. Source of repayment by loan-use (in percentage)^a

Source of repayment	Loan-use			
	SELFBUS	FAMBUS	LAND	CONSUME
Self-managed business	85.4	0	0	0
Family enterprise	13.4	9.25	17.5	4.17
Own wages	1.2	87.66	82.5	87.5
Sale of asset	0	3.08	0	8.33
Number of cases	82	227	40	48

^a In case of multiple sources (8.32%), respondents were asked for the primary source.

The experiences of women who have their loans diverted into family enterprise or for land purchases suggest that women have little influence over household's incomes and assets. G3W7, G3W11, V2W6, and V11W3 are women whose loans were used as working capital in family farms. **Before obtaining SHG loans, these women had worked on family farms or within their households, but now they find themselves working as wage laborers mainly to meet repayments.** Moreover, in some instances, as in the cases of G3W7 and V11W3, they were explicitly asked to take up wage laboring to repay loans by their husbands. As discussed before, not only is waged work considered socially inferior to work on own assets, but also women, compelled by the need to make repayments, **had to pledge their labor for very low wages.**²⁵ One of them, G3W11, expressed the desire to discontinue SHG membership so that she could stop working as a wage laborer. In addition, V11W3 finds that **her husband, who used to discuss household finances with her, is now secretive about income from crop sale and remittances for fear that she may ask him to make repayments.** Our interviews indicate that these women are resentful about having to withdraw their labor from work on own assets and work for wages instead. These experiences at least partly explain why women who exert significant control over their loans would prefer not to use it in family enterprise or for purchasing land.

Among the women whose loans were used to meet the consumption needs of the household G5W12, G7W2, and V4W9 had voluntarily used their loans to avert a household crisis (G5W12—husband's ill-health, G7W2 and V4W9—food shortages). Both G5W12 and V4W9 exerted significant control over their loans. All three women were involved in wage laboring prior to joining the SHG but now had to divert their wages into repayments. In addition, as a result of peer-pressure (which in

case of G5W12 was hostile) G5W12 sold her copper vessels and V4W9 sold her goat. Their families did not consent to these sales and both women are suffering the consequences. For instance, G5W12 is not allowed to keep money from sale of crop or her husband's wages, both of which she controlled prior to the incident. She has even lost control over her own wages, which her husband now collects directly from her landlord employer to stop her from using wages to repay loan. This was also the experience of several other women we interviewed, like V4W9, V10W2, and G3W5. Although not common, women were also actively punished for what was seen as acts of defiance. For instance, G7W2 and V4W9 experienced deliberate negligence from their families with respect to their rice consumption during particularly lean periods. Testimonies suggest that, prior to the incidents, **these women may have had a greater say over household decisions and incomes and that this has now diminished lest they try and divert resources away from the household.**

A number of **women who used their loans for self-managed enterprises did perceive a positive change in their statuses.** Many of them like, G6W14, G7W7, V7W1, and members of G9 spoke about how their ability to earn incomes independent of their husbands and without recourse to wage laboring **gave them a confidence** in their own capability and worth and had also changed the general attitude of people around them. They also valued the additional benefits that **access to a group network** provided in times of family emergencies. However, even among them just 29.3% ($N = 82$) reported a definite positive income after repayments. This is mainly the members of the group that invested jointly in a fertilizer shop. Pooling their loans gave women the opportunity to invest in a high investment and high returns business without undue exposure to risk. The opportunities available to women who managed business

individually were highly restricted because of small loan size, and severe competition among the women meant that very few made any appreciable profit.²⁶

The loans procured by women may help their households diversify and improve incomes, but women's lack of authority over family assets means that they are unable to divert income from these sources toward repayments. In such cases, they may lose control over the allocation of their work time and may even find their relative powers in domestic relations depreciate. Where their loans are used to avert a family crisis, using own wages or selling assets for repayment can result in loss of authority over household resources and in some instances even result in hostility toward the woman. These experiences reveal some of the difficulties women face in repaying loans which are misleadingly assumed away by the high repayment rates.²⁷ Even when loans are used for self-managed businesses, women find it difficult to make profits mainly because of small loan size and lack of joint group investments.

Regarding the paradoxical results obtained earlier, we can identify three broad points. First, the credit needs of poorer households within our sample (for productive or consumption purposes) are high and families are by and large able to divert loans procured by women into these activities. If the loan was not available, many households would be worse off in terms of income diversification while quite a few may have plunged into crises. Second, women's lack of command over household's productive assets means that she is unable to divert any income from such sources into repayments and is having to rely on the limited means available to her—wage laboring and sale of smaller belongings. This has an adverse impact on both allocation of her work time and her say over family resources. Finally, if loans given to women are continued to be diverted into household needs without any change in their asset positions, then this can over time widen the existing resource divide between men as owners and women as laborers and prove to be a disempowering experience for the women concerned.

