Profits and Poverty: The Impact of Profit Status on the Microfinance Industry

Kevin Hogan

Professor Erica Field, Faculty *Advisor*

Author may be reached for questions at kth5@duke.edu. Kevin Hogan graduated with a BS with Distinction in Economics with a concentration in Finance and a certificate in Market and Management Studies from Duke University in May 2013 and will be working as a business analyst with Deloitte Consulting in New York City.

Duke University
Durham, North Carolina
2013

Acknowledgements

I would like to thank Professor Erica Field for all of the advice and guidance she has provided throughout this process. I am also extremely grateful towards Professor Marjorie McElroy and my classmates in Econ 495 and Econ 496 for all of the invaluable feedback that they have provided over the past year.

Abstract

Microfinance is the practice of providing small, collateral free loans to the poor. While the microfinance industry was initially comprised of predominantly non-profit institutions, a shift towards for-profits has emerged. This paper examines the effects of changes in for-profit concentration on the microfinance industry. First, an economic model for the activity of non-profit firms is established. Empirical data from microfinance institutions (MFIs) is then analyzed in the context of this model. Findings indicate that for-profit MFIs serve more borrowers, serve wealthier borrowers, and do not provide lower quality loans than non-profit MFIs. There is also evidence that economic models developed to understand non-profit decision-making might not apply to the microfinance industry.

Glossary

MFI: Microfinance Institution
MIX: Microfinance Information Exchange
ROA : Return on Assets
NGO : Non-governmental organization
GDP: Gross Domestic Product
FDI: Foreign Direct Investment
USD: United States Dollars
GNI: Gross National Income
IMF: International Monetary Fund

JEL Classification: L3, L 31, L33, G21
Keywords: Microfinance, microfinance institutions, non-profits, profit status

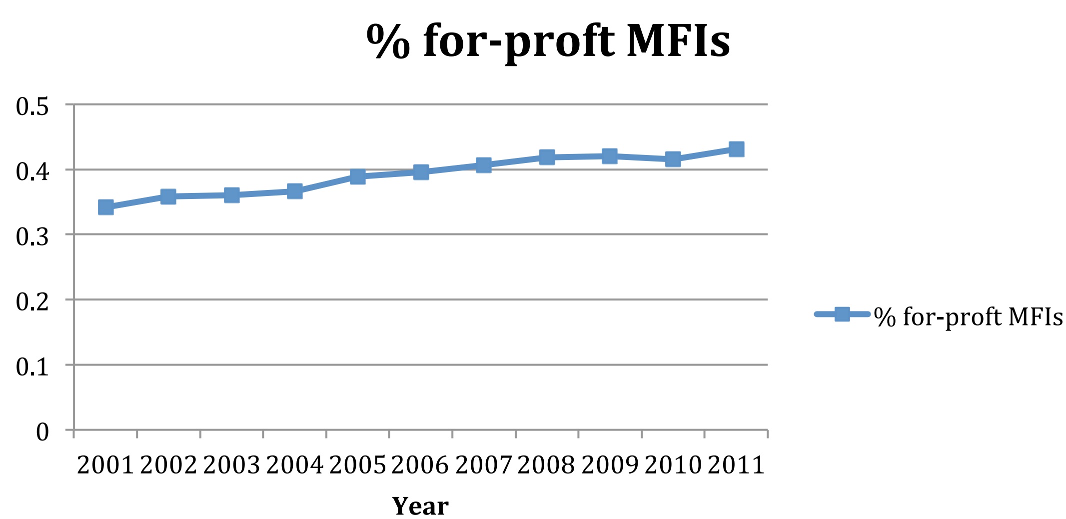
I. Introduction and Background

Microfinance is the practice of providing loans, along with other basic financial services, to the very poor in an effort to help them achieve economic self-sustainability and remove themselves from poverty. Since those stuck in poverty often lack collateral and would be unprofitable customers for traditional banks, most do not have access to financial services. Microfinance institutions (MFIs) have sprung up to fill in this gap. MFIs provide small loans to the poor that generally do not require collateral and rely on methods such as community support groups and social capital to achieve high repayment rates (de Quidt et al 2012). The industry is large and growing globally, but it appears that the industry has only tapped into a portion of the existing demand for these financial services. While estimates vary significantly, from 40%-80% in 2007, all agree that a significant portion of the populations in developing economies still lack access to formal financial services (World Bank 2007). To meet this untapped demand, many MFIs have adopted a for-profit model that they claim will allow them to expand more rapidly and make a larger dent in the fight against poverty. Critics disagree, arguing that earning profits from the poor represents a shift away from the true mission of microfinance. It is thus important to understand the impact that changes in the profit status of MFIs have on the industry as a whole.

The beginnings of the microfinance industry are often associated with Muhammad Yunus and his Grameen Bank (meaning village bank in Bengali). Mr. Yunus worked as an economics professor in Chittagong University in Bangladesh. His involvement with microfinance began in 1976, when he became aware of the issues facing a number of women living in a nearby village. These women worked as self-employed seamstresses and they required outside funding to purchase the materials they need to sew clothing. Since they were unable to access traditional credit sources, they were forced to borrow from local loan sharks. The interest rates that they faced from these loans were so high, that the women were unable to make any profit from their activities. Yunus intervened by loaning them a small amount of his own money, which allowed the women to invest in materials that they needed to begin to run profitable businesses (Yunus 1999).

While the industry was initially comprised of predominantly non-profit institutions such as the Grameen Bank, a shift towards commercialization has emerged in the past decade. See figure 1 below for trends in the global percentage of MFI's with for-profit status. The percentage of for-profit MFIs increased from 34% in 2001 to 43% in 2011.

