Charles University

Faculty of Social Sciences
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MASTER'S THESIS

Analysis of publicly listed microfinance equity diversification potential and possible mission drift

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Declaration of Authorship

The author hereby declares that he compiled this thesis independently; using only the listed resources and literature, and the thesis has not been used to obtain a different or the same degree.

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Prague, January 6, 2017

Signature

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Abstract

The objective of this master thesis is to investigate, whether equity of publicly listed Microfinance institutions (MFIs) can be used for portfolio diversification, while these MFIs still maintain its original social mission. To explore these two aspects of publicly listed MFIs, this study is split in two major parts.

The first part is focused on the comparison of risk and return characteristics of selected MFIs shares with conventional financial institutions shares and market equity benchmark indices. The analysis indicates no significant diversification potential in publicly listed microfinance equity.

The second part of this thesis is exploring the impact of IPO on publicly listed MFIs social outreach. It was found some evidence of a drift from the original social mission among selected MFIs. However, there is not enough evidence to claim that for-profit investment cause long-term significant operational change of MFIs.

JEL Classification	F65; F21; G15; G21
Key words	microfinance, investment, risk, return, financial markets, social outreach

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Extant of the thesis	91 601 characters (with spaces)

Abstrakt

Cílem této diplomové práce je prozkoumání, zda mohou být veřejně obchodované akcie mikrofinančních institucí využity k diverzifikaci portfolia a zároveň nezpůsobit změnu původního cíle těchto institituci s ohledem na pomoc chudým v rozvojových zemích.

První část je zaměřena na srovnání veřejně obchodovaných titulů mikrofinančních institucí s vývojem na světových a rozvojových finančních trzích. Regresní analýza využívající vytvořených trežní kapitalizací vážených indexů neodhalila signifikatní diverzifikační potenciál v akciích mikrofinančních institucí.

V druhá části diplomové práce analyzuji efekt vstupu mikrofinančních institucí na finančních trhy na možný posun od jejich puvodního cíle - snižování chudoby a přiměřené zvyšování finanční inkluze. Pozorvání naznačilo určité signifikatní změny, ale analýza nepotvrdila dlouhodobý trend změny původního cíle těchto institituci způsobený vlivem zisk-maximalizujícíh investorů.

Klíčové pojmy	microfinance, investice, riziko, výnos, finanční trhy, socialní přínos

Contents

Acronyms

MFI Microfinance Institutions

MB Mainstream banks

SRI Social Responsible Investment

CAPM Capital asset pricing model

LIFI Low income financial institutions

SKS SKS Microfinance

Master's Thesis Proposal

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Proposed Topic:

Are listed Microfinance Institutions safe opportunity for portfolio diversification purposes?

Motivation:

The idea of lending small loans to poor people, which consecutively led to the emergence of Microfinance sector, was invented by Mr. Muhammad Yunus in 70's. The fundamental goal was to offer a capital to disadvantaged people, who couldn't be served by regular banks due to their lack of collateral. Since then the number of Microfinance Institutions (MFIs) grew rapidly. This progress was associated with increasing variety of services delivered to borrowers, from specific-purpose loans to insurance.

During this enormous growth several issues have surfaced and became a subjects of large number of studies. One of the main concerns is the ongoing process of changes among Microfinance Institutions (MFIs) towards more professional and for-profit managed businesses, such as MFI's which publicly offered their stocks.

Example of the challenges in this area is Andhar Pradesh crisis in 2011, which led to suicide wave caused by insolvency of SKS Microfinance bank's borrowers, one of the largest MF banks. According to Washington Street Journal and other literature there are clues that the root-cause of this situation was SKS's hugely successful IPO and investors driven hyper-growth period.

These issues indicate that some of the listed MFI's can get under investors pressure to increase profitability leading to "mission drift" and the business long term sustainability risk. There are however very successful MFI's IPO examples as well (e.g. Compartamos Banco IPO in 2007).

Motivation of my Master thesis is to get better understanding of listed MFIs around the world and attempt to answer the question whether MFIs equity is safe and convenient opportunity for investor's portfolio diversification.

Hypotheses:

Hypothesis #1: Microfinance Institutions are shifting towards mainstream finance
Hypothesis #2: There are Microfinance equities representing a good portfolio diversification option

Methodology:

Explain in detail how you plan to test each hypothesis. Include a concrete description of the material you are going to work with (e.g., data sources).

In order to investigate the performance of MFIs and test the hypothesis, I will analyze data from multiple sources. The main source will be the Datastream/Eikon from Reuters, where the everyday stock prices and annual reports are stored. As a second source, I will use the comprehensive Mixmarket database.

The analysis will be conducted as follows. At first, I'll explore whether the trend among listed MFIs shifting towards mainstream finance still preserves (Briere and Szafarz, 2014). For the purpose of this analysis, I'll construct capitalization-weighted indices based on stocks prices of both listed MFIs and selected Financial institutions. The MFIs index will be including stocks of *Bank Rakyat, Bank Danamon, Bank Tabungan Pensiunan, SKS Microfinance, African Bank, Capitec, Equity Bank, Compartamos Banco, Financiera Independencia, First Cash Financial, IPF* (Volume Growth and Valuation Contraction, 2012) and counterpart index will be based on stocks of financial institutions included in MSCI index. I assume that one of the main proof of shifting listes MFIs towards mainstream finance will be reaction to recent situation on China's capital markets.

At second, I'll explore risks associated Microfinance. Accroding to Crabb (2004), MFIs are highly sensitive to foreign-exchange risk. Hence, I'll use CAPM method to explore the systematic risk. Furthermore, MFIs are facing other risks such as no collateralized loans. Hence, I'll attempt to capture the sustainability of MFIs by using Operational Self-Sufficiency measure (Ahlin and Lin 2006).

At third, I'll look for diversification benefits from investing into Microfinance equity. In other words, I will examine whether inclusion of external asset in hypothetical portfolio will shift the efficient frontier northwest.

Finally, I'll go through of each annual report of 11 listed MFIs in the sample and attempt to find some mutual pattern which could help us to get better insight.

Expected Contribution:

What new do you plan to bring to the current discussion in the academic literature? How could your results be used in practice?

The possible findings of my Master thesis may contribute to nascent literature attempting to explore the MFIs performance from capital markets viewpoint. Regardless to relatively small number of listed MFIs, its market capitalization

accounts for large amount of capital and each of the MFIs from the sample belongs to the largest banks of its home country. Hence, the possible observations could shed light on the overall performance of Microfinances sector in six countries, namely Mexico, Kenya, Indonesia, South Africa, Bangladesh and India.

From practical standpoint, the results of this study may be useful for potential investors who seek for Emerging markets exposure.

Outline:

1. Intorduction
2. Literature Review
3. Banks and Country Review
4. Data/Methodology
5. Results
6. Conclusion

Core Bibliography:

List the most important papers you are going to use (specify at least 5 relevant references).

- *Does Commercial Microfinance Belong to the Financial Sector? Lessons from the Stock Market* (Briere, Szafarz, 2014)
- *Investment in Microfinance Equity: Risk, Return, and Diversification Benefits* (Briere, Szafarz, 2011)
- *A study of Four Listed Micro Finance Institutions* (Monroy, Huerga 2012)
- *SUITABILITY OF MICROFINANCE AS AN INVESTMENT OPTION* (Karel Janda, Barbora Svárovská 2012)

Author **Supervisor**

1. Introduction

1.1. Summary

The objective of this master thesis is to investigate the attractiveness of publicly listed Microfinance institutions (MFIs) equity from the diversification viewpoint and also analyze the impact of Initial public offering on MFIs social outreach.

The comparison of risk and return characteristics of selected MFIs shares with conventional financial institutions shares and market equity benchmark indices indicates no significant diversification potential for profit-seeking investor.

It was found some evidence with regards to the shift from the original social mission among selected MFIs, which might be caused by the involvement of for-profit investors. However, there is not enough evidence to affirm long-term mission drift.

1.2. Historical context

The origin of modern banking is dated to 13th century, when Italian goldsmiths were accepting deposits and providing loans. Their very first costumers were kings and rich merchants. As the banking services were becoming more commonplace, the portfolio of costumers was enlarging. However, despite the enormous progress of banking there has still been remaining significant part of the society unbanked. The financial exclusion has not been driven only by distance from economic epicenters, but also by wealth of excluded people. The poverty line has drawn the imaginary edge between banked and unbanked part of the world and contributed to widening of socioeconomic scissors.

As long as the first microloans were provided to poor people, they had only a small chance to escape the poverty trap. Microloans were offered to the poorest with the aim to stimulate their economic activity. These small loans became a building block of nowadays microfinance industry consisting from hundreds of microfinance institutions (MFIs) around the world.

Two factors typical for MFIs are the social dimension of operations and willingness to bear the risk associated with the lending money to people at the bottom of the social and economic pyramid. The risk arises from the fact that poor people are not able to cover their loans by any collateral. Moreover, the amount of money in risk is being amplified

by high cost of managing the lending process: from providing the loan to frequent cash installment payments. The social dimension has been mainly describing the nascent era of microfinance, when the pioneering MFIs were only donors founded NGOs.

The microfinance pioneer age in 70s was followed by successful development in each aspect of the industry. The initial success of micro loans has been mainly fueled by long-time non-saturated demand for financial resources from poor borrowers.

"Money, says the proverb, makes money. When you have got a little, it is often easy to get more. The great difficulty is to get that little."

Adam Smith, 1776

The poor unbanked people showed very good entrepreneurial skills and ability to swiftly repay their debts. The large demand and strikingly relatively low loan-loss rate were considered as a possible way for poverty alleviation. As a result, number of MFIs had been rapidly growing since mid-70s.

The expansion of microfinance industry has been foremost typical for countries like India, Bangladesh, Mexico or Philippines. Nature of microloans as an instrument of poverty alleviation and reduction contributed to its widespread among all emerging markets around the world. Even some developed countries have introduced microfinance services to domestic financial markets. (Morduch, Jonathan, and Mark Schreiner, 2001)

The progress of microfinance industry has not been registered just in terms of width, but also as a matter of deepening of the process. The initial risk reducing group loans models were complemented by special purpose loans and other risk mitigating mechanisms. Furthermore, the portfolio of offered micro services has grown. Instruments such as micro-savings or micro-insurance have been introduced. The most prevalent trend of the last two decades in microfinance universe was migrating the former only cash industry to e-commerce. MFI called M-Pesa has been very successful with its mobile phone-based money transfer microfinancing service in Africa. Other milestone occurred when peer-to-peer model of lending met microfinance. Kiva Microfunds is the pioneer of collecting small investments and providing them to people in developing parts of the world.

The microfinance industry has dramatically changed over the years into a large and significantly important financial sector for many countries, with its downsides and

upsides. Especially the upsides used to be subjects of many studies and working papers by the time of microfinance's nascent era. Researches were pointing at beneficial effect of microloans on consumption of poor or small businesses profits. However, the downsides, doubts and possible threats have been surfacing during the last decade. Several studies have been questioning the issues related to methodologies and assessments of microloans effects on poverty reduction, whereas others introduced debate over mission drift, predatory lending, over-indebtedness or governance and regulation of MFIs.

The recent doubts were triggered by steeply rising number of for-profit MFIs entering the industry or switching from former non-profit MFIs. The term closely associated with this tendency is mission drift: the drift from poverty alleviation mission. The pressure to expand outreach of for-profit MFIs may cause change in, for instance the target group structure or loans sizes. The top of the iceberg driving these doubts was the Andhra Pradesh crisis (2011), which even intensified the debate. The possible root of the crisis may be found in SKS Microfinance (SKS) initial public offering (IPO) in 2010. In order to attract investors, SKS was scaling up its activities before the IPO. The large number of provided loans has been followed by large write-off ratio after the IPO. There was also an increase in number of suicides in the area. The ex-post investigation explored that many borrowers provided with microcredit committed suicide, as a result of not being able to pay their debt.

Muhammad Yunus, Nobel Price Peace Laureate and co-founder of Grameen bank, justifies that for-profit Microfinance Institutions may twist the beneficiaries' sides, from borrowers to investors. The original mission of microfinance to fight the poverty, bad loans and helping poor people to escape from poverty trap will drift away. In contrary, some argue that commercialization may positively influence the industry: drive innovations, efficiency or progress better tailored services. Moreover, the funds from private sector are needed for achieving the mission goal of complete financial inclusion.

According to the Global Findex Database (2014), there were 2 billon people unbanked in 2014. The microfinance industry has played an important role on the path towards the reduction of the financial exclusion number. Despite the effort made to reduce the number, it still remains relatively large. On the other hand, socially responsible donor's

funds are restricted and not able to reach all unbanked adults. Hence, the private equity investments are desirable for scaling up the MFIs activity.