7. CONCLUSIONS

This paper sets out to investigate the paradoxical suggestion that emerges from studies

evaluating the impact of microcredit viz., while lending to women benefits their households, its benefits for women themselves are not as certain. Using detailed data sets from two villages participating in the SHG program in India, it examines the impact of the credit program on core dimensions of household vulnerability and female empowerment. The same paradoxical result that taunts the microcredit literature surfaces: we find that lending to women is likely to strengthen the household's ability to cope with vulnerability across income groups but that the women themselves, especially the poorest ones, are not likely to see consistent improvements in their household status. Further, we investigate the mechanisms underlying this "impact-paradox" by examining loan-use and repayment data and testimonies by women borrowers. **Our findings suggest that loans given to women are mainly diverted into productive or consumption needs of their households.** While this in general helps the households strengthen their ability to cope with crises, it may have adverse consequences for the women concerned. Women's lack of ownership of family's productive assets means that even when her loans are used for productive purposes they are unable to divert any of the incomes from loan-sponsored activities into repayments. Compelled to rely on their own devices, women are forced to accept unfavorable use of their work time and may also find their control over family resources diminish. The findings of this study also suggest that if women's lack of control over family assets is not challenged, then microcredit may fail to live up to its promise vis-à-vis empowerment.

The findings of this paper have a number of policy implications. First, our results indicate that lending to women undeniably benefits their households diversify incomes and improves their ability to cope with shocks. Hence, microcredit can be a powerful vehicle for enhancing incomes and protecting households from the risk of crises. Second, our results suggest that microcredit alone may not be the right intervention for new clients. A social security program like the IGVGD intervention offered by BRAC or an insurance backed credit scheme may be a more beneficial in such cases. Such financial services can also provide vital cushioning in time of economic shock due to natural disasters or ill-health. Third, our findings also show that the benefit to women is greatest where loans are used for self-managed enterprises and especially so if individual loans are

pooled into group projects. This suggests that credit must be accompanied by programs aimed at building the group's economic capabilities. It is likely that the lack of focus on "group building" activities within the SHG scheme is one of the main reasons for its ineffectiveness in empowering women. Credit alone is unlikely to lead to women's emancipation in terms of affecting her household position and allocation of her work time (also see EDA, 2005; Hunt & Kasynathan, 2001). Our findings support the often made suggestion that women's empowerment may be increased when credit is offered as part of an integrated package that includes other services like non-pro-

ductive loan facilities, insurance, enterprise development, and welfare-related activities (Berger, 1989; Holvoet, 2005; Johnson & Rogaly, 1996; Mayoux, 2005). Finally and most importantly, our findings suggest that where household's demand for credit for productive purposes is high, lending to women may not benefit her personally. For this to happen, the patriarchal hold on family's productive assets needs to be challenged. One of the ways in which this could be achieved is to make credit conditional on asset transfers in favor of the women concerned. Effective transfer is likely to be achieved where assets are acquired using woman's own loan money.

