
WORKING PAPER 179/2019

**Social Performance Of Microfinance Institutions
in South Asian Region: A Case Study of India,
Bangladesh, Nepal and Sri Lanka**

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March 2019

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Abstract

Over the years, microfinance institutions (MFIs) have been propagated for poverty alleviation and support to the underserved area. Different objectives discussed in the literature in regard to these institutions include poverty alleviation, financial efficiency, sustainability and social performance. The last one of these objectives, namely social performance has been least explored the least. This is owing largely to best and agreeable measurement methods. Questions float around the issues whether it should be only qualitative or could be satisfactorily measured quantitatively.

In this paper we use the quantitative method. This is in line with some of the seminal studies that have deployed a social measurement index. We calculate and apply this social performance index. We use panel and logistic regressions to explore the impact of other important variables on social performance. Using the data for the years 2009-2014 for 88, 27, 25 and 15 MFIs in four south Asian countries namely, India, Bangladesh, Nepal and Sri Lanka respectively. Our results compare among these countries as well as other studies in the South Asian nations. The results indicate that assets and profitability position and maturity of MFIs play an important role in performing socially and there is no conflict between social performance, efficiency and sustainability of MFIs.

Key words: *Microfinance, social performance, measurement index, India, Bangladesh, Nepal, Sri Lanka*

JEL Codes: *G21, F34, I31, C01*

Acknowledgement

This work is carried out under Union Bank Chair at Madras School of Economics. An earlier version of this paper was presented at MSE Faculty seminar held on February 1-2, 2019. Authors are grateful for valuable comments from all participants and particularly from Professors K.R. Shanmugam, S. Bhaduri, K.S. Kavikumar and N.S. Siddharthan which provided useful inputs

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INTRODUCTION

Microfinance in developing countries gained prominence due to the function of helping the poor in areas where banks and other modes /schemes could not reach. It has thus become synonymous for non-governmental finance support for the poor in remote and underserved areas. In doing so the sole objective of this mode of support appeared to be development and particularly of social groups which were deprived otherwise to get the benefit of inputs like employment or self-employment through small or medium enterprise or loan/income support for very low income groups. Thus it is a major strategy for social development of downtrodden or neglected socio-economic groups in underserved areas by other schemes. Over a period of time however, goals like sustainability and efficiency of microfinance organization also received considerable attention. In this paper we mainly intend to focus on the other main function of microfinance institutions namely that of contribution to social development.

Research Studies on Social Development: A Review

There are a number of studies both in India and other countries which have directed their attention to social development. Broadly these studies have given some measures or suggested some qualitative methods to assess the contribution of microfinance organizations in social development. Some are state specific and some have focused on a country or comparison of countries.

For instance, focusing on studies related to an Indian state like Assam, Arup Roy (2010) has conducted an internal evaluation of the social performance of the MFIs of Assam relating to four fundamental dimensions and 15 indicators. The four dimensions that are covered include:(i) outreach to the poor and excluded, (ii) adaptation of the services and products to the target clients, (iii) improvement of social and political capital of the clients, and (iv) social responsibility of the

institution. The indicators that were considered include - mission of the MFI, geographic and socio-economic focus on client group, tools for targeting, size of transaction, collateral, range of services, quality of service, non-financial services accessible to the clients, participation, transparency, client representatives, empowerment, human resources policy, social responsibility towards the clients, and social responsibility towards the local community.

The sample MFIs were found to be more inclined towards the first dimension. A very less focus was observed for social responsibility towards its clients and local community, human resource policy, empowerment, client representatives, participation, non-financial services, and range of services; and a balanced effort between mission of the MFI, size of transactions, geographic and socio-economic focus, and quality of services. The study suggested that the other three dimensions need to be improved significantly as the SPI score of the sample MFIs under these three dimensions is very low. The study used the SPI tool developed by Zeller, Lapenu and Greeley in 2003. The average social performance score of the sample MFIs' of Assam is found to be 49 out of 100 with maximum of 78 and minimum of 31. The overall sample data reveals an average score of 17 out of 25 of the sample MFIs for the first performance dimension, i.e., outreach to the "poor and excluded". Therefore, it may be concluded that the average social performance of the sample MFIs of Assam is higher in terms of outreach to the poor and excluded (66 percent) as compared to the other three dimensions viz., adaptation of the services and products to the target clients (45 percent), improvement of social and political capital of the clients (46 percent), and social responsibility of the institution (60 percent).