Two types of private investments opportunities are available, namely, listed equity of MFIs and Microfinance Investments Vehicles (MIVs). The latter option refers to the investment funds providing investors with exposure to microfinance industry. There has been an effort to assess the performance of these funds (Rausser and Janda, 2014; Galema et al., 2011; Janda and Svárovská, 2010). These studies revealed that investments in MIVs represent an attractive opportunity for the portfolio diversification. Nonetheless, the analysis of MIVs is quite cumbersome and including several drawbacks. Researcher's observations rely only on directly collected data from MIVs reports, this might be an issue since the MIVs portfolios are often opaque.

In comparison, publicly listed MFIs are obliged to issue annual reports and publicly traded equity priced on daily basis allows for more comprehensive and deeper analysis. The data availability contributes to the research transparency. This considerable advantage over MIVs performance analysis outweigh the relatively small number of publicly listed MFIs.

Taking in account the need for private investments in microfinance universe and possible threat of mission drift, there is a convenient reason to shed light on publicly listed MFIs. There have already been conducted a researches exploring the risk-return performance and similarities between listed MFIs and mainstream banks (Marie Brière and Ariane Szafarz, 2010), or mission drift (Sarah Segill, 2013). However, none of these researches have combined the finance and social perspective in terms of publicly listed MFIs to my knowledge.

1.3. Contribution

The contribution of this master thesis lays in its original approach considering both profit-seeking investor's and microcredit borrower's viewpoint. Moreover, it analyses the most recent period after 2010 until nowadays. On one side, this thesis assesses the diversification potential in microfinance. Hence, this allows to make a conclusion about the attractiveness of such investment to for-profit investors. On the other side, it considers the social aspect in MFIs operations by analysis of IPO's effect allowing to make a conclusion about the possible mission drift.

1.4. Approach

The first part observes MFIs rate of returns and compares them with benchmark indices and other mainstream banks rate of returns using Capital asset pricing model (CAPM).

In the second part, variables such as average loan size, percentage number of women borrowers or number of loans per loan officers are considered as proxies for the purpose of mission drift's investigation.

Two distinct data sets are used for the analysis. First dataset is sourced from the local stock exchanges, where the publicly listed Microfinance Institutions operate. The second dataset comes from database collected by former non-profit organization called Mixmarket.org.

In order to answer major questions of this research, this study is split into two logical self-standing parts according to type of the dataset and research questions. Each of the parts includes the relevant Literature review, Methodology, Data, Results and Analysis section.

The conclusion is gathering the results from both parts and putting them in broader picture.

2. Part I – Publicly listed MFIs equity performance

2.1. Literature review

In this section, the most relevant studies in the field of microfinance concerning to Microfinance institutions (MFIs) financial performance are presented.

2.1.1. MFIs preformance in the light of macroeconomic measures

A share of population under poverty line is gradually decreasing. According to the World Economic Forum, there has been 9,6% of population living with 1.9 dollar per day in 2015. The progress in terms of poverty alleviation is associated with revers financial inclusion's trend. More precisely, financial inclusion figure refers to the share of people provided with financial services globally and it has been increasing while share of people under poverty line has been decreasing.[1] (Global Findex Database, 2014). The trend of

[1] Poverty line or Poverty threshold is a minimum income per day. In 2015 the World bank set the international poverty line to 1.90 USD. (World Bank, 2015)

increased number of financial included people closely connected to the size of microfinance industry.

The early stages of microfinance were between 1970s and 1980s, when poor people from Bangladesh were provided with small sums of money for the first time. The potential of microfinance lifting people above the poverty line was apparent and that fact spurred the progress. First studies were mainly focused on assessing the impact of microfinance on poor. One of the first researches questioning the financing structure of MFIs was conducted by Jacob Yaron in 1992. He developed the subsidy dependence index analyzing the ability of MFIs to operate without external financial support. Based on this index, he observed among Grameen bank and Bank Rakyat Indonesia the trend towards decreasing subsidy dependency. This tendency was accompanied by increasing interest rates and size of the loans. It was one of the first signals showing that financing poor can be economical profitable. Nonetheless, the findings about increasing loan's sizes and interest rates brought to light also the question about the impact of pressure on profitability and sustainability of MFIs on its operation and original social mission. [2]

Since then, researchers have been approaching the question from variety of perspectives. They were attempting to explore the attractiveness of investments into microfinance either through the debt or equity financing.

The studies exploring the MFIs performance in macroeconomic context are Gonzalez (2007), Krauss and Walter (2009) and Ahlin et al. (2011). Each of these researches draw the conclusion on macroeconomic measures and dataset from MixMarket.org.[3]

Gonzalez (2007) was analyzing the effect of GNI per capita changes on four portfolio risk indicators, namely, Portfolio at Risk over 30 days, Portfolio at Risk over 90 days, Loan loss Rate, and Write-off Ratio. He observed that only Portfolio at Risk over 30 days significantly reacts to changes in GNI per capita. This observation indicated that microfinance portfolios are resilient to macroeconomic shocks. This conclusion also points to the evidence of possible microfinance investment attractiveness for portfolio diversification.

Krauss and Walter (2009) conducted a comprehensive research investigating the microfinance correlation with domestic and international markets. They ran fixed-effects

2 We elaborate on the topic of social mission drift in the Part II. of this thesis
[3] Mixmarket.org is an institution collecting business data about more than 2000 MFIs around the world.

panel regressions on five indicators: return on equity, profit margin, change in total assets, change in gross loan portfolio and loan portfolio at risk. The global market risk represented by the S&P 500 and domestic market risk, represented by domestic GDP, were the dependent variables. Krauss and Walter (2009) explored that MFIs investment opportunity may be beneficial for international investors, since MFIs performance is not correlated with global markets. Nonetheless, it reports to be correlated with domestic markets, and hence, the beneficial effect of diversification vanishes for domestic investors.

Ahlin et al. (2011) were investigating the complementarity between broader economy and MFIs performance. Their results indicated that MFIs perform better in covering costs, when economics growth is strong. They also observed that in the financially deeper economies, MFIs tend to have lower defaults rate and charge lower interest rate.[4] They concluded that the country context plays an important role in determining the MFIs performance.

2.1.2. MFIs ivestment preformance in rate-of-return context

The other research's approach to MFIs investment opportunities is taking into account the returns from the specific investments. From that viewpoint, two options have been at hand - investments into Microfinance vehicles (MIVs) and direct investments into MFIs equity.

The first option was investigated by Janda & Svárovská (2010). They found out slightly negative correlation between MIVs returns and the performance of stock and fixed income markets. According to their results, the returns of selected MIVs have tendency to move in opposite direction to benchmark indices. They concluded that investments into MIVs offer a desirable asset to investor's portfolio.

Their observations found support in Galema, Lensink, & Spierdijk, (2011) research exploring beneficial effect of investments in microfinance on mean – variance frontier of investor's portfolio. Galema, Lensink, & Spierdijk, (2011) also suggested that investments in Latina America generates more efficient portfolio than in Africa.

4 Financially deeper economics term refers to the countries with larger number of financial institutions offering wider portfolio of financial services relatively to other countries.

Janda & Rausser (2013) advanced the previous investigation of MIVs performance. They conducted a panel date regression on 22 funds denominated either in USD or EUR. The result of their analysis report close-to-zero beta referring to good diversification potential for investor's portfolio. They also performed a mean - variance spanning test exploring benefits from having microfinance asset in portfolio. The findings confirmed the previous beta's observations, and hence, they concluded that MIVs are reasonable investment opportunity for social investors.

Their research was extended by Madeleine Brandt and Caroline Nacksten (2015). They draw the conclusion about the financial performance of MIVs on larger sample ranging up to 83 funds. Moreover, they compared returns of MIVs with other Social responsible investments (SRIs). They found out that adding microfinance investments funds (MFIFs) to a portfolio of developed market assets provide an investor with diversification effect. Moreover, they explored that MFIFs do not perform worse than considered SRIs.

The specificity of MIVs was stressed by Matthäus-Maier & von Pischke (2006) and Cull, R., Demirguc-Kunt, A. & Morduch, J. (2009). The latter study revealed that investments in microfinance are rather attractive for social responsible than for pure profit seeking investors, due to relatively high costs on investments.

In contrary to MIVs, MFIs equity offered at local stock exchanges provide us with different investment opportunity. It also has an advantage for analysis, due to daily quoted prices.

The first paper shedding light on microfinance publicly listed equity was published by O'Donohoe et al. (2009). They observed low-income financial institutions (LIFIs) to outperform the national indices. In comparison to the former observation of strong resilience to shocks among MFIs, they explored the resilience to be lowering over the time.[5]

Monroy and Huerga (2012) assessed the performance of MFIs listed in stock exchanges, observing their ability to perform better in financial crisis and downturns.

The most recent paper on analyzing performance of MFIs publicly traded equity has been written by Brière and Szafarz (2014). They conducted a comprehensive research

5 The Low-Income Financial Institutions are focusing on poor people, but they do not always satisfy the characteristics of MFIs, and hence, the sample of publicly listed LIFIs is overlapping the sample of publicly listed MFIs.

observing the potential in diversification via MFIs equity. Their findings are in accord with O'Donohoe et al. (2009) observations, however, they also observed the tendency of vanishing diversification potential. They underlined this finding with conclusion pointing at close correlation between mainstream banks and publicly listed microfinance institutions.

2.2. Methodology

In this section the hypotheses and the proposed estimation methodology are defined.

2.2.1. Hypotheses

The microfinance equity was perceived as a good source of diversification in the past. However, it was found that the difference between the for-profit microfinance and commercial banking sector has been diminishing overtime (Briere and Szafarz, 2011). As a consequence, the diversification potential represented by microfinance equity for profit seeking investor's portfolio has been vanishing.

This is challenging the hypothesis that there is a still some diversification potential in the MFIs equity:

Hypothesis 1	The returns on investment in microfinance publicly listed equity are not positively correlated with returns on investment of a benchmark portfolio (in terms of beta coefficient)[6]

This hypothesis is based on a belief that the underlying asset of microfinance institutions is not fully exposed to the global markets. In other words, the microcredit borrowers lending funds from MFIs are involved rather in small local businesses, which are independent to global measures. Moreover, MFIs are leveraging special risk mitigation technique, such as joint liability groups. These groups are provided with credit and each member of the group is obligated to pay its share of debt. In case, some member is not able to repay its debt the group must share the indebted member's portion of loan. There are various other models such as line of credits conditional on previous repayments. These risk mitigation techniques implemented by MFIs are uncommon among conventional financial institutions.

[6] The correlation refers to sensitivity estimated by CAPM beta coefficient. The hypothesis follows the Janda and Rausser (2013) tradition

In case, this hypothesis would not be rejected, the microfinance equity would offer a diversification potential, and hence, adding it to the investor's portfolio of assets may represent an attractive investment opportunity for the investor's broad and aleradz well-diversified portfolio against unsystematic risk.

On the other hand, if this hypothesis is rejected, it would lead to the conclusion that investor would not be provided with diversification benefits by including of microfinance stocks to his or her portfolio.

Since the risk exposure and its diversification is not the only investor's interest, it is possible to investigate, whether the average returns of MFIs stocks over the sample period have or have not exceeded the benchmark indices. This leads to the following hypothesis:

Hypothesis 2	The returns on investment in microfinance publicly listed equity have exceeded the expected returns on benchmark portfolio during the observed period.

Rejection of this hypothesis suggests that MFIs publicly traded equity has not genreted abnormal return compared to the alternative investment opportunities.

To get even better insight about the investment opportunity represented by MFIs stocks, an analysis comparing the MFIs and Mainstream banks returns sensitivity to benchmark indices returns moves is conducted.[7] To be more specific, this study is investigating, whether there is a difference between risk exposure associated with either MFIs and Mainstream banks stocks.

Operational specificity of MFIs in comparison to conventional banks in domestic markets may contribute to different level of return' sensitivity, where MFIs are hypothesized to be less sensitive than mainstream banks to benchmark indices.

Hypothesis 3	The returns on investment in microfinance publicly listed equity are less sensitive to benchmark indices than returns on investment in Mainstream banks.

7 The Mainstream banks term refers to banks selected from constituents, concerning to financial services, of the MSCI Local indices in respective countries of selected MFIs.

According to the literature, it is also possible to formulate hypothesis that microfinance stocks provide potential investor with larger abnormal return than conventional stocks. (Brandt and Nacksten, 2015)

Hypothesis 4	Microfinance publicly listed equity generates higher or the same abnormal return as mainstream banks in countries, where selected MFIs operate.

