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## ABSTRACT

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## KEYWORDS

Microfinance, financial ratios, outreach, social performance, mission drift, long tail, bankruptcy.

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# **Microfinance, the long tail and mission drift**

## **1. INTRODUCTION**

Vilfredo Pareto found empirically in 1909 that the distribution of wealth within a population does not follow a normal distribution (bell-curve), but an unequal function (long tail), that took his name. A few rich persons have most of the wealth, facing a long queue of poor people, with barely anything. According to Pareto's 80/20 Principle, most of the profits of a company come from a reduced percentage of good customers. In the financial sector, banks aim at affluent customers. The costs of managing small loans are proportionally high, so lending to the poor is not worthwhile. The poor were excluded from financial services until microfinance institutions (MFIs) emerged. But some MFIs have drifted from their mission; this phenomenon has been studied by Copestake (2007), Mersland and Strøm (2010), Armendáriz and Szafarz (2011) and Hermes et al (2011). This paper analyzes microcredit, following the long tail theory, to explain microfinance mission drift. An indicator is developed to measure mission drift. This indicator allows distinguishing between mission drifted and mission centered MFIs, those really serving the poorest. The patterns of both groups can be identified, and a logistic regression model can be performed to predict group membership.

When analyzing MFIs performance, apart from financial aspects such as self-sufficiency or solvency, the social performance must be emphasized. Different social performance indicators have been proposed, Zeller et al (2003), but they are not as standardized as financial ratios. Certain rating agencies are already assigning social ratings, Gutiérrez-Nieto and Serrano-Cinca (2007). No consensual measure of mission drift exists. Loan size, the percentage of women borrowers and the percentage of rural borrowers have been proposed, among others, by Mersland and Strøm (2010), Cull et al (2007), and Hermes et al (2011). Schreiner (2010) proposes the use of poverty scorecards, to assess the probability that a borrower is poor in a given country; this way the percentage of MFI poor clients can be obtained. This paper combines both approaches. It proposes an indicator based on average loan size, percentage of women borrowers, and percentage of rural borrowers, but comparing a given MFI with its country sector. Percentile ranks can be calculated to this end. The mission drift ratio suggested ranges from 0 (minimum) and 1 (maximum), which makes it easy to interpret.

Most MFIs mission consists in lending to the poor, serving rural communities or contributing to women empowerment. There are many kinds of mission drift. For example, some MFIs use abusive collection practices, or charge interest rates close to usury, Augsburg and Fouillet (2010). The paper

studies MFIs that give loans to customers outside the targeted groups in their mission. The paper models microcredit business by formulating hypotheses on the kind of MFIs operating in the long tail. There, clients are poor and loans are small. Given the high operating costs and the lack of deposits, mission centered MFIs either need subsidies or have to charge high interest rates. This is a clear example of a poverty penalty, Mendoza (2011). Hypotheses have been empirically tested with a sample of around 1,000 MFIs. The study identifies patterns of mission centered MFIs and mission drifted MFIs.

After identifying two groups (the most centered MFIs and the most drifted MFIs), a regression logistic model is developed; this model obtains a satisfactory classification percentage. This is the same methodology used in bankruptcy prediction. In some way, the most drifted MFIs could be candidates to a kind of social failure, in the sense that they do not meet their social mission. This is especially interesting for donors, social investors and rating agencies.

The next section presents the model and its hypotheses. Section 3 calculates the mission drift ratio for MFIs. Section 4 presents the empirical study testing the model with a sample of MFIs. In the final section the conclusions are discussed.

## **2. MICROCREDITS: THE LONG TAIL OF CREDITS**

Wealth among individuals follows an unequal distribution. In fact, it is a power law probability distribution, called Pareto distribution, studied by Stiglitz (1969). Figure 1 shows the probability density function, visually characterized as a J-shaped curve. A characteristic element is the long tail that approaches the X-axis asymptotically. Pareto distributions are also used in management to identify profitable customers. This is the 80/20 rule, stating that 80% of the earnings come from 20% of the customers, that is, the best ones. Turning now to the banking business, the left part, or “fat tail” belongs to private banking. These banks offer customized attention to wealthy customers, sometimes with several employees devoted to a single customer. The right part or “long tail” has usually been unattended by commercial banks, until MFIs arose. These institutions give loans to the poorest, excluded from financial services, Morduch (2000). MFIs have an important role in poverty alleviation and women empowerment.

\*\*\* Figure 1 \*\*\*

High street banks do not serve clients in the long tail, because they follow Pareto’s Principle. Yunus (1999) was a pioneer when he realized that there was business in lending to poor people, becoming the niche market for the Grameen Bank. Microfinance is a kind of banking business, and has to deal with two key aspects: risks and margins. Risks are involved in lending money to be recovered later. Margins (income minus expense) matter because the entity buys and sells money, a

largely undifferentiated product.

The first hypothesis is related to operating costs. In microfinance, administrative costs are high because for approving a tiny loan, an application form needs to be filled, uploaded to the computer system, analyzed, and so on. This problem, identified by Aleem (1990), is still unresolved. He found that for one dollar lent, about half dollar is spent in operative costs. Jenkins (2000) made a survey in order to better understand what discourages banks to enter microfinance, and the most common answer (40%) was “higher administrative costs”. It is expected that centered MFIs, attending the end of the long tail, have higher operating costs than drifted MFIs, which do not enter the end of the long tail (H1).