Figure 1: Global percentage of MFIs with for-profit status, 2001-2011

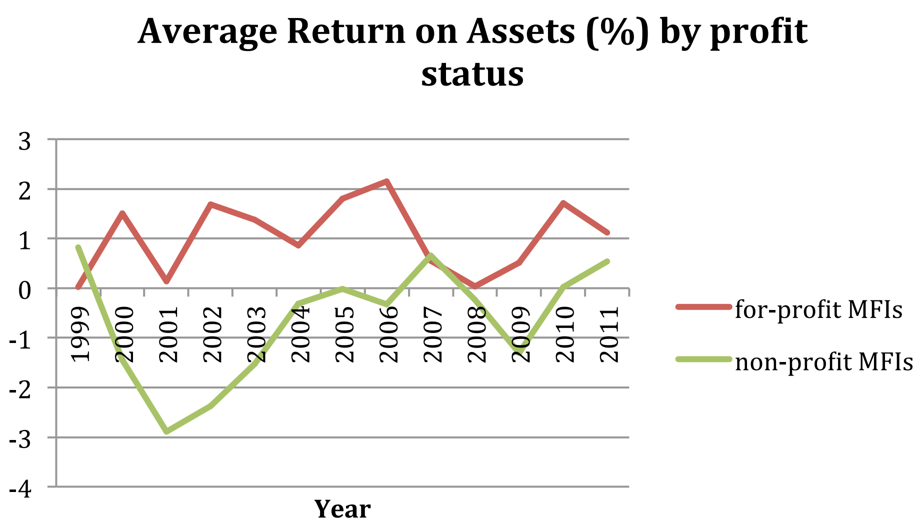


(Data obtained from *Microfinance Information Exchange*, January 2013)

This trend has been underscored by several high profile IPOs by MFIs across the globe. Those who have switched to a for-profit model argue that profits must be earned to allow their institutions to be self-sustaining and to attract the investor capital that will be needed to reach the scale needed to fulfill the latent demand that exist for their microloans. There is evidence for this as the amount of commercial funding for microfinance has increased in leaps and bounds, for example growing from 4.9 billion dollars in 2003 to 7.3 billion in 2005 (The Economist 2007). Many non-profit leaders argue, however, that the shift towards commercialization has endangered the social mission of MFIs and will lead them to seek higher profits at the expense of the poor borrowers that they are claiming to serve. Mr. Yunus has been among the most outspoken critics of commercial microfinance. In response to the initial public offering of Compartamos, a large Mexican MFI, he stated that microfinance should be, "protecting poor people from moneylenders, not creating new ones" (The Economist 2008).

An important point to understand is that the difference between for-profit and non-profit institutions is not their ability to earn profits. In the microfinance industry, profitability actually varies significant amongst both types of institutions, with many non-profits that have revenues exceeding costs and many for-profits losing money. See figure 2 below for trends in the average profitability (as measured by return on assets (ROA), which is equal to net income/ average assets) of both for-profit and non-profit MFIs globally from 1999 to 2011. The average ROA for for-profit MFIs during this period is 1.07% while the average ROA for non-profit MFIs is -0.35%.

Figure 2: Average Return on Assets for MFIs globally by profit status, 1999-2011



(Data obtained from *Microfinance Information Exchange*, January 2013)

The difference between non-profits and for-profits is rather what they are allowed to do with any profits that they generate. For-profits are able to disburse any profits that they earn to the owners of the company while non-profits must reinvest any profits back into the organization. While it may seem economically irrational for a founder of an enterprise to constrain themselves in such a way, there are a number of reason one might choose to found a company as a non-profit. One reason is that they want to signal to potential donors that funds will not be diverted away from the main activities of the organization (Glaeser and Shleifer 2001). Additionally there are a number of ways in which non-profits might subject to different rules then for-profit companies. For example, in many countries, non-profits receive a variety of tax breaks, but are unable to raise capital in equity markets (Lakdawalla and Philipson 1998).

This paper examines the economic impact of for-profit MFIs on the microfinance industry. These results will then be analyzed in the context of a broader economic theory about the nature of for-profit and non-profit organizations. Section II will outline the current literature on the relevant aspects of microfinance. Section III will establish a general economic theory about the activity of non-profit organizations to create a context for the results that are discussed in this paper. Section IV will discuss the data sources used and Section V will present the empirical specification that the analysis will be based on. The results of this analysis will be presented and discussed in the context of the economic theory in Section VI. Section VII will offer concluding remarks and propose avenues for further research.

II. Review of Relevant Microfinance Literature

As microfinance is a fairly young industry and the entry of for-profit lenders into the fray an even more recent event, the economics literature on the subject is somewhat limited. There are, however, a number of papers that have addressed the inherent conflict between the commercial and the social objectives of MFIs.

Murdoch (1999,2000) addressed what he refers to as the “win-win” argument advanced by the proponents of micro-finance. The central idea of this argument is that the MFIs that best practice sound banking will have the most extensive outreach, allowing them to pursue financial sustainability and poverty reduction simultaneously. This win-win has the added benefit of removing the need for government subsidies, which had hampered previous attempts at poverty reduction by removing the incentives to achieve economic competitiveness.

There are several practices that can help MFIs to achieve a win-win scenario. One of these is group lending. Ghatak (1999) showed that the peer selection process involved with forming lending groups can improve repayment rates and improve the welfare of the borrowers. The group structure also creates a system of peer monitoring that uses social pressures to increase repayment rates and encourages borrowers to pursue safer actions. MFIs can also use dynamic incentives, generally involving the promise of increasingly large loans in the future conditional upon timely repayment. Finally, MFIs have found ways to replace traditional loan collateral with things such as shared insurance pools for members of the lending group.

Murdoch found that a few MFIs had used at least some of these practices to achieve the win-win scenario. While this group constituted a set of best practices for the industry, there was no evidence that other MFIs had emulated their success. Murdoch pointed to a number of flaws in the theoretical basis of the win-win argument. One important issue with this argument is that while raising interest rates may not have a large impact on the demand for microloans, it may effect which groups of people are demanding those loans. Murdoch also cited the need for additional empirical analysis on the matter.

