Economic or Non-Economic Factors – What Empowers Women?

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By

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Abstract

Microfinance programs like Self Help Group Bank linkage program (SHG), aim to empower women through provision of financial services. We investigate this further to determine whether it is the economic or the non-economic factors that have a greater impact on empowering women. Using household survey data on SHG from India, a general structural model is adopted where the latent women empowerment and its latent components (economic factors and financial confidence, managerial control, behavioural changes, education and networking, communication and political participation and awareness) are measured using observed indicators. The results show that for SHG members, economic factors, managerial control and behavioural changes are the most significant factors in empowering women.

Keywords: microfinance, impact, women empowerment

JEL: D12, D63, D91, J16, O12, O16.

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1.Introduction

Most microfinance programs target women with the explicit goal of empowering them. Yet verifying their impact on women empowerment and determining which factors empower women more significantly remains difficult. Woman empowerment is a multi-dimensional process which intersects the woman's personal, family, social, cultural, economic and political space. Moreover, it is a latent variable that along with its components cannot be directly observed or measured. This paper undertakes this challenging task to investigate and determine the factors that have a significant impact in empowering women, especially members of Self Help Groups (SHGs), which is one of the leading microfinance programs in India.

Several development interventions use income transfers or microfinance for income generation, as a way of inducing empowerment. Evidence on impact of microfinance on women empowerment has been well documented by comprehensive studies. Several studies (Bali Swain 2007, Pitt et al. 2006, Goetz and Sen Gupta 1996, Hashemi et al. 1996) show that credit programs lead to a greater value for women in household decision making, access to financial and economic resources, social networks, and greater bargaining power within the household and freedom of mobility.

Based on intra-household bargaining literature (Browning and Chiappori 1998, Duflo 2003, Blumberg 2005) economic factors are identified as an important factor for empowering women. Increases in the value of female time and her monetary income have been postulated

to result in higher bargaining power and greater participation in household decision-making. It also leads to greater investment in education, housing and nutrition for children (Duflo, 2003). Recent research on developing countries however shows that transfers of income that are made to women only, do not automatically translate into increases in their bargaining power. Given the cultural and social constraints imposed on the women in developing countries', women's autonomy or personal accumulation of resources may not necessarily result in empowering women on their own. Thus, though economic interventions are important, other development initiatives such as education, political quotas, awareness generation and property rights etc. are as essential for empowering women (Kabeer 2005, Malhotra and Mather 1997, Deshmukh- Randive 2003). In order to understand the contribution of different components of women empowerment, we investigate the relative significance of these factors in empowering women.

Empirical research on women empowerment is compounded by problems in defining and measuring it. For the most part, impact research on women empowerment tends to estimate an over-extended definition of empowerment or a truncated aspect of it (Goetz and Gupta, 1996, Hashemi et. al, 1996). A number of these studies also suffer from possible bias due to endogeneity of decisions involved in program participation and the unobserved households, individual, and area characteristics. Measuring women empowerment is also a problem, as it cannot be directly observed and has multiple facets. Past studies on women empowerment have also suffered from treating ordinal variables as continuous variable and treating the latent variable of women empowerment as observed.

By adopting a general women empowerment model in this paper, some of these problems are overcome. The various latent components of women empowerment are measured by their

respective observed indicators. These latent components are the factors that may affect the empowerment level of a woman and cover various domains of this multi-dimensional concept.

Woman empowerment is considered to take place when a woman challenges the existing norms and culture of the society in which she lives, to effectively improve her well being (Bali Swain 2007, Bali Swain and Wallentin 2007).[1] Based on this definition, the latent women empowerment is measured using the observed indicators that reflect that women have showed increased participation in traditionally male-dominated areas, within the South-Asian context. The structural model where the latent women empowerment depends on its latent components is then estimated. The results show that economic factors are the most significant in empowering women. Behavioural changes of the respondent, spouse and other members of the household also have a significant impact on women empowerment. Managerial decision-making, which captures the extent of control that a woman has over the management and organisation of her income-generating activities, is also significant. Interestingly network, education and political-participation do not contribute significantly to empowering women at the individual level in our data. The SHG members show a similar trend, though for non-SHG members economic factors are not significant.

The analysis is based on the quasi-experimental data collected for the Self Help Group (SHG) program in India. The survey data contains information on about a 1000 households (both SHGs and non-SHG) from five different states of India, in 2003.

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[1] For a detailed discussion on this refer to Bali Swain 2007.

The paper makes important contributions at several levels. It is one of the few studies that quantitatively investigate whether economic or the non-economic factors are more significant in empowering women. These factors belong to different domains of a woman's empowerment process or can sometimes complement each other. In contrast to previous studies the general women empowerment model, does not treat the latent variables as observed. Moreover, appropriate techniques are used to treat the ordinal variable. Further contributions are made by the information rich data which contains both quantitative and qualitative information. It is important to note that even though the analysis in this paper is based on studying the impact of SHG data, the methodology and the conceptual framework may be extended to any women empowerment study.

The paper is organized as follows. Section 2 provides a brief overview on how women are empowered through the SHGs. The data, its characteristics and the various factors underlying women empowerment are discussed under Section 3. The measurement issues, treatment of the ordinal variables, model specification and estimation are discussed in Section 4. Whereas, the empirical evidence and conclusions are presented in the final sections.

