

**MARKET STRUCTURE, MISSION DRIFT AND PRODUCTIVITY
TOWARDS A SUSTAINABLE MICROFINANCE INDUSTRY IN
BANGLADESH**

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**FACULTY OF ECONOMICS AND ADMINISTRATION
UNIVERSITY OF MALAYA
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PRODUCTIVITY TOWARDS A SUSTAINABLE MICROFINANCE
INDUSTRY IN BANGLADESH**

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**[MARKET STRUCTURE, MISSION DRIFT AND PRODUCTIVITY TOWARDS
A SUSTAINABLE MICROFINANCE INDUSTRY IN BANGLADESH]**

ABSTRACT

Microfinance is a preferred development tool in most developing countries, and remains important to Bangladesh, the country where the sector is most established. With approximately half of the Bangladesh population is unbanked and one third below the income poverty line, microfinance serves as an important policy instrument in the country's vision of attaining middle-income status by 2021. Hence, it is imperative for the microfinance industry to be effective, efficient and sustainable. This study identifies three important objectives – market structure, mission drift, and productivity – crucial to microfinance in the contemporary world. First, this study aims to investigate the market structure (concentration and competition) in order to understand functioning and the operations of the microfinance. Second, in recent years, financial interests have increasingly influenced microfinance institutions (MFIs), with financial gain overshadowing service to the poor. Hence, this study examines the incidence and explanations for commercial interests to interfere with the social mission of MFIs. Third, the long-run ability of MFIs to meet the financial needs of the poor is contingent on their economic viability. Thus, the productivity of MFIs and its determinants is assessed in this study. A balanced panel data set from 169 MFIs during the period of 2009 to 2014 which was compiled from annual reports by the Microcredit Regulatory Authority, Bangladesh is used for this purpose. Since the three objectives are independent of each other, different types of estimation strategies are employed based on convention and reported separately in different chapters. Based on the concentration ratio and the Herfindahl and Hirschman Index (structural approach), this study finds that the microfinance industry is moderately concentrated and currently transitioning to an unconcentrated market. The Lerner index

(non-structural approach) confirmed that the competition level is relatively high and likely to follow an inverted U-shape during the study period. Results from the static and dynamic panel analysis, revealed that increased focus on commercial interest or profit motive leads to mission drift. Mission drift is also likely to happen when more commercial funds are injected into MFIs, as well as when MFIs are vulnerable to the macroeconomic and regulatory environment influences. The non-parametric Malmquist Productivity Index indicates that the microfinance industry in Bangladesh observed productivity progress, with a declining trend towards the end of the study period. Further decomposition results revealed that technical efficiency has enhanced overall productivity, while technological change has deteriorated. One policy implication that can be drawn from the evidence is to encourage MFIs participation in innovation activities, so that the stimulation of technological change can improve the overall productivity. The second stage parametric test revealed that GDP growth has a positive effect on productivity and technological progress, whereas an interest rate cap significantly deteriorates the productivity and technological progress of MFIs. Therefore, the policy makers and regulatory authority should consider macroeconomic and regulatory environment when designing policy prescriptions to promote sustainability in the microfinance industry.

Keywords: microfinance, sustainability, market structure, productivity, mission drift.

**[STRUKTUR PASARAN, MISI DRIFT DAN PRODUKTIVITI KE ARAH
KEWANGAN MIKRO YANG MAPAN DI BANGLADESH]**

ABSTRAK

Pembiayaan mikro adalah alat pembangunan yang paling diutamakan di negara-negara yang sedang membangun. Bagi Bangladesh alat ini adalah sangat penting kerana alat ini telah ditubuhkan di negara tersebut dan paling stabil digunakan di situ. Kira-kira separuh daripada penduduk Bangladesh tidak mempunyai akaun bank dan satu pertiga di bawah garis kemiskinan pendapatan rendah, pembiayaan mikro berfungsi sebagai instrumen dasar yang penting dalam wawasan negara untuk mencapai status berpendapatan sederhana menjelang tahun 2021. Oleh itu, industri pembiayaan mikro yang berkesan, cekap dan mampan adalah sangat diutamakan di Bangladesh. Kajian ini adalah berdasarkan tiga objektif yang penting. Pertama, kajian ini bertujuan untuk mengkaji struktur pasaran (tumpuan pasaran dan persaingan) untuk memahami fungsi dan operasi pembiayaan mikro. Seterusnya sejak kebelakangan ini kadar bunga di pasaran telah mempengaruhi institusi pembiayaan mikro (MFI) secara drastik. Oleh itu, objektif yang kedua bertujuan untuk mengkaji insiden dan mencari penjelasan kenapa kadar bunga komersial mengganggu misi sosial MFI. Objektif terakhir adalah untuk menilai produktiviti dan factor-faktor yang mempengaruhi MFI. Ini kerana, keupayaan jangka panjang MFI untuk memenuhi keperluan kewangan golongan miskin adalah bergantung pada daya saing ekonomi mereka. Data panel seimbang dari 169 MFI bagi tempoh 2009-2014 yang diperolehi dari laporan tahunan Pihak Berkuasa Kawal Selia Mikro Kredi Bangladesh digunakan untuk tujuan kajian ini. Oleh kerana, ketiga-tiga objektif tidak saling berkait, strategi anggaran yang berbeza digunakan dan dilaporkan secara berasingan dalam bab-bab yang berbeza. Berdasarkan concentration ration dan Indeks Herfindahl dan Hirschman (pendekatan struktur), kajian ini mendapati bahawa industri pembiayaan mikro concentrated secara sederhana dan kini beralih kepada pasaran

unconcentrated. The Lerner indeks (pendekatan bukan struktur) mengesahkan bahawa tahap persaingan yang agak tinggi dan cenderung mengikuti bentuk inverted U-shape dalam tempoh kajian. Keputusan daripada analisis panel statik dan dinamik, mendedahkan bahawa peningkatan fokus keatas kadar bunga komersial atau motif keuntungan membawa kepada misi drift. Misi drift juga mungkin berlaku apabila lebih banyak dana komersial disuntik ke MFI, dan juga apabila MFI terdedah kepada pengaruh persekitaran makroekonomi dan undang-undang. Pemerhatian melalui Indeks Produktiviti Malmquist bukan parametrik menunjukkan bahawa industri pembiayaan mikro di Bangladesh mempunyai kemajuan produktiviti, dengan arah aliran yang menurun pada akhir tempoh kajian. Hasil kajian juga menunjukkan kecekapan teknikal meningkatkan produktiviti keseluruhan, manakala perubahan teknologi merosot. Satu implikasi dasar yang boleh diambil daripada bukti ini adalah untuk menggalakkan penyertaan MFI dalam aktiviti inovasi, supaya rangsangan perubahan teknologi boleh meningkatkan produktiviti keseluruhan. Ujian peringkat kedua parametrik mendedahkan bahawa pertumbuhan GDP mempunyai kesan positif ke atas produktiviti dan kemajuan teknologi, manakala penetapan kadar faedah merosotkan produktiviti dan kemajuan teknologi MFI. Oleh itu, pembuat dasar dan pihak berkuasa kawal selia perlu mengambil kira persekitaran ekonomi makro dan undang-undang apabila mereka bentuk dasar untuk menggalakkan kemampanan dalam industri pembiayaan mikro.

Keywords: pembiayaan mikro, kemampanan, struktur pasaran, produktiviti, misi drift.

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LIST OF SYMBOLS AND ABBREVIATIONS

ASA	:	Association for Social Advancement
AT	:	Agency Theory
AVLGNI	:	Average Loan Over GNI per Capita
BANK	:	Commercial Bank
BBC	:	British Broadcasting Center
BDT	:	Bangladeshi Taka
BIDS	:	Bangladesh Institute of Development Studies
BRAC	:	Bangladesh Rural Advancement Committee
BURO-Bangladesh	:	Basic Unit for Resources and Opportunities of Bangladesh
CBN	:	Cost of Basic Needs
CBS	:	Columbia Broadcasting System
CDF	:	Credit and Development Forum
CGAP	:	Consultative Group to Assist the Poor
CNN	:	Cable News Network
CR	:	Concentration Ratio
CRS	:	Constant Return to Scale
CUMS	:	Cumulative Surplus
DEA	:	Data Envelopment Analysis
DEAP	:	Data Envelopment Analysis (computer) Program
DFA	:	Distribution Frontier Analysis
FDH	:	Free Disposal Hull
FDI	:	Foreign Direct Investment
FE	:	Fixed Effect
GB	:	Grameen Bank
GCS	:	Grameen Classic System
GDP	:	Gross Domestic Product
GGs	:	Grameen General System
GM	:	Green Microfinance
GNI	:	Gross National Income
GUK	:	Gram Unnayan Karma
HCI	:	Head Count Index
HHI	:	Herfindahl-Hirschman Index
IBBL	:	Islami Bank of Bangladesh Limited
ILO	:	International Labor Organization
INTCP	:	Interest Rate Cap
IO	:	Industrial Organization
KABIKHA	:	Kajer Binimoye Khaddo
L	:	Lerner Index
LCT	:	Life Cycle Theory
MDG	:	Millennium Development Goals
MFI	:	Microfinance Institutions
MHI	:	Micro Health Insurance