As comprehensive data about MFIs became more available, researchers began conducting more empirical studies related to this win-win tradeoff. Cull et al (2008) used data obtained for the Microfinance Information Exchange (see section IV below for a description of this data source) to seek answers for a number of key questions about microfinance institutions. First, they found that nongovernmental organizations (NGOs), which tend to be non-profits, serve more people, but have a lower share of the total assets. Microfinance banks, which are generally for-profit tend to have more assets, but serve fewer customers. Additionally, for-profit status does not equal profitability, as most of the MFIs that are profitable actually have non-profit status. Finally, they found that average loan sizes, scaled by Gross

National Income (GNI) per capita, vary significantly across different types of MFIs, with microfinance banks having larger average loan sizes than NGOs.

Ghatak et al (2012) also made use of this data to examine the welfare effects of profit status and market power of MFIs. They created economic models based around the interest rates charged to borrowers and the social capital that borrowers put at risk by defaulting on loans. Separate simulations were then run under a variety of conditions, including a monopolist for-profit lender, a competitive marketplace, and a large non-profit lender. Their findings indicate that in the monopoly scenario, the lender could exploit the borrowers' social capital to raise interest rates and lower their welfare. Results for the competitive marketplace and the non-profit scenarios produced similar results for borrower welfare, however, indicating that the removal of market power mitigates that negative impact that a for-profit lender could have on borrowers' welfare.

There have also been attempts to create economic models for the decision-making process of non-profit firms. A seminal model was developed by Joseph Newhouse (1970) to explain non-profit decisions in the context of hospitals. See Section III below for a more detailed explanation of this non-profit theory.

This paper attempts to advance the discussion on the tensions between the commercial and social interests of MFIs by examining the performance of non-profit and for-profit lenders in the context of the broader economic theory. The results from this paper will also give insight into whether general non-profit theories apply to the microfinance industry.

III. Theoretical Model for Non-Profit Institutions

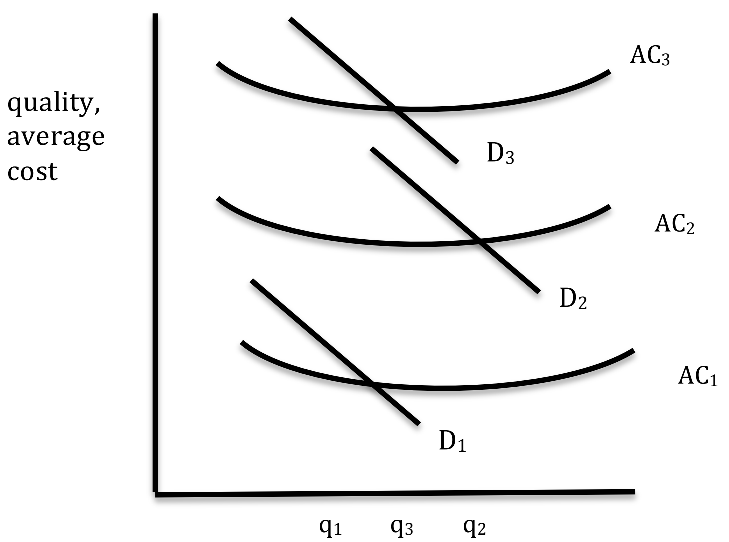
This paper will draw upon a theoretical model for non-profit firms developed for hospitals (Newhouse 1970). In this model, non-profit managers make decisions with the interest of maximizing two variables: quantity and quality. Since the services provided by a non-profit institution are presumed to be beneficial in some sense, it follows that these institutions would desire to provide these services to as many people as possible. Providing high quality service is also important to non-profits because it is beneficial to their customers, makes it easier to attract outside funding, and increases the prestige of the managers and the institution.

In this model it is assumed that there are a certain set of variables that would determine the quality of services provided by the institution. The values that these variables can take constitute a set of quality vectors, with each vector having an overall level of quality and an average cost associated with it. For a given level of average cost, the non-profit manager will choose the vector that produces the highest quality. Thus, the only way to achieve a higher level of quality is to increase average costs. Since each level of costs has a particular maximum quality associated with it and changing cost is the only way to move to a different level of quality, quality is equivalent to average cost in this model. Thus, varying the level of quality, one can trace out a series of average cost curves.

There will also be a demand curve that is unique for each particular level of quality (as quantity demanded will depend on the quality of the services offered). The non-profit manager will choose to produce at the point where the average cost and demand curves intersect, creating an equilibrium quantity for that level of quality/cost, as illustrated in figure 3-a. If the non-profit manager improves quality by accruing additional costs, the manager's average cost curve will shift up, and consumer demand will also increase. Depending on the relative movements of these two curves, the equilibrium quantity may increase or decrease. As quality is increased, if there is a point at which further increases in quality decrease the equilibrium quantity, then non-profit managers must make a tradeoff between quantity and quality. If this tradeoff exists, then there will be an efficient frontier along which non-profit managers can choose to produce, according to their preferences, as illustrated in figure 3-b.

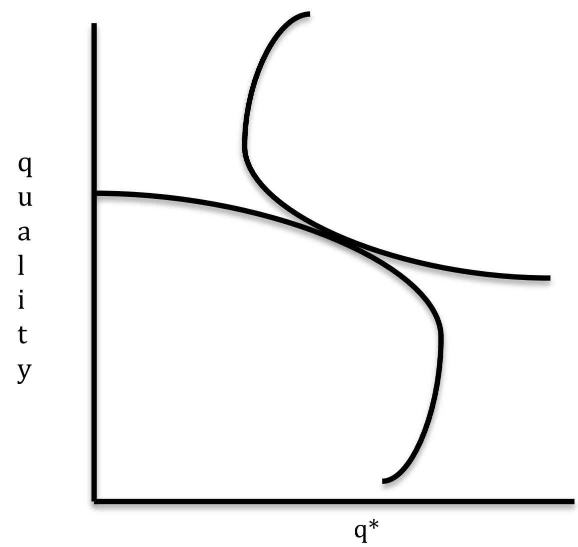
See figures 3-a and 3-b for a graphical representation of this model. In figure 3-a, the AC curves represent average cost/quality, the D curves represent the demand that corresponds to that particular level of quality, while the points q represent the quantities that will be produced by the non-profit at that level of quality, given their desire to achieve lowest cost production. Figure 3-b shows a representation of the production frontier along which non-profits may produce and a sample indifference curve to demonstrate how a firm's preferences influence at which point along the frontier they produce, which will be at q* in this case. Figures 3-a and 3-b are adapted from Newhouse (1970).

