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**The impact of microfinance on factors empowering women:  
Regional and Delivery Mechanisms in India's SHG  
Programme**

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# **The impact of microfinance on factors empowering women: Regional and Delivery Mechanisms in India's SHG Programme**

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## **Abstract**

We examine how the impact on women empowerment varies with respect to the location and type of group linkage of the respondent. Using household survey data from five states in India, we correct for selection bias to estimate a structural equation model. Our results reveal that in the southern states of India empowerment of women takes place through economic factors. For the other states, we find a significant correlation between women empowerment and autonomy in women's decision-making and network, communication and political participation respectively. We do not however find any differential causal impact of different delivery methods (linkage models).

**Keywords:** Microfinance, women empowerment, structural equation model, self-help groups.

**JEL Classification No.:** C31, G21, J16.

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## 1. Introduction

The Self Help Group Bank Linkage programme (SBLP) was the core strategy for women empowerment in the Ninth Plan (1997-2002)<sup>1</sup> and Tenth Plan (2002-2007) for the Government of India. Piloted by the National Bank for Agriculture and Rural Development (NABARD) in the early 1990s, it has expanded to cover over 97 million households, by March 2010. The SBLP is a microfinance programme that links the Self Help Group (SHG) of 10 to 20 members (predominantly women), to a bank for savings and/or credit. The SHGs are formed, nurtured and linked to banks through the Self Help Promoting Institutions (SHPIs) like non-governmental organisations (NGOs), banks or government organisations etc. The development of the SBLP has been regionally imbalanced. The southern states of Andhra Pradesh, Tamil Nadu and Karnataka dominate the SBLP. These states account for 54 per cent of the SHGs and 75 per cent of the bank credit even though they constitute only 20 per cent of India's population (Sinha et al., 2009). About 75 per cent of the groups were formed by NGOs and financed directly by banks, popularly known as linkage model 2. The remaining SHGs were either directly formed and financed by banks; or formed by NGOs and financed by NGOs through the banks (NABARD, 2006).

Our main objective is to investigate if the regionally imbalanced SBLP development and the type of delivery mechanisms (linkage models) have resulted in significant differences in the process of empowering women through SBLP. In particular we examine if it is the economic or non-economic factors that are leading to empowerment in the south and other states. Since its initiation the regional imbalance in SBLP has shown a special preference for the southern states (Sinha et al., 2009; Reddy and Malik, 2011; Kumar and Golait, 2009). This outstanding performance of the SBLP in the south (especially Andhra Pradesh) was attributed to multiple factors by Write (2000). State supported government programs, like the Development of Women and Children in Rural Areas (DWCRA) in Andhra Pradesh, credit linked a significant number (about 40 per cent) of the SHGs. A large number of SHGs (about 3000 groups) were promoted under the South Asian Poverty Alleviation Program, sponsored under the United Nations Development Program. The community based development finance showed a strong evolution in the south, with the SHGs being promoted by NGOs and district rural development agencies. The able support of the government officials, NABARD district development managers and the lead bank managers also played an important role. Presence of the forefront microfinance NGOs like Mysore Resettlement and Development Agency (MYRADA), Society for Helping Awakening Rural Poor through Education (SHARE) and Bharatiya Samruddhi Investments Consulting Services Limited (BASIX), contributed substantially to the success of the SBLP in the southern states. Reddy and Malik (2011) argue that the low credit linkages in the northern states have resulted from the lack of motivation and efforts by the banks and have been perpetuated by the inability of banks to identify NGOs. This has been partially aggravated by the lack of large sized NGOs that had the experience of working with SHGs and the unsuitability of the SBLP approach to the region. The NCAER (2008) study attributes the slow growth in the north to institutional factors like lack of awareness and gender inequality. Regional imbalances;

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<sup>1</sup> Source: Planning Commission (2002). Chidambaram (2004), India's then Finance Minister recognised the SBLP as one of the most popular strategy for empowering women.

differential strength of delivery mechanism due to variation in motivation, efforts and quality of bankers, government officials and NGOs; along with institutional factors may have an impact on the process of women empowerment through SBLP. We investigate this.

Empowering women is a multi-dimensional process<sup>2</sup> (Malhotra and Mather, 1997; Johnson, 2005; Kabeer, 1999; Bali Swain, 2007; Bali Swain and Wallentin, 2012). Most researchers argue that the economic impact of microfinance empowers a woman through an increase in her income, which raises her bargaining power to allocate resources within the household. Others emphasise the social impact of microfinance on women's empowerment with greater autonomy in decision-making, awareness and political and social inclusion. Empirical evidence from earlier research on microfinance substantiates that the economic and social impact of microfinance empowers women (Bali Swain and Wallentin, 2009; 2012; Malhotra and Schuler, 2005; Pitt and Khandker, 1998; Pitt, Khandker, and Cartwright, 2006; Armendáriz and Morduch, 2010; Anderson and Eswaran, 2005; Dijkstra, 2002; Beteta, 2006; Bardhan and Klasen, 1999). A few studies find no impact (Banerjee et al., 2013) or a negative impact of microcredit on women's decision making power, especially where loans are controlled by the husbands and where women depend on them for repayments (Garikipati, 2008; Goetz and Gupta, 1996; Rahman, 1999; Leach and Sitaram, 2002).

Using the Self Help Group Impact Assessment Survey (SIAS) data that the author collected from five states in India for the year 2003, we first correct the selection bias in SBLP participation by using Propensity Score Matching (PSM). We then estimate the Structural Equation Model (SEM) for different geographical regions (southern and other states) and linkage models. The SEM estimates the impact of microfinance on a latent variable like women's empowerment through various economic and non-economic factors. The considered latent factors encompass women's economic empowerment; autonomy; network, communication and political participation; social attitudes; and education level. These latent factors are measured by a set of observed ordinal variables. These variables report ordinal categories, where specifying a value of the numerical scale is inappropriate (see discussion in section 3.3). For ordinality of observed variables the assumption of multi-normal distribution is violated thus we estimate polychoric correlations on the probability for each category of the observed ordinal variable.

