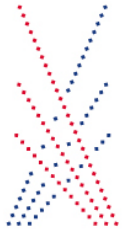

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Commercialisation of Microfinance Institutions (MFIs) in Developing Countries and the Financial and Social Performance- Dynamic panel analysis

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Abstract

In recent years, microfinance institutions (MFIs) have grown rapidly. Traditionally, it was set up as a strategy to fill the gap between the supply and demand for credit to poor households that enable income-generating activities and eventually improve living standard. Therefore, it was mostly non-government organisations (NGOs). However, in the last decade, there has been an increasing trend of commercialisation in the microfinance industry. As a result, a lot of commercial MFIs started to appear but little is known about whether the industry and clients are benefited from commercialisation. Therefore, this study has investigated the relationship between the commercialisation and performance of MFIs of microfinance using comprehensive data drawn from 114 countries over the period 2002 to 2016 using a dynamic panel data analysis method. This study finds that commercialisation does not have a significant effect on the financial performance of MFIs but have a significant negative effect on social performance. Further, this study has also examined the factors that drive the performance of MFIs.

Keywords: Microfinance, Commercial Microfinance Institutions, Commercialisation, Dynamic Panel Data Analysis

1. Introduction

Microfinance is not a new phenomenon. It has existed for centuries in different forms. According to Seibel (2004), the evolution of microfinance began in Germany in about 150 years ago as an informal self-help movement. In Europe, the earliest can be dated back to the 15th century when the Catholic Church founded pawn shop as an alternative to the usurious money lender. These pawn shop spread throughout Europe. One of the earliest examples is Irish loan fund started in the early 1700s by Jonathan Swift. This system becomes very popular and has about 300 funds all over Ireland by 1840s (Helms, 2006). Similarly, in the 1800s, a new approach of saving and credit cooperatives began to emerge in Europe which was first started in Germany by Friedrich Wilhelm Raiffeisen to help low-income households and improve their welfare. Later, it becomes successful and expanded around Latin America, Asia and Africa. One of the early examples is the Indonesian People's Credit Bank. In the 1900s, an adaptation of saving and credit cooperatives model started to appear more in Latin America to support the agricultural sector, mobilised idle savings, increased investment through credit and reduced oppressive feudal relation that was enforced through indebtedness. In between the 1950s and 1970s, government and donors started to focus on providing credit services to farmers to improve their productivity and income through state-owned financial institutions and agricultural cooperatives. They started to offer loan to clients on the below-market interest rate but unfortunately, the scheme was not successful because rural development banks were unable to cover their cost and had poor repayment rate as borrowers considered the loan as the government gift. Meanwhile, in late 70s Prof. Muhammad Yunus introduce microcredit in Bangladesh and established Grameen bank for poor households which deliver the credit based on solidarity group (Yunus, 1999). Over the period of time, the model (Grameen Model) become popular and by replicating the model many MFIs started to emerge in other regions such as Latin America, Africa, and other Asian countries (Remenyi, 1997). For example, ACCION International in Latin America and Self-employed Women's Association Bank in India. In the 1980s, microcredit received huge attention as it was becoming successful worldwide and in early 1990s, the term microfinance has been started to use to refer Microcredit while International development agencies started to promote microfinance as a strategy to alleviate poverty which includes services of savings, loan, insurance, remittance and defined as the provision of financial and non- financial services from microfinance institutions to low-income households and small business in rural and urban areas (Robinson, 2001). MFIs mostly operates in low-income countries due to the lack of availability of financial access in these types of

countries. Over the past decade, MFIs served millions of people resulting increases in living standards (Linares-Zegarra and Wilson, 2018; Raihan et al., 2017).

Initially, MFIs started as non-commercial institutions supported by government subsidies and donations as their primary goal is to provide social welfare, however, gradually MFIs have realised that they need to be sustainable to provide continued services which have been proved difficult by depending on donations and subsidies (Johnson, 2012). As a solution, many MFIs started to apply the market-based approach to stay financially sustainable and deliver continued services (Hishigsuren, 2006). Morduch (1999) stated this process as the win-win solution of microfinance. Therefore, in the last decade, a large number of non-commercial MFIs have migrated towards commercial oriented MFIs (Abrar and Javaid, 2014; Mersland, 2009). Hence, some institutions are non-commercial oriented with the objective of social mission and others are commercially oriented, seeking to be financially sustainable by employing commercial approach along with the social mission.

1.1 Commercialisation of Microfinance Institutions

Commercial-oriented MFIs can be formed through a different procedure. It can constitute **"**upgrading", "downscaling", and "greenfields". The process of upgrading is to transfer a non-governmental organisation (NGOs) into a fully-fledged MFI, downscaling is the process of traditional commercial banks becoming involved in the microfinance industry and greenfield is a process of creating a new commercial MFI from scratch. The process of commercialisation is supported by the United Nations and World Bank, who argue it is indeed for the development of an integrated financial market, which is needed for the provision of sustainable microfinance. Some of the first MFIs apply commercial approach are PRODEM (NGO) in Bolivia in 1992, Bank Rakayat Indonesia (BRI), K-Rep in Kenya and First Microfinance Bank (FMFB) in Pakistan (Bateman, 2010). Despite supporting commercial MFIs by many institutions and organisations, a counter-concern has arisen. Thus, there are two different views on the provision of microfinance, and these represent two different schools of thought 'welfarist' and 'institutionalist'. Welfarists believes that MFIs should be non-commercial or NGO with the sole mission of social welfare, while institutionalists believe that the MFIs should be more commercial in form, with both sides saying they provide the best solution to enhance the living standard of poor peoples. Thus, the major challenge of modern MFIs is to balance their financial and social objective, especially commercial MFIs as they are motivated to make a profit. The growing trend of commercial microfinance institutions has created serious concern of mission drift which has attracted interest from various academics, investors and practitioners as employing commercial approach in MFIs

might harm their clients rather than benefit them (Guerin et al, 2015) and only limited research available on whether commercialisation of MFIs is harmful or benefit to their clients and institutions itself. Previous studies on this matter are still vague and sceptical. Therefore, Lensink (2011) and D'Espallier et al. (2017) suggest further study on modern MFIs. Further, little evidence shows that studies have been conducted on the commercialisation of microfinance using the rigours method such as dynamic panel analysis model which take accounts of endogeneity which shows that there is also a methodological gap in the literature on this issue and this study fill the methodological gap using dynamic panel analysis. In addition to this, this study is using new indicators to measure the social performance for the first time introduced by Bibi et, al (2018) while investigating the relationship between commercialisation and the financial and social performance of MFIs in developing countries.

Therefore, this paper aims to contribute on the literature of commercialisation of microfinance institutions using largest data set and also using new indicators of social performance utilising data from 114 developing countries of 2108 MFIs operating between 2002 and 2016 using dynamic panel analysis method. To examine whether commercialisation has an effect on the financial and social performance, this study has used profit orientation (profit-oriented vs non-profit oriented) of MFIs as an independent variable since it shows if MFIs are profit motivated. The findings show that commercialisation has significantly benefited the industry as it is not significantly associated with financial performance however, this study also found that it has a positive association market shares borrowers which indicate that commercial MFIs have larger market shares in the country compare to non-commercial MFIs in terms of a number of borrowers. Further, the result also shows that commercial MFIs are serving richer clients as it has a positive association with average loan size.