Figure 3-a: Movements in Average Cost, Demand, and Quantity



Quantity

Figure 3-b: Quantity/Quality Frontier



Quantity

Newhouse notes one major similarity and one major difference between this model and the traditional model of a profit-maximizing decision maker. The main similarity is that in both cases, the outcome will involve least cost production. This is because the non-profit decision maker is incentivized to produce at the point where marginal revenues and costs are equal and to keep costs as low as possible. Any profit earned can then be reinvested to reach a higher level of quality. Thus, non-profit and profit-maximizing managers should make similar decisions at a given level of quality.

The main difference between the non-profit model and the traditional profit-maximizing model deals with providing lower quality services. For-profit institutions have an incentive to provide services to any customers that would be profitable to serve. Thus, if there are segments of the population that demand lower quality services, for-profit managers would choose to provide those lower quality services as long as it is profitable to do so. Non-profit managers in the Newhouse model, however, would not necessarily choose to provide these lower quality services. This is due to the non-profit's desire to maximize their average quality. If there is a segment of the population that demands lower quality services, a non-profit must weigh the increased quantity that will come with providing these services against the decrease in average quality that providing them would entail. If the non-profit decides that the increase in quantity is not worth the damage to their average quantity (and thus their prestige, access to funding, etc.) then they will not provide these services even if it is the best interest of society to do so. Newhouse recognizes this and lists it as one of the main reasons why the non-profit model is not economically efficient.

While this model was developed for analyzing the decision making of hospitals, it is also applicable to other types of non-profit institutions such as MFIs. Microloans provided by MFIs are generally considered to be an economic good, as they can help provide the capacity for the poor to lift themselves out of poverty, meaning that managers should want to provide these services to as many people as possible. Quality of loans is also important, as MFIs want to provide loans that their borrowers will be able to pay off so that they are providing access to credit without burdening them with excessive debt. Additionally, providing high quality loans would help an MFI to increase its prestige and its ability to attract outside funding, as those who would provide money to non-profit MFIs (such as foundations and governments) might be hesitant to give to an institution with an unusually high default rate. Finally, client income is a third dimension that is relevant for the microfinance industry because a stated goal of many MFIs is to address poverty. If these institutions are serving large quantities of middle class customers, then they are simply replacing the services provided by traditional banks and are not fighting poverty in any meaningful way. It is thus important to measure if MFIs are actually serving poor clients or if they have achieved efficiencies by serving wealthier borrowers.

IV. Description of Data Sources and Transformations

The data used for this analysis came from the Microfinance Information Exchange (MIX). This is a non-profit organization that provides business and financial information about the microfinance industry and maintains partnerships with well-known international organizations such as the Bill and Melinda Gates Foundation. Data is collected from documents such as audits, financial statements, and management reports, as well as from direct survey questions to MFIs. Regional microfinance experts choose MFIs that are representative of particular geographical regions, so while a large number of institutions and countries are included in the dataset, they do not have data for every MFI in the world.

MIX then proceed to audit and clean the data so it can be used. Numerous quality checks and audit rules are applied to ensure the quality of the data. Their data dates back to 1995 and continues until 2012. Observations are at the MFI, not the country, level and represent the values for a vector of variables that correspond to a particular institution and a particular year.

While relevant metrics for quantity variables (gross loan portfolio and number of active borrowers) are explicitly reported in the MIX dataset, there is not good data that directly measures default rates and levels of client income. Thus, it is common practice in the literature to use alternate measures that are available in the data. See section V below for a detailed explanation of why these particular alternate variables were chosen. It should be noted that survey data collected by the Microcredit Summit Campaign includes estimates of the percentage of an MFI's clients that are poor. This dataset is not as comprehensive as the MIX data and the methods by which the MFIs estimate which of their clients are poor vary greatly, so it was not used for this paper. Previous studies have used this data to establish a correlation between loan size and borrower income, which is discussed in Section V.

For the purposes of this study, the MIX data on individual MFIs was collapsed into observations at the country level. This was done by summing the quantity variables and averaging the percentage variables for all of the MFI level data that corresponded to a particular country and year. Additionally, reported data for average loan sizes per borrower are divided by gross national income (GNI) rather than gross domestic product. In order to create the linear restriction between coefficients described in Section V, these values were multiplied by GNI to obtain the average loan size per borrower (at the country/year level) and then divided by GDP to obtain the scaled values that are used in my regressions. The values for number of borrowers and gross loan portfolios were also scaled down so that they could be compared at the country level. Data reported for portfolio at risk is already divided by gross loan portfolio, so no additional scaling was required.

At this point, the dataset had 1370 observations. Observations that had a missing value for percentage of for-profit MFIs were dropped, since this indicates that there were no MFIs that reported data from that country/year. 27 observations were dropped in this step. Next, observations that had a gross loan portfolio or a number of active borrowers of zero were also dropped, as this would mean that no loans were active in that country during that year. 43 observations were dropped in this stage. Finally, observations with a portfolio at risk >30 of greater than one were dropped, since this would indicate reporting error as it is impossible for the value of delinquent loans to be higher than the total value of loans. 66 observations were dropped at this time. After these transformations were completed I was left with 1234 observations from 110 countries over 18 years. The data is an unbalanced panel, as data from almost all of the countries is not available for the entire time period. The only country that has data for every year is India.