The paper by Zelle, Lapenu and Greenley (2003) also provides the details pertaining to development of SPI tools and the methodology by CERISE which has been used by many researchers in later years. Bédécarrats, Lapenu and Tchala (2010) have also explained the SPI

tools developed in 2004. It assesses the principles, actions and corrective measures implemented by an MFI to achieve its social objectives. As carried out by CERISE, as of March 31, 2010, it had received the results of 287 SPI audits from 223 institutions in 53 countries worldwide. Considering four dimensions of performance: in the CERISE results, scores of MFIs were of the order which varied as 63, 62, 56 and 49 percent for dimensions of targeting and outreach, products and services adaptation, social responsibility and economic and social benefits respectively.

Most MFIs scored high on quality of service (C2-2) indicating that MFIs pay a close attention to their clients' needs. The lowest scores exhibited on social responsibility vis-à-vis the community and environment (C4-3) measuring the complex dynamics of local development and environmental protection.

Across continents, Asia scored high in dimension 1 (targeting), Latin American institutions for dimension 2 (products and services) and Africa for participation (dimension 3). Generally rural MFIs scored higher than their urban counterparts. In terms of size, large MFIs generally target less the poor yet score well in the other dimensions of social performance. Considering types like Charter, profit and non-profit, governance, banks and non-banking and others, social performance varied.

The paper by Marr and Awaworyi (2012) investigated possible indicators which may contribute to MFI's social performance across countries. It applied social performance rating with 8 different indicators namely; MFI outreach, average outstanding balance/GNI per capita, cost per borrower, number of offices, operational self-sufficiency, percent of women borrowers, portfolio at risk after 90 days and write-off ratio. These were based on quantifying the qualitative values of relevant

indicators and further rescaling the values to follow a normal distribution. The sum of all rescaled indicators are taken to form the SPI. Using panel data analysis, this study explored impact of MFI's age, assets, regulation status, loans per loan officers and MFI profit status on social performance. Besides it, factors like geographic locations (of MFIs) and the income levels of their countries were also considered.

There was noted a similarity in the effects of these variables on social performance in each geographic region (except for Eastern Europe and Central Asia), low-income countries and upper-middle income countries. Their evidence showed that older and regulated ones tend to perform less socially relative to younger and non-regulated MFIs. In addition, the results also point that MFIs with more assets and higher ratios for loans per loan officer had the tendency of performing more socially.

European Investment Bank (2008) carried out up to 2007 a mega review covering 90 studies. Its focus was on Mediterranean region and partner countries. The study examined existing literature and reflected on the economic and social impact of microfinance particularly in the Mediterranean Partner Countries. Various gaps in coverage pertaining to methodologies adopted and analytical limitations indicated options for the way forward with microfinance impact assessment in the Mediterranean Partner Countries. Notable conclusions from this study were inclusive of: Micro-credit as predominant microfinance offering in the Mediterranean region, typical absence of access to services such as micro-savings, insurance and money transfer systems, banking sector regulations a relatively high hurdle for microfinance institutions, the beneficial impact on individual clients, households, and micro-enterprises The impacts in the Mediterranean are largely similar to those reported in other regions, and major results are the improvement in household income and enterprise profits and revenue.

The study by Daher and Erwan le saout (2012) aims to present the microfinance sector and to relate the results of early research on the analysis of financial performance. It carried out a statistical analysis to explore if the rural banks have the highest risk/return position, and that African MFIs are the riskiest and the less profitable of all. It emphasized that besides financial performance it is also necessary to build robust social performance indicators and highlight a positive relationship with financial performance. The authors opined that a lack of relationship could jeopardize the future of microfinance.

The study by Simon Maina Waithaka (2013) investigated the factors that influence the social performance of Microfinance Institutions (MFIs) in Kenya. It established factors that influence the social performance of microfinance institutions with a specific focus on governance mechanisms. The study used an explanatory and descriptive research design on sample of 38 out of a population of 55 microfinance institutions. Triangulation of data was applied in order to capture most aspects of the study variables. Results indicated that board characteristics were an important determinant of an MFI's social performance. The study recommends improvement on governance through adherence to various corporate governance guidelines and practices. Similarly, leadership characteristics directly and positively influenced social performance hence the recommendation to have more experienced CEOs as well as separation of roles of board chairman and the CEO. Stakeholder involvement improved the social performance for MFIs especially in cases where donor and clients were represented in the board. Accountability practices of MFIs were however found not to have significant influence on their social performance. The study thus recommended adoption by the industry of mandatory reporting requirements on the Social Performance. The study identifies best practices in the board characteristics, leadership characteristics and the

involvement of stakeholders in the MFIs board as the key policy consideration areas in addressing the social performance of MFIs in Kenya.