2. Empowering women through SHGs

SHG program has emerged across India as one of the most popular strategy for empowering women (Chidambaram 2004).[2] It is the largest and fastest-growing microfinance program in the developing world. Implemented since 1996 on a national scale, it has reached an estimated 121.5 million people in March 2005, by mainly targeting women. More than USD 1.7 billion

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[2] The SHG model was introduced as a core strategy for empowerment of women in the Ninth Plan (1997-2002). This strategy was continued in the Tenth Plan (2002-2007) with the government commitment to encourage SHGs to act as agents of social change, development and empowerment of women (pg. 239, Planning Commission, 2002, Tenth Five Year Plan 2002-2007, New Delhi: Government of India.)

have been dispersed in cumulative bank loans up to March 2005, using a network of 41,082 bank branches and 4,323 Non Governmental Organisations (NGOs).

The SHG is constructed of 10-20 poor women who group together for financial services. These involve periodic savings, loans and/or training, education and other social services. SHGs are usually formed and managed by their members with external support from self-help promotion institutions (SHPIs) that include non-governmental organisations (NGOs), government agencies, commercial and rural banks, cooperatives and microfinance institutions. Typically groups begin by saving and lending out of the members' own resources for about the first six months after formation. Subsequently, most SHGs borrow from a bank (at about 12 percent per annum) using its savings and group guarantee as the collateral. These SHGs may also be linked into a network of SHGs with elected leaders, which meet periodically to discuss issues or arrange training and workshops.

Like a majority of microfinance programs that target women, SHG program also aims to empower women. As argued in Bali Swain (2007), not all activities that lead to an increase in well-being of a woman are necessarily empowering in themselves. For instance, activities like improvement in nutrition of children, lead to greater efficiency in the woman's role in the household but it also falls within the existing role of the women within the prevailing norms of the South-Asian society. When a woman is better able to perform such activities, it leads to an increase in her self-confidence and feeling of well being. This might create conditions leading to women empowerment, but are not empowering on their own. Therefore, for our analysis women empowerment is defined as the process in which women challenge the existing norms and culture of the society in which they live to effectively improve their well-being.

A growing body of literature has begun to question if microfinance re-inforces traditional gender roles, as women tend to make choices that fall within the scope of the traditional up-bringing. Furthermore, such choices are also rewarded by the society. It is therefore difficult to infer that microfinance has been effective in transforming social norms and traditions. Based on a survey of fifteen different programs in Africa, Mayoux (1999) argues that the degree of women's empowerment depends on the inflexible social norms and traditions. It also depends on how well a particular program is designed and implemented (Holvoet, 2006).

Within the context of South Asia certain decisions like buying and selling of property, family planning[3], children's marriage and decision to send a girl child to school have traditionally been taken by men (Kabeer 1999). Bali Swain (2007) and Bali Swain and Wallentin (2007) argues forcefully that increased involvement of women's decision-making in these non-traditional areas are crucial measures of greater empowerment of women. The empowerment level of women is therefore determined by their behavioural reactions to situations that reflect their well-being.

The SHG's empower women through various channels. The household bargaining literature[4] identifies economic factors as an important component of women empowerment. SHGs may impact the household choices through changes in the bargaining power, by raising the overall resources, by increasing the returns to investments in human capital, and by influencing attitudes and norms (Armendariz de Aghion and Morduch 2005). In a collective decision making model, Browning and Chiappori (1998) show that if behaviour in the household is

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[3] For instance Schuler, Hashemi and Riley (1997) find positive impact of microfinance on use of contraceptives, in Bangladesh. This might be a combination of increases in opportunity cost of women's time and increased peer pressure and support of group members to limit the family size in order to improve education and health of the woman and children within the household and the ability to repay the loan.

[4] Refer to McElroy and Horney 1981, Manser and Brown 1980, Chiappori 1988, 1992, Browning and Chiappori 1998. For a survey on models of allocation within the family, refer to Bergstrom 1996.

Pareto efficient, the household's objective function takes the form of a weighted sum of individual utilities. The individual weights can represent the bargaining power of the female members in the household relative to the male household members, in determining the intra household allocation of resources. In the literature it is assumed that by increasing the relative value of female time and her money income, the weight and hence the bargaining power of the female members can be increased within the household. This 'weight' may also be altered by social pressure. The weight parameter may thus reflect the women's power within the household decision making and maybe one index of women empowerment.

Anderson and Eswaran (2005) demonstrate theoretically that income needs to be in the control of women – not just generated by them – in order to impact their bargaining power in the household. Evidence from Bangladesh reveals that credit taken by women might be used by the male household head, with women having limited control over their own investments (Goetz and Sen Gupta 1996). The managerial decision-making of women in their work therefore presents their effective empowerment in taking managerial decisions. Crucial decisions on purchase of raw materials, pricing of the product and planning are some of the indicators of a woman's effective managerial decision-making power.

Additional SHG women empowerment impact is generated as a direct result of the actual formation and network links of the SHGs and provision of additional development initiatives through them (Bali Swain 2006, Bali Swain and Floro 2007). SHG formation, gives the women an opportunity to share their experiences amongst a homogenous group. This enables them to critically analyse their situation and exposes the structural suppression within the society that they live in. This group interaction creates an environment where personal problems are revealed as social patterns and negative emotions may be blamed on the

environment than the self (Summer-Effler 2002). Townsend (1999) also notes that SHG meetings allow the women to break out of the daily routine and discuss their similar burdens, share their problems, giving them the opportunity to analyse that the root causes go beyond the individual fault or responsibility.

