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**Working Paper**

## Microfinance 'plus': The impact of business training on Indian self help groups

Working Paper, No. 2010:24

**Provided in Cooperation with:**

Department of Economics, Uppsala University

*Suggested Citation:* Swain, Ranjula Bali; Varghese, Adel (2010) : Microfinance 'plus': The impact of business training on Indian self help groups, Working Paper, No. 2010:24, Uppsala University, Department of Economics, Uppsala, <https://nbn-resolving.de/urn:nbn:se:uu:diva-138920>

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Working Paper 2010:24  
*Department of Economics*

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Working paper 2010:24  
December 2010  
ISSN 1653-6975

## MICROFINANCE 'PLUS': THE IMPACT OF BUSINESS TRAINING ON INDIAN SELF HELP GROUPS

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# Microfinance ‘Plus’: The Impact of Business Training on Indian Self Help Groups

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## Abstract

The provision of business training with microfinance leads to a positive impact on assets for the participating households. We correct for membership selection bias and account for potential training endogeneity with propensity score matching, using data from the Self Help Group microfinance program in India.

Keywords: India, microfinance, business training, impact studies, Self Help Groups.

JEL Classification Numbers: G21, I32, O12.

## 1. Introduction

The Self Help Group (SHG) program in India has outpaced private microfinance institutions (MFIs) with over three times the number of members to become the largest and fastest growing microfinance program in the world. Like MFIs, SHGs have been fraught by the ‘Minimalist’ and the Microfinance ‘Plus’ debate. ‘Minimalists’ state that households already have the human capital and only need financial capital. Advocates of Microfinance ‘Plus’ assert that training must also be provided, as households cannot effectively use the financial capital that they receive. We investigate whether training, especially, skill-development and marketing training (we term business training) has an impact on household’s assets and income. We further examine if the impact varies with respect to who forms and links the SHG to the bank (by linkage model). In its methods, it corrects for two different types of selection bias by combining two nonexperimental methods: the pipeline and matching methods.

With microfinance considered as a poverty alleviation tool, providing evidence on the ‘Minimalist’ and Microfinance ‘Plus’ debate is important. This paper provides support for business training on assets impact. Karlan and Valdivia (2009) provide the only rigorous study of business training in microfinance using a randomized experiment in Peru. The study is weak on external validity as it investigates only one program in one specific place. Furthermore, they do not separately measure the effects of membership, thus their results hold conditional on membership.

The empirical analysis is based on SHG data from five states in India, for the year 2003. SHGs fall under the category of village banking which includes ten to twenty (primarily female) members. In the initial months the group members save and lend amongst themselves and thus build group discipline. Once the group demonstrates stability and financial discipline for six months, it receives loans of up to four times the amount it has saved. The bank then

disburses the loan and the group decides how to manage the loan. The SHG program links with the poor through Self Help Group Promoting Institutions (SHPIs), which primarily includes NGOs, but also banks, and government officials. The agencies survey the village, provide the details of the program, enlist borrowers, and sometimes organize the training.

Three types of linkages have emerged as the most common. In Linkage Model 1, banks both form and finance SHGs. According to NABARD (2006), roughly twenty percent of SHGs fall under this linkage model. In the most popular linkage model 2 (roughly three-fourths of all SHGs), NGOs and others form the groups but banks directly finance them. In the third linkage model banks finance the SHGs through NGOs (but only 5 % of linkages fall under this model).

## 2. Estimation Strategy

In measuring the impact of training by MFIs on households we encounter a double selection problem: into participation and training. We first correct for selection into the program using a pipeline method and then control for training endogeneity using matching methods. By design, SHG members have to wait to receive a loan from the bank (about six months) and we can exploit this design feature to identify the self-selected members who have not yet received a loan. These serve as a control group since they are pre-selected on attributes but have not received the benefits.<sup>1</sup>

As mentioned in the earlier section, the SHPIs provide basic training to all SHGs. Then, the SHPIs organize additional training for some of the SHGs. the training variable ( $T_{ijs}$ ) indicates whether the household received such training. Thus, this variable captures whether training has impact beyond membership duration and self selection of the members.

