# The impact of sources of funds on lending rates in microfinance: Empirical observations from panel data

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## Abstract

High lending rate charged by Microfinance institutions (MFIs) has always been at the center of ethical debate. This aspect signifies the importance of studying the determinants, impact and correlation of lending rates and sources of funds (SOF). SOFs are essential for MFIs to enhance their efficiency, productivity and outreach. Sources includes deposits, borrowings, equity, revenues and grants/donations. There are different risks, cost and benefits associated with each source and its impact on the lending rate. This study, through a panel data of 493 MFIs across 75 countries over a period of five years taken from MIX market investigates the impact of sources of funds on the lending rates in microfinance. Our results indicate that borrowing leads to charging higher interest rates even after controlling for MFI-related characteristics. However, we found no evidence of any impact of other sources of funds on lending rate. Interestingly, our research reveals that MFIs charge higher lending rates to female borrowers.

**Keywords:** *Micro-finance institution, Lending rate, Capital Structure*
**JEL Classification:** F3, G21, G32, E43

## Introduction

Poverty alleviation is on the agenda for many developing as well as emerging economies. Microcredit is celebrated as one of the measures to reduce poverty through provision of small credits to poor people (Bogan, 2012; Yang & Chen, 2009). Microcredit ensures that credit reaches to poor to get access to financial services at an affordable cost that they are otherwise unable to acquire (Caudill et al., 2009; Sun et al., 2015; Mukherjee, 1998). In addition to credit, microfinance institutions (MFIs) provide people with other services as well, such as funds transfer, savings accounts and risk management in the form of insurance (Kipesha, 2013b; Yang & Chen, 2009). Amid commercialization of the sector, A sector at lending rates that covers the cost of providing credit and ensures sustainable business by eliminating dependency on subsidies. MFIs are accused of charging usurious lending rates (Abakaeva, 2009; Busardo et al., 2010; Nyamsogro, 2010). This is a topic under discussion for many years but it is much intensified now. Purpose of MFIs to contribute towards human wellbeing is now questioned by many researchers (Aghion et al., 2000). They believe that by charging high interest rates MFIs are leading poor people towards more poverty instead of helping them out (Hulme, 2015; Julien, 2009). Higher lending rate charged to the clients in microfinance is an issue of importance for all ethical reasons (Dehejia, 2012). The literature in the context of the determinant of lending rates in microfinance is still inconclusive. Sources of funds too, derive the lending rates in microfinance (Janda & Zetek, 2014; Duval, 2004). This study focuses on the impact of sources of funds that is deposits, borrowings, equity, donations and revenues on lending rate in microfinance.

Sources of funds are essential for determination of MFIs lending rates which highlights the importance of best mix of capital structure (Akhigbe, 2005; Banerjee et al., 2013, Farrington, 2002). MFIs are required to have funding from different sources to work properly, continuously and with greater efficiency (Kar & Swain, 2014). Existing literature in this context, though scarce, highlights various sources of funds ranging from debt, equity, deposits and revenues (Meesters et al., 2008; Morduch and Armendariz, 2004 and Gonzalez, 2007) to subsidies and grants Stiglitz, 1990 and Murdoch, 1999). MFIs take **deposits** along with their other activities as they see saving as a valuable service for their clients, also these deposits allows them to enhance their microlending (Aghion et al., 2000; Kipesha, 2013a). MFIs pay higher deposit rates to its depositors as compared to banks and high lending rates they charge on their loans enable them to

do this (Meesters et al., 2008). Microfinance can borrow funds in the form of loans and bonds whether domestic or cross-border. MFIs have shifted from subsidized funding to private funding (borrowing) which is expensive compared to former one so this results in high financial cost for MFIs which is a contributing factor in interest yield (Bogan, 2012; Morduch & Armendariz, 2004, Hug, 2014). During start-up stage of an MFI, **subsidies** are essential as they helps in covering operating costs (Bédécarrats & Lapenu, 2013). MFIs provide loans to its borrowers from the amount gathered in form of grants at lower interest rates as compared to market rates ((Bassem, 2008; Sekabira, 2013). When MFIs move towards commercialization they have to decide whether to go for debt or equity financing. **Equity** has also been considered an integral part of the institution to increase the supply of credit and other financial services to micro and small businesses (Bogan, 2008; Nicayenzi, 2001). By including more equity in sources of funds, cost of fund decreases and cost of fund has a positive relation with lending rate. So more the equity, lower will be the lending rate (Cotler & Almazan, 2013). Another source of fund is the **revenue** generated by the institutions through which they expand their capital base (Meesters et al., 2008). Revenue is used to cover the cost incurred by MFIs. With the increase in amount of revenues, lending rates decreases which are set to cover the cost (Ramasamy, 2005; Akhigbe, 2005).

Problem addressed in this study is:

▸ *High lending rates charged by MFIs to its customers are unethical. Sources of funds are important determinants of lending rates which are not given due attention. Analyzing the role of each source of fund is worth investigating.*

The objective of this study is centered on the examination of the impact of sources of funds on MFIs lending rate by controlling MFI characteristics.

**Literature review:**

In developing countries, MFIs are significant as they expand the leading edge of financial intermediation by providing services to those who are traditionally expelled from the formal financial markets (Cotler & Almazan, 2010). Microfinance is a one step towards the expansion of local economies in developing countries by lending small amount of money to entrepreneurs (Busardo et al., 2010). MFIs are a social enterprise that have two goals, first is to pursue a social

mission by helping the poor while the other one is to engage in commercial activities to sustain their operations (Hermes & Lensink, 2011; Sun & Im, 2015).

**Lending rate** is the key indicator of MFI operation and its effectiveness (Liang et al., 2014; Crowley, 2007). Interest rate also depicts how devoted they are towards their social responsibility of contributing towards human wellbeing (Blavy et al., 2004; Aghion et al., 2000 ). In the early stages, activities of MFIs are entirely focused on services but with the maturity, they face performance dilemmas which gradually shift their focus to profitability that is commercialization (Mitra, 2009; Bogan, 2008). Interest is the main source of income for MFIs and because their cost to serve is high, lending rates charged are also comparatively high (Sun & Im, 2015; Ahmad 2009). The high costs associated with providing small loans, the potentially high delinquency rates, and the moral hazard caused by information asymmetry could lead MFIs to charge higher lending rates to poor borrowers (Kipesha, 2012; Bassem, 2008).

**Sources of funds** are important for operational sustainability of MFIs (Bogan et al., 2007; Petersen & Rajan; 1995). Fund providers of MFIs are government, aid agencies, development partners and donors (Basharat et al., 2015). These all stakeholders are concerned about proper allocation of public funds provided by them to microfinance institutions (Blavy et al., 2004; Titman & Wessels, 1998). It is recognized intensely that capital structure should be planned in a way that it maximizes the utility of sources of funds and enables the organization to adapt to the changing conditions (Pandey, 2009; Banerjee et al., 2013).

As compared to formal financial institutions, MFIs have substantially less assets for which they take deposits from public (Cull et al., 2009; Abakaeva & Glisovic-Mezieres, 2009). Tapping into commercial sources such as **deposits,** enables MFIs to increase its customer base by funding its services to grow (Ericson & Pakes, 1995; Aghion et al., 2000). Holding deposits from micro entrepreneurs may cost more to MFI for managing tiny deposits but is not only the case because more often MFIs take deposits from large institutional investors which becomes a long term source of fund for MFIs at low cost (Farrington, 2002).

Special feature of MFIs is that they receive subsidies and **donations** (Gutiérrez-Nieto & Serrano-Cinca, 2009; Martins, 2003). MFI's focus on outreach obligates their dependence on grants, donations and subsidies especially in the startup stage (Hermes et al., 2009; Kipesha, 2013a). MFIs that are funded by grants do not urge to compete on market interest rates (Bogan et al.,

2007; Fox, 1995). So MFIs can charge as much lower lending rates as they want irrespective of their cost until and unless they have back of government and donors to support MFIs in covering up their losses by providing subsidies as needed (Nyamsogoro, 2010; Aghion et al., 2000).

MFIs sometimes take debt from non-regulated sources like money lenders which provide loans at high interest rates and with shorter payback period (Sekabira, 2013; Velnampy & Niresh, 2012). In case of **borrowing,** MFIs are usually price takers as they do not have more control over lending rate they pay for funding and most of the times they get funding where ever they find it (Cull & Morduch, 2007). High price that MFI pays on its borrowings is being reflected in the lending rates they charge on borrowers' loan (Aghion et al., 2000; Lislevand, 2012).

Need for capital increases with the number of MFIs and also with the growing age of MFIs when they expand their microlending (Nawaz et al., 2011). Capital from donors is limited which could not match with the growing need of finances so MFIs looked for some other innovative way of gaining access to capital which includes **equity** in form of non-voting shares (Afwan & Charitonenko, 2003; Nicayenzi, 2001). The overall purpose of equity investments is to create professionally managed and well-capitalized financial institutions servicing mainly the small and microenterprise sector, while offering positive financial returns to investors (Lislevand, 2012).

**Revenue** is another source of fund which is viewed as the need for MFIs as by increasing it they could increase efficiency and reduce cost in order to eliminate reliance on donors to fund operational costs and decrease lending rate (Busardo et al., 2010; Kipesha, 2013a). To be sustainable, MFIs should make expenses from the revenues earned. When revenues are sufficient MFIs can operate without need for subsidies otherwise subsidies are required to cover all its cost (Sekabira, 2013; Kipesha, 2013b).

Keeping in view the relationship between high lending rate and borrower's financial burden, MFIs should try to find a way to lower the interest rates while maintaining their financial sustainability to achieve both financial and social goals (Sun & Im, 2015). One way of doing this is to select appropriate sources of funds at every stage that is institutions should built capital structure after analyzing costs and benefits associated with all sources of funds (Bogan, 2012; Cotler & Almazan, 2010, 2013; Ngumi, 2014; Titman and Wessels, 1988).

