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Spring 2012

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# Sustainability of MFIs through Governance Mechanisms

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*A cross-Country Analysis of Regulation on Outreach and Operational Self  
Sufficiency*

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## **Abstract**

Poverty is an age long problem that has been part of mankind ever since civilization and the fight against poverty is as old. There are many efforts to fight poverty of which microfinance is one. One theory to explain prevalence of poverty especially in the age of capitalism is that poor enterprising people cannot lift themselves out of poverty because they lack capital to develop their enterprises. Start up businesses and enterprises commonly start operations with credit support from financial institutions but there are prerequisites to attaining this credit and numerous poor individuals do not possess these prerequisites. Such individuals are referred to as poor and un-bankable.

Microfinance therefore tries to act as a market remedy to this problem. Microfinance is the provision of financial services to individuals with little or no cash income, small businesses or microenterprises that are financially marginalized by the mainstream financial systems. The notion governing microfinance is that when the poor are enabled they can lift themselves out of poverty and therefore it is important to support their enterprises irrespective of their creditworthiness.

Microfinance involves numerous organizations called Microfinance Institutions (MFIs) and they are broadly spread into legal categories like Non-Profit vs. for Profits, Banks, Non Bank Financial Intermediaries, Credit Unions etc. They vary as much in organization and clientele focus and are found largely concentrated in developing nations of the world but not limited to them. Since its inception microfinance has grown in terms of clientele and capital commitment and therefore there is a growing need to understand the state of the industry, the organizations in particular, in terms of their sustainability. This research therefore investigates the sustainability of MFIs through their governance policies, both internal and external.

## **Introduction**

Microfinance institutions function as financial institutions but they are not subject to the same market forces that tend to enforce due diligence on managers of mainstream financial institutions and therefore the question of sustainability is crucial in the microfinance sector. Sustainability of MFIs in general and in this research is defined as the ability of the institutions to be financially self sustaining without compromising their operations. MFIs must focus on a double bottom line in terms of performance whereby they are self-sustaining in both operations and finances in order to achieve their mission of aiding poverty alleviation. Governance of any institution is directly correlated to its performance whereby well governed institutions perform better than those that are not and this is not different with MFIs. This research defines governance as deliberate policies that affect the operations of MFIs and they are classified into external and internal governance mechanisms.

External mechanisms of governance refer to the macro-policies imposed on MFIs to which they have no choice but to comply. External mechanisms are usually as a result of government action intended to control MFIs and their operations and they include regulation and auditing of financial statements. Internal mechanisms of governance refer to micro-policies that individual MFIs choose to adhere to so as to increase their efficiency and performance and they include the institution's board and its characteristics, agent compensation and internal financial practices as indicated by MFI internal variables.

The managerial dilemma therefore is whether governance of MFIs has an impact on their sustainability so as to prescribe appropriate governance policies that will ensure sustainability. In order to better understand its dilemma, the research questions below were formulated to provide a framework in which the dilemma could be investigated:

- Does regulation have an effect on the sustainability of MFIs as measured by Operational Self Sufficiency (OSS) and outreach?
- Does regulation affect different MFIs differently?
- Does the pursuit of sustainability of MFIs lead to mission drift in its outreach?

## **Literature Review Part A (Theoretical Framework):**

Both parts A and B of the literature research for this thesis were done through online databases and journals like Google Scholar, University of Massachusetts Boston Healey Library text, Journal of Microfinance and developmental banks of Africa and Asia. The review is solely based on articles and working papers concerned with governance and sustainability of MFIs.

The literature on sustainability of microfinance through governance is abundant and it consistently points out a few mechanisms that seem to affect the above. It's important to understand the definition of sustainability of microfinance because it subjects the interpretation of the impact of the various mechanisms. In this research we define sustainability in accordance with the duality of the MFI goals in mind i.e. on one hand they strive to attain financial sustainability (Operational Self Sustainability) and on the other to attain a high level of outreach to clients that need their services most. Research has shown that often times these goals are in contradiction of each other as far as attaining them is concerned through governance policies and therefore MFIs continually face a dilemma on which goal to prefer over the other. Depending on the status of the MFI this decision dilemma can greatly affect the whole institution's performance. A review of previous research on the governance of MFIs shows a focus on the same mechanisms of governance as summarized below:

### **External mechanisms:**

The level of government involvement in the governance of microfinance institutions is significant and banking regulations exist in any country that has a banking sector. This regulation can be justified by market failure arising from asymmetric information, market power of institutions and negative externalities and since market failure is not limited to the mainstream commercial markets a case can be made for government involvement in the microfinance sector through imposing regulation on the institutions involved. Regulation therefore is the dominant external mechanism discussed.

Given the importance of regulation in light of possible market failure a regulated MFI is more likely to earn customer trust (Mersland, 2007) which should theoretically increase the number of clients served and hence improve both financial and outreach performance of the institution and hence attaining a higher level of sustainability. However in order for this theory to hold it would mean that there is an observable and consistent difference in the number of clients between regulated and non-regulated institutions. The absence of this would mean that there is no strong relation between the firms' official regulation status and the customer trust and numbers hence nullifying the theoretical relation between regulation and sustainability. Furthermore, the perceived positive impact of regulation on MFIs may be curtailed due the moral hazard problem caused by regulation. Regulation of MFIs includes mandates of insurance on depositor funds and therefore this can lead to a more aggressive and higher risk taking management style with the insurance in mind as a safety net in the event of major losses (O'Hara, 2003). This is important because risk is inherent in the operations of MFIs simply because they deal with low net worth and often un-analyzable clients for credit and this controlling the risk – lending risk in particular is important so as to achieve sustainability. Lastly, regulation often requires standards to be met by the MFIs which include but not limited to technological investment, data security and mandatory fees all which can potentially increase the cost of operation of the institutions and thus necessitate them to require a higher return on their capital which is manifested through higher interest rates on clients or higher disbursed loan minimums. Therefore with the various factors in play regulation is generally considered to have no direct impact on the sustainability of MFIs.

It's important to note that much as regulation doesn't seem to have a direct impact on the sustainability of MFIs, it bears an indirect advantage to the same. This is through the marginal activities that regulated MFIs can take part in that non-regulated ones cannot. An example of this is the ability to take deposits that many countries limit to only regulated institutions in order to ensure safety of clients' deposits (Cull, 2008). This is believed to improve MFI sustainability through operational advantages like increasing its capital base by lending out deposits hence reducing the need for leverage and enforcing due diligence on the part of borrowers

out of interest to protect their stake in the MFI (Simtowe, 2006) in the case of MFIs that require a client to be a depositing member of the institution).

Auditing of financial statements by an external third party is considered another external mechanism of regulating MFIs. This is because most countries require documentation of the financial operations of MFIs but they do not necessarily require this documentation to be a public record. This has created a situation in which MFIs keep their financial and often social performance reports as proprietary information and hence hard for external possible stakeholders to value their operations. Some of the reviewed literature suggests that MFIs stand to gain donor funds, cheaper credit and higher demand for equity (in the case of publically traded MFIs). This effect is attributed to the expectation that auditing will reduce the information asymmetry between managers of the MFI and interested potential stakeholders who are concerned that in the absence of the due diligence market pressures exerted by the mainstream market on mainstream institutions don't exist in the microfinance industry. Due to this reason many MFIs have their financial statement audited and certified by external auditors. Auditing can be an effective external mechanism because it signals to potential investors and donors that the manager complied with the accounting practices and did not misrepresent financial information (Hartarska, 2007).

### **Internal Mechanisms:**

Internal controls are given a heavy weight of importance because due to the undeveloped microfinance sector due to its relative age and the deficiency of market pressure to enforce due diligence on the part of the managers. This implies that there has to be a deliberate action(s) to control the actions of managers and as earlier stated one way of doing so is externally. However given the broad legal statuses of MFIs the external controls may not apply to some institutions and therefore making internal controls not only important but necessary.