Additional data was obtained from the October 2012 World Economic Outlook produced by the International Monetary Fund (IMF) and the World Bank Country Indicators database. These databases contain time series data for various macroeconomic factors. Data obtained from these sources are used to scale relevant variables and provide country specific controls. The World Bank country indicators that are included in this analysis are percentage of rural population, net inflows of foreign direct investment as a percentage of GDP, and percentage of female population for each country and year. Additional indicators that may have been relevant (including trade openness, corruption, ease of doing business, war deaths, unemployment, and rainfall) were obtained. The data for these indicators was only available for a limited number of years or countries, however, so they were not included as part of this analysis.

The following country/year variables are used for econometric analysis:

Number of active borrowers/ country population: Calculated for each MFI by averaging the number of active borrowers at the beginning of the year and the end of the year. These MFI figures were then aggregated at the country level and scaled by that country population. This provides information about the extent to which the population is served by MFIs.

Average Loan Balance per borrower/Gross Domestic Product per Capita: Average loan balance per borrower is obtained by taking the total loan portfolio of an MFI, divided by its total number of borrowers. The value at the country level is computed by taking the average of all MFI values for a particular country/year. This figure is then scaled by the GDP per capita of that country. This serves as a proxy for the relative wealth of the clientele being served by the MFI, with a higher average balance corresponding to a wealthier clientele.

Gross Loan Portfolio/Gross Domestic product: The total principal balance of all outstanding loans for a particular MFI. It is aggregated at the country level and scaled by the GDP of that country.

Portfolio at Risk >30 days/Gross Loan Portfolio: The value of loans that have at least one payment that is overdue by more than 30 days divided by the gross loan portfolio. The value at the country level is computed by taking the average of all MFI values for a particular country/year. Note that these values are the averages of previously scaled figures, not the total value of delinquent loans in a country divided by its total gross loan portfolio. This will give insight into whether MFIs are giving out riskier loans and whether borrowers are struggling to repay their loans on time.

Percentage of For-Profit MFIs: measures the percentage of institutions in a country that are for-profit in a particular year. This will be used to determine the correlation between concentration of for-profit institutions and values for the desired variables.

Percentage of Rural Population: the percentage of the population that lives in a rural area, as defined by national statistics offices. It is calculated as the difference between total and urban population. This may be relevant, as the demographics of their borrowers will effect the operations of an MFI.

Foreign Direct Investment (FDI), net inflows (% of GDP): Foreign Direct Investments are the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in a country other than that of the investor. This variable shows net inflows (new investment inflows less divestment) in the reporting economy from foreign investors, divided by the GDP of the recording country for the year. This is relevant as foreign investment in a country can impact the financial sector of that country.

Percentage of Female Population: Percentage of the total population that is female. This is relevant as the majority of MFI borrowers are female.

Summary statistics for these variables are in Table 1 below. Monetary variables are reported in nominal United States Dollars (USD) for the year that the data was recorded. These values are obtained by using average exchange rates over the relevant time period to convert from local currency to USD. Since the variables that are used in the analysis are ratios rather than dollar amounts, values are not converted to constant prices. This is because the values for the numerators and denominators of these ratios are both in current prices (e.g. gross loan portfolio and GDP for the year 2001 observations are both in 2001 dollars) so converting both will not change the ratio. My data constitute an unbalanced panel. To give an idea of the sample composition, the variables with 1234 observations come from data on 110 countries and 18 years; the variables with 1103 observations come from 99 countries and 18 years.

Table 1

Summary Statistics

Variable	# of Obs	Mean	Std Dev	Min	Max
Gross Loan Portfolio	1234	\$3.68e+08	\$1.32e+09	\$5,752	\$2.46e+10

Number of Active Borrowers	1234	5,888,807	2,536,044	5	3.28e+07
Average Loan Size per Borrower	1234	$2,021.58	$8880.846	$13.59	$195,281.9
GDP	1125	$9.77e+10	$2.45e+11	$2.15e+08	$2.49e+12
Population	1107	4.81e+07	1.40e+08	103000	1.22e+09
GDP per capita	1103	$2,525.15	$2,842.22	$112.87	$2,1291.06
Gross Loan Portfolio/GDP	1103	.01069	.02149	4.94e-07	.19341
Number of Active Borrowers/Population	1107	.01503	.02471	3.40e-08	.16377
Average Loan Balance per Borrower /GDP per capita	1103	1.1023	5.4222	.00930	161.48
Portfolio at Risk >30 days/Gross Loan Portfolio	1234	.07031	.07187	0	.5948
% for-profit MFIs	1234	.39799	.34297	0	1
% rural population	1036	.53717	.20486	.07456	.90851
FDI net inflow/GDP	1028	4.37275	5.98484	-4.57808	84.94215
% female population	1032	.504445	.0104931	.47910	.54001

V. Specification of Quantity, Quality, and Client Income Regressions

In this paper, I attempt to determine whether for-profit managers, who are making a traditional profit-maximizing decision, or non-profit managers, who are making a quantity and quality maximizing decision, are more effective at fighting poverty through microfinance. As noted above, fighting poverty will be assessed along three dimensions: quantity, quality, and client income. Quantity will be measured in two ways, number of active borrowers and gross loan portfolios.

Quality for MFIs is usually measured in terms of a default rate because low default rates indicate borrowers are not being unduly burdened with their loans. Since there is no explicit data on default rates in the data, Portfolio at Risk >30 days rates will be used an alternate measure. This metric measures the percentage of an MFI's loan portfolio that has delinquent payments for more than 30 days. This is a suitable measure because it provides an early indication that borrower are having trouble meeting their loans. Increased values for this variable indicate riskier loans and worse repayment, meaning that an increase in portfolio at risk indicates a decrease in loan quality.

Finally, there are no explicit measures on client income, so the variable average loan balance per borrower/GDP per capita will be used as a proxy measure. Although this is far from a perfect measure of client income, Gonzalez and Rosenberg (2006) indicate a strong correlation between the percentages of small loans provided by an MFI and the percentages of poor borrowers that it serves. By analyzing self-reported data from the Microcredit Summit Campaign (which contained observations for over 2,100 MFIs globally) mentioned in section IV, they found that a 10% increase in the percentage of small loans (under $300) for an MFI corresponded with a 9% increase in the percentage of poor borrowers that they served. Increases in scaled average loan sizes will thus proxy as increases in client income. This intuitively makes sense as the size of the loan a person can take out should be largely dependent on their predictions of income streams that they can use to repay the loan.