Considering its importance many studies have been conducted on capital structure and performance and sustainability of microfinance institutions (Afwan & Charitonenko, 2003;

Bogan, 2008; Julien, 2009; Kipesha, 2013b; Nawaz, 2010). However there is a dearth of literature in this context. The underlying study aims to fill this gap through an investigation of issue. Further results of this study are more generalized as our sample consists of all the regions i.e. South Asia, Africa, Latin America and the Caribbean, East Asia and the Pacific and Middle East and North Africa. Moreover this study investigates the impact of sources of funds separately on lending rate in addition to the aggregate impact.

*Age* is a variable which measures the number of years MFI has been working since its establishment. Age is associated with experience, the more the age more experienced the organization will be and experience in return results in enhanced outcome and good output (Kipesha, 2013a; DeYoung et al., 2004). In the initial stages of MFIs life they rely on zero-cost donor funding and low-cost subsidies and then move towards gaining commercial loans and when it finally stabilizes in its operations become regulated then move towards public deposits and in the end go for IPO issues on capital markets (Ericson & Pakes, 1995). By changing sources of funds with age, helps MFIs to keep their cost of fund at low rates. Reducing funding cost means reducing lending rate to borrowers (Bogan et al., 2007)

*Size of institution* is measured by their total assets (Sekabira, 2013). In order to reach more poor people microfinance institutions are required to grow and increase their size both in terms of assets and staff and also geographically Kipesha (2013a). There are many benefits associated with large size of institution. As Yang & Chen (2009) and Morduch & Armendariz (2004) stated that large sized MFIs have advantage of getting loan more frequently for investment and to possess capable human capital as compared to small MFIs. Also large MFIs have benefit of economies of scale which reduce their cost and increase productivity (Hulmes, 2015; Ramasamy, 2005).

*Women Borrower:* Many MFIs lay emphasis on offering financial services to women (Brau & Woller, 2004). MFI's main goal is to eradicate poverty and to fulfill this purpose mostly MFIs target women because female are greater part of poor community and due to women's less access to capital, they may return more on capital than men (Cotler & Almazan, 2010). Female borrowers are good target because they are more capable of repaying the loan and willing to invest their credit in productive activities (Caudill et al., 2009; Bruton et al., 2011). There are evidences that MFIs have positive impact on women empowerment (Zhao & Wry, 2014). Women are usually disadvantaged from low-interest loans due to their susceptibility to income

shocks and higher chances of default (Blavy et al., 2004). Generally women borrowers are less educated and have less knowledge related to financial contracts due to which they may end up paying higher lending rates than men (Kipesha, 2012).

*Population Density:* MFIs operating in countries with higher density of population are expected to have lower cost than those operating in countries where clients are more disperse (Gonzalez, 2007). Population density is the factor that contributes in efficiency and efficiency is the key driver of MFIs lending rate (hug, 2014). Population density is part of characteristic of any country. Population density, measured as distance, effect the working of microfinance institutions in three different ways (Pedrosa and Do, 2006). Firstly the demand of distant clients varies and so do the monitoring cost, also distant borrowers are more risky and to cope with this MFIs stricken their policies while lending to them. Secondly transaction cost is higher for distant clients which results in high lending rate.

*Number of Borrowers:* According to MIX, number of borrower is the driver of cost as large MFIs with more number of customers are more efficient as compared to small MFIs because their cost is distributed among large customer base (Gonzalez, 2007; Sun & Im, 2015). Lower cost means lower lending rate charged by MFIs as lending rates are set to cover cost (Julien, 2009).

*Status:* MFIs can operate as Non-Governmental Organizations (NGOs), credit unions, non-bank financial intermediaries, rural bank or commercial banks (Bogan, 2012; Cull et al., 2009; Kipesha, 2013b). Many MFIs start working as NGOs and fund its operation with concessional loans and grants from donors and development finance institutions (De Sousa-Shield, 2004; Helms, 2006). As MFIs matures it moves towards debt financing and in the end goes for equity financing (Singh et al., 2010; Cull et al., 2009). By transforming into formal organization like Non-governmental financial institution or specialized bank, MFIs would be able to offer deposits and develop institutional capacity along with governance (CGAP, 2005).

*Regions:* There are total six geographic regions in which MFIs are working and these regions are South Asia, Latin America and the Caribbean, East Asia and the Pacific, Africa, Middle East and North Africa and Eastern Europe and Central Asia (Basharat et al., 2015). Costs such as transaction cost and personnel cost faced by MFIs working in diverse regions are different from one another due to which they charge different lending rates ( Busardo et al., 2010; Bogan, 2008;

Sun & Im, 2015). Along with the cost there are different circumstances that MFIs face in different regions which directly or indirectly affect the capital structure and working of MFIs (Jansson, 2003; Conger, 2003).

*Lending Methodology:* Basharat et al. (2015) discussed two lending methodologies. One is group loan which is a kind of joint liability in which MFIs transfer costs of monitoring, screening and enforcement to group. Second is individual loan which is not backed by any collateral but is secured with the guarantee of lending more money in future in case of current loan repayment. Individual and group lending together could lead to large clientele base (Sekabira, 2013, Cull, 2005).

Group lending is less costly due to reduced information cost attached with the joint liability arrangement (Rosenberg et al., 2013; Cotler and Almazan, 2010; Kipesha, 2013a). Another framework suggests that group lending, by eliminating the problem of adverse selection, decreases the cost of serving to marginal clients (Meslier et al., 2014; Assefa et al., 2013).

*Credit Plus Activities:* MFIs have expanded their services by adding non-financial and social services with existing financial services. Non-financial services include development support services, such as technical trainings, trainings in marketing and in management, and social services include education, healthcare, nutrition, and illiteracy eradication (Kipesha, 2013a). MFIs providing non-financial services along with financial services are better in performance than ones providing only financial services (Caudill et al., 2009).

*Regulation:* There are some advantages related to capital access that MFIs could get. But these advantages are associated with regulation. MFIs should transform to take benefits. Firstly by becoming regulated, MFIs get license to take deposits and remove its dependency on subsidies by adding another source of fund. Secondly it would be easy to get commercial funding as commercial lenders looks for regulated and well reputed MFIs to lend their money. Thirdly, threat of getting short of subsidized funds could be avoided by adding other sources of funds along with subsidy. As a matter of fact, the more independent an MFI is, the better positioned it is for further business expansion (Crowley, 2007).

Regulation does not directly have impact on outreach and self-sustainability (Schreiner et al., 1998). There is no difference in financial efficiencies of regulated and unregulated MFIs (Lislevand, 2012). There is a cost for MFI to get regulated (Rosenberg et al., 2013). This cost of

regulation is higher for MFI than other formal financial institutions. The reason of higher cost is economies of scale as it is expensive as well as time taking procedure to report about financial position to higher authorities especially when MFI deals in small transactions (Cull et al., 2009).

## Research methodology:

**Data and Sample:**

A total of 493 MFIs have been selected as a sample for this study and their data has been collected for the period of five years from 2008 to 2012. Unit of analysis in this study is MFIs of 75 countries in six regions including East Asia and Pacific, Africa, Middle East and North Africa, Eastern Europe and central Asia, Latin America and the Caribbean and South Asia and panel data analysis has been conducted. Data of MFIs' sources of funds and lending rate has been taken from MIX Market. Further, data on categorical variables has been compiled from the profiles of respective MFIs available on their website in addition to the mix market website. MFIs that have a profile on Microfinance Information Exchange (MIX market) , that are rated by the microfinance rating agencies and are given at least 4 diamonds [1] are included in the final sample of 493 with 2465 observations.

Quantitative approach is used to get the findings of research study. Descriptive statistics is used to summarize the behavior of variables included in study. It reduces the large data set into bird-eye view by converting data into averages and percentages to better interpret it (Velnampy & Niresh, 2012).

## Variables and Definitions:

Lending rate is a dependent variable in this study. Lending rate is the rate which MFIs charge to its customers on loans given to them. Sources of funds (SOF) are independent variable. Deposits, debt, equity, revenue and grants/donations are the sources of funds included in underlying study as these are the most extensively taken sources of funds in previous studies(Bogan et al., 2007; Bogan, 2012)

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[1] MIX market gives diamond scores to its MFI profiles on the basis of availability of products and client data, financial data, audited financial statements and rating reports

MFI's characteristics and categorical variables are controlled variables in this study. MFI's characteristics includes AGE of institution (number of years since establishment), SIZE of an MFI (measured as the log of total assets), number of active borrowers of an MFI (No. of Borrowers), Density of Population (Population density) and the number of women borrowers as a share of all borrowers (Women Borrowers) of an MFI are included in the analysis. These variables are extensively used in studies related to microfinance (Assefa et al., 2013; Cull et al., 2009; Hermes et al., 2009; Ahlin et al., 2010; Olivares, 2005).Categorical variable includes status of MFIs (NGO, Credit Union Cooperative, Banks, NBFI, and Rural Banks), lending methodology of MFI (Individual Lending, Group Lending and Both), Credit plus activities (Yes or No), regulation (Yes or No) and region (East Asia and Pacific, Africa, Middle East and North Africa, Eastern Europe and central Asia, Latin America and the Caribbean and South Asia).

**Descriptive Analysis**

**Descriptive Statistics for variables**

Table 1 explains the summary statistics of the independent, dependent variables and control variables used in the study.

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Table 2 explains the distribution of MFI in our study by status, region, lending methodology, regulation and credit plus activities. 39% of MFIs are NGOs and NBFIs by status whereas MFIs in Latin America and Caribbean constitutes almost 45% of the sample; half of the MFIs lend to both individuals and groups and 71% of MFIs have credit plus activities. 61% of MFIs are regulated.