The literature suggests that most important of these is the institution's board of directors. Just like any company whereby managers aren't necessarily owners of the resources under their control, MFIs face the



agency problem (Bassem, 2009). The MFI board should act as a controller of the managers and ensure that the policies they undertake are aimed at sustaining the institution and protective of stakeholder objectives. This is very important because MFIs face a double bottom line objective and therefore more often than not they have to sacrifice one objective for another. Despite the consensus on the importance of the MFI board, the literature review revealed different interpretations of components the board structure. For instance, whereas some research supported the theory that MFIs with a large board tend to perform better than those that do not (Bassem, 2009) the directly contradicting view was expressed by others, that MFIs with a large board have worse performance than those that do not (Hartarska, 2007).

The composition of the MFI is considered crucial because it's theorized to have an impact on the sustainability of the MFI. The articles reviewed revealed a consensus that higher board diversity positively affects the performance of the MFI. However there are distinctions made within some articles despite their consensus to the above. Hartarska states that whereas board diversity positively affects sustainability, diversity between board members has different implications in that a board with more local members improves outreach at the expense of OSS while one with more foreign members will improve OSS at the expense of outreach. Therefore going by her research findings persuade MFIs to pursue a balanced board in terms of composition so as to achieve sustainability. In addition to the above, research suggests that there is a positive relationship between the percentages of female board members with sustainability of the institution.

## **Literature Review Part B (Empirical Framework):**

Whereas the impact of internal mechanisms of MFIs is significant and worth investigating, this research doesn't incorporate it further into this literature review due to absence of data. MFIs operate on a broad spectrum and therefore the data that's publically available varies greatly too but information on the internal composition of MFIs is consistently absent due to the MFIs' attitude towards its release. Many of the MFIs keep data pertaining to managers (both demographic and compensation) proprietary and thus there is little to no available data on which to base an observational study. Due to the time and financial constraints faced during this research it was impossible to attain this kind of data at a meaningful scale and thus the compromise to focus on the external mechanisms with selected performance indicators of individual MFIs.

The major external governance mechanism is regulation which is as a result of government action, therefore in order to test the effect of governance policies on the sustainability of MFIs further literature review had to be done so as to develop a framework through which the various variables can be tested based on existing research models. The aim of this part of the literature review was to familiarize me with the most commonly used variables and the methods of analysis so as to aid in the decision of the data and methods selected for the research. Through this I was able to decide on the variables that would be considered in the analysis of my research question as discussed below:

Outreach at its most basic sense is defined as the number of clients that an MFI serves however I define it in this research as the magnitude of the output of a microfinance organization in terms of outreach, percent of female borrowers and the target market. This is because I wanted to investigate the research questions without neglecting the possibility of mission drift by the MFI. First of all the outreach of the MFI would be important to show the participation of the MFI in the sector based on the number of borrowers it supports. In addition to this it's important to keep track of the percentage of women serviced by the MFI because they tend to have a higher burden of attaining access to financial services (Navajas, 2000) especially in the developing nations due to age old cultural influences. Lastly the target market of the MFI reveals both the depth of the MFI and its focus

based on the majority of the borrowers that it services. Looking at these variables together should provide a sufficient framework in which we can determine the effect of governance policies on MFIs while controlling for mission drift; where mission drift refers to the process through which MFIs continually and gradually sacrifice outreach to clients for financial sustainability (Christen, 2000).

The activities of MFIs are beneficial to the poor however existing literature suggests that the time frame of MFI activities affects the above and therefore making sustainability of the MFIs essential for success (Navajas, 2000). Operational Sustainability in this research is defined as the ability of the MFI to cover its operating costs with the operating income it attains. Financial sustainability is the ability of MFIs to cover the costs of funds at the market price and it is usually used in tandem with the operational sustainability to investigate an MFI's overall OSS. However the literature revealed a high level of dispute on the link between financial sustainability and outreach to the poor. Financial self-sufficiency and depth of outreach are not inherently dichotomous. Rather, they have a complex, multidimensional relationship that depends on several factors, both direct and indirect. Moreover, financial self-sufficiency is itself driven by factors that may or may not facilitate deep outreach. The exact relationship between financial self-sufficiency and depth of outreach in a given situation will depend on the way in which all these factors interact with each other (Woller, 2002). One argument is that in order for MFIs to attain their outreach maximization goal, they will have to incur higher transaction costs related to servicing extra clients hence creating an inverse relationship between outreach and financial self sufficiency. Another argument is that financial Self sufficiency is affected by variables like the number of clients served by the MFI as MFIs that attains economies of scale will reduce its costs hence proving more financially sufficient than others that do not have the same advantage. Therefore considering this dispute and inadequate time to analyze it, it is ignored as a variable but I highly encourage others that have the resources to investigate it further and incorporate it into their analysis to do so because it would be a good indicator for prospective stakeholders during MFI evaluation before risking their funds in them.

## Data and Variables:

Microfinance institutions have a focus on a double bottom line in that they aim to attain sustainability and positive social performance and therefore two kinds of data are required. Unfortunately microfinance institutions have for a long time treated their institution data as proprietary and therefore not publically available. This has made it hard to conduct empirical research on their operations. However, this is changing as the institutions realize the benefit of publishing data for public use and research as it increases transparency and attracts funds to support their operations. The data used in this research is solely sourced from the MIX MARKET (<http://www.mixmarket.org/>) which is an online database that collects MFI information. This is the most comprehensive publically available database. The database offers both financial and social performance indicators totaling to 83 variables. The data was extracted on a cross country-cross region basis for all the 83 indicators available from 2000 to 2011. The framework from the empirical framework literature review was then applied on the data in order to segregate useful indicators from those that aren't in respect to this research's questions. The selected indicators were then divided into four categories i.e. Sustainability and Profitability, Asset/Liability Management, Portfolio Quality and Efficiency and Productivity based as categorized by the Consultative Group to Assist the Poor (CGAP) training material on Financial Analysis for Microfinance Institutions. The indicators were further sub-divided into dependent, independent or control variables. Please refer to appendix for the full list of variables and their categorization.

The original data selection from MIX returned 11,104 records and therefore there was a need to reduce the results so as to allow empirical analysis. The criteria used to trim down the records were as follows; first of all the data was controlled by the period of financial data reported. The MIX offered quarterly and annual reporting schedules and for this research only MFIs that reported annual data were considered because it was based on the majority i.e. majority of MFIs reported annually and this control yielded 10,553 records.

*The outreach of the MFI is measured using offices of the MFI, Number of active borrowers, Average loan balance per borrower and Average loan balance per borrower adjusted by GNI per capita as explained below:*

Offices of the MFI are used because we expect to find their number varying directly with the level of outreach of that particular MFI. Given the characteristics of the clientele of MFIs like hindered mobility due to transportation costs and concentration in rural areas in their countries, it's important to have a high degree of accessibility so as to provide adequate support to the clientele in addition to the loans provided to them. Therefore if the conclusion that regulation has no effect on outreach and sustainability of an MFI as read in the literature review, we then expect to see this reflected in the statistical model, and if this is not so then reverse result would mean that regulation does have an impact on outreach of MFIs through their ability to deliver services and support to clients by utilizing their offices.

The number of active borrowers is the number of individuals or entities who currently have an outstanding balance with the MFI or are primarily responsible for repaying any portion of the loan portfolio (Mix Market). In the case of a single borrower holding multiple loans that borrower is counted only once. This variable allows the model to test for the impact of regulation on the number of active borrowers that an MFI serves. The result will enable us to determine whether there is a negative effect on the outreach of an MFI as a result of regulation as the literature suggests happens as a result of MFIs experiencing higher costs of servicing a client. Therefore if regulation has a negative impact on the outreach of MFIs then we expect to observe this relationship in the statistical model.