Deposits are the most common funding source for a bank. MFIs serving the long tail have a clear disadvantage, because their customers are poor, which reduces the chance to collect savings. Sometimes the problem is legal, because many types of MFIs are not authorized by central banks to gather deposits. Many MFIs only develop a part of their banking business, which consists in taking deposits and lending money. Morduch (2000) explains some of the difficulties involved in deposit taking. At the end of the long tail there will be a low amount of savings; and centered MFIs are expected to collect fewer deposits than drifted MFIs (H2).

So, what kind of financial institution will be attracted to a poor client, with high operating costs and with limited possibilities to collect deposits? Although there are banks in this market, NGOs are expected to attend the end of the long tail, given its social nature (H3). It is also expected that they be small financial institutions (H4), because the long tail is a niche market, Porter (1980), and this is the field where small firms are competitive. Weston and Strahan (1996) find a relationship between financial institution size and customer size; in other words, small financial institutions are a major source of credit for small businesses. The expected pattern for a centered MFI corresponds to a small NGO.

The more attention the MFI pays to the end of the long tail, the more social the MFI is. The role of subsidies in microfinance has been studied from their origins, Morduch (1999). According to Hudon and Traca (2011) MFIs donors’ common goal is to reach very remote populations that are not likely to be served without external support. Centered MFIs will have more possibilities to receive donations than drifted MFIs (H5).

The next hypothesis is related to profitability. Like every firm, MFIs need to have profits to survive. In their empirical study, Cull et al (2007) find that the relationship between profitability and average loan size is insignificant. Centered and drifted MFIs are expected to have similar profitability levels (H6).

If MFIs in the long tail suffer from high operating expenses, lack cheap funding sources like deposits, donations are uncertain, and furthermore have to be sustainable, they are doomed to increase revenues; that is, charging the poor with high interest rates to cover costs. It is an example of a poverty penalty: the poor pay more, Mendoza (2011). This is a widely debated topic. Hermes and Lensink (2011) distinguish between the financial systems approach vs. the poverty lending approach. The former emphasizes the importance of financially sustainable microfinance programs. The latter, the advocates of the poverty lending approach, argue that the poor cannot afford higher interest rates and they are in favor of subsidized interest rates. At the end of the long tail centered MFIs operate, and they are expected to achieve higher margins than drifted MFIs (H7).

Contrary to private banking in the fat tail, where several employees are devoted to an affluent customer; in the long tail, employees deal with more and more customers. Each employee manages a large number of microcredits from poor clients. Centered MFIs are expected to have more labor productivity than drifted MFIs (H8).

Financial structure aspects, such as the relationship loan portfolio to assets, are not influenced by the drifting tendency of the MFI. There is no reason to expect different financial structures between drifted and centered MFIs (H9).

The last hypothesis deals with a key aspect in banking business: risk. Yunus was a pioneer in lending to the poor applying the proverb “the poor always pay back”. In this sense MFIs have developed alternative systems to secure repayment, such as solidarity groups or peer monitoring, Stiglitz (1990). This is one of the main innovations involved in the microfinance industry. Risk levels are expected to be similar in drifted and centered MFIs (H10).

### **3. MEASURING MISSION DRIFT**

The mission of MFIs is to provide financial services to the poorest. But some MFIs do not meet their mission. The mission drift topic has been studied by Copestake (2007), Cull et al (2007), Mersland and Strøm (2010), Armendáriz and Szafarz (2011) and Hermes et al (2011). There are many ways for MFIs to drift from their mission, Jones (2007). The most common one is not to really give loans to poor people. Most of the studies use average loan size as a mission drift proxy. As well as loan size, Mersland and Strøm (2010) use borrower’s gender, lending methodology, and MFI’s main market as additional mission drift measures. Cull et al (2007) use the following measures: average loan size and percentage of women borrowers. Hermes et al (2011) use average loan balance, percentage of loans below US\$300, percentage of woman borrowers, average savings balance, and the percentage of clients in the bottom half of the population.

Rosenberg (2009) remarks that high loan sizes are justified, for example, in the case of former

poor customers turned now into middle class, who ask for larger loans. He affirms that a reliable way to judge mission drift is to look at the places where the MFI is opening its new branches. Ghosh and Van Tassel (2008) suggest that the most accurate approach to deal with mission drift is the poverty gap ratio, but this is difficult to measure in practice. In this direction, Schreiner (2010) has created several poverty scorecards, which allow the categorization of poor people in different countries. MFI credit officers evaluate the poverty level of applicants through a small set of country-tailored indicators. When aggregating the data, the poverty level of the customer is revealed, and the degree of the MFI's mission drift. This procedure requires filling out a poverty scorecard for each loan applicant.

Given the dual financial-social MFI nature, rating agencies have recently incorporated social ratings. Planet Rating, a pioneering agency in issuing social rating for MFIs, assesses mission drift in the evaluation process. They do it in a qualitative way, after visiting the MFI. This rating agency evaluates if the social mission has been taken into account in decisions such as branch opening, customer diversification and new products development. But they do not provide a quantitative and comparable mission drift indicator.