MIX	:	Microfinance Information Exchange
MM	:	Modigliani and Miller
MP	:	Microfinance Plus
MPI	:	Malmquist Productivity Index
MRA	:	Microcredit Regulatory Authority
NBFI	:	Non-Bank Financial Institutions
NEIO	:	New Empirical Industrial Organization
NGO	:	Non-Governmental Organization
OLS	:	Ordinary Least Squares
OSS	:	Operational Self-Sustainability
PIT	:	Profit Incentive Theory
PKSF	:	Palli Karma Sahayak Foundation
POT	:	Pecking Order Theory
PPP	:	Purchasing Power Parity
PR	:	Panzar-Rosse
PTE	:	Pure Technical Efficiency Change
RCT	:	Randomized Control and Trial
RE	:	Random Effect
RMSE	:	Root Mean Squared Error
ROA	:	Return on Asset
SAARC	:	South Asian Association for Regional Cooperation
SCP	:	Structure-Conduct-Performance
SDG	:	Sustainable Development Goals
SE	:	Scale Efficiency Change
SFA	:	Stochastic Frontier Analysis
SSS	:	Society for Social Service
TC	:	Technological Change
TEC	:	Technical Efficiency Change
TFA	:	Thick Frontier Analysis
TFP	:	Total Factor Productivity
TMSS	:	Thengamara Mohila Sabuj Sangha
TOT	:	Trade-Off Theory
UN	:	United Nations
USA	:	United States of America
USD	:	United States Dollar
WB	:	World Bank
WDI	:	World Development Indicators
WGI	:	World Governance Indicators

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CHAPTER 1: GENERAL OVERVIEW OF THE RESEARCH

1.1 Introduction

Formal and informal financial institutions, targeted at providing services to the masses, have evolved significantly over the years. However, most formal financial instruments are profit-driven. For this reason, they tend to neglect the poorest segment of the society and those who have little means of meeting collateral requirements. Informal instruments, such as borrowing from friends, family members and neighbors are quite common. Formal and informal money lending also exist, but the poor are either discouraged by the exorbitant interest rates, or victimized by such high and poorly regulated rates (also short term and small). In addition, the absence of commercial banks in the rural areas leaves the poor vulnerable to the activities of mildly regulated moneylenders. In light of these shortcomings, in 1976, Professor Muhammad Yunus developed microcredit as a means for the poor in Bangladesh to access credit. Microfinance subsequently became a major breakthrough.

There is in-depth coverage of microfinance services in Bangladesh. For example, in 2014, more than 33 million clients (including Grameen Bank) were receiving financial services from over 700 registered microfinance institutions (MFIs) (MRA, 2015). Since Bangladesh is striving towards achieving ‘middle-income’ status by 2021 – a goal known as ‘Vision 2021’¹ – the importance of the financial sector, and microfinance in particular, cannot be understated. The empirical literature has also reiterated that development of the financial sector indeed reduces poverty and enhances socio-economic development

¹ Bangladesh will celebrate 50 years of independence in the year 2021 and aims to achieve the poverty-free ‘middle-income’ status. Bangladesh needs significant improvements in combating poverty and strengthening socio-economic development to achieve that goal. For more specific information related to ‘Vision 2021’, please see: *Nagorik* (People’s) Committee (2012). *Bangladesh Vision 2021* (No. 23151). East Asian Bureau of Economic Research.

(Beck, Demirgüç-Kunt, & Levine, 2007; Jalilian & Kirkpatrick, 2002, 2005; Odhiambo, 2009). Hence, the provision of microfinance has become a significant policy intervention to provide doorstep financial services to over 30% of the poor and half of the unbanked population in Bangladesh (Bangladesh Economic Review, 2014). Certainly, achieving middle-income status by 2021 would be a mere aspiration for Bangladesh if the country chose to disregard the large population of unbanked and poor people.

In addition to that, recent travails in microfinance have been fueled by numerous exogenous and endogenous shocks (Sainz-Fernandez, Torre-Olmo, López-Gutiérrez, & Sanfilippo-Azofra, 2015). The vulnerability of microfinance has been exposed by the global financial crisis in 2007 and 2008 (Constantinou & Ashta, 2011; Wagner & Winkler, 2013; Wichterich, 2012), the well-known Andhra Pradesh crisis in India (Ashta, Khan, & Otto, 2015; Mader, 2013; Taylor, 2011), mission drift² (Aubert, de Janvry, & Sadoulet, 2009; Copestake, 2007; Hishigsuren, 2007; Mersland & Strøm, 2010; Xu, Copestake, & Peng, 2016), unproductiveness or inefficiency of MFIs (Bassem, 2014; Mia & Ben Soltane, 2016; Wijesiri & Meoli, 2015; Wijesiri, Viganò, & Meoli, 2015), significant decline in donations (MRA, 2010, 2013, 2015) and multiple borrowing (Chaudhury & Matin, 2002; Mia, 2017).

Thus, it is essential for microfinance to achieve sustainability in order to provide efficient and effective financial services for the poor (Hartarska, 2005; Rauf & Mahmood, 2009). The issue of sustainability in microfinance is gaining even more attention as the pendulum of public perceptions swings back and forth, depending on the triumphs and troubles of the industry as highlighted above (Roodman, 2013). Shankar (2007)

² Also known as 'mission creep'.

proclaimed that fostering sustainability is crucial for MFIs to operate on a larger scale and broaden coverage to the greater segment of the unbanked and economically-disadvantaged population. Hence, the mantra of sustainability has been rapidly adopted and remains in the global limelight among the pundits in microfinance (Buckley, 1997; Johnson & Rogaly, 1997; Mahajan & Navin, 2013; Morduch, 1999a; Pollinger, Outhwaite, & Cordero-Guzmán, 2007).

The main questions, however, remain unanswered; that is, how can microfinance achieve sustainability? What are the components of sustainability? Due to the exceptionality of the microfinance industry in each country, there is no global ‘way-out’ or ‘single click’ to promote sustainability. For example, a set of policies towards sustainability in microfinance may be successful in the African countries but not in South Asia, and *vice versa*. This is mainly due to the macroeconomic and historical settings that are significantly different across countries. Nevertheless, sustainability issue in the banking industry has been synonymous to financial performance and is achieved by exploiting and excluding the poor. In contrast, microfinance operational strategies are fundamentally dissimilar to that of the conventional banking system. Hence, it is not justifiable to evaluate the sustainability of microfinance using conventional banking parameters. That is why this study³ identifies and evaluates different critical issues that are likely to promote sustainability in the microfinance industry.

1.2 Sustainability in Microfinance

Sustainability is a much contested topic in the global development agenda. Due to the complex and multidimensional interpretation of the term, a conclusive definition of

³ ‘This study’, ‘this thesis’ and ‘this work’ are used interchangeably.

sustainability has yet to be formulated. For example, Jabareen (2008) claimed that the definition of sustainability is vague and fraught with contradictions. However, a general definition of sustainable development or sustainability has been put forth by Brundtland (1987) as “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. A more simplistic definition of sustainability by Mebratu (1998) is the state of living harmoniously with nature and with one another. It can be further inferred that the Brundtland (1987) definition of sustainability or sustainable development incorporates the individual, society and environment.

The publication of the Brundtland (1987) report has drawn the attention of academics from various backgrounds and instigated various forms of development on the concept of sustainability (Hopwood, Mellor, & O'Brien, 2005; Lélé, 1991). Fields that have gained consideration include sustainability and ethical behavior (Dossa & Kaeufer, 2014; Hoffman & Haigh, 2010), environment (Giddings, Hopwood, & O'Brien, 2002; Omer, 2008; Pearce & Warford, 1993) and poverty (Panel, 2013; Thomas, 2006). The appeal of the sustainable development agenda is increased by highlighting the shortcomings in conventional business models, which have largely ignored morality and environmental aspects (Gladwin, Kennelly, & Krause, 1995).

Surveying the microfinance literature on sustainability, one of the earliest works is accredited to Yaron, Benjamin, and Piprek (1997), where the emphasis is on the role of institutional outreach and financial viability. In a similar vein, Hulme (2000) argued that once these two goals have been achieved, it is judged to be beneficial for the sustainability of the microfinance industry. Hence, based on the complexity of the term and its relevance to microfinance, overall aspects of sustainability can be categorized into three different albeit connected dimensions (Giddings et al., 2002), namely economic, environmental

and social aspects (also known as profit, people and planet). There are interconnections between these three aspects, and each of them should be balanced for better representativeness in a sustainable development framework (Gladwin et al., 1995; Starik & Kanashiro, 2013).

