

**MICROFINANCE SOCIAL PERFORMANCE:  
A GLOBAL EMPIRICAL STUDY.**MARR, Ana\*  
AWAWORYI, Sefa

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**Abstract**

Over the years, microfinance has been purported to have experienced enormous progress and is seen to contribute towards poverty reduction by extending finance to people previously excluded from formal financial markets. However, the question on how microfinance social performance is assessed remains unresolved. The paper develops an original social performance rating for 878 microfinance institutions (MFIs), across all geographic regions in the world for a period of 11 years (2000-2010). Furthermore, the paper investigates whether or not the age, assets, regulation status, loans per loan officers, as well as the profit status of MFIs affect MFIs' ability to perform socially.

**Keywords:** Microfinance, social performance, measurement index

**JEL Codes:** G21, F34, I32, C01

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**1. Introduction**

Generally, microfinance has come to serve as an important tool in combating poverty and helping international development through the provision of specially designed financial products and services, and the provision of the necessary technical support to targeted recipients to start and/or grow businesses to sustain themselves. The targeted recipients mainly are individuals from low-income households; who have been labelled by the major formal institutions as 'credit unworthy' to have access to a specific type of credit or services. Microfinance, by and large, has the sole intention of helping the poor or the low-income households in certain areas (usually rural) by giving them the necessary support and loans to establish small productive ventures.

These tailored financial products and services are provided by microfinance institutions (MFIs). Today, the number of MFIs across the globe is on the increase and regardless of the size, age, or such differences between MFIs, there is a level of, or at least an expected level of, social performance attained by the microfinance programmes initiated by each one of these MFIs. Notwithstanding, the major question is: how is the social performance of microfinance assessed? The importance of social performance assessment cannot be underestimated considering the significant implications on beneficiaries' welfare. Primarily, well-executed assessments for microfinance are able to help identify the policy remedies for the microfinance industry and also to expose whether or not MFIs are really doing what they are professed to be doing.

Taking into consideration the growing nature of the microfinance industry, a large number of empirical studies have emerged that explore the various aspects of the industry. However, most of these studies focus on aspects other than social performance; the few that have explored social performance as a research topic, resort mainly to

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\* Dr Ana Marr is Reader in International Development Economics at the University of Greenwich, London, UK. Corresponding author: [a.marr@gre.ac.uk](mailto:a.marr@gre.ac.uk). At the time of writing this article, Sefa Kwame Awaworyi was a Graduate Research Assistant at the University of Greenwich, London.

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qualitative approaches and focus on the particular issue of social impact.<sup>1</sup> Notwithstanding, some notable research such as Karlan and Zinman (2011), Aroca (2002), Ghalib (2007) and Khandker (1998) have used quantitative methodologies to assess the impact of microfinance interventions.

Similarly, in helping understand how social performance can be assessed, this paper seeks to contribute to existing studies that try to explain social performance by applying quantitative methodologies to create social performance ratings for MFIs and by explaining the relationship between some specific variables and social performance. In the pursuit of this, the first part of this paper brings to light the perspectives of existing studies which were concerned with the entire concept of social performance or aspects of it, such as social impact, after which the data used in this study is presented. The next section puts across significant use of quantitative skills to collectively transform certain indicators into a social performance index (hereafter SPI) which is used as social performance ratings. In this section, it is argued that certain indicators are viable enough to aid in the assessment of microfinance social performance. Thus, putting together these indicators in a coherent and logical manner should give an unbiased numerical rating or assessment of microfinance social performance. The last section of this paper, presents a series of empirical results which explain social performance and the level of significance and contribution of variables like MFI age, assets, regulation status, loans per loan officers, and MFI profit status on the social performance of MFIs. The nature of these effects on social performance, based on geographical locations as well as on country income levels, is also studied.

## **2. The perspective of existing studies**

Microfinance, as claimed by proponents, is aimed at poverty reduction. Nevertheless, the impacts made by microfinance cuts across diverse facets. This has led to the subjection of MFIs under a series of impact assessments as evidenced in mainstream literature.

In his paper which reviewed microfinance impact assessment methodologies, Hulme (2000) indicated that microfinance impact assessment could be done with three possible approaches, i.e. the humanities tradition method; the scientific approach; and the participatory learning and action (PLA). Hulme (2000) explains that the scientific approach conventionally has some quantitative qualities; however, owing to the challenges of data availability, technicality and cost implications, this method of analysis is not often used. Contrary to the reasons why the scientific approach is not used, Karlan and Zinman (2011) and Meade (2010) postulate that microfinance impact is complex and therefore the precise quantitative methods have to be at least as complex as what is being measured. In this regard, the authors propose that the use of rigorous processes in assessing microfinance impact should not be abandoned because of the technicalities and complexities involved. Hulme (2000) continued in his paper and asserted that the humanities tradition was more of a qualitative approach to assessing impact while the PLA seemed to be a blend of both quantitative and qualitative. In any case, the qualitative component of this approach is still dominant. Ghalib (2007), in turn, analyses social impact assessments and the underlying principles of the assessment process. The author identifies key indicators that primarily influence social impact and thus is able to develop

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<sup>1</sup> Social impact is just a part of social performance; see Sinha (2006) for more details.

a generic model of microfinance impact. One crucial aspect of the model is the development of a measurement index, which is used for assessing social impact. In this paper, variables identified as social impact indicators are evaluated to a perceptible degree and the possible ways of assessing these variables are explored alongside.

Notwithstanding the above, Karlan and Zinman (2008, 2011) assess impacts by use of randomised control trials and Barnes (1996) examines the effects of assets acquisition of MFI clients. The latter proposes that a viable way of measuring microfinance social impact is to identify and measure assets of clients over time. Thus in this paper, much focus was given to the characteristics of assets, how to measure them and whether or not assets could be important in determining MFI impact. Barnes (1996), meanwhile, reveals a positive relationship between asset accumulation and MFI impact. This approach used by Barnes could be a good measure of impact however, surveys in that direction cannot be sure whether or not other factors outside microfinance influence affected MFI clients' assets accumulation. Randomised control trials developed by Karlan and his team, progressed with the use of a more precise methodology for assessing impacts but relies on intensive commitment from MFIs to allow intervention and data collection, which could be costly and difficult to replicate easily in other contexts and environments.