This paper uses the most common mission drift indicators (average loan size, percentage of loans to women, and percentage of loans to rural population), and relate the values obtained by a given MFI to the country average values. Table 1 serves as an example. It contains 10 MFIs from the same country. The first column is the Gross Loan Portfolio (GLP). ALS is the average loan size; WB is the percentage of the loan portfolio lent to women and RB is the percentage of the loan portfolio lent to rural population. Let's compare the two first MFIs, A and B. MFI A has a gross loan portfolio (GLP) of 6,869,043\$, an average loan size (ALS) of 1,199\$, 90% of its loans are for rural people (RB) and 75% are for women (WB). MFI B has an average loan of 4,758\$, 19% of its loans are for rural people and 15% go to women. The last row is the median value of the sector: 2,931\$ average loan, 29% for rural people and 43% are for women. It is clear that A is more mission centered than the sector, because its loans are lower, and its percentages of rural and women borrowers are higher. By contrast, B follows the opposite pattern. It could be said that B suffers from more mission drift than A.

\*\*\*Table 1\*\*\*

A possible way of quantifying MFI mission drift, in comparison to the sector, is by using percentile ranks. A percentile rank is the percentage of scores that are below a given score.  $PR_{ALS}$  is the ALS percentile rank,  $PR_{WB}$  is the WB percentile rank, and  $PR_{RB}$  is the RB percentile rank. For example, the MFI A has an average loan size of 1,199\$ and a  $PR_{ALS}$  of 0.22. This means that only 22% of the MFIs in this country have average loan size lower than 1,199\$. Then, MFI A is more

centered than the sector average. In the case of rural and women borrowers, the value of 1-rank percentile has been calculated, since in these cases, the higher the percentile rank value is, the more centered the MFI is. For this same MFI,  $1 - PR_{WB}$  is 0.11 and  $1 - PR_{RB}$  is 0.11: only 11% of the MFIs in this country lend to higher percentages of rural and women borrowers in the population.

The three percentile ranks reflect three mission drift aspects. The average of the three percentile ranks can be interpreted as a Mission Drift ratio (MD). The MD ratio is given by the following formula:

$$\text{Mission Drift ratio} = \frac{PR_{ALS} + (1 - PR_{WB}) + (1 - PR_{RB})}{3}$$

Percentiles are ordinal data and it may not be statistically proper to compute averages. But following Velleman and Wilkinson (1993) it has been considered that their interpretation leads to fruitful results without misleading conclusions. MD ratio ranges from 0 to 1. If a given MFI gets a 0.5 MD ratio, it is in the average of its country. The most centered MFIs in each country obtain MD ratios close to 0. Likewise the most drifted MFIs obtain MD ratios close to 1. MFI A obtains a MD ratio of 0.15, meaning that this is a very centered MFI. MFI B obtains a MD ratio of 0.78, over the 0.5 threshold. Let's analyze the extreme values for MFI C (C for Centered) and MFI D (D for Drifted). MFI C is the most social in the sector, with a low average loan size, 536\$, lending 100% to rural population and 90% to women: its MD ratio is 0. By contrast, MFI D has the highest average loan size, 10% loans to women and 5% loans to rural population: its MD ratio is 1.

The MD ratio has several advantages. The ratio meets the qualitative attributes recommended for indicators design by the International Accounting Standards Board, IASB (1980): understandability, relevance, reliability and comparability. The ratio is easy to understand because it ranges from 0 to 1. The MD ratio is relevant because it measures one of the key aspects of a social business. It is reliable because it aggregates several aspects: a MFI failing in one aspect can be compensated by other factors. Finally, it allows for immediate comparisons, because it is a relative indicator that gives information on the performance of a given MFI within its sector.

The formula includes three items usually available in MFI annual statements. Yet this formula could include alternative variables related to the MFIs mission. Different weights could also be assigned to the three items, according to the importance given to each of them. Basel banking accords, BIS (2004), can be a source of inspiration to this end. Banks assign weights to their loans based on their level of risk. For example, residential mortgages can have a risk weight of 50% and loans to the government can be considered zero risk weight. The total risk-weighted assets are obtained according to a formula provided by the Basel Committee on Banking Supervision. Because social aspects matter in microfinance, each loan could be weighted according to its social impact by



using a formula based on UN Millennium Development Goals. Thus, the total social-weighted loan portfolio obtained could be useful to assess the MFI contribution to poverty alleviation, education, equality, health or environment. For this aim, the MFI GLP could be broken down according to loan recipients' gender, location and purpose. If a given MFI gets a 0.5 MD ratio means that its social-weighted loan portfolio composition is in the average of its country, then, a simpler option could be multiplying GLP to the MD ratio, obtaining the  $GLP_{MD}$  in Table 1. This indicator resembles the risk-weighted assets indicator by Basel banking accords, applied to the MFIs social performance.

## **4. EMPIRICAL STUDY**

### **4.1 Exploratory analysis and hypotheses testing**

MixMarket database is the source of information for the analysis. It contains financial and non-financial information of 2,041 MFIs worldwide. 9 ratios have been calculated, one for each hypothesis to be tested, as well as a dummy variable, taking the 1 value for MFI NGOs. Table 2 shows the variables used and their definition. Operating Expense to Gross Loan Portfolio (OPER-EXPEN) is taken for measuring the impact of operating costs; Operational Self-Sufficiency (OSS) as a profitability ratio; Donations to Equity (DON-TE) as a subsidies indicator; Yield on Gross Loan Portfolio (YIELD) to quantify the MFI margin; Write Off ratio (WOFF) as a risk measure; Loans per Staff Member (LOAN-STAFF) as a labor productivity ratio; Deposits to Total Assets (DEP-ASSETS) to quantify savings; Gross Loan Portfolio to Total Assets (GLP-TA) as a financial structure ratio and finally, Total Assets (ASSETS) as a size indicator. 5 years have been analyzed, from 2006 to 2010. Although the whole database contained 2,041 MFIs, not all of them had available data for the study, and the sample analyzed contains around 1,000 MFIs.