What do these three aspects of sustainability mean for microfinance? First, the economic aspects of sustainability means financial sustainability or economic viability – MFIs’ ability to repeat their operations over time (Schreiner, 2000). Britzelmaier, Kraus, and Xu (2013) defined financial sustainability as the ability of MFIs to generate enough revenue to cover total operational cost, in order to survive and prosper in the long-run. Second, the environmental aspects of sustainability refers to how MFIs aim to address environmental issues, including pollution, use of chemicals and pesticides in production (e.g. agriculture), efficient use of energy (e.g. solar energy), destruction of forests and other burning issues that are detrimental to the environment (Allet & Hudon, 2015; Van Elteren, 2007). Third, the social aspects of sustainability in microfinance means how well MFIs uphold sustainable access of financial services for the poor in an ongoing effort to alleviate poverty and empower women in patriarchal societies (Kabeer, 2005; Mosley, 2001; Mosley & Rock, 2004).

The overall framework of this study is depicted in Figure 1.1. It is based on understandings of microfinance, country context (Bangladesh), existing literature and the economic and social aspects of sustainability. Furthermore, this study has also taken into consideration the critical triangle of microfinance as discussed by Zeller and Meyer (2002), which comprises of three different objectives of microfinance; social outreach, financial sustainability and impact towards the clients. Due to the unavailability of data, the environmental aspects of sustainability are not covered in this study

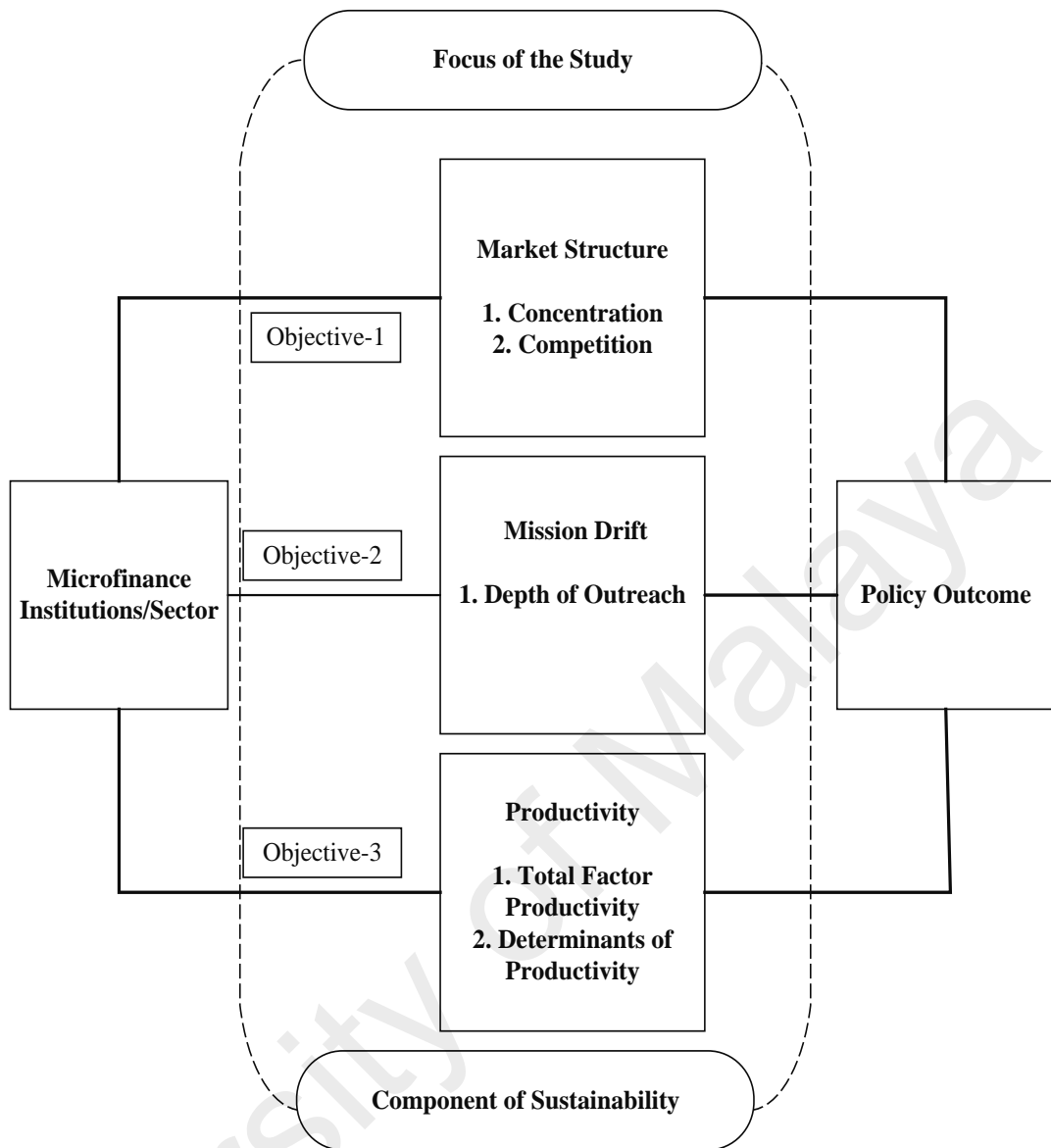


Figure 1.1: Framework of the Study

Source: Author's.

The first component of sustainability has been identified as market structure, which includes the concentration and competition of the industry; this can be linked to both the economic and social aspects of sustainability. Based on the theory of competition, a competitive microfinance industry is desired as it will trigger innovations and technological advancement in the production of microfinance services. Utilizing efficient technologies and product development will simultaneously reduce production costs and

lower the prices of microfinance services, which in turn enhances the welfare of the poor (Motta, 2004). This goes in line with the last component of the critical triangle of microfinance through discernible effect towards clients' quality of life since they need to pay less for microfinance services. Hence, the clients can enjoy the surplus income to enhance their wellbeing. Moreover, competition has been encouraged as interest rates in the microfinance industry are still higher than that of the formal banking sector and continues to be a major concern among policymakers and academicians (Fernando, 2006; Mersland & Khafagy, 2013; Rosenberg, Gaul, Ford, & Tomilova, 2013). In this regard, economists have touted the benefits of competition as it lowers equilibrium prices (McIntosh & Wydick, 2005). In contrast, a concentrated market may not be customer-friendly and it might result in higher prices with limited choices for the poor and vulnerable.

Competition is also believed to be necessary for the long-term stability of the microfinance industry. For example, the advocates of institutionalism in microfinance have recommended nurturing competition in the sector to ensure maximum coverage of financial services among the poor (Morduch, 2000; Woller, Dunford, & Woodworth, 1999). Moreover, competition is also desirable for efficiency and maximization of social welfare. It is not only the clients who will be better off in a competitive market, as MFIs will also achieve institutional stability based on the competition-stability hypothesis (Bertrand, Schoar, & Thesmar, 2007; Boyd & De Nicolo, 2005; Dick & Lehnert, 2010; Rice & Strahan, 2010; Schaeck, Cihak, & Wolfe, 2009).

The conventional banking system has bypassed the poor for a long time, but financial inclusion is certainly important in the sustainable development framework. The emphasis on financial inclusion will ensure that the poor are integrated and their voice is heard within the sustainable development framework. To reiterate the importance of clients,

Rhyne (1998); Zeller and Meyer (2002) profoundly argued that client sustainability is a key factor that should be given equal importance along with MFIs in the sustainability debate. Going a step further, Toindepi (2016) contended that sustainability would not be achieved unless MFIs look closely into sustainable access and meeting the financial needs of the poor.

Hence, the sustainable development framework should ensure that all human beings, in particular the poor and vulnerable group have access to the financial services they need (Hudon, 2009). This has been further reinstated in the first Sustainable Development Goals (SDG), which have stated that “by 2030, [we must] ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance”. In the same vein, the United Nations Capital Development Fund (2016) has stated that, “Financial inclusion is achieved when all individuals and businesses have access to and can effectively use a broad range of financial services that are provided responsibly, and at a reasonable cost, by sustainable institutions in a well-regulated environment”. However, a mission drift restricts financial inclusion of sustainable development goals from being reached.

Another important dimension of sustainability can be linked to the productivity and long-term viability of MFIs, which also fall under both the economic and social aspects of sustainability. An evaluation of productivity would reveal how well this informal sector uses scarce resources to achieve their objectives of financial and social outreach. For example, Gustafson (1994) defined sustainable institutions as being able “to produce outputs that are sufficiently in demand for enough inputs to be supplied to continue production at a steady or growing rate”. This would also reveal how capable MFIs are to

meet the growing needs of the poor. Thus, Singh, Goyal, and Sharma (2013) have argued that banks and MFIs are judged based on how well they achieve productivity or efficiency in their operations. Certainly, efficient and productive MFIs could provide better services and products to the poor at cheaper costs, which will enhance the wellbeing of the poor (Mia & Ben Soltane, 2016).

1.3 Motivation

Microfinance gained prominence because it aims to promote financial inclusion in a weak, fractured and rapacious conventional banking system (Dev, 2006), where the poor are systematically circumvented from financial services (Taylor, 2012). Moreover, the record failure of the conventional banking sector in the 1980s and 1990s to address needs of the poor has increased the appeal of microfinance as an alternative banking solution under the aegis of multilateral organizations (e.g. the World Bank, the United Nations, the Aga Khan Foundation). Due to its success in meeting the welfare needs of the poor, it has spread to over a hundred countries with an estimated coverage of 205.3 million clients and donations of over USD 1 billion per year (Hudon, 2010; Maes & Reed, 2012).