Many more authors have put across a diverse range of findings and assertions however, most of these center around observing beneficiaries of microfinance programs over a period of time and finding one or more indicators which could serve as a measure of impact. This approach has generally been deemed by the microfinance industry as too demanding and costly for MFI practitioners to engage with and therefore more practitioner-centred approaches have emerged in recent years. Copestake (2007) presents a model in which rather than 'proving' impacts the aim is to 'improve' impacts arising from microfinance and thus the idea is to identify indicators and steps by which MFI managers themselves can assess impacts and improve upon them.

This more recent approach tries to differentiate the terms 'social impact' and 'social performance' explaining that the former relates to assessing the impact on beneficiaries (and therefore is more related to the studies mentioned before) while social performance refers to "the effective translation of a [microfinance] institution's social mission into practice" (Lapenu and Reboul 2006:2), and therefore it is more practitioner-centred. To make progress on the latter, the proponents of this concept have helped develop social performance indicators and ratings based on a consultation process involving primarily MFI managers and practitioners. Recent results of social performance measurement (Bédécarrats et al 2010) show that non-for-profit MFIs score generally better than for-profit ones, while bigger MFIs are generally less oriented towards the poor. Although there is an effort to audit these results by external professionals, existing social performance indicators and ratings still remain primarily dependent on the subjective responses and perspectives of MFIs.

Against this background, our paper aims at measuring social rating based on quantitative indicators that have been audited by third parties and reported in publicly-available sources, which, in turn, warrants robust and credible data. We also attempt to bridge between the concept of social impact and social performance by employing indicators

closely related to assessing social impact and then by identifying the explanatory factors that determine social performance. Therefore, in some cases, these two concepts are used inter-changeably.

### **3. DATA, VARIABLES & METHODOLOGY**

#### **3.1. Data**

Data used for the analysis presented in this paper was collected from MixMarket.<sup>2</sup> Data was initially retrieved for MFIs from the year 1996 to 2010. However, this was screened down to 11 years (2000 – 2010) owing to the unavailability of data for relevant indicators needed for the analysis in the rejected years. A total of 878 MFIs were sampled out. These MFIs cut across a total of 98 countries and are representative of all 6 geographic regions as presented in the MIXMarket.

#### **3.2. Variables/Indicators**

In generating the given social performance ratings for MFIs under study, 8 different indicators were used. These indicators are the MFI's outreach, average outstanding balance / GNI per capita (hereafter ABPGNI), cost per borrower (hereafter CB), number of offices, operational self sufficiency (hereafter OSS), percent of women borrowers, portfolio at risk after 90 days (hereafter PAR90) and write-off ratio.

##### **Outreach**

Microfinance outreach has to do with the extent to which MFIs are able to cover a wider area or to reach and serve a greater number of people. The outreach of the MFI is used as an indicator for social performance because it is expected that the wider the outreach of an MFI, the bigger the social performance it can make. However, it is imperative to know that outreach cannot be the only measure of social impact since reaching a huge number of people does not necessarily mean these people are transformed, hence, the need for other indicators. MixMarket presented a qualitative measure for MFI outreach thus it was necessary to quantify such measures since the focus of this paper is quantitative; thus dummy variables were introduced.

##### **Average outstanding balance / GNI per capita**

Average outstanding balance/GNI per capita indicates to a reasonable extent the loan sizes MFIs give to borrowers. A low ratio shows that the MFI gave small loans. On the other hand, a high ratio means the MFI gave out loans that were too big. A low ratio for average outstanding balance / GNI per capita is expected to be better-off than a high ratio hence in measuring social performance. The biggest value of rating (100) is assigned to the lowest ratio whereas the smallest value (25) of rating is assigned to the highest ratio. This is done by a normalization<sup>3</sup> process.

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<sup>2</sup> MixMarket is a major microfinance database and reference for most analysts. Data from the MixMarket is self reported by MFIs to the information exchange. Those with external audited reports are included here.

<sup>3</sup> In this context, Normalization is the process of scaling data collected from different sources. Usually this is done such that no matter the original values of the data collected, all values, after transformation, would now fall with a particular range say, 0 to 100 or 0 to 1, depending on what the analyst considers appropriate. In doing this, all new values assigned are relative to each other and would not exceed the assigned scale. Mathematicians adopt a variety of formulas to help normalize or re-scale data depending on what is expected. (See Kruskal (1964) for details).

**Cost per borrower**

The cost per borrower given by an MFI is primarily gotten when the adjusted operating expense of the MFI is divided by the MFI's adjusted average number of active borrowers. This indicator is seen by many as one which exposes an MFI's efficiency. Considering this output, it is evident that a higher ratio for cost per loan for an MFI indicates that the loan given by that MFI is relatively expensive and hence clients technically may be under exploitation. Thus, a high ratio reflects inefficiency on the part of the MFI as well as the MFIs inability to perform socially since loans given out are expensive. Taking into account this understanding, this paper assigns a ratings mark of 100 to the MFI with the lowest cost per borrower ratio and a mark of 25 to the MFI with the highest cost per loan ratio.

**Number of offices**

This paper regards number of offices as an indicator for outreach. The underlying reason is based on the fact that the more the offices an MFI has, the more clients feel they can easily access services provided by the MFI.

**Operational self sufficiency (OSS)**

The operational self sufficiency ratio shows the ability of an MFI to cover its costs of operation using internally generated income. This ratio primarily is expected to be an efficiency ratio thus helping expose the efficiency of an MFI, however, its involvement in this paper as one of the indicators to measure performance is based on the argument that the efficiency of the MFI is relevant in performing socially as this could lead to less costly services to clients.