The interaction with the women in the SHGs and with other members of the SHGs at the cluster or federation meetings increases the exposure of the women to other views and ideas and increase her confidence to articulate and pursue her interests (Purushottaman 1998). Furthermore, the collective nature of SHG gives its members the confidence to become active participants in the public arena, strengthening their ability to pursue the interests of women and making their role in politics and society more inclusive (Bali Swain 2007, Tesoriero 2005). Thus, networking, communication and stepping outside the domain of family and household are also empowering for women.

SHG programs are also linked to other development initiatives of the non-governmental organisations and/or government agencies. These range from interventions that target reproductive and child health, daycare facilities for children, water and sanitation initiatives, training (pertaining to accounting, skill formation etc.) and gender awareness etc.

According to our definition, behavioural changes in the woman within the household to improve her own well-being is also a crucial component of empowerment. Several studies have investigated the impact of microfinance on women's rights, especially situation with domestic violence. Hashemi, Schuler and Riley (1996) and Kabeer (2001) find that as a result of microfinance, violence against women in Bangladesh has reduced. Whereas, Rahman (1999) finds that domestic violence has increased for Grameen borrowers. Bali Swain (2006)

also documents an increase, but argues that the domestic violence is in fact a reaction to the women exerting their rights and reflects the process of empowerment.

Behavioural changes in the woman, her spouse and other members of the household, are also important component of women empowerment. A woman's response on a possible situation of verbal abuse, psychological and emotional abuse and physical abuse are all indicative of changes that might ultimately impact her empowerment. Increased self-confidence along with greater involvement in all decisions of the family may also be inferred as greater empowerment.

A woman's participation in the political space is another component of empowerment. Gender Empowerment Measurement (GEM), developed by UNDP focuses on the women's political and economic power at the aggregate level. Several researchers have critiqued it and argued for the inclusion of female representation in local governments (Bardhan and Klasen 1999, Dijkstra 2002). Beteta (2006) further recommends incorporating broader representation and including activities such as voting, demonstrating and getting involved in political organisations, as well as participating in informal organisations to solve community problems. In the survey, the respondents were asked if they were aware that women had reservations in the local political institutions called panchayats[5]. They were also asked if they got involved (voted and/or participated) in the village level politics. Information from these two variables

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[5] In 1993, India passed the 73rd Constitutional Amendment which reserved 33% of *panchayati raj* (village councils) seats for women. The Amendment enabled thousands of women to enter the political arena. While some women have created political spaces to voice their needs, concerns and priorities, others are still trying to grapple with the power and authority thrust upon them. If empowerment is seen as a process by which women overcome the challenges of a patriarchal society then it is difficult to maintain that the 73rd Amendment has achieved it for women. What has emerged, however, is that women have felt empowered at different points through their experiences and at various levels. A number of women have challenged their roles as care-givers by entering the public domain, have gained new prestige, and have become role models for other women. Although it is difficult to measure how these experiences have impacted on the women in their personal lives, it is known that through participation in *panchayati raj*, women have acquired a critical gender consciousness on how they have been denied their rights. (PRIA 1999).

was used to proxy for the political awareness and participation. Finally it is important to consider that women empowerment is not an outcome, but a process (Johnson 2005). Apart from the factors that we have discussed in this paper a wider range of factors such as legal and regulatory framework, women's social and economic rights and societal attitudes are also important (Beteta 2006).

3. Data

The household survey data used for the estimation in this paper is a part of a larger study that investigates the impact of Self Help Groups (SHGs) bank linkage program on poverty, vulnerability and social development. The household survey uses a quasi-experimental design to address the 'problem of attribution'[6]. The survey was conducted in 2003 and consists of a sample of 968 households[7] collected from two representative districts each, for five different states[8] in India. The respondents from the SHG members at the district level were randomly chosen. The control group households were chosen to reflect a comparable socio-economic level as the SHG respondents and were selected from non-SHG villages with a similar level of economic development, socio-cultural factors and infra-structural facilities. The sample includes a group of SHGs members that have participated in the program (810) and a control group (158).

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[6] The "problem of attribution" refers to the difficulty in establishing unequivocally that the observed changes in the economic and social status of the members of the SHGs, are induced by the formation of SHGs and the related component of micro finance, and not as a consequence of other possible causes arising due to the changing economic, political, social, cultural or policy environment. To address this problem a quasi-experimental design is chosen where information is collected on the SHG households and a control group, which contains information on non-participating households of similar household characteristics. The difference in the results of these two groups would therefore reflect the real impact of SHG bank linkage program.

[7] All the respondent to the questionnaire are women.

[8] These states (districts in parentheses) are Orissa (Koraput and Rayagada), Andhra Pradesh (Medak and Rangareddy), Tamil Nadu (Dharamapuri and Villupuram), Uttar Pradesh (Allahabad and Rae Bareli), Maharashtra (Gadchiroli and Chandrapur).

Table 1 gives selected characteristics of the household sample for these two groups. The groups also similar in terms of percentage of earners, literacy level and proportion of respondents engaged in farm activity. The control group, however, is slightly better off in terms of the total value of land owned and the average level of assets owned. Interestingly, about 64 percent of the SHG members reported an increase in their own income over the survey period as compared to 39 percent of the control group respondents.