\*\*\*Table 2\*\*\*

The MD ratio for the year 2010 has been calculated for all the available MFIs in Mixmarket database. For the purposes of this study, two groups of MFIs were selected. The first group includes excellent MFIs, totally centered on their mission, with MD ratios close to 0. Their loan size is low, and they are focused on women and rural population, among all the MFIs in their country. They serve the end of the long tail. The 100 MFIs with lowest MD ratios were selected for this group. The second group follows the opposite pattern; it is composed of the 100 MFIs with the highest MD ratios. Beaver (1966) was a pioneer in showing that financial ratios can predict bankruptcy; he analyzed a sample of failed and solvent firms. It can be argued that, among the 1,000 MFIs in the sample, those 100 with the highest MD ratio are those closest to failure, understood not as bankruptcy, but rather as a kind of social failure. Maybe the term social bankruptcy should be used in

extreme cases of MFIs that give up their social commitment: for example, those that put in practice coercive lending methods outside ethical principles. Figure 2 visualizes the results for each of the 9 financial ratios. Each chart displays the median evolution of the two groups (centered and drifted MFIs), as well as the whole sector.

\*\*\*Figure 2\*\*\*

Table 3 shows the exploratory data analysis annual results for each financial ratio, as well as the mean, median and a non-parametric Mann Whitney test. Table 4 shows cross tabulations with a Chi-Square test of statistical significance for the dummy variable NGO.

\*\*\*Table 3\*\*\*

\*\*\*Table 4\*\*\*

Figure 2 visually reveals which ratio presents differences between drifted and centered MFIs. Tables 3 and 4 confirm if these differences are statistically significant or not. All the hypotheses were accepted, within the data analyzed. Operating Expense to Gross Loan Portfolio (OPER-EXPEN) is double for centered MFIs than for drifted MFIs, and these differences are statistically significant (H1). The Deposits to Total Assets value is higher for centered than for drifted MFIs, and the differences are statistically significant (H2).

As for MFI status, Table 4 shows that, among the 96 focused MFIs, 59% are NGOs, and among the 98 drifted MFIs, only 19% are NGOs. Differences are statistically significant (H3). Size values, measured by Total Assets, are higher for drifted than for centered MFIs, and the differences are statistically significant (H4).

Considering donations, centered MFIs receive more donations than drifted MFIs, and the differences are statistically significant (H5). This means that donors are considering aspects correctly, giving subsidies to MFIs at the end of the long tail.

In terms of profitability, analyzed by the Operational Self-Sufficiency ratio, drifted MFIs are more profitable than centered MFIs, but these differences are not statistically significant (H6).

As expected, centered MFIs get more financial revenue from their loan portfolio than drifted MFIs; this implies higher margins, interest rates and fees, these differences being statistically significant (H7). In our opinion, this is the main challenge that MFIs face: avoiding the poverty penalty.

Labor productivity, measured by the Loans per Staff Member ratio, is higher in centered MFIs than in drifted MFIs, and the differences are statistically significant (H8). Although gains in productivity are a way of reducing costs, not so much can be done, because centered MFIs'

employees are already more productive than those working in drifted MFIs.

No statistically significant differences were found in terms of financial structure, measured by the Gross Loan Portfolio to Total Assets (H9).

Finally, the value of the ratio Loans Written-Off to Gross Loan Portfolio does not present statistically significant differences (H10), so it is confirmed that the poor pay back.

To sum up, the typical pattern of a MFI operating at the end of the long tail, centered on fulfilling its mission is as follows: a small NGO, not collecting deposits, receiving donations, with high operating expenses, high labor productivity and high margins. No statistically significant differences were found in terms of financial structure, profitability or delinquency.

## **4.2 Logistic regression**

A model to discriminate between centered and drifted MFIs is obtained in this section. The most widespread technique to this end is logistic regression, a type of regression used when the target variable is a categorical variable with two categories. It has been widely used to predict company bankruptcy from financial ratios, since the Olhson (1980) study. The logistic regression model could be useful to predict mission drift probability. This would be especially interesting for donors, which aim at allocating their funds to the most socially oriented MFIs. Ghosh and Van Tassel (2008) and Cull et al (2009) discuss the role of donors and mission drift practices. Other interested parties in this kind of study would be MFI social rating agencies. Table 5 displays logistic regression results.

\*\*\* Table 5\*\*\*

The bootstrap resampling method has been used to estimate the parameters, using 1,000 total samples. To minimize the multicollinearity problem, a stepwise selection process, with both forward search and backward search, was performed. Table 5 shows a parsimonious model that incorporates 5 variables: Ln(Total Assets), Donations to Equity, Deposits to Assets, Loans per Staff Member and Yield on Gross Portfolio. The regression coefficient signs were as expected. The percentage correctly predicted is 79.3%, and Nagelkerke  $R^2$  is 0.522. Logistic regression results confirm and detail the patterns identified by the univariate study.