NOTES

1. For a discussion on conceptual and methodological issues, see de Aghion and Morduch (2005), Kabeer (2001) and Morduch (1999).
2. The Rural Finance Access Survey, 2003 reported in Basu and Srivastava (2005), however, indicates that poorer households in rural India still have very little access to formal finance. For instance, 70% of marginal/landless farmers do not have a bank account and 87% have no access to institutional credit.
3. The involvement of its vibrant NGO sector has greatly boosted India's microcredit movement. Estimates suggest that by 2006 there were over 1,000 NGO engaged in mobilizing savings and providing credit services to the poor (World Bank, 2006). By 1994, these largely donor supported institutions also began to attract financial support from NABARD and other state development banks. Although the NGOs are crucial to the microcredit sector, their outreach and volume of loan is still relatively small. Among the most prominent NGO-led microcredit institutions are those managed by BASIX, CARE, MYRADA, SEWA, and SHARE. For a discussion, see World Bank (2006).
4. For a critic of the NABARD studies on methodological grounds, see World Bank (2004).
5. A total of 302 households were surveyed but six *de facto* female and four *de facto* male headed households and one income outlier were excluded from the analysis. The interviews were carried out by a group of two interviewers, one male and one female. The author participated in over 1/3rd of these and also carried out all the focus group interviews. For details on methodology and survey protocol, see chapter 2 in Horrell, Johnson, and Mosley (2008).
6. A systematic analysis of male and female responses did not indicate a gender bias in responses, except in case of variables pertaining to the head of the household (defined later in the paper).
7. The correctness of the official poverty figures is intensely debated (see Deaton & Drèze, 2002). Income is net of costs but not of loan repayments.
8. Unlike Hashemi *et al.* (1996), we have focused on neutral household decisions and excluded all those that an SHG member is more likely to take when compared to others (like the decision to buy a goat). Not doing so could lead to a bias in favor of the credit program.
9. The variable *DURATION* was preferred to the variable *SHG-MEMBER* (coded as one if the household had an SHG member, $r = 0.942$, $p = 0.000$) since it not only differentiated between members and non-members but also between early and late joiners.
10. For the independent categorical variables used in this study, the contrast type is specified as "Indicator" and the smallest category is identified as the reference category. The "Indicator" contrast type creates a set of dummy variables that indicates the presence or absence of category membership. Values for the reference category are set to zero such that no parameter estimates are computed for this category and those for the other remaining categories represent deviations from the effect of being a member of the reference category.
11. Selection bias occurs if the credit program participants differ from the non-participants in unobservable characteristics. If these characteristics are related to the vulnerability and empowerment measures studied here, then the coefficient of *DURATION* will reflect these

effects and will be biased. More specifically it can cause the statistical effects of participation to be exaggerated (Morduch, 1999; Pitt, Khandker, McKernan, & Latif, 1999). Pitt and Khandker (1998) and Pitt *et al.* (2006) are studies that have, among others, used the instrumental variable technique to correct for the endogeneity of credit program participation.

12. Note, however, that clusters are not very far from each other and “spill-over” effects are likely. The data we currently have do not allow us to explore this issue any further.

13. We thank one of the referees for suggesting the estimation procedure discussed here, in particular the use of the tobit model to estimate *DURATION* in the first-stage. The same referee also suggested the use of ivprobit. We report on this later.

14. While the bootstrap procedure is well established, there is still no fixed rule concerning the number of replications one should use in computing bootstrap standard errors. Since theory desires an infinite number of replications, the decision often rests on practical considerations (see Gould & Pitblado, 2005). In this study, we carry out 10,000 replications each time on the basis that estimates obtained remain robust to further replications.

15. Significantly, this led us to drop the variable *VILLAGE*. Estimating the models separately for the two survey villages suggests that while the study results are generally valid at the village level, they are somewhat stronger for Vepur.

16. If *DURATION* is used “as is” the results are somewhat mixed. Notably, its coefficient is statistically significant in (4-1) and has the expected sign. This suggests that endogeneity may be a problem and justifies the use of the instruments.

17. In principle, a Wald test could also be used, but the likelihood-ratio test is found to be more reliable for small sample sizes (Agresti, 2007; Menard & Menard, 2001).

18. According to Mahajan and Ramola (1996), the average annual credit use by rural households in India is around 14,549 Rs. Of this, 65% is for productive purposes and 35% for consumption purposes.

19. Members of just two SHGs invested in joint projects: a successful fertilizer shop and a rental company that catered to special occasions like weddings and funerals. Projects managed individually were usually petty businesses like livestock (65%), mobile shops (23%), tea stalls, grocery, and tailoring shops (13%).

20. We acknowledge that the way we have set up this model is potentially problematic, since (some of) the right-hand side variables may be endogenous and may result in biased estimates. In particular, as suggested by one of the referees, the variables *CONTROL* could be endogenous to the outcomes being studied. To solve this potential endogeneity problem, we should have used valid instruments. For example, we should have used information on past behavior of members to endogenize *CONTROL*. Unfortunately, our current data set does not have suitable instruments. We therefore suggest that the results be treated with caution.

21. Members of some SHGs display a greater tendency to use loans for own enterprises than others. This suggests that “within group” dynamics might be an important consideration. *PEERP* is designed to capture one aspect of these dynamics. The limitations of our data set do not permit the inclusion of other relevant variables like social ties and leadership.

22. This compares with Goetz and Gupta’s (1996) findings for BRAC, Bangladesh. If we classify all women scoring two or more points as in control of their loans, then our data suggest that 67.51% of them control their loans to some extent. This compares with findings from studies for Bangladesh’s Grameen Bank (Goetz & Gupta, 1996; Hashemi *et al.*, 1996; Rahman, 1986).