[Table 1 about here]

As discussed in earlier section, SHGs channel their impact on women empowerment through direct and indirect economic factors. Further, they also empower through development initiatives that directly target women through SHGs.[9]   Finally, SHG members also get empowered by the formation of SHGs and their linkages to other networks. These factors that lead to women empowerment include: economic factors and financial confidence (economic), managerial power (manage), networks, political and social awareness and participation (politics), and behavioural changes within the respondents and household members (behaviour), and education. Table 2 gives the details of the various observed indicators that are used to measure the latent women empowerment and its components.

[Table 2 about here]

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[9] Stromquist (2002) explains that at present, access to formal schooling does not necessarily lead to empowerment.   He argues that women's empowerment is possible more through non-formal education programmes. The alternative spaces provided by women-led NGOs promote systematic learning opportunities through workshops on topics such as gender subordination, reproductive health, and domestic violence, and provide the opportunity for women to discuss problems with others.

In accordance with our definition, women empowerment is measured by the indicators that cover the decision-making in traditionally male-dominated areas within the South Asian context. These include involvement in decision-making on family planning, on children's marriage, on buying and selling of property, on sending daughter to school and use of birth control.[10]

It is well-established in literature that an economically active woman with her own independent savings and greater income share within the household, has more economic power. This results in a higher bargaining power within the household, thereby making her more empowered and likely to challenge the prevailing norms that restrict her ability to make choices (Asraf et al. 2006, Bali Swain 2007, Bali Swain and Wallentin 2007, Duflo 2003, Browning and Chiappori 1998, Blumberg 2005). A woman's economic power is proxied by the following indicators: respondent's income as a share of the total household income, primary activity that the respondent is engaged in, her own independent savings that she controls and her contribution to her household's assets in excess of Rs. 5000. Financial confidence in meeting a family financial crisis and/or the ability to arrange credit also improve a woman's bargaining power within a household thereby further empowering her.

Access to credit does not necessarily imply control and decision-making power for women clients. Thus managerial decision making indicates that the woman is in control of managing her work related activities and is measured by the respondent taking crucial decisions and planning in her income generating activity.

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[10] Changes in decision-making on some these specific issues are conditioned on some of these events actually occuring. For instance, if the family only has sons, then it is difficult for the respondent to reply positive to the question on sending daughters to school. In that sense, these decision-making changes record the actual changes that occurred conditioned on the possibility of the event occurring and do not reflect the normative empowered capacity of women, for instance, even though the respondent might not actually have a daughter or might not actually face a decision to send her daughter to school (because her daughter is too old or young), she feels that her involvement in decision-making on sending her daughter has increased.

Network, communication, awareness and political participation is measured by the number of officials that the respondent has spoken to, the communication skills of the respondent, their awareness and participation, in the local village politics and their behavioural reaction to verbal and physical violence within the household.

The behavioural changes within the respondent, her spouse and other family members was measured by ordinal responses to direct questions on these aspects as detailed in Table 2. Whereas, education of the respondent is based on her educational attainment level.

Although the process of empowerment works through these different channels, they might influence the various factors (or dimensions) underlying the multi-faceted concept of women empowerment in a different way. The sociological and gender literature clarifies that access to resources is distinct from control over them, and only the latter can be considered an indicator of power. Moreover, power is multi-locational, exists in multiple domains and is multi-dimensional. Thus, women's control over a given dimension, for instance economic decision making does not necessarily imply ability to make reproductive or non-financial domestic decisions (Malhotra and Mather, 1997). Thus, these processes of empowerment may work through synergies and/or complex interrelationships with each other, to produce its impact on the factors underlying women empowerment.

4. Empirical Analysis

4.1 Measurement Issues

Several studies on women's empowerment are limited by confusion over concepts, a lack of disaggregated data, and limited information on household dynamics (Moghadam and Senftova

2005). Factors underlying women empowerment cannot be measured directly. Some common approaches to measure women empowerment in the microfinance literature have been to use case studies and qualitative analysis, index approach (Goetz and Sen Gupta 1996) and factor analysis (Pitt et al. 2006).

Most of these studies including Pitt et al. (2006) use data that is self-reported, subjective and ordinal in nature.[11] However, it is important to recognize that information from ordinal variables needs to be treated appropriately. Ordinal variables have categories as values (as can be seen for our observed indicators in table 2), which cannot be treated like a continuous variable. For instance, consider that a respondent who is asked the following question in the survey: "What do you do if you are physically abused in your family?" Her response is one of the following categories: 1 if she resists; 2 if she submits herself, 3 if she complains in the group or takes their help, 4 if she complains to the relatives, 5 if she warns against such behaviour and 6 if she does nothing. In case of such a variable, a number allocated to the category has no meaning by itself. Moreover, considering the different categories of the responses to this question, it is difficult to know by how much more the respondent resists if she would have chosen category 4 over category 5. Secondly, even if the respondent chooses category 4, for instance, we don't know the magnitude of her resistance. Furthermore, even if two different respondents choose the same category 4, we cannot say that their magnitude of resistance to the verbal abuse is the same. The ordinal variables therefore, need to be treated as ordinal variables, thereby requiring special treatment. This is discussed further in the following section. Another limitation of previous empirical studies have been to use the estimated latent scores and treat them as observed variables in order.

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[11] Frankenberg and Thomas (2001) make a case for using data on attitudes of and towards women within the household.

4.2 Treatment of Ordinal Variables

Like most empowerment studies, the data used in this paper is also ordinal in nature. The ordinal variables in the data represent responses to a set of ordered categories. It is assumed that a person who selected a specific category has more of a character than if she/or he had selected a lower category. Therefore ordinal variables do not have origins or units of measurements. Means, variances and covariances of ordinal variables have no meaning. The only information we have are counts of cases in each category.