The paper contributes to the research literature on several levels. First, it provides insights into the regional differences in the factors leading to the empowerment of women. It also contributes by investigating if the type of linkage has an effect on the factors that empower the SBLP members. Second, it provides a rigorous scientific methodology that corrects for sample selection and presents SEM estimates for women empowerment and its latent causal factors, giving statistically correct treatment to the ordinal variables. Third, we use unique data that enables us to implement this sophisticated analysis and provides us with detailed information on respondents from 10 geographically spread and representative districts in India. Fourth, given SBLP's

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<sup>2</sup> See Kabeer (2001) and Johnson (2005) for a discussion on microfinance and women empowerment in terms of viewing empowerment as outcomes for women associated with access to loans, or as processes of loan use.

critical role in promoting women's empowerment, our results provide the Indian financial inclusion policy with clear evidence on areas for strategic expansion and focus.

In the following section of the paper we discuss the SBLP programme and its role in women's empowerment. Section 3, explains the model specification and estimation. The data and the observed indicators are discussed in Section 4. The results are presented in Section 5. The final section concludes.

## **2. The Self Help Group Bank Linkage Programme and women's empowerment**

Rural financial system in India was given a boost with the nationalization of 14 major commercial banks in 1969 to provide subsidised agricultural credit with the start of India's green revolution for increasing agricultural productivity in the 1960s.<sup>3</sup> This led to the expansion of rural credit but with very high default rates, thus resulting in a weaker rural financial sector (Meyer and Nagarajan, 2000). To improve the system, the Regional Rural Banks (RRBs) were introduced in 1975 as a subsidiary of the public-sector commercial banks to provide credit to the unbanked rural clients, thereby increasing the geographical reach and access to credit. A credit-based poverty alleviation programme, the Integrated Rural Development Programme (IRDP) was also introduced in 1978, targeting households below the poverty line. This program was later replaced by a similar programme, named the Swarnjayanti Gram Swarozgar Yojana (SGSY) in 1999.<sup>4</sup>

In 1983 the All India Debt Investment Survey concluded that the rural financial system had failed to reach its objectives. Discussions between the Reserve Bank of India and NABARD in 1991-1992 resulted in a pilot project that ultimately developed into SBLP, which became one of the largest and fastest growing microfinance programmes in the world (Bali Swain, 2012a; Garikipati, 2008). By 31 March 2010, SBLP had savings-linked seven million SHGs and credit-linked more than 4.9 million SHGs. At its core SBLP is a village banking model where the group members save and lend amongst themselves for the initial six months. After the group demonstrates stability and financial discipline, the group is credit linked to a bank through a SHPI and receives a loan of up to four times the amount it has saved. As savings increase through the group's life, the group accesses a greater amount of loan. The programme is characterised by small loan size, regular meetings, frequent repayment instalments, regular savings and might also include training facilitated by the SHPIs. Typical training programmes may include training related to SHG, primary healthcare, basic literacy, family planning, marketing, and occupational skills (Bali Swain and Varghese, 2010).

Facilitated by the active involvement of the governments in the southern states of India and the presence of a strong civil society, the SBLP programme has seen a disproportionate growth in the south. The state of Andhra Pradesh alone accounts for

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<sup>3</sup> For a detailed account of microfinance and rural financial sector in India, refer to Bali Swain (2012a).

<sup>4</sup> Subsequently, the SGSY has been transformed into an integrated livelihood development intervention, named the National Rural Livelihoods Mission (NRLM).

40 per cent of all SHGs (Bansal, 2003). Estimating two separate indices to estimate the extent of outreach of SBLP, Srinivasan (2010) confirms this southern bias. The microfinance penetration index (MPI), which computes the ratio of microfinance clients with the share of the population, shows that three of the top five states are in the south: Andhra Pradesh (3.64), Tamil Nadu (2.77) and Karnataka (1.57). Another measure, the intensity of microfinance among poor index (MPPI) is the ratio of the share of the state in microfinance clients to the share of the state in population of poor. Again of the top five states, four were from the south: Andhra Pradesh (6.35), Tamil Nadu (2.77), Kerala (2.49) and Karnataka (1.74). As far as the linkage is concerned, NGOs are the dominant SHPIs (NABARD, 2006) and the most effective when they form and nurture the group and the SHG is credit-linked by bank (Bali Swain and Varghese, 2010; Ghate et al., 2007).

How does a microfinance programme like SBLP lead to women's empowerment? Supported by the household bargaining literature, researchers attribute women's empowerment to the economic factors through changes in household choices, and bargaining power, by increasing overall resources, affecting the returns on human capital and influencing the attributes and norms (Armendáriz and Morduch, 2005; Browning and Chiappori, 1998; Ashraf, Karlan, and Yin, 2006). Increasing the relative value of female time and her monetary income, increases her bargaining power to allocate resources within the household and leads to greater investment in education, housing and nutrition for children (Browning and Chiappori, 1998; Duflo, 2003). Microfinance also empowers women through loans that enable greater autonomy and decision-making by women (Anderson and Eswaran, 2005; Goetz and Gupta, 1996); and creating awareness and political and social inclusion (Armendáriz and Morduch, 2010; Dijkstra, 2002; Beteta, 2006; Bardhan and Klasen, 1999).