However, the shortcomings of microfinance are no longer a secret. Until recently, none of the development policies or tools has worked as a 'panacea' or 'silver bullet' that is applicable in every single country and microfinance is no exception. Looking at net benefit is the most realistic way to distinguish the effectiveness of a policy intervention or program targeted to enhance development. Microfinance has shown tangible effects in addressing poverty and promoting socio-economic development despite criticisms of its effectiveness (a detailed discussion is provided in the next chapter). To ensure that microfinance can continuously play an important role in various aspects of development, it is essential to understand the dynamics of microfinance from the vantage points of both suppliers and clients. In a similar vein, deriving potential solutions in solving internal and

external complications would promote the sustainable development agenda through microfinance – and that is where this thesis contributes.

A careful investigation of the microfinance literature from the past 10 years has revealed a shift in research trends, from compelling impact assessment to institutional analysis. The swing of microfinance research to institutional aspects has resulted in independent development of competition, mission drift, and productivity/efficiency. However, the existing literature is still lacking and suffers from various methodological and empirical issues. Hence, this provides an outstanding rationale for this study.

Another important observation from the recent literature on microfinance is that most of the studies on institutional analysis are based on cross-sectional data of regions (e.g. South Asian, Latin American, Middle Eastern and North African countries) or groups of countries (lower income, middle-income, etc.). Certainly, the global or regional comparison is interesting; it can be used to identify similarities and differences, as well as to test a theory with large samples and robust results. However, this cross-sectional analysis also has some limitations. These arguments require further empirical support where the effectiveness and performance of MFIs are significantly determined by macroeconomic and other socio-economic settings (Ahlin, Lin, & Maio, 2011; Mimouni & Ali, 2012). It is certain that these factors vary from country to country, region to region. Hence, pooling all the MFIs into a single basket for the purposes of research not only neglects crucial information about the historical context of microfinance, but also provides mixed results or fails to capture actual market dynamics (Basharat, Hudon, & Nawaz, 2015).

The majority of the institutional analyses in microfinance rely on secondary sources of data collected by international organizations that promote microfinance-related

research. Among such international organizations are MixMarket (also known as the Bloomberg of microfinance), Consultative Group to Assist the Poor (CGAP)⁴ and Microfinance Transparency.⁵ Certainly, their substantial effort to compile data for global MFIs has earned them popularity, such that significant amounts of donations have been channeled towards their operations. Although these sources are the ultimate choices of a researcher for collecting global microfinance data, the data sources are not free from limitations. For example, the reliability of the data can be called into question due to the self-reported data scheme (Trujillo, Rodriguez-Lopez, & Muriel-Patino, 2014). The dataset may be skewed towards MFIs that need more exposure to international investors and donors (Barry & Tacneng, 2014). Gonzalez (2007) further argued that MFIs reporting data to MixMarket may already be efficient in their operations, having a focus on portfolio quality and profitability. This also raises concerns about the presence of socially-driven MFIs in the samples extracted from such databases.

Moreover, as discussed in Gonzalez (2007), the main issue with MixMarket and other major databases is selection bias – whether or not the sample size is representative of the market. In an empirical research study, a selected sample size should be representative of the total population. If not, the results may not be extrapolated to the population under study (Nayak, 2010). Although Bangladesh has around 700 registered MFIs, only 35 to 40 MFIs are reported by MixMarket, leaving a large number of MFIs unaccounted for. This is one of the reasons why most empirical research studies have used transnational MFIs to fulfill the criteria of sample size. By doing so, it not only underestimates the coverage of the sector for each selected country under study, but it may also result in

⁴ CGAP is a database that occasionally provides crucial information about the worldwide developments of the microfinance sector. They also publish policy reports and recent findings in microfinance research.

⁵ Microfinance Transparency was established in 2008 to promote the welfare of poor micro-entrepreneurs, and to promote the integrity of microfinance as a poverty alleviation practice. For more details, please visit <https://www.mftransparency.org/about-our-organization/>.

sample selection bias. These important issues for empirical analyses have been carefully addressed in this study.

Due to these drawbacks, this thesis relies on a single country, that is, Bangladesh. By choosing a single country and a longitudinal data set, the approach of this thesis is significant and indeed necessary for young regulatory authorities such as Microcredit Regulatory Authority (MRA), to make policy prescriptions that will ensure the sustainability of the sector. Indeed, it is of paramount interest whether the microfinance sector in Bangladesh, one of the oldest and largest in the world, is capable of accommodating the poor in a sustainable fashion.

1.4 Problem Statement

Based on the discussion of various components of sustainability and motivation in the microfinance industry in Bangladesh, several research issues are raised in this thesis and framed as problem statements. Three main problems present within the microfinance industry is highlighted below.

The worldwide microfinance industry has observed unprecedented growth and rapid development in the past few years. Despite the success and speedy growth of the microfinance industry, which has the poor as its target market, there has been very little sign of abatement of high-interest rates.⁶ The interest rates in the Bangladesh microfinance sector range from 22% to 110% (Faruqee & Khalily, 2011a). The high and exploitative interest rates charged by MFIs rescind consumer benefits and impede the overall socio-economic development of the poor. This poses a considerable threat to the long-term sustainability of the industry. Moreover, without a fair competition in the

⁶ High interest rates in microfinance generally means that the interest rate are above the market rate or the conventional banking sector.

industry, expecting the delivery of quality financial services and meeting the growing needs of the poor would not be fulfilled. Hence, it is important to understand the market structure in order to make the microfinance sector sustainable, as well as for MFIs to function effectively as credit providers for the poor.

The microfinance sector in Bangladesh has observed drastic changes in its capital structure⁷ over the past few years. Initially a donor-driven initiative, it has seen numerous sources of funds emerge recently, including funds from commercial banks.⁸ The emergence of commercial funds (e.g. banks) is certainly a surprising turn in microfinance as they were initially reluctant to provide financial support to the poor. With the growing presence of commercial funds, which can exert influence through their ‘deep pockets’ and abundant resources (Ledgerwood & White, 2006), MFIs place increasing emphasis on profitability and growth targets (Srinivasan, 2014). However, there is a paucity of research that deals explicitly with the linkages between sources of funds and mission drift. To fill the research gap, further investigation is warranted to develop a reliable and concrete explanation from a funding structure point of view. Moreover, research based on a single country can shed light on the trade-off between commercial interest or profit motive and depth of outreach goals of MFIs.

While financial inclusion in much of Bangladesh has been widened over the last few decades, MFIs still need to improve productivity to meet growing demand for financial services from the unbanked population. This is corroborated by the fact that one-third of the total population in Bangladesh are poor. This may indicate that MFIs in Bangladesh have yet to operate at optimal scale. It is also evident that unproductiveness deters outreach of MFIs. Productive MFIs can alleviate poverty at a greater scale than

⁷ Capital structure and funding structure are interchangeably used in this thesis.

⁸ Evolution of sources of funds is discussed in Section 2.6.4.

unproductive MFIs through spill-over effect and efficient utilization of scarce resources. Productivity has become even more crucial because the amount of subsidies, particularly international donations, has dwindled significantly in the microfinance sector in Bangladesh. However, there is a paucity of research that deals with the state of productivity of MFIs and the effectiveness of external financial support in the Bangladesh microfinance industry. Thus, evaluating productivity and its determinants is a matter of serious concern for management, donors, policymakers and various other stakeholders.

1.5 Research Questions

The problem highlighted above raises several important research questions. The following are the three main research questions investigated in this study:

1. The microfinance industry in Bangladesh requires special understanding of the evolution of market structure, particularly the concentration and competition over the years. In this vein, the first research question is: how has the market structure (market concentration and competition) within the microfinance industry in Bangladesh evolved from 2009 to 2014? This would in particular shed light on the overall market structure of the industry to form effective policies.
2. Mission drift has become a matter of serious concern as it undermines the financial inclusion objective of the sustainable development mandate. Hence, this study would like to examine why and what types of MFIs are susceptible to mission drift. In pursuit of this, the second research question is: how do major sources of funds, institutional characteristics and macroeconomic factors affect the mission drift of MFIs?
3. Sustainable financial inclusion will not be achieved without ensuring the sustainability of MFIs. Thus, attaining productivity has become one of the core principles for long-term economic viability. Hence, the third and last research question is: what are the patterns and determinants of productivity of MFIs in

Bangladesh? Findings on the determinants of productivity will provide key information for optimal utilization of scarce resources to achieve set objectives. Moreover, this research question also aims to answer why MFIs are unproductive and how the unproductiveness of MFIs could be resolved.