The remaining of this paper has been organised as follows. In section 2, this study has reviewed the previous literature, while in section 3, this study has present data and methodology. Similarly, this study has presented model specification in section 4 and empirical results in section 5 and finally, the discussion & conclusion in section 6.

2. Commercialisation of MFIs and the Financial and Social Performance

Recent studies show that commercial MFIs increasing and prioritising financial performance (Hermes et al., 2011). As a result, MFIs in India has led to massive market penetration, market saturation, over lending, and finally over-indebting of clients in some instances. The popular case of Andhra Pradesh was one of the worst cases (Kapur, 2014). This also occurred in other

developing nations, such as Bosnia, Morocco, Pakistan, Bolivia and Nicaragua – although it was accompanied by different dimensions and experiences (Hossain, 2013).

Cull. et, al. (2009) studied commercialisation and MFIs to answer eight questions about the microfinance industry from 2002-2004 using data from the Mix market. They cover 346 MFIs. They concluded that commercial MFIs are more likely to provide a loan to an individual, provide credit to fewer women, provide larger loans and have a higher cost per borrower. However, they also stated that although commercialisation is increasing in the microfinance industry, it was nevertheless the case that NGOs are still serving the largest number of poor clients. Nawaz (2010) also examined the mission drift phenomenon in his study on subsidies and efficiency. By using a dataset of 179 MFIs operating worldwide and stated that due to the commercialisation of microfinance, investors are increasingly directing their funds to those MFIs that serve the relatively less poor or well-off clients who can afford to pay back larger loans. According to the study conducted by Pavlović and Stoyanov's in 2011 on Microfinance in Bosnia and Herzegovina, they claimed that commercialisation of microfinance institutions (MFIs) have a negative impact on economy and society in long term. They also suggest that very little effect has seen on poverty reduction due to the microfinance. Wagenaar (2012) also concluded that transferred microfinance institutions lead to the mission drift as their objectives of reducing poverty become profit making. She investigates the mission drift among microfinance institutions that transform from non-profit to profit-oriented institutions using data on 1,558 microfinance institutions spanning 15 years. She found that the transformed MFIs from non-profit NGO to for-profit institutions have significantly higher average loan sizes and a lower percentage of female borrowers and non-profit NGOs MFIs. Similarly, a study conducted by Abrar and Javaid (2014) examined the movement to the commercialisation of microfinance by using average loan size as a proxy of mission drift, operational self-sufficiency as a profit measure, productivity as a cost measure, and repayment risk as an independent variable. The data was collected from 72 countries for the years 2003 to 2009. They concluded that commercialisation of microfinance is associated with mission drift through a de-emphasis of social goals and a corresponding greater emphasis on financial objectives.

Although these studies found that commercialisation has a negative impact, there are other studies which present positive impacts. According to Berger et al., (2006), commercialisation is the key to MFI's sustainability, forcing microlenders to cover their costs, allowing them to obtain financial and technical expertise needed for expansion and the necessary discipline to provide an efficient service to their clients. They also stated that commercialisation allows MFIs to maintain high profitability to help to grow the institution and increase outreach. Likewise, Dacheva (2009) concluded that profitability and sustainability in microfinance in Latin America were improved

through commercialisation. He also found that commercialisation impacted the region in a very positive way and influenced the industry significantly. Tchakoute-Tchuigoua (2010) conducted a study to find out the relationship between the performance of microfinance institutions and its legal status by using the data from 202 microfinance institutions during the date of between 2001 and 2006 which were available in Microfinance Information Exchange (MIX) database. Three forms of ownership were chosen: cooperatives, private microfinance companies, and non-profit making organisations. The result shows that private microfinance companies are more sustainable than NGOs. The risk in the credit portfolio for private companies is lower than with NGOs and finally, Private microfinance institutions have better financial performance than NGOs and better portfolio quality than cooperatives and NGOs. Similarly, Lensink (2011) also stated that commercial microfinance is vital to increase MFIs funding. This is because developing nations have no access to financial services. For example, in India, there are around 120 million families with no access to financial services, and to meet that demand, the microfinance sector needs to expand, which is only possible through commercialisation. Furthermore, commercial MFIs can diversify portfolios and can use profits from lending to wealthy clients to finance to the poor people - which will help to increase the availability of funds and helps to improve outreach.

Alongside these studies, results also show no relationship between commercialisation and MFIs performance. For example, Olivares- Polanco (2005) conducted the study on the commercialisation of microfinance and deepening outreach by using data from the period of 1999 to 2001 from 28 Latin American microfinance institutions and analyse the data by using multiple regression method. He concluded that regardless of whether microfinance institutions are regulated or not (NGOs= Non-regulated and Financial institutions= Regulated), there is no effect on loan size. Cull et al., (2007) also found that being profit oriented MFIs have no significant effect on return on assets (ROA), return on equity (ROE) and operational self-sufficiency (OSS). Mersland and Strom (2009) found no difference between non-profit organisations and shareholder firms in terms of financial performance and outreach. In addition, Catherine et al., (2015) found that there is no association between mission drift and the performance of deposit microfinance institutions. All these above studies have created serious debate and confusion as diverse findings have been reported which required for further in-depth investigation with larger data set covering a large period of time span using a rigorous method to investigate the actual effect of commercialisation.