**Percent of women borrowers**

Percent of women borrowers is a relative ratio of active women borrowers to the total number of borrowers. Conceptually, this ratio is seen to be a very significant indicator of outreach considering the vulnerable nature of women in most communities and the fact that they are usually undermined especially in rural areas. This awareness creates the understanding that in a community where more women have been reached, that community has been positively impacted socially since it is expected that women there would now be in some form of meaningful business. Thus an increasing trend of percent of women borrowers can be seen as a positive indicator for social performance.

**Portfolio at risk after 90 days**

As the name suggests, this indicator gives a hint of the portion of an MFI's portfolio that may be at risk because payment is overdue. A decreasing trend for this indicator is a positive indication. Furthermore, a decreasing trend for this indicator may mean that MFIs have been able to have a positive effect on clients and hence repayment of loans is prompt. Thus it could be a good indicator of social performance.

**Write-off ratio**

Lastly, the write-off ratio is a relevant indicator that can help understand the level of support MFIs give to clients so they don't default. In this regard, it is sufficient to say that a low ratio indicates that MFIs have been supportive enough hence clients did not default. This can be a good measure of performance.

**3.3. Methodology**

**3.3.1. Social Performance Ratings Methodology**

Each indicator that has been explained above as an indicator of social performance is rescaled and summed up into a social performance index. This index can be represented mathematically as;

$$SPI = A + B + C + D + E + F + G + H \tag{1}$$

where A to H are the normalized or rescaled values of the indicators explained above.

Primarily, two types of rescaling formulas were used to transform the values of the indicators before summing them up to truly reflect what the values mean. For instance, for some indicators chosen as part of the measure of social performance, a small ratio means that MFIs are doing well while a high ratio indicates otherwise. In this case, formula A shown below is used in the rescale process. While in the reverse situation were a high ratio means good performance formula B shown below is used.

$$A = \alpha * \left( \frac{\Omega - b}{\Omega - \beta} \right) \tag{A}$$

Where A is the derived rescaled value,  $\alpha$  and  $\beta$  are the highest and lowest given rescaled value respectively that an MFI can get,  $\Omega$  is the highest recorded raw value of the indicator in use and b is the specific value of the indicator for a given MFI.

$$B = \beta + \left( \frac{(b - \mu) * (\alpha - \beta)}{(\Omega - \mu)} \right) \tag{B}$$

Where B is derived rescaled value,  $\alpha$  and  $\beta$  are the highest and lowest given rescaled value respectively that an MFI can get,  $\Omega$  and  $\mu$  are the highest and lowest recorded raw values respectively of the indicator in use and b is the specific value of the indicator for a given MFI.

**3.3.2. Regression Methodology**

The concept of panel data is used to analyse the relationship between social performance and the chosen explanatory variables. Fundamentally, a panel regression model is given as;

$$y_{it} = \sum_{k=1}^k x_{kit} \beta_{kit} + e_{it} \tag{2}$$

Where  $\mathbf{i} = 1, \dots, N$ . N is the number of MFIs and  $\mathbf{t} = 1, \dots, T$  . where T is the number of years under study.

More specifically, the random effect panel models would be used based on the results gotten from the Hausman Tests and the Lagrange Multiplier Tests. Mainly, six (6) models were estimated for each group of MFIs that are analysed. The dependent variable of the first model was the generated social performance index (SPI) while the other five models had the original values of MFI outreach, CB, ABPGNI, OSS and PAR90 as their dependent variables. These five dependent variables happen to be part of the individual components which were summed up to form the SPI. This is to study the relationship between the explanatory variables and the individual components that make up the SPI. A

correlation matrix of all the variables in use show a correlation coefficient of less than 0.5 which could be an indicator that problems regarding multicollinearity are not eminent.

We analyse this relationship by using the following regression model:

$$socperf_{it} = \beta_0 + \beta_1 age_{it} + \beta_2 pro_{it} + \beta_3 reg_{it} + \beta_4 loan_{it} + \beta_5 lnassets_{it} + e_{it} \quad (3)$$

where *socperf* represents all the dependent variable in this case the SPI, outreach, CB, ABPGNI, OSS and PAR90. *age*, *pro*, *reg*, *loan* and *assets* represent MFI age, profit status, regulatory status, loans per loan officer and assets respectively.

## 4. Empirical results

### 4.1. Overall Findings

Results for the entire sample regardless of geographic area are presented here. These have been presented in table 1 below.

Table 1: Tables of Results for all MFIs collectively regardless of Geographic Regions.						
Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0030** (0.0017)	0.0017*** (0.0005)	0.0002** (0.0001)	0.0029*** (0.0006)	-0.0001 (0.00006)	-0.0077*** (0.0010)
<b>profit status</b>	-0.0121 (0.0448)	-0.0128 (0.0124)	-0.0015 (0.0014)	-0.0147 (0.0132)	-0.00002 (0.0012)	0.0099 (0.0177)
<b>regulatory status</b>	-0.2768*** (0.0432)	-0.0354*** (0.0119)	0.0003 (0.0014)	-0.1301*** (0.0127)	0.0001 (0.0012)	0.0272 (0.0170)
<b>loans/loan officer</b>	0.0129*** (0.0021)	0.0047*** (0.0006)	0.0004*** (0.00009)	0.0039*** (0.0007)	0.0001 (0.0001)	0.0013 (0.0012)
<b>lnassets</b>	5.8765*** (0.6048)	7.4868*** (0.1794)	-0.3454*** (0.0251)	0.0758 (0.1941)	0.0968*** (0.0210)	0.0537 (0.3228)
<b>constant</b>	396.55*** (10.55)	-47.836*** (3.0813)	104.52*** (0.4175)	85.77*** (3.3239)	29.74*** (0.3490)	71.02*** (5.3319)
<b>N</b>	4098	4098	4098	4098	4098	4098
<b>R squared</b>	0.0891	0.5038	0.0282	0.1091	0.0161	0.0333

Notes: standard errors are in brackets. \*,\*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