This hypothesis states that investors are compensated for additional risk more by an investment in microfinance equity than in common mainstream bank's equity in emerging countries.

In order to test the above stated hypotheses, the estimation methodology is presented in the following section.

2.2.2. Estimation Methodology

In order to test the hypothesis, both portfolio returns and risk measures are used. The used approach is combining the previous studies methodology, which allows us to test and explore financial performance of MFIs stocks most effectively.

2.2.2.1. Portfolio Analysis

The investor evaluating the portfolio performance considers two-dimensional space. The first dimension is represented by risk and the second dimension is represented by return of the investment. The measures most commonly used for portfolio's risk and return estimation are standard deviation, Capital asset pricing model (CAPM) portfolio beta coefficients and R-squared complemented by performance measures such as Jensen's Alpha, Sharpe ratio, Treynor ratio. All of these measures were used in previous researches and they are also used by this thesis to test the hypothesis. The following subsections are referring to each measure and the specific tested hypothesis.

2.2.2.1.1. The Capital Asset Pricing Model

The Capital Asset Price Model (CAPM) introduced by William Sharpe (1964) and John Lintner (1965) has been widely used among researchers for portfolio analysis over decades. The model's original version is presented by Equation 1.

Equation 1	$(\boldsymbol{r_{pt}} - \boldsymbol{r_{ft}}) = \boldsymbol{\alpha_i} + (\boldsymbol{r_{Mt}} - \boldsymbol{r_{ft}}) \times \boldsymbol{\beta_i} + \boldsymbol{\varepsilon_t}$

The Equation 1. is displayed in regression notation. Where:

$\boldsymbol{r_{pt}}$ is return of selected portfolio index at time t

$\boldsymbol{r_{Mt}}$ is return of benchmark index at time t

$\boldsymbol{r_{ft}}$ is return from the investment considered to be risk-free. (e.g. government's bonds)

$\boldsymbol{\alpha}$ is estimated regression coefficient (Jensen's Alpha)

$\boldsymbol{\beta}$ is estimated regression coefficient

$\boldsymbol{\varepsilon_t}$ refers to the error term in regression.

The difference $(\boldsymbol{r_{Mt}} - \boldsymbol{r_{ft}})$ represents market premium or excess return over the market. It is in fact adjusted return after the subtraction of risk-free rate from the rate of returns of both selected portfolio and benchmark index.

The CAPM model has been quite popular for its approach to risk measurement. The model recognizes two types of risks, namely, unsystematic and systematic risk. The latter one is considered to be undiversifiable, whereas the unsystematic risk might be possible to diversify away by appropriate portfolio construction.

The so called systematic risk is expressed by the beta coefficient in the model and estimated by single dependent variable regression. It measures the adjusted returns sensitivity of an instrument on market portfolio's adjusted returns. From other perspective, the beta refers to what extent should be an investor compensated for taking on an additional risk. The size of the compensations equals to the beta coefficient times market premium and it is called risk premium.

The unsystematic risk is addressed by residual standard deviation and refers to the realization accuracy of expected returns (Berk and DeMarzo, (2011); Brandt and Nacksten, (2015)).

The validity of CAPM results and findings revealed by the model has been widely discussed by researches, due to its single explanatory variable version. Although the idea behind the model is correct, large number of model's modification has been developed in order to improve and make the model more robust. The modifications include lagged variables suggested by Ferson and Schadt (1996), exchanges rates (Harvey, 1995) or illiquidity measures (Brennan and Subrahmanyam, 1996). One of the most important research papers of two last decades questioning models validity and suggesting possible improvements was Fama and French (2004). They introduced a well-recognized three-factor model reflecting the market risk, company Price-to-Book Ratio and company size.

Despite the ongoing discussion, the CAPM is still frequently used in literature and it was also used for the purpose of studies concerning the analysis of Microfinance funds and stocks performance (Birere and Szafaraz (2011); Janda and Svarovska (2011); Brandt and Nacksten (2015)).

This is also the reason why this model is used for the purpose of this study. Further comments on the used model are made in Discussion part (including suggestions for future solutions and hints for further research).

The introduced beta coefficient, which stems from the regression defined above, serves for the hypothesis tests. According to the beta estimates, it is possible to decide about the rejection or not rejection of the first hypothesis.

Table 1 displays theoretical beta's outcome options and its interpretations. The hypotheses are not rejected if the beta coefficients fulfill the conditions in Table 2.

The statistical tests and econometrical justifications are presented in the Results part.

Table 1.

Beta	Description
$\beta > 1$	Adjusted returns of selected portfolio exhibit higher volatility than benchmark portfolio's adjusted returns
$\beta = 1$	Adjusted returns of selected portfolio move fully with benchmark index's adjusted returns
$0 < \beta < 1$	Adjusted returns of selected portfolio exhibit lower volatility than benchmark portfolio
$\beta = 0$	Adjusted returns of selected portfolio do not move with benchmark index's adjusted returns
$-1 < \beta < 0$	Adjusted returns of selected portfolio move in opposite direction to benchmark index's adjusted returns
$\beta < -1$	Adjusted returns of selected portfolio exhibit higher volatility than benchmark portfolio's adjusted returns

Table 1 contains possible beta's values and its interpretations.

Table 2.

Hypotheses	Non-Rejection Criteria Conditions
Hypothesis 1	$\beta \leq 0$
Hypothesis 3	$\beta_{FI} < \beta_{MFI}$

Table 2 indicates the conditions of hypothesis 1and 3 not-rejection.

2.2.2.1.2. Jensen's Alpha

Jensen (1968) claimed that it is also needed to take in account the possibility of abnormal rate of returns. Hence, Jansen suggested to analyze also the constant in the CAPM-like regression. The so-called Jensen's Alpha measures difference between the average return and the expected return considering the market conditions and the portfolio's risk. Kothari and Warner (2001) states that intercept of the CAPM measures the abnormal portfolio's performance. The second and fourth hypothesis are approved or reject, dependently on the resulting α. The decision tree is again displayed in following table. (see Table 3.)

Table 3.

Hypothesis	Non-Rejection Criteria Conditions
Hypothesis 2	$\alpha > 0$
Hypothesis 4	$\alpha_{FI} < \alpha_{MFI}$

Table 3 indicates the conditions of hypothesis 2 and 4 not-rejection.

2.2.2.1.3. Sharpe Ratio

Sharpe ratio was introduced in 1966 and it measures the trade-off between the risk premium and volatility. In other words, it is a measure informing about the reward for variability in considered portfolio or asset taking in account risk–free investment opportunity.

$$\text{Sharpe Ratio } = \frac{(r_i - r_f)}{\sigma_i}$$

where r_i is the mean return of the portfolio and r_f is the mean risk-free rate, σ_i is the volatility represented by standard deviation. The variables included in Sharpe formula are representing the descriptive statistics.

2.2.2.1.4. Treynor Ratio

Treyoner (1965) introduced another return to risk ratio using beta coefficient estimated the by CAPM-like regression instead of volatility. This measure refers to return of the portfolio considering the specific or so called systematic risk associated with the portfolio. Treynor ratio is applicable on positive beta portfolios only.

$$\text{Treynor Ratio } = \frac{(r_i - r_f)}{\beta_i}$$

The analysis of both considered performance ratios defined above are extending the investigation of MFIs stocks performance. The explanation of performance measures is following: The higher resulting ratio for the selected portfolio/index than the benchmark the better it is for the profit- and diversification-seeking investor.

2.3. Data

The data used for the analysis are based on selected stock prices and indices. The dataset is described in more detail in the following text.

The analysis is mainly focused on the target group of shares consisting of five MFIs publicly traded shares. These five MFIs represent the whole "universe" of currently publicly listed MFIs. In other words, there are no other MFIs with shares listed at stock exchanges nowadays. The selected publicly listed MFIs have following characteristics:

Risk management techniques large number of borrowers, short loan maturities and shared liability group.

Social objectives fulfilled by providing financial services to unbanked people and funding microbusinesses that lacked of previous financial support.

Business model benefiting for the favorable duration mismatch between short term assets (microcredits) and long term liabilities

High interest rates are driven by high operational costs, however, the interest rates charged by "loan sharks" are even higher.

Lower financial leverage than traditional banks given by immaturity of the sector and lack of classical debt funding (Feasley (2011); Brand (2010))

The sample includes MFIs from five countries: Bangladesh (BRAC Bank), India (SKS Microfinance), Mexico (Financiera Independencia), Indonesia (Rakyat Bank) and Kenya (Equity Bank). The market capitalization and inception date of each bank is presented in Table 4a in Appendix.

Note:

The literature is not consistent about the definition of publicly listed MFIs. In other words, the studies which have been already conducted defined the sample of MFIs with listed shares at stock exchange differently. Brière and Szafarz (2014) defined the broadest sample consisting of 13 institutions. Nevertheless, their sample included also the Low Income Financial Institutions (LIFIs) not fulfilling the MFI selection criteria.

Monroy and Huerga (2012) claim that only sub-sample of LIFIs can be considered as a group of publicly listed MFIs. The rest of seven listed institutions from Brière and Szafarz (2014) sample do not match the right microfinance characteristics, in terms of offered services and social objectives.[8]

The criteria suggested by Monroy and Huerga (2012) for the selection of publicly listed MFIs were also used for the purpose of this thesis. The selected group of MFIs is listed in the first paragraph of this page.

Regarding the previous sections, we analyze the MFIs stock performance and risk exposure in comparison to Mainstream banks publicly traded equity in Emerging markets.

The Mainstream banks sample used in this study consists of 23 banks based on following selection criteria. Banks are selected from the MSCI local indices constituents from respective country and represent an investment in commercial banking in those markets.

The sample includes 2 banks from Mexico, 3 banks from Kenya, 3 banks from Indonesia, 6 banks from India and 11 banks from Bangladesh.

The high number of banks in Bangladesh might be explained by relatively developed financial sector initiated by World Bank reform in 1990s (Demirguc-Kunt & Levin (1999); Briere and Szafarz (2015)). As a result of the reform, the financial market in Bangladesh has been diversified and expanded (Uddin & Hopper, 2003).

[8] Namely, Capitec Bank CPI: SA (South Africa), Blue Financial Services BFS: SA (South Africa), International Personal Finance IPF: UK (UK, Mexico, Eastern Europe), African Bank (South Africa), Banco Panamericano (Brazil), Danamon Bank (Indonesia), First Cash Financial (US, Mexico)

For the purpose of this study, the analysis is conducted on time period starting in August 2010 and ending in December 2016. The starting date was selected specifically according to the SKS Microfinance IPO. This thesis follows the study conducted by Birere and Szafarz (2014) covering period 2003 – 2010. Monthly data are used to measure monthly rate of return of an investment.

Note:

During this period Compartamos banco also existed, another Mexican MFI satisfying the microfinance criteria defined above. However, it was delisted from the Mexican stock exchange at the end of 2011, while merging with Financiero Crear in Peru. Hence, it was excluded from this study.

Morgan Stanley Capital World and Emerging markets indices were selected as proxies for the global and developing markets respectively (MSCI World and MSCI EM). Morgan Stanley is company specialized on constructing large number of indices. Each index includes specific stocks to describe certain market sector or business as precisely as possible. Included constituents of indices are selected on market capitalization and volume basis. The descriptive statistics for each index are displayed in Table 5.

These indices were selected in order to explore the MFIs shares risk and return performance relatively to the Emerging and World markets.

Rate of returns of stocks and both benchmark indices are calculated according to following formula.

$$r_t = LN\left(\frac{P_t}{P_{t-1}}\right)$$

$\boldsymbol{r_t}$ is return of selected portfolio index at time t

$\boldsymbol{r_t}$ is return of selected portfolio index at time t

LN is natural logarithm

$\boldsymbol{P_t}$ is close price at time t.

Due to the fact, that selected MFIs stocks are publicly listed at respective domestic stock exchanges and traded at local currency, additional step was made by converting each stock price to USD at the current exchange rate. The exchange rates descriptive statistics are presented in Table 6 in Appendix.

Further, to compute the adjusted returns needed for the CAPM, benchmark three-month US bond was used as the risk-free rate, which addresses intended investor's investment horizon. (see Table 6 for descriptive statistics)

Tables 5 (pg 26.) presents descriptive statistics for sample period starting in August 2010 and ending in December 2016. This time period was also selected for the following reasons.