Data and Methodology

For the purpose of our analysis we have covered four South Asian countries namely, India, Bangladesh, Nepal and Sri Lanka. The period of coverage for these countries by and large is for the years 2009-2014. The MFIs which are included for these countries remain respectively 88, 27, 25 and 15. The data is collected from the major data source, namely Mix market. Social performance rating is prepared based on Marr and Awaworyi (2012) methodology. It consists of 8 variables which include MFI's outreach, average outstanding balance (or GNI per capita), cost per borrower, number of offices, operational self-sufficiency, percent of women borrowers, portfolio at risk after 90 days (or PAR90) and write off ratio. Among these outreach represents extent of area coverage and thus enhancing the possibility of increasing social impact. Another indicator namely, Average outstanding balance is indicative of size of loan and therefore smaller size is given better rating. The same holds true for cost per borrower and its lower value indicates more efficiency and less exploitation. Accessibility is captured by more number of offices and vice versa. Also presuming that more self-sufficiency means less costly services, it also is included in social performance index. Keeping in view that reaching more women borrowers in a community implies better social performance as it helps to their better status in the respective community through self-sufficiency of more women, it becomes an inclusion in forming SPI. Overall financial riskiness of MFI is incorporated through portfolio at risk after 90 days. Thus lower riskiness is a better thing for SPI. The same holds true for the last variable included in SPI, namely, write off ratio. Lower value of write off ratio, indicates a better support to community for no default. SPI is constructed by using a summation of different ratings for these indicators. Thus some indicators will be considered better in rating if they have high numerical value and

vice versa. Yet since these eight indicators are converted into rating and thus added to form SPI value which may be considered as good with high values.

Using SPI as dependent variable we apply imbalanced panel data regressions. However, we also apply regressions by keeping some of the explanatory dummy variables like outreach, outstanding balance, average cost per borrower, operating self-sufficiency and PAR90 as dependent variable with other remaining explanatory variables as independent variables to explore their relationships.

Thus overall our panel regressions comprise the following relationships:

$$\text{SPI} = f(\text{age, profit status, regulatory status, loans per officer, assets}) \quad \dots(a)$$

$$\text{OUREACH (or outstanding balance per borrower / operating self-sufficiency / cost per borrower / PAR90)} = f(\text{age, profit status, regulatory status (i.e., Small/medium/large), loans per officer, assets}) \quad \dots(b)$$

Results and Analysis

All the results are presented in the Annexure. The results for India are in Tables 1-7. There are three dummies which we have used in these regressions. These include age (DUMAGE), Profit (DUMProfit) and legal status (LEGAL DU). In some of these regressions, more than two dummies as explanatory variables do not appear statistically significant in a single regression. Also where ever we have used dummy as dependent variable, in the panel regression we have deployed logit model.

As presented in Table 1, using two dummies namely, age and profit status, only one of them profit status has appeared significant with negative sign indicating that profits have come in the way of providing better social performance. Among other variables in the Table 1, assets have appeared with a positive sign and loans per staff member is not

significant. This reveals that more assets provide apparently opportunities for better social performance.

In Table 2, we have used legal status and age dummies together, here both assets and only one dummy namely legal status, are positively significant. This is indicating that legal status does matter in social performance. In other words, whether being banking or non-banking in status has a positive impact.

In Table 3, using profit and legal status, both dummies, only one namely legal status is negatively significant. Using explanatory variables of SPI as dependent variables, with other remaining variables (except SPI) in the model, the results for India are presented in Tables 4-7. In Table 4, outreach dummy is taken as dependent variable in a logit model. Only asset variable has appeared significant with positive sign, suggesting that more assets provide the capacity to increase outreach services. In Table 5, portfolio at risk after 30 days is taken as a function of assets, loans per staff member, legal status and age. Choosing random effect model and logit framework, only assets has appeared significant variable. In Table 6, only age dummy is significant in explaining loans per staff member. Thus indicating that maturity of MFI helped in providing more loans. In Table 7, borrowers per staff member is depicted as being significantly influenced by assets (positively) and by profits negatively. This again suggests that borrowers are constrained by overall profit status of MFI and thus weakening the social performance also witnessed in Table 1 earlier.

Results of Bangladesh are presented in Tables 8-12. As depicted in Table 8, unlike India, return on assets (in India we used profit status) has a positive impact on SPI. Thus suggesting that MFIs in Bangladesh are functioning more cost effectively. Also assets are proving to be having positive impact in Table 8. This is in line with India indicating that better assets position helps to improve social performance. Results for

other variables are presented in Tables 9-12. The results in Table 9 suggest that none of the variables are influencing portfolio at risk for 30 days in Bangladesh. In Table 10 results indicate that assets and loan per staff member influence positively the number of borrowers per staff member thus helping the social performance of MFIs in Bangladesh. Again in Table 11, in line with the results of SPI, MFIs loan per staff member are seen to be influenced positively by assets position and profits. The return on assets (or Profits) in turn in Bangladesh MFIs are seen to be influenced by loans per staff member only (Table 12).