1.6 Research Objectives

Each of the research questions stated above has a research objective. Thus, the research objectives are as follows:

1. The first research objective is to analyze the evolution of market structure (market concentration and competition) of the microfinance industry in Bangladesh from 2009 to 2014. The aim of this objective is also to show the similarities and differences of various measurements of market structure (concentration and competition).
2. The second research question aims to evaluate the effect of major sources of funds, institutional characteristics and macroeconomic factors on mission drift of MFIs. The effect of various factors on mission drift has been estimated by using both the static and dynamic approaches; this enables a robust empirical inference.
3. The third objective attempts to investigate the pattern and determinants of productivity for MFIs in Bangladesh. The determinants of productivity range from institutional characteristics, financial support from various stakeholders, and macroeconomic factors. This objective also examines the effectiveness of financial support (donors, government and government apex body) on productivity in MFIs.

1.7 Significance and Contribution of the Study

The primary contribution of this study is to illuminate how sustainability can be promoted in the microfinance industry. This is to ensure that the original aim of microfinance can be met and to uphold Bangladesh's vision of achieving middle-income status by 2021. Hence, this study identifies three crucial components of sustainability

based on the SDGs, which have not been comprehensively investigated in the existing literature. This study conducts empirical inquiry on such issues and draws fresh explanations from the microfinance industry.

The evolution of microfinance and its various stages of development and strategic responses by the management of MFIs are carefully studied to uncover historical aspects. It is important to understand the passage of microfinance over the last forty years in Bangladesh. The discussion is based on the nomenclature of the well-known product life cycle theory developed by Vernon (1966), which has been hitherto neglected by the business historians in the context of microfinance. Moreover, the background of the thesis discusses some key characteristics of the microfinance industry, which can serve as an important outline.

A comprehensive analysis of the market structure, including the comparison between concentration and competition in the microfinance industry, would provide useful information and serve as a timely policy reference for the relatively young regulatory authority. Without a good understanding of the market structure, implementation of policies or guidelines may not be efficient and effective. Hence, the findings of this study will provide a solid empirical reference about the market structure of the microfinance industry in Bangladesh. Another important empirical and theoretical contribution of this thesis is to provide insights on mission drift in microfinance from the capital structure point of view. The findings will contribute to an assessment on how the formal capital structure viewpoints are applicable to the microfinance industry. This will further open up the discussion and provide solutions on what types of sources of funds MFIs should use in their capital structure to prevent mission drift. Moreover, this study examines whether there are trade-offs between commercial interest or profit motive and outreach goals of MFIs in the context of the Bangladesh microfinance industry. Finally, this study

also examines how macroeconomic dynamics can play an important role in mission drift, which can aid policymakers in designing effective macroeconomic interventions.

For MFIs to remain competitive and contribute to the sustainable development agenda, they must compare themselves to industry peers. The performance of MFIs can be ranked using findings on productivity, which is an indicator of how well the resources are used in production. Moreover, productivity assessment will also offer scenario analysis for MFIs to understand their strengths and weaknesses. Not only that, the findings will provide specific policy guidelines to managers and practitioners on how to improve productivity. On top of that, potential donors and authorities will be able to target and identify the nature of assistance needed in the sector, be it monetary or non-monetary.

Above all, the policy guidelines generated from this thesis is of paramount interest for the relatively young MRA to supervise and control operational activities of MFIs. However, the results of this thesis can be an important layout for microfinance practices in other countries, given that the findings are not considered as a benchmark but rather a topic of interest.

1.8 Scope and Limitations of the Study

This thesis has provided insights into sustainability in microfinance and its various components, which may serve as a starting point for more intensive research; however, this thesis has its limitations. For example, the components of sustainability assessed in this study are not exhaustive, and other aspects of sustainability could be explored in future research studies. In particular, the environmental aspects of sustainability in the context of microfinance require special attention from academicians. Furthermore, the findings of this study are contextually specific to the case of Bangladesh, however, the research approach can be applied to other microfinance markets. It should also be noted

that the findings of this study are limited to NGO-MFIs and future studies may investigate MFIs of other legal statuses to examine which types of MFIs can serve the poor better. As the Islamic microfinance is an uprising global market, a comparison between conventional and Islamic MFIs may unravel useful operational dynamics which have not been considered in this study due to limitations of the dataset. Moreover, future studies should also consider using larger panel datasets so as to make the findings on MFIs more robust than what has been undertaken in this study.

1.9 Data Sources and Features

This study relies on secondary and unique dataset to execute the above research questions and objectives. Hence, it is necessary to provide an adequate explanation about the data and its sources. As highlighted above, there are several limitations of transnational microfinance analysis and conventional data. Hence, a single country, Bangladesh has been chosen as the sample due to several important reasons. First, Bangladesh has one of the longest histories of microfinance; indeed, it has become known as the land of microfinance (Alam & Molla, 2012). Second, the sector has expanded rapidly over the last decades; it has currently become one of the largest sectors among developing countries in terms of number of clients and borrowers. Third, the distinctive socio-economic and political characteristics of Bangladesh and longer history of microfinance is expected to provide a more reliable track record from which other countries can draw lessons. Fourth, studying microfinance in Bangladesh is interesting because of its competitiveness and innovativeness. In addition, its longevity may have revealed problems that may not be evident in other younger microfinance markets (Meyer, 2002).

Since international databases are not fully representative of the actual microfinance market, using a domestic database that focuses exclusively on the microfinance industry

is certainly a preferred choice. One such database, targeted at the microfinance industry in Bangladesh, is the MRA (www.mra.gov.bd). As a regulatory body, the MRA first collects relevant financial and outreach information on each of the registered MFIs. The registered MFIs are obliged to provide specified data to the MRA. After collecting data, MRA compiles all the information of MFIs into an industry overview which is published as an annual statistics on NGO-MFIs (henceforth annual reports). These annual reports are publicly available at no cost. Based on the archive, there is roughly a two-year lag period of publishing the full annual reports. For example, the annual reports that comprise information for 2014 were only available in mid-2016. The annual report PDF files were converted to Excel format and various features of Microsoft Excel were used to make the data workable in STATA12 software. Hence, a significant amount of time and effort has been rendered to produce a workable dataset, which could have been easier if MRA had online data streaming facilities.

Apart from that, there are a few key points that need to be discussed with regard to the data sample used in this study. For this study, a decision had to be made on whether to use cross-sectional or panel data. Generally, researchers have preferred panel data over cross-sectional data due to several advantages of the former. Hsiao (1985), Baltagi (2008) and Wooldridge (2010) have persuasively explained the benefits of using panel data in empirical analyses. Generally, it is agreed that panel data can provide more accurate inferences of model parameters, greater capacity to capture the complexity of human behavior, more simplified computation and statistical inference. However, it should also be kept in mind that panel data has its disadvantages too. Most often, panel datasets suffer from intertemporal dependencies, autocorrelation, endogeneity and other aspects of statistical problems, which may not be an issue in cross-sectional data. Moreover, panel data collection is resource-intensive (requires a lot of time, manpower and monetary

commitments); hence, many researchers choose cross-sectional data to meet the constraints of resources. However, given the rapid development of econometric techniques to address the issues in panel data, the availability of secondary sources and the nature of the research objectives of this study, a panel data is preferred over cross-sectional data.

A second decision was whether to choose balanced or unbalanced panel data. Balanced data is a set of data in which all elements are observed throughout the entire time frame, whereas unbalanced data is a set of data in which the data category is not observed during certain years. Given that the number of MFIs in Bangladesh varies year to year, particularly after the establishment of the MRA in 2006 (Figure 1.2), choosing a large balanced panel would not be an easy job. The number of time periods (T) can easily be fixed based on the availability of the annual reports. For example, the MRA was established in 2006, and the comprehensive yearly publications were only available from 2008 to 2014. The prior annual reports only included general industry information, rather than information specific to individual MFIs. In addition, the reporting structure of the 2008 annual report differs significantly from that of the annual reports from 2009 to 2014. Hence, to maintain consistency in the information of required variables, the sampling period of 2009 to 2014 is chosen. Next, choosing N or the number of MFIs is crucial. From time to time, some MFIs may become de-registered due to non-compliance and there may be emergence of newly-registered MFIs. Thus, a smooth large panel data ($N*T$) is difficult. This study intended to maximize N to have better representativeness and efficient estimates; however, a few criteria had to be employed in choosing the final N .