Empowerment is multi-locational, exists in multiple domains and is multi-dimensional – for instance, economic decision-making does not necessarily imply that the woman can decide contraception use or contribute to non-financial decisions (Malhotra and Mather, 1997). This makes alternative development initiatives, such as political quotas, awareness generation and property rights, important interventions for empowering women (Armendáriz and Morduch, 2005; Kabeer, 2005; Deshmukh-Ranadive, 2003). Factors such as legal and regulatory framework and social norms and culture also have a significant impact on the empowerment process (Beteta, 2006; Mayoux, 1999).

Recent studies largely conclude that SBLP has a significant economic impact on its clients (Banerjee et al., 2013; Bali Swain and Varghese, 2009; EDA, 2006; Puhazhendi, 2000; Puhazhendi & Badatya, 2002; Puhazhendi & Satyassi, 2000). SBLP access also leads to a reduction in vulnerability of the participating households (Bali Swain and Floro, 2012; Guérin et al., 2009). Bali Swain (2012b) argues that this reduction in vulnerability is greater for villages with better infrastructure and for SHGs that are formed by NGOs and credit linked by banks. Bali Swain and Varghese (2013) find similar evidence for training in SBLP.

There is increasing evidence that suggests that SBLP participation leads to women's empowerment in India. Bali Swain and Wallentin (2009), use data from

geographically spread states in India (including Andhra Pradesh in the south) to find evidence for empowerment of SBLP women clients group. They do not observe a similar empowerment in the control group. Qualifying their findings they explain that every woman that joined the SBLP is not empowered to the same degree. Neither does the empowerment progress at the same pace for everyone. Investigating the factors that lead to empowerment of SBLP members, Bali Swain and Wallentin (2012) find that economic factor is amongst the most significant factor for women empowerment. Autonomy of the member in decision-making and social attitudes are other factors that contribute significantly to empowering the SBLP female clients.

Some studies that were focused on the state of Andhra Pradesh, however, find little evidence for women's empowerment. Investigating 291 married couples from two villages in Mabubnagar district in 2001-2003, Garikipati (2008) finds that lending to women helps households to diversify livelihoods and reduce their vulnerability to shocks, but fails to empower women. Banerjee et al. (2013) also find no impact of microfinance institutions (MFIs) on women's decision-making, using data from slums in the capital city of Hyderabad in Andhra Pradesh, in 2005-2007.

An important feature of the SBLP is the frequent group meetings. These group meetings provide female member an opportunity to break out of her daily routine and discuss her common problems (Bali Swain and Wallentin, 2009; Townsend, 1999). This interaction with the women of her SHGs and members of the other SHGs leads to an increase in the exposure and confidence to articulate and pursue her interests (Purushottaman, 1998; Summer-Effler, 2002).

Improved networking, better communication and greater mobility also empower women (Bali Swain and Wallentin, 2009). Social pressure from SHPIs and other group members can induce changes in attitudes within the household, and can lead to greater empowerment. Browning and Chiappori (1998) suggest that social pressure may also alter the woman's power within household decision-making. SHPIs and SHG interaction encourages the women members to participate in the community, thereby making them more active in the society and the local politics (Bali Swain, 2007; Tesoriero, 2005). Increased female representation in local governments, voting, and involvement in politics, as well as in informal organisations to solve community problems, are factors that lead to further empowerment of women (Bardhan and Klasen, 1999; Dijkstra, 2002; Beteta, 2006).

### **3. Estimation Method**

We face two major challenges in measuring the impact of women empowerment. First, the decision to participate in the SHG depends on the same attributes that may determine the woman's empowerment. Unobservable traits like (self-confidence level) may make a woman more likely to participate in SHG and could also lead to her greater empowerment. Second, women empowerment is a latent variable. Not only does it present definitional and measurement challenge, lack of disaggregated data and limited information on household dynamics also leads to further difficulties (Moghadam and Senftova, 2005). To scientifically quantify women empowerment

some studies have used the index approach (Hashemi, Schuler, and Riley, 1996; Goetz and Gupta, 1996) and the factor analysis methodology (Pitt, Khandker, and Cartwright, 2006). The index/indicator approach assigns numerical values (or arbitrary weights) to the ordinal measures that are generally qualitative responses and thus categorical in nature. Doing this is inappropriate as it is not for the researchers to assign these values or weights (Bali Swain and Wallentin, 2009; 2012). Doing this also leads to loss of information and may lead to misleading conclusions.

We correct for the programme selection bias by using the propensity score matching (PSM) method.<sup>5</sup> PSM enables us to identify the program impact when a random experiment is not implemented, as long as there is counterfactual or control group. To correctly measure the impact of various latent factors on women empowerment we estimate structural equation model, where ordinal variables are treated appropriately, without assignment of arbitrary values or weights.

### *3.1 Propensity Score Matching Method*

The PSM uses the “Propensity Score” or the conditional probability of participation to identify a counterfactual group of non-participants. These propensity scores are based on a logit equation to estimate the probability of participating in the SBLP. The matching relies on the assumption of conditional independence of potential outcomes and treatment given observables (Heckman et al., 1997). First, the survey questionnaire is the same for participants and non-participants so that the outcome measures are measured in the same way for both. Second, both groups come from the same local markets. Third, a rich set of observables for both outcome and participation variables are available for the performance of the PSM method. Our data fulfils these three conditions.