First, this sample period allows us to investigate how the MFIs stocks cope under the sluggish growth, which hit the Emerging markets after 2010. Second, we may also observe the effect of China crisis in August 2015. Third, in comparison to Briere and Szafarz (2015), two additional large MFIs were included to the group of publicly listed MFIs, namely SKS Microfinance and BRAC Bank representing significantly important microfinance markets – India and Bangladesh, respectively.

2.3.1. Index Construction

Two indices are constructed from publicly listed MFIs and Mainstream stocks in order to test the hypotheses. Similar method was used by Briere and Szafarz (2014).

In comparison to Briere and Szafarz (2014) research, this study does not have to deal with the statistical challenges caused by different date of Initial public offering.

Constructed indices enable simple comparison between Microfinance and Mainstream banks equity.

The approach of custom index construction has some constraints. Adjustments of capital market weighted index are common, for instance, for well-known index such as S&P 500. Nevertheless, the impact of frequent adjustments of indices including small set of constituents with varying market capitalization should be considered.[9]

The changes in number of constituents during the observed period may potentially lead to outliers. This was not the case for this thesis, as the observed data are balanced.[10]

The indices introduced in this thesis are market capitalization weighted similarly to MSCI, S&P 500 or Nasdaq indices.

The first index, so called MFI index, consists solely from publicly listed MFIs shares and it represents microfinance investment opportunity. The second index named Mainstream banks index (MB Index) is constructed from stocks of Mainstream banks in country, where our tested MFIs operate and it addresses the commercial investments in Emerging markets.[11]

$$MFI\ index = \frac{\sum_{i=1}^{n} p_{it} * NS_{it}}{p_0 * NS_0} * 1000$$

where:

$\boldsymbol{p_{it}}$ price of the MFIs share in USD at time t

$\boldsymbol{NS_{it}}$ number of outstanding shares of MFI at time t[12]

n total number of month in observed period

[9] Adjustments are referring to adding or removing of constituents
[10] Balanced data term refers to having observations each variable at each time
[11] No additional weighting of constituent's or countries were used
[12] $p_0 * NS_0$ is market capitalization of an index at inception time

$$MB\ index = \frac{\sum_{i=1}^{n} p_{it} * NS_{it}}{p_0 * NS_0} * 1000$$

where:

$\boldsymbol{p_{it}}$ price of the Mainstream banks share in USD at time t

$\boldsymbol{NS_{it}}$ number of outstanding shares of Mainstream bank at time t

n total number of month in observed period

i each specific Mainstream bank

The descriptive statistics for both indices are presented in Table 5.

2.4. Analysis and Results

The analysis and results are following the methodology defined in previous section. The descriptive statistics of MFIs shares are described as first. In order to get better understanding of MFIs equity performance, the investigation of both constructed indices performance in comparison to each other and selected MSCI indices is conducted.

The decisions about hypotheses are made based on the results from defined statistical tests.

2.4.1. Descriptive Statistics

The monthly financial descriptive statistics of selected microfinance stocks displayed in Table 4 indicate wide disparity among themselves.

Table 4: Monthly returns of MFIs stocks

	SKS Microfinance	Brac Bank	Finanicera Independencia	Raykat Bank	Equity Bank
Mean	0,85%	1,15%	-2,17%	0,08%	0,55%
Max	41,82%	21,88%	25,71%	26,36%	17,97%
Min	-83,89%	-28,81%	-33,57%	-28,39%	-32,19%
Volatility	20,23%	8,44%	11,77%	9,87%	8,44%
Start Date	Aug-10	Aug-10	Aug-10	Aug-10	Aug-10
End Date	Dec-16	Dec-16	Dec-16	Dec-16	Dec-16

Table 5 presents the descriptive statistics of stocks for each MFI from the target sample. The statistics in table are calculated on monthly basis.

Some MFIs has registered profitable trend, such as Equity bank in Indonesia with mean monthly return of 0.55% or BRAC bank 1.51%.

On the other hand, Financiera Independencia from Mexico have reported negative monthly mean return during the tested time period.

The SKS Microfinance was heavily slumping after the IPO with later upward tendency (see Figure 1), whereas the Financiera Independencia has been reporting disastrous performance (mean monthly return equals -2.17%) until nowadays. Moreover, the Financiera Independencia shows the evidence of decreasing volume reflecting lower interest from the investors. Regarding to volume tendency, it is possible to observe increasing interest in SKS Microfinance shares.

Figure 1: SKS Microfinance stock's performance

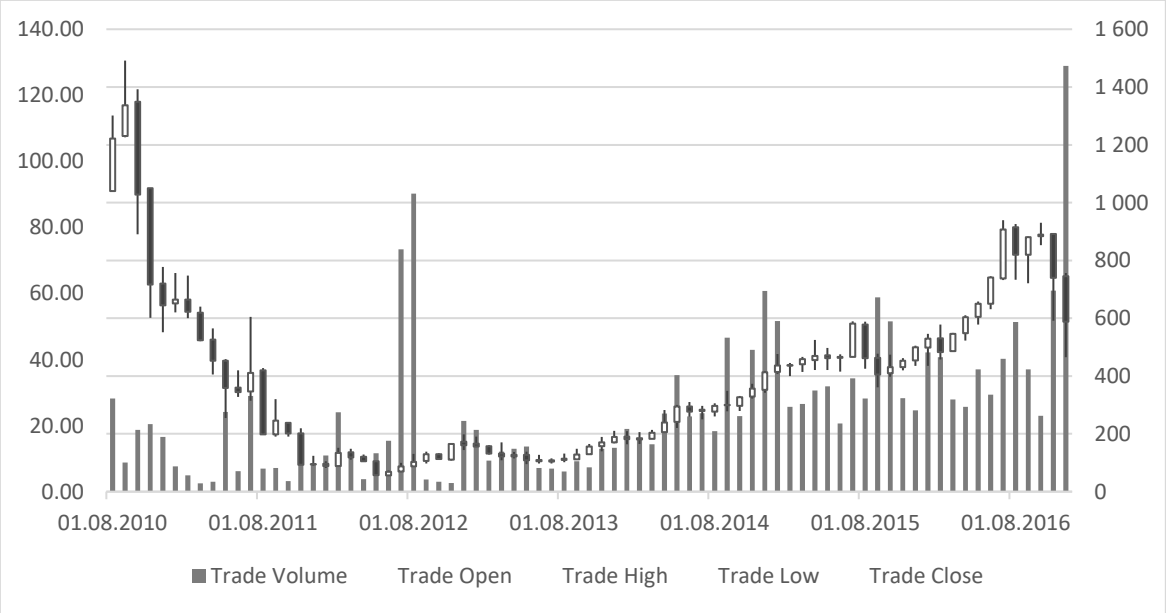
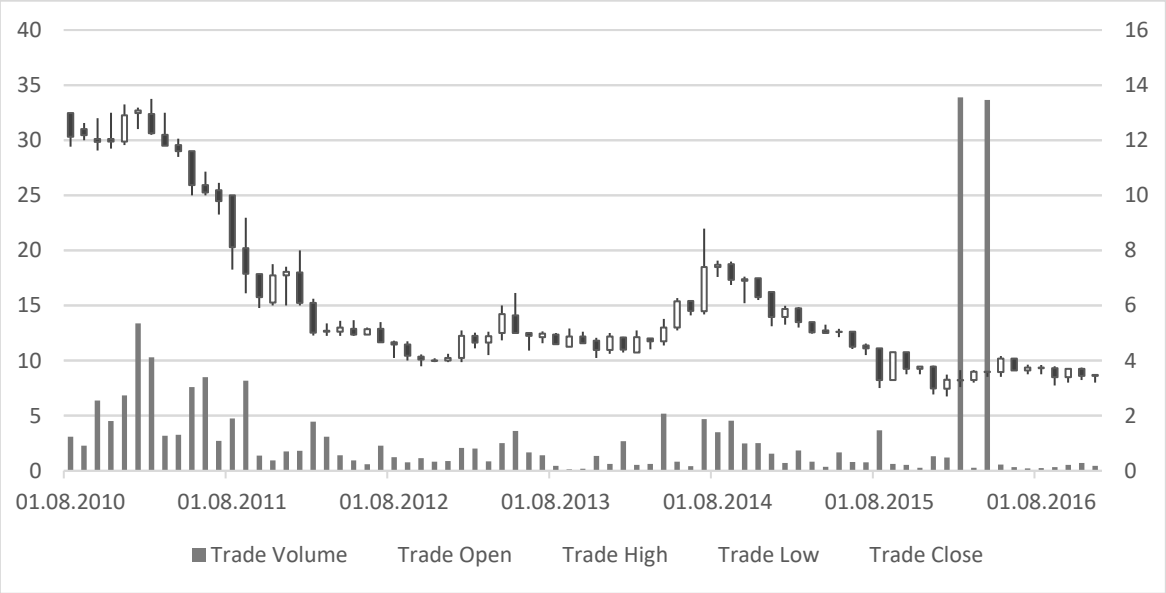


Figure 2: Financier Independencia stock's performance



On the other hand, Raykat, Equity and BRAC bank indicates relatively good and stable performance in terms of volume and open-close price trends. (See Figure 3) The same holds for Equity bank, where the increased sell-out and volumes in August 2015 might be probably explained by the effect of China crisis.

Figure 3: Raykat bank stock's performance

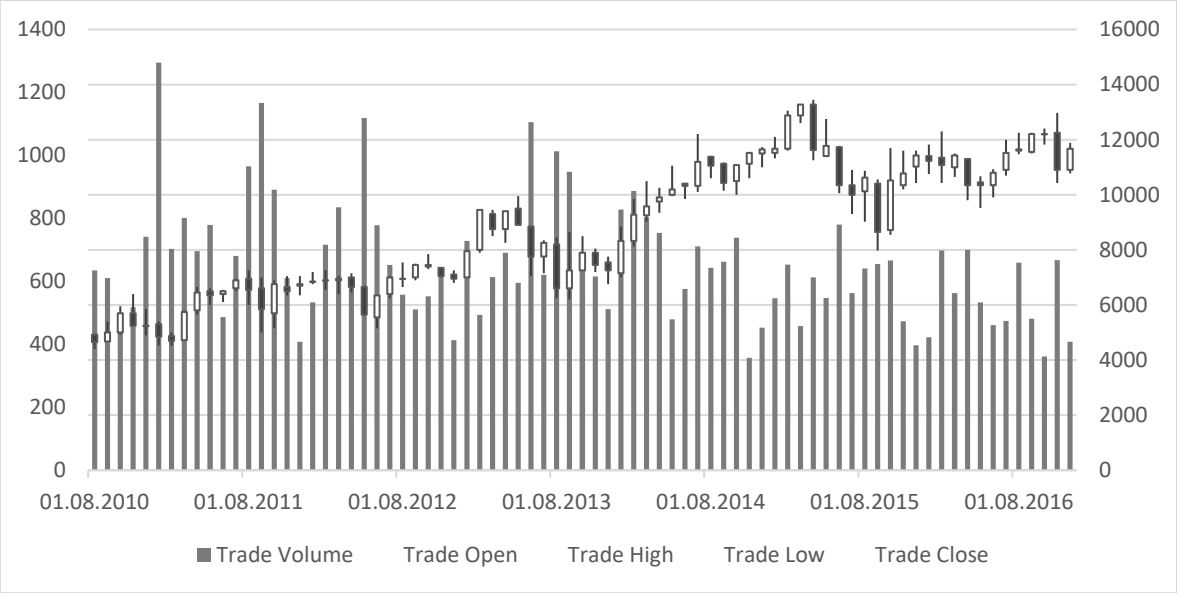
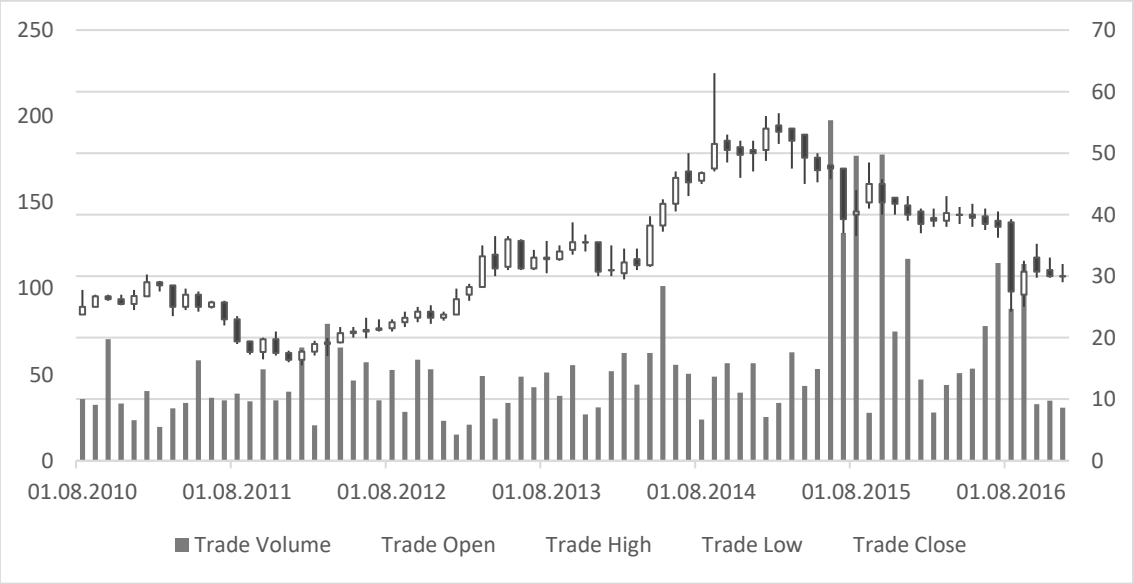


Figure 4: BRAC Bank stock's performance

Figure 5: Equity Bank stock's performance



The results interpretation should be considered in the light of each country specific macroeconomic and microfinance sector aspects. Selected MFIs stocks come from 5 different countries, and hence, their performance might reflect those circumstances.