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<sup>1</sup> In Bali Swain and Varghese (2009), we argue how the rollout of the program, conditional on district choice is random. We also check on observables and find no difference between old and new SHGs by villages and households.

Keeping in mind the outlined pipeline procedure, we estimate the following regression:

$$I_{ijs} = a + \alpha X_{ijs} + \beta V_{js} + \lambda D_s + \gamma M_{ijs} + \delta SGHMON_{ijs} + \phi T_{ijs} + \eta_{ijs} \quad (1)$$

Where  $I_{ijs}$  is the impact for household  $i$  measured in terms of asset accumulation or income generation, for household  $i$  in village  $j$  and district  $s$ ,  $X_{ijs}$  are the household characteristics;  $V_{js}$  is a vector of village-level characteristics, and  $D_s$  is a vector of district dummies that control for any district level difference. Credit decisions in India are made at the district level, the most basic administrative unit within a state.

Here,  $M_{ijs}$  is the membership dummy variable, which controls for the selection bias. It takes the value one for both mature and new SHGs. It takes the value of zero for those villagers that have chosen not to access the program. Here,  $SGHMON_{ijs}$  is the number of months that SHG credit was available to mature members, which is exogenous to the households. The parameter of interest is  $\phi$  which measures the impact of training. We now discuss how we address the selection bias of the trainees.

We primarily have information on the total training weeks that a household has received. We set the training variable to 1 for all households who reported positive weeks of training. Furthermore, households were asked about their type of training and services, if they reported that they received marketing or skill training advice, we set the business training variable to 1.

We employ a version of matching which combines elements of regression. These regression adjusted matching estimators as in Heckman, et al. (1997) allow for different covariates for the logit participation equation and the outcome equation. In our case these estimates are particularly important because of the need to account for the selection of

participation into the program in which we use the pipeline method.<sup>2</sup> The following procedure explains the steps of regression adjusted matching estimators for which we correct for both member self selection and training endogeneity.

First, run a regression for the outcome equation, Equation (1), with the pipeline method on the no training group  $Y_0 = x\beta + \varepsilon$ . Calculate the fitted values. Second, subtract these values from the outcome variables for both the no training and training group (since these fitted values are free of the effect of training). Third, match the new variables, outcome variables minus the fitted values. The estimator is given by equation (2):

$$\Delta RAM = \sum_{j=1}^T w_j \left[ (Y_{j1} - x_j \hat{\beta}_0) - \sum_{i=1}^C W_{ij} (Y_{i0} - x_i \hat{\beta}_0) \right] \quad (2)$$

where RAM refers to regression adjusted matching estimators, T (C) refers to the total number of treated (not treated), and  $w$  ( $W$ ) refers to the particular weight used in matching for the treatment (control).

### 3. Results and Discussion

Table 1 presents the impact results of overall training and business training. Training positively impacts on assets but has no impact on income. Business training has a stronger significant impact on assets but again not on income. Thus, training (and business training) and participation can have immediate effects on asset accumulation but translating these into income is problematic for MFIs.

We then turn to investigate the breakdown by linkage model. Table 2 shows the regression adjusted matching estimates of training impact on asset and income by the type of linkage used. Our results show that only when NGOs specialize in training and banks in

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<sup>2</sup> We are aware that this specific type of selection is actually a sequential or dynamic selection process. But practical estimates are limited so we estimate the static framework.



lending (the more popular Linkage model 2), impact of skill development and marketing training has a strong positively significant impact on assets.

We can compute a crude measure of returns on assets by examining the point estimates. We find a return of 18 % of basic training. These returns can increase to 23 % with more specialized training such as business training. Finally, with business training and Linkage Model these returns increase to 34 %. Thus, the combination of business training and Model type 2 yields the largest returns.