The results of Nepal are presented in Tables 13-17. In line with Bangladesh, but unlike India, the results in Table 13 indicate that both assets and return on assets (ROA) have a positive impact for SPI in Nepal's MFIs. The coefficients are highly significant with the values being 4.88 and 0.156 respectively for assets and ROA. In Table 14-17, other explanatory variables are used as dependent variables for Nepal. Table 14 depicts that the portfolio at risk for 30 days for MFIs (in Nepal) behave under the constraint of assets and profitability in using riskier portfolio. By contrast borrowers per staff member in Nepal's MFIs seem to be positively influenced by these two factors (Table 15). The positive coefficients for assets and ROA in Nepal in influencing borrowers per staff member are 1.21 and 0.06 respectively. However, loans per staff member for these MFIs in Nepal are negatively influenced by assets (coefficient = - 5.26) (Table 16). As presented in Table 17, profits of MFIs are not being influenced by any of the chosen variables by us.

Results for Sri Lanka are presented in Tables 18-22. In line with Bangladesh, the results of Sri Lanka also indicate a positive influence of both assets and profits on SPI. The respective coefficients for these variables are 9.66 and 0.203. Additionally, in Sri Lanka loans per staff member have also emerged as positively significant. The coefficients as being 0.573 indicates that MFIs have been encouraging more loans per staff member to enhance social performance. However, for Sri Lanka,

there does not seem to be any statistically significant variable (included in our analysis) that could influence risky portfolio choice (Table 19). Further borrowers per staff member are in turn being influenced by assets (coeff.= 4.335) and loans per staff member (coeff.= .721). By contrast loans per staff member are influenced positively by borrowers per staff member (coeff.= 0.7642) and negatively by assets (coeff.=minus 5.4915) (Table 21). Unlike the results of Nepal, in Sri Lanka, return on assets for MFIs are being negatively influenced by loans per staff member (coeff.= minus 0.338) and assets (coeff.= minus 2.889), thus indicating that profits for MFIs in Sri Lanka are constrained by overall assets and their loans (Table 22).

Comparison with Other Studies

Comparing our results with some other relevant studies, we find, for instance, that in South Asian region, the results of Marr and Awaworyi (2012) indicate a positive coefficient for assets. This is also reinforced by our results for India, Bangladesh, Nepal and Sri Lanka (Tables 1,8, 13 and18).

However, unlike Marr and Awaworyi (2012)' s results we had statistically positive and significant impact shown for countries, namely, Bangladesh, Nepal and Sri Lanka. Thus indicating that country level results may be more revealing in certain aspects relative to regional level analysis. Likewise, in line with Daher and Erwan le saout(2012) results for African MFIs, we also notice that MFIs with better positive impact of return on assets. For example, in Bangladesh, Nepal and Sri Lanka, this is noted in our results. Likewise, in line with the results of Mediterranean region (European Investment Bank, 2008), our results for SPI pertaining to India (Table 2) also indicate that a clarity regarding legal status of MFI, for instance, banking or non-banking status, has a definite positive impact. Besides it, the comparable results for loans per staff member, the positive influence of age as seen in Marr and Awaworyi (2012)'s results are also witnessed in our results for India (Table 6). However, for some

of the other variables where we have used dummy dependent variable in a logit regression framework; our results may not be strictly comparable. Overall our results are in line with studies done in some other regional contexts, notwithstanding some differences due to country specific and methodology related reasons.

Conclusions

For Indian MFIs profit status has appeared significant with negative sign indicating that profits have come in the way of providing better social performance and more assets provide apparently opportunities for better social performance. Presumably more assets provide the capacity to increase outreach services and maturity of MFI helped in providing more loans. Legal status does matter in social performance. In other words, whether being banking or non-banking in status has a positive impact.

Among four countries, MFIs in Bangladesh are functioning more cost effectively. Thus helping in social performance of MFIs in Bangladesh by both, assets and return on assets (ROA). In Nepal's MFIs, the portfolio at risk for 30 days for MFIs behave under the constraint of assets and profitability in using riskier portfolio. By contrast borrowers per staff member in Nepal's MFIs seem to be positively influenced by these two factors.