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Correlation analysis is being presented in Table 3. Lending rate which is dependent variable in this study has significant relationships with all the independent variables i.e sources of funds and control variables except borrowings. Further, it is positively correlated with women borrowers

whereas negatively correlated with age of institution, size of institution, number of borrowers and population density.

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Further, Box-plots are used to study relationship between lending rate and categorical variables. Figure 1 below depicts that MFIs with the status of NBFI on average charge higher lending rates as compared to MFIs with other status. Region wise, MFIs operating in African region have high provision of charging higher lending rates. MFIs that are focused on individual lending charge higher lending rates as compared to those which lend in groups or both to groups and individuals. Similarly MFIs which are regulated charge lower lending rates than those of unregulated MFIs. MFIs engaged in other activities in addition to credit services, charge slightly lower than only credit providing MFIs.

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## Empirical analysis:

Following general regression model is being used to test the link between Sources of funds and efficiency.

$$Y_{it} = \alpha_{it} + \beta_{it}X + \varepsilon_{it}$$

Where $Y_{it}$ is the dependent variable (DV) which in underlying study is lending rate of $MFI_i$, at a year t, X is the explanatory variable with a coefficient $\beta$, and $\varepsilon$ the error term. The independent variables or explanatory variables are five sources of funds. Therefore, the operational model for the empirical investigation used in this study is given according to different independent variable (IV). Because of the panel data, we have employed Random effect model after applying the Hausman test.

## Hypothesis 1

*H1:* Sources of funds have an impact on MFIs lending rate while controlling for other variables.

Hypothesis 1 is regarding the aggregate impact of sources of funds on MFI's lending rate. Further the robustness of results has been checked by taking control variables. For which we have investigated the impact of SOF on lending rate with all the control variables and subsequently drop the control variables one by one. Control variables are also included because of the presence of significant correlation between the control variables and the dependent variable. By dropping control variables we see the impact and changes occur in the relationship between independent variable and dependent variable. The regression equation for this hypothesis is:

With control variables:

$$LR_i = \beta_{it}0 + \beta_{it}(SOF) + \gamma_{it1}(Age) + \gamma_{it2}(Age\ Square) + \gamma_{it3}(Size\ of\ Institution) + + \gamma_{it4}(No.\ of\ Borrowers) + \gamma_{it5}(Women\ Borrower) + \gamma_{it6}(Population\ Density) + Status + Region + Lending\ Methodology + Regulation + CPA + \acute{\varepsilon}_{it}$$

And without control variables:

$$LR_i = \beta_{it}0 + \beta_{it}(SOF) + Status + Region + Lending\ Methodology + Regulation + CPA + \acute{\varepsilon}_{it}$$

*Where*

$LR_i$ = Lending Rate of MFIs

CPA = Credit Plus Activities

SOF = Sources of fund

Where Sources of funds include *deposits, borrowings, donations, equity and revenues* all as ratio of assets, Size of institution proxied by log of assets, women borrowers are in percentage of the total borrowers, population density measures population per square kilometer.

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Table 4 shows the results of regression analysis of aggregate impact of five sources of funds on the lending rate of MFIs. We have found borrowing to be positively related to the lending rate and this is significant at 10% which shows that lending rate increases with the increase in amount of borrowings used by MFIs. This result is robust as it holds even after dropping the control variables in equation (2) to (7). This result is in line with the theory that as borrowing is an

expensive source of fund because MFIs have to pay high interest on it and MFIs are less likely to be funded by borrowings (Julien, 2009; Lislevand, 2012). Further the theoretical evidence put forwarded bySun, Zhao, and Im (2013) reinforce the view that lending rate could be reduced by reducing interest rate to creditors. This shows that high cost of borrowing leads to high lending rate.

Our results further indicate the negative relationship between donation and lending rate though it is insignificant. This shows that more an MFI gets donations, the lesser it charges interest rate to the clients. The results remain insignificant even after dropping variables. Nonetheless in equation 4 after dropping variables of age and size of institution, the relationship between donation and lending rate become positive. This means that age and size of institution changes the impact of donations on lending rate. The reason could be that as an MFI matures in age and size,the reliance on donation in long tern leads to increase in costs which subsequently results in charging higher lending rates to the clients because of inefficiency in operations due to lack of competitive pressures associated with attracting market funding (Bogan et al., 2007; Petersen & Rajan, 1995). Whereas from equation 1 to 3, controlling age and scale, the use of donations results in charging lower interest rate because of the realization of the economies of scale.

Further result shows negative relationship between equity and lending rate. This means the more the equity, the less would be the lending rate though the results are insignificant (Rhyne & Otero, 2006). Even after dropping variables the relationship remains negative and insignificant.

Our result shows positive and insignificant relationship between deposits and lending rate. The literature provides mixed evidence of the impact of deposits on the lending rate (Abakaeva & Glisovic-Mezieres, 2009; Kipesha, 2013a; Meesters et al., 2008; Morduch & Armendariz, 2004). This insignificant relationship holds even after dropping control variables.

Our results for the revenues depict negative impact of revenues on the lending rate which affirm that MFIs should generate enough revenue to meet their operating and financing costs. As cost of MFIs reduces they could charge lower lending rates to the clients (Woller et al., 1999; Murdoch 2000).

In line with the existing literature, we have taken five control variables in this regression which includes age, size of institution, number of borrowers, women borrowers and population density (Ahlin et al., 2011; DeYoung et al., 2004; Krauss, 2009).

The results for age show negative and significant at 1% relation with lending rate thus depicting that lending rate decreases with increase in age of MFI. This result is in line with previous findings that with the increase in the number of years institution has been operating, due to realization of economies of scales cost decreases which subsequently result in decrease in lending rates (Basharat et al., 2015; Cotler & Almazan, 2010; Petersen & Rajan, 1995). However we found no significant evidence for variable age square.

Our variable for size show negative and insignificant relation between size of MFI and lending rate and in equation 3 this relation become significant at 1% which shows that as assets of MFI increases, the lending rate decreases. This result is in line with the theory that large organizations get funding at cheaper rates and less cost of funds results in lower interest rates (Akhigbe, 2005; Morduch, 2004; Meslier et al., 2014).

The results for number of borrower variable show positive and significant at 5% significance level thus depicting that lending rate increase with the increase in borrowers of an MFI. The reason could be that in order to serve more number of poor people personnel of MFI have to travel more and also to handle more number of borrowers more staff is required which increases the cost of MFIs which results in high lending rate (Julien, 2009). This relationship becomes significant at 1% in equation 3.

The results further show positive relationship between female borrowers and lending rate. This relationship is robust and significant at 1%. Results are in line with the theory that most female borrowers are illiterate and have less knowledge of financial contracts due to which they may end up paying more lending rate (Sun et al., 2013; Baharat et al., 2015; Liang et al., 2014; Nawaz, 2011).

According to results, population density showed mixed evidence as in first two equations the relationship is positive whereas in next four equations the relationship is negative. The results are insignificant too.Result indicating positive effect of population density is in line with the findingthat borrowers which are distant from microfinance institutions cost them higher due to which borrowers have to face higher lending rate (Pedrosa, 2006; hug, 2014).

For five categorical variables which includes region, status, lending methodology, regulation and credit plus activities, the omitted variable categories are: for region, South Asia; for status, Credit

Union; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activities.

In categorical variables, region variable includes six regions Eastern Europe and Central Asia, East Asia and Pacific, South Asia, Africa. Results of all regions show positive and significant results at 1%. This shows that MFIs in all five regions charge higher lending rates as compared to MFIs in South Asia. These results are empirically supported by existing study that Africa and Latin America charge higher interest rates whereas microfinance institutions in South Asia charge lower rate this is may be because of default rate and funding and operating cost (Cotler & Almazan, 2010). Further the theoretical evidence state that monitory regulatory authority (MRA) in South Asia has imposed interest rate ceiling which regulates MFIs to charge lower interest rate that is the reason that MFIs in South Asia charge lower rates as compared to MFIs in other regions(Sinha & Fernando, 2010).

In status variable MFIs of all four status showed significant positive and significant results. This shows that MFIs of any one of the four charge higher lending rate as compared to credit union/cooperative. MFIs which are not regulated charge higher lending rate. This is shown by regression results which are significant at 1%. The reason could be that government plays important role in reducing lending rate and in non-regulated MFIs there are no checks and balances imposed by government and there is no one to protect borrower's rights (Sun et al., 2013; Liang et al, 2014) .

Result showed that MFIs which are involved in group lending, charge lower lending rates than the ones who only do individual lending though results are insignificant (Taani, 2013). The reason could be that in groups, individuals are guarantee for each other to repay the loan and also there is less management required by MFIs which reduce losses and cost contributing to lending rate. Risk of loan repayment and interest rate on loan portfolio rises under individuals based lending (Cull, 2005; Gonzalez, 2007; Morduch, 2004; Stiglitz, 1990).

Variable CPA shows that MFI which are not involved in credit-pus-activities charge high lending rate. The result is positive but insignificant.

Further we have run separate regressions for all the variables of sources of funds to investigate their individual impact on the efficiency.

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Table 5 presents the impact of deposits on the lending rate which remains the same as in the combined effect model. Similarly the results of the impact of borrowings on the lending rate is robust as depicted in table 6 below …………………

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Similarly changing impact of donation on the lending rate has been found in separate model though the results are insignificant as in table 7 below.

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The negative impact of equity on the lending rate has been depicted in separate model in table 8 below.

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The impact of revenues on the lending rate is insignificant in the combined model in table 4 and in separate model as well. This result holds even after controlling for other variables.

## Conclusion

Using a panel data of 493 MFIs for a period of five years from 2008 to 2012 for regions South Asia, Africa, Latin America and the Caribbean, Middle East and North Africa and East Asia and the Pacific by applying random effect model regress the impact of sources of funds on MFIs lending rate. The impact of sources of funds on lending rate has been investigated by controlling various factors to check the robustness of results.