The four regressions conducted are the following:

$$ln(\frac{GrossLoanPortfolio}{GDP}) = \alpha + \beta_1 percentforprofit + \beta \mathbf{X_i} + \varepsilon_i \tag{1}$$

$$ln(\frac{numberofborrowers}{population}) = \alpha + \beta_1 percentforprofit + \beta \mathbf{X_i} + \varepsilon_i \tag{2}$$

$$ln(\frac{avgloansize}{GDPpercapita}) = \alpha + \beta_1 percentforprofit + \beta \mathbf{X_i} + \varepsilon_i \tag{3}$$

$$ln(\frac{PortfolioatRisk}{GrossLoanPortfolio}) = \alpha + \beta_1 percentforprofit + \beta \mathbf{X_i} + \varepsilon_i \tag{4}$$

For each regression, the dependent variable is the MFI variable of interest, percent for-profit is the percentage of MFIs that are for-profit for a particular country/year observation, and $\mathbf{X_i}$ represents a vector of country specific explanatory variables that are used as controls. The variables that were chosen as part of $\mathbf{X_i}$ for this analysis are percentage of rural population, and FDI as a percentage of GDP. These variables are included as they may be relevant to the microfinance industry. The coefficient of interest is $Beta_1$, as I am interested in the effect of for-profit MFI concentration on the four dependent variables.

This specification also creates a linear restriction amongst the three $Beta_1$ coefficients corresponding to equations 1,2, and 3 above. This is because Average Loan Balance per Borrower/GDP per capita (equation 3) is equal to Gross Loan Portfolio/GDP (equation 1) divided by Number of Active Borrowers/population (equation 2). Since the natural logs of these variables are the dependent variables in these regressions, the values of the beta coefficients in equation 3 will be equal to the values of the betas in equation 1 minus the values of the beta in equation 2. This is because of the following natural log relationship:

$$ln(\frac{x}{y}) = ln(x) - ln(y)$$

Note that this linear restriction will only hold exactly if the exact same observations are used for all of the regressions. In my results, this restriction only holds approximately, since the three regressions use slightly different samples, as discussed in section VI below.

According to the Newhouse model explained in section III, non-profit MFIs should choose to maximize the quantity of borrowers served and the quality of the loans that are provided. Since they are only seeking to maximize the quantity of borrowers served, they would not have an incentive to increase client income and provide larger loans. These MFIs also have an additional incentive to keep client income low as it is often seen as prestigious within the industry to serve poor customers. Profit maximizing MFIs would have an incentive to serve relatively wealthier borrowers, as they can provide them larger loans and increase their revenue per customer. Additionally, for-profit institutions would have an incentive to provide low quality loans if segments of the populations demanded them.

According to the Newhouse model, non-profit MFIs might not provide all of these low quality loans as they would need to weigh the increase in quantity against the decrease in average quality that providing these loans would cause.

Therefore, since for-profit MFIs have an incentive to serve wealtheir customer and provide larger loans, gross loan portfolio and client income should increase with for-profit concentration. Furthermore, since since for-profit institutions have an incentive to serve customers that demand lower quality loans and non-profit MFIs do not, portfolio at risk and number of active borrowers should also increase with for-profit concentration. Note that an increase in portfolio at risk corresponds with a decrease in quality. These predictions are summarized in Table 2 below.

Table 2

Anticipated Sign of $Beta_1$

Regression	1: Gross Loan Portfolio/GDP	2: Number of active borrowers/ population	3: Average Loan Balance per Borrower/GDP per capita	4: Portfolio at Risk >30 days/Gross Loan Portfolio
Anticipated Sign of $Beta_1$	Positive	Positive	Positive	Positive

VI. Results and Discussion

To measure the how the concentration of for-profit MFIs effect values for quantity, quality, and client income measures, four linear regressions controlling for fixed effects at the country level were performed. Dependent variables in these regressions were the natural logs of the quantity, quality, and client income variables. The coefficient estimates and standard errors are reported below in Table 3. In general, the coefficients on percentage for-profit are positive and significant, the coefficient on percentage rural population is negative and significant, the coefficient on foreign direct investment is insignificant, and the coefficient on percent female population is positive and significant. The fit of regressions 1-3 is fairly good, while the fit of regression 4 is much lower. This could indicate that different explanatory variables affect loan qualities. Finally, the difference in the magnitude of the significant coefficients is due to the difference in variation between the independent variables, which is shown in Table 2 in Section IV.

Table 3

Summary of Results

	1. Ln(Gross Loan Portfolio/GDP)	2. Ln(Number of Active Borrowers /Population)	3. Ln(Average Loan Balance per Borrower/GDP per Capita)	4. Ln(portfolio at Risk > 30 days/Gross Loan Portfolio)
% for-profit	.73798***	.50219**	.25587**	-.16500
($Beta_1$)	(.23788)	(.2280265)	(.12614)	(.18210)
% rural	-49.09538***	-43.90853***	-4.94757***	-12.91728***
population	(2.11659)	(2.01945)	(1.11627)	(1.57831)
FDI/GDP	.01449*	.00996	.00611	.00170
	(.00865)	(.00820)	(.00453)	(.00646)
% female	315.1855***	310.2369***	.46505	61.62009***
population	(31.48048)	(30.06151)	(16.59303)	(23.64667)
Constant	-139.1968***	-138.5552***	1.49299	-27.12564**
	(15.93662)	(15.21199)	(8.39556)	(11.96143)
R^2	.7865	.7335	.7624	.4743
observations	1011	1005	1001	990
F stat for joint test on country fixed effects	34.963***	26.760***	26.188***	8.657***

Note: ***=p<.01,**=p<.05,*=p<.1, Standard errors in parentheses. *Source: MIX, IMF, and World Bank* Data sets.