The negative trend of Mexican MFI (Financier Independencia) might be explained by worsening situation in Mexican microfinance industry after 2011. The magnitude of Write-offs had been alarming, according to Rozas (2014). Increasing Write-off's ratio had been fueled by increased number of borrowers who took up 2 and more loans,

repaying its debts by other microloans falling into debt spiral. The resulting situation was reflected by financial markets and microfinance equity has not been an exemption.

According to the World Bank report on financial situation in Mexico (2016), governmental reforms and steps towards increase of financial inclusion number, strengthening the legal framework and encouragement of competition in microfinance sector introduced in 2014 might prevent from the future microfinance crisis.

SKS Microfinance stock performance can be explained as well. After the Comparatos Banco successful IPO in 2007, it was expected that SKS's stock offering in India in 2010 will follow this trend. However, the expectation was not fulfilled and the disastrous stock's performance followed the IPO in 2010 is known as Adhara Pradesh crisis.[13]

The aim to increase market capitalization before the IPO led to risky or shark loans provisioning. As a result, large number of borrowers were not able to repay its debt. Being unable to repay debts is considered very seriously in developing countries and it leads not occasionally to debt-related suicides. The suicide wave which was registered after the SKS Microfinance IPO confirmed that claim (Mader, 2013). Nonetheless, the so called microfinance crash in Andhara Pradesh was not solely consequence of planned SKS Microfinance IPO.[14] The root cause was in weak legal framework and regulation of microfinance sector in India.

The consequences and causes are more elaborated in the second part of this thesis focusing on mission drift aspects. From this part of thesis, it is possible to conclude that over-estimated IPO affected the stock performance in negative monthly mean return and increased volatility.

The remaining MFIs report close-to-zero or positive monthly mean returns. The relatively high return of Raykat Bank can be explained by the synergy of imposed innovations, such as mobile banking, and relatively sophisticated risk techniques assessing credibility of borrowers resulting in good bank's asset management reflected by investor's interest.[15]

[13] Hundreds Of Suicides In India Linked To Microfinance Organizations [online] 2012
[14] In partial agreement with SKS on what caused the Indian Microfinance Crash [online]2013
[15] The mobile banking in case of BRI means lenders offering microloans in cars or boats traveling across country in order to approach the poor people. (www.irakyat.com.my)

Equity Bank achieved major success by providing loans to more than a million borrowers and was recognized as the best bank among others in Kenya (Rhyne, 2009). This fact is probably reflected in the positive mean stock return.

The mean values in terms of rate of returns after 2010 comparing to results of Briere and Szafarz (2014) are lower.

Regarding to volatility presented in Table 4 (pg 21.), we may observe relatively high volatility of all stocks representing considerable risk associated with those stocks.

The returns of constructed indices displayed in Table 5 indicate that developed markets have outperformed the Emerging markets during the tested time span.

Table 5: Monthly Indices returns

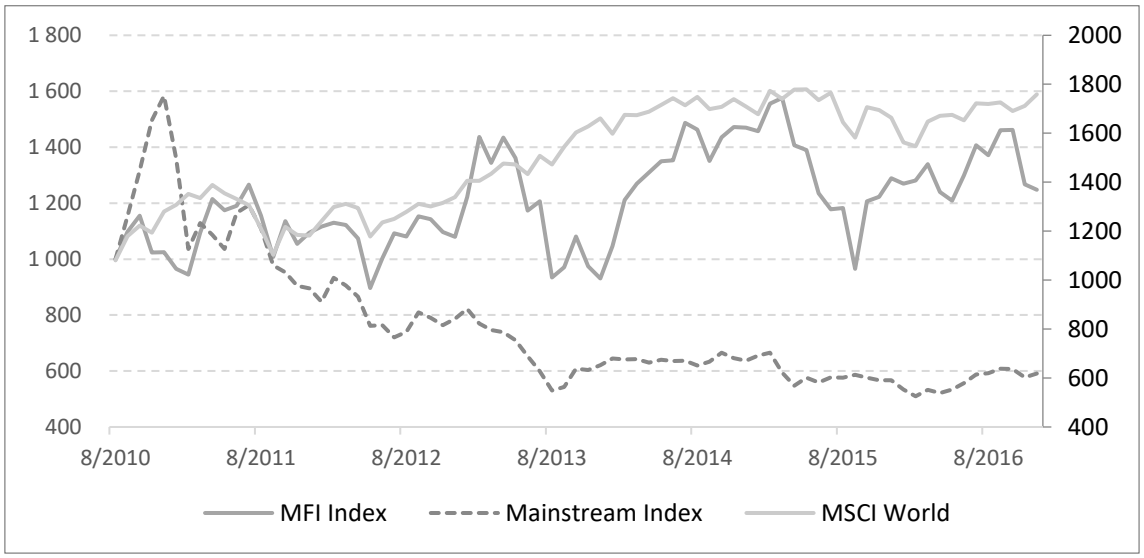
	MFI Index	**MB Index**	**MSCI EM**	**MSCI World**
Mean	-0.2 %	-0.69 %	-0.18 %	0.64 %
Max	22.3 %	14.6 %	12.2 %	9.7 %
Min	-25.6 %	-27.1 %	-15.9 %	-9.4 %
Volatility	14.2 %	6.8 %	5.58 %	3.7 %
Start Date	Aug-10	Aug-10	Aug-10	Aug-10
End Date	Dec-16	Dec-16	Dec-16	Dec-16

Table 5 presents descriptive statistics for each artificially constructed index, MSCI World and Emerging markets index. Returns are calculated on monthly basis.

The volatility of MFI index is higher than MSCI Emerging countries and MSCI World index.

The highest negative result in terms of mean monthly rate of return for Mainstream bank is surprising.

Figure 6: Constructed Indices



**Left axis refers to MFI and MB index values. The right Axis refers to MSCI World index*

The negative trend of MB index is influenced by the recession coming after 2010 in Bangladesh. This recession was preceded by bullish market initiated by the end of the two-year long political crisis and reestablishment of democracy in the country.

The Bangladeshi Central Bank decided to calm down the overheated markets by "putting a leash on liquidity". As a result, stocks prices were falling and investors started protesting in streets.[16]

The sole analysis of descriptive statistics cannot provide us with complete picture of stock performance. We employ the structure of analysis used by Svarovska and Janda (2011) and Brandt and Nacksten (2015). In detail, we investigate and evaluate the historical beta coefficient, standard deviation, R-squared same as performance frequently used portfolio measures, namely, Jensen's alpha, Sharpe and Treynor ratios.

[16] *"Bulls on a leash"*. The Daily Star. 12 July 2009. Retrieved 18 October 2011.

2.4.2. Capital Asset Pricing Model

According to defined methodology, monthly adjusted returns of two artificially constructed indices representing Microfinance and Mainstream banking sectors in Emerging markets are regressed on monthly adjusted returns of MSCI World and Emerging markets indices. The results of tests compiled with explanation of findings are provided in the following text.

The beta coefficients which stem from the Ordinary Least Squares regression are presented in Table 6. and 7.

The R-Squared are usually lower for CAPM models (Harvey (1995); Birere and Szafarz (2014); Janda and Savrovska (2011)). Despite that we can see relatively good results in so called goodness-of-fit measure for regression (1) amounting to 26 %. On the other hand, the results of the regression (2) are unexpectedly low with regards to the same measure. The R-Squared reports the percentage of dependent variable variance explained by the independent variable.

The Mainstream banks index interpretation might be misleading due to its unbalanced market capitalization weighted basis.

It is possible to observe from Table 7. (3) that MFIs index variance is better explained by MSCI Emerging markets index than by MSCI World index. This finding is in line with expectations.

The regression of Mainstream banks adjusted returns on MSCI EM adjusted returns reports higher R-Squared than in the regression with MSCI World index, but still relatively lower in comparison to the regressions (1) and (3) Table 6 and 7, respectively.

All beta coefficients are significant at least at 5 % confidence level. Each regression coefficient is tested, whether it is significantly different from zero in order to test the first hypothesis.

These tests report that all of the betas are significantly different from zero. The first hypothesis is rejected.

Hypothesis 1	The returns on investment in microfinance publicly listed equity are not positively correlated with returns on investment of a benchmark portfolio (in terms of beta coefficient).	**Rejected**

To test the third hypothesis that the MFIs stocks may provide better diversification potential than the Mainstream banks, the difference between the beta coefficients of Mainstream and MFIs indices are used. Table 6 and 7 show these significant differences so the Hypothesis 3 can be rejected.

Hypothesis 3	The returns on investment in microfinance publicly listed equity are less sensitive to benchmark indices than returns on investment in Mainstream banks.	**Rejected**

Notes: The relatively low MB index beta coefficients are probably caused by the specific situation in Bangladesh (i.e. market evolution, number of mainstream banks and their market capitalization)

If the Bangladesh BRAC bank and Mainstream banks are excluded from the MFI and MB index, respectively, then the MB index adjusted returns are more sensitive to MSCI world moves than MFI index's (see Table 8 in Appendix). Hence, for the group excluding Bangladesh the hypothesis 3 should not be rejected,

Table 6 Regression result

	MSCI World		
	Beta	Wald test	R-Squared
(1) MFI Index	1,19 *** (5,12)	6,86*** (0,0088)	26,14 %
(2) MB Index	0,49 ** (0,20)		7,18 %

*Table 6. displays the beta coefficient of the regression of both constructed indices on MSCI world. The Wald test presents, whether there is a significant difference between coefficients. ***,**,* significant at the 1%, 5% and 10% level.* [17]

[17] The regression are conducting using STATA command *reg indep_var dep_var*. The test of difference between beta coffeicents is conductined by running *est store* command after each regression followed by *test [est_mean]dep_var = [est_mean]dep_var*

Table 7 Regression result

MSCI Emerging Markets			
	Beta	Wald test	R-Squared
(3) MFI Index	0.91*** (5.58)	7.45*** (0.0063)	29.62 %
(4) MB Index	0.47*** (3.38)		13.39 %

*Table 6. displays the beta coefficient of the regression of both constructed indices on MSCI world. The Wald test presents, whether there is a significant difference between coefficients. ***,**,* significant at the 1%, 5% and 10% level.*

2.4.3. Jensen's alpha measure

First performance measure which is presented is the Jensen's alpha. It stems from the linear regression described in previous section. In both tables below, it is possible to see that none of the alpha coefficients are significant. In other words, Jensen's alpha is not significantly different from zero, due to that fact, the second and fourth hypothesis are rejected. Microfinance equity represented by MFI index have not outperformed the benchmark indices nor the MB index.

Hypothesis 2	The returns on investment in microfinance publicly listed equity have exceeded the expected returns on benchmark portfolio.	**Rejected**

Hypothesis 4	Microfinance publicly listed equity generate higher or the same abnormal return as Mainstream banks in countries, where selected MFIs operate.	**Rejected**

Table 10 Regression result

	MSCI World		
	Alpha	Wald test	R-Squared
(1) MFI Index	-0,005 (-0,65)		26,14 %
(2) Financial Index	-0,011 (0,154)		7,18 %

Table 10. displays the alpha coefficients of the regression of both constructed indices on MSCI world. The Wald test is not presented due to insignificance of alpha.