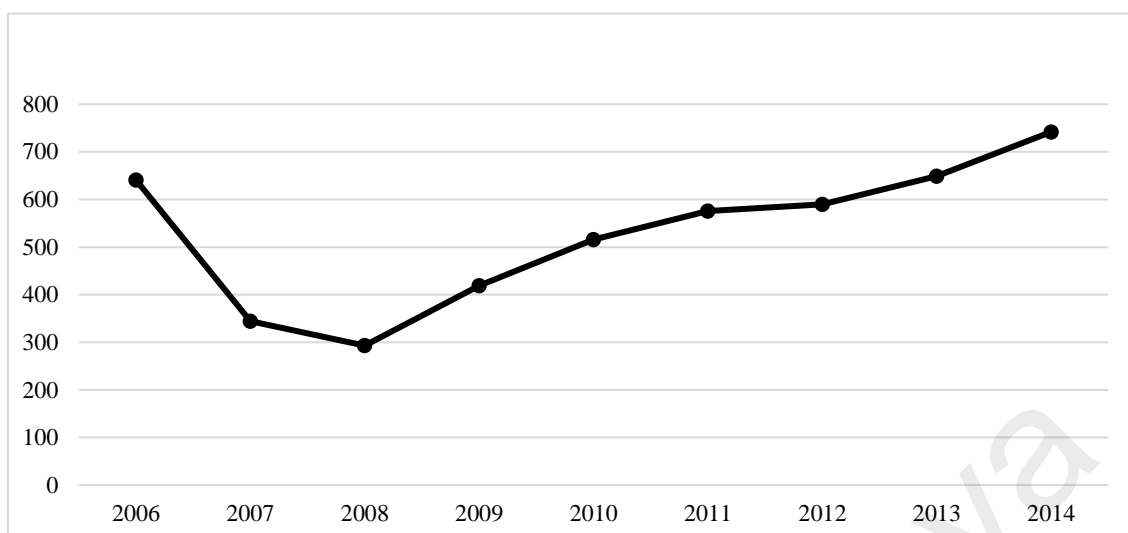


Figure 1.2: Registered NGO-MFIs in Bangladesh (2006-2014)

Source: Author's compilation from various MRA annual reports.

The very first criterion to choose N was to focus on MFIs that operated consistently between the periods of 2009 to 2014. Then, a comprehensive analysis was performed to check whether the initially-selected MFIs had the complete set of required variables. A third criterion was to only choose the MFIs that had all observed data, at least for the variables used in the productivity analysis (inputs and outputs, objective 3); this means there must not be any missing values for the specified variables. The required variables are total loans, number of borrowers, number of clients, financial revenue (portfolio yield as a proxy), operating expense and number of employees. These variables are required based on the obligation of using conventional Data Envelopment Analysis (DEA) software to execute the third research objective. However, this study relaxed this criterion for other variables that are not used in the DEA analysis. The initial screening also showed that the missing values for other variables were very minimal (see descriptive statistics in the third chapter). Hence, the replacement of missing data was not employed as it might have artificially reduced the variance, affected the strength of relationships and

undermined the true association between explanatory and outcome variables (Donders, van der Heijden, Stijnen, & Moons, 2006; Donner, 1982).

Based on these three criteria, a total of 169 MFIs have been chosen to form a balanced panel or longitudinal sample. Hence, the sample size includes a period of 6 years, from 2009 to 2014. However, the selection of data is incomplete if it is not representative of the population, because the findings based on the sample size should be generalizable to the whole population. Using a few market indicators and the year 2009 as a base period, the sample size of this study represents 85.9% of clients, 85.8% of borrowers, 86.9% of total loan outstanding and 86.7% of total net savings of the microfinance market in Bangladesh. Hence, this study has sufficient confidence that the sample size is representative of the total population.

Although data were collected from the respective yearly publication from 2009 to 2014, the study needed to rely on the 2008 annual report for the age and location of MFIs. The 2008 report did not directly provide the age of MFIs, but initial registration dates could be calculated by checking the year of establishment/registration. The location of MFIs also extracted from the annual reports where MFIs registered themselves. In a few cases, some MFIs registered simultaneously with Societies Registration Act, Trust Act, Voluntary or Company Act; in such cases, this study used the earliest date to determine age. Some of the newly-emerged MFIs are not included in the 2008 or subsequent annual reports, so the year of their establishment and location were collected from the NGO Affairs Bureau of Bangladesh (NGO Affair Bureau, 2015). The data on macroeconomic variables were collected from World Development Indicators (WDI) and World Governance Indicators (WGI) databases of the World Bank.

One of the major differences between the MRA dataset and other international databases, i.e. MixMarket, is the information on sources of funds. MRA data explicitly cover all sources of funds used by MFIs in Bangladesh, albeit only reported as debt-to-equity ratios, amount of donations and amount of savings in international databases. Apart from that, this study has revealed the identity of MFIs, particularly when levels of productivity of the MFIs are estimated. The main argument behind revealing the identity of MFIs is in line with publicly available data, which can be accessed by anyone at any time. It also helps policymakers to effectively identify MFIs that need policy intervention.

There are several important characteristics and attributes of the sample that warrant discussion. The selected duration enables the minimization of exogenous influences, such as the inter-sectorial structural change that may affect the performance of MFIs. At the beginning of 2007, there was political turmoil in Bangladesh. During that time, the caretaker government declared a state of emergency for an unspecified period and an elected government was only formed in 2009. There was a second general election in 2014 as one term constitutes a five-year period. Interestingly, the same party that was in power in 2009 formed the government in 2014. Thus, the policy environment and market fundamentals are expected to remain unchanged throughout the sample period.

Additionally, the global financial crisis that happened in 2007 and 2008 is not reflected directly in this sample period. Academics have found that MFIs remain resilient during global shocks or turbulence (Gonzalez, 2007; Llanto & Badiola, 2009); however, in the event of post-crisis effects, the performance of MFIs could be influenced even after major macroeconomic events (Daher & Le Saout, 2015; Di Bella, 2011; Vogelgesang, 2003). The selected duration is believed to minimize the direct effects of major local and international onslaught or crisis; however, this study does not rule out the possibility of post-crisis effects on microfinance performance.

Apart from that, there are several important characteristics and attributes of the sample that warrant discussion. One of the important features of our sample is related to the homogeneity of the legal status of MFIs within the sample. Most of the earlier works comprise a mixture of non-governmental organizations (NGOs), banks, non-bank financial institutions (NBFIs), credit unions, financial cooperatives and others, whereas only NGO-MFIs are included in our sample. This is mainly due to the fact that MRA only regulates MFIs that are NGO in Bangladesh. Other types of MFIs such as banks, non-bank financial institutions, cooperatives and credit union are not under the direct jurisdiction of MRA. Hence, their data are not available in the annual reports of MRA. However, NGO-MFIs in Bangladesh dominates the overall microfinance industry despite noticeable microfinance services provided by other types of MFIs. Nonetheless, microfinance services provided by other categories do not fall under the mainstream microfinance provider (Mia, 2016).

Additionally, NGOs tend to be more socially-oriented and connected to the grassroots poor, compared to other categories of MFIs. Furthermore, NGOs often have considerable knowledge on the needs of the poor (Wilburn, 2009) as it is their main target to work with those at the bottom of the economic pyramid (Prahalad, 2006). Moreover, NGOs are also innovative and mostly successful in their early stage (Chesbrough, Ahern, Finn, & Guerraz, 2006), as their know-how and proximity to the impoverished add impetus to their success (Jamali, 2003). Gutierrez-Nieto, Serrano-Cinca, and Molinero (2007) also argue that NGOs try their best to provide loans as much as possible to the poor and operate with minimal cost.

1.10 Organization of the Study

This study is divided into 6 chapters. Since each of the research objectives/questions are standalone, they are discussed separately in **Chapter 3** (market structure), **Chapter 4**

(mission drift) and **Chapter 5** (productivity and its determinants). This helps to maintain the flow, clarity and coherence of the arguments presented in the thesis.

Chapter 2 presents an overview of the microfinance sector in Bangladesh and a brief literature review, including the discussion on theories used in this thesis. A comprehensive definition of various terms, socio-economic conditions of Bangladesh and historical evolution of microfinance are presented. **Chapter 3** focuses on measuring the market concentration and competition in the sector. **Chapter 4** investigates mission drift by identifying its factors. **Chapter 5** presents an estimation of productivity and its determinants in MFIs. **Chapter 6** completes the study by drawing a comprehensive conclusion based on the three objectives independently discussed in the main analytical chapters. This chapter further extends the discussion on implications in terms of theory and policy-making, and then ends with recommendations for future studies.

CHAPTER 2: BACKGROUND OF THE STUDY AND THEORETICAL IDENTIFICATION

2.1 Introduction

This chapter provides a comprehensive discussion on the background of the study. Definitions of the terms used in this study are cogently explained to provide a clear idea to the reader. Since microfinance is an integral part of an economy, the overview of Bangladesh briefly touches upon socio-economic and economic indicators. A detailed discussion on poverty in Bangladesh underlines the power of microfinance to redress the economic inequality. Since Bangladesh has the longest history of modern microfinance, the current national scenario of MFIs (regulatory framework, sources of funds, and locations) is further discussed in this chapter. Most importantly, this section also elucidates the evolution of microfinance in Bangladesh based on a historical perspective. Then, comprehensive elaborations of the extant theories are set out chronologically, based on the objectives of this thesis.

2.2 Definitions of the Terms

In this section, various terms are defined, such as microcredit and microfinance, market share, market power, competition mission drift, and productivity.