In our analysis we adopt the terminology of Jöreskog (2002) to refer to an unobserved univariate continuous distribution that generates an observed ordinal distribution as a latent response distribution. This means that for each ordinal variable y, we assume that there is an underlying continuous variable y^*. This continuous variable y^* represents the attitude of the ordinal responses to y and is assumed to have a range from $-\infty$ to $+\infty$.

It is this underlying variable y^* that is used in our model, and not the observed ordinal variable y. The underlying variable assigns a metric to the ordinal variable. The relationship between an underlying continuous variable y^* and an observed ordinal variable y is formalized as following

If y has m categories labelled $1, 2, ..., m$, the connection between y and y^* is

$$y = i \Leftrightarrow \tau_{i-1} < y^* < \tau_i, \qquad\qquad i = 1, 2, ..., m,$$

where
$$-\infty = \tau_0 < \tau_1 < \tau_2 < ... < \tau_{m-1} < \tau_m = +\infty$$

are *threshold* values as parameters defining the categories *i*. With *m* categories, there are *m-1* threshold parameters $\tau_1, \tau_2, ..., \tau_{m-1}$. Since we have only ordinal information, the distribution of y^* is determined only up to a monotonic transformation. Next, we choose the distribution for y*. Generally, we can choose any continuous distribution. In this analysis, we choose the standard normal distribution with density function *φ(u)* and distribution function *Φ(u)* for y^*.

The probability of a response in category *i* is

$$\pi_i = P(z = i) = P(\tau_{i-1} < z^* < \tau_i) = \int_{\tau_{i-1}}^{\tau_i} \phi(u)du = \Phi(\tau_i) - \Phi(\tau_{i-1}), \qquad \text{so that}$$

$$\tau_i = \Phi^{-1}(\pi_1 + \pi_2 + ... + \pi_i), \qquad i = 1,...,m-1,$$

where Φ^{-1} is the inverse of the standard normal distribution function. The quantity $(\pi_1 + \pi_2 + ... + \pi_i)$ is the probability of a response in category *i* or lower.

The π_i's are unknown population quantities and can be estimated consistently by the corresponding percentage p_i of responses in category *i*. Then, estimates of the thresholds can be obtained by

$$\hat{\tau}_i = \Phi^{-1}(p_1 + p_2 + ... + p_i), \qquad i = 1,2,...,m-1.$$

The quantity $(p_1 + p_2 + ... + p_i)$ is the proportion of cases in the sample responding in a given category *i* or lower. In fact, $\hat{\tau}_i$ is the maximum likelihood estimator of π_i based on the univariate marginal sample data.

4.3 Model Specification

To assess the impact of various latent components on Women Empowerment, a structural equation model is adopted. This model is graphically presented in Figure 1. As the path diagram indicates, the latent women empowerment variable (We) and its various latent components (economic, management, politics, behaviour and education) are represented by ellipses. The latent women empowerment variable is measured by its respective indicators (in rectangles) on the right side of the path diagram.

The latent components of women empowerment are measured by indicators (in rectangles) on the left side of Figure 1, with some measurement errors. The causal relations between the latent women empowerment variable and its components are represented in the middle part of the path diagram. The straight single-headed arrows represent causal relations between variables connected by arrows. The variables at the head of arrow measure the variables at the base of the arrow. Whereas the measurement errors are represented by the arrows that point to each of the indicators.

[Figure 1 about here]

The path diagram in Figure 1 corresponds to the following simultaneous system of equations (see Jöreskog and Sörbom 1999). Equation (1) represents the measurement model for the latent components of women empowerment (ξ_i, i= 1,…,5)**,**

$$
\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \\ x_{13} \\ x_{14} \\ x_{15} \\ x_{16} \\ x_{17} \\ x_{18} \\ x_{19} \\ x_{20} \end{pmatrix} =
\begin{pmatrix}
\lambda_1 & 0 & 0 & 0 & 0 \\
\lambda_2 & 0 & 0 & 0 & 0 \\
\lambda_3 & 0 & 0 & 0 & 0 \\
\lambda_4 & 0 & 0 & 0 & 0 \\
\lambda_5 & 0 & 0 & 0 & 0 \\
\lambda_6 & 0 & 0 & 0 & 0 \\
0 & \lambda_7 & 0 & 0 & 0 \\
0 & \lambda_8 & 0 & 0 & 0 \\
0 & 0 & \lambda_9 & 0 & 0 \\
0 & 0 & \lambda_{10} & 0 & 0 \\
0 & 0 & \lambda_{11} & 0 & 0 \\
0 & 0 & \lambda_{12} & 0 & 0 \\
0 & 0 & \lambda_{13} & \lambda_{14} & 0 \\
0 & 0 & \lambda_{15} & \lambda_{16} & 0 \\
0 & 0 & 0 & \lambda_{17} & 0 \\
0 & 0 & 0 & \lambda_{18} & 0 \\
0 & \lambda_{19} & 0 & \lambda_{20} & 0 \\
0 & 0 & 0 & \lambda_{21} & 0 \\
0 & 0 & 0 & \lambda_{22} & 0 \\
0 & 0 & 0 & 0 & \lambda_{23}
\end{pmatrix}
\begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \\ \xi_5 \end{pmatrix} +
\begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \\ \delta_9 \\ \delta_{10} \\ \delta_{11} \\ \delta_{12} \\ \delta_{13} \\ \delta_{14} \\ \delta_{15} \\ \delta_{16} \\ \delta_{17} \\ \delta_{18} \\ \delta_{19} \\ \delta_{20} \end{pmatrix}
\qquad (1)
$$

where $x_1,\ldots,x_{20}$ are the measures for the latent components of women empowerment, $\lambda_{1,\ldots,}\,\lambda_{23}$ are the factor loadings and $\delta_1,\ldots,\delta_{20}$ are the measurement errors associated with the respective indicators. This measurement model corresponds to the left side of the path diagram.