We found evidence that lending rates increase with the increase in the borrowings. We link this finding to the particular social nature of this sector. This shows that MFIs which use fewer

borrowings are supposed to charge lower lending rate than those with borrowings as major part of their capital structure because borrowing is an expensive source of fund as MFIs have to pay high interest on it and MFIs are less likely to be funded by borrowings. This calls for decision regarding borrowing to be used with proper ratio to support their operations along with the relief for poor people. The insignificant results of deposits, equity, donations and revenues could be attributed to the large sample used in study.

Outreach of MFIs seems to play an important role in lending rate of MFIs which shows that MFIs which works with the mission of women empowerment charge higher lending rate and this is because female borrowers take small loans which increases the cost of lending and resultantly increases lending rate. MFIs serving more number of borrowers also charge higher rates due to more expensive management of transactions for these borrowers and increased credit risk in those clients.MFI related characteristics also have significant impact on lending rate such as age and size of institution. As MFI matures and expand its operations, efficiency and effectiveness of its operations increases which restrain from wastage of funds and leads to the optical utilization of funds which reduces lending rate charged. Other important conclusions of the study relate lending rate with region in which MFI is working, status of MFI, regulation status of MFI, lending methodology used by MFI and involvement in credit plus activities. MFIs in South Asia charge lower lending rates as compared to MFIs in other regions as modern regulatory authority has imposed interest rate ceiling on South Asian MFIs which regulates them to charge lower interest rate that is the reason that MFIs in South Asia charge lower rates as compared to MFIs in other regions. Legal and regulatory status also affects lending rate as regulated MFIs charge less to the clients as government plays important role in reducing lending rate and regulated MFIs are bound by government to charge lower rates also there are checks and balances imposed by government to protect borrower rights.

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**Table 1: Summary Statistics**

| Variables | Definitions | Minimum Value | Maximum Value | Mean | Standard Deviation | Median |
|---|---|---|---|---|---|---|
| Deposits (000) | Total deposits, whether voluntary, compulsory, retail or institutional are presented under Deposits on the face of the balance sheet. | 0 | 4570000 | 37200 | 209000 | 0 |
| Deposits/Assets | Deposits/Total Assets | 0 | 6.7166 | 0.1817 | 0.3025 | 0 |
| Borrowings (000) | Total of Commercial and Concessional Borrowings. | 0 | 802000 | 23800 | 63700 | 43800 |
| Borrowing /Assets | Loan/Total Assets | 0 | 3.6014 | 0.4461 | 0.2844 | 0.4731 |
| Equity (000) | Total of all equity accounts, less any distributions. | -112000 | 949000 | 15500 | 50400 | 3183899 |

| Equity/Assets | Equity/Total Assets | -1.1510 | 8.4636 | 0.3220 | 0.4247 | 0.2423 |
|---|---|---|---|---|---|---|
| Donations | Donations made to the MFI to subsidize its operations. | 0 | 7275001 | 81361.45 | 395062 | 0 |
| Donations/Assets | Donations/Assets | 0 | 2.2180 | 0.0126 | 0.0715 | 0 |
| Revenues (000) | Revenue generated from both the gross loan portfolio and financial.(Mix-Market) | 0 | 280000 | 13785 | 92665 | 78481 |
| Revenues/Assets | Revenues/Total Assets | 0 | 7.8722 | 0.0531 | 0.3275 | 0.0064 |
| Lending Rate (%) | Rate charged by MFI to its borrowers measured as yield on gross portfolio | 0.01 | 133.26 | 33.2272 | 18.29307 | 28.38 |
| Age of Institution | Years Functioning as an MFI (Mix-Market) | 1 | 60 | 14.50183 | 9.328864 | 13 |
| Number of Borrowers (000) | Number of individuals who are active borrowers and/or savers with the MFI. (Mix-Market) | 10 | 6710 | 128.151 | 531.54 | 1402 |
| Women Borrowers as percentage of Borrowers (%) | Number of active women borrowers/ Number of Active Borrowers. (Mix-Market) | 0 | 100 | 0.6566 | 0.2544 | 0.6355 |
| Size of Institution (0000) | Measured as total assets (Mix-Market) | 65792 | 560000 | 8300 | 29800 | 1150 |
| Population Density | Population density is midyear population divided by land area in square kilometers. (World Bank) | 1.69471 | 1188.41 | 159.9341 | 212.5285 | 75.41037 |

**Table 2: Distribution of MFIs**

| Region | Africa | East Asia and Pacific | Eastern Europe and Central Asia | Latin America and Caribbean | Middle East and North Africa | South Asia |
|---|---|---|---|---|---|---|
| | 8% | 6% | 17% | 45% | 2% | 22% |
| Status | NGO | Credit Unions | Banks | NBFI | Rural Banks | |
| | 39% | 11% | 10% | 39% | 1% | |

| Lending Type | Individual (I) | Group (G) | I & G | | | |
|---|---|---|---|---|---|---|
| | 21% | 28% | 51% | | | |
| Credit plus Activities | Yes | No | | | | |
| | 71% | 29% | | | | |
| Regulated | Yes | No | | | | |
| | 61% | 39% | | | | |

## Table 3: Correlation Analysis

| | Lending Rate | Borrowing As Assets | Donations as Assets | Equity as Assets | Deposits as Assets | Revenue as Assets | Log of Assets | Women Borrowers | Number of Borrowers | Population Density | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lending Rate | 1.0000 | | | | | | | | | | |
| Borrowing As Assets | 0.0007 | 1.0000 | | | | | | | | | |
| Donations as Assets | 0.1315*** | -0.0736*** | 1.0000 | | | | | | | | |
| Equity as Assets | 0.1337*** | 0.1510*** | 0.0641*** | 1.0000 | | | | | | | |
| Deposits as Assets | -0.1723*** | -0.4731*** | -0.0535*** | -0.1473*** | 1.0000 | | | | | | |
| Revenue as Assets | 0.0502** | -0.0408** | 0.0579*** | 0.0591*** | 0.0255 | 1.0000 | | | | | |
| Log of Assets | -0.1644*** | -0.0405 | -0.2038*** | -0.1792*** | 0.2881*** | -0.105*** | 1.0000 | | | | |
| Women Borrowers | 0.1465*** | 0.1626*** | 0.0499** | -0.0949*** | -0.136*** | -0.0063 | -0.124*** | 1.0000 | | | |
| Number of Borrowers | -0.0384* | 0.0257 | -0.0368* | -0.0133 | 0.0481** | -0.0224 | 0.3785*** | 0.160*** | 1.0000 | | |
| Population Density | -0.1825*** | 0.1312*** | -0.0190 | -0.0898*** | -0.0091 | 0.0058 | 0.0697*** | 0.3693*** | 0.3450*** | 1.0000 | |
| Age of Institution | -0.2119*** | -0.0929*** | -0.0513** | -0.0250 | 0.1588*** | 0.0526*** | 0.1212*** | -0.0642** | 0.1017*** | 0.0899*** | 1.0000 |

**Fig 1**

Lending Rate and Status



Lending Rate and Region



Lending Rate and Lending Methodolody



Lending Rate and Regulated



Lending Rate and Credit_Plus_Activities
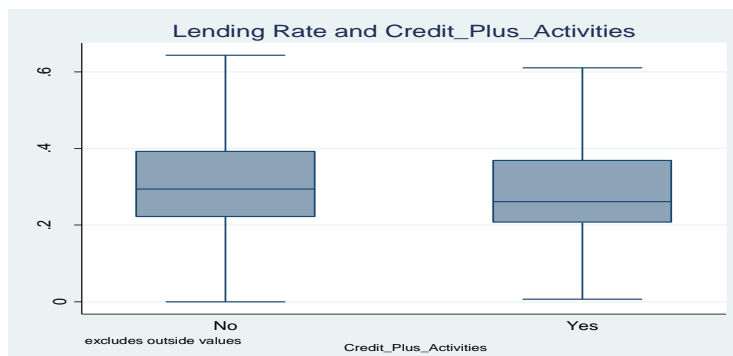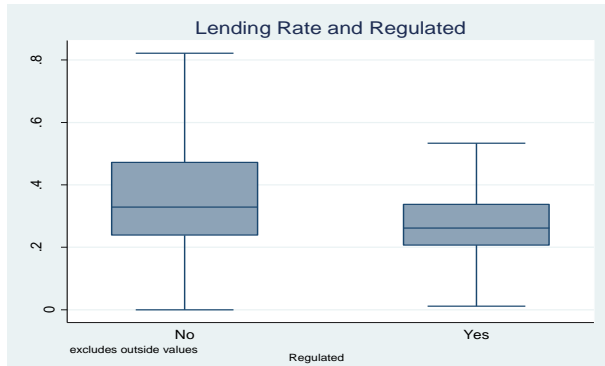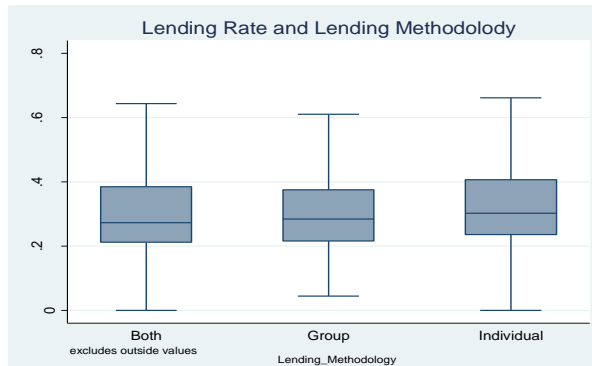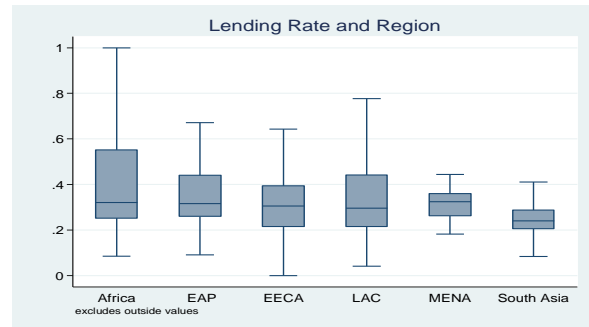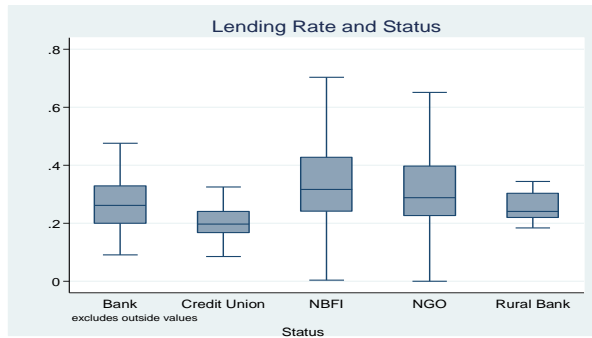
## Table 4 Regression analysis: Sources of Funds and Lending Rate