As shown in Table 1 the generated Social Performance Index (SPI) was regressed on the independent variables, after which five of the individual components which contributed to the social performance index (SPI) were used individually as dependents variables. For model 1 where the SPI was used as the dependent variable, it was found that all coefficients were statistically significant except for the coefficient of profit status. The coefficients of age and regulatory status were negative and significant indicating that as MFIs grow older and are regulated their tendency of performing socially diminishes. This possibly is the case since studies (like that of Bédécarrats et al., 2010) have shown that as MFIs grow bigger and older, they tend to drift away from their social mission. Furthermore, considering the various debates that have emerged whether or not it is good for MFIs to be regulated, it is apparent that the results of this paper point to a negative social performance for MFIs that are regulated. This could possibly be because of the

obligations and cost of operations that come along with regulations. On the other hand, the coefficients of loans per loan officers and assets are positive and significant indicating that as an MFI possesses more assets, the more it is able to perform socially. Furthermore, as the number of loans per loan officer increases, MFIs tend to reach many more clients thus social performance is attained since the level of outreach reflects the social performance of an MFI. The trend of results for models 2, 3 and 4 are almost the same. The dependent variable for model 2 is outreach while for Model 3 and 4 CB and ABPGNI are the dependent variables respectively. For model 2, all coefficients are statistically significant except for profit status while for model 3 all are significant except the coefficients of profit and regulatory status. Model 4 however has all coefficients significant except for profit status and assets. For models 2, 3 and 4 the coefficient of age is positive indicating that as MFIs grow older, the tendencies of expanding outreach increases. On the other hand, the cost per borrower becomes more expensive which from one perspective, could explain why the older MFIs tend to make less social performance. In addition, the positive coefficient of age for model 4 indicates that as MFIs grow older, they tend to give bigger and unaffordable loans thus higher ABPGNI is achieved which reflects poor social performance. The coefficient of regulatory status in model 2 and 3 are negative showing that regulated MFIs have lower scales of outreach and they also tend to reflect low ratios in terms of ABPGNI which is a good sign of social performance. However the coefficients of loans per loan officer in models 2, 3 and 4 are positive which makes economic sense for models 2 and 4. The dependent variables of model 2 and 4 are outreach and ABPGNI respectively. In this regard, a higher ratio of loans per loan officer reflects higher outreach which is true for model 2. However, for model 4 this is also true considering the fact that as many clients are reached, the tendency of loan repayment defaults also increase which is reflected in the ABPGNI. The coefficients of assets for model 2 and 3 are positive and negative respectively which shows clearly that the more assets an MFI is able to acquire, the more they are able to expand their outreach. On the contrary, while the assets base of the MFI is being increased, the cost per borrower tends to increase since by default, assets acquired add up to the MFI's operation cost thus clients would have to pay more on loans received. For model 5, all coefficients are statistically insignificant except for the intercept and the coefficient of assets which is positive showing that an MFI that has lots of assets increases its operational self-sufficiency. Model 6 also shows a similar trend like model 5 where all coefficients are statistically insignificant except for two (2), the intercept and the coefficient of age which reflected negative results. This coefficient signifies that as MFIs grow older, they tend to have lower percentages of their portfolios at risk.

## **4.2. Findings by Geographical Regions**

This section presents findings that have been made based on geographical regions.

### **4.2.1. The Case of Africa**

Table 2 below gives the regression results for MFIs in Africa only. Considering MFIs in Africa only, results show that for the overall SPI, all coefficients are statistically significant except for coefficients of age and profit status. The trends and relationships between the other independent variables which are statistically significant and social performance in Africa is similar to observed trends when taking into account MFIs in all geographical regions collectively. This is the same for model 2 as well except that for



model 2, the coefficients of age, profit and regulatory status are not statistically significant. The results for model 3 for all MFIs and MFIs in Africa only, similarly have related results except that in Africa, the coefficient of assets is statistically significant which indicates that as MFI assets increase in Africa, the cost per borrower decreases.

<b>Models</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>Age</b>	0.0004	0.0008	-0.00004	0.0029**	0.0002	-0.0042
	(0.0044)	(0.0013)	(0.00006)	(0.0016)	(0.0002)	(0.0027)
<b>profit status</b>	-0.0334	-0.0016	0.0014	0.0289	-0.0046**	-0.0271
	(0.1001)	(0.0246)	(0.0009)	(0.0326)	(0.0021)	(0.0422)
<b>regulatory status</b>	-0.2509**	-0.0471	0.0008	-0.1109***	-0.0002	-0.0351
	(0.1172)	(0.0287)	(0.0010)	(0.0382)	(0.0024)	(0.0493)
<b>loans/loan officer</b>	0.0369***	0.0166***	0.0005***	0.0134***	0.0005**	0.0005
	(0.0067)	(0.0020)	(0.00009)	(0.0014)	(0.0002)	(0.0040)
<b>Inassets</b>	4.7181***	8.1404***	-0.1042***	-1.9404***	0.2395***	0.6703
	(1.7724)	(0.4973)	(0.0194)	(0.6079)	(0.0507)	(0.9301)
<b>constant</b>	389.67***	-58.81***	100.78***	105.71***	27.12***	60.51***
	(29.69)	(8.1243)	(0.3116)	(10.080)	(0.8028)	(14.983)
<b>N</b>	583	583	583	583	583	583
<b>R squared</b>	0.0543	0.5548	0.2047	0.1856	0.1538	0.0094

Notes: standard errors are in brackets. \*,\*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

Also for model 4 the coefficient of assets is significant for Africa and the sign has changed to negative. Model 5 however presents very distinct differences. The coefficients for profit status and loans per loan officer are statistically significant in this case. Profit status has a negative coefficient which shows that profit making MFIs are more self-sufficient than non-profit making MFIs which makes economic sense considering the fact that profits that are made can be used to help support the operations of the MFI, an advantage which non-profit MFIs do not have. Considering the positive coefficient of assets in model 5, it can be said that in Africa, MFIs with more assets are more self-sufficient operationally compared to MFIs with relatively less assets. The coefficients of model 6 all seem to be statistically insignificant except for the intercept which is positive and significant.