Table 11 Regression result

	MSCI Emerging Markets		
	Alpha	Wald test	R-Squared
MFI Index	0.0045 (0.53)		29.62 %
Financial Index	-.0065 (-0.89)		13.39 %

Table 11. displays the alpha coefficients of the regression of both constructed indices on MSCI world. The Wald test is not presented due to insignificant of alpha.

2.4.4. Sharpe and Treynor ratios

The below presented table refers to the last two portfolio performance ratio which may contribute to grasp the broader picture about the microfinance stocks performance. More precisely, Sharpe and Treynor ratios are displayed in Table 12 respectively to the variables in their computational formulas.

It is possible to observe that during the investigated time period both Sharpe and Treynor ratios resulted again in quite similar values. The performance measures are close to zero, with MSCI World Shapre ratio exceeding other index Sharpe ratios. The magnitude of MSCI World Sharpe ratio is also induced by remaining indices higher volatility and lower diversification.

MFIs shares have not revealed any significant nor tendencies of specific beneficial performance for an international diversification-seeking investor.

Table 12 Performance ratio results

	Sharpe Ratio	Treynor Ratio	
		MSCI World Index	MSCI Emerging Markets Index
MFI Index	-0,09	0,004	0,006
MB Index	-0,11	0,003	0,002
MSCI World Index	0.14		
MSCI EM Index	-0.05		

Table 12. displays the Sharpe and Treynor measures calculated according to formula (see Methodology part)

To summarize the Part I considering the MFIs stock performance from the investors viewpoint, the beta coefficients are only significant estimators. All betas are reporting to be close to one. Regarding to that fact, the hypothesis about benefits associated with microfinance equity for an investor with well diversified portfolio from the systematic risk seeking for an investment with close-to-zero beta is rejected. In other words, the results indicate that microfinance equity exhibit higher systematic exposure.

The MB index has lower beta coefficient, however, after excluding of Bangladeshi constituents from the MFI and Mainstream indices the beta resulted close to 1.0. The possible root cause is that the market capitalization weights are unbalanced. It is suggested to conduct further research exploring index inclusion weight factors.

3. Part II - Social performance

The second part of the thesis analyzes the MFIs IPO effect on its social outreach. In other words, the aim of this section is also to investigate, whether the initial public offering may cause the mission drift.

3.1. Literature review

Similarly to the first part of this thesis the second part begins with the literature overview corresponding to this topic

3.1.1. MFIs social outreach

Social responsible investments have grasped the momentum during the recent years. A growing number of investors have been considering also the social perspective of their investments, besides the financial returns. They have been seeking for an exposure to microfinance industry, investing into MFIs debt and equity. This tendency spurred the process of commercialization. As a result, doubts about maintaining of the microfinance original poverty-reduction mission have surfaced.

There are two opinions about external for-profit financing of MFIs. The first one is represented by Mohammad Yunus the Nobel Price Peace Laureate saying:

"This is pushing microfinance in the loansharking direction; by offering an IPO, you are sending a message to the people buying the IPO there is an exciting chance of making money out of poor people. This is an idea that is repulsive to me. Microfinance is in the direction of helping the poor retain their money rather than redirecting it in the direction of rich people." – Mohammad Yunus[18]

The opposite opinion is represented by Vikram Akula, founder of SKS Microfinance. He advocates that external financing is not just needed to expand the MFIs activates, but even desirable. He argues that businesslike shift among MFIs may contribute to increased efficiency and spurred the process in implementing of new innovations believing that it is possible to help poor people from poverty trap and make profit at the same time.

[18] SKS I.P.O. Ignites Microfinance Debate, 2010, [online] [cit 2016-12-05]

His arguments find the support in microcredit offering organizations such as Kiva or M-pesa. Those institutions are profitable and sticking to their original social objectives.

Kiva is microcredit offering platform, where the investors (lenders) meets its counterparts (borrowers) from developing countries. This innovative approach based of peer – to - peer lending shows the possible direction for future. The investments amounting 302 mil $ and 98,7% repayment rate shows the sustainability of the business solution.[19]

The M-Pesa is another example of for-profit platform, where mobile banking meets microfinance. This is also and innovative approach which has grasped its momentum in Africa. The advantage in mobile banking solution is in lowered costs, which play an important role in microfinance industry. The costs associated with managing the microloans are behind the size of interest rates, which has been the object of discussions for last decade. (CGAP, 2012) One of the objectives of microfinance is to fight with loan sharking and enormously high interest rates.

Hammam and Schwank (2011) observed that some microcredit borrowers became unable to repay its debt due to high interest rates as the rates charged by loan sharks.

Several studies have been conducted with regard to this topic, exploring, whether the increasing involvement of for-profit investors has not affected the original mission of serving poor people.

Setting aside the financial consideration of investments, the social and ethical context of investment was investigated by Mersland & Strøm (2010). They use the size of the loan as mission drift indicator arguing that increasing size of the loans is associated with shift from the poorest to the poor. Hence, the larger size of the loans may reveal the drift from the original mission of poverty alleviation. They observed that there is no mission drift associated with tendency of commercialization among MFIs, since loan size has not been changing over time.

On the other hand, Briere and Szafarz (2011) argue that considering simple loan size as mission drift proxy is misleading. They propose to amend at least interest rates in order to capture possible occurrence of the mission drift.

[19] www.kiva.org [online]

Sarah Segill (2013) was focusing on three publicly listed MFIs. Each of them is included in this thesis (i.e. Euity Bank, Compartamos Banco and SKS Microfinance). She conducted the analysis in 2013, and hence, she had only data for analysis of Compartamos Banco and Equity Bank. Her analysis was based on comparison of selected variables before and after IPO. The similar approach is leveraged in this thesis. Her findings suggest some evidence of mission drift, but her research calls for further research.

Cull, Dermirguc – Kunt and Murdoch (2009) highlight the still large size of population with lack of access to banking institutions. They note that microfinance has played its role in reducing the financial exclusion in developing countries, therefore further expansion is needed. With for-profit MFIs, poor will be provided with basic financial services who otherwise would not have other options or worse, such as loan sharks.

On the other hand, Roberts (2012) observed that increasing number of businesslike MFIs may cause the business to lose its sight from the social mission towards more profit seeking activities.

Brière and Szafarz (2014) extended their financial analysis of publicly lised MFIs and Low income financial institutions by observing the decreasing number of women borrowers over the time, which may indicate the possible changes in MFIs loan portfolio.

This finding is interesting in the light of MFIs social objectives consideration, since women have played an important role in microfinance era. According to, Chowdhury (2011), the majority of microfinance borrowers are women. For instance, SKS Microfinance, one of the largest MFIs in India, based its operations on providing only women borrowers with loans and one of the major social aspects of MFIs operation is to support women living under poverty line.

There are several reasons for it, empowering women with financial services may contribute to reduction of gender gap. This assumption is partially approved by Cheston (2002) observing that the access to finances reduces women's vulnerability.

Moreover, Chowdhury and Sarahat (2011) observed that Microfinance proved to improve women's self-decision and participation in business. As a result, it argues that providing women in poor regions with financial services contributes to poverty reduction.

Thus, finding of lowered share of women borrower may became a clue of changes in microfinance universe driven by increased involvement of for-profit sector.

In the following section are defined the hypothesis and methodology, which will help to test these hypotheses and investigate deeper the impact of financial markets on MFIs operability.

3.2. Methodology

In this section are defined hypothesis and the methodology to test them.

3.2.1. Hypotheses

As presented in literature review, there are doubts about the positive effects of increasing involvement of profit-seeking investors in microfinance sector. Sergill (2013) has already analyzed two publicly listed MFIs on data until 2010, with observing indication of mission drift. She could not include SKS Microfinance into the analysis, due to lack of data at that time. This thesis analyzes both MFIs from the Sergill (2013) research. In addition, the investigated group includes also another three publicly listed MFIs, namely, Equity bank, BRAC Bank and Financiera Independencia.

According to what has happened after the SKS Microfinance IPO, there is a possibility that there have been changes in microfinance industry driven by for-profit investors increasing engagement.

Moreover, there is lack of support in literature for positive impacts of MFIs equity listing at stock exchanges on their performance. Hence, further investigation is also needed in this direction.

This is leading to the following hypothesis definition.

Hypothesis 5	There is a mission drift associated with publicly listed MFIs.

The not-rejection of hypothesis would put the reaching double-bottom line via MFIs equity in question and might be considered by social investors same as other microfinance agents.

3.2.2. Estimation Methodology

There are several measures which may indicate and reveal the possible occurrence of the mission drift caused by increasing involvement of for-profit investors in microfinance industry. Some of them were presented in literature review. The selected variables listed in Table 13 are used to examine the effect of publicly listed equity on its social outreach. These seven variables were chosen based on their reflection of MFIs outreach and they are used by other studies as well. On top of the previous researches variables *Number of loans per Officer* variable is added, as an important indicator of possible mission drift.

Table 13.

Variables	**Description**
Loan Balance per Borrower	Loan Portfolio / Number of Active Borrowers
Number of loans per Loan Officer	Total number of loans landed by an employee of single MFIs
Percent of Women Borrowers (%)	Number of Active Borrowers who are women / number of active borrowers
Portfolio at Risk > 30 days Ratio (%)	Portfolio at Risk > 30 days/ Loan Portfolio
Return on Assets (ROA) (%)	Net Operating Income/ Assets
Return on Equity (ROE) (%)	Net operating income / Equity
Write off Ratio (%)	Write Offs / Loan Portfolio

Table 13. Present used variables for hypothesis testing and brief description.

Each variable is tested, whether it has significantly changed after the IPO for each publicly listed MFI and against the country level. There is a challenge which must be overcome from the quantitative viewpoint, due to unbalanced and lack of data.

In order to test the significant difference in the variable between two different times, the Wilcoxon Rank Sum test is used.[20] This non-parametric test is chosen, considering the fact that normal distribution of data cannot be assumed, due to lack of data, which are not equally distributed before and after the IPO.

The Wilcoxon Rank Sum test represents statistical non-parametric test for two sets of data. It tests whether one of the sample sets has significantly larger values than the other. The procedure is done accordingly: two independent sample sets of data are considered as a one group and each observation receives its rank from 1 to N. (i.e. the smallest observation receives the rank equals to one and the largest receives rank equals to N). The used ranking procedure instead of the classical numerical means allows to relax the normality distribution assumption. The two-tailed version of the test is used, since non-equality of means is explored.

The test is conducted for each publicly traded MFI, comparing before and after the IPO data. The differences between the target group and country sample groups of For-profit and Non-profit MFIs are tested as well.

Every single selected variable is shedding light on different aspect of possible mission drift. To answer the research question and grasp better insight, we investigate significant changes in variables. According to Table 2. and stated hypothesis, there are defined expectations about each variable.

In case of mission drift, the *Loan Balance per Borrower* variable is expected to significantly increase after the IPO. This change refers to shift from the poor to less poor, and hence, drift from the original social mission.

This *Percent of Women Borrowers (%) out of all borrowers* is specific to financial sector, but dominant in microfinance universe. Many MFIs based its operation solely on providing financial services to women. There is a two-fold reason. At First, women are considered to be more reliable and in many developing countries are those who are responsible for the managing of family finances. Hence, the risk associated with not

[20] The Wilcoxon Rank Sum is also called Mann-Whitney test

repaying micro debt is lower for women than man. On the other hand, women tend to be more vulnerable and dominated by men in countries such as India, Bangladesh or Indonesia. Therefore, the financial support of women contribute to reduction of their vulnerability, closes the gender gap and support the development of less developed areas of the world.

The importance of women borrowers is possible to observe in case of SKS Microfinance, where the portfolio of borrowers is consisted only from women. This variable informs more about social dimension of certain MFI. Significant change may indicate a MFIs mission drift.

The *Return on Assets (ROA) (%)* and *Return on Equity (ROE) (%)* are measures widely used for assessment of financial performance. It is important to realize that those ratios are also effected by interest rates. Hence, the significant increase in either ROE or ROA after the IPO may indicate interest rates increase putting the burden on borrower's shoulders.

The Write off Ratio (%) refers to loan portfolio quality and overall riskiness of publicly listed MFIs. This variable is complemented with *Portfolio at Risk > 30 days Ratio (%),* which directly addresses the risk associated with MFIs operations. These measures also refer to the mission drift. The possible increase may indicate increased pressure on profitability despite the original social mission.

The last variable *Number of loans per Loan Officer* is very important for analysis of credit unions or insurance companies, but it is also considered as very reasonable variable for microfinance sector. The upward trend may represent increasing riskiness in MFIs loans portfolio, since the micro lenders are offering more loans with lower probability of being repaid. If it is the case, it may be followed or associated with the same directional change in Write-off and Portfolio at risk variables.