3. Conceptual Framework

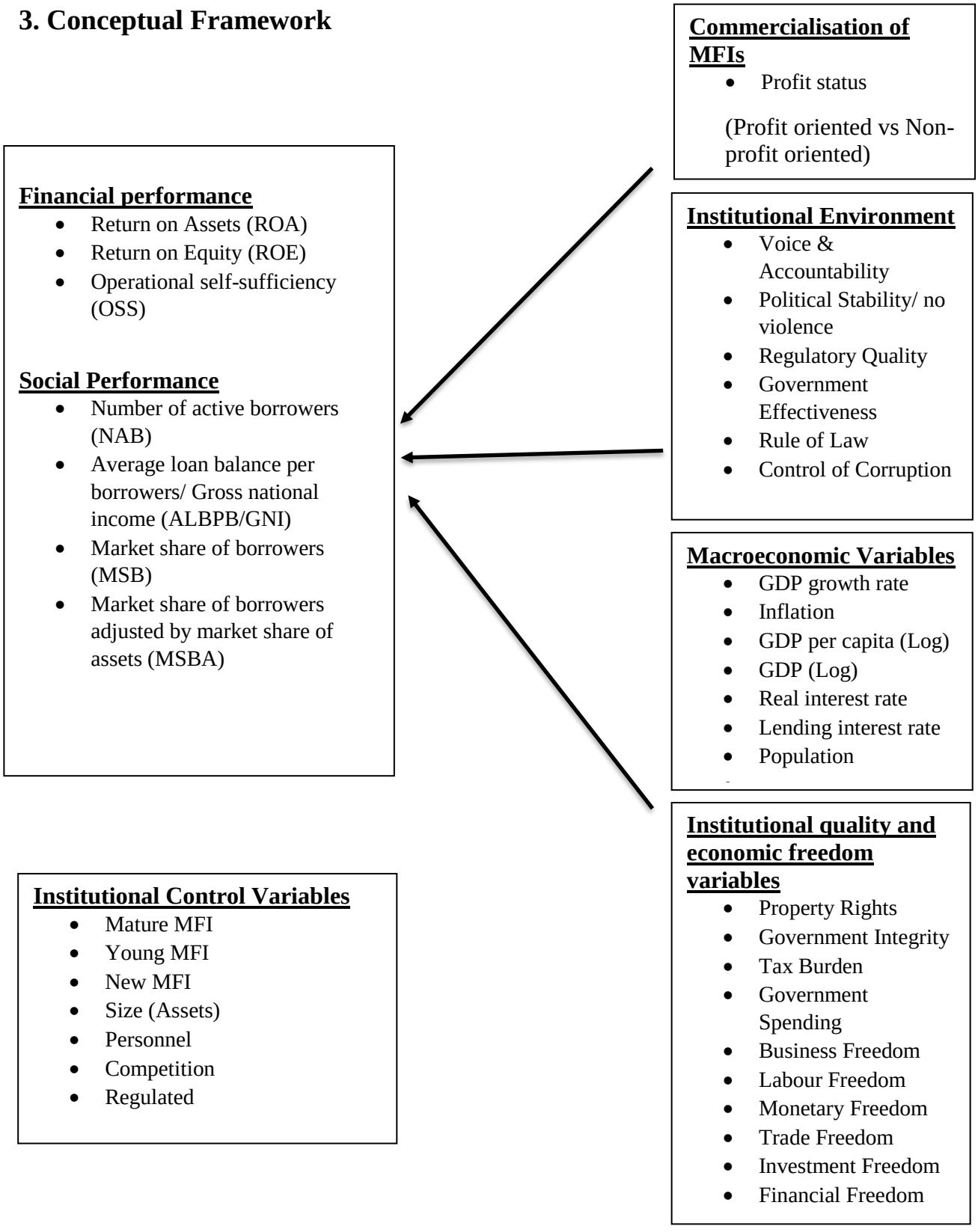

Figure 1. Commercialisation and the Financial and Social Performance of MFIs

(Source: Author)

4. Data and methods

4.1 Data

The data related to MFIs are collected from The Mix Market platform. The database is widely used for research on the microfinance sector (Abrar and Javaid, 2014; Cull et, al., 2009; Kar, 2016; Vanroose & D'Espallier, 2013). The data are self-reported and in order to ensure the quality of data, the platform provides rating scheme based on the quantity and quality using a 5-star system (5 means data are audited and are available for at least 3 years and 1 being the least complete data available) (Mix Market). Therefore, this research will only use the institution's data which have 3 or more Star/ diamond for the data quality purpose (Barry and Tacneng, 2014; Assefa, Hermes and Meesters,2013). Similarly, data related to world governance indicators (WGI) which were created by Kaufmann et al., (2010) and macroeconomics are collected from the World Bank. Similarly, institutional quality and economic freedom related data are collected from the Heritage Foundation and analysed using the unbalanced panel data regression method. This study has covered the data period from 2002 to 2016 using 2108 MFIs from 114 developing countries.

4.2 Dependent Variables

Dependent variables are the factors that changed by the effect of independent variables. For this study, dependent variables are the financial and social performance of MFIs. Financial performance is measured by return on Assets (ROA) and operational self-sufficiency (OSS) (Lensink et al., 2018; D'Espallier et al., 2017; Allet and Hudon, 2015; Tchakoute-Tchuigoua 2010; Mersland and Strøm, 2009) as it summarises the financial success of MFIs and is common indicators of measuring financial performance in the context of microfinance. Further, we have also used return on equity (ROE) to measure the financial performance for robustness (Strøm et al., 2014; D'Espallier et al., 2013; 2017).

Social performance is difficult to measure however in the context of microfinance, previous literature have measures social performance of MFIs using number of active borrowers (D'Espallier et al., 2017; Tchakoute-Tchuigoua 2010; Mersland and Strøm, 2009; Cull et al., 2009) which shows the impact on society as a larger number of clients means greater social impact (Hartarska, 2005), and average loan balance per borrower divided by gross national income (GNI) (D'Espallier et al., 2013) which enable to assess if MFIs are providing large or small loans compare to the average income of the particular country (Tchakoute-Tchuigoua 2010). A smaller value of this variable is preferred because smaller values indicate that poorer people are being served. Conversely, higher values indicate that wealthier clients are being served. Therefore, from a

poverty-alleviation perspective, a negative impact is preferred because it indicates that this variable improves the depth of outreach by helping serve poorer people (Hartarska, 2005). However, Quayes (2012) posited the income level of borrowers needed to be known if one is to know the depth of outreach. Also, Copestake (2007) criticised a number of active clients by stating that the data does not show how active the clients are and stated that previous indicators of outreach has weakness and noting the lack of consensus. As a result, Bibi et al., (2018) introduced new indicators to measure social performance i.e. Market share of borrowers (MSB) and Market share of a number of borrowers adjusted by market share of assets (MSBA) which measures the breadth and depth of outreach and claimed as better than previous indicators. Hence, this study has used new and previous indicators for the first time to measure social performance while investigating the effects of commercialisation on social performance in developing nations.

4.3 Independent Variables

Within the industry, commercialisation has various meaning and proxies, however, in this research commercialisation will be measured through profit orientation (profit-oriented vs Non-profit oriented) as Christen (2001) described that profitability is associated with the increasing commercialisation of the microfinance industry. Profit-orientation is also used as proxy of commercialisation because it shows whether institution is motivated by profit or non-profit making which shows the actual intention of the institution and appears better measures intuitively compare to others (shareholders vs NGOs; ownership type) because they may be making profits that are not distributed to shareholders but are reinvested in activities that further service their clients (Cull et al, 2009) and also some of the shareholder may not be socially motivated although they own shares of MFIs. Similarly, MFIs with different legal status or ownership also either motivated by profit or non-profit.

4.4 Control variables

This study has used various control variables to isolate the effect of commercialisation from potentially confounding factors. This study has used the age dummy (Mature, Young and New), size (Log of Assets) and regulated (Regulated vs Non-regulated) as institutional control variables. Further, this study also accounts for country-specific variables that are institutional environment indicators, macroeconomic indicators, institutional quality indicators and economic freedom indicators. All the variables have been defined individually in table 1 below.