The empirical study reveals that MFIs that fulfill their social mission can occupy a niche market at the end of the long tail, without falling into mission drift. Centered MFIs can be considered as good bankers, not only for serving the poor, but also because of their banking practices. They have good clients who pay back, keeping acceptable risk levels. Their strategy leads to adequate margins leading to a fair level of profitability. The lack of deposits and their social performance legitimates them to obtain donations.

However, a final reflection from the study is that it seems unavoidable that high operating costs in the long tail would lead to charging high interest rates and fees to poor clients. How to solve this problem? Deposit collection does not seem realistic, because centered MFIs serve the poorest. Through subsidies, centered MFIs already receive more subsidies than drifted ones, and Figure 2 shows that subsidies levels are not increasing in recent years. Improving labor productivity is difficult, because centered MFIs are already more productive than drifted ones. Reducing profits can jeopardize their sustainability. The Long Tail Theory (Anderson, 2004 and Brynjolfsson et al 2011), successfully applied to sectors such as e-commerce can be a reference. Internet companies show that, in Pareto distributions, the long tail can also be profitable. Usually, off line retailers undervalue the long tail because of the costs of inventory storage and distribution. Online shops like Amazon make profits in attending the long tail by selling less of more. Amazon keeps a very large catalogue with relative unpopular products that always find someone willing to buy them. To reduce inventory storage and distribution costs the key aspect was innovation in technology. Microfinance institutions should also reduce the operating costs related to microcredits, then a similar strategy would be desirable for the sector. According to González (2011) analyzing data from 1,007 MFIs in 2009, from every \$100 collected by MFIs from borrowers as interest rates and fees, \$63 covered operating expenses, \$21 financial expenses, \$7 portfolio losses, \$3 taxes, and \$7 were left for profits.

There are several ways to lower operating costs. The first one is that MFIs improve their technology, usually rudimentary and far from a real banking management information system. The second one is that conventional banks enter the microcredit market, adapting their efficient information systems to microfinance needs. Amazon does not exclusively focus on the long tail, which is a niche market, but serves all the market. In other words, that should imply that commercial banks can downscale to microfinance, where several examples already exist. The third way, inspired in peer-to-peer social networks, would be that actors in the social arena (lenders, donors, social investors, depositors and so on) collaborate on administrative tasks, like several e-business models have achieved. Tripadvisor is an example, because the contents in their site are generated by hotel guests who rate and build the website. There are several examples of P2P networks in lending, but their potential is still to be developed.

## **5. CONCLUSIONS**

MFIs lend to the poorest, but some of them have drifted from their mission. The theoretical framework of this study is based on considering wealth as a Pareto distribution function, comprising a fat tail with wealthy individuals and a long tail with many poor people. MFIs are a kind of financial

institution that attend the long tail, where poor people, traditionally excluded from financial services, are located. It is argued that some MFIs have a tendency towards mission drift, by simply applying the Pareto's 80/20 Principle, which affirms that the less interesting customers are placed in the long tail. Any business aims at the most profitable customers, and what most MFIs really do is going against the tide, driven by their strong social principles.

The poorest people are found at the end of the long tail, and microcredit lending entails high operating expenses, given the small amount of the loans to be processed. These kinds of customers barely have savings to be collected by the MFI. Although there are banks that have entered this niche market, small NGO MFIs are attending the long tail. If they drift from their mission, they lose their social character, and this would justify a cut in the donations received. Both drifted and centered MFIs have similar profitability levels, those needed to avoid business closure. Contrasting private banking attending the fat tail where several employees are devoted to a single client, at the end of the long tail less employees attend a large amount of clients. The poor always pay back and the delinquency levels in centered and drifted MFIs are similar.

An empirical study using a database of around 1,000 MFIs from years 2006-2010 tested the above reasoning. A mission drift ratio has been built. A logistic regression has allowed for identifying the distinctive features of centered vs drifted MFIs, as well as the symptoms that antecede a kind of social failure.