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Dependent Variable:** *Lending Rate* | | | | | | | |
| **Independent Variables:** *Sources Of Funds* | | | | | | | |
| | *Eq (1)* | *Eq (2)* | *Eq (3)* | *Eq (4)* | *Eq (5)* | *Eq (6)* | *Eq (7)* |
| Borrowing as Percentage of Asset | 0.0165* (1.82) | 0.0158* (1.74) | 0.0160* (1.75) | 0.0175* (1.91) | 0.0171* (1.86) | 0.0166* (1.81) | 0.0167* (1.82) |
| Donations as Percentage of Asset | -0.0113 (-0.46) | -0.0091 (-0.37) | -0.0044 (-0.18) | 0.0048 (0.20) | 0.0049 (0.20) | 0.0036 (0.14) | 0.0038 (0.15) |
| Equity as Percentage of Asset | -0.0045 (-0.52) | -0.0051 (-0.58) | -0.0085 (-0.95) | -0.0027 (-0.31) | -0.0037 (-0.42) | -0.0054 (-0.62) | -0.0054 (-0.61) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Deposits as Percentage of Asset | 0.0052 | 0.0049 | 0.0005 | 0.0003 | 0.0003 | 0.0009 | 0.0008 |
| | (0.57) | (0.54) | (0.06) | (0.04) | (0.03) | (0.10) | (0.09) |
| Revenues as Percentage of Asset | -0.0068 | -0.0067 | -0.0105 | -0.0084 | -0.0086 | -0.0107 | -0.0108 |
| | (-0.70) | (-0.69) | (-1.08) | (-0.86) | (-0.88) | (-1.10) | (-1.11) |
| *CONTROL VARIABLES* | | | | | | | |
| Age Num | -0.0065*** | -0.0045*** | | | | | |
| | (-4.73) | (-6.99) | | | | | |
| Age Square | 0.0001 | | | | | | |
| | (1.68) | | | | | | |
| Size of Institution | -0.0002 | -0.0013 | -0.0090*** | | | | |
| | (-0.06) | (-0.48) | (-3.67) | | | | |
| No. of Borrowers | 0.0000** | 0.0000** | 0.0000*** | 0.0000** | | | |
| | (2.48) | (2.49) | (2.62) | (1.84) | | | |
| Women Borrowers | 0.0671*** | 0.0665*** | 0.0687*** | 0.0684*** | 0.0686*** | | |
| | (4.33) | (4.29) | (4.39) | (4.37) | (4.38) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.89) | (0.89) | (-0.42) | (-0.82) | (-0.51) | (-0.41) | |
| *CATEGORICAL VARIABLES* | | | | | | | |
| Africa | 0.2270*** | 0.2244*** | 0.2061*** | 0.1994*** | 0.1993*** | 0.1858*** | 0.1917*** |
| | (7.22) | (7.14) | (6.47) | (6.21) | (6.21) | (5.60) | (6.42) |
| East Asia and Pacific | 0.1260*** | 0.1244*** | 0.0946*** | 0.0863*** | 0.0866*** | 0.0847** | 0.0896*** |
| | (3.97) | (3.92) | (2.96) | (2.68) | (2.69) | (2.53) | (2.88) |
| Eastern Europe and Central Asia | 0.1179*** | 0.1146*** | 0.0960*** | 0.0918*** | 0.0909*** | 0.0669** | 0.0731*** |
| | (4.47) | (4.35) | (3.61) | (3.42) | (3.39) | (2.45) | (3.21) |
| Latin America and Caribbean | 0.1690*** | 0.1675*** | 0.1291*** | 0.1167*** | 0.1167*** | 0.1007*** | 0.1070*** |
| | (6.83) | (6.76) | (5.26) | (4.75) | (4.76) | (3.99) | (5.33) |
| Middle East and North Africa | 0.1432*** | 0.1423** | 0.1291** | 0.1039* | 0.1061* | 0.0888 | 0.0948* |
| | (2.56) | (2.55) | (2.27) | (1.83) | (1.87) | (1.51) | (1.66) |
| Banks | 0.1154*** | 0.1154*** | 0.1446*** | 0.1202*** | 0.1248*** | 0.1234*** | 0.1243*** |
| | (3.89) | (3.88) | (4.84) | (4.09) | (4.26) | (4.06) | (4.10) |
| NBFI | 0.1542*** | 0.1519*** | 0.1779*** | 0.1709*** | 0.1722*** | 0.1805*** | 0.1805*** |
| | (6.44) | (6.34) | (7.40) | (7.06) | (7.13) | (7.21) | (7.23) |
| NGO | 0.0828*** | 0.0787*** | 0.0770*** | 0.0778*** | 0.0767*** | 0.0864*** | 0.0856*** |
| | (3.23) | (3.08) | (2.96) | (2.97) | (2.93) | (3.18) | (3.17) |
| Rural Banks | 0.1618*** | 0.1687*** | 0.1626*** | 0.1523** | 0.1506** | 0.1605** | 0.1613** |
| | (2.68) | (2.80) | (2.65) | (2.46) | (2.44) | (2.50) | (2.52) |
| Regulated (No) | 0.0772*** | 0.0766*** | 0.0818*** | 0.0872*** | 0.0884*** | 0.0914*** | 0.0918*** |
| | (4.18) | (4.15) | (4.37) | (4.62) | (4.69) | (4.67) | (4.71) |
| Group Lending | -0.0125 | -0.0129 | -0.0141 | -0.0144 | -0.0153 | -0.0162 | -0.0159 |
| | (-0.82) | (-0.84) | (-0.91) | (-0.92) | (-0.98) | (-0.99) | (-0.98) |
| Individual Lending | 0.0141 | 0.0159 | 0.0063 | 0.0034 | 0.0038 | 0.0037 | 0.0038 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (0.84) | (0.94) | (0.37) | (0.20) | (0.22) | (0.21) | (0.21) |
| CPA (No) | 0.0043 | 0.0047 | 0.0055 | 0.0064 | 0.0064 | 0.0040 | 0.0045 |
| | (0.29) | (0.32) | (0.37) | (0.42) | (0.42) | (0.26) | (0.29) |
| Constant | 0.0928 | 0.1013 | 0.1837 | 0.0475 | 0.0470 | 0.0988 | 0.0907 |
| | (1.76) | (1.93) | (3.55) | (1.31) | (1.30) | (2.79) | (3.09) |
| **Wald chi2 (24)** | 265.68 | 262.19 | 206.72 | 189.62 | 186.60 | 155.76 | 156.10 |
| **Prob. > chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **R-sq: Within** | 0.0209 | 0.0211 | 0.0062 | 0.0060 | 0.0042 | 0.0057 | 0.0054 |
| **Hausman Test Results** **Prob>chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Chi 2 (10)** | 74.48 | 74.59 | 65.56 | 71.95 | 72.26 | 57.30 | 58.75 |

\*\*\* Statistical significance at 1% level \*\* Statistical significance at 5% level \* Statistical significance at 10% level
The omitted variable categories are: for region, South Asia; for status, Credit union/cooperative; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activities