Table 1: Description of Variables

Variable	Definition	Formula	Data Source
Dependent Variable			
Financial Performance			
Return on assets (ROA)	Net Operating income (less taxes) compared to average assets. It measures how the institution is managing its assets to optimize its profitability. This ratio excludes donations and non-operating items.	Net operating income less taxes / Average Assets	Mix
Return on equity (ROE)	Net operating income (less taxes) compared to average equity. It measures an institution's ability to build equity through retained earnings. This ratio is net of income taxes and excludes donations and non-operating items.	Net operating income less taxes / Average equity	Mix
Operational self-sufficiency (OSS)	Measures the institution's ability to cover its costs through operating incomes. Financial expense, impairment losses on loans and operating expenses are included in the calculation as they are a normal and significant cost of operating institution	Financial Revenue / (Financial expense on funding liabilities + Net impairment Loss on gross loan portfolio + Operating expense)	Mix
Social Performance			
Number of active borrowers	The numbers of individuals or entities that currently have an outstanding loan balance with the FSP or are primarily responsible for repaying any portion of the gross loan portfolio. Individuals who have multiple loans with FSPs are counted as a single borrower	N/A	Mix
Average loan balance per borrower / GNI per capita	Average outstanding loan balance compared to local GNI per capita to estimate the outreach of loans relative to the low-income population in the country.	Average loan balance per borrower / GNI per capita	Mix
Market Share of borrowers (MSBij)	New indicators to measure social performance indicators-It measures the breadth of outreach	Number of active borrowers (NABij) / Total number of active borrowers of MFIs in country J (TABj)	Bibi et al (2018)
Market share of the number of borrowers adjusted for market share of assets (MSBAij)	New indicators to measure social performance indicators - It measures the depth of outreach	Market share of borrowers / Market share of Assets	Bibi et al (2018)
Independent Variables			
Profit Status	1 if a MFI is registered as Profit-oriented, 0 otherwise	N/A	Mix
Competition	Herfindahl- Hirschman Index (HHI)	Square of Number of borrowers of MFIs in a country *c* in period *t* / Total number of active borrowers in a country c in period t	Mix
Personnel	The number of individuals who are actively employed by an entity.	N/A	Mix
Country Control Variables			
Government effectiveness	Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank
Regulatory quality	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permits and promote private sector development.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank

Rule of law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank
Control of Corruption	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank
Voice and Accountability	Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank
Political stability/ No Violence	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	Index ranges from -2.5 (weak) to 2.5 (strong) performance	World bank
GDP growth (annual %)	Annual GDP growth rate	N/A	World bank
Inflation, (annual %)	Inflation measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly	Inflation, consumer price	World bank
GDP per capita (Log)	Logarithm of GDP per capita	N/A	World bank
GDP (Log)	The logarithm of GDP of each country	N/A	World bank
Real interest rate	The rate of interest an investor, saver or lender receives after allowing for inflation	N/A	World bank
Lending interest rate	The rate of interest charged by a lender to a borrower for the use of assets	N/A	World bank
Population	The total population of each country	N/A	World Bank
Property rights	It's an ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws	Index ranging from 0 to 100 (Higher score meaning the rights are guaranteed and the opposite is outlawed)	Heritage Foundation
Government integrity	Measure government transparency	Index ranging from 0 to 100 (Higher score meaning the transparent and the opposite is repression)	Heritage Foundation
Tax Burden	A measure of the tax burden imposed by the government. It includes direct taxes, in terms of the top marginal tax rates on individual and corporate incomes, and overall taxes, including all forms of direct and indirect taxation at all levels of government, as a percentage of GDP	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
Government spending	Measure government expenditures as a percentage of GDP. Government expenditures, including consumption and transfers, account for the entire score.	Index ranging from 0 to 100 (Higher score meaning, less spending of GDP and low score meaning high spending)	Heritage Foundation
Business Freedom	an overall indicator of the efficiency of government regulation of business. The quantitative score is derived from an array of measurements of the difficulty of starting, operating, and closing a business	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
Labour freedom	Measure that considers various aspects of the legal and regulatory framework of a country's labour market, including regulations concerning minimum wages, laws inhibiting layoffs, severance requirements, and measurable regulatory restraints on hiring and hours worked.	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation

Monetary freedom	Measure of price stability with an assessment of price controls. Both inflation and price controls distort market activity. Price stability without microeconomic intervention is the ideal state for the free market	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
Trade freedom	Measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services. The trade freedom score is based on two inputs:	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
Investment freedom	Measures whether individuals and firms would be allowed to move their resources into and out of specific activities, both internally and across the country's borders, without restriction.	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
Financial freedom	Measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector	Index ranging from 0 to 100 (Higher score meaning the freedom and the opposite is repression)	Heritage Foundation
MFI Control Variables			
Mature (Age_dummy1)	1 if a MFI is operating for more than 8 years, 0 otherwise	N/A	Mix
New (Age_dummy2)	1 if a MFI is operating for less than 4 years, 0 otherwise	N/A	Mix
Young (Age_dummy3)	1 if a MFI is operating for more than 4 years but less than 8 years, 0 otherwise	N/A	Mix
Regulated	1 if a MFI is regulated, 0 otherwise	N/A	Mix
Assets (Log)	The logarithm of net assets of MFIs	N/A	Mix

Table 2: Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
Return on Assets	10,436	0.0080755	0.1284318	-3.4527	0.7986
Return on Equity	10,429	0.0018208	11.00113	-1058.785	276.9735
Operational Self-sufficiency	11,719	1.168198	1.124429	-47.8453	81.2188
Number of Active Borrowers	12,387	64913.44	371042.9	0	8166287
Average Loan Balance per Borrowers/ GNI	12,279	0.7962493	5.524962	0	557.7283
Market share of Borrowers	12,704	0.0090707	0.0341871	0	0.7848947
Market share of Borrowers adjusted by market share of assets	12,704	8.218732	145.1454	0	10336.59
Profit Status	12,704	0.4307305	0.495198	0	1
Competition	12,703	0.2638845	0.2172477	0	1
Personnel	12,317	382.8389	1772.515	0	118000
Government effectiveness	12,605	-0.4405364	0.4435713	-2.058268	1.275488
Regulatory quality	12,594	-0.3196102	0.4976642	-2.236245	1.538509
Rule of law	12,632	-0.6126559	0.4500733	-1.896632	1.43314
Control of corruption	12,634	-0.6244343	0.4143099	-1.722249	1.592268
Voice and accountability	12,632	-0.3157984	0.6255893	-2.172564	1.292521
Political stability/ no violence	12,583	-0.7474355	0.7135079	-3.180798	1.271879
GDP growth rate	12,621	5.495773	4.494089	-52.42754	64.06996
Inflation	12,419	7.135844	12.97617	-35.83668	1096.678
Real interest rate	9,744	6.776044	11.22845	-42.31018	508.7408
Lending interest rate	9,749	14.85887	10.29008	2.587667	496.4583
GDP per capita (Log)	12,622	7.578195	1.049885	4.712799	9.961196
GDP (Log)	12,623	24.76632	1.915272	19.47874	29.98072
Population	12,511	1.35E+08	3.08E+08	103604	1.36E+09
Property rights	12,310	34.33712	11.88861	0	90
Government integrity	12,315	28.36391	7.981903	10	75
Tax burden	12,315	79.04413	7.433525	44.1	97.6

Government Spending	12,313	78.10876	13.37162	0	98.5
Business freedom	12,315	58.81904	11.48477	4.1	90.6
Labour freedom	10,355	58.60883	13.58145	20	100
Monetary freedom	12,311	73.83444	7.802848	0	94.3
Trade freedom	12,304	69.6999	11.86376	15	89.2
Investment freedom	12,315	46.054	16.4498	0	90
Financial freedom	12,304	47.27243	14.09742	10	90
Mature MFIs	12,624	0.647576	0.4777441	0	1
New MFIs	12,624	0.1539132	0.3608798	0	1
Young MFIs	12,624	0.1985108	0.3988945	0	1
Regulated	12,704	0.6711272	0.4698222	0	1
Assets (Log)	12,314	15.50255	2.146783	-0.6931472	24.46844

The above table 2 provides the summary statistics of the variables used in this study. The table reports the number of observations, mean, standard deviation, minimum and maximum of all variables. The result shows that, on average, MFIs are self-sustainable as the mean of ROA (0.0080) and ROE (0.0018) are positive even though it is very small. Mean of OSS is 1.17, which is 117% which indicate that the average number of MFIs can cover their operational cost from the profit. The average number of active borrowers is 64,913 and the maximum is 8,166,287. The highest number of borrowers is from VBSP microfinance institution located in Vietnam, while the minimum is none. The minimum value shows that some of the MFIs did not provide credit service to a single person. The average loan balance per borrowers compare to GNI is 0.79 which shows that the average borrowers are the poor as the average GNI is higher. Similarly, the market share of borrowers and market share of the number of borrowers adjusted for a market share of assets are 0.009 and 174.226 respectively. Further, this study checks multicollinearity issues through variance inflation (VIF) factor which suggests no sign of multicollinearity in the models as mean VIF < 4 and individual VIF < 10.