The latent women empowerment is denoted by η and is measured by the indicators $y_1,\ldots,y_5$ as given by equation (2),

$$
\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \end{pmatrix} =
\begin{pmatrix} \rho_1 \\ \rho_2 \\ \rho_3 \\ \rho_4 \\ \rho_5 \end{pmatrix} \left(\eta \right) +
\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \end{pmatrix}
\qquad (2)
$$

where ρs are the factor loadings and εs are the measurement errors that are associated with $y s$. This measurement model corresponds to the right side of Figure 1.

Equation (3) is the structural equation model which indicates that the latent women empowerment (η) depends on the latent components ($\xi_i, i = 1,\ldots,5$),

$$\eta = \begin{pmatrix} \gamma_1 & \gamma_2 & \gamma_3 & \gamma_4 & \gamma_5 \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \\ \xi_5 \end{pmatrix} + \left(\zeta \right) \qquad (3)$$

where γs are the latent regression coefficients and ς is the error term. The statistical significance of γs therefore indicates which latent component has a significant impact on women empowerment. Equations (1), (2) and (3) can be summarized in the matrix form as follows:

$$\mathbf{x} = \Lambda \xi + \delta;$$

$$\mathbf{y} = \rho \eta + \varepsilon,$$

$$\eta = \Gamma \xi + \zeta.$$

4.4 Estimation Method

The Robust Maximum Likelihood (RML) method has been used for analyzing Women Empowerment data (see Jöreskog et. al 2001). The RML uses the following fit function

$$F(\theta) = \log \| \Sigma \| + tr(S\Sigma^{-1}) - \log(S) - k - (\bar{z} - \mu)' \Sigma^{-1} (\bar{z} - \mu)$$

Where z is the vector of the observed responses (containing both y and x). Σ is the population covariance matrix and S is corresponding sample covariance matrix. Central to the development of the traditional maximum likelihood estimator is the assumption that the observations are derived from a population that follows a multivariate normal distribution. This assumption is not valid in our data because of ordinality. Therefore, RML is used to obtain the same fit function as traditional Maximum Likelihood in order to get the parameter

estimates. While the asymptotic covariance matrix is used to estimate the correct standard errors and chi-squares under the non-normality (caused by ordinality).

5. Empirical Evidence

Much has been written on the multi-dimensional, multi-locational and complex character of women empowerment. However, most studies have used ordinal responses to construct a partial picture on one aspect of empowerment. Using a structural equation model, helps us determine, which factors have a higher significance and play a more important role as a factor in empowering women.

The results presented in Table 3 show that economic, management and behaviour factors (components) of women empowerment in our specification are statistically significant. The t-values reveal that financial confidence and economic factors are the most significant factors of women empowerment for all households, thus confirming intra-household bargaining literature and the feminist theories[12] that suggest that economic factor is perhaps one of the most important factors in the women empowerment process.

[Table 3 about here]

Behavioural changes within the respondent, her spouse and other members of the household also have a significant impact on woman empowerment.

It has been argued in literature that mobility, communication and political participation by women are important factors of women empowerment. It is therefore surprising that it is not

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[12] Some authors have gone as far as to suggest that economic factors are the magic potion for empowerment (Blumberg 2005)

a significant factor for empowering women in our survey data. Similarly, education, which is perhaps one of the most important investments that may be made in the development of a society is statistically insignificant. It is possible that some of these factors, take a much longer time to impact the individual empowerment of a woman. To show impact perhaps these processes need to mature and become more rooted within the society.

Table 4 presents the disaggregated results for the SHG household and the control group of non-SHG households. For the SHG members economic component is the most significant factor. By providing the members the possibility to borrow, it enables them to generate income, thereby, increasing their bargaining and decision-making power within the household. Management component that measures the decision-making and managerial ability of the SHG members also makes a significant contribution to women empowerment.

Behavioural changes in the respondent, her spouse and other members of the household also have a significant impact on women empowerment. These changes could be through indirect impact of economic factors, where greater bargaining power of the woman within the household may be accompanied by a corresponding change in the attitudes of spouse and other household members. It may also be a result of the direct awareness creation by the SHPIs or the group meetings, interaction and support of other group members.

Several respondents reported increased political awareness and participation plus greater networking and communication outside, their family and community. However, the composite politics factor that captured all these aspects is not statistically significant. While this implies that from our survey data it is difficult to conclude that it contributes to women empowerment, it is also possible that such effects will be visible only after a much longer

time period. Education is also insignificant in impacting empowerment, but most of the women within our data have primary or lower levels of education.