We first estimate a parsimonious logistic equation in order to determine the probability of participation in the SBLP. To correct for the program selection bias the variables that likely affect both the participation in SHG and the real food expenditure (per capita per month) that reflects the economic level of the household, were chosen. These include age, age squared, sex, education dummies, lack of cash or food 3 years ago, owned land 3 years ago, distance from bank, health care centre, marketplace, and paved road. We employ neighbour to neighbour algorithm (with one person matching) and log linear regression method (for bandwidths 1). Both algorithms give similar results, implying robustness. We use the neighbour to neighbour matching to derive the propensity scores. The respondents with low or high probabilities that cannot be matched to the propensity scores of the control group, are dropped. Thus, only the households on the common support are retained to assure comparability. Prior to matching, the estimated mean propensity scores (standard error) for SHG members and non-SHG member were 0.94 (0.05) and 0.89 (0.06) respectively. After the matching, there was a negligible difference in the mean propensity scores of the two groups (0.93 (0.04) for SHG members and 0.89 (0.06) for non-SHG members). Of the remaining 742 households, 34 observations have missing values and are dropped. We thus end

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<sup>5</sup> See Caliendo and Kopeinig (2008) for a survey on propensity score matching.

with a sample of 708 observations with 659 SBLP participants and 49 non-SHG (control group) respondents.

### 3.2 Structural equation model

Structural Equation Modelling (SEM) is a statistical methodology which is intensively used by researchers across disciplines in the social and behavioural sciences to study the causal relationships of a set of latent constructs. SEM enables us to estimate the impact of latent factors on a latent variable like women's empowerment. More particularly, we have a three-fold objective. First, we want to measure the latent factors that have an impact on women empowerment. Second, while using the ordinal indicators to measure these latent factors we do not want to artificially assign values/weights to the ordinal categories. Third, we want to know which of these latent factors have a significant impact on empowering women. The estimated model is presented by the path diagram in Figure 1. The model consists of two measurement models and a structural model. The measurement models use the observed indicators (in rectangles) to measure the latent women empowerment variables and other related latent variables (in the ellipses). The latent economic and non-economic factors of women's empowerment are measured by the observed indicators (in rectangles) on the left-hand side of Figure 1.

< Figure 1 about here >

The structural model is indicated by the middle part of Figure 1 and represents the causal relation between the latent economic and non-economic factors and the latent women's empowerment variable. The path diagram in Figure 1 corresponds to the following simultaneous equations system (see Jöreskog and Sörbom 1999).

$$\boldsymbol{\eta} = \boldsymbol{\Gamma}\boldsymbol{\xi} + \boldsymbol{\zeta} \quad (1)$$

$$\mathbf{x} = \boldsymbol{\Lambda}^x\boldsymbol{\xi} + \boldsymbol{\delta} \quad (2)$$

$$\mathbf{y} = \boldsymbol{\Lambda}^y\boldsymbol{\eta} + \boldsymbol{\varepsilon} \quad (3)$$

The structural equation model is represented by equation (1), which indicates that the latent women empowerment ( $\boldsymbol{\eta}$ ) depends on the vector of latent component ( $\boldsymbol{\xi}$ ), where  $\boldsymbol{\Gamma}$  is the vector of latent regression coefficients and  $\boldsymbol{\zeta}$  is the error term. The measurement models are represented by equation (2) and (3). Equation (2) is the measurement model for the latent components (economic and non-economic) of women empowerment ( $\boldsymbol{\xi}$ ), where  $\mathbf{x}$  is the vector of measures for the latent component of women empowerment,  $\boldsymbol{\Lambda}^x$  is the vector of factor loadings and  $\boldsymbol{\delta}$  is the vector of measurement errors associated with the respective indicators. Equation (3) is the measurement model of the latent women's empowerment ( $\boldsymbol{\eta}$ ), which is measured by the indicator vector  $\mathbf{y}$  and  $\boldsymbol{\Lambda}^y$  is the vector of factor loadings.  $\boldsymbol{\varepsilon}$  is the vector of measurement errors associated with  $\mathbf{y}$ .

### 3.3 Treatment of ordinal variables

As discussed earlier, several of the indicators used to measure women's empowerment are ordinal in nature. Ordinal variables represent responses to a set of ordered categories. It is inappropriate to specify numerical values to categorical questions. For instance, if the respondent is asked about how confident she is, she might respond by choosing one of the following categories: very confident; somewhat confident; not confident; and not at all confident. Specifying a numerical value to these choices, as has been done in earlier studies is not appropriate because of the following reasons. First, we do not know the magnitude of difference between any of these two categories. Second, even if two different respondents choose the same category, we cannot say that they have the same level of self-confidence. It is the underlying latent self-confidence that we are interested in. Following Jöreskog (2002) we assume that the unobserved univariate continuous distribution 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  $y^*$  that 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  $y$ .

### 3.4 Estimation method

The ordinality of observed variables imply that the assumption of multi-normal distribution which maximum likelihood estimation method requires is violated. Therefore, the standard errors and chi-square estimates will be biased. In order to correct for this we adopt Robust Maximum Likelihood (RML) method (see Jöreskog et al. 2001) using an asymptotic covariance matrix to estimate the correct standard errors and chi-squares under the non-normality (caused by ordinality). The model is estimated using the following function:

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

where  $\mathbf{z}$  is the vector of the observed responses (containing both  $\mathbf{y}$  and  $\mathbf{x}$ ).  $\Sigma$  is the population matrix of polychoric correlation and  $\mathbf{S}$  is the corresponding sample polychoric correlation matrix.

## 4. Data

Estimating women empowerment requires information on a wide range of questions with high demand on the data quality and sample size. Data constraints have been a major challenge for several scientific studies on women's empowerment. For the analysis in this paper we use the Self Help Group Impact Assessment Survey (SIAS), collected by one of the authors, which is a part of a larger study that investigates the SBLP. The household survey uses a quasi-experimental design, with a pre-coded questionnaire to collect data for two representative districts each, from five

states in India, in 2003.<sup>6</sup> These are Andhra Pradesh and Tamil Nadu in the south; and Uttar Pradesh, Orissa and Maharashtra in the north, east and west respectively.