The average loan balance per borrower and average loan balance per borrower adjusted by GNI variables are used to measure the effect of regulation on outreach of the MFI. Average loan balance per borrower provides a measure of size of the "typical" loan of the MFI hence its clientele while the average loan balance per borrower adjusted by GNI segments the clientele into economic class based on the Gross National Income of the country in which the MFI operates. This is in an effort to test whether attaining operational self sufficiency through regulation actually compels MFIs to mission drift. As earlier explained in the literature review, mission drift is when MFIs opt to serve comparatively wealthier clients as opposed to the poorest because of the pressure to improve their financial and performance statements. The effect of regulation in this

relationship is that it requires such statements to be made public record this accessible to both potential donors and creditors to the MFI. In this model we test for the relationship between regulation and outreach for regulated and operationally self sufficient MFIs against those that are regulated but not operationally self sufficient.

*The sustainability of the MFI in terms of its operations is measured by the calculated Operational Self Sufficiency (OSS) ratio of the MFI, Return on Assets (ROA), Return on Equity (ROE), and Debt to Equity ratio (Debt\_Equity) as explained below:*

The OSS ratio of an MFI measures its ability to cover all its operating expenses (including impairment loan expenses) with its operating revenue. Therefore, an MFI with a ratio of one or higher is considered to be sustainable because it has either enough or more than enough revenue from operations to sustain those operations. Such an MFI is considered sustainable because it doesn't require continuous large external capitals to operate. The literature suggests that there is no relation between regulation and OSS and therefore if this is true then the model should reveal the same.

Return of Assets is a measure of profitability based on the assets (both equity and debt) held by the MFI. Just like the mainstream financial businesses the return on assets is an important signal on how well managers are utilizing the assets at their disposal to generate income. This is therefore an important variable to test whether MFIs that are regulated have a better utilization of their assets when regulated as opposed to not being regulated. The rationale behind the above reasoning is that since microfinance as an industry doesn't have strong market forces to compel managers to perform at their utmost best and they may therefore become inefficient in utilizing the MFIs assets in earning income. Therefore if regulation requires publicizing their financial and performance statements then it acts as the exogenous factor that motivates them to manage the assets prudently hence attaining OSS in the long run. Therefore if regulation has impact on the ROA of the MFI then it has an impact on the OSS of the institution.

Return on Equity is a measure of profitability based on the shareholder equity of the MFI. Traditionally, MFIs have operated on a strict capitalization mix of debt and donations for various reasons but this is changing as more of them continue to attract equity and in the case of Latin America rapidly become publically traded companies. Whereas ROA demonstrates the level of profitability of the MFI, it doesn't give a comparable base due to the wide variance between asset bases of the different MFIs. Therefore in order to be able to compare this profitability we shall rely on the ROE. The literature review suggests that the MFI stands to benefit from equity because it will reduce its cost of capital hence reducing its cost of loans and thereby attracting more borrowers and attaining OSS in the long run. However, potential shareholders only invest when they believe there is a return to be earned and therefore regulatory requirements to have audited financial statements are expected to enhance the MFI's financial profile and thereby attracting more equity. Therefore the expectation is that regulated MFIs will have higher equity which enables higher earnings and therefore higher ROE

Debt to equity is a measure of liability management and is used to measure what amount of debt and equity is used to finance assets. As earlier mentioned, the MFI is evolving from heavy debt capitalization towards a mix of debt and equity. The measure of sustainability by ROA returns the utilization of the assets irrespective of the liability funding them and given the consideration of an ROE impact on the ROA, it's only prudent to consider the effect of debt through the debt to equity. The literature suggests that regulation enables MFIs attract more equity capital which in the long run leads to OSS so this implies that regulation reduces the debt to equity ratio of MFIs and this should be observed in the statistical model.

*(Please see appendix for summary statistics and correlation coefficients of the model variables)*

## **Methodology:**

This research bases on selected literature concerning the sustainability of MFIs through governance and therefore its inquiry is based on questions that arose from the literature review was opposed to formulated hypotheses. Therefore observational statistics was utilized to determine the relationship between regulation and the chosen variables and the significance levels. Three independent models are utilized to test the above relationship and they are as follows:

The first model is to test the relationship and significance of regulation on the outreach and sustainability of the MFIs measured by the variables as explained in the data and variables section of this paper. The model holds the variables regulated, assets and deposits as independent and compares them their relationship to dependent outreach variables (offices, number of active borrowers) and sustainability variables (OSS, ROA, ROE, Debt\_Equity). The variable regulated in this model is dichotomous where regulated is 1 and non-regulated is 0 and all other variables are continuous. Given the variation of MFIs as a result of their regions of operations (continents and countries) this model is run for all individual regions, with the variables kept as is so as to investigate the results categorized by region. The significance test is done by simple linear regression for each of the dependent variables.

The second model is an exploratory model designed to investigate the relationship between regulated MFIs only and the dependent variables as listed above. This model is meant to explore the results of model one categorized by the current legal status of the MFI. It's important to have this model because MFIs vary greatly from each other in terms of their operations based on the legal status they identify with. Therefore this model is meant to investigate the impact of MFI's legal status on the relationship of regulation and the dependent variables from model one. In addition to the dependent variables from model one, two variables Cost per borrower and Cost per loan are added to investigate the effect of regulation across legal statuses. The variable regulated is dichotomous as like in model one, variable current legal status is categorical and all other variables are continuous. The significance test is done by compared means and one-way ANOVAs.



The third model is designed to investigate the relationship between regulation, operational self sufficiency and mission drift in the MFI's outreach. The independent variables are regulated and OSS as measured by sustainability. Sustainability is when the MFI achieves an OSS ratio greater than or equal to 1 (OSS) and an MFI with an OSS ratio less than 1 is not (Non-OSS). Therefore in this model the variable regulated is equal to 1 and sustainability is dichotomous such that OSS is equal to 1 and Non-OSS is equal to 0. Mission drift in outreach is measured by the average loan balance per borrower and the target market of the MFI is measured by the average loan balance per borrower adjusted by GNI. The significance is tested by compared means and one way ANOVAs.

**Results:**

**Model 1 – Full Model**

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	-.005	-.075***	-.004	.037***	.015	.017
	(.1.561)	(7633.267)	(.019)	(.003)	(.368)	(2.026)
Assets	.778***	1.174***	.015	.059	.002	-.013
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Deposits	-.393***	-.716***	-.009	-.037	-.001	.012
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)

Significance: \*\*\*1%, \*\*5%, \*10%

The overall model testing the relationship between regulation, assets and deposits of the MFI and its outreach as measured by the number of offices is significant. However, regulation is not significant as a variable to explain the model as shown above. The model is explained by assets in that the more assets an MFI has then the higher its outreach is. Since regulation is not significant we agree with the literature that regulation has no relation to the outreach of MFIs as measured by the number of offices in general.

The overall model testing the relationship between regulation, assets and deposits of the MFI and its outreach as measured by the number of active borrowers is significant. Regulation which is the primary independent variable of interest is significant as shown by the model results above. Regulated has a negative standardized coefficient at the 1% significance level and therefore this means that regulated MFIs tend to have a lower number of active borrowers as compared to non-regulated ones. This is in line with the literature review which states that regulating MFIs may in fact increase their costs per borrower and therefore leading to fewer loans created and lower number of active borrowers.

The overall model testing the relationship between regulation, assets and deposits of the MFI and its internal sustainability as measured by its ROA is significant. Regulation which is the primary independent variable of interest is also significant as shown by the model results above. Regulated has a positive standardized coefficient at the 1% significance level and therefore this means that regulated MFIs tend to have a

higher ROA as regulation will increase ROA. Given that the literature links ROA to sustainability this result suggests that regulation will increase the operational self sufficiency of the MFI.