## Table 5 Regression Analysis: Deposits and Lending Rate

| *Dependent Variable:* Lending Rate | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Independent Variables:* Deposits as Percentage of Asset | | | | | | | |
| | *Eq (1)* | *Eq (2)* | *Eq (3)* | *Eq (4)* | *Eq (5)* | *Eq (6)* | *Eq (7)* |
| Deposits as Percentage of Asset | 0.0055 | 0.0051 | 0.0003 | 0.0008 | 0.0006 | 0.0010 | 0.0009 |
| | (0.60) | (0.56) | (0.03) | (0.08) | (0.06) | (0.11) | (0.10) |
| *CONTROL VARIABLES* | | | | | | | |
| Age Num | -0.005\*\* | -0.0046\*\*\* | | | | | |
| | (-4.69) | (-7.09) | | | | | |
| Age Square | 0.0001 | | | | | | |
| | (1.56) | | | | | | |
| Size of Institution | 0.0005 | -0.0004 | -0.0082\*\*\* | | | | |
| | (0.20) | (-0.18) | (-3.41) | | | | |
| No. of Borrowers | 0.0000\*\* | 0.0000\*\* | 0.0000\*\*\* | 0.0000\* | | | |
| | (2.45) | (2.46) | (2.61) | (1.88) | | | |
| Women Borrowers | 0.0667\*\*\* | 0.0661\*\*\* | 0.0686\*\*\* | 0.0673\*\*\* | 0.0675\*\*\* | | |
| | (4.31) | (4.27) | (4.39) | (4.29) | (4.31) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.82) | (0.82) | (-0.53) | (-0.89) | (-0.59) | (-0.49) | |
| *CATEGORICAL VARIABLES* | | | | | | | |
| Africa | 0.2199\*\*\* | 0.2177\*\*\* | 0.1984\*\*\* | 0.1922\*\*\* | 0.1921\*\*\* | 0.1787\*\*\* | 0.1858\*\*\* |
| | (6.96) | (6.88) | (6.20) | (5.90) | (5.90) | (5.32) | (6.14) |
| East Asia and Pacific | 0.1218\*\*\* | 0.1202\*\*\* | 0.0881\*\*\* | 0.0817\*\*\* | 0.0818\*\* | 0.0793\*\* | 0.0852\*\*\* |
| | (3.82) | (3.76) | (2.74) | (2.50) | (2.50) | (2.34) | (2.70) |
| Eastern Europe and Central Asia | 0.1151\*\*\* | 0.1119\*\*\* | 0.0920\*\*\* | 0.0884\*\*\* | 0.0873\*\*\* | 0.0633\*\* | 0.0708\*\*\* |
| | (4.33) | (4.21) | (3.43) | (3.24) | (3.20) | (2.29) | (3.06) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Latin America and Caribbean | 0.1646*** | 0.1632*** | 0.1232*** | 0.1117*** | 0.1116*** | 0.0958*** | 0.1033*** |
| | (6.61) | (6.54) | (4.99) | (4.48) | (4.48) | (3.75) | (5.07) |
| Middle East and North Africa | 0.1381** | 0.1371** | 0.1221** | 0.0997* | 0.1018* | 0.0844 | 0.0916 |
| | (2.45 ) | (2.43) | (2.13) | (1.72) | (1.76) | (1.41) | (1.58) |
| Banks | 0.1130*** | 0.1127*** | 0.1415*** | 0.1202*** | 0.1247*** | 0.1230*** | 0.1241*** |
| | (3.80) | (3.78) | (4.71) | (4.01) | (4.19) | (3.89) | (4.03) |
| NBFI | 0.1567*** | 0.1543*** | 0.1802*** | 0.1749*** | 0.1761*** | 0.1838*** | 0.1839*** |
| | (6.53) | (6.42) | (7.47) | (7.14) | (7.19) | (7.26) | (7.28) |
| NGO | 0.0857*** | 0.0818*** | 0.0798*** | 0.0818*** | 0.0804*** | 0.0895*** | 0.0886*** |
| | (3.32) | (3.18) | (3.05) | (3.07) | (3.02) | (3.26) | (3.24) |
| Rural Banks | 0.1571*** | 0.1637*** | 0.1543** | 0.1463** | 0.1445** | 0.1526** | 0.1535** |
| | (2.60) | (2.71) | (2.51) | (2.34) | (2.31) | (2.36) | (2.38) |
| Regulated (No) | 0.0778*** | 0.0772*** | 0.0821*** | 0.0879*** | 0.0889*** | 0.0915*** | 0.0921*** |
| | (4.19) | (4.15) | (4.35) | (4.58) | (4.64) | (4.61) | (4.66) |
| Group Lending | -0.0124 | -0.0128 | -0.0138 | -0.0143 | -0.0152 | -0.0160 | -0.0156 |
| | (-0.80) | (-0.82) | (-0.88) | (-0.89) | (-0.95) | (-0.96) | (-0.94) |
| Individual Lending | 0.0145 | 0.0161 | 0.0065 | 0.0036 | 0.0040 | 0.0041 | 0.0042 |
| | (0.85) | (0.95) | (0.38) | (0.20) | (0.23) | (0.22) | (0.23) |
| CPA (No) | 0.0042 | 0.0046 | 0.0052 | 0.0061 | 0.0060 | 0.0037 | 0.0043 |
| | (0.28) | (0.31) | (0.35) | (0.40) | (0.39) | (0.23) | (0.27) |
| Constant | 0.0886 | 0.0958 | 0.1773 | 0.0560 | 0.0552 | 0.1060 | 0.0962 |
| | (1.71) | (1.86) | (3.49) | (1.53) | (1.51) | 2.96 | 3.24 |
| **Wald chi2 (20)** | 256.14 | 252.41 | 196.09 | 177.64 | 174.50 | 144.86 | 145.19 |
| **Prob. > chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **R-sq: Within** | 0.0172 | 0.0174 | 0.0027 | 0.0029 | 0.0014 | 0.0022 | 0.0002 |
| **Hausman Test Results** **Prob>chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Chi 2 (6)** | 44.60 | 43.12 | 37.02 | 37.86 | 37.33 | 24.85 | 20.53 |

*** Statistical significance at 1% level ** Statistical significance at 5% level * Statistical significance at 10% level
The omitted variable categories are: for region, South Asia; for status, Credit union/cooperative; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activities

## Table 6 Regression analysis: Borrowings and Lending Rate

| *Dependent Variable:* Lending Rate | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Independent Variables:* Borrowing as Percentage of Asset | | | | | | | |
| | *Eq (1)* | *Eq (2)* | *Eq (3)* | *Eq (4)* | *Eq (5)* | *Eq (6)* | *Eq (7)* |
| Borrowing as Percentage of Asset | 0.0181** | 0.0175** | 0.0184** | 0.0183** | 0.0181** | 0.0181** | 0.0182** |
| | (2.08) | (2.02) | (2.09) | (2.08) | (2.06) | (2.06) | (2.07) |
| *CONTROL VARIABLES* | | | | | | | |
| Age Num | -0.0065** | -0.0045** | | | | | |

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | (-4.73) | (-7.05) | | | | | |
| Age Square | 0.0001 | | | | | | |
| | (1.63) | | | | | | |
| Size of Institution | -0.0005 | -0.0006 | -0.0082*** | | | | |
| | (0.17) | (-0.22) | (-3.42) | | | | |
| No. of Borrowers | 0.0000** | 0.0000** | 0.0000*** | 0.0000* | | | |
| | (2.48) | (2.48) | (2.64) | (1.91) | | | |
| Women Borrowers | 0.0668*** | 0.0662*** | 0.0687*** | 0.0672*** | 0.0674*** | | |
| | (4.32) | (4.28) | (4.40) | (4.29) | (4.30) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.86) | (0.86) | (-0.49) | (-0.85) | (-0.54) | (-0.45) | |
| *CATEGORICAL VARIABLES* | | | | | | | |
| Africa | 0.2271*** | 0.2245*** | 0.2045*** | 0.1983*** | 0.1981*** | 0.1848*** | 0.1913*** |
| | (7.17) | (7.07) | (6.37) | (6.06) | (6.06) | (5.47) | (6.29) |
| East Asia and Pacific | 0.1243*** | 0.1227*** | 0.0904*** | 0.0841*** | 0.0841*** | 0.0816*** | 0.0871*** |
| | (3.89) | (3.83) | (2.81) | (2.56) | (2.56) | (2.40) | (3.74) |
| Eastern Europe and Central Asia | 0.1163*** | 0.1130*** | 0.0935*** | 0.0897*** | 0.0887*** | 0.0647*** | 0.0715*** |
| | (4.37) | (4.25) | (3.48) | (3.28) | (3.24) | (2.33) | (3.09) |
| Latin America and Caribbean | 0.1686*** | 0.1671*** | 0.1271*** | 0.1154*** | 0.1153*** | 0.0996*** | 0.1064*** |
| | (6.75) | (6.68) | (5.13) | (4.61) | (4.61) | (3.87) | (5.20) |
| Middle East and North Africa | 0.1407** | 0.1396** | 0.1248** | 0.1023* | 0.1043* | 0.0870 | 0.0935 |
| | (2.50) | (2.47) | (2.18) | (1.76) | (1.80) | (1.45) | (1.61) |
| Banks | 0.1123*** | 0.1121*** | 0.1406*** | 0.1192*** | 0.1239*** | 0.1222*** | 0.1232*** |
| | (3.77) | (3.75) | (4.68) | (3.97) | (4.14) | (3.94) | (3.99) |
| NBFI | 0.1508*** | 0.1485*** | 0.1757*** | 0.1703*** | 0.1716*** | 0.1791*** | 0.1793*** |
| | (6.30) | (6.20) | (7.32) | (6.63) | (7.02) | (7.08) | (7.10) |
| NGO | 0.0800*** | 0.0762*** | 0.0756*** | 0.0775*** | 0.0762*** | 0.0852*** | 0.0844*** |
| | (3.11) | (2.97) | (2.90) | (2.91) | (2.87) | (3.10) | (3.08) |
| Rural Banks | 0.1561*** | 0.1629*** | 0.1538** | 0.1458** | 0.1439** | 0.1520** | 0.1529** |
| | (2.58) | (2.69) | (2.50) | (2.32) | (2.30) | (2.34) | (2.36) |
| Regulated (No) | 0.0759*** | 0.0753*** | 0.0809*** | 0.0867*** | 0.0877*** | 0.0903*** | 0.0908*** |
| | (4.10) | (4.05) | (4.29) | (4.52) | (4.58) | (4.54) | (4.59) |
| Group Lending | -0.0124 | -0.0128 | -0.0137 | -0.0143 | -0.0152 | -0.0159 | -0.0156 |
| | (-0.80) | (-0.82) | (-0.87) | (-0.89) | (-0.94) | (-0.96) | (-0.94) |
| Individual Lending | 0.0145 | 0.0163 | 0.0066 | 0.0036 | 0.0041 | 0.0041 | 0.0042 |
| | (0.85) | (0.95) | (0.38) | (0.21) | (0.23) | (0.23) | (0.23) |
| CPA (No) | 0.0042 | 0.0047 | 0.0053 | 0.0062 | 0.0061 | 0.0037 | 0.0043 |
| | (0.28) | (0.31) | (0.35) | (0.40) | (0.39) | (0.23) | (0.27) |
| Constant | 0.0847 | 0.0923 | 0.1704 | 0.0492 | 0.0484 | 0.0993 | 0.0902 |
| | (1.64) | (1.80) | (3.36) | (1.34) | (1.32) | (2.76) | (3.05) |
| **Wald chi2(20)** | 259.81 | 255.98 | 200.04 | 180.89 | 177.61 | 148.04 | 148.38 |
| **Prob. > chi2** | 0.000 | 0.000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **R-sq: Within** | 0.0193 | 0.0194 | 0.0046 | 0.0052 | 0.0032 | 0.0031 | 0.0028 |
| **Hausman Test Results Prob>chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0001 | 0.0000 |
| **Chi 2 (6)** | 35.48 | 35.24 | 27.67 | 21.77 | 32.60 | 22.12 | 26.20 |