#### *4.1 Regional variations in SBLP*

The SBLP has made foremost progress in the southern state of Andhra Pradesh. The SBLP gained momentum in the state during 1995-96. At the time of the survey nearly 50 per cent of the total Indian SHGs were from Andhra Pradesh. The District Rural Development Agency (DRDA) was the driving force in the formation of SHGs, their capacity building and linkage to banks. In this it was supported by both the NGOs and the banks. Many SHGs were initially formed under the Development of Women and Child in Rural Areas (DWCRA) programme. The Andhra Pradesh government actively promoted SHGs. Members of the SHGs selected a person (Gram Deepika) who was appointed by the state government to maintain SHG records, coordinate with banks/government agencies and facilitate the SHGs. On average a Gram Deepika was responsible for 20 SHGs with part of their salary paid by the SHGs. The government rewarded them with priority status in state government schemes that involved a subsidy component. By 2003, with the formation of SHG federations and Mutually Aided Cooperative Societies (MACS), the scale of lending and saving had increased. The SHGs were usually engaged in activities like dairy, animal husbandry, vegetable cultivation and processing and marketing of spices. (Bali Swain, 2012a)

SBLP was first piloted in Tamil Nadu in 1991-1992. By 2003 it was ranked second, after Andhra Pradesh, in terms of its SBLP performance. The state government of Tamil Nadu set up the Tamil Nadu Corporation for the Development of Women (TNCDW) to promote women SHGs in the state. A large number of NGOs actively facilitated the SHGs, thereby playing an important role in the SBLP development in the state. (Bali Swain, 2012a)

Located in the north, Uttar Pradesh is India's most populous state. Compared to the other states, Uttar Pradesh has been relatively slow in developing SBLP. Some officials blamed this on the lack of an active interest by the state government (Bali Swain, 2012a). Much of SBLP activity in Uttar Pradesh was linked to the SGSY poverty alleviation programme that had a subsidy component and was facilitated by the government officials. During the time of the survey Maharashtra was ranked seventh in terms of its SBLP, by predominantly targeting rural women who had no previous link to the banks. As compared to Uttar Pradesh and Maharashtra, the Orissa state government engaged more actively with the SBLP. For the development of the women in the rural areas, the Orissa state government formed a separate directorate 'Mission Shakti' in 2001 under the Women and Child Development (W&CD) Department. Mission Shakti worked at the sub-district (block) level through the Integrated Child Development Society (ICDS). Almost all the government programmes were linked to the SBLP, for instance SGSY, Integrated Tribal Development Programme and Orissa State Financial Development Corporation Programmes etc. In Orissa, SHGs were

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<sup>6</sup> The following districts were selected why? for the survey: Medak and Warrangal from Andhra Pradesh; Koraput and Rayagada from Orissa; Gadchiroli and Chandrapur from Maharashtra; Dharmapuri and Villupuram in Tamil Nadu; and Allahabad and Rae Bareli in Uttar Pradesh. For further details on the survey design, sampling and data, refer to Bali Swain (2012a).

quick to form federations. Within the state the SBLP has seen substantial progress in the tribal dominated districts of Orissa.

Mahajan and Gupta (2003) note that the central, eastern and north-eastern states in India have been left behind in the SBLP, resulting in a low demand for credit, especially amongst the subsistence poor. Lack of good NGOs and the heavy reliance on delivering subsidised programmes (for instance SYSG) to individuals rather than SHGs have corrupted the SBLP in these states. In addition to the NGOs, SGSY relies on banks and government-owned District Development Agencies that are primary implementing agencies. Nair (2005) notes that such agencies lack the required administrative capacity to implement SBLP and make the situation much worse by increasing the pressure on the village and block level administrators to achieve targets on creation of SHGs.

Based on the marked difference in level of development of the SBLP in south and other regions of India, we divide our sample of SHG participants into the better performing southern states (Andhra Pradesh and Tamil Nadu) and other states (Maharashtra, Orissa and Uttar Pradesh) of India. Table 1 shows the characteristics of the SHG members in the south and other states. In general, SHG members in the south are younger and have higher education as compared to the SHG members in the other states. The households of the SHG members in the southern states on average own more land and have slightly higher assets. In terms of their location the SHG members are on average closer to the banks as compared to the SHG members in other states. However, in other states SHG members have better infrastructural access in terms of average distance to a paved road or bus-stop.

< Table 1 about here >

#### *4.2 Linkage model*

The SHGs were credit linked to the banks through three different models during the time of the survey.<sup>7</sup> The SHPIs survey the village, provide information about the SBLP, facilitate and nurture group formation and at times also organise training programmes for the SHG members. In the first linkage model, the banks help form and finance the SHGs. The groups linked by the second model are formed and nurtured by the NGOs but directly financed by the banks. In linkage model 3, NGOs form the SHGs but banks finance the SHGs through the NGOs. Of these three linkages types, model 2 is the most popular, accounting for roughly three-fourths of all SHG linkages

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<sup>7</sup> In January 2006, the Reserve Bank of India specified the inclusion of the Business Facilitator Model (BFM) and Business Correspondent Model (BCM) for providing intermediary services like identifying borrowers, promoting savings, processing and submission of loan and monitoring of repayment. The BFM also provide additional services like disbursement of small loans, recovery of principal, collection of interest, sale of micro insurance and mutual fund products. The BFM include NGOs, cooperatives, post offices, insurance agents and community-based organisations. The BCM include NGOs and Microfinance Institutions (MFIs) that are registered under the Trusts Act, not-for-profit companies (Section 25 companies in India) and post offices. A fee may be charged to the bank for these services (Allen et al., 2007). Not clear how this footnote fits here?