The overall models testing the relationship between regulation, assets and deposits of MFIs and OSS, ROE and Debt to Equity are not significant.

### Model 1 - Africa

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	.252**	-.024	-.149	-.250**	-.126	-.193
	(1.862)	(2155.837)	(.116)	(.057)	(.107)	(.625)
Assets	.091	.391***	.105	.228**	-.105	.039
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Deposits	.003	-.049	.028	n/a	n/a	-.055
	(.010)	(11.090)	(.000)	n/a	n/a	(.002)

### Model 1 – East Asia and Pacific

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	-.085***	-.020***	.100***	.096***	.049	.146***
	(3.898)	(8145.251)	(.051)	(.008)	(.042)	(.608)
Assets	.748***	1.158***	-.067	-.039	-.035	-.036
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Deposits	-.048	-.282***	-.014	.012	.019	.044
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)

### Model 1 – Eastern Europe and Central Asia

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	-.032	.065***	-.018	.060*	.045	.026
	(1.318)	(826.213)	(.046)	(.009)	(.050)	(.407)
Assets	.627***	.725***	-.103***	-.081**	-.014	.131***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Deposits	.007	-.006	.023	.046	.005	-.021
	(.022)	(13.810)	(.001)	(.000)	(.002)	(.007)

### Model 1 – Latin America and the Caribbean

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	.045*** (1.164)	-.028** (3316.124)	.032 (.020)	.061*** (.008)	.066*** (.071)	.018 (1.386)
Assets	1.911*** (.000)	2.278*** (.000)	.238*** (.000)	.254*** (.000)	.089 (.000)	-.027 (.000)
Deposits	-1.254*** (.000)	-1.674*** (.000)	-.234*** (.000)	-.243*** (.000)	-.084 (.000)	.047 (.000)

### Model 1 – Middle East and North Africa

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	-.113*** (7.434)	-.064** (5581.064)	-.076 (.404)	-.165** (.011)	.028 (.627)	-.071 (1.589)
Assets	.833*** (.000)	.875*** (.000)	-.023 (.000)	-.070 (.000)	.023 (.000)	.042 (.000)
Deposits	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

### Model 1 – South Asia

Variable	Offices	Num_Act_Borrowers	OSS	ROA	ROE	Debt_Equity
Regulated	-.114*** (13.682)	-.064*** (19178.248)	.003 (.025)	.050 (.008)	-.061 (.268)	.050 (12.369)
Assets	1.005*** (.000)	1.035*** (.000)	.258*** (.000)	.172*** (.000)	-.012 (.000)	-.035 (.000)
Deposits	-.184*** (.000)	-.128*** (.000)	-.145*** (.000)	-.079 (.000)	-.005 (.000)	.025 (.000)

#### FOR ALL MODELS ABOVE

Significance: \*\*\*1%, \*\*5%, \*10%

n/a: Variable deleted as it bears direct relation to the dependent variable or the dependent variable is constant

Model 1 is evaluated for all the different regions so that we can investigate the particular contribution of each region to the full model and variation is expected because of the variation of the countries in which the MFIs operate as shown above.

From the results above, it's easy to observe the different relationships of the same variables. Compared to the overall model in which regulated was not significant, it is significant and positively affects the outreach of the MFI as measured by the number of offices in African and Latin America and the Caribbean while it is

significant but affects outreach measured by the number of offices of the MFI negatively. Only the region of Eastern Europe and Central Asia conforms to the overall model results by having a non significant result of regulation on the outreach of the MFI.

The overall model shows the relationship between regulation and the outreach of the MFIs as measured by the number of active borrowers as significant and regulated MFIs register a lower number of active borrowers. This is in line with the regional models of East Asia and the Pacific, Latin America and the Caribbean, Middle East and North Africa and South Asia. Only Eastern Europe and Central Asia demonstrates a significant relationship of regulation to outreach as measured by the number of active borrowers that is positive. Africa as a region demonstrates a model that's not statistically significant.

The overall model shows the relationship between regulation and the sustainability of the MFIs as measured by the operational self sufficiency ratio as not statistically significant and therefore in line with the literature review. The regional models of Africa, Eastern Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa and South Asia are in line with the results of the overall model i.e. there is no significant relationship. East Asia and the Pacific is the only region that showed a statistically significant relationship between regulation and OSS of the MFI and the relationship is a positive one.

The overall model shows the relationship between regulation and sustainability as measured by the ROA as significant and its positive meaning that regulated MFIs are observed to have a higher ROA. The regional analysis for East Asia and the Pacific, Eastern Europe and Central Asia and Latin America and the Caribbean shows a similar relationship as the overall model. However, regions Africa and Middle East and North Africa show a significant relationship between regulation and OSS as measured by the ROA but with a negative relation. South Asia is the only region in which there is no statistical significance between the above variables.

The overall model shows the relationship between regulation and sustainability as measured by the ROE as non significant and therefore implying that there is no relation between regulation and a higher ROE and

eventual sustainability in the long run. All regional analyses conform to this result with the exception of Latin America and the Caribbean where the relationship is both significant and positive.

The overall model shows the relationship between regulation and sustainability as measured by the debt to equity as not statistically significant. However, the regional analyses of East Asia and the Pacific, Eastern Europe and Central Asia and Latin America and the Caribbean show regulation as statistically significant relationship and its positive implying that in these regions sustainability is positively affected by regulation.

**Model 2 (see appendix for detailed data tables)**

**Select Variables of Regulated MFIs with Statistically Significant Mean Differences**

Variable	Bank	Credit Union/Cooperative	NBFI	NGO	Rural Bank
Cost_borrower	Higher	Lower	Higher	Lower	Lower
Num_Act_Borrowers	Higher	n/a	n/a	Lower	Lower
Offices	Higher	n/a	n/a	Lower	Lower
OSS	Higher	n/a	n/a	Lower	Higher
ROA	n/a	n/a	n/a	Lower	Higher

*n/a: Model doesn't achieve statistical mean difference*

Given the observed differences of the relationship between regulation and the outreach and sustainability of MFIs across different region, an exploratory test is necessary to investigate whether the impact of regulation leads to different results on MFIs based on their legal status. Just as MFIs are geographically diverse they are very diverse in the legal status which determines their operations. The literature review suggests that regulation can lead to higher costs for the MFI and therefore hamper its outreach and sustainability and therefore specific dependent variables have been chosen to investigate such possible results. The costs incurred by regulated MFIs will be captured in the cost per borrower as this variable includes the operating expenses of the MFI and therefore is chosen to track the same costs. In all models of the MFI current legal statuses the mean difference between regulated and non-regulated MFIs is statistically significant. Other variables significant within the legal status of the MFI are also considered to explain differences between regulated and non-regulated within the category but not between across categories.

Across categories only Banks and Non Bank Financial Intermediaries exhibit a higher cost per borrower when regulated than when not. All other categories have the non-regulated MFIs with a higher cost per borrower. Assuming that the regulatory costs are significant contributors to this variable then this provides a foundation upon which we can dispute the impact of regulatory costs on the cost of the MFI and eventually the cost per borrower. On the other hand, Banks exhibited higher outreach as measured by the number of active borrowers and by offices in addition to exhibiting higher sustainability as measured by the OSS when regulated as opposed to not being regulated implying that regulation has no negative impact on MFIs operating as Banks. Rural Banks however are observed to achieve higher OSS when regulated as opposed to not being regulated but at the same time they exhibit lower outreach as measured by number of active borrowers and by number of offices thus implying that regulation of Rural Banks increases their sustainability at the expense of outreach. NGOs exhibit lower measures of both sustainability and outreach when regulated as opposed to being regulated. They exhibit lower values for all variables in the model. The models for Credit Unions and NBFIs provide insight only to the cost per borrower and they exhibit higher values for this variable. All other values do not achieve statistically different means.