5. Model Specification

This study is using unbalanced panel data regression method in order to analyse the data and the dynamic panel model has been specified.

$$Y_{itc} = \text{Intercept} + \alpha Y_{itc-1} + \alpha Y_{itc-2} + \beta X_{itc} + \pi C_{itc} + \Omega G_{tc} + ¥M_{tc} + \infty Q_{tc} + \S E_{tc} + \varepsilon$$

Where,

Y_{itc}=Financial and Social performance of MFI

αY_{itc-1} & αY_{itc-2} = First and Second lags of Financial and social performance MFI at a time, located in country c

βX_{itc}=An Independent variable of MFI at a time, located in country c

πC_{itj}=A set of Control variables of MFI at a time, located in country c

ΩG_{tc}=A set of Governance indicators at a time, in country c

¥M_{tc}=A set of Macroeconomic variables at a time, in country c

∞Q_{tc}=A set of Institutional quality variables at a time, in country c

§W_{tc}= A set of Economic freedom variables at a time, in country c

ε=Error term

5.1 Dynamic Panel data model

As this study employs unbalanced panel data regression. Hausman- Taylor's test (HT) has been employed to choose between fixed effects (FE) and random effects (RE) and the outcome support fixed effects estimator. However, this study can't apply fixed effects as the main variables of interest is time-invariant. Therefore, RE estimation has been employed. Further, we also use a two-step system generalised method of moments (GMM) to take account of endogeneity. Two-step system GMM has been chosen because system GMM are consider more augmented compared to difference GMM (traditional GMM), when number of units (N) is larger and time periods (T) are relatively small (Arellano and Bond, 1991) and two-step system GMM is considered as robust and more efficient to heteroscedasticity and autocorrelation (Roodman, 2009). We have used lagged values of variables have been used as instruments while conducting two-step system GMM as it allows additional moment restrictions and corrects for any bias that would emerge using the standard difference GMM estimator. Although, previous studies have used instrumental variables (IV) estimation techniques to address the endogeneity issue, finding suitable instruments is difficult and Wooldridge (2002,p.101) warns of the poor behavior of IV method if the instruments are weak and dynamic panel estimator helps to solve this issue by exploiting the time series dimension of the data which enables to create lags and lagged differences that can be adequate instruments for potential endogenous variables (Pugh et. al, 2011). Endogeneity can be caused by omitted variables, measurement error or heterogeneity and on this paper, the independent variables are assumed to be correlated with residual and some of the institution characteristics could have the reverse effect of dependent variables which leads to endogeneity issue. For example, size, personnel, competition and profit orientation. In addition, the past realization of the dependent variable may also affect current year performance which shows the relationship between explanatory variables and dependent variables is dynamic. Therefore, a two-step system GMM estimation dynamic panel model is preferred, although the estimation of the random effects of the static panel data model also have been presented.

6. Empirical Results & Discussions

6.1 Financial Performance

Table 3: Relationship between ROA, OSS and ROE and Commercialisation of MFIs: Dynamic Panel estimation

VARIABLES	RE-ROA	GMM-ROA	RE-OSS	GMM-OSS	RE-ROE	GMM-ROE
L.ROA		0.432***				
		(0.038)				
L.OSS				0.260**		
				(0.115)		
L2.OSS				0.030*		
				(0.016)		
L.ROE						-0.042**
						(0.02)
Profit status dummy	-0.002	0.032	-0.04	-0.11	-0.016	0.637
	(0.006)	(0.022)	(0.025)	(0.107)	(0.091)	(3.845)
Competition	-0.018*	0	-0.031	0.056	-0.077	-1.688
	(0.01)	(0.02)	(0.11)	(0.062)	(0.224)	(1.419)
Personnel	-0.000*	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Government effectiveness	0.014	0.007	0.099	0.028	-0.142	0.142
	(0.012)	(0.006)	(0.069)	(0.042)	(0.164)	(0.361)
Rule of law	-0.005	-0.003	0.03	-0.016	0.206	0.272
	(0.014)	(0.008)	(0.07)	(0.038)	(0.185)	(0.315)
Control of corruption	-0.008	0.002	-0.05	0.042	-0.243	0.305
	(0.01)	(0.009)	(0.054)	(0.058)	(0.166)	(1.20)
Voice and accountability	-0.007	-0.010***	-0.209**	-0.121*	-0.008	-0.303
	(0.006)	(0.004)	(0.082)	(0.072)	(0.117)	(0.483)
Political stability/No violence	-0.002	0.002	0.028	-0.008	-0.015	0.576
	(0.005)	(0.004)	(0.023)	(0.023)	(0.105)	(0.568)
GDP growth rate	0.002***	0.002***	0.009***	0.006***	0.001	-0.006
	(0.00)	(0.00)	(0.002)	(0.001)	(0.007)	(0.008)
Inflation	0.00	-0.000*	0.001	0.002	0.00	-0.006
	(0.00)	(0.00)	(0.001)	(0.002)	(0.002)	(0.009)
Real interest rate	0.00	0.00	0.001	-0.002	-0.001	-0.001
	(0.00)	(0.00)	(0.003)	(0.003)	(0.004)	(0.005)
Lending interest rate	0.00	0.00	0.001	0.00	0.00	0.021
	(0.00)	(0.00)	(0.003)	(0.001)	(0.005)	(0.021)
Property rights	0.00	0.00	0.001	0.002	0.001	0.01
	(0.00)	(0.00)	(0.003)	(0.002)	(0.004)	(0.011)
Government integrity	-0.001*	0.00	0.003	0.004	0.007	0.016
	(0.001)	(0.00)	(0.004)	(0.004)	(0.011)	(0.02)
Tax burden	0.001***	0.001***	0.010***	0.008***	0.007	-0.001
	(0.00)	(0.00)	(0.004)	(0.003)	(0.005)	(0.038)
Government spending	-0.000**	-0.000**	0.00	-0.002	0.004	0.001
	(0.00)	(0.00)	(0.002)	(0.001)	(0.003)	(0.008)
Business freedom	0.00	0.00	-0.002	-0.002	-0.006	-0.006
	(0.00)	(0.00)	(0.002)	(0.002)	(0.007)	(0.011)
Labour freedom	0.00	0.00	0.002***	0.00	0.001	-0.007
	(0.00)	(0.00)	(0.001)	(0.001)	(0.003)	(0.012)
Monetary freedom	0.001*	0.001***	0.008***	0.001	-0.006	-0.024
	(0.00)	(0.00)	(0.003)	(0.002)	(0.008)	(0.018)
Trade freedom	0.00	0.00	0.00	-0.001	-0.007	-0.023**
	(0.00)	(0.00)	(0.002)	(0.002)	(0.005)	(0.011)
Investment freedom	0.00	0.00	-0.002**	0	-0.004	0.007
	(0.00)	(0.00)	(0.001)	(0.001)	(0.004)	(0.009)
Financial freedom	0.00	0.00	0.001	0.001	0.011**	0.008
	(0.00)	(0.00)	(0.001)	(0.001)	(0.005)	(0.01)
Population	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita (Log)	-0.01	-0.003	0.036	0.01	0.016	-0.295