[Table 4 about here]

The results reveal that according to RMSEA the model for both the SHG and the non-SHG group, fits the data approximately. For the non-SHGs (control group), behaviour and management are the factors with a significant impact on women empowerment. Economic factors are in-significant in empowering women of the control group. This is perhaps due to the fact that in absence of SHG programs, women do not have the possibility to significantly increase her income generation capacity and thereby increase her bargaining power within the household. It should be noted that it is inappropriate to compare the magnitude of the regression coefficient of the latent variables (in both Table 3 and Table 4) because latent variables have no origin and scale of measurement. We can therefore only interpret the t-values that indicate the significance of each latent component on women empowerment.

6. Conclusions

Empowering women is perhaps one of the most frequently cited social objectives of most microfinance programs. Impact of microfinance on women empowerment however is equally difficult to verify. Women empowerment is a multi-faceted concept and an on-going process, and defining it is in itself a challenging task. Moreover, women empowerment is unobservable and therefore needs to be measured appropriately.

Women empowerment takes place when women challenge the existing norms and culture of the society to effectively improve their well-being. We measure empowerment as a latent variable. Unlike previous studies, the measurement model does not treat the latent variable as observed. Moreover, appropriate techniques are used to treat the ordinal variables in the structural equation models.

The general structural model is adopted to investigate the effect of various factors on women empowerment. Using the RML approach, we empirically examine the SHG and non-SHG data. The results strongly support the role of economic factors and financial confidence gained from participation in the SHG program in empowering women. Management and behavioural changes within the respondent and the household are other important factors leading to empowerment of women. For the control group however, only managerial decision-making and behaviour are significant factors.

As the definition of women empowerment indicates, the empowerment process is a challenging task for any individual, let alone those members of the society that are not only socially suppressed but also economically weak. Empowerment is complex and multi-dimensional process. A comprehensive intervention which embodies different domains of this process is essential for empowering women on a substantial scale. If empowerment has to extend beyond the household, there is a greater need for participation, education and awareness creation of all members of the society. However, our results confirm that policies and interventions that promote economic factors, behavioural changes and managerial control of women, would make a significantly greater impact on empowering women.

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Tables

Table 1. Sample Characteristics (mean values with standard deviations in the parenthesis)		
	All SHGs	Control group
Age of respondent (yrs.)	34.53	33
Total value of land owned end of 2003 (Rs.)	34145 (91408)	50301 (207890)
Total value of assets by end of 2003 (Rs.)	116669 (192029)	147983 (323706)
Percentage of respondents that are main earners of the household	19.75	15.8
Percentage of respondents that are earning	81.85	78.5
Percentage of respondents that are literate	38.4	43
Percentage of respondents engaged in farm activity and agricultural wage labour	57.4	53.2
Percentage of respondents with increase in household income since July 2000	65.5	46.8
Percentage of respondents with increase in own income since July 2000	63.7	39.2
Sample size	810	158

* Source: Household survey data, Bali Swain, 2003.

Table 2. Description of observed indicators to measure latent variables

Latent Variable	Observed indicators that measures it	Description	Categories
1.Women Empowerment			
	dm1	As compared to July 2000, has your involvement in the decision making of on family planning increased?	1. Yes 0. No
	dm2	As compared to July 2000, has your involvement in the decision making of your children's marriage increased?	1. Yes 0. No
	dm3	As compared to July 2000, has your involvement in the decision making on buying and selling of property increased?	1. Yes 0. No
	dm4	As compared to July 2000, has your involvement in the decision making on sending your daughter to school increased?	1. Yes 0. No
	ph1	Have you used birth control?	1. Yes 0. No
2. Economic & financial confidence			
	rincshare	Woman's income as a share of the total household income	
	hh_prinw	Primary activity of the respondent in 2003	1. Don't work 2. Farm activity 3. Self-employment in non-farm activity 4. Agricultural wage labourer 5. Non-farm employment

			6. Others
	we322	Does the respondent have independent savings which she controls[13]	0. No 1. Yes
	si_jrepa	Has the respondent made any repairs, improvements or additions in their home that cost more than Rs 5000.	1. Yes 2. No 3. Don't know
	sc_conf_f	Are you more confident of meeting financial crisis in the family after joining the group?	1. Yes 2. No
	ma_arr_c	Are you able to arrange the credit and other inputs in time?	1. Yes 2. No
3. Managerial decision-making			
	ma_cru_d	Do you take crucial decisions in purchase of raw materials, pricing of the product of your activity? (ma_cru_d)	1. Yes 2. No
	ma_act_d	Do you plan your (work related) activities and get things done by others? (ma_act_d)	1. Yes 2. No
4. Network, communication, awareness and political participation			
	sc_of_ma	How many officials (from bank, government etc.) have you met and spoken to?	
	sc_commu.	How does the respondent communicates in the meetings?[14]	1. Talks freely 2. Sometimes talks 3. Hesitates to talk and hence does not talk 4. Talks only if asked

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[13] This variable has been constructed from the information collected on the savings of the respondent with and/or in: Self Help Group, Banks, local chits, post-office, employers or others.

	bc_woman	Do/did you know that women have reservations in panchayats and jobs?	1. Yes 2. No
	bc_vi_po	Do/did you get involved in village level politics?	1. Yes 2. No
	bc_va_nw	What would you do in the following situation in your family – verbal abuse?	1. Resist 2. submit yourself 3. Lodge complaint with SHG or take their help 4. Complain to relatives 5. Give warning 6. Do nothing
	dc_chang	Is there any change in the family violence since July 2000?	1. Never had any family violence 2. Increased 3. Decreased 4. No Change
6. Behavioural changes			
	sc_treat	As compared to July 2000 how is the treatment of your spouse towards you? (sc_treat)	1. More respectful 2. Usual 3. Less respectful
	bc_phy_n	What would you do in the following situation in your family – beating /physical violence? (bc_phy_n)	1. Resist 2. submit yourself 3. Lodge complaint with SHG or take their help 4. Complain to relatives 5. Give warning 6. Do nothing
	bc_emo_n	What would you do in the following situation in your family – psychological and emotional abuse? (bc_emo_n)	1. Resist 2. submit youself 3. Lodge complaint with SHG or take