#### **4.2.2. The Case of East Asia & the Pacific**

Table 3 below shows the results for MFIs in East Asia and the Pacific. Considering MFIs in East Asia and the Pacific, the effects of the independent variables on the SPI as shown in Model 1 of table 3 are similar to that of Africa in terms of statistical significance and the signs of the coefficients. This means that effects of the explanatory variables on social performance in Africa and East Asia and the Pacific are almost similar. However when model 2 is considered, it is observed that similar effects are eminent except for the coefficient of loans per loans officer which is now statistically insignificant and that of regulatory status which is now negative and significant. This is in line with the

observations in the results gotten when the sample size included all geographical locations collectively as shown in table 1.

<b>Models</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0030 (0.0070)	-0.0011 (0.0017)	0.0005 (0.0004)	-0.0008** (0.0015)	0.0004** (0.0001)	-0.0036 (0.0037)
<b>profit status</b>	0.1692 (0.2024)	-0.0008 (0.0532)	-0.0074 (0.0062)	-0.0739 (0.0458)	0.0151*** (0.0052)	0.3019*** (0.0845)
<b>regulatory status</b>	-0.3512** (0.2030)	-0.0891** (0.0534)	0.0002 (0.0062)	-0.1810*** (0.0459)	0.0171*** (0.0052)	0.2031** (0.0843)
<b>loans/loan officer</b>	0.0104** (0.0060)	0.0015 (0.0015)	0.0009** (0.0004)	0.0014 (0.0013)	-0.0002 (0.0002)	0.0048 (0.0033)
<b>lnassets</b>	5.9184*** (1.6924)	6.7675*** (0.4176)	-0.6456*** (0.0926)	-0.1401 (0.3609)	0.1370*** (0.0451)	2.0297** (0.8909)
<b>constant</b>	397.54*** (34.75)	-29.72*** (8.8245)	109.17*** (1.6130)	104.32*** (7.6100)	27.18*** (0.9110)	9.9490 (16.7610)
<b>N</b>	541	541	541	541	541	541
<b>R squared</b>	0.1429	0.5043	0.0775	0.1819	0.1354	0.0094

Notes: standard errors are in brackets. \*,\*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

Model 3 also reveals similar effects as in the case of Africa. The results for model 4 show quite a different trend as compared to results for all MFIs collectively and MFIs in Africa only. This result shows that the coefficient of ABPGNI is significant but negative which differs from what was observed for Africa and all MFIs regardless of geographical area. All other coefficients are statistically insignificant except for the intercept. Again, observed results for model 5 differ from results for Africa and all MFIs collectively. Here all coefficients are statistically significant except the coefficient of loans per loan officer. The coefficient of profit status is positive here as compared to a negative coefficient for Africa and all MFIs collectively. Furthermore, the coefficient of regulatory status is also positive and significant meaning MFIs in East Asia and the Pacific that are regulated are more self-sufficient than non-regulated ones. Results for Model 6 also show that only coefficients of profit status, regulatory status and assets are significant with positive signs.

#### **4.2.3. The Case of Eastern Europe & Central Asia**

Table 4 below shows the findings in the case of Eastern Europe and Central Asia. The relationship between social performance and the explanatory variables under study in Eastern Europe and Central Asia seems quite different from what has been observed tables 1, 2 and 3. For model 1, only the coefficients of age, loans per loan officer and the intercept are statistically significant however the trends of these coefficients are consistent with what was observed in the case where all MFIs were considered collectively (table 1). For model 2, the coefficients of age and loans per loan officer depict similar relationships as in the case of all MFIs collectively (table 1) however, the coefficient of profit status is statistically significant and show a negative relationship. In model 3, the coefficients of loans per loan officer and assets show a similar trend as

observed in the cases of MFIs represented in model 3 of tables 1, 2 and 3. However, the sign of the coefficient of age in this model changes thus a negative relationship between MFI age and cost per borrower in Eastern Europe and Central Asia. Results for model 3 are all consistent with what was found for Africa except that the coefficient of profit status is statistically significant in this case

Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0061**	0.0010	-0.0003**	0.0035**	-0.0004***	-0.0076***
	(0.0030)	(0.0009)	(0.0001)	(0.0015)	(0.0001)	(0.0020)
<b>profit status</b>	0.1033	-0.0361**	-0.0014	0.0774***	0.0012	0.0167
	(0.0630)	(0.0173)	(0.0058)	(0.0274)	(0.0026)	(0.0277)
<b>regulatory status</b>	-0.0104	-0.0114	0.0042	-0.0857**	-0.0064*	0.1252***
	(0.0804)	(0.0222)	(0.0074)	(0.0351)	(0.0034)	(0.0361)
<b>loans/loan officer</b>	0.0963***	0.0271***	0.0020***	0.0299***	0.0012**	0.0318**
	(0.0119)	(0.0036)	(0.0005)	(0.0059)	(0.0006)	(0.0075)
<b>Inassets</b>	-0.5463	6.3922***	-0.1973***	-1.2660**	-0.0562	-1.3831**
	(1.1970)	(0.3501)	(0.0579)	(0.5685)	(0.0548)	(0.6605)
<b>constant</b>	441.12***	-43.21***	100.89***	88.61***	33.07***	86.52***
	(19.606)	(5.6805)	(1.1467)	(9.1920)	(0.8854)	(10.5344)
<b>N</b>	732	732	732	732	732	732
<b>R squared</b>	0.1994	0.6048	0.0858	0.1922	0.0421	0.0838

Notes: standard errors are in brackets. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