\*\*\* Statistical significance at 1% level \*\* Statistical significance at 5% level \* Statistical significance at 10% level

The omitted variable categories are: for region, South Asia; for status, Credit union/cooperative; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activities

## Table 7 Regression analysis: Donation and Lending Rate

| | Eq (1) | Eq (2) | Eq (3) | Eq (4) | Eq (5) | Eq (6) | Eq (7) |
|---|---|---|---|---|---|---|---|
| *Dependent Variable: Lending Rate* | | | | | | | |
| *Independent Variables: Donations as Percentage of Asset* | | | | | | | |
| Donations as Percentage of Asset | -0.0153 | -0.0132 | -0.0094 | 0.0001 | 0.00001 | -0.0018 | -0.0015 |
| | (-0.62) | (-0.53) | (-0.38) | (0.00) | (0.00) | (-0.07) | (-0.06) |
| *CONTROL VARIABLES* | | | | | | | |
| Age Num | -0.0064*** | -0.0045*** | | | | | |
| | (-4.71) | (-7.09) | | | | | |
| Age Square | 0.0001 | | | | | | |
| | (1.60) | | | | | | |
| Size of Institution | 0.0002 | -0.0008 | -0.0084*** | | | | |
| | (0.07) | (-0.32) | (-3.49) | | | | |
| No. of Borrowers | 0.0000** | 0.0000** | 0.0000*** | 0.0000* | | | |
| | (2.46) | (2.47) | (2.62) | (1.86) | | | |
| Women Borrowers | 0.0675*** | 0.0670*** | 0.0695*** | 0.0685*** | 0.0688*** | | |
| | (4.36) | (4.33) | (4.45) | (4.38) | (4.39) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.84) | (0.84) | (-0.52) | (-0.88) | (-0.58) | (-0.48) | |
| *CATEGORICAL VARIABLES* | | | | | | | |
| Africa | 0.2217*** | 0.2193*** | 0.1991** | 0.1929*** | 0.1927*** | 0.1792*** | 0.1860*** |
| | (7.10) | (7.03) | (6.30) | (6.03) | (6.03) | (5.43) | (6.26) |
| East Asia and Pacific | 0.1221*** | 0.1205*** | 0.0883*** | 0.0821** | 0.0821** | 0.0795** | 0.0853*** |
| | (3.87) | (3.81) | (2.78) | (2.55) | (2.55) | (2.39) | (2.74) |
| Eastern Europe and Central Asia | 0.1149*** | 0.1117*** | 0.0924*** | 0.0891*** | 0.0880*** | 0.0635** | 0.0707*** |
| | (4.37) | (4.26) | (3.48) | (3.31) | (3.28) | (2.33) | (3.11) |
| Latin America and Caribbean | 0.1652*** | 0.1638*** | 0.1238*** | 0.1123*** | 0.1123*** | 0.0961*** | 0.1034*** |
| | (6.70) | (6.64) | (5.07) | (4.58) | (4.58) | (3.82) | (5.16) |
| Middle East and North Africa | 0.1385** | 0.1376** | 0.1228** | 0.1003* | 0.1023* | 0.0846 | 0.0915 |
| | (2.49) | (2.27) | (2.17) | (1.76) | (1.80) | (1.43) | (1.60) |
| Banks | 0.1139*** | 0.1138*** | 0.1421*** | 0.1203*** | 0.1248*** | 0.1231*** | 0.1242*** |
| | (3.87) | (3.86) | (4.79) | (4.08) | (4.26) | (4.05) | (4.10) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NBFI | 0.1553*** | 0.1529*** | 0.1802*** | 0.1745*** | 0.1757*** | 0.1835*** | 0.1836*** |
| | (6.58) | (6.49) | (7.63) | (7.30) | (7.36) | (7.43) | (7.44) |
| NGO | 0.0842*** | 0.0802*** | 0.0797*** | 0.0813*** | 0.0800*** | 0.0892*** | 0.0884*** |
| | (3.32) | (3.17) | (3.11) | (3.12) | (3.08) | (3.32) | (3.30) |
| Rural Banks | 0.1570*** | 0.1637*** | 0.1545** | 0.1462** | 0.1444** | 0.1526** | 0.1535** |
| | (2.62) | (2.74) | (2.55) | (2.38) | (2.35) | (2.40) | (2.41) |
| Regulated (No) | 0.0767*** | 0.0761*** | 0.0818*** | 0.0877*** | 0.0888*** | 0.0913*** | 0.0919*** |
| | (4.19) | (4.15) | (4.40) | (4.67) | (4.73) | (4.69) | (4.74 ) |
| Group Lending | -0.0125 | -0.0128 | -0.0138 | -0.0143 | -0.0152 | -0.0160 | -0.0157 |
| | (-0.82) | (-0.84) | (-0.89) | (-0.91) | (-0.96) | (-0.98) | (-0.96) |
| Individual Lending | 0.0146 | 0.0163 | 0.0066 | 0.0036 | 0.0040 | 0.0041 | 0.0042 |
| | (0.87) | (0.97) | (0.39) | (0.21) | (0.23) | (0.23) | (0.23) |
| CPA (No) | 0.0040 | 0.0044 | 0.0052 | 0.0062 | 0.0061 | 0.0037 | 0.0043 |
| | (0.27) | (0.30) | (0.35) | (0.41) | (0.40) | (0.23) | (0.27) |
| Constant | 0.0960 | 0.1032 | 0.1804 | 0.0550 | 0.0542 | 0.1062 | 0.0966 |
| | (1.87) | (2.02) | (3.56) | (1.54) | (1.51) | (3.03) | (3.35) |
| Wald chi2(20) | 260.79 | 257.68 | 200.86 | 183.40 | 180.38 | 149.62 | 149.94 |
| Prob. > chi2 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.0000 | 0.0000 |
| R-sq: Within | 0.0171 | 0.0171 | 0.0028 | 0.0028 | 0.0013 | 0.0030 | 0.0005 |
| Hausman Test Results Prob>chi2 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0001 | 0.0000 | 0.0000 |
| Chi 2 (6) | 46.47 | 46.54 | 39.29 | 39.53 | 39.48 | 23.45 | 20.65 |

*** Statistical significance at 1% level    ** Statistical significance at 5% level * Statistical significance at 10% level

The omitted variable categories are: for region, South Asia; for status, Credit union/cooperative; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activities