(NABARD 2006).<sup>8</sup> About 20 per cent of SHGs are formed and linked by banks (model 1) and only 5 per cent are linked by banks through NGOs (model 3). Ghate et al. (2007) suggests that the groups promoted by the field level government officials have low capacity to support the SHGs. In addition, these officials are further burdened with targets number of SHGs to be created. Many NGOs usually have strong empowerment and development objectives and thus engage more actively with the SHGs. In our data 72 per cent of the SHG respondents were credit linked by linkage model 2 while 12 per cent were linked by model 1 and 15 per cent by model 3 respectively. See Table 1, (column 3) for the characteristics of the respondent linked by model 2.

#### *4.3 Women empowerment variables*

To estimate latent women's empowerment, we need to rely on observed indicators that capture the increment in empowerment. Bali Swain (2007) and Bali Swain and Wallentin (2009) explain that women are empowered when their well-being increases through participation in non-traditional domains.<sup>9</sup> In South Asia, decisions such as buying and selling of land and property, family planning and use of contraception, decision to educate a girl child and marriage of an off-spring, remain outside the domain of women's decision-making (Kabeer, 1999; Bali Swain and Wallentin, 2009). Based on these considerations our selected observed indicators reflect this definition of women's empowerment.

The discussion in Section 2 suggests the observed indicators for the latent economic and non-economic causal factors for women's empowerment, that are presented with definition and response proportions in Table 2. For instance, the latent economic factor is measured by the following observed indicators for the respondent: her participation in economic activity; investment by respondent in home improvement; confidence to meet financial crisis; and arranging capital and other inputs. For further discussion on selection of these observed indicators for the measurement model, refer to Bali Swain and Wallentin (2012).

< Table 2 about here >

## **5. Results and discussion**

Our first objective is to investigate if SBLP programme has differential impact on women's empowerment of its SHG members depending on whether they belong to the more actively engaged states in the south or not. Second, we also examine if the type of linkage impacts the women's empowerment process differently. The underlying assumption is that NGO driven linkage model 2 might be more effective in empowering women as compared to the other linkage types due to their active engagement in the social-development space. Table 3 presents the parameter estimates and some of the fit indices for the SHG members in the south, other states and linkage

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<sup>8</sup> By 2007 the share of SHGs linked by NGOs dropped to less than one-third with nearly half of them being promoted by the government (Allen et al., 2007).

<sup>9</sup> For a literature survey and detailed discussion on this refer to Bali Swain (2007) and Bali Swain and Wallentin (2009; 2012).

model 2. These coefficients are standardised and may thus be interpreted on both significance and magnitude.

< Table 3 about here >

The model fit is assessed by examining the Satorra-Bentler scaled chi-square goodness of fit index, the Root Mean Square Error of Approximation (RMSEA) and the Normed Fit Index (NFI). The RMSEA considers the error of approximation in the population and finds how well the model, with unknown but optimally chosen parameter values, fits the population covariance matrix. The NFI is a measure that rescales chi-square to compare a restricted model with a full model using an arbitrary baseline null model. The model fit indicators reveal that the model has a good approximate fit, which implies that our estimates are reliable.

While comparing the states in south with the other states, our results show that the southern states have a clear advantage in empowering women. In the south, the economic factor has the most significant impact on empowering SHG members. This resonates well with the economic theory and earlier results (Bali Swain and Wallentin, 2012). Women participating in SBLP get access to loans that are used for generating livelihoods and accumulating assets. This leads to greater bargaining power within the household and a greater say and decision-making within the household, thereby leading to greater women's empowerment.

Greater autonomy in terms of independent planning, management and decision-making at work and intolerance towards emotional and psychological abuse at home, is expected to contribute incrementally towards empowerment. However, this does not seem to be the case for the SHG members in the south. From the negative coefficient for autonomy we infer that even though women in the south have greater autonomy in work related decisions, they do not have control or ownership of their assets or/and loans. This is supported by evidence from Garikipati (2008). Using data from rural Andhra Pradesh in India, she argues that diversion of women's loan into enhancing household assets and incomes may not lead to women's empowerment as women do not have co-ownership of property and assets. Garikipati (2012) further argues that microcredit leads to enhancing male ownership of the household's productive assets, thus helping husbands to move away from wage work (associated with low wages and status) to self-employment. She finds little impact on women's time use. Thus, loan access and autonomy in making work related decisions have to be supported by women's control over loan-created assets to have an impact on empowering women. Some researchers find that loans taken by women are often controlled by their husbands, resulting in their dependence for loan repayment and domestic discord (Goetz and Gupta, 2006; Rahman, 1999).

Social attitudes, network, communication and political participation and education do not contribute significantly to women's empowerment. Statistical non-significance of these factors in this study should not be interpreted as non-significance of these factors in empowering women. Women's empowerment is a long term process and it is possible that these crucial factors will have a positive impact in the long run scenario.

In addition to the estimated parameters of the SEM we also look at the underlying covariance coefficients of the economic and non-economic factors with women empowerment (Table 4). Although for the structural model, none of the parameter estimates are significant in the case of other states, the covariance matrix reveals significant correlations between the factors and women's empowerment. Based on the covariance structure of these latent variables we notice that the relation between autonomy; network, communication and political participation and social attitudes is significant in the case of other states. Although this significance does not imply causality it does provide evidence for positive correlation for autonomy and network, communication and political participation, with women empowerment in other states. Social attitude is significantly negatively correlated with empowerment of women in the other states, suggesting a negative bias against women due to various cultural, traditional and behavioural factors.