The conditional independence assumption which propensity score matching rests on is untestable but we find these results robust to two different observables (young and education) that mimic the unobservables (see Table 3). Following Ichino, et al. (2007), if the selection effects were significant, then the results would not be robust. We also tested the sensitivity of results by linkage model type and found no selection effect as well (results available from the authors).

#### **4. Conclusion**

In the current paper, business training impacts assets beyond basic training. The linkage which yields most impact is when banks provide the funding and NGOs provide the training. We find no impact on income for any model type. Future work can explore the costs and find whether the benefits outweigh the costs.

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**Table 1.** Regression adjusted matching estimates of training and business training impact on assets and income ( $\times 10^{-2}$ )

<i>Matching Algorithm</i>	<i>Training</i>		<i>Business Training</i>	
	(1)	(2)	(3)	(4)
	<i>Gross Assets</i>	<i>Income</i>	<i>Gross Assets</i>	<i>Income</i>
LLR (bw 1) (S.E.)	201.2** (1.99)	8.2 (0.6)	258.0** (106.6)	-10.5 (14.7)
LLR (bw 4) (S.E.)	201.2** (2.12)	8.2 (0.6)	258.0** (111.6)	-10.5 (13.6)

*Notes:* \*\* Significant at the 5 % level. \* Significant at the 10 % level. NN = neighbor to neighbor, bootstrap standard errors in parentheses. LLR= local linear regression, p-values in parentheses standard errors created by 200 bootstrap replications.

**Table 2.** Regression adjusted matching estimates of business training impact on assets and income by Linkage Model ( $\times 10^{-2}$ )

<i>Matching Algorithm</i>	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Gross Assets</i>	<i>Income</i>	<i>Gross Assets</i>	<i>Income</i>	<i>Gross Assets</i>	<i>Income</i>
<i>Business training</i>						
LLR (bw 1) (S.E.)	-650.6 (458.9)	-21.1 (53.1)	371.8*** (134.8)	-19.2 (17.1)	-215.0 (227.0)	37.9 (41.2)
LLR (bw 4) (S.E.)	-650.6 (458.5)	-21.1 (52.5)	371.8*** (132.9)	-19.2 (17.5)	-215.0 (215.6)	37.9 (38.1)

*Notes:* \*\* Significant at the 5 % level. \* Significant at the 10 % level. NN = neighbor to neighbor, bootstrap standard errors in parentheses. LLR= local linear regression, p-values in parentheses standard errors created by 200 bootstrap replications.

**Table 3.** Simulation-Based Sensitivity Analysis for Matching Estimators†

Average treatment on treated effect (ATT) estimation on regression adjusted assets and income with simulated confounder General multiple-imputation standard errors ( $\times 10^{-2}$ )††

<i>Variable/Covariate</i>	<i>for</i>	(1)	(2)	(3)	(4)
<i>simulated confounder</i>		<i>ATT</i>	<i>Standard Error</i>	<i>Outcome effect</i>	<i>Selection effect</i>
<b>Training</b>					
<i>Assets</i>					
Age		144.8	6.6	1.2	0.8
Education		140.6	7.2	1.3	1.3
<i>Income</i>					
Age		4.5	0.9	1.0	0.8
Education		4.3	0.8	1.1	1.3
<b>Business Training</b>					
<i>Assets</i>					
Age		240.0	4.3	1.1	0.93
Education		241.3	7.8	1.0	1.32
<i>Income</i>					
Age		-14.8	0.7	0.9	0.9
Education		-14.6	1.1	1.1	1.3

*Notes:* † Based on the sensitivity analysis with kernel matching algorithm with between-imputation standard error. The binary transformation of the outcome is along the median. †† Age variable (=1 if age is less than 26 years; and = 0 otherwise) and education (=1 if no education; and zero otherwise).

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