This analysis will enable us to get deeper and more detailed picture about the social outreach of tested publicly listed MFIs. The variables suggested by previous literature also includes *Cost per borrower* Sarah Sergill (2013). This variable is not used in this study due to its ambiguity.[21]

[21] It may be explained in two different ways. Decrease in *Cost per borrower* may either refer to introduction of innovations or pressure from the profit-seeking investor.

We believe that comprehensive set of variables may help us to explore and uncover potential mission drift or interesting changes in MFIs operations dimension.

Note:

To test each single variable for each time and MFI is tedious and error prone.

Hence, the simple MS Excel - Visual basic for Application script was developed. The method is based on nested loop procedure taking in account the date of IPO, before and after records for each variable. Afterwards, the program is using the Wilcoxon rank sum test defined in methodology section of this part in order to calculate concrete p-values. Calculated p-values with averages are then inserted in prepared tables.

3.3. Data

For the purpose of this analysis data from MIXmarket.org were used. The comprehensive dataset includes records about more than 2000 MFIs around the world. Microfinance institutions included in dataset are structured by country, region and type of operations (i.e. For–profit or Non-profit (NGO)). The business and social outreach measures are reported annually.

The Mixmarket.org was a Non-profit organization and MFIs shared its business data on voluntary basis or their records were gathered from the MFIs annual reports. The noncompulsory basis is one of the causes of unbalanced dataset, since not all MFIs are sharing all measures at each time. Therefore, it is not possible to analyze for instance Rakyat Bank due to the missing data points.

Note:

Mixmarket.org has become a For-profit organization recently, and hence, the trend of shifting towards for-profit businesses includes also other participants than only microloans lenders.

3.4. Analysis and Results

The results are structured according to variables defined in the Methodology part.

Write-off Ratio

The first analyzed variable is the Write-off ratio, which is expected to be significantly higher after the IPO if mission drift occurs.

Table 7. Write-offs average

MFI	Before IPO	After IPO
BRAC Bank (Bangladesh)	2,10%	2,59% (0,859)
Compartamos Banco (Mexico)	0,56%	3,91%*** (0,016)
Equity Bank (Kenya)	6,60%	4,90%*** (0,034)
SKS Microfinance (India)	0,42%	12,18%*** (0,001)
Financiera Indepndencia (Mexico)	-	20,41%

Table 7. displays the percentage share of wrote off loans out of total number of loans per year
The Wilcoxon Rank sum test presents *** at 5% confidence level.

In the table above, it's possible to observe significant changes. The significant changes are however in different directions (e.g. SKS Microfinance and Compartamos Banco reports significantly higher Write-off ratio after IPO, whereas Equity Bank present significantly lower write-off ratio after IPO).

It was not possible to investigate the effect of IPO on Financiera Independicia, due to missing data before the IPO. Nevertheless, it reports very high mean Write-off ratio after the IPO in comparison to Non-profit and For-profit microfinance sector. (See Table 14 in Appendix) indicating possible mission drift.

Regrading to SKS Microfinance, the Write-off ratio increased from 0,42% before IPO to 12.18% after the IPO and thus the mission drift occurred and the hypothesis is not rejected.

Surprising observation is presented in case of only African publicly listed MFI (Equity Bank) in the target group. Equity bank reports the decline in Write-off ratio. Additionally, Equity bank also managed to outperform the other For-profit MFIs in the country with respect to percentage of lost loans.

The remaining Bangladesh publicly listed MFI (Bra Bank) do not show any anomaly with respect to itself or to overall market situation.

Averagre Loan Size

In case this variable is increasing, it is an indication of the shift from the poorest to the poor. In other words, the upward tendency in size of loans is considered as mission drift, since the MFI is not focusing on poverty alleviation anymore.

Table 9 Average loan size average

MFI	Before IPO	After IPO
BRAC Bank (Bangladesh)	58,73$	148,22$*** (0,006)
Compartamos Banco (Mexico)	288,43$	425,90$*** (0.003)
Equity Bank (Kenya)	710,21$	1661,65$*** (0.000)
SKS Microfinance (India)	93,82$	134,82$ (0.235)
Financiera Indepndencia (Mexico)	261,75$	325,76$*** (0.017)

Table 9 presnets the avergae loan size in USD. The Wilcoxon Rank sum test presents *** at 5% confidence level

Four out of five publicly traded MFIs increased on average loan size after the listing its shares at local stock exchange, namely, Equity Bank, BRAC Bank, Financier Independencia and Compartamos Banco.

The BRAC Bank indicate the significant change and thus a mission drift for this variable.

The results from Table 15 in Appendix enable to observe that the loan size increased in whole microfinance sector in Mexico. However, both publicly listed MFIs report significantly lower loan size than non-publicly listed For-Profit MFIs in Mexico.

The most outstanding result is presented by Equity bank in Kenya. It has rapidly increased the average loan size after the IPO. Looking at country comparison reflecting For-profit and Non-profit aspect of operation, we may see from the (Table 15 in Appendix) that average loan size is growing steadily in Kenya, but Equity Bank has significantly larger loan size than the market average before and after IPO.

The average size of the loan is stable in India and SKS microfinance does not deviate from trend in country.

Percentage number of Women borrowers

This variable depicts the MFIs social outreach from the gender perspective.

Table 10 Percentage number of women borrowers average

MFI	Before IPO	After IPO
BRAC Bank (Bangladesh)	97,80%	93,63%*** (0.034)
Compartamos Banco (Mexico)	98,87%	96,46% (0.359)
Equity Bank (Kenya)	42,56%	43,21% (0.296)
SKS Microfinance (India)	100%	100%
Financiera Indepndencia (Mexico)	-	-

Table 10 displays the percentage share of women out of total sample of borrowers. The Wilcoxon Rank sum test presents *** at 5% confidence level

The BRAC bank decreased significantly the average share of women borrowers after the IPO according to the results presented in Table 10. This trend holds for whole microfinance sector in Bangladesh. Nevertheless, BRAC bank still provide relatively more women with microloans with respect to the whole portfolio of borrowers then both Non-profit and For-profit MFIs (See Table 16 in Appendix).

In Mexico, only Compartamos Banco reports the share size of its female borrowers. Same as in the BRAC bank case, Comaprtamos Banco provide more women with financial services relative to whole sample of borrowers than country average for Non-profit and For-profit MFIs without respect to time, but it follows the country declining trend, which is possible to observe in (Table 16 in Appendix)

The Equity Bank does not report any significant change induced by IPO. An interesting observation follows Table 16 in Appendix, where For-profit MFIs tend to financially serve significantly lower share of women borrowers than Non-profit MFIs. The difference is sharp resulting in 87% and 44% on average for Non-profit and For-profit, respectively.

SKS Microfinance is a special case offering microcredit only to women borrowers.

Number of Borrowers per Loan Officer

This measure may indicate possible mission drift if it increases after the IPO. To indicate the clear mission drift other variables must be taken in account, due to the possible effect of innovations, such as mobile banking or automation reducing the number of officers while increasing the number of borrowers.

Table 11 Number of borrowers per Loan officer average

MFI	Before IPO	After IPO
BRAC Bank (Bangladesh)	303	356*** (0.012)
Compartamos Banco (Mexico)	343	336 (0.143)
Equity Bank (Kenya)	460	448 (0.296)
SKS Microfinance (India)	486	409*** (0.012)
Financiera Indepndencia (Mexico)	-	366

Table 11 presnents avergae number o loans per MFIs agent. The Wilcoxon Rank sum test presents *** at 5% confidence level

The table above shows the two significant changes. At first, SKS Microfinance report significant decrease in number of borrowers per Loan officer, it might be caused by

increased write-off ratio resulting in decrease in absolute number of borrowers. The second significant changed is reported for BRAC bank, however, the write-off ratio is stable over time. Hence, the increase in this variable cannot be considered as a mission drift.

The remaining MFIs are indicating no significant change in this variable after the IPO. Taking in account the country averages the results not indicating possible mission drift, since the tendencies and absolute values are same or lower among publicly listed MFIs. (see Table 17 in Appendix)

Return on Asset and Return on Equity

These two core business measures help us to explore the other part of MFIs operations, which may provide deeper insight.

Table 12 Return on asset and equity average

MFI	Before IPO	After IPO	Before IPO	After IPO
	ROE		ROA	
BRAC Bank (Bangladesh)	4,90%	4,50% (0.210)	5,20%	4,90% (0.531)
Compartamos Banco (Mexico)	52,26%	41,5%*** (0.012)	26,45%	16,67%** (0.060)
Equity Bank (Kenya)	20,00%	27%*** (0.014)	2,90%	5,71%*** (0.002)
SKS Microfinance (India)	16,67%	-28,88%*** (0.001)	-16,01%	-14,02% (0.834)
Financiera Indepndencia (Mexico)	26,00%	16,00%*** (0.006)	7,30%	3,49%*** (0.012)

Table 12 dispalys average retun on asset and equity for each MFI before and after IPO.
Wilcoxon Rank sum test presents *** at 5% confidence level

The results presented in table above show that there have been significant changes between periods, but the direction is differing. Both Mexican MFIs report declining Return on asset and Return on equity measures after the IPO. This tendency is in opposite

direction to country microfinance trend. Despite this fact, Compartamos banco and Financiera Independencia are generating higher ROA and ROE than the rest of microfinance sector in Mexico.

From the profit seeking investors view point, we may observe great performance in case of only publicly listed MFI in Kenya. Equity Bank managed to significantly increase the return on equity and the return on asset has even doubled after the IPO. Taking in account the increased Equity Bank's loan size, there is an indication of the shift towards larger loans with higher returns and lower costs.

BRAC bank reports stable and unchanged results between the periods before and after the IPO.

Finally, it is possible to observe decrease of ROA and ROE for SKS Microfinance. This fact might also be driven by the large write-off ratio after the IPO, caused by the pressure on providing more microloans before the IPO, in order to attract investors.

Portfolio at Risk > 30 days Ratio (%)

The last presented variable is *Portfolio at risk > 30 days*. It is considered as a rather complementary to the previous variables signaling the possible threat and riskiest of loans portfolio.

Table 13 Portfolio at risk > 30 days Ratio (%)

MFI	Before IPO	After IPO
BRAC Bank	6,67%	6,96% (0.676)
Compartamos Banco	0,89%	3,12%*** (0.003)
Equity Bank	18,75%	8,57%*** (0.001)
SKS Microfinance	0,68%	-
Financiera	7,35%	18,62%*** (0.001)

Table 12 dispalys average retun on asset and equity for each MFI before and after IPO. The Wilcoxon Rank sum test presents *** at 5% confidence level

The missing results for SKS Microfinance might be result of increased write-offs after inception date which would bias the Portfolio at risk measure, since SKS wrote off large

share of its portfolio of loans, which was considered to be not able to collect at any time in future.

Looking at results from Mexican microfinance sector, it is possible to observe the increasing riskiness, since the share of unrepaid loans increased after the IPO.

The BRAC and Equity Bank from Bangladesh and Kenya respectively are reporting opposite results to the remaining MFIs. The Equity bank presents decreasing share of loans unpaid within 30 days from its maturity and BRAC bank stable share of this variable over time.

Summary

The Table 17 summarizes the results of the Part II displaying the percentage difference between variables results before and after IPO. The bolt numbers in matrix are referring to significant changes and the color coding represents the not rejection of stated hypothesis. In other words, the cells filled with color are representing potential mission drift. However, all variables are indicating and hence they have to be consider in comparison to market and each other.

Table 17 Summary Matrix of relative changes

Variable / MFI	BRAC Bank	Compartamos Banco	Equity Bank	SKS Microfinance	Financiera Independencia
Write-off Ratio	**23%**	**598%**	**-26%**	**2800%**	-
% of women	**-4%**	-2%	2%	0%	-
Average Loan Size	**252%**	**148%**	**234%**	**144%**	**124%**
Number of Borrowers per Officer	**15%**	-2%	-3%	**-19%**	-
ROE	-8%	**-21%**	**35%**	**-273%**	**-38%**
ROA	-9%	**-59%**	**49%**	**-14%**	**-109%**
Portfolio at risk > 30 days	4%	**71%**	**-119%**	-	**61%**

BRAC Bank variables are indicating mission drift. Although the absolute values are corresponding either to market or microfinance characteristics. Percentage of women in sample is still higher than country average.

Compartamos Banco is also indicating the mission drift, since the Number of Officer decreased, the loan size increased, same as Portfolio at risk, and Write Off Ratio increased referring to overall increase of riskiness after the IPO.