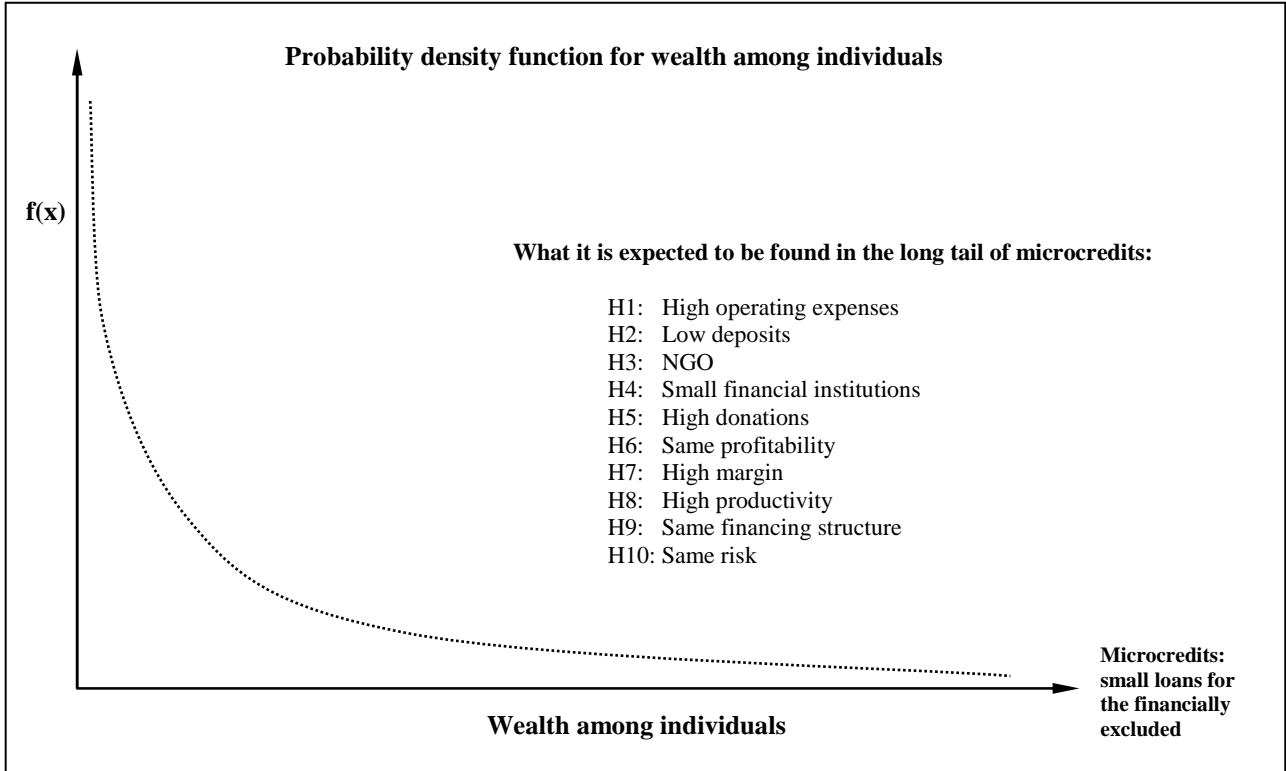
With high operating expenses, lack of deposits and uncertain donations, the most obvious way to achieve sustainability is to increase margins; that is, charge the poor with high interest rates and fees. This is an example of a poverty penalty. The paper concludes by providing suggestions to untie this Gordian knot caused by the Pareto Principle. Some dot com companies have positioned themselves in the long tail of their markets without increasing prices. This has been done by reducing costs and gaining efficiency through the innovative use of information and communication technologies.

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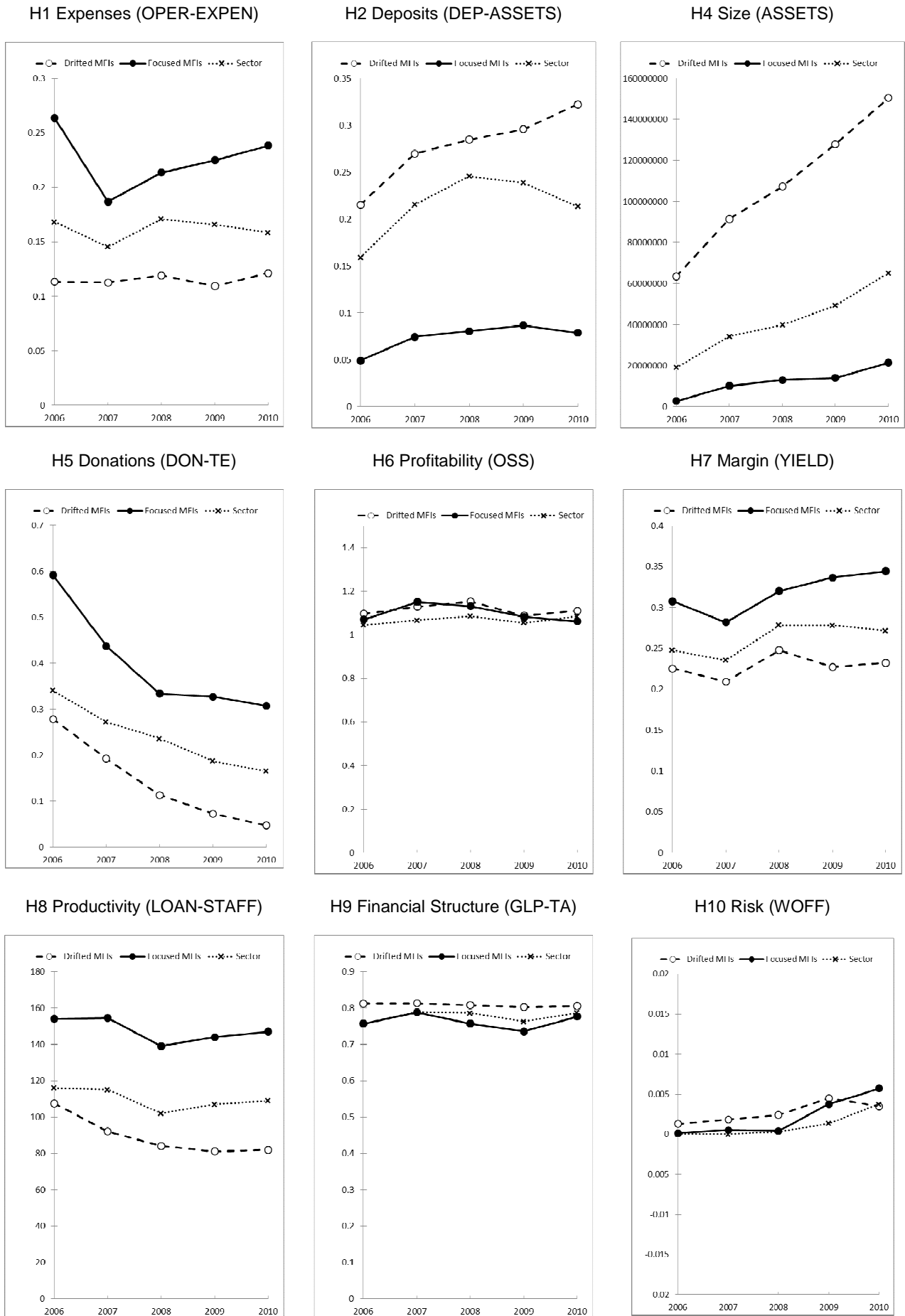
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**Figure 1.** The long tail of credits.