In line with Bangladesh, the results of Sri Lanka also indicate a positive influence of both assets and profits on SPI. Unlike the results of Nepal, in Sri Lanka, return on assets for MFIs are being negatively influenced by loans per staff member and assets thus indicating that profits for MFIs in Sri Lanka are constrained by overall assets and their loans.

Overall our results are in line with studies done in some other regional contexts, notwithstanding some differences due to country

specific and methodology related reasons. These are also indicating that country level results may be more revealing in certain aspects relative to regional level analysis. Besides it, the results also suggest that better position with regard to assets and profitability as well as maturity of MFIs help to improve social performance and thus it may not be conflicting with sustainability and efficiency of MFIs (Purohit and Saravanan, 2018)

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Annexure

SPI RESULTS for India

Table 1

SPI=F (Lnassets, Loansperstaffmember, Dummyage, Profitstatusdummy)			
Random-effects GLS regression		Number of obs=431	
Group variable: year_id		Number of groups=6	
R-sq: within= 0.5196		Obs per group: min=59	
between = 0.8602		avg =71.8	
overall = 0.5228		max = 86	
		Wald chi2(4)= 466.73	
corr(u_i, X)= 0 (assumed)		Prob> chi2 =0.0000	
spi	Coef.	z	P> z
LNA	0.2297	18.3	0
LPSM	6.01E-08	0.66	0.509
DUMAGE	0.032	0.78	0.437
DUMProfit	-0.2255	-4.86	0
CONT	-2.9645	-16.15	0

Note: sigma_u = 0; sigma_e= .3780; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 2

SPI =f(Lnassets, Loansperstaffmember, Legalstatusdummy, Dummyage)			
Random-effects GLS regression		Number of obs=431	
Group variable: year_id		Number of groups =6	
R-sq: within = 0.5229		Obs per group: min = 59	
between = 0.8693		avg=71.8	
overall = 0.5262		max = 86	
		Wald chi2(4) =473.07	
corr(u_i, X)= 0 (assumed)		Prob> chi2=0.0000	
SPI	Coef.	z	P> z
LNA	0.2329	18.45	0
LPSM	5.83E-08	0.64	0.52
LEGALStDU	0.2453	5.18	0
AGEDU	0.0226	0.55	0.584
CONT	-3.2387	-15.57	0

Note: sigma_u=0;sigma_e= .3767;rho=0 (fraction of variance due to u_i)

Source: Estimated

Table 3

SPI =f(Lnassets, Loansperstaffmember, Legalstatusdummy, Profitstatusdummy)			
Random-effects GLS regression		Number of obs=431	
Group variable: year_id		Number of groups =6	
R-sq: within = 0.5226		Obs per group: min=59	
between = 0.8657		avg =71.8	
overall = 0.5258		max=86	
Wald chi2(4)=472.44			
corr(u_i, X)=0 (assumed)		Prob> chi2=0.0000	
SPI	Coef.	z	P> z
LNA	0.2361	21.06	0
LPSM	6.24E-08	0.69	0.49
LEGALDU	0.2502	1.83	0.068
PROFITDU	-0.0047	-0.03	0.972
CONT	-3.278	-14.5	0

Note: sigma_u=0; sigma_e= .3768; rho =0(fraction of variance due to u_i)

Source: Estimated

Table 4

OUTREACHDUMMY=f(Lnassets, Loansperstaffmember, Legalstatusdummy, Dummyage, re)			
Random-effects logistic regression		Number of obs =431	
Group variable: year_id		Number of groups=6	
Random effects u_i ~ Gaussian		Obs per group:min =59	
		avg =71.8	
		max =86	
Integration method: mvaghermite		Integration pts.=12	
		Wald chi2(4) =87.48	
Log likelihood = -93.144177		Prob > chi2=0.0000	
OURDUM	Coef.	z	P> z
LNA	2.4878	8.67	0
LPSM	-1.12E-06	-0.14	0.89
LEGALDU	0.0411	0.1	0.923
AGEDUM	-0.3804	-0.92	0.358
CONT	-37.9765	-8.53	0
	Coef.	Std. Err.	
Insig2u	-16.3191	76.1038	
sigma_u	.0002	.0108	
rho	2.49e-08	1.89e-06	
LR test of rho=0: chibar2(01) = 0.00			
Prob >=chibar2 = 1.000			