. The nature of the relationships between the explanatory variables and ABPGNI however remain the same for both geographical regions. Considering model 5, there are apparent differences when comparing with observations made in the case of East Asia and the Pacific. All coefficients that happen to be statistically significant in both cases seem to have different signs thus whatever observations have been made in the case of East Asia and the Pacific regarding OSS and the explanatory variables, the opposite relationship is observed amongst MFIs in Eastern Europe and Central Asia. This opposite relationship is also observed with the relationship between assets and OSS when considering MFIs in Eastern Europe and Central Asia and all MFIs regardless of geographic area (table 1). In the case of model 6, it was found that taking into account the relationship between PAR90 and the explanatory variables, age and assets, opposite relationships exists when contrasting Eastern Europe and Central Asia with East Asia and the Pacific

#### **4.2.4. The Case of Latin America and the Caribbean**

The results for the relationship between social performance and the explanatory variables in Latin America and the Caribbean as shown in table 5 below are consistent with relationships found for Africa (table 2), East Asia and the Pacific (table 3) as well as all MFIs regardless of geographic region (table 1) however, the coefficient of profit status is statistically significant in Latin America and The Caribbean whereas it is not in the other regions. Furthermore, in the case of Latin America and the Caribbean the coefficient of age is statistically insignificant. Considering model 2, the signs of all the statistically

significant coefficients are consistent with what is observed for the coefficients in the case of all other geographic regions thus in terms of outreach, the relationship between the explanatory variables and outreach in all geographical locations seems to be similar. In like manner, for model 3, similar observations have been made for MFIs in Latin America and The Caribbean as well as Africa except that in Africa the coefficient of regulatory status is statistically insignificant. Model 4, show all coefficients statistically significant with the signs of the coefficients consistent with what was found for MFIs collectively regardless of their geographic regions. Model 5 on the other hand shows only the coefficient of the intercept term and loans per loan officer to be positive and statistically significant. This positive nature of the loans per loan officer coefficient in model 5 fall in line with what has been observed in the case of Africa, Middle East and North Africa, Eastern Europe and Central Asia. In model 6, all coefficients are statistically significant in exception of the coefficient for assets. The signs of the observed coefficients, primarily match what was found in the case of Africa however, the coefficients were statistically insignificant in the case of Africa. Furthermore, the nature of the relationship observed between MFI age and portfolio at risk is similar to what was observed for all MFIs collectively as well as MFIs in Eastern Europe and Central Asia.

**Table 5: Table of results for MFIs in Latin America and the Caribbean**

Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0003 (0.0030)	0.0021** (0.0009)	-0.0001** (0.00004)	0.0029*** (0.0010)	0.00003 (0.0001)	-0.0066*** (0.0018)
<b>profit status</b>	-0.2110*** (0.0657)	-0.0485*** (0.0183)	0.0017 (0.0011)	-0.0519*** (0.0198)	0.0011 (0.0020)	-0.0671** (0.0271)
<b>regulatory status</b>	-0.3315*** (0.0688)	-0.0008 (0.0193)	0.0021* (0.0011)	-0.1376*** (0.0208)	0.0031 (0.0021)	-0.0538* (0.0292)
<b>loans/loan officer</b>	0.0195*** (0.0056)	0.0074*** (0.0017)	0.0004*** (0.0001)	0.0092*** (0.0018)	0.0004** (0.0002)	0.0065** (0.0034)
<b>lnassets</b>	6.7935*** (1.0571)	7.9190*** (0.3178)	-0.1495*** (0.0146)	0.6011* (0.3385)	-0.0039 (0.0360)	0.0339 (0.5662)
<b>constant</b>	384.68*** (17.0875)	-58.66*** (5.0785)	101.33*** (0.2423)	79.73*** (5.4207)	30.95*** (0.5721)	74.91*** (8.8461)
<b>N</b>	1476	1476	1476	1476	1476	1476
<b>R squared</b>	0.0818	0.6456	0.1074	0.0769	0.0261	0.0501

Notes: standard errors are in brackets. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

#### 4.2.5. The Case of Middle East and North Africa

The results for Middle East and North Africa as shown in table 6 below, show similar patterns to what has been observed for other geographical regions and all MFIs collectively. For model 1, which defines the relationship between the SPI and the explanatory variables, it was found that all coefficients are statistically insignificant except for the intercept and the coefficient of loans per loan officer. This coefficient for loans per loan officer is positive and therefore is consistent with what has been observed for all MFIs regardless of their geographical regions (table 1) and even when geographic regions are under considerations. On the other hand, for Model 2 all coefficients are

significant except the coefficients of profit and regulatory status. In the exception of results found for East Africa and the Pacific, the nature of the relationship found here for model 2, is consistent with all other geographic regions individually and collectively. Model 3 reveals coefficients which are statistically significant for only the intercept, regulatory status and loans per loan officer. An observed negative coefficient for regulatory status deviates from what has been observed for all other areas signifying that for the Middle East and North Africa, regulated MFIs are able to present cheaper CB. However, the nature of the relationship between loans per loan officer and cost per borrower is as observed for all other areas. Model 4 shows results with all coefficients statistically significant in the exception of the coefficient of profit status. These results reflect similar relationships between the explanatory variables and the independent variable in all geographical areas except for a reverse relationship which was observed for MFI age and ABPGNI in East Asia and the Pacific. Furthermore, the relationship between MFI assets and ABPGNI in Latin America and the Caribbean shows an inverse relationship compared to what has been observed for the Middle East and North Africa. Models 5 and 6 both have only the coefficients of the intercept and loans per loan officer positive and statistically significant, which differs from what have been observed for all areas.