**Model 3**

**Case Processing Summary for Mission Drift**

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Av_Loan_Bal_Borrower * Sustainability	5081	84.8%	909	15.2%	5990	100.0%
Av_Loan_Bal_Borrower_GNI * Sustainability	5084	84.9%	906	15.1%	5990	100.0%
Num_Act_Borrowers * Sustainability	5099	85.1%	891	14.9%	5990	100.0%

**Report on Means of Variables by Category of Sustainability**

Sustainability		Av_Loan_Bal_Borrower	Av_Loan_Bal_Borrower_GN I	Num_Act_Borrowers
0	Mean	1030.03	.94	51703.44
	N	1412	1413	1419
	Std. Deviation	2219.894	2.081	440426.387
1	Mean	1508.81	1.17	57526.95
	N	3669	3671	3680
	Std. Deviation	4406.698	3.649	256709.857
Total	Mean	1375.76	1.10	55906.32
	N	5081	5084	5099
	Std. Deviation	3928.893	3.290	318618.588

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Av_Loan_Bal_Borrower	Between Groups	233726578.960	1	233726578.960	15.184	.000
	Within Groups	78182164300.371	5079	15393219.984		
	Total	78415890879.332	5080			
Av_Loan_Bal_Borrower_GNI	Between Groups	54.966	1	54.966	5.081	.024
	Within Groups	54977.835	5082	10.818		
	Total	55032.800	5083			
Num_Act_Borrowers	Between Groups	34730724760.500	1	34730724760.500	.342	.559
	Within Groups	517503038033286.7 50	5097	101530907991.620		
	Total	517537768758047.2 50	5098			



As shown in model 2 regulation has different effects on different MFIs as categorized by their legal statuses and with the exception of Banks all other significant results show that regulation has a negative impact on the MFI's outreach and simultaneously improving the sustainability of the MFI as measured by OSS. Therefore, the question of mission drift arises in that given the inverse impact of regulation on outreach and OSS a trade off exists and thus creating a need to sacrifice one for the other. In this model we attempt to investigate whether institutions that are regulated and have achieved operational self sufficiency significantly exhibit lower outreach as measured by the average loan balance per borrower and the average loan balance per borrower adjusted by GNI. These two variables will indicate the level of poverty of the MFIs' clientele and the targeted segment of the MFI respectively.

As the model results shown above indicate, there is a significant difference in the means of the variables across regulated MFIs that are either sustainable (1) or non-sustainable (0). Sustainable MFIs show a characteristic of both higher average loan balance per borrower and the average loan balance per borrower adjusted for GNI thus demonstrating mission drift.

## Conclusions

Model 1 shows that regulation has no relation to the outreach and sustainability of the MFI as measured by number of offices and OSS, ROE and Debt to Equity respectively. However regulation will negatively affect the number of active borrowers that an MFI services and therefore there is no expectation for increased social performance of the MFI as a result of regulation. On the other hand, regulation has a significant and positive relation on the ROA of the MFI but no significant relation with the ROE and Debt to Equity. This implies that the source of funding for the assets isn't directly affected by the regulatory status of the MFI and therefore MFIs should be able to attain sustainability through prudent management without regulation. This follows from the literature review that states manager performance (in this case measured by ROA) varying directly with the level of financial transparency of the MFI which regulation enforces. MFIs therefore can be unregulated and financially transparent and achieve operational sustainability without sacrificing their outreach.

The regional tests based on model 1 show that only African and Latin America and the Caribbean MFIs improve their outreach as measured by the number of offices that the MFI operates when regulated and therefore they are the only regions in which regulation may be suitable to increase outreach. However given the negative effect of regulation on the number of active borrowers in these regions, this divergence from the overall model could be explained by the specific regulatory procedures in these regions. For example, regulation in Africa mainly focuses on a tier system whereby different regulatory policies are exerted on different MFIs based on criteria like legal status and size. Therefore the increase in outreach coupled with the reduction in the number of active borrowers could be an effect of improper classification of the level of regulation of the source data in the MIX market database given that regulated is a dichotomous variable (Yes/No).

Model 2 shows that there is a different impact of regulation on OSS and outreach of MFIs based on their legal statuses and therefore its impact will largely depend on the dominant legal status among the MFIs. Since only Banks and NBFIs exhibit costs per borrower when regulated this means that their structure of business

affects the impact of regulation. Banks and NBFIs are typically not limited to microfinance and therefore tend to be larger in both assets base and staff numbers. Since regulation requires internal checks and balances of the MFI, the magnitude of these institutions leads to their higher costs per borrower. NGO performance is hindered by regulation in all variables observed and this can be attributed to the profile of the institutions. The majority of NGOs operating in microfinance are foreign as evidenced by the increasing amount of cross-border funding from developed to developing nations and thus such institutions tend to have a governing structure that's linear across all markets of operation. Since regulation is an external control enforced by governments, there is divergence between the regulatory demands and the NGO operational strategy hence the consistently lower results when regulated. Rural Banks are predominantly operated either by the government or as parasatal organizations (due to their focus on rural agriculture that is the backbone of most developing nations' economies) and thereby making external supervision important. Generally speaking governments in developing nations face rampant corruption and therefore programs like microfinance often fall victim to financial mismanagement and this is catalyzed if the MFI has no obligation to report its financial statements to the public. In addition, mismanagement is rampant in these countries which can lead to poor utilization of resources available to the MFI. Therefore with regulation in place to scrutinize these activities we expect lower costs per borrower and higher OSS and ROA as shown by the model.

Model 3 shows that regulated MFIs that achieve OSS tend to have a clientele that holds large average loan balances which can be an indication that they are serving relatively wealthier individuals as opposed to the poorest of the poor. The high transaction cost of maintaining loans of small amounts is one reason as to why the poor cannot borrow from the mainstream financial institutions as such institutions try to minimize transaction costs. MFIs can follow the same practice if they focus heavily on achieving OSS at the expense of the clientele served. It's important to note that the model shows an insignificant difference between the means of the number of active borrowers between regulated and operationally self sufficient institutions and those that aren't. This is as a result of the MFI exhibiting mission drift based on the clientele economic group as opposed to the number of clients served because reducing the latter would work against its objective to achieve sustainability.

Therefore MFIs that experience mission drift will have almost as many number of active borrowers as the rest but in a comparably better off target market of clients that can afford to hold larger loan balances which would reduce the MFI's transactional costs per loan against a steady volume of loans hence increasing its financial performance and OSS. This is strong evidence of mission drift.

**Limitations:**

I believe that this paper does a lot in investigating the effects of regulation on the outreach and sustainability of MFIs but there is more that can be done to make it better than what it has to offer presently. The first limitation is that due to lack of access to the internal mechanisms of MFI control, this paper largely focuses on regulation and therefore misses out on the impact of the former. MFIs continue to keep a lot of the internal characteristics data proprietary and therefore future research should be planned with adequate time and financial resources to gain access to such data. The second limitation of this paper is that the data used for analysis is solely sourced from the MIX market database and therefore there are no continuous exogenous variables that can segregate results based on the variations of the macroeconomic conditions of the countries or regions in which MFIs operate. Just as the regional analysis yielded different results from the overall model in the first model, exogenous macroeconomic conditions could probably have a significant effect on the results.