Source: Estimated

Table 5

PAR30=f(Lnassets, Loansperstaffmember, Legalstatusdummy, Dummyage, re)			
Random-effects logistic regression		Number of obs 431	
Group variable: year_id		Number of groups=6	
Random effects u_i ~ Gaussian		Obs per group:	
		min = 59	
		avg =71.8	
		max =86	
Integration method: mvaghermite		Integration pts. = 1 2	
		Wald chi2(4) =17.69	
Log likelihood= -187.94764		Prob > chi2 =0.0014	
PAR30	Coef.	z	P> z
LNA	0.3577	3.58	0
LPSM	-2.52E-07	-0.52	0.604
LEGALDU	0.1981	0.59	0.558
AGEDU	-0.285	-0.97	0.333
CONT	-4.1052	-2.55	0.011
lnsig2u	-11.4088	72.0148	
sigma_u	.0033	.1199	
rho	3.37e-06	.0002	
LR test of rho=0: chibar2(01) = 5.6e-05 Prob >= chibar2 = 0.497			

Source: Estimated

Table 6

LOANSPERSTAFFMEMBER =f(Lnassets, Borrowersperstaffmembers, Dummyage, Profitstatusdummy)			
Random-effects GLS regression		Number of obs=431	
Group variable: year_id		Number of groups= 6	
R-sq:		Obs per group:	
within = 0.0212		min =59	
between = 0.1450		avg =71.8	
overall = 0.0218		max =86	
		Wald chi2(4)=9.52	
corr(u_i, X)=0 (assumed)		Prob > chi2= 0.0494	
LOANPSM	Coef.	z	P> z
LNA	-10412.2	-1.53	0.127
BPSM	-53.1875	-1.13	0.259
AGEDU	40259.74	1.84	0.066
PROFITDU	-14477.1	-0.58	0.559
CONT	188043.1	1.92	0.054

Note: sigma_u=0; sigma_e=200623.66; rho=0 (fraction of variance due to u_i)

Source: Estimated

Table 7

BORROWERSPERSTAFFMEMBERS = f(Loansperstaffmember, Lnassets, Dummyage, Profitstatusdummy)			
Random-effects GLS regression		Number of obs=431	
Group variable: year_id		Number of groups= 6	
R-sq:		Obs per group:	
within = 0.0805		min =59	
between = 0.7949		avg =71.8	
overall = 0.0827		max = 86	
corr(u_i, X) = 0 (assumed)		Wald chi2(4) =38.41	
		Prob > chi2=0.0000	
BPSM	Coef.	z	P> z
LPSM	-0.00005	-1.13	0.259
LNA	31.1531	4.55	0
AGEDU	33.9423	1.51	0.131
PROFITDU	-55.4885	-2.19	0.028
CONT	-203.766	-2.03	0.042

Note: sigma_u=0; sigma_e=206.47658; rho=0 (fraction of variance due to u_i)

Source: Estimated

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Table 8

SPI=f(Lnassets, Roa, Loansperstaff)			
Random-effects GLS regression		Number of obs = 129	
Group variable: yearid		Number of groups=7	
R-sq:		Obs per group:	
within= 0.7298		min=1	
between = 0.4847		avg=18.4	
overall= 0.7137		max=27	Wald chi2(3) =311.61
corr(u _i , X) = 0 (assumed);			
Prob>chi2=0.0000			
spi	Coef.	z	P> z
lnassets	0.379	9.53	0
roa bb	0.011	1.24	0.215
loansperstaff	0.00002	4	0
constant	-6.3237	0.593	-10.66
sigma_u 0			
sigma_e .5755			
rho 0 (fraction of variance due to u _i)			

Source: Estimated

Table 9

PAR30=f(Lnassets, Roa, Loansperstaff)			
Random-effects GLS regression		Number of obs =129	
Group variable: yearid		Number of groups = 7	
R-sq:		Obs per group:	
within = 0.0386		min =1	
between =0.6145		avg =18.4	
overall = 0.0653		max =27	
		Wald chi2(3) = 8.74	
corr(u_i, X) = 0 (assumed)		Prob> chi2 = 0.0330	
par30	Coef.	z	P> z
lnassets	0.6246	1.03	0.304
roa	-0.1375	-1.01	0.315
loans pstaff	-.0002	-2.41	0.016
const	2.1454	0.24	0.813

Note: sigma_u = 0; sigma_e= 9.2082511; rho=0 (fraction of variance due to u_i)

Source: Estimated

Table 10

BORROWERS PERSTAFFMEMBER=f(Lnassets, Roa, Loansperstaff)			
Random-effects GLS regression		Number of obs=129	
Group variable: yearid		Number of groups =7	
R-sq:		Obs per group:	
within = 0.5568		min = 1	
between = 0.6742		avg =18.4	
overall = 0.5511		max =27	
		Wald chi2(3) =153.45	
corr(u_i, X) =0 (assumed)		Prob> chi2 0.0000	
borrowerspst	coeff	z	p>z
lnassets	12.0601	5.19	0.000
roa	-0.7441	-1.42	-1.76
loanspst	0.0019	4.63	0.000
cons	-97.7659	-2.82	0.005