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[14] Surveyors made their own assessment about this question, however they were briefed in training of supervisors and surveyors with examples on how this assessment should be made.

			their help 4. Complain to relatives 5. Give warning 6. Do nothing
	dm5	As compared to July 2000, has your involvement in the all decisions of the family increased? (dm5)	1. Yes 2. No
	sc_incre	As compared to July 2000, has your self confidence (sc_incre)	1. Increased 2. Decreased 3. Same as before
	bc_va_nw	What would you do in the following situation in your family – verbal abuse? (bc_va_nw)	6. Resist 7. submit youself 8. Lodge complaint with SHG or take their help 9. Complain to relatives 10. Give warning 6. Do nothing
	dc_change	Is there any change in the family violence since July 2000?	1. Never had any family violence 2. Increased 3. Decreased 4. No Change
7. Education			
	hh_litnw	Education level in 2003	1. No schooling but can sign my name 2. No schooling but can read a letter 3. No schooling but can read & write a letter 4. Primary 5. Secondary 6. College 7. Cannot read or write

Table 3. Estimated parameters of the women empowerment factor model for all household

	Parameter estimates (t-values)
Economic	0.49(4.60)***
Management	0.33(3.49)***
Politics	0.054(0.98)
Behaviour	0.21(3.89)***
Education	-0.025(-0.53)
Model Fit	$\chi^2 = 1040.92$, df $= 257$ RMSEA $= 0.056$
Sample size	968

Table 4. Estimated parameters of the women empowerment factor model for SHG households and non SHG households (t-values in parenthesis).

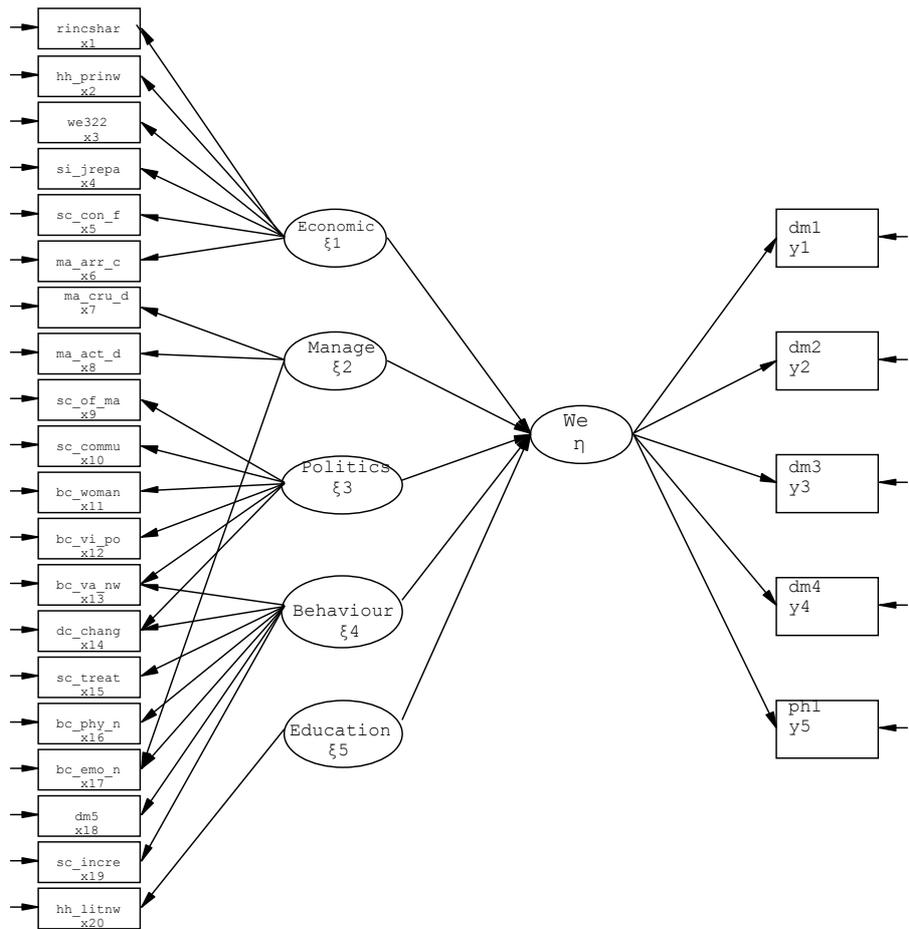|	SHG Group	Non-SHG Group
Economic	0.54(4.35)***	-0.13(-0.30)
Management	0.27(2.42)***	0.66(1.71)*
Politics	0.067(0.77)	0.16(0.82)
Behaviour	0.37(4.09)***	0.32(2.43)**
Education	-0.071(-0.91)	-0.053(-0.56)
Model Fit	$\chi^2 = 806.44$, df $= 257$ RMSEA $= 0.051$	$\chi^2 = 414.63$, df $= 257$ RMSEA $= 0.063$
Sample size	810	158

Figure 1: Path diagram for the General Women Empowerment Model

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