The values for $Beta_1$ have the expected sign and are significant for regressions 1-3, but not in regression 4, in which $Beta_1$ is not significant. The first three results are consistent with the theory developed in the Newhouse model. The fact that the coefficient on equation 4 is not significant, however, indicates that the decisions being made by non-profit and for-profit managers are not necessarily those that would be predicted by the model. This is also leads to interesting interpretations of other coefficients.

There are two different explanations for why $Beta_1$ is not significant in the fourth regression. The first is that it could be that non-profit MFIs do not behave in the way predicted by the Newhouse model and are not concerned with the fact that providing higher risk loans might lower their average quality. This behavior might be caused by differences between the industries being considered, as outside sources could perceive offering low quality hospital services and high-risk loans differently. If this were the case, it would provide evidence that the Newhouse model incorrectly predicts the behavior of non-profit MFIs.

An alternative explanation could be that the non-profit MFIs do avoid providing lower quality loans as predicted in the model. Since they tend to service poorer borrowers than for-profit MFIs, however, their loans might be inherently riskier than loans that are provided to wealthier borrowers. This idea is complicated by the fact that while it would certainly be riskier to provide a large loan to a poor person than to a wealthier one, it is not necessarily riskier to provide a smaller loan to a poorer person. This line of reasoning applies to MFIs because of the correlation between loan size and income that has been discussed previously. However, it may reasonable to assume that there are increased risks associated with serving poorer borrowers regardless of loan size. These risks could include serving borrowers that live in remote villages that are difficult to travel to, lack savings to fall back on in case of unexpected drops in income, or have incomes that vary greatly with unpredictable events like rainfall. Thus, it could be that this increased risk that comes with serving poorer borrowers cancels out the effect predicted by Newhouse.

From the first regression in column one, it is clear that increase in for-profit concentration is associated with an increase in gross loan portfolios. I estimate that a one-percentage point increase in the concentration of for-profit MFIs in a country is associated with a .74 percent increase in the scaled value of that country's gross loan portfolio. The size of gross loan portfolios is also a function of the number of borrowers and the average loan size. Similarly, in regressions 2 and 3, the number of borrowers and the average loan size also increase with a country's concentration of for-profit MFIs. In sum, I find evidence that as compared to non-profit MFIs, for-profit MFIs increase the size of a country's loan portfolios by serving both more borrowers and wealthier borrowers.

The second regression also demonstrates a correlation between increases in for-profit concentration and the number of microfinance borrowers. While this result is predicted by the economic theory, the fact that in the fourth regression the quality of the loans seems unaffected by for-profit concentration complicates the picture. According to the Newhouse model, for-profit institutions should have a higher number of borrowers because they service borrowers that demand lower quality loans that would not be provided by non-profits. Since there is no significant difference in the quality of loans, however, it is natural to seek an alternate explanation. It could be that for-profit institutions are able to scale their operations more rapidly because of their ability to generate profits and attract investor capital. If this were the case, it would give weight to the arguments of the proponents of for-profit microfinance.

In the third regression, there is evidence that increasing for-profit concentration leads to increases in client income. This gives support to the idea that for-profit institutions tend to serve wealthier borrowers with larger loans, in an attempt to increase their revenues. Since an important part of microfinance is serving the poor, this result could be damaging to the case of for-profit proponents. If for-profit MFIs are achieving higher quantity/quality efficiencies, but are doing so by serving medium income borrowers, than it could be argued that they have entered into the realm of commercial banking and are no longer truly MFIs.

The coefficients for the three variables that are included as controls appear to be intuitively reasonable. Rural populations tend to be poorer and less dense than urban populations. This means that intuitively, there should higher fixed cost per borrower since it is more difficult to reach individuals, and it is likely more difficult to scale the operations of an MFI in rural areas. While it might seem that increases in FDI should have a positive effect on the dependent variables, most of the money that is being invested by foreign countries is likely going into industries like manufacturing. This type of spending should not have a major impact on the microfinance industry. Finally, the majority of MFI borrowers have traditionally been women, as women are believed to be more likely to invest their incomes back into their families (Yunus 1999). It thus makes sense that countries with more females would see an increase in MFI activity. It is interesting to note, however, that the percentage of female borrowers is different for for-profit and non-profit MFIs. Cull et al (2008) found that the median percentage of female borrowers for NGOs, which are generally non-profit, was 85% while the median percentage for banks, which are generally for-profit, was 52%. The macro data used in my study also indicated a correlation of -.09 between for-profit concentration and percent of female borrowers. This discrepancy may be a factor in the differences that are observed between non-profit and for-profit MFIs.

A few other things should also be noted about the results. In the empirical specification section above, I noted that coefficients from the third regression should be equal to the coefficients from the first regression minus the coefficients from the second regression. While they are reasonably close for most of the variables*, this linear relationship does not hold exactly in these regressions. This is due to the fact that the samples are slightly different for each regression. Since I wanted the samples used in this analysis to be as robust as possible, I wanted to include all available observations for these regressions. See Appendix 1 for results of the first three regressions conducted with slightly smaller, identical samples. Additionally, I attempted to run the regression while including a time varying country trend in addition to the constant country dummy variables. As this would have added about 100 additional parameters to estimate, however, the data set used was not robust enough to support this additional step.

VII. Concluding Remarks and Suggestions for Further Research

The results discussed in Section IV provide a few key insights about the impact of for-profit MFIs on the microfinance industry. In general, for-profit MFIs will tend to have larger loan portfolios, serve more borrowers, and serve richer borrowers

---

* For example the exact difference between $Beta_1$ in regressions 1 and 2 is .23579, while observed value of $Beta_1$ in regression 3 is .25587

than non-profit MFIs, without a significant difference in the quality of the loans being provided. These findings support claims made by both sides of the for-profit microfinance debate. It appears that for-profit MFIs can reach more borrowers without negatively impacting the quality of the loans that they provide. This indicates that commercialization of the industry could have a positive effect by reaching more of the poor without burdening them with low quality loans. At the same time, the fact that for-profit MFIs are serving borrowers who are relatively wealthier suggests that they may be drifting away from the initial mission of providing financial services to the very poor. This could have policy implications, as for-profit MFIs may receive special treatment such as tax breaks that might be unwarranted if their activities are similar to those of commercial banks. As data on borrower incomes improves, future studies should be able to shed additional light on this issue.