Note: sigma_u =0; sigma_e=34.520248; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 11

LOANSPERSTAFF =f(Borrowersperstaffmember, Lnassets, Roa)			
Random-effects GLS regression		Number of obs =129	
Group variable: yearid		Number of groups =7	
R-sq:		Obs per group:	
within = 0.5921		min =1	
between =0.9543		avg =18.4	
overall = 0.5615		max = 27	
		Wald chi2(3)=160.05	
corr(u_i, X) = 0 (assumed)		Prob> chi2 =0.0000	
LPSTM	Coef.	z	P> z
BPSTMEM	76.2629	4.63	0
lnassets	2355.426	5.07	0
roa	226.1223	2.2	0.028
cons	-30794.9	-4.69	0

Note: sigma_u = 0;sigma_e= 5753.4938;rho =0 (fraction of variance due to u_i)

Source: Estimated

Table 12

ROA=f(Loansperstaff, Lnassets)			
Random-effects GLS regression		Number of obs =129	
Group variable: yearid		Number of groups =7	
R-sq:		Obs per group:	
within = 0.0142		min =1	
between = 0.3924		avg =18.4	
overall = 0.0333		max =27	
		Wald chi2(2)=4.34	
corr(u_i, X) = 0 (assumed)		Prob> chi2 =0.1143	
roa	Coef.	z	P> z
LPSTM	0.0001	1.79	0.073
lnassets	-0.1813	-0.46	0.647
constant	4.036	0.69	0.493

Note: Sigma u= 0; sigma_e= 5.9743;rho = 0 (fraction of variance due to u_i)

Source: Estimated

SPI results Nepal

Table 13

SPI= f(Lnassets, Roa, Loanperstaffmember)			
Random-effects GLS regression			
Number of obs = 99; Group variable: yearid			
Number of groups = 6			
R-sq:	Obs per group: within = 0.6603		
min = 5			
between = 0.9674	avg = 16.5		
overall = 0.6850	max = 25		
Wald chi2(3) = 206.59			
corr(u _i , X) = 0 (assumed) Prob > chi2 = 0.0000			
spi	Coeff	z	P>Z
lnast	4.8825	8.9	0
roa	0.1557	4.88	0
LPSM	-0.0725	-1.05	0.293
cont	-11.953	-7.18	0

Note: sigma_u = 0 ; sigma_e = .3725 ; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 14

PAR30= f(Lnassets, Roa, Loanperstaffmember)			
Random-effects GLS regression; Number of obs = 99			
Group variable: yearid; Number of groups = 6			
R-sq: within = 0.0762; between=0.3798; overall=0.0862			
Obs per group: min = 5; avg = 16.5; max = 25			
Wald chi2(3) = 8.96			
corr(u _i , X) = 0 (assumed) Prob > chi2 = 0.0298			
par30	Coef.	z	P> z
lnast	-10.8961	-0.67	0.5
roa	-2.5286	-2.69	0.007
LPSM	0.2071	0.1	0.919
Cont	33.8129	0.69	0.49

Note: sigma_u = 0; sigma_e = 11.0136; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 15

BORROWERSPERSTAFFMEMBER= f(Lnassets, Roa, Loanperstaff)			
Random-effects GLS regression Number of obs = 99			
Group variable: yearid Number of groups = 6			
R-sq: within = 0.1327; between = 0.7871; overall = 0.1454			
Obs per group: min = 5 ; max = 25 ;avg = 16.5			
Wald chi2(3) = 16.16			
corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0010			
BoPSta	Coef.	z	P> z
Lnasse	1.2184	2.26	0.024
roa	0.06301	2.01	0.044
LPSM	-0.0144	-0.21	0.832
Cont	1.8436	1.13	0.258

Note: sigma_u = 0; sigma_e = .3685; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 16

LOANPERSTAFF= f(Borrowersperstaffmember, Lnassets,)Roa			
Random-effects GLS regression Number of obs = 99			
Group variable: yearid; Number of groups = 6			
R-sq: within=0.4452; between=0.8521;overall=0.4447			
Obs per group: min=5; max=25; avg=16.5			
Wald chi2(3)=76.07			
corr(u_i, X)=0 (assumed) Prob > chi2=0.0000			
LPSM	Coef.	Z	P> z
BPSM	-0.033	-0.21	0.832
lnasse	-5.226	-8.14	0
roa	-0.0068	-0.14	0.887
cont	17.863	10.62	0