<b>Models</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>Age</b>	0.0057 (0.0062)	0.0035* (0.0021)	0.00002 (0.00005)	0.0030*** (0.0010)	0.0001 (0.0004)	-0.0034 (0.0039)
<b>profit status</b>	0.0598 (0.4934)	0.1468 (0.1513)	-0.0015 (0.0044)	-0.1152 (0.1179)	0.0042 (0.0190)	-0.2197 (0.2121)
<b>regulatory status</b>	-0.1868 (0.1737)	-0.0505 (0.0534)	-0.0032** (0.0015)	-0.0723* (0.0411)	-0.0076 (0.0068)	-0.0488 (0.0759)
<b>loans/loan officer</b>	0.1861*** (0.0251)	0.0424*** (0.0086)	0.0008*** (0.0002)	0.0150*** (0.0041)	0.0071*** (0.0014)	0.0706*** (0.0155)
<b>Lnassets</b>	-2.3883 (2.6826)	8.2177*** (0.9057)	-0.0238 (0.0225)	-1.4587*** (0.4569)	0.0456 (0.1388)	-2.3452 (1.5362)
<b>Constant</b>	482.18*** (64.6392)	-84.19*** (20.6035)	99.99*** (0.5716)	119.66*** (13.9025)	29.25*** (2.8430)	120.93*** (31.5720)
<b>N</b>	212	212	212	212	212	212
<b>R squared</b>	0.3424	0.6143	0.1629	0.1408	0.1615	0.2262

Notes: standard errors are in brackets. \*,\*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

#### **4.2.6. The Case of South Asia**

Table 7 below shows results for MFIs in the case of South Asia. Considering MFIs in South Asia, it was found that MFIs that possessed more assets have the tendency of performing more socially which is consistent for what has been observed for most geographic areas. All other coefficients were however statistically insignificant. For model 2 and 3 only the coefficients of age, assets and the intercept are statistically significant. Considering these models, what have been observed to be the relationship

between age and the independent variables CB and outreach remain consistent with the observations made with all MFIs collectively regardless of geographic area (table 1) however, considering geographic areas, there seem to be inconsistency in observed relationships.

<b>Models</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	SP	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>Age</b>	0.0055 (0.0059)	0.0038** (0.0018)	0.0002*** (0.00003)	0.0047*** (0.0013)	0.0005*** (0.0002)	-0.0045 (0.0034)
<b>profit status</b>	-0.1078 (0.1374)	-0.0125 (0.0343)	0.0002 (0.0005)	-0.0192 (0.0301)	-0.0028 (0.0031)	-0.0002 (0.0619)
<b>regulatory status</b>	-0.0981 (0.1302)	-0.0396 (0.0323)	-0.0001 (0.0005)	-0.0181 (0.0285)	-0.0002 (0.0029)	0.0730 (0.0582)
<b>loans/loan officer</b>	0.0006 (0.0027)	0.0004 (0.0008)	0.00001 (0.00001)	0.0008 (0.0006)	0.00001 (0.00009)	-0.0013 (0.0016)
<b>lnassets</b>	10.4678*** (1.4262)	7.2750*** (0.4480)	0.0222*** (0.0086)	0.4594 (0.3278)	0.2594*** (0.0495)	-0.1022 (0.8497)
<b>constant</b>	360.32*** (28.4747)	-30.69*** (8.4611)	99.35*** (0.1568)	79.10*** (6.4602)	26.53*** (0.9069)	72.53*** (15.8967)
<b>N</b>	554	554	554	554	554	554
<b>R squared</b>	0.1374	0.4689	0.1665	0.0372	0.1733	0.0265

Notes: standard errors are in brackets. \*,\*\* and \*\*\* denote significance at the 10%, 5% and 1% levels respectively

The relationship between assets and MFI outreach remains constant across all geographic areas however the relationship between assets and CB varies depending on geographic area. Model 4 shows only the coefficient of age and the intercept to be positive and statistically significant. Model 5 however shows positive and statistically significant coefficient for age, assets and the intercept. This is similar to what was observed for most areas. Model 6 on the other hand, has no significant coefficients except for the intercept.

### 4.3. Findings by Country Income Levels

This section present result of MFIs grouped under their country's income level. Three income levels have been used - low income, low-middle income and upper-middle income levels. Results for MFIs in low income countries are shown in table 8 below. Considering this category of MFIs, it was found that all coefficients were statistically significant except the coefficient of age for Model 1. Model 2 also had all coefficients significant except for the coefficient of profit status. The nature of the relationship between all explanatory variables and the dependent variable for model 1 (SPI) and model 2 (outreach) is analogous to what was found for all MFIs collectively (table 1). It has also been observed that most MFIs are located in low income countries. For model 3, it was found that in low income countries, as MFIs grew older, CB decreased. Furthermore, MFIs with more assets had relatively lower CB which falls in line with what was found generally for all MFIs (table 1).

Results for models 4 and 5 do not differ significantly from what was found for similar models when all MFIs were used collectively as the sample however, more coefficients in the case of low income countries happen to be statistically significant. For model 6, the

coefficient of age seems consistent with what was found for all MFIs collectively however it was also found that non-profit making MFIs in low income countries usually have fewer clients defaulting. This possibly could be because less interest rate is charged on loans taken since the MFIs are not profit oriented. Interestingly, contrasting what has been observed for low income countries with low-middle income countries, no significant relationship differences have been observed.

Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0010	0.0024***	-0.00004	0.0046***	0.0001	-0.0062***
	(0.0031)	(0.0009)	(0.00004)	(0.0010)	(0.0001)	(0.0018)
<b>profit status</b>	-0.1564**	-0.0167	0.0024***	-0.0361	-0.0037**	-0.0584**
	(0.0793)	(0.0200)	(0.0008)	(0.0235)	(0.0017)	(0.0295)
<b>regulatory status</b>	-0.3125***	-0.0483**	-0.0007	-0.1200***	-0.0004	0.0034
	(0.0792)	(0.0199)	(0.0008)	(0.0234)	(0.0017)	(0.0293)
<b>loans/loan officer</b>	0.0098***	0.0040***	0.0001***	0.0036***	0.00009	-0.0008
	(0.0027)	(0.0008)	(0.00003)	(0.0009)	(0.00009)	(0.0015)
<b>lnassets</b>	6.6956***	7.5814***	-0.0287**	-0.1138	0.1311***	-0.4611
	(0.9821)	(0.2905)	(0.0120)	(0.3246)	(0.0314)	(0.5290)
<b>constant</b>	400.82***	-43.18***	99.89***	84.59***	29.10***	84.00***
	(18.1493)	(5.1640)	(0.2133)	(5.8358)	(0.5340)	(9.0501)
<b>N</b>	1527	1527	1527	1527	1527	1527
<b>R squared</b>	0.0820	0.4858	0.0590	0.0777	0.0705	0.0285