**Figure 2.** Comparison of median values for drifted MFIs, focused MFIs and the whole sector.

MFI	GLP	ALS	RB	WB	PR <sub>ALS</sub>	1-PR <sub>RB</sub>	1-PR <sub>WB</sub>	MD ratio	GLP <sub>MD</sub>
<i>A</i>	6,869,043	1,199	0.90	0.75	0.22	0.11	0.11	0.15	1,021,198
<i>B</i>	98,592,718	4,758	0.19	0.15	0.78	0.67	0.89	0.78	76,672,270
<i>Centered</i>	58,121,383	536	1.00	0.90	0	0	0	0	0
<i>Drifted</i>	39,792,122	7,392	0.10	0.05	1	1	1	1	39,792,122
<i>E</i>	16,971,771	5,266	0.67	0.28	0.89	0.22	0.78	0.63	10,686,558
<i>F</i>	439,834,903	3,021	0.10	0.43	0.55	0.89	0.44	0.63	276,949,377
<i>G</i>	19,677,542	4,558	0.30	0.42	0.67	0.44	0.67	0.59	11,662,223
<i>H</i>	417,277,505	2,842	0.27	0.54	0.44	0.78	0.33	0.52	216,427,933
<i>I</i>	41,159,697	809	0.33	0.42	0.11	0.56	0.56	0.41	16,779,436
<i>J</i>	107,986,585	2,434	0.25	0.68	0.33	0.34	0.22	0.30	32,036,020
<i>Median</i>		2,931	0.29	0.43					

**Table 1.** Data from a set of MFIs from the same country. Calculations to obtain the Mission Drift ratio.

<i>Hypotheses</i>	<i>Variable</i>	<i>Definition</i>
H1 (Expenses)	OPER-EXPEN	Operating Expense to Gross Loan Portfolio
H2 (Deposits)	DEP-ASSETS	Deposits to Total Assets
H3 (Type)	NGO	Dummy variable taking the 1 value for NGO MFIs
H4 (Size)	ASSETS	Total Assets
H5 (Donations)	DON-TE	Donations to Total Equity
H6 (Profitability)	OSS	Operational Self-Sufficiency. Financial Revenue to (Financial Expense + Net Loan Loss Provision Expense + Operating Expense)
H7 (Margin)	YIELD	Yield on Gross Portfolio. Financial Revenue from Loan Portfolio to Gross Loan Portfolio
H8 (Productivity)	LOAN-STAFF	Loans per Staff Member. Number of Loans Outstanding to Number of Personnel
H9 (Structure)	GLP-TA	Gross Loan Portfolio to Total Assets
H10 (Write off)	WOFF	Write off ratio. Value of loans written-off to Gross Loan Portfolio