## Abbreviations:

- MFIs - Microfinance Institutions
- NBFIs - Non Bank Financial Intermediary
- NGOs - Non Government Organization
- OSS - Operational Self Sufficiency
- ROA - Return on Assets
- ROE - Return on Equity

## Helpful links

- MIX Market: <http://www.mixmarket.org/>
- MIX Market Glossary: <http://www.mixmarket.org/about/faqs/glossary>
- MIX Market Frequently Asked Questions concerning variables and calculations of ratios:  
<http://www.mixmarket.org/about/faqs#calculations>

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**Appendix:**

**List of Countries in which MFI Data Was Extracted By Region**

#	Africa	East Asia and the Pacific	Eastern Europe and Central Asia	Latin America and The Caribbean	Middle East and North Africa	South Asia
1	Angola	Cambodia	Albania	Argentina	Egypt	Afghanistan
2	Benin	China, People's Republic of	Armenia	Belize	Iraq	Bangladesh
3	Burkina Faso	East Timor	Azerbaijan	Bolivia	Jordan	Bhutan
4	Burundi	Fiji	Bosnia and Herzegovina	Brazil	Lebanon	India
5	Cameroon	Indonesia	Bulgaria	Chile	Morocco	Nepal
6	Central African Republic	Laos	Croatia	Colombia	Palestine	Pakistan
7	Chad	Malaysia	Georgia	Costa Rica	Sudan	Sri Lanka
8	Congo, Democratic Republic of the	Papua New Guinea	Hungary	Dominican Republic	Syria	
9	Congo, Republic of the	Philippines	Kazakhstan	Ecuador	Tunisia	
10	Cote d'Ivoire (Ivory Coast)	Samoa	Kosovo	El Salvador	Yemen	
11	Ethiopia	Thailand	Kyrgyzstan	Grenada		
12	Gabon	Tonga	Macedonia	Guatemala		
13	Gambia, The	Vanuatu	Moldova	Haiti		
14	Ghana	Vietnam	Mongolia	Honduras		
15	Guinea		Montenegro	Jamaica		
16	Guinea-Bissau		Poland	Mexico		
17	Kenya		Romania	Nicaragua		
18	Liberia		Russia	Panama		
19	Madagascar		Serbia	Paraguay		
20	Malawi		Slovakia	Peru		
21	Mali		Tajikistan	Saint Lucia		
22	Mozambique		Turkey	Suriname		
23	Namibia		Ukraine	Trinidad and Tobago		
24	Niger		Uzbekistan	Uruguay		
25	Nigeria			Venezuela		
26	Rwanda					
27	Senegal					
28	Sierra Leone					
29	South Africa					
30	South Sudan					
31	Swaziland					
32	Tanzania					
33	Togo					
34	Uganda					
35	Zambia					
36	Zimbabwe					



Summary Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Assets	10216	.00	4732197926.00	32864549.8202	152244332.77144
Av_Loan_Bal_Borrower	9763	0	171473	1193.38	3537.595
Av_Loan_Bal_Borrower_GNI	9719	0	113	.80	2.535
Cost_per_Borrower	7613	0	179116	245.29	2666.668
Cost_per_Loan	4412	0	997	164.89	162.620
Debt_Equity	9860	-3567	21050	7.89	229.953
Deposits	7116	.00	8472837222.00	24247624.8897	206430203.21364
Num_Act_Borrowers	9833	.00	8340623.00	56716.1371	358571.16563
Offices	6333	0	994	28.96	67.250
OSS	9634	-1	81	1.17	1.147
Regulated	10418	0	1	.57	.494
ROA	8060	-113	1	-.02	1.350
ROE	8057	-1059	169	-.18	15.415
Sustainability	9461	0	1	.71	.456
Valid N (listwise)	4216				

Correlations

Variable		Assets	Av_Loan_Bal_Borrower	Av_Loan_Bal_Borrower_GNI	Cost_per_Borrower	Cost_per_Loan	Debt_Equity	Deposits	Num_Act_Borrowers
Assets	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	10216							
Av_Loan_Bal_Borrower	Pearson Correlation	.090**	1						
	Sig. (2-tailed)	.000							
	N	9579	9763						
Av_Loan_Bal_Borrower_GNI	Pearson Correlation	.025*	.465**	1					
	Sig. (2-tailed)	.013	0.000						
	N	9540	9713	9719					
Cost_per_Borrower	Pearson Correlation	.004	.105**	.067**	1				
	Sig. (2-tailed)	.705	.000	.000					
	N	7605	7604	7560	7613				
Cost_per_Loan	Pearson Correlation	.080**	.632**	.456**	.925**	1			
	Sig. (2-tailed)	.000	0.000	.000	0.000				
	N	4407	4407	4369	4407	4412			
Debt_Equity	Pearson Correlation	-.002	-.003	-.003	.001	-.006	1		
	Sig. (2-tailed)	.857	.771	.751	.918	.690			
	N	9858	9298	9259	7595	4406	9860		
Deposits	Pearson Correlation	.861**	.080**	.052**	.004	.115**	.003	1	
	Sig. (2-tailed)	0.000	.000	.000	.745	.000	.832		
	N	6995	6679	6634	5704	4386	6833	7116	
Num_Act_Borrowers	Pearson Correlation	.554**	-.031**	-.028**	-.011	-.119**	-.002	.333**	1
	Sig. (2-tailed)	0.000	.003	.005	.339	.000	.851	.000	
	N	9634	9763	9719	7609	4409	9329	6721	9833

Variable		Assets	Av_Loan_Bal_Borrower	Av_Loan_Bal_Borrower_GNI	Cost_per_Borrower	Cost_per_Loan	Debt_Equity	Deposits	Num_Act_Borrowers	Offices	OSS	Regulated	ROA	ROE	Sustainability
Offices	Pearson Correlation	.438**	-.056**	-.035**	-.020	-.143**	.002	.280**	.614**	1					
	Sig. (2-tailed) N	.000 6217	.000 6265	.006 6219	.146 5493	.000 4338	.886 619	.000 6238	0.000 6286	6333					
OSS	Pearson Correlation	.003	.025*	.017	.021	-.044**	.003	.003	.006	.002	1				
	Sig. (2-tailed) N	.789 9622	.016 9134	.102 9096	.062 7604	.004 4410	.745 960	.803 6741	.552 9165	.863 6169	963				
Regulated	Pearson Correlation	.116**	.074**	.142**	.055**	.129**	-.010	.087**	-.002	.057**		1			
	Sig. (2-tailed) N	.000 10098	.000 9667	.000 9624	.000 7575	.000 4407	.332 976	.000 7009	.810 9734	.000 6279	.415 954	10418			
ROA	Pearson Correlation	.007	.007	.007	-.933**	-.096**	.000	.005	.005	.011	.007		1		
	Sig. (2-tailed) N	.554 8060	.517 7824	.550 7783	0.000 7463	.000 4397	.986 804	.725 6079	.646 7841	.395 5757	.529 805		8002	8060	
ROE	Pearson Correlation	.005	.006	.006	-.603**	.001	-.029**	.004	.003	.007	.001	.013	.556**	1	
	Sig. (2-tailed) N	.663 8057	.592 7820	.618 7779	0.000 7454	.933 4399	.010 805	.733 6084	.771 7837	.571 5761	.933 805	.239 8000	0.000 8040		8057
Sustainability	Pearson Correlation	.068**	.060**	.033**	-.046**	-.070**	-.011	.058**	.037**	.035**	.288**	.033**	.540**		1
	Sig. (2-tailed) N	.000 9441	.000 8986	.002 8990	.000 7469	.000 4326	.292 942	.000 6565	.000 9015	.007 6039	.000 944	.002 9386	0.000 7898	.003 78	9461