Notes: standard errors are in brackets. \*, \*\* and \*\*\*: significance at the 10%, 5% and 1% levels

Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	-0.0042*	0.0012*	0.0004***	0.0024***	-0.0002*	-0.0088***
	(0.0023)	(0.0007)	(0.0001)	(0.0007)	(0.00009)	(0.0013)
<b>profit status</b>	0.1753***	-0.0135	-0.0058**	0.0222	0.0023	0.1004***
	(0.0564)	(0.0161)	(0.0028)	(0.0159)	(0.0018)	(0.0240)
<b>regulatory status</b>	-0.2498***	-0.0583***	0.0027	-0.1059***	0.0021	0.0657***
	(0.0536)	(0.0153)	(0.0027)	(0.0151)	(0.0018)	(0.0228)
<b>loans/loan officer</b>	0.0176***	0.0050***	0.0008***	0.0056***	0.00008	0.0051**
	(0.0034)	(0.0010)	(0.0002)	(0.0011)	(0.0001)	(0.0021)
<b>lnassets</b>	5.5769***	7.5420***	-0.6603***	-0.1572	0.0373	0.5724
	(0.8046)	(0.2354)	(0.0455)	(0.2539)	(0.0294)	(0.4306)
<b>constant</b>	381.94***	-50.45***	109.25***	87.37***	30.71***	54.78***
	(13.7110)	(3.9908)	(0.7567)	(4.2329)	(0.4909)	(7.0446)
<b>N</b>	2289	2289	2289	2289	2289	2289
<b>R squared</b>	0.1075	0.5554	0.0355	0.1476	0.0066	0.0617

Notes: standard errors are in brackets. \*, \*\* and \*\*\*: significance at the 10%, 5% and 1% levels

Considering Models 1 for both low income and low-middle income countries it was found that only the relationship between profit status and the SPI differed. As profit making MFIs performed more socially in low income countries, non-profit MFIs rather performed more socially in low-middle income countries. Taking into account models 2 and 4 as shown in table 9 below, no significant differences were observed for MFIs in both categories of countries. However, model 3 presents significant differences where the relationships differ in both country groups when considering the relationships between age and profit status and the independent variable, CB. Models 5 and 6 also show very significant difference in relationships between the explanatory variables and their respective regressands. Examples are the difference in the relationship between profit status and the regressand of model 6 (PAR90) as well as the relationship between age and the regressand of model 5 (OSS).

Models	1	2	3	4	5	6
	SPI	OUTREACH	CB	ABPGNI	OSS	PAR90
<b>age</b>	0.0026 (0.0056)	0.0023 (0.0019)	-0.0002*** (0.0001)	0.0014 (0.0009)	0.0001 (0.0003)	-0.0032 (0.0038)
<b>profit status</b>	-0.4848*** (0.1331)	-0.0499 (0.0366)	-0.0004 (0.0032)	-0.1009*** (0.0305)	0.0004 (0.0042)	-0.2086*** (0.0581)
<b>regulatory status</b>	0.0182 (0.1535)	0.0013 (0.0416)	0.0017 (0.0037)	-0.0272 (0.0357)	-0.0064 (0.0047)	0.0291 (0.0648)
<b>loans/loan officer</b>	0.0264** (0.0120)	0.0069* (0.0041)	0.0011*** (0.0003)	0.0049** (0.0021)	0.0010* (0.0005)	0.0117 (0.0078)
<b>lnassets</b>	0.5458 (2.2596)	7.3272*** (0.7217)	-0.0828 (0.0533)	-0.7208* (0.4047)	0.3263*** (0.0896)	-2.6766** (1.2853)
<b>constant</b>	488.49*** (36.2362)	-50.88*** (11.4117)	99.95*** (0.8575)	107.67*** (6.6893)	25.80*** (1.4078)	120.66*** (20.1238)
<b>N</b>	282	282	282	282	282	282
<b>R squared</b>	0.1867	0.5475	0.1274	0.1517	0.1710	0.1526

Notes: standard errors are in brackets. \*, \*\* and \*\*\*: significance at the 10%, 5% and 1% levels

MFIs that fall under the category of upper-middle income countries seem to show traits consistent with what has been observed for MFIs in low income countries when considering model 1 as shown in table 10 above. In the terms of the scope of MFI outreach which is explained by model 2 across all tables, it is evident that all statistically significant coefficient seem to reflect similar relationships when considering all three income levels under study. Most of the relationships found to exist between the explanatory variables and the dependent variables for all models in the case of upper-middle income seem to be quite consistent with what has been observed for low income countries rather than low-middle income countries.

## 5. Conclusion

The paper investigated possible indicators which may contribute to MFI social performance. In doing this, MFI social performance rating were generated using 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 ratings were achieved



by quantifying all qualitative values of relevant indicators presented by the MixMarket and then rescaling the values of all other indicators to follow a normal distribution after which the sum of the all rescaled indicators are taken to form the SPI. In addition, by employing the technique of panel data analysis, this paper investigated a number of explanatory variables and how they could possibly affect social performance. These variables are MFI age, assets, regulation status, loans per loan officers and MFI profit status. This study took into account the geographic locations of MFIs and the income levels of the countries in which they operate. It was found that the effects of these variables on social performance in each geographic region were mostly similar to each other except for Eastern Europe and Central Asia that differed slightly. Furthermore, MFIs in low-income countries, behaved similarly to MFIs in upper-middle income countries with MFIs in low-middle income countries showing unique trends from the other sets of MFIs. Overall, the paper provides evidence that older MFIs as well as regulated ones tend to perform less socially as compared to younger and non-regulated MFIs. In addition, the results also point to the fact that MFIs with more assets and higher ratios for loans per loan officer have the tendency of performing more socially.

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