< Table 4 about here >

The SEM was estimated for different linkage types and the results for the linkage model 2 are presented in Table 3 (column 3). There is no evidence for any significant empowerment causing factor for linkage model 2. Part of the problem here is the small sample size. This suspicion is confirmed when we experiment by assuming a larger sample size of over 1000, for linkage model 2. With an increase in sample size both economic and autonomy factors become significant in causal relation to women empowerment. Note that the results for the control groups for the two state sub-samples and linkage models could also not be estimated due to the very small sub-sample size for the control group.<sup>10</sup>

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<sup>10</sup> Bali Swain and Wallentin (2009) used the SIAS data, to find that women are empowered by SBLP as compared to the control group. Our control group is just two observations short of this control group, but dividing it into further sub-sample (regionally or linkage model types) reduces the sample further making SEM estimations difficult.

## 6. Concluding Remarks

An increasing concern for greater outreach of SBLP has been the entry of the government agencies and the contracted staff that may lack the possibility to invest time and resources required to nurture the SHGs, are driven by government targets and/or focused on reaching numbers rather than creating quality SHGs. An added challenge has been the SBLP expansion to the slower growing states in the central and eastern parts of India. The reliance on the relatively weak government promoted groups and the lack of NGOs at the grassroots has led to a decline in the SHG quality, in these states. Thus, with SBLP as one of the core women empowerment strategy in India, it becomes imperative to investigate the differential in the process of women empowerment with respect to the regional location and the delivery mechanisms.

In this paper we investigate the variation in the factors that lead to women empowerment for the SBLP members in the south and other states. We also examine the empowerment of SBLP members that are formed by NGOs and financed by banks. The analyses are based on the SIAS data that contains in-depth information on observed indicators for women empowerment from ten districts in five states in India. To extricate the selection bias, we employ PSM. We then estimate the Structural Equation Model (SEM) for different geographical regions (southern and other states) and linkages. The SEM model estimates the impact of the SBLP to find whether it is the economic or the non-economic factors that lead to the process of women empowerment. Results show that for the southern states, it is the economic factor that is the strongest cause for empowerment. We also find that for the states in the south, greater autonomy in decision-making leads to a decline in women empowerment.

While there is evidence for significant direct impact of economic factors in women empowerment, it is also clear that autonomy in decision-making may not always lead to empowerment without women's ownership of loan created property and assets. The underlying covariance matrix reveals that the social attitudes and political participation also play a crucial role. The impact of SBLP critically depends on the quality of SHGs and it is important to identify how the SHGs are promoted. Creating and maintaining SHGs is a time-consuming process that requires nurturing and as such is more suitable to the social-development perspectives of NGOs. Banks on the other hand are more interested in ensuring safety of their loans.

If women's empowerment has to be pursued as a serious objective, the expansion of SBLP to the other states has to remain focused on the effective economic empowerment of women through livelihood creation. Greater emphasis also needs to be placed on training, education and creating awareness about empowerment related issues with increased investment in social intermediation. Otherwise, SBLP will result in positive outcomes but the process of women's empowerment will remain incomplete.

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## TABLES

TABLE 1  
*Descriptive statistics for SHG members*

	<i>South</i>	<i>Other states</i>	<i>Linkage model 2</i>
	<i>Mean (S.D.)</i>	<i>Mean (S.D.)</i>	<i>Mean (S.D.)</i>
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
N	279	380	475
Average Age of Respondent	34 (8.4)	35.9 (8.3)	35 (8.4)
Proportion with some (in %)			
Primary education	14.3	20.3	16.4
Secondary education	27.2	11.3	20.4
Post-Secondary education	4.3	2.6	3.4
Dependency ratio	0.6 (0.3)	0.7 (0.2)	0.7 (0.2)
Average number of workers in the household	2.4 (1.2)	2.6 (1.3)	2.5 (1.2)
Average number of workers engaged in primary activity	2.1 (1.2)	2.8 (1.4)	2.4 (1.3)
Mean size of owned land in 2003(in acres)	1.04 (2.5)	0.81 (1.41)	0.93 (2.12)
Total assets (in Rupees.)	111,156 (133,294)	110,318 (147,746)	104,492 (136,475)
Distance to Bank (kms.)	7.3 (6.9)	6.4 (4.3)	5.4 (4.0)
Distance to Health Care (kms?)	3.6 (2.8)	3.6 (2.5)	3.6 (2.7)
Distance to Market	5.4 (4.0)	5.3(3.7)	5.2 (4.1)
Distance to Paved Road	3.1 (3.3)	2.3 (2)	2.8 (2.6)
Distance to Bus Stop	3.8 (3.6)	2.8 (2.3)	3.5 (3.1)
Lack of cash or food in 2000 (%)	43.7	43.7	43.2

TABLE 2

*Description of observed indicators to measure latent variables for SHG members*

(1) <i>Observed indicators</i>	(2) <i>Questions asked to the SHG respondent</i>		(3) <i>Coding (Proportion)</i>
<i>1. Women Empowerment</i>			
Family Planning Decision	As compared to July 2000, has your involvement in the decision making of on family planning increased?		1.Yes (0.24) 0.No (0.76)
Buying & selling of property	As compared to July 2000, has your involvement in the decision making on buying and selling of property increased?		1. Yes (0.18) 0.No (0.82)
Sending daughter to school	As compared to July 2000, has your involvement in the decision making on sending your daughter to school increased?		1.Yes (0.30) 0.No (0.70)
Children's marriage decision	As compared to July 2000, has your involvement in the decision making of your children's marriage increased?		1.Yes (0.14) 0.No (0.86)
Use of birth control	Have you used birth control?		1.Yes (0.31) 0.No (0.69)
<i>2. Economic</i>			
Primary activity	Primary activity of the respondent in 2003	1.Don't work (0.13) 2.Farm activity (0.33) 3.Self-employment in non-farm activity (0.08) 4.Agri. wage labourer (0.26) 5.Non-farm employment(0.06) 6.Others (0.95) 7. No response (0.04)	
Investment to improve home	Has the respondent made any repairs, improvements or additions in their home that cost more than Rs 5000?		1.Yes (0.17) 2.No (0.32) 3.Don't know (0.51)
Confidence to meet financial crisis	Are you more confident of meeting financial crisis in the family after joining the group?		1.Yes (0.88) 0.No (0.12)
Arranging credit and other input	Are you able to arrange the credit and other inputs in time?		1.Yes (0.62) 0.No (0.38)
<i>3. Autonomy</i>			
Purchase of raw material	Do you take crucial decisions in purchase of raw materials, pricing of the product of your activity?		1.Yes (0.60) 0.No (0.40)
Plan work	Do you plan your (work related) activities and get things done by others?		1.Yes (0.49) 0.No (0.51)
Reaction to emotional abuse	What would you do in the following situation in your family – psychological and emotional abuse?	1.submit yourself (0.24) 2.Do nothing (0.07) 3.Resist (0.13) 4.Give warning (0.04) 5.Complain to relatives (0.11) 6.Lodge complaint with SHG or take their help (0.41)	