**Table 2.** Variables employed and their definition.

		2006			2007			2008			2009			2010		
		Focused	Drifted	Sector	Focused	Drifted	Sector	Focused	Drifted	Sector	Focused	Drifted	Sector	Focused	Drifted	Sector
<b>(H1)</b> <b>OPER- EXPEN</b>	N	44	38	877	77	72	1308	89	85	1327	97	95	1234	100	100	1059
	Mean	0.57	0.15	0.37	0.26	0.15	0.26	0.27	0.19	0.26	0.30	0.15	0.32	0.28	0.17	0.24
	Median	0.26	0.11	0.17	0.19	0.11	0.15	0.21	0.12	0.17	0.23	0.11	0.17	0.24	0.12	0.16
	Mann Whitney test	444 (0.000)***			1490 (0.000)***			2399 (0.000)***			2275 (0.000)***			2621.5 (0.000)***		
<b>(H2)</b> <b>DEP- ASSETS</b>	N	44	38	869	76	72	1299	88	83	1317	96	94	1202	97	97	1015
	Mean	0.05	0.22	0.16	0.07	0.27	0.22	0.08	0.28	0.25	0.09	0.30	0.24	0.08	0.32	0.21
	Median	0.00	0.04	0.00	0.00	0.14	0.00	0.00	0.21	0.09	0.00	0.21	0.05	0.00	0.26	0.02
	Mann Whitney test	607 (0.019)**			1797 (0.000)***			2299 (0.000)***			2904 (0.000)***			2750 (0.000)***		
<b>(H4)</b> <b>ASSETS</b>	N	44	38	870	77	73	1312	88	84	1321	97	95	1208	97	97	1015
	Mean	2782877	63575744	19140796	10179371	91522648	34223872	12993226	107306559	39844371	14053700	127938705	49401315	21484708	150392831	65182224
	Median	1817391	9182145	1859442	3008663	15777596	3270665	3549430	20561905	4202652	3336858	19466301	5562290	4078997	22573700	7514130
	Mann Whitney test	343 (0.000)***			1424.5 (0.000)***			2011 (0.000)***			2648.5 (0.000)***			2745 (0.000)***		
<b>(H5)</b> <b>DON- TE</b>	N	44	38	864	76	72	1295	88	83	1313	96	94	1196	97	97	1013
	Mean	0.59	0.28	0.34	0.44	0.19	0.27	0.33	0.11	0.24	0.33	0.07	0.19	0.31	0.05	0.17
	Median	0.34	0.03	0.00	0.19	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mann Whitney test	594 (0.020)**			1925 (0.001)***			2685.5 (0.001)***			3321 (0.000)***			3378 (0.000)***		
<b>(H6)</b> <b>OSS</b>	N	42	40	876	73	68	1223	81	83	1286	90	90	1154	95	94	973
	Mean	1.01	1.07	1.13	1.10	1.35	1.09	1.21	1.32	1.12	1.11	1.24	1.07	1.16	1.27	1.12
	Median	1.07	1.10	1.04	1.15	1.13	1.07	1.13	1.15	1.09	1.08	1.09	1.06	1.06	1.11	1.09
	Mann Whitney test	814 (0.809)			2297 (0.445)			3307 (0.857)			3788 (0.453)			4054 (0.274)		
<b>(H7)</b> <b>YIELD</b>	N	44	38	877	77	72	1308	89	85	1327	97	95	1234	100	100	1059
	Mean	0.32	0.23	0.29	0.30	0.23	0.31	0.34	0.27	0.33	0.36	0.23	0.39	0.35	0.26	0.32
	Median	0.31	0.23	0.25	0.28	0.21	0.24	0.32	0.25	0.28	0.34	0.23	0.28	0.34	0.23	0.27
	Mann Whitney test	626 (0.049)**			1808 (0.000)***			2638 (0.000)***			2626 (0.000)***			3283.5 (0.000)***		
<b>(H8)</b> <b>LOAN- STAFF</b>	N	61	54	749	54	55	817	62	63	975	78	83	993	97	93	963
	Mean	175.97	126.04	137.57	158.65	107.24	134.66	156.73	101.56	127.91	172.14	106.16	130.40	174.77	102.35	133.52
	Median	154.00	107.50	116.00	154.50	92.00	115.00	139.00	84.00	102.00	144.00	81.00	107.00	147.00	82.00	109.00
	Mann Whitney test	1088.5 (0.001)***			946 (0.001)***			1159 (0.000)***			1775.5 (0.000)***			2331 (0.000)***		
<b>(H9)</b> <b>GLP- TA</b>	N	44	38	869	76	72	1299	88	83	1317	96	94	1202	97	97	1015
	Mean	0.71	0.77	0.73	0.76	0.75	0.77	0.74	0.77	0.76	0.71	0.75	0.76	0.74	0.77	0.76
	Median	0.76	0.81	0.76	0.79	0.81	0.79	0.76	0.81	0.79	0.74	0.80	0.76	0.78	0.81	0.79
	Mann Whitney test	721 (0.284)			2684 (0.841)			3137 (0.111)			3725 (0.037)**			4260 (0.255)		
<b>(H10)</b> <b>WOFF</b>	N	44	38	877	77	72	1308	89	85	1327	97	95	1234	100	100	1059
	Mean	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.02	0.02	0.02
	Median	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
	Mann Whitney test	789 (0.649)			2325 (0.079)*			3540 (0.449)			4387 (0.558)			4599 (0.319)		

**Table 3.** Exploratory analysis. In parentheses, the p-values of the Mann Whitney U test.

	<i>Non-NGO</i>	<i>NGO</i>	<i>Total</i>	<i>Pearson Chi-Square</i>
<i>Drifted MFIs</i>	77 (80.2%)	19 (19.8%)	96	31.437 (0.000)
<i>Focused MFIs</i>	40 (40.8%)	58 (59.2%)	98	
<i>Total</i>	117	77	194	

**Table 4.** Study of mission drift by type of entity. Categorical variable.

$$Mission\ Drift_k = \beta_0 + \beta_1 \ln(TotalAssets)_k + \beta_2 Don\ Equity_k + \beta_3 DepAssets_k + \beta_4 LoanStaff_k + \beta_5 Yield_k + e_k$$

	Expected sign	Coefficient	SE	Significance (2-tailed)
Constant		-4.545	2.234	(0.030)
Ln(TotalAssets)	+	0.406	0.127	(0.001)
DonEquity	-	-1.068	0.737	(0.011)
DepAssets	+	3.101	1.114	(0.002)
LoanStaff	-	-0.010	0.005	(0.002)
Yield	-	-3.126	1.893	(0.040)

Note: N=184 cases; -2 Log likelihood = 163.551; Nagelkerke  $R^2 = 0.522$ ; Chi square = 91.440; Chi square significance =0.000

Correctly predicted percentage: focused MFIs=86.2; drifted MFIs= 72.2; overall=79.3

MissionDrift = Dummy variable takes value of 0 if the MFI is focused and 1 if it is drifted

Ln(TotalAssets) = Total Assets logarithm

DonEquity = Donations to Total Equity ratio

DepAssets = Deposits to Total Assets

LoanStaff= Loans per Staff Member

Yield= Yield on Gross Portfolio

**Table 5.** Multivariate Logistic Regression results. Bootstrap results are based on 1000 bootstrap samples.