Note: sigma_u = 0; sigma_e = .5567; rho = 0 (fraction of variance due to u_i)

Source: Estimated

Table 17

ROA= f(Loanperstaff, Lnassets)
 Random-effects GLS regression Number of obs = 99
 Group variable: yearid; Number of groups = 6
 R-sq: within=0.0098; between=0.1066 ; overall=0.0137
 Obs per group: min=5; avg=16.5; max=25
 Wald chi2(2)=1.19
 corr(u_i, X)=0 (assumed); Prob > chi2 = 0.5526

roa	Coef.	Z	P> z
LPSM	-0.0485	-0.22	0.827
lnasse	1.1449	0.65	0.519
cont	-2.3075	-0.43	0.668

Note: sigma_u=.2519; sigma_e=1.1964; rho= .04245 (fraction of variance due to u_i)

Source: Estimated

Results for Sri Lanka

Table 18

SPI =f(Lnassets, Roa, Loanperstaff)
 Random-effects GLS regression Number of obs = 56
 Group variable: yearid ; Number of groups = 6
 R-sq: within=0.7238; between= 0.4774; overall=0.7036
 Obs per group: min=1; avg=9.3; max=15
 Wald chi2(3) = 123.46
 corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0000

spi	Coef.	z	P> z
Lnasset	9.6666	10.6	0.000
roa	0.2029	2.71	0.007
LPSM	0.5734	4.57	0.000
Cont	-27.3513	-9.79	0.000

Note: sigma_u=0; sigma_e=.5601; rho= 0 (fraction of variance due to u_i)

Source: Estimated

Table 19

PAR30= f(Lnassets, Roa, Loanperstaff)
 Random-effects GLS regression Number of obs = 56
 Group variable: yearid; Number of groups = 6
 R-sq: within=0.0492; between=0.4761; overall=0.0411
 Obs per group: min = 1; avg = 9.3; max = 15
 Wald chi2(3) = 2.23
 corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.5267

par30	Coef.	z	P> z
Lnasset	-5.1054	-0.21	0.837
roa	-0.4976	-0.24	0.807
LPSM	-4.2321	-1.24	0.214
Cont	34.8494	0.46	0.646

Note: Sigma u= 0; sigma_e= 15.3388; rho =0 (fraction of variance due to u_i)

Source: Estimated

Table 20

BORROWERSPERSTAFFMEMBER= f(Lnassets, Roa, Loanperstaff)
 Random-effects GLS regression Number of obs = 56
 Group variable: yearid Number of groups = 6
 R-sq: within=0.6112; between=0.0726; overall=0.6045
 Obs per group: min = 1; avg = 9.3; max = 15
 Wald chi2(3) = 79.49
 corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0000

BorPSM	Coef.	z	P> z
Lnasset	4.355	6.640	0.000
roa	-0.0724	-1.340	0.179
LPSM	0.7215	8.000	0.000
cont	-9.1811	-4.570	0.000

Note: sigma_u=0; sigma_e=.4162; rho=0 (fraction of variance due to u_i)

Source: Estimated

Table 21

LOANPERSTAFF= f(Borrowersperstaffmember, Lnassets, Roa)
 Random-effects GLS regression Number of obs = 56
 Group variable: yearid; Number of groups = 6
 R-sq: within=0.7537; between=0.3082; overall=0.7515
 Obs per group: min =1; avg =9.3; max=15

Wald chi2(3)=157.29
 corr(u_i, X)=0 (assumed); Prob > chi2= 0.0000

LPSM	Coef.	Z	P> z
BPSM	0.7642	8.0000	0.0000
Lnasset	-5.4915	-10.7200	0.0000
roa	-0.0067	-0.1200	0.9040
cont	14.4266	10.2200	0.0000

Note: sigma_u=0; sigma_e =.4295; rho= 0 (fraction of variance due to u_i)

Source: Estimated

Table 22

ROA= f(Loanperstaff, Lnassets)
 Random-effects GLS regression; Number of obs = 56
 Group variable: yearid; Number of groups=6
 R-sq: within=0.0656; between=0.4324;overall=0.0663
 Obs per group: min=1; avg=9.3; max=15
 Wald chi2(2) =3.76
 corr(u_i, X)=0 (assumed); Prob > chi2=0.1525

roa	Coef.	z	P> z
LPSM	-0.3888	-1.7400	0.0820
Lnasset	-2.8892	-1.7800	0.0750
Cont	9.5509	1.9300	0.0540

Note: sigma_u=0; sigma_e=1.0507; rho=0 (fraction of variance due to u_i)

Source: Estimated

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