<i>Observed indicators (1)</i>	<i>Questions asked to the SHG respondent (2)</i>	<i>Coding/ (prop.) (3)</i>
<i>4. Network, communication, awareness and political participation</i>		
Officials you have met	How many officials (from bank, government etc.) have you met and spoken to?	mean (standard deviation) 1.22 (1.5)
Communication	How does the respondent communicate in the meetings?	1.Talks freely (0.41) 2.Sometimes talks (0.32) 3.Hesitates to talk and hence does not talk (0.05) 4.Talks if asked (0.22)
Know about reservation	Do/did you know that women have reservations in panchayats and jobs?	1.Yes (0.57) 0.No (0.43)
Involvement in village politics	Do/did you get involved in village level politics?	1.Yes (0.38) 0.No (0.62)
Verbal abuse	What would you do in the following situation in your family – verbal abuse?	1.submit yourself (0.37) 2.Do nothing (0.18) 3.Resist (0.20) 4.Give warning (0.02) 5.Complain to relatives (0.06) 6.Lodge complaint with SHG or take their help (0.17)
Change in family violence	Is there any change in the family violence since July 2000?	1.Increased (0.64) 3.No Change (0.10) 2.Decreased (0.21) 4.Never had any family violence (0.05)
<i>5. Social Attitude</i>		
Treatment by spouse	As compared to July 2000 how is the treatment of your spouse towards you?	1.Less respectful (0.52) 2.Usual (0.46) 3.More respectful (0.02)
Reaction to physical abuse	What would you do in the following situation in your family – beating /physical violence?	1.submit yourself (0.24) 2.Do nothing (0.09) 3.Resist (0.17) 4.Give warning (0.03) 5.Complain to relatives (0.09) 6.Lodge complaint with SHG or take their help (0.38)
Reaction to emotional abuse	Refer above	
Involvement in family decisions	As compared to July 2000, has your involvement in the all decisions of the family increased?	1.Yes (0.43) 0.No (0.57)
Increase in self confidence	As compared to July 2000, has your self confidence	1.Increased (0.90) 2.Decreased (0.03) 3.Same as before (0.07)
Verbal abuse	Refer above	
<i>6. Education</i>		
Education level	Education level in 2003	1.Cannot read or write (0.24) 2. No schooling but can sign my name (0.04) 3. No schooling but can read a letter (0.01) 4. No schooling but can read and write a letter (0.12) 5.Primary (0.18) 6. Secondary (0.03) 7. College (0.29)

Source: SIAS survey. Descriptive statistics reported for 659 SHG members.

TABLE 3

*Estimated parameters of the women empowerment structural model for the SHG members*

<i>Latent Factors of women empowerment</i>	<i>South (1)</i>	<i>Other states (2)</i>	<i>Linkage model 2 (3)</i>
	<i>Coefficients (standard errors)</i>	<i>Coefficients (standard errors)</i>	<i>Coefficients (standard errors)</i>
Economic	0.70(0.32)***	0.74 (0.85)	0.50 (0.38)
Autonomy	-0.22(0.13)*	0.047 (0.05)	-0.095 (0.075)
Network, Communication and Political participation	-0.14 (0.13)	0.031(0.085)	-0.017(0.048)
Social Attitudes	-0.83 (0.51)	-1.16 (0.75)	-2 (2.34)
Education	0.044(0.04)	0.032 (0.027)	0.021(0.026)
<i>Model Fit</i>			
Satorra-Bentler scaled Chi-Square	579.57	590.64	499.64
RMSEA	0.081	0.069	0.058
NFI	0.73	0.70	0.75
Sample size	279	380	475

Notes: \*\*\*, \*\* and \* implies significant at the 1%, 5% and 10% level respectively

TABLE 4

*Covariance matrix of independent variables and women empowerment  
for the SHG members*

<i>Latent Factors of women empowerment</i>	<i>South</i>	<i>Other states</i>	<i>Linkage model 2</i>
	<i>Coefficients (standard errors)</i>	<i>Coefficients (standard errors)</i>	<i>Coefficients (standard errors)</i>
Economic	0.04(0.02)**	0 (0)	0 (0.01)
Autonomy	-0.06(0.02)***	0.04 (0.02)*	-0.01 (0.02)
Network, Communication and Political participation	-0.10 (0.04)***	0.04 (0.02)*	-0.01(0.02)
Social Attitudes	0 (0.01)	-0.01 (0.01)*	0 (0)
Education	-0.05 (0.04)	-0.01 (0.03)	-0.02 (0.03)

Notes: \*\*\*, \*\* and \* implies significant at the 1%, 5% and 10% level respectively .

FIGURE 1

Path diagram for the general women's empowerment model