2.2.1 Microcredit and Microfinance: Concepts and Definitions

Microfinance is often equated with microcredit, but the two need to be distinguished from one another. Microcredit is a subset of microfinance with a longer history than microfinance. The term *microcredit* is basically a combination of two words, *micro* and *credit*. *Micro*, a unit of measurements in metric system denoting a factor of 10^{-6} , a millionth. The word “micro” is derived from the Greek word ‘*mikros*’ means small and credit is derived from the Latin word ‘*credere*’, means ‘to believe’ or ‘to trust’. So, the general meaning of “microcredit” basically refers to the trust between two parties in a

small lending framework (borrower and lender). Microcredit often refers to the provision of small loans to impoverished groups of people for self-employment to foster entrepreneurship, particularly among unbanked women, due to the stringent requirements and conservative practices of the formal financial sector. Various financial schemes around the world bear resemblance to microcredit, although the Bangladesh experience popularized the practice worldwide. For example, '*Susus*' in Ghana, '*Chit Fund*' in India, '*Tandas*' in Mexico, '*Arisan*' in Indonesia, '*Cheetu*' in Sri Lanka, '*Tontines*' in West Africa, and '*Pasanku*' in Bolivia display similarities to microcredit and have been operating for several decades (CGAP, 2006). Amid the heterogeneity, the defining features of microfinance, as explained by Srinivias (2015), include: small loans, tiny savings, micro-insurance, smaller frequency of loans, shorter repayment periods, and operations at the local, and community level.

Microfinance has wider coverage than microcredit. Microcredit is limited to credit services, whereas microfinance covers microcredit as well as micro-insurance, savings, remittances and other financial products. Ledgerwood (1998) explains succinctly the distinctive feature of microfinance, which consists of financial intermediation and social intermediation. Qudrat-I Elahi and Rahman (2006) define social intermediation as organizing and raising the voice of the poor to address their aspirations and concerns over policies and issues related to their development. Financial intermediation refers to match-making between savers and borrowers.

Usage of the terms microcredit and microfinance should be aligned with their scope, with the former being a subset of the latter. Jain and Moore (2003) prefer to use microcredit instead of microfinance, claiming that most MFIs have not yet developed large deposit mobilization systems. However, their conclusion may have to be revisited in the current context, as most MFIs currently offer banking services comparable to those

of the commercial banking system (Table 2.1). For example, in the case of Bangladesh microfinance industry, total savings of registered NGO-MFIs had reached US\$1.69 billion, or an over 37 percent of the value of total loans outstanding (US\$ 4.52 billion) in 2015 (MRA, 2015). Functionally, almost all MFIs in Bangladesh simultaneously provide credit, savings and other financial services to their clients.⁹ Moreover, commercial banks, non-bank financial institutions, and credit-cooperatives, who offer the full range of financial services, have also entered the microfinance sphere (Mia, 2016). Thus, this study prefers to use the term microfinance over microcredit. Given that the context of microfinance in Bangladesh is fairly different from other countries, it should not be generalized that microcredit came before microfinance since savings are often originated first in some countries. However, microfinance in the context of Bangladesh is the gradual development of microcredit.

Table 2.1: Summary of Financial Products Offered by MFIs.

Credit	Savings	Insurance	Others
Term Loan	Compulsory Saving	Health	Mobile Subscription
Entrepreneurs Loan	Flexible Savings	Life	Mobile Financial Service
Housing Loan	Daily Savings	Property Credit	Remittance Services
Health and Sanitation	Voluntary Savings		Micro-leasing
Seasonal	Time Deposit	Crop	
Education	Fixed Deposit	Others	
Disaster Consumption	Risk Fund		
Loan Top Up			
Mid-Term Loan			
Emergency Loan			
Migration Loan			
Islamic Microfinance			

Source: Author's compilation from various sources.

⁹ It should also be noted that all services that are not financial services, on the opposite, sometimes known as “non-financial” or “business development” services.

While the Grameen Bank (where poor people are grouped in five or known as ‘group lending’) is the leading microfinance scheme in Bangladesh, the Grameen method has not remain static; rather, it has observed gradual changes over the years. The modification of the Grameen Bank model has been considerably affected by the suggestions of field workers, geographical location and cultural settings. Some MFIs have modified the model to meet their operational philosophies (Khan & Ashta, 2013), which has resulted in various innovations in loan products and financial services to provide better solutions to the local community. For example, it was suggested by the employees that the majority of poor women are illiterate and lack entrepreneurial skills; hence, MFIs started providing financial literacy programs and entrepreneurship training, which was not included in the original idea of Grameen Bank. Apart from entrepreneurial loans, MFIs have also realized that people living in disaster-prone areas need disaster loans to mitigate the effect of such natural calamities (Matin & Taher, 2001). Thus, MFIs began providing disaster loans with very flexible conditions. From an institutional perspective, there have also been modifications in the operational model of the Grameen Bank to cope with various types of risks (Khan & Ashta, 2013).

Moreover, as MFIs also aspire to educate the children of microfinance clients, leading MFIs started to provide scholarships and education loans. For example, Grameen Bank established higher education loans (through Grameen Kalayan) with marginal interest rates for the children of its clients. By 2015, Grameen Bank had provided education loans to 53,357 students with an estimated value of USD 49.94 million (Grameen Bank, 2015). BRAC went a step further in ensuring the education for the poor by establishing over 14,153 primary schools that have accommodated 5.3 million students to date.¹⁰ Moreover,

¹⁰ For more details, see <http://www.brac.net/education-programme/item/761-brac-primary-schools>

BRAC University¹¹ and ASA University¹² were established in Bangladesh by the two leading NGO-MFIs to provide higher education facilities to the masses and staff of the MFIs.

2.2.1.1 Microfinance: Distinctions and Shortcoming

While MFIs have evolved to offer a wide array of products and services, their original role – to help the poor by financing small-scale entrepreneurial activities – remains central to the premise and ethos of their operations. Dunford (2012) notes that the concept underlying microfinance is related to change — that is, a change in the financial system where the emphasis falls on the poor, who have been systematically excluded by the mainstream financial sector. Microfinance programs do not treat the poor as hopeless victims who should be helped with charity, or as commercial victims of a rapacious financial sector (Nasrin, Baskaran, & Rasiah, 2017). Rather, microfinance programs promote the poor as normal human beings with an innate right to accumulate wealth from the resources of our planet (Hickel, 2015). The programs and services offered by MFIs can be considered vital ingredients for the development of a country as the formal financial sector rarely meets the credit demand of the poor.

Microfinance plays a bridging function between the unbanked and the financial system as it is impossible for the poor to access loans from commercial banks without collateral. However, microfinance approach of Muhammad Yunus – similar to the ‘Irish Loan Fund’ – enables borrowing through a ‘peer monitoring system’ as a form of ‘social collateral’, which is missing in the conventional banking system. Hence, microfinance has made it

¹¹ See <http://www.bracu.ac.bd/>

¹² See <http://www.asaub.edu.bd/>

financially viable to lend to the poor, which explains why it has become popular in the international arena.

Microfinance experienced phenomenal growth and popularity at the end of the twentieth century, particularly after the early work of development economists who advocated it as an effective instrument to alleviate poverty and stimulate socio-economic development (Hashemi, Schuler, & Riley, 1996; Morduch, 1998, 1999a, 1999b, 2000; Pitt & Khandker, 1998; Pitt, Khandker, & Mundial, 1996; Schuler & Hashemi, 1994). Among other things, microfinance enables the poor to generate income, build assets and minimize vulnerability to economic shocks. Furthermore, one of the greatest achievements of microfinance is its contribution towards empowering women, which is a desired social transformation in patriarchal societies and a step towards meeting the Sustainable Development Goals (SDGs) (Mull, 2016; Pitt, Khandker, & Cartwright, 2006); Loewe & Rippin, 2015; Pronyk, Hargreaves, & Morduch, 2007). On the whole, microfinance has stimulated development of households, societies, and nations. Prominent media coverage, particularly by leading channels such as Columbia Broadcasting System (CBS) News, British Broadcasting Center (BBC), The Guardian, Financial Times, and Cable News Network (CNN), have boosted the global profile of the Grameen Bank and enhanced perceptions of its impact on development.

Duvendack et al. (2011) have raised the issue of weak methodologies employed in the microfinance impact evaluation studies. Recently, one of the most advanced and robust empirical techniques in microfinance impact evaluation on clients level is the incorporation of randomized control and trial (RCT). Although this method is commonly used in the medical literature (see Sibbald, 1998), where one group (treatment) is compared with another group (control) to evaluate the effectiveness of a drug. To support the incorporation of RCT in microfinance evaluation studies, Karlan, Goldberg, and

Copestake (2009); Karlan, Harigaya, and Nadel (2009) have claimed that it is the best method to evaluate the impact of microfinance programs as well as to improve the designs of various microfinance products.