	(0.006)	(0.005)	(0.037)	(0.023)	(0.091)	(0.688)
GDP (Log)	0.003	0.002	-0.002	0.026	0.032	0.567
	(0.003)	(0.002)	(0.013)	(0.017)	(0.061)	(0.676)
Assets (Log)	0.011***	0.004	0.014	0.003	0.009	-0.168
	(0.002)	(0.003)	(0.012)	(0.012)	(0.029)	(0.303)
Regulated dummy	0.001	-0.014	0.023	0.134	0.166*	3.859
	(0.007)	(0.019)	(0.031)	(0.136)	(0.09)	(3.588)
Mature MFI dummy	0	0.003	0.022	0.012	0.257**	0.146
	(0.005)	(0.005)	(0.03)	(0.025)	(0.116)	(0.712)
New MFI dummy	-0.039***	-0.006	-0.026	-0.023	0.197	-0.239
	(0.008)	(0.007)	(0.041)	(0.023)	(0.151)	(0.573)
Constant	-0.264***	-0.203***	-0.91	-0.638	-1.713	-8.122
	(0.082)	(0.067)	(0.766)	(0.441)	(1.469)	(6.863)
Observations	6,561	5437	7,038	5,047	6,553	5,429
Number of MFIs	1,385	1181	1,444	1,075	1,383	1,177
Number of Instruments		545		580		139
AB test AR (1) P-value		0		0.28		0.268
AB test AR (2) P-value		0.16		0.349		0.321
Hansen Test P-value		0.169		0.107		0.509

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(Although GMM estimation is preferred, both Random Effect (RE) estimation and Two-step system-GMM have been reported above for each variable for robustness purpose. In GMM AR (1) and AR (2) tests are to check if a serial correlation exists, H0= No-serial correlation. Hansen test of over-identification, H0= Instruments are valid.)

Return on assets (ROA)

The above Table 3 shows the random effects and two-step system GMM estimation that the main variable 'profit status' has no significant association with ROA which indicates that being profit oriented MFIs have no effect on ROA and the result is consistent with Cull et al. (2007) as they also found that ROA is not significantly associated with profit orientation. The result also shows that GDP growth rate has a positive association with ROA which indicates that MFIs perform better in that countries that have higher GDP growth rate (Vanroose A, and D'Espallier, 2013; Cull et. al, 2009). Similarly, tax burden and monetary freedom also have a positive association with ROA. It shows that reducing the tax burden and increasing the ideal state for a free market where prices are stable are positively associated with ROA. However, voice and accountability, and government spending have a negative association with ROA. It shows that the country with higher freedom of expression and government spending reduces the profitability of MFIs. It could be because mostly where there is higher freedom of expression and government involvement in the country, the institutions are more accountable as a result, the institutions can't misuse the resource to make a profit. Similarly, inflation also has a significant negative relationship with ROA which suggest that MFIs perform better in countries that are not heavily affected by high inflation.

The result is consistent with Vanroose A, and D'Espallier (2013) but the contrast to the findings of Lensink et. Al (2018) as they found no relationship between ROA and inflation.

Operational self-sufficiency (OSS)

The above result shows that the main variable profit status has no significant association with OSS in both estimation which is similar to the result of Cull et al., (2007), Hararska and Nadolnyak (2007) but GDP growth rate and tax burden have significant positive association in both estimation which suggest that MFIs are operationally self-sufficient in the countries that have a higher GDP growth rate (Vanroose A, and D'Espallier, 2013) and less tax burden. In contrast, voice & accountability has a negative association with OSS.

Return on equity (ROE)

The above table 3 shows the relationship between ROE and independent variables. The main variables of interest 'profit status' is not significantly associated with ROE and all most all the variables are not associated with ROE. However, the freedom of tax burden has a negative relationship with ROE.

6.2 Social Performance

Table 4: Relationship between NAB, ALBPB/GNI, MSB, MSBA and Commercialisation of MFIs: Dynamic Panel estimation

VARIABLES	RE-logNAB	GMM-LogNAB	RE-ALBPB/GNI	GMM-ALBPB/GNI	RE-MSB	GMM-MSB	RE-MSBA	GMM-MSBA
L.logNAB		1.225***						
		(0.063)						
L2.logNAB		-0.259***						
		(0.054)						
L.ALBPB/GNI				0.612***				
				(0.074)				
L.MSB						0.990***		
						(0.061)		
L.MSBA								0.282***
								(0.109)
Profit status dummy	-0.048	0.077	0.349***	0.555**	0.004**	0.005***	31.657	-4.518
	(0.063)	(0.077)	(0.12)	(0.224)	(0.002)	(0.002)	(21.808)	(4.261)
Competition	-0.033	0.113	0.244	-0.079	0.016***	0.006***	-0.211	-1.957
	(0.065)	(0.094)	(0.152)	(0.256)	(0.004)	(0.002)	(3.36)	(3.846)
Personnel	0.000***	0.00	0.00	0.00	0.000***	-0.000**	0.019*	0.002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.001)
Government effectiveness	-0.09	-0.067*	-0.07	0.026	-0.005*	0.00	-4.93	0.644
	(0.057)	(0.036)	(0.1)	(0.067)	(0.002)	(0.001)	(3.557)	(1.756)
Rule of law	-0.029	0.045	-0.038	-0.166**	0.006**	0.001	-16.678**	-0.811
	(0.068)	(0.041)	(0.167)	(0.075)	(0.003)	(0.001)	(8.424)	(1.768)
Control of corruption	0.024	0.022	-0.14	0.145**	0.003	0.00	3.489	-0.446
	(0.057)	(0.038)	(0.153)	(0.07)	(0.002)	(0.001)	(6.605)	(1.797)
Voice and accountability	0.128**	0.016	-0.027	-0.032	-0.002	0.00	7.708*	-3.845***
	(0.05)	(0.023)	(0.137)	(0.055)	(0.001)	(0.001)	(4.209)	(1.384)