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Model 2

**Case Processing Summary**

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Cost_Borrower * Bank	4271	71.3%	1719	28.7%	5990	100.0%
Cost_Loan * Bank	2450	40.9%	3540	59.1%	5990	100.0%
Num_Act_Borrowers * Bank	5512	92.0%	478	8.0%	5990	100.0%
Offices * Bank	3539	59.1%	2451	40.9%	5990	100.0%
OSS * Bank	5450	91.0%	540	9.0%	5990	100.0%
ROA * Bank	4564	76.2%	1426	23.8%	5990	100.0%
ROE * Bank	4562	76.2%	1428	23.8%	5990	100.0%
Debt_Equity * Bank	5562	92.9%	428	7.1%	5990	100.0%
Cost_Borrower *	4271	71.3%	1719	28.7%	5990	100.0%
Credit_Union_Cooperative						
Cost_Loan * Credit_Union_Cooperative	2450	40.9%	3540	59.1%	5990	100.0%
Num_Act_Borrowers *	5512	92.0%	478	8.0%	5990	100.0%
Credit_Union_Cooperative						
Offices * Credit_Union_Cooperative	3539	59.1%	2451	40.9%	5990	100.0%
OSS * Credit_Union_Cooperative	5450	91.0%	540	9.0%	5990	100.0%

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
ROA * Credit_Union_Cooperative	4564	76.2%	1426	23.8%	5990	100.0%
ROE * Credit_Union_Cooperative	4562	76.2%	1428	23.8%	5990	100.0%
Debt_Equity *	5562	92.9%	428	7.1%	5990	100.0%
Credit_Union_Cooperative						
Cost_Borrower * NBF	4271	71.3%	1719	28.7%	5990	100.0%
Cost_Loan * NBF	2450	40.9%	3540	59.1%	5990	100.0%
Num_Act_Borrowers * NBF	5512	92.0%	478	8.0%	5990	100.0%
Offices * NBF	3539	59.1%	2451	40.9%	5990	100.0%
OSS * NBF	5450	91.0%	540	9.0%	5990	100.0%
ROA * NBF	4564	76.2%	1426	23.8%	5990	100.0%
ROE * NBF	4562	76.2%	1428	23.8%	5990	100.0%
Debt_Equity * NBF	5562	92.9%	428	7.1%	5990	100.0%
Cost_Borrower * NGO	4271	71.3%	1719	28.7%	5990	100.0%
Cost_Loan * NGO	2450	40.9%	3540	59.1%	5990	100.0%
Num_Act_Borrowers * NGO	5512	92.0%	478	8.0%	5990	100.0%
Offices * NGO	3539	59.1%	2451	40.9%	5990	100.0%
OSS * NGO	5450	91.0%	540	9.0%	5990	100.0%
ROA * NGO	4564	76.2%	1426	23.8%	5990	100.0%
ROE * NGO	4562	76.2%	1428	23.8%	5990	100.0%

Continued

**Case Processing Summary**

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Debt_Equity * NGO	5562	92.9%	428	7.1%	5990	100.0%
Cost_Borrower * Rural_Bank	4271	71.3%	1719	28.7%	5990	100.0%
Cost_Loan * Rural_Bank	2450	40.9%	3540	59.1%	5990	100.0%
Num_Act_Borrowers * Rural_Bank	5512	92.0%	478	8.0%	5990	100.0%
Offices * Rural_Bank	3539	59.1%	2451	40.9%	5990	100.0%
OSS * Rural_Bank	5450	91.0%	540	9.0%	5990	100.0%
ROA * Rural_Bank	4564	76.2%	1426	23.8%	5990	100.0%
ROE * Rural_Bank	4562	76.2%	1428	23.8%	5990	100.0%
Debt_Equity * Rural_Bank	5562	92.9%	428	7.1%	5990	100.0%

Table 1: Cost\_Borrower Cost\_Loan Num\_Act\_Borrowers Offices OSS ROA ROE Debt\_Equity \* Bank

Bank		Cost_Borrower	Cost_Loan	Num_Act_Borrowers	Offices	OSS	ROA	ROE	Debt_Equity
.00	Mean	200.17	164.45	40648.6462	27.63	1.1716	.01	.10	6.3428
	N	3642	2073	4729	2986	4686	3892	3892	4796
	Std. Deviation	520.235	155.943	211302.37067	60.024	.73285	.124	1.928	98.66392
1.00	Mean	379.97	290.15	153696.7190	59.49	1.1059	.01	.15	3.4907
	N	629	377	783	553	764	672	670	766
	Std. Deviation	468.109	218.302	654942.29717	96.989	.31911	.081	1.125	48.42935
Total	Mean	226.65	183.79	56707.5434	32.61	1.1624	.01	.11	5.9500
	N	4271	2450	5512	3539	5450	4564	4562	5562
	Std. Deviation	516.783	173.059	317379.77899	68.127	.69032	.119	1.832	93.36644

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Cost_Borrower	Between Groups	17339798.572	1	17339798.572	65.914	.000
	Within Groups	1123025778.574	4269	263065.303		
	Total	1140365577.146	4270			
Cost_Loan	Between Groups	5040220.518	1	5040220.518	180.635	.000
	Within Groups	68305975.564	2448	27902.768		
	Total	73346196.082	2449			
Num_Act_Borrowers	Between Groups	8585156044150.313	1	8585156044150.313	86.553	.000
	Within Groups	546537455736593.500	5510	99190100859.636		
	Total	555122611780743.800	5511			
Offices	Between Groups	473551.217	1	473551.217	105.031	.000
	Within Groups	15947135.266	3537	4508.661		
	Total	16420686.483	3538			
OSS	Between Groups	2.838	1	2.838	5.960	.015
	Within Groups	2593.850	5448	.476		
	Total	2596.687	5449			
ROA	Between Groups	.036	1	.036	2.530	.112
	Within Groups	64.491	4562	.014		
	Total	64.527	4563			
ROE	Between Groups	1.333	1	1.333	.397	.529
	Within Groups	15304.996	4560	3.356		
	Total	15306.328	4561			
Debt_Equity	Between Groups	5372.705	1	5372.705	.616	.432
	Within Groups	48471492.625	5560	8717.894		
	Total	48476865.330	5561			

**Table 2: Cost\_Borrower Cost\_Loan Num\_Act\_Borrowers Offices OSS ROA ROE Debt\_Equity \* Credit\_Union\_Cooperative**

Credit_Union_Cooperative		Cost_Borrower	Cost_Loan	Num_Act_Borrowers	Offices	OSS	ROA	ROE	Debt_Equity
.00	Mean	233.03	178.36	66479.4828	32.88	1.1605	.01	.10	6.4748
	N	3492	2127	4466	3022	4381	3707	3700	4464
	Std. Deviation	561.689	173.990	350751.66661	69.377	.68292	.124	1.398	88.27536
1.00	Mean	198.05	219.54	14985.2859	31.02	1.1704	.01	.14	3.8161
	N	779	323	1046	517	1069	857	862	1098
	Std. Deviation	221.574	162.582	58374.89798	60.339	.72015	.095	3.063	111.72198
Total	Mean	226.65	183.79	56707.5434	32.61	1.1624	.01	.11	5.9500
	N	4271	2450	5512	3539	5450	4564	4562	5562
	Std. Deviation	516.783	173.059	317379.77899	68.127	.69032	.119	1.832	93.36644

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Cost_Borrower	Between Groups	779662.166	1	779662.166	2.921	.088
	Within Groups	1139585914.980	4269	266944.464		
	Total	1140365577.146	4270			
Cost_Loan	Between Groups	475551.636	1	475551.636	15.976	.000
	Within Groups	72870644.446	2448	29767.420		
	Total	73346196.082	2449			
Num_Act_Borrowers	Between Groups	2247283034214.935	1	2247283034214.935	22.397	.000
	Within Groups	552875328746530.0 60	5510	100340350044.742		
	Total	555122611780745.0 00	5511			
Offices	Between Groups	1529.209	1	1529.209	.329	.566
	Within Groups	16419157.274	3537	4642.114		
	Total	16420686.483	3538			
OSS	Between Groups	.086	1	.086	.180	.671
	Within Groups	2596.602	5448	.477		
	Total	2596.687	5449			
ROA	Between Groups	.019	1	.019	1.327	.249
	Within Groups	64.508	4562	.014		
	Total	64.527	4563			
ROE	Between Groups	1.214	1	1.214	.362	.548
	Within Groups	15305.115	4560	3.356		
	Total	15306.328	4561			
Debt_Equity	Between Groups	6229.453	1	6229.453	.715	.398
	Within Groups	48470635.877	5560	8717.740		
	Total	48476865.330	5561			