## Table 8 Regression analysis: Equity and Cost per Borrower

| | *Dependent Variable: Lending Rate* | | | | | | |
|---|---|---|---|---|---|---|---|
| | *Independent Variables:* Equity as Percentage of Asset | | | | | | |
| | *Eq (1)* | *Eq (2)* | *Eq (3)* | *Eq (4)* | *Eq (5)* | *Eq (6)* | *Eq (7)* |
| Equity as Percentage of Asset | -0.0089 | -0.0093 | -0.0129 | -0.0077 | -0.0086 | -0.0103 | -0.0102 |
| | (-1.06) | (-1.10) | (-1.52) | (-0.92) | (-1.03) | (-1.22) | (-1.21) |
| | *CONTROL VARIABLES* | | | | | | |
| Age Num | -0.0064*** | -0.0045*** | | | | | |
| | (-4.61) | (-6.99) | | | | | |
| Age Square | 0.0000 | | | | | | |
| | (1.52) | | | | | | |
| Size of Institution | -0.0001 | -0.0011 | -0.0089*** | | | | |
| | (-0.04) | (-0.42) | (-3.63) | | | | |
| No. of | 0.0000** | 0.0000** | 0.0000*** | 0.0000* | | | |
| | (2.43) | (2.44) | (2.58) | (1.82) | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Borrowers | | | | | | | |
| Women Borrowers | 0.0665*** | 0.0659*** | 0.0682*** | 0.0671*** | 0.0673*** | | |
| | (4.29) | (4.26) | (4.36) | (4.29) | (4.30) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.85) | (0.85) | (-0.48) | (-0.88) | (-0.58) | (-0.48) | |
| CATEGORICAL VARIABLES | | | | | | | |
| Africa | 0.2220*** | 0.2198*** | 0.2001*** | 0.1931*** | 0.1931*** | 0.1799*** | 0.1869*** |
| | (7.05) | (6.97) | (6.27) | (5.95) | (5.95) | (5.36) | (6.18) |
| East Asia and Pacific | 0.1244*** | 0.1231*** | 0.0921*** | 0.0838*** | 0.0842*** | 0.0821** | 0.0879*** |
| | (3.90) | (3.84) | (2.86) | (2.56) | (2.57) | (2.42) | (2.77) |
| Eastern Europe and Central Asia | 0.1159*** | 0.1129*** | 0.0941*** | 0.0896*** | 0.0886*** | 0.0649** | 0.0723*** |
| | (4.37) | (4.25) | (3.51) | (3.28) | (3.25) | (2.34) | (3.12) |
| Latin America and Caribbean | 0.1658*** | 0.1646*** | 0.1252*** | 0.1124*** | 0.1124*** | 0.0967*** | 0.1042*** |
| | (6.67) | (6.60) | (5.07) | (4.52) | (4.52) | (3.78) | (5.11) |
| Middle East and North Africa | 0.1413** | 0.1405** | 0.1271** | 0.1017* | 0.1038* | 0.0869 | 0.0940 |
| | (2.51) | (2.49) | (2.22) | (1.76) | (1.80) | (1.45) | (1.62) |
| Banks | 0.1159*** | 0.1159*** | 0.1452*** | 0.1214*** | 0.1259*** | 0.1244*** | 0.1255*** |
| | (3.89) | (3.87) | (4.82) | (4.06) | (4.23) | (4.02) | (4.07) |
| NBFI | 0.1561*** | 0.1539*** | 0.1815*** | 0.1752*** | 0.1764*** | 0.1841*** | 0.1842*** |
| | (6.55) | (6.46) | (7.59) | (7.22) | (7.28) | (7.32) | (7.34) |
| NGO | 0.0842*** | 0.0804*** | 0.0802*** | 0.0819*** | 0.0807*** | 0.0897*** | 0.0889*** |
| | (3.29) | (3.15) | (3.09) | (3.10) | (3.06) | (3.28) | (3.26) |
| Rural Banks | 0.1565*** | 0.1629*** | 0.1537** | 0.1455** | 0.1436** | 0.1516** | 0.1525** |
| | (2.59) | (2.70) | (2.51) | (2.33) | (2.30) | (2.34) | (2.36) |
| Regulated (No) | 0.0778*** | 0.0773*** | 0.0833*** | 0.0888*** | 0.0899*** | 0.0927*** | 0.0933*** |
| | (4.21) | (4.17) | (4.42) | (4.65) | (4.71) | (4.67) | (4.72) |
| Group Lending | -0.0128 | -0.0132 | -0.0142 | -0.0146 | -0.0155 | -0.0163 | -0.0159 |
| | (-0.83) | (-0.85) | (-0.90) | (-0.91) | (-0.97) | (-0.98) | (-0.96) |
| Individual Lending | 0.0143 | 0.0158 | 0.0061 | 0.0032 | 0.0035 | 0.0035 | 0.0036 |
| | (0.84) | (0.93) | (0.35) | (0.18) | (0.20) | (0.19) | (0.20) |
| CPA (No) | 0.0044 | 0.0048 | 0.0055 | 0.0063 | 0.0063 | 0.0039 | 0.0046 |
| | (0.29) | (0.32) | (0.36) | (0.41) | (0.41) | (0.25) | (0.29) |
| Constant | 0.1012 | 0.1084 | 0.1895 | 0.0573 | 0.0566 | 0.1077 | 0.0979 |
| | (1.94) | (2.09) | (3.70) | (1.58) | (1.56) | (3.20) | (3.33) |
| **Wald chi2(20)** | 257.62 | 254.07 | 198.71 | 179.15 | 176.13 | 145.96 | 146.28 |
| **Prob. > chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **R-sq: Within** | 0.0181 | 0.0183 | 0.0041 | 0.0039 | 0.0023 | 0.0037 | 0.0032 |
| **Hausman Test Results Prob>chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0001 | 0.0000 |
| **Chi 2 (6)** | 46.64 | 45.83 | 40.02 | 38.88 | 41.16 | 18.15 | 17.34 |

(Based on own calculation)

## Table 9: Regression analysis: Revenue and Lending Rate

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Dependent Variable:** Lending Rate | | | | | | | |
| **Independent Variables:** Revenues as Percentage of Asset | | | | | | | |
| | *Eq (1)* | *Eq (2)* | *Eq (3)* | *Eq (4)* | *Eq (5)* | *Eq (6)* | *Eq (7)* |
| Revenues as Percentage of Asset | -0.0067 | -0.0066 | -0.0105 | -0.0083 | -0.0086 | -0.0107 | -0.0107 |
| | (-0.69) | (-0.69) | (-1.08) | (-0.86) | (-0.89) | (-1.10) | (-1.11) |
| ***CONTROL VARIABLES*** | | | | | | | |
| Age Num | -0.0064*** | -0.0045*** | | | | | |
| | (-4.65) | (-7.02) | | | | | |
| Age Square | 0.0001 | | | | | | |
| | (1.55 ) | | | | | | |
| Size of Institution | 0.0003 | -0.0007 | -0.0083*** | | | | |
| | (0.11) | (-0.26) | (-3.48) | | | | |
| No. of Borrowers | 0.0000** | 0.0000** | 0.0000*** | 0.0000* | | | |
| | (2.45) | (2.46) | (2.61) | (1.87) | | | |
| Women Borrowers | 0.0663*** | 0.0657*** | 0.0679*** | 0.0666*** | 0.0668*** | | |
| | (4.28) | (4.24) | (4.34) | (4.25) | (4.26) | | |
| Population Density | 0.0000 | 0.0000 | -0.0000 | -0.0000 | -0.0000 | -0.0000 | |
| | (0.84) | (0.84) | (-0.49) | (-0.87) | (-0.56) | (-0.46) | |
| ***CATEGORICAL VARIABLES*** | | | | | | | |
| Africa | 0.2215*** | 0.2192*** | 0.1993*** | 0.1929*** | 0.1928*** | 0.1798*** | 0.1865*** |
| | (7.02) | (6.94) | (6.23) | (5.92) | (5.92) | (5.34) | (6.16) |
| East Asia and Pacific | 0.1229*** | 0.1214*** | 0.0898*** | 0.0830** | 0.0831** | 0.0809** | 0.0866*** |
| | (3.85) | (3.79) | (2.79) | (2.53) | (2.54) | (2.38) | (2.73) |
| Eastern Europe and Central Asia | 0.1151*** | 0.1120*** | 0.0928*** | 0.0889*** | 0.0879*** | 0.0674** | 0.0715*** |
| | (4.33) | (4.22) | (3.46) | (3.52) | (3.22) | (2.31) | (3.08) |
| Latin America and Caribbean | 0.1652*** | 0.1639*** | 0.1241*** | 0.1122*** | 0.1121*** | 0.0966*** | 0.1038*** |
| | (6.63) | (6.57) | (5.02) | (4.49) | (4.49) | (3.77) | (5.08) |
| Middle East and North Africa | 0.1384** | 0.1374** | 0.1227** | 0.0998* | 0.1018* | 0.0847 | 0.0915 |
| | (2.46) | (2.43) | (2.14) | (1.72) | (1.75) | (1.41) | (1.57) |
| Banks | 0.1138*** | 0.1136*** | 0.1423*** | 0.1204*** | 0.1250*** | 0.1234*** | 0.1245*** |
| | (3.82) | (3.80) | (4.73) | (4.01) | (4.28) | (3.98) | (4.03) |
| NBFI | 0.1554*** | 0.1532*** | 0.1806*** | 0.1750*** | 0.1762*** | 0.1837*** | 0.1839*** |
| | (6.52) | (6.42) | (7.55) | (7.19) | (7.24) | (7.30) | (7.31) |
| NGO | 0.0842*** | 0.0804*** | 0.0802*** | 0.0819*** | 0.0806*** | 0.0896*** | 0.0888*** |
| | (3.28) | (3.14) | (3.08) | (3.09) | (3.05) | (3.27) | (3.25) |
| Rural Banks | 0.1626*** | 0.1691*** | 0.1633*** | 0.1533** | 0.1517** | 0.1615** | 0.1624** |
| | (2.67) | (2.77) | (2.63) | (2.43) | (2.40) | (2.47) | (2.49) |
| Regulated (No) | 0.0769*** | 0.0764*** | 0.0820*** | 0.0879*** | 0.0889*** | 0.0914*** | 0.0920*** |

|  | (4.16) | (4.12) | (4.35) | (4.59) | (4.65) | (4.61) | (4.66) |
|---|---|---|---|---|---|---|---|
| Group Lending | -0.0126 | -0.0129 | -0.0139 | -0.0145 | -.0153 | -0.0162 | -0.0158 |
|  | (-0.81) | (-0.84) | (-0.89) | (-0.90) | -0.96 | (-0.97) | (-0.95) |
| Individual Lending | 0.0146 | 0.0162 | 0.0065 | 0.0035 | 0.0039 | 0.0040 | 0.0041 |
|  | (0.85) | (0.95) | (0.38) | (0.20) | (0.23) | (0.22) | (0.23) |
| CPA (No) | 0.0042 | 0.0046 | 0.0053 | 0.0062 | 0.0061 | 0.0037 | 0.0043 |
|  | (0.28) | (0.31) | (0.35) | (0.40) | (0.39) | (0.23) | (0.27) |
| Constant | 0.0938 | 0.1008 | 0.1799 | 0.0563 | 0.0554 | 0.1057 | 0.0963 |
|  | (1.82) | (1.96) | (3.55) | (1.55) | (1.52) | (2.96) | (3.27) |
| **Wald chi2(20)** | 256.33 | 252.61 | 196.94 | 177.60 | 174.49 | 145.18 | 145.50 |
| **Prob. > chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **R-sq: Within** | 0.0173 | 0.0175 | 0.0033 | 0.0035 | 0.0019 | 0.0019 | 0.0015 |
| **Hausman Test Results**<br>**Prob>chi2** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.036 | 0.056 |
| **Chi 2 (6)** | 37.73 | 37.16 | 29.97 | 25.61 | 26.00 | 6.64 | 3.64 |

(Based on own calculation)

*** Statistical significance at 1% level

** Statistical significance at 5% level

* Statistical significance at 10% level

The omitted variable categories are: for region, South Asia; for status, Credit union/cooperative; for lending methodology, both (Group and Individual lending; and not regulated and MFI not involved in credit plus activies