These results also provide some evidence as to whether economic theories developed to understand non-profit decision-making in the context of hospitals can be applied to non-profits in other industries. Based on the results discussed above, it appears that the Newhouse model does not accurately predict decisions about quantity and quality of services provided by MFIs. This is likely do to differences between the hospital industry around which the theory was developed and the microfinance industry. One of the key ideas in the model is that non-profit institutions will attempt to maximize quality not just because they want to provide the best services possible, but also because they want outsiders to view them positively. It could be that non-profit MFIs are not particularly concerned with outside opinions of their activity, or that providing higher risk loans is viewed in a different light then providing low quality health services. The results also show that dimensions other than just quantity and quality might be relevant to understanding how non-profits make decisions. In the microfinance industry, borrower income is a very important dimension because it shows whether MFIs are actually fighting poverty and may also impact the riskiness of an MFI's loan portfolio, which would change their observed loan quality. It will be interesting to see whether existing models can be changed to be more comprehensive or if different models will need to be created for different industries.

During the course of this study, I also came across some interesting avenues of research that I did not have the time to pursue. An important part of the Newhouse model is that non-profit managers face a quantity/quality tradeoff and that there is an efficient frontier along which they can produce. It could be interesting to empirically create a representation of this frontier for both non-profit and for-profit institutions. This would need to be done with micro data from individual MFIs as opposed to the aggregated country level data that was used in my analysis. Comparing the two frontiers could provide some insight into how the profit status of MFIs affects their efficiencies. Including a third dimension for borrower income could also illustrate whether these efficiencies change as the relative wealth of borrowers changes. This would be useful to examine if a certain type of institution is more efficient at serving a certain type of borrower.

References

Banerjee, Abhijit, Chandrasekhar, Arun G., Duflo, Esther, and Jackson, Matthew O. (Jan 2012) The Diffusion of Microfinance". NBER Working Papers.

Cull, Robert, Demirgü.-Kunt, Asli, and Morduch, Jonathan. (May 2008) "Microfinance Meets the Market". World Bank Policy Research Working Papers.

de Quidt, Jonathon, Fetzer, Thiemom and Ghatak, Maitreesh (Sep 2012). "Market Structure and Borrower Welfare in Microfinance". BREAD Working Papers.

Duflo, Esther and Banerjee, Abhijit V.. *Poor Economics: A radical Rethinking of the Way to Fight Global Poverty.* Public Affairs, United States. 2011.

The Economist (2007). "Economics Focus: Small Loans and Big Ambitions," The Economist, March 17, 2007.

The Economist (2008). "Poor People, Rich Returns," The Economist, May 15, 2008.

Ghatak, Maitreesh. (1999) "Group Lending, Local Information and Peer Selection," Journal of Development Economics.

Glaeser, Edward and Shleifer, Andrei (2001) "Not-for-profit Enterpreneurs" Journal of Public Economics 81 (1): 99-115.

Gonzalez, Adrian and Rosenberg, Richard. (2006) "The State of Microfinace: Outreach, Profitability, and Poverty". CGAP working papers

Lakdawalla, D., Philipson, T., (1998) "Nonprofit Production, Competition, and Long-Term Care" NBER Working Paper Series.

Murdoch, Johnathon. (April 2000) "Microfinance Schism". *World Development.*

Morduch, Johnathon (Dec 1999) "The Microfinance Promise." Journal of Economic Literature. pp.1569-1614

Newhouse, Joseph P. (1970) "Toward a Theory of Nonprofit Institutions: An Economic Model of a Hospital". American Economic Review pp. 64-74

Rhyne, Elisabeth. (Jul 1998) "The Yin and Yang of Microfinance: Reaching the Poor and Sustainability". MicroBanking Bulletin*.* pp.6-9

Rose-Ackerman, Susan (Jun 1996) "Altruism, Nonprofits, and Economic Theory". Journal of Economic Literature. pp.701-728

World Bank (2007) "Finance for All? Policies and Pitfalls in Expanding Access."

World BankPolicy Research Report, August. Washington, DC: World Bank.

Yunus, Muhammad. *Banker to the Poor.* Public Affairs, United States 1999.

Data Sources

Microfinance Information Exchange : http://www.mixmarket.org/profiles-reports

International Monetary Fund October 2012 World Economic Outlook:

http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx

The World Bank World Development Indicators:

http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=world-development-indicators

Appendix 1

Alternate Results for regression 1-3 using identical samples.

	1. Ln(Gross Loan Portfolio/GDP)	2. Ln(Number of Active Borrowers /Population)	3. Ln(Average Loan Balance per Borrower/GDP per Capita)
% for-profit ($Beta_1$)	.82120*** (.24130)	.56534** (.22667)	.25587** (.12614)
% rural population	-48.76162*** (2.13535)	-43.81405*** (2.00582)	-4.94757*** (1.11627)
FDI/GDP	.01492* (.00867)	.00881 (.00815)	.00611 (.00453)
% female population	309.745*** (31.74129)	309.28*** (29.8158)	.46505 (16.59303)
Constant	-136.6411*** (16.06011)	-138.1341*** (15.08587)	1.49299 (8.39556)
R^2	.7861	.7367	.7624
observations	1001	1001	1001
F stat for joint test on country fixed effects	34.494***	27.086***	26.188***

Note: ***=p<.01,**=p<.05,*=p<.1, Standard errors in parentheses. *Source: MIX, IMF, and World Bank* Data sets.

Note that in these results the values of the coefficients for regression 3 are exactly equal to the coefficients from regression 1 minus the coefficients from regression 2