Political stability/No violence	-0.03	-0.037*	0.04	0.055	0.00	0.00	-1.381	-0.552
	(0.029)	(0.019)	(0.057)	(0.043)	(0.001)	(0.00)	(2.494)	(1.221)
GDP growth rate	-0.002	0.009***	0.008**	0.002	-0.000*	0.000**	0.021	0.094
	(0.002)	(0.002)	(0.004)	(0.002)	(0.00)	(0.00)	(0.09)	(0.066)
Inflation	0.003***	0.00	-0.001	-0.002	0.00	0.00	0.121	0.02
	(0.001)	(0.00)	(0.002)	(0.002)	(0.00)	(0.00)	(0.098)	(0.022)
Real interest rate	-0.002**	0.00	0.003	0.001	0.00	0.00	0.071	0.022
	(0.001)	(0.001)	(0.002)	(0.001)	(0.00)	(0.00)	(0.057)	(0.03)
Lending interest rate	-0.007***	-0.001	-0.001	0.004	-0.000***	0.000*	-0.475*	-0.056
	(0.002)	(0.001)	(0.004)	(0.003)	(0.00)	(0.00)	0.287)	(0.072)
Property rights	0.003	0.00	-0.003	-0.007**	0.00	0.00	-0.106	-0.108*
	(0.002)	(0.001)	(0.003)	(0.003)	(0.00)	(0.00)	(0.118)	(0.065)
Government integrity	0.002	-0.004*	0.008	0.006**	0.00	0.00	0.364*	0.210**
	(0.002)	(0.002)	(0.007)	(0.003)	(0.00)	(0.00)	(0.203)	(0.099)
Tax burden	0.003*	0.001	0.003	-0.003	0.000**	0.00	-0.111	-0.097
	(0.002)	(0.001)	(0.005)	(0.003)	(0.00)	(0.00)	(0.146)	(0.085)
Government spending	0.002	0.00	0.00	-0.002	0.00	0.00	-0.007	0.008
	(0.001)	(0.001)	(0.003)	(0.001)	(0.00)	(0.00)	(0.074)	(0.044)
Business freedom	0.002	0.001	-0.003	-0.002	0.00	0.00	0.215	0.054
	(0.001)	(0.001)	(0.002)	(0.001)	(0.00)	(0.00)	(0.19)	(0.042)
Labour freedom	-0.001	0.001	0.001	0.001	0.00	0.00	0.106	-0.046
	(0.001)	(0.001)	(0.002)	(0.002)	(0.00)	(0.00)	(0.066)	(0.034)
Monetary freedom	-0.002	0.006***	-0.007*	0.002	0.000*	0.000**	0.204	0.009
	(0.002)	(0.002)	(0.004)	(0.002)	(0.00)	(0.00)	(0.126)	(0.042)
Trade freedom	0.005***	-0.003***	0.001	0.001	0.00	0.00	0.096	-0.016
	(0.001)	(0.001)	(0.002)	(0.001)	(0.00)	(0.00)	(0.168)	(0.047)
Investment freedom	0.001	-0.002**	-0.001	-0.001	0.00	0.00	0.092	0.019
	(0.001)	(0.001)	(0.001)	(0.001)	(0.00)	(0.00)	(0.076)	(0.042)
Financial freedom	0.004***	0	-0.009**	-0.003*	0.00	0.00	-0.046	0.122***
	(0.001)	(0.001)	(0.004)	(0.002)	(0.00)	(0.00)	(0.087)	(0.044)
Population	0.000*	0.00	0.00	0.00	0.00	0.00	0.000	0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita (Log)	-0.515***	-0.023	-0.01	-0.049	0.007***	0.00	3.098	2.553**
	(0.042)	(0.027)	(0.083)	(0.041)	(0.002)	(0.001)	(6.719)	(1.139)
GDP (Log)	0.283***	-0.018	-0.264***	-0.049*	-0.003**	-0.001**	1.112	0.121
	(0.027)	(0.017)	(0.053)	(0.026)	(0.001)	(0.00)	(2.008)	(0.628)
Assets (Log)	0.524***	0.051*	0.120***	0.042**	0.002***	0.002***	-17.265**	-3.849***
	(0.008)	(0.031)	(0.027)	(0.021)	(0.00)	(0.00)	(7.476)	(1.448)
Regulated dummy	-0.067	-0.324***	0.105	-0.02	0.003**	-0.005***	-16.523	7.915*
	(0.067)	(0.109)	(0.09)	(0.155)	(0.001)	(0.001)	(24.071)	(4.592)
Mature MFI dummy	0.115***	-0.031	-0.049	0.06	-0.001	0.00	3.545	1.391
	(0.024)	(0.027)	(0.043)	(0.043)	(0.001)	(0.00)	(2.383)	(1.393)
New MFI dummy	-0.301***	0.06	0.066	-0.08*	0	0.001*	-10.080**	2.326
	(0.027)	(0.041)	(0.074)	(0.07)	(0.001)	(0.001)	(5.036)	(1.482)
Constant	-3.491***	0.135	5.980***	1.478**	0.004	-0.006	171.494**	31.656*
	(0.534)	(0.393)	(1.088)	(0.588)	(0.029)	(0.008)	(66.669)	(18.606)
Observations	7,350	5,364	7,311	6,287	7,444	6,484	7,444	6,484
Number of MFIs	1,480	1,147	1,479	1,316	1,494	1,345	1,494	1,345
Number of Instruments		160		141		142		141
AB test AR (1) P-value		0		0.005		0.063		0.28
AB test AR (2) P-value		0.378		0.167		0.347		0.413
Hansen Test P-value		0.109		0.354		0.133		0.741

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(Although GMM estimation is preferred, both Random Effect (RE) estimation and Two-step system-GMM have been reported above for each variable for robustness purpose. In GMM AR (1) and AR (2) tests are to check if a serial correlation exists, H0= No-serial correlation. Hansen test of over-identification, H0= Instruments are valid.)

Number of active borrowers (NAB)

Table 4 result shows that the main variable profit status has no significant association with NAB. The number of borrowers has been transferred into a logarithm. Further, the result shows that GDP growth rate, monetary freedom and size have a positive relationship with NAB which indicates that the MFIs located in a country with higher GDP growth rate and monetary freedom are likely to have a higher number of borrowers (Kuchler, 2011). Similarly, it also indicates that an increase in the size of an institution will increase the number of borrowers (Lensink et al, 2018; Mersland and Strom, 2009). However, the result also shows that government effectiveness has a negative effect on a number of borrowers which indicates that MFIs have a higher number of borrowers in a country where the government's commitment to formulate and implement quality public and civil services are weak. The findings in contrast to the findings of Kuchler, (2011) where he found no relationship between government effectiveness, political stability and number of clients. Similarly, political stability, government integrity, trade freedom, investment freedom and regulated dummy have a negative relationship with NAB which suggests that an increase in these variables reduces the number of borrowers. It suggests that the countries which have weak institutional environments have a higher number of borrowers due to the higher demand for microfinance. Finally, the result also indicates that the non-regulated MFIs have a higher number of borrowers than regulated MFIs but Mersland and Strom (2009) found no relationship between regulation and number of clients.

Average loan balance per borrowers/ Gross national income (ALBPB/GNI)

Table 4 result shows that profit status has a significant positive relationship with the average loan balance per borrowers/ GNI) which represent average loan size (Hartarska, 2005). It indicates that profit-oriented MFIs are providing larger loans compare to non-profit oriented MFIs which also means that profit-oriented MFIs are serving wealthier clients. Similarly, control of corruption and government integrity also have a positive association with average loan size which suggests that the MFIs are proving larger loans to wealthier clients in the countries where there are less corruption and high transparency. Further, size has positive significant association on average loan size. It shows that larger MFIs are providing larger loans. This result is consistent with Mersland and Strom (2009) and Lensink et al (2018) but not consistent with the findings of Hartarska, (2005) and Bibi et.al, (2018) as both of them found that there is no significant association between the size of MFI and average loan size. However, rule of law, property rights, financial freedom and GDP (Log) have a negative relationship with average loan size which suggests that MFI provides small loans in those countries which better rule of law, property rights, financial freedom and GDP.