The Financiera Indepnedencia results indicated by variables in matrix above are ambiguous. Thus, the mission drift cannot be confirmed for this MFI.

Equity Bank is reporting mission drift in terms of Average loan size, Return on equity and assets. This finding is pointing to the possible drift of this MFI to more Mainstream bank -like business with larger loans focusing on profitability measures.

SKS Microfinance refers to the mission drift in two variables. This trend is associated with the attempt to increase the market capitalization by large number of provided loans before the IPO. After the IPO, large share of provided loans was written-off. Nevertheless, there is not enough evidence to confirm long term mission drift.

To summarize this part, the original approach using the matrix displaying studied publicly listed MFIs and variables to identify the possible mission drift revealed for 16 out of 35 observations change in direction of shift from the original mission. The fifth hypothesis is rejected. due to the fact that more than half of figures do not refer to the significant shift from the original social mission caused by listing MFIs shares at stock exchange. In other words, there is not enough evidence to claim the systematic pattern among publicly listed MFI to drift away from its original social mission after the IPO. This finding is in accord with Sarah Sergill (2013) observations.

Hypothesis 5	There is a mission drift associated with publicly listed MFIs.	**Rejected**

4. Conclusion

This thesis contributes to nascent literature focused on social investment analysis. It has two parts. In the first part, the viewpoint of investors seeking for profit and exposure to Emerging markets is reflected. The second part is focused on the analysis of MFIs shares public listing effect on its social outreach.

In the first part, two possible investments in Microfinance and Mainstream banks in Emerging markets are considered. Those investments opportunities are represented by artificially constructed indices. Each index includes respective stocks according to whether it addresses the investment in microfinance or in Mainstream banks. The indices are compared with benchmark indices, namely, MSCI World index and MSCI Emerging Markets index. Capital asset pricing model and performance ratios, such as Sharpe or Treynor Ratio were used to test the hypothesis about investment attractiveness of microfinance equity.

The first hypothesis concerning to diversification potential associated with microfinance stocks is rejected. The beta (significantly greater than 0) presented by index consisted of microfinance shares reports no diversification potential for an investor considering to hold a microfinance share in his or her broad and well-diversified portfolio against unsystematic risk.

The second hypothesis was also rejected. MFI index does not reveal any abnormal returns over the benchmark indices (World and Emerging Markets) during the tested period.

The third hypothesis concerning to difference in potential to diversify away the systematic risk between Mainstream banks and MFIs stocks is also rejected. The beta coefficients which stem from the regression of adjusted returns of Mainstream banks index on both MSCI benchmark indices are significantly lower than beta coefficient associated with MFI index.

The last hypothesis of the first part testing the differences between Jensen's alpha of MFI and MB index was also rejected at 5 % confidence level. The performance ratios underlined the previous findings of no specific diversification potential.

To conclude, the microfinance equity might be an interesting investment instrument. However, the analysis did not indicate any attractiveness represented by publicly traded

MFIs shares in comparison to investment in conventional banking stocks in Emerging markets. This conclusion is in line with Birere and Szafarz (2014) about similarity between Mainstream bank and Microfinance Institutions.

The second part was exploring the effect of microfinance sector entering the financial market on its social outreach. Five publicly listed MFIs were analyzed on set of 7 measures depicting their both social and business performance.

Some indications of SKS Microfinance drifting away from original social mission, due to its listing at stock exchange were found. The Andhara Pradesh crisis in 2011 has been thought to be caused by not only SKS Microfinance. We do not challenge it, but rather claim the importance of SKS role. On one hand, the stable loans size after the IPO reveal unchanged poverty class of borrowers. On the other hand, the significantly increased number of borrowers just before IPO and 47% write-off ratio after the IPO supports the claim of Mohammad Yunus about the danger associated with financial markets entering microfinance universe. However, the mission drift in case of SKS Microfinance rather refer to onetime event than long term lasting change.

Notes

The evil hidden in detail is the fact that SKS offers loans only to women, the horrific examples happening after the IPO, when women were abused, force to drink toxic liquids or drown in the wells leaving their children behind for being not able to repay its debts. Those and other similar stories happened and should be taken in account, when deciding about the for-profit investment in microfinance.

Even though, the BRAC bank also indicates potential drift from the original social mission according to some selected variables and expectations, the "mission drift" hypothesis is rejected based on for instance the high percentage of women borrowers in comparison to rest of the microfinance sector in Bangladesh.

The other analyzed MFI is the Equity bank in Kenya. As was mentioned above its stock's financial performance is better relatively to rest of the target group of publicly listed MFIs. According to the findings from the second part of thesis, the resulting performance is accompanied by increase in loan size even with respect to country level and significantly smaller percentage of women borrowers. These observations lead to the

conclusion that financial stability, good business and stock results of the only one publicly listed MFI (Equity bank) in Kenya might be associated with changes in its operation. The hypothesis about mission drift is rejected, due to not enough evidence. Nevertheless, it is suggested to check in future research, whether Equity bank still fulfills the microfinance characteristics, if it will keep its trend.

The performance of two publicly listed MFIs in Mexico, namely, Compartamos Banco and Financiera Independencia was also investigated. It was found support in data for the effect of worsening situation for both MFIs in Mexico, in terms of increased Write-off ratio. This change however doesn't necessary mean mission drift. It can be also explained by the fact that microfinance universe is relatively young and fragile. The second part of this thesis describe this situation, when microcredit borrowers were allowed to took up more loans than they are able to repay. As a result, both publicly listed MFIs same way as whole Mexican microfinance industry got in to trouble during the years coming after 2010. (Finca, 2014)

To conclude, some indications of mission drift was observed in publicly listed MFIs. Nevertheless, the hypothesis concerning the shift from the original mission among publicly listed MFIs is rejected, due to not enough evidence (no systematic change pattern was recognized).

According to Monroy and Huerga (2012), there are planned two other IPOs of microfinance equity in the future. Due to this fact and current lack of data for Indonesian publicly listed MFI, there is an opportunity for further research, which will extend the analysis of this thesis and other literature concerning to *double-bottom* investments.

5. Disscusion

The artificial indices were used for the portfolio diversification hypothesis testing. According to the results of the analysis in the first part, it was observed that this approach has its constraints and it's suggested to further analyze the stocks on individual basis reflecting the country specifics as well. Other suggested extension of the research might be found in Janda and Ruasser (2013) using panel data regression with fixed effects.

Future research should also consider multi-variable version of the Capital asset pricing model. The Asset pricing theory reflecting the microfinance and macroeconomic indicators might reveal further interesting observations, same as finding of optimal portfolio consisted of only microfinance shares.

The possible research extension of the effect on the social outreach is also recommended. The matrix table presenting publicly listed MFIs with results of selected variables in two-dimensional space used in this thesis is also possible approach. Other research might explore MFIs social outreach by weighted rating index using different weights according to importance of each variable to MFIs social outreach.

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7. Appendix

Table 4a Market Capitalization of publicly listed MFIs

	Inception date	Market capitalization
SKS Microfinance	8 / 2010	950 392 465
Equity Bank	08 / 2006	1 104 479 140
Raykat Bank	11 / 2003	19 768 532 647
Brac Bank	01 / 2007	576 320 630
Financiera Independecia	11 / 2007	117 787 124

The Market capitalization value refers to the end of sample period 31/12/2016. Compartamos Banco market capitalization refers to the date before delisiting from the Mexican stock exhchange. The values are in USD.

Table 5a 3-Month US Bond & Exchange rate Monthly returns

	3-Month US Bond	Inodonesia	Mexico	Kenya	Bangladesh	Indi
Mean	0,10%	-0,48%	-0,59%	-0,31%	-0,17%	-0,53%
Max	6,81%	7,30%	10,31%	2,90%	6,74%	6,74%
Min	-7,65%	-11,9%	-6,89%	-6,28%	-6,07%	-6,07%
Volatility	0,10%	2,67%	3,34%	2,03%	1,09%	2,22%
Start Date	Aug-10	Aug-10	Aug-10	Aug-10	Aug-10	Aug-10
End Date	Dec-16	Dec-16	Dec-16	Dec-16	Dec-16	Dec-16

Table 8 Indices exluding Bangladesh

	MSCI World		
	Beta	Wald test	R-Squared
(1) MFI Index	1.21*** (5.11)	0.04 (0.8351)	26 %
(2) Financial Index	1.16*** (6.98)		39.7 %

Table 9 Indices exluding Bangladesh

	MSCI World		
	Alpha	Wald test	R-Squared
(1) MFI Index	-.0059514 (-0.66)		26 %
(2) Financial Index	-0.0046 (-0.74)		39.7 %

Table 14 Write-off Ration Country For-Profit/Non-profit compariosn

Write-Off Ratio	**Before IPO**			**After IPO**		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	2,10%	0,48%**	3,23%	2,59%	0,74%	2,04%
Compartamos Banco	0,56%	1,09%	1,32%	3,91%	3,68%	6,09%
Equity Bank	6,60%	7,23%***	8,77%***	4,90%		
SKS	0,42%	0,29%	0,56%	12,18%	0,29%***	1,78%***
Financiera Indepndencia	-	1,09%	1,32%	20,4%	3,68%***	6,09%***

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 15 Average Loan size Country For-Profit/Non-profit compariosn

Average Loan Size	**Before IPO**			**After IPO**		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	58,73$	60.5$**	69.64$**	148,22$	68.56$***	64.34$***
Compartamos Banco	288,435$	284.5$	476.34$***	425,90$	295.34$	487.34$*
Equity Bank	710,2$	105,3$***	220,2$***	1661,65$	79.5$***	302.5$***
SKS	93,8$	73.23$	81.87$	134,8$	70.87$	72.6$
Financiera Indepndencia	261,75$	284.5$	476.34$***	325,76$	295.34$	487.34$***

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 16 Percenatge of women borrowers Country For-Profit/Non-profit compariosn

% of women borrowers	Before IPO			After IPO		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	97,80%	94%	83%***	93,6%	92%	90%***
Compartamos Banco	98%	78%***	82%***	96%	78%***	79%***
Equity Bank	42%	78%***	40%	43%	96%***	47%
SKS	100%	92%***	92%***	100%	97%***	97%***
Financiera Indepndencia	-	78%	82%	-	78%	79%

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 17 Number of loans per loan Officer Country For-Profit/Non-profit compariosn

Number of loans per Loan Officer	Before IPO			After IPO		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	303	263	274	356	293	294
Compartamos Banco	343	321	247	336	236***	226***
Equity Bank	460	360***	310	448	325***	387***
SKS	486	489	526	409	536***	616***
Financiera Indepndencia	-	321	247	366	236***	226***

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 18 ROA & ROE Country For-Profit/Non-profit compariosn

ROA	Before IPO			After IPO		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	4,90%	3.44%	1.37%	4,50%	2.24%	0.12%
Comparta mos Banco	26,45%	-4.44%	-1.53%	16,67%***	2.69%	1.01%
Equity Bank	2,90%	-41.25%	5.66%	5,7%***	-2.59%	0.05%
SKS	-16%	-5.66%	-1.31%	-14%	1.75%	-0.51%
Financiera Indepndenc ia	7,30%	-4.44%	-1.53%	3,49%***	2.69%	1.01%

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 19 ROE Country For-Profit/Non-profit compariosn

ROE	Before IPO			After IPO		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	4,90%	1.65%	9.56%***	4,50%	3.24%	3.19%
Comparta mos Banco	52,26 %	-4.14%***	-13.59%***	41,5%	6.37%***	3.02%***
Equity Bank	20,00 %	-15.64%***	13.63%	27%	-9.55%***	29.53%
SKS	16,67 %	4.36%***	6.96%***	-28,88%	6.23%***	8,65%***
Financiera Indepndenc ia	26,00 %	-4.14%***	-13.59%***	16,00%	6.37%***	3.02%***

The Wilcoxon Rank sum test presents *** at 5% confidence level

Table 20 Portfolio at risk > 30 days Country For-Profit/Non-profit compariosn

Portfolio at risk > 30 days	Before IPO			After IPO		
	MFI	Non-Profit	For-Profit	MFI	Non-Profit	For-Profit
BRAC	6,67%	4.60%	8.09%	6,96%	7.11%	6.39%
Compartamos Banco	0,89%	8.17%	5.02%	3,12%***	7.31%	7.04%
Equity Bank	18,75%	12.80%	11.80%	8,57%***	3.39%	8.87%
SKS	0,68%	2.06%	4,29%***	-	4.44%	10.80%
Financiera Indepndencia	7,35%	8.17%	5.02%	18,62%***	7.31%	7.04%

The Wilcoxon Rank sum test presents *** at 5% confidence level