23. Hermes, Lensink, and Mehrteab (2005) suggested that the group leader’s actions (and not of other group members’) matters for the performance of microcredit groups. To test whether the impact of the group leader’s loan-use is significantly different from that of the other group members, we separately analyze for a group leader effect. Our results suggest that the group leader’s loan-use matters but so does that of the other group members.

24. There were instances where woman displayed remarkable courage to retain the ability to use their loans on self-managed enterprise. Like in the case of V1W8 who physically fought her husband’s attempt to take her loan money to invest in his barber’s shop. In some instances, however, women gave up their loans willingly. G2W8 gave her loan to her husband and father-in-law because she considered herself well looked after by them and was not confident about using it herself.

25. Low rainfall and lack of off-farm work contribute to low female wages in the survey area. On an average, these were between 36.8% and 39.8% of the statutory minimum wage (Garikipati, 2008).

26. During the survey, we faced the daily dilemma of selecting from the half a dozen tea stalls that the SHG women operated. Mosley and Rock (2004) reported similar evidence from Zimbabwe (CARE) and South Africa (SEF), where women traders are forced to seek to regulate the market, for instance, by agreeing to trade on alternate days.

27. This compares with findings from Mayoux (2005), who suggested that high repayment levels do not indicate women's control over the loans and may in fact be a sign of social pressure to access resources for others in the household. In further support of this thesis, we find that very few women who reported negative experiences actually wanted to leave their SHGs.

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(See Overleaf)

APPENDIX A

See Table A1.

Table A1. *Tobit estimation of determinants of duration of SHG membership: First-stage (N = 291)*

	Dependent variable: Duration (first-stage regression for the models specified)			
	A (for 3-1, 3-3, 3-4 and 3-5)	B (for 3-2) ^c	C (for 4-1 to 4.7)	D (for 6-1 to 6-3) ^d
Instrumental variables				
<i>CLUSTERSIZE</i>	0.241 (24.48) ^{***a}	0.241 (24.72) ^{***}	0.243 (24.47) ^{***}	0.305 (25.26) ^{***}
<i>MINORCASTE</i>	-15.625 (.) ^b	-15.815 (.)	-15.180 (.)	1.048 (3.55) ^{***}
Program-related variable				
<i>PEERP</i>	-	-	-	-0.032 (-6.38) ^{***}
<i>CONTROL</i>	-	-	-	0.221 (1.02)
Household characteristics				
<i>HHHSEX</i>	0.072 (0.14)	0.120 (0.23)	-	-
<i>HHHAGE</i>	-0.004 (-0.33)	-0.004 (-0.36)	-	-
<i>HOUSE</i>	-0.013 (-0.04)	-0.032 (-0.10)	-0.068 (-0.22)	-0.331 (-1.23)
<i>LABORSHARE</i>	-0.008 (-0.74)	-0.008 (-0.77)	-0.008 (-0.68)	-0.009 (-0.63)
<i>OLOAN</i>	-0.293 (-1.16)	-0.359 (-1.42)	-0.347 (-1.37)	-0.801 (-2.40) ^{**}
<i>CASTE</i>	0.149 (0.62)	0.201 (0.84)	0.143 (0.58)	-0.179 (-0.81)
<i>VILLAGE</i>	-	-	-	-0.083 (-0.40)
Women's personal characteristics				
<i>WOMAGE</i>	-	-	-0.0004 (-0.04)	-0.006 (-0.63)
<i>WOMEDU(1)</i>	-	-	0.314 (1.31)	-0.378 (-1.56)
<i>WOMEDU(2)</i>	-	-	1.120 (2.20) ^{**}	-0.109 (-0.32)
<i>MALECHILD</i>	-	-	0.344 (1.06)	-0.364 (-1.22)
Other variables				
<i>ENTERPRISE</i>	-	0.444 (1.90) [*]	-	-
<i>CONSTANT</i>	-3.634 (-5.67) ^{***}	-3.748 (-5.85) ^{***}	-4.345 (-6.78) ^{***}	-4.713 (-6.90) ^{***}
Log likelihood	-246.281	-244.496	-243.139	-831.647
LR chi-square (degrees of freedom)	464.44 (8)	468.01 (9)	470.72 (10)	433.44 (13)
No. of observations censored at 0	174	174	174	0

^a *t*-Statistics are given between parentheses.^b (.) indicates that the estimate was not available.^c *DURATION* was estimated separately for (3-2) since it includes *ENTERPRISE* as one of the explanatory variables.^d Note that in this case the non-negativity constrain on the variable *DURATION* is non-binding and an OLS model gives identical coefficient estimates.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.