In other words, MFIs serves poor clients in the countries which has strong institutional environment. It could be because better rules and regulation are forcing MFIs to serve small loan to poor clients and finally the result also shows that new MFIs provides small loan than young MFIs as New MFIs dummy has a negative relationship with average loan size. It could be that new MFIs do not have a fund to provide larger loans.

Market share of borrowers (MSB)

The result reveals that both profit status has a significant positive relationship with MSB in both estimations which suggest that profit-oriented MFIs are covering a larger market share in terms of borrowers than non-profit MFIs. Similarly, the competition also has a significant positive relationship with MSB which indicates that an increase in competition will increase the market shares of the institutions. Similarly, GDP growth rate, lending interest rate and monetary freedom also have a significant positive relationship with MSB which indicates that MFI covers higher market share in the country which has higher GDP growth rate, interest rate and monetary freedom. Further, size has a positive association with MSB which shows that larger MFIs are covering higher market shares and the result is consistent with Bibi et.al (2018). In addition, new MFIs also have a positive association with MSB which indicates that new MFIs covers larger market shares of borrowers compared to young MFIs but personnel, GDP and regulated have a negative relationship with MSB. The finding is similar to Bibi et.al (2018) as they also found that GDP has a significant negative relationship with MSB.

Market share of borrowers adjusted by market share of assets (MSBA)

The result shows that profit status has no significant association with MSBA. Although, the above result reveals that personnel have a significant positive effect on MSBA in all estimation. It shows that MFIs with large number of personnel provides smaller loans and greater outreach. It could be because a higher number of employees can serve a higher number of borrowers. Similarly, government integrity, financial freedom, population, GDP per capita and regulated dummy have a positive association with MSBA. On the other hand, voice and accountability, property rights and size have a significant negative effect on MSBA. The result is consistent with the result of Bibi et al (2018) as they also found the size and MSBA has a significant negative association. It indicates that larger MFIs are providing larger loans and less outreach. It could be that larger MFIs not reaching more people; instead, as they get bigger, they provide larger loans to a smaller number of clients.

Diagnosis Test:

For a dynamic panel model, the institutional characteristics indicators have been considered as endogenous variables and instrumented using lagged variables. AR (2) p-value has been used to check if a serial correlation exists and the value doesn't reject the null hypothesis meaning no serial correlation in the model. Similar Hansen test has been used to check the validity of the instrument and all the Hansen test p-value shows the instruments used are valid as it doesn't reject the null hypothesis. all the governance indicators, macroeconomic variables, institutional quality variables, economic freedom variables and age are considered as exogenous variables as dependent variable do not have reverse effects on these variables. Further, in GMM method, the instruments are expected to be less than groups (Roodman, 2009) in this case less than the number of MFIs and all the estimation has a small number of instruments compared to the number of MFIs which is reported above.

7. Conclusion

The objective of this research is to investigate the effect of commercialisation on the financial and social performance of MFIs in developing countries using new indicators of social performance which claim to be better than previous indicators (Bibi et al., 2018). This study has used the largest data set compared to previous studies such as Cull et al (2009), Mersland and Strom (2009), Tchakoute-Tchuigoua (2010) and others. The data was collected from Mix Market, World Bank and Heritage Foundation, and the final dataset includes 2,108 MFIs from 114 developing countries covering from 2002 to 2016. To analyse the data, this study has employed two-step GMM estimations techniques as it takes account of endogeneity issue and the results shows that commercialisation has no effect on financial performance as the profit status has no significant association with all three indicators of financial performance (i.e. ROA, OSS and ROE). It could be because although MFIs are profit-oriented they are not extremely focused on financial performance but only trying to be sustainable. However, the study also found that commercialisation has a negative effect on the social performance as the result found that profit oriented MFIs have a higher market share of borrowers in the country but also providing larger loans which is against their objective that is evident from the definition of microfinance. It suggest that commercial oriented MFIs are serving wealthier clients rather than poor but even if the institutions are serving poor clients, proving larger loan to poor clients may lead to over-indebtedness as they might not be able to pay back.

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Appendix A: Categories of profit orientation of MFIs

Profit status	No.of Observation	Per cent
Profit	5,472	43.07
Non-profit	7,232	56.93
Total	12,704	100

Appendix B: List of the countries used for this study and number of observations

Numbers	Country	No.of Observation	Numbers	Country	No.of Observation
1	Afghanistan	42	58	Macedonia	43
2	Albania	58	59	Madagascar	94
3	Angola	11	60	Malawi	46
4	Argentina	126	61	Malaysia	3
5	Armenia	105	62	Mali	114
6	Azerbaijan	203	63	Mexico	598
7	Bangladesh	400	64	Moldova	30
8	Belize	4	65	Mongolia	60
9	Benin	156	66	Montenegro	14
10	Bolivia	303	67	Morocco	109
11	Bosnia and Herzegovina	137	68	Mozambique	76
12	Brazil	228	69	Myanmar (Burma)	3
13	Bulgaria	139	70	Namibia	10
14	Burkina Faso	68	71	Nepal	264
15	Burundi	42	72	Nicaragua	307
16	Cambodia	175	73	Niger	45
17	Cameroon	109	74	Nigeria	199
18	Central African Republic	7	75	Pakistan	215
19	Chad	16	76	Palestine	65
20	Chile	52	77	Panama	44
21	China, People's Republic of	80	78	Papua New Guinea	17
22	Colombia	291	79	Paraguay	73
23	Congo, the Democratic Republic of the	85	80	Peru	682
24	Congo, Republic of the	23	81	Philippines	568
25	Costa Rica	151	82	Poland	21
26	Cote d'Ivoire (Ivory Coast)	69	83	Romania	68
27	Croatia	12	84	Russia	334
28	Dominican Republic	103	85	Rwanda	58
29	East Timor	23	86	Samoa	13
30	Ecuador	577	87	Senegal	122
31	Egypt	120	88	Serbia	46
32	El Salvador	175	89	Sierra Leone	49
33	Ethiopia	134	90	Solomon Islands	2
34	Gabon	2	91	South Africa	48
35	The Gambia	13	92	South Sudan	12
36	Georgia	110	93	Sri Lanka	115
37	Ghana	232	94	Sudan	7
38	Grenada	1	95	Suriname	8
39	Guatemala	217	96	Swaziland	9

40	Guinea	40	97	Syria	17
41	Guinea-Bissau	12	98	Tajikistan	204
42	Guyana	5	99	Tanzania	101
43	Haiti	66	100	Thailand	14
44	Honduras	242	101	Togo	91
45	Hungary	4	102	Tonga	6
46	India	836	103	Trinidad and Tobago	9
47	Indonesia	276	104	Tunisia	13
48	Iraq	45	105	Turkey	14
49	Jamaica	10	106	Uganda	126
50	Jordan	75	107	Ukraine	26
51	Kazakhstan	194	108	Uruguay	7
52	Kenya	177	109	Uzbekistan	116
53	Kosovo	93	110	Venezuela	12
54	Kyrgyzstan	163	111	Vietnam	146
55	Laos	27	112	Yemen	49
56	Lebanon	36	113	Zambia	39
57	Liberia	10	114	Zimbabwe	13
	Total		114		12704