Table 3: Cost Borrower Cost Loan Num Act Borrowers Offices OSS ROA ROE Debt Equity \* NBF1

NBF1		Cost_Borrower	Cost_Loan	Num_Act_Borrowers	Offices	OSS	ROA	ROE	Debt_Equity
	Mean	210.50	190.04	52690.1885	33.59	1.1542	.01	.11	5.8008
.00	N	2534	1338	3310	2022	3322	2747	2747	3378
	Std. Deviation	322.314	177.883	334350.63809	65.784	.65593	.111	2.017	100.69973
	Mean	250.23	176.27	62746.3465	31.30	1.1753	.01	.10	6.1807
1.00	N	1737	1112	2202	1517	2128	1817	1815	2184
	Std. Deviation	710.193	166.840	289976.91014	71.130	.74080	.130	1.509	80.74443
	Mean	226.65	183.79	56707.5434	32.61	1.1624	.01	.11	5.9500
Total	N	4271	2450	5512	3539	5450	4564	4562	5562
	Std. Deviation	516.783	173.059	317379.77899	68.127	.69032	.119	1.832	93.36644

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Cost_Borrower	Between Groups	1626758.168	1	1626758.168	6.099	.014
	Within Groups	1138738818.978	4269	266746.034		
	Total	1140365577.146	4270			
Cost_Loan	Between Groups	115109.081	1	115109.081	3.848	.050
	Within Groups	73231087.001	2448	29914.660		
	Total	73346196.082	2449			
Num_Act_Borrowers	Between Groups	133721202884.655	1	133721202884.655	1.328	.249
	Within Groups	554988890577859.700	5510	100723936584.004		
	Total	555122611780744.300	5511			
Offices	Between Groups	4515.494	1	4515.494	.973	.324
	Within Groups	16416170.989	3537	4641.270		
	Total	16420686.483	3538			
OSS	Between Groups	.577	1	.577	1.211	.271
	Within Groups	2596.110	5448	.477		
	Total	2596.687	5449			
ROA	Between Groups	.000	1	.000	.015	.901
	Within Groups	64.526	4562	.014		
	Total	64.527	4563			
ROE	Between Groups	.087	1	.087	.026	.872
	Within Groups	15306.241	4560	3.357		
	Total	15306.328	4561			
Debt_Equity	Between Groups	191.387	1	191.387	.022	.882
	Within Groups	48476673.943	5560	8718.826		
	Total	48476865.330	5561			



Table 4: Cost\_Borrower Cost\_Loan Num\_Act\_Borrowers Offices OSS ROA ROE Debt\_Equity \* NGO

NGO		Cost_Borrower	Cost_Loan	Num_Act_Borrowers	Offices	OSS	ROA	ROE	Debt_Equity
	Mean	245.51	194.50	61024.7024	33.85	1.1728	.01	.13	5.1637
.00	N	3576	2097	4637	3022	4590	3845	3846	4687
	Std. Deviation	549.533	177.947	339642.20184	71.994	.63687	.107	1.851	79.68358
	Mean	129.61	120.20	33829.0674	25.36	1.1069	-.02	.01	10.1618
1.00	N	695	353	875	517	860	719	716	875
	Std. Deviation	276.212	122.801	150452.97541	37.629	.92325	.168	1.724	146.29214
	Mean	226.65	183.79	56707.5434	32.61	1.1624	.01	.11	5.9500
Total	N	4271	2450	5512	3539	5450	4564	4562	5562
	Std. Deviation	516.783	173.059	317379.77899	68.127	.69032	.119	1.832	93.36644

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Cost_Borrower	Between Groups	7816463.107	1	7816463.107	29.463	.000
	Within Groups	1132549114.038	4269	265296.115		
	Total	1140365577.146	4270			
Cost_Loan	Between Groups	1667809.122	1	1667809.122	56.960	.000
	Within Groups	71678386.960	2448	29280.387		
	Total	73346196.082	2449			
Num_Act_Borrowers	Between Groups	544420344991.312	1	544420344991.312	5.409	.020
	Within Groups	554578191435753.200	5510	100649399534.619		
	Total	555122611780744.500	5511			
Offices	Between Groups	31762.705	1	31762.705	6.855	.009
	Within Groups	16388923.778	3537	4633.566		
	Total	16420686.483	3538			
OSS	Between Groups	3.149	1	3.149	6.616	.010
	Within Groups	2593.538	5448	.476		
	Total	2596.687	5449			
ROA	Between Groups	.708	1	.708	50.581	.000
	Within Groups	63.819	4562	.014		
	Total	64.527	4563			
ROE	Between Groups	8.990	1	8.990	2.680	.102
	Within Groups	15297.339	4560	3.355		
	Total	15306.328	4561			
Debt_Equity	Between Groups	18419.743	1	18419.743	2.113	.146
	Within Groups	48458445.587	5560	8715.548		
	Total	48476865.330	5561			

Table 5: Cost\_Borrower Cost\_Loan Num\_Act\_Borrowers Offices OSS ROA ROE Debt\_Equity \* Rural\_Bank

Rural_Bank	Cost_Borrower	Cost_Loan	Num_Act_Borrowers	Offices	OSS	ROA	ROE	Debt_Equity
Mean	239.06	193.42	61921.5306	35.29	1.1510	.00	.10	5.9423
.00 N	3840	2165	4906	3104	4821	4065	4063	4923
Std. Deviation	541.743	178.087	335907.29014	71.538	.72535	.125	1.934	99.21398
Mean	116.08	110.68	14496.6172	13.48	1.2498	.03	.16	6.0088
1.00 N	431	285	606	435	629	499	499	639
Std. Deviation	134.800	102.633	27578.74826	28.762	.29679	.037	.473	6.57539
Mean	226.65	183.79	56707.5434	32.61	1.1624	.01	.11	5.9500
Total N	4271	2450	5512	3539	5450	4564	4562	5562
Std. Deviation	516.783	173.059	317379.77899	68.127	.69032	.119	1.832	93.36644

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Cost_Borrower	Between Groups	5861196.716	1	5861196.716	22.055	.000
	Within Groups	1134504380.430	4269	265754.130		
	Total	1140365577.146	4270			
Cost_Loan	Between Groups	1723824.135	1	1723824.135	58.919	.000
	Within Groups	71622371.947	2448	29257.505		
	Total	73346196.082	2449			
Num_Act_Borrowers	Between Groups	1213120809142.542	1	1213120809142.542	12.067	.001
	Within Groups	553909490971601.250	5510	100528038288.857		
	Total	555122611780743.800	5511			
Offices	Between Groups	181428.659	1	181428.659	39.516	.000
	Within Groups	16239257.823	3537	4591.252		
	Total	16420686.483	3538			
OSS	Between Groups	5.435	1	5.435	11.427	.001
	Within Groups	2591.252	5448	.476		
	Total	2596.687	5449			
ROA	Between Groups	.383	1	.383	27.249	.000
	Within Groups	64.144	4562	.014		
	Total	64.527	4563			
ROE	Between Groups	1.602	1	1.602	.477	.490
	Within Groups	15304.726	4560	3.356		
	Total	15306.328	4561			
Debt_Equity	Between Groups	2.502	1	2.502	.000	.986
	Within Groups	48476862.828	5560	8718.860		
	Total	48476865.330	5561			