Using the RCT method in microfinance impact evaluation, Karlan and Zinman (2009) found that expanding credit supply indeed enhances the welfare of the poor. Moreover, a study on the microfinance industry in the Philippines by Karlan and Zinman (2011) found that microfinance did enhance community ties, risk management and informal access to credit. However, the duo also observed that the treatment group had limited business activities and subjective wellbeing compared to the control group. In a more recent study by Banerjee et al. (2015), after summarizing the results of six different RCT evaluation studies in microfinance in India, it was noted that the effect of microfinance is modestly positive, but not transformative. Apart from those RCT evaluation studies, Khandker and Samad (2014) conducted a comprehensive study comprising more than 3000 households in 87 villages and over a 20-year period in Bangladesh. They reiterated that microfinance indeed helps the poor by raising various aspects of households' welfare. These aspects range from increasing personal expenditure, accumulating households assets, empowering women, increasing labor supply and providing children's education, among others. There are ample of empirical research studies that found microfinance loan in general is associated with higher women empowerment (Weber & Ahmad, 2014; Rehman et al., 2015; Nilakantan et al., 2013; Laha & Puri, 2014), which is a significant social transformation in a patriarchal society. Additionally, Weber & Ahmad (2014) found that women in higher loan cycles enjoys higher level of empowerment in the case of Pakistan compare to relatively new loan beneficiaries. Due to these significant benefits, microfinance programs (Grameen model) have subsequently been replicated in the developed countries, such as the United States,

Canada, Germany and many other European countries to address poverty and generate self-employment.

Bateman and Chang (2012), however, argue that microfinance poses a barrier to achieving the sustainable economic development goals. Instead of eradicating poverty, the high-interest rates charged by MFIs put borrowers in a 'death trap'. The high cost of borrowing can negate the social outreach aspirations of microfinance, as some of the poorest households find the interest rates unbearable – and have to bear additional burdens from co-borrowing peers, plus the risk of disrepute in the community should one default on a loan. Circumspection against microfinance heightened in 2007, when a Mexican MFI, *Compartamos*, went for Initial Public Offerings (IPO) and charged interest rates as astronomical as 195% (Bateman & Chang, 2012). Professor Muhammad Yunus termed such outrageous profit-maximizing MFIs as 'new loan sharks' who exploit the poor (Mitra, 2009). However, the portfolio yield (average yearly nominal yield on gross loan portfolio) in the South Asian microfinance sector has ranged from 16% to 42%, with the highest average rates recorded in Afghanistan (Figure 2.1). The microfinance sector in Bangladesh enjoyed a stable interest rate (22% to 26%) between 2005 and 2014.

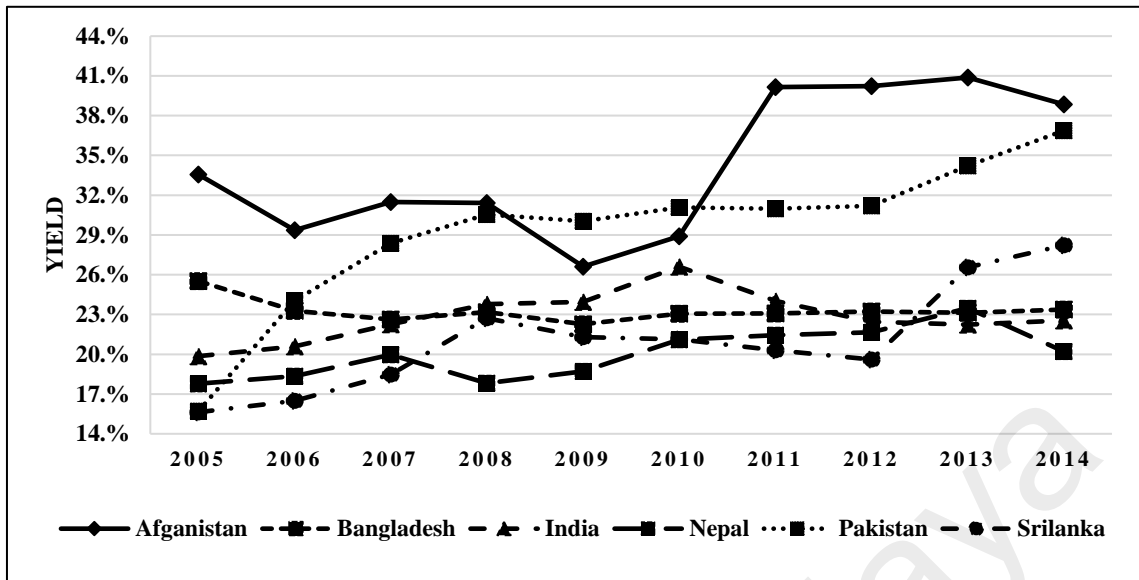


Figure 2.1: Portfolio Yield in MFIs in South Asian Countries (2005-2014)

Source: Author's compilation from MixMarket.

The microfinance sector also faces serious financial threats in some countries where clients are severely over-indebted and default rates have risen. This over-indebtedness could be a result of multiple borrowing and other associated factors. Suicides of microfinance clients reported in Andhra Pradesh have ignited public outcry both in India and around the world (Taylor, 2011). However, Ashta et al. (2015) have shown that there is no or very weak relationship between microfinance and suicide incidents, but there is a strong relationship between suicides and banking finance. Apart from that, corruption in microfinance has also been highlighted by Moh'd Al-Azzam (2016) and Sinclair (2012).

Another piece of news that sparked the global media was the ouster of Muhammad Yunus in early 2011 from Grameen Bank. This political intervention, which did not follow normal procedural justice, surprised many people inside and outside of Bangladesh. The government invoked his age as the reason for his dismissal (retirement age is 60 years for the staff of Grameen Bank). In response, Yunus argued that although

he exceeded the government age limit in 1999, the central bank never took any issue with his continual role in the institution. There is a common perception that the target political interference towards Muhammad Yunus started when he publicly considered entering politics during a politically-turbulent period in 2007. The dominant political parties and powerful individuals within the present government did not welcome such initiatives, perceiving him as a threat to their political careers and thus removed him from the institution that he had founded (CBS News, 2011).

Nonetheless, the report by a Danish journalist named Tom Heinemann uncovered a complex financial transaction that took place in the mid-1990s involving donations by the development agencies of several countries (Norway, Sweden, Germany USA and Canada) (Heinemann, 2010; The Guardian, 2011). This news added fuel to the fire in an already tenuous relationship with the political parties. Although the report claimed that Yunus mishandled a huge amount of donations by illegally transferring funds from Grameen Bank to another entity (Grameen Kalyan) to gain tax incentives, the government of Norway quickly announced that the issue had been settled amicably and cleared him of any wrongdoing. However, the government of Bangladesh still insisted that he step down, continually raising this financial matter and pressing for transparency and accountability of Grameen Bank activities. The Grameen Bank is now under the direct control of the Central Bank of Bangladesh, a government-dominated institution in the country.

It is widely understood that Yunus and Grameen Bank are as inseparable as two sides of the same coin; however, Yunus has also been criticized for neglecting to select a successor for a smooth transition of the Grameen governance. This issue has been amplified by experts who fear for the future of Grameen in the absence of Yunus (Wharton, 2011). Additionally, Yunus has made exaggerated claims about the impact of

microfinance on poverty; his way of simplifying complex issues and use of hyperbolic language have garnered criticisms from across the globe.

2.2.2 Definition of Market Concentration and Competition

Economically, market concentration refers to the degree to which production in a particular market or industry (microfinance, in this case) is concentrated in the hands of a few large firms (Dobre, 2012). When the majority of the market share¹³ is controlled by a few large firms, it is known as a highly concentrated market. If the market has a lot of firms and their market share is negligible, then it is known to be an unconcentrated or less concentrated market. Both theoretical and empirical research have linked market share with the market power of individual firms or institutions. If a firm or institution holds the majority share of the market, it has dominant power over the market and can significantly affect the industry by exercising its power. Generally, market power implies the ability to increase the price of products beyond the marginal cost for a sustained period; this action is often executed with intended profit motive (Baker & Bresnahan, 2006). Market power resulting from market share provides considerable privileges to the firms in determining the prices (interest) of their products, often at the expense of the consumers.

In general, competition means contest or rivalry between two entities, i.e., firms or institutions. However, Clark (1925) provides a classical and comprehensive definition of competition as “rivalry for income by the method of giving more than one's rivals give in proportion to what one asks in return, or by making the public think so, or by making them at least act as if they thought so to the extent of buying one's goods in preference to those of one's rival”. Put simply, a competitive market can be defined as one where a large number of producers compete with one another to satisfy the wants and needs of a large

¹³ Market share is the fraction or percentage of a relevant market that is controlled by a specific market participant (Dobre, 2012).

number of consumers. Hence, in a competitive market, no single producer or group of producers, and no single consumer or group of consumers, can dictate how the market operates. Both the consumers and producers are price takers and cannot influence the overall market.

2.2.3 Definition of Mission Drift

Recently, mission drift has become included in the microfinance lexicon. Mission drift and outreach¹⁴ are inseparable terms; hence, to understand mission drift, it is imperative to have a concrete understanding of the outreach mission of MFIs. Outreach simply refers to the social benefits of microfinance for the poor (Schreiner, 2002). Hermes, Lensink, and Meesters (2011) further contend that outreach means providing credit services to the poor, that is, those who are excluded from the formal banking sector, in an attempt to ameliorate poverty and provide a financial means for them to set up their own income-generating business. Since outreach has a broader meaning, academics have tried to split the concept of outreach into several dimensions. For example, Conning (1999) is one of the earliest to classify outreach into two dimensions: depth and breadth. The depth of outreach means providing financial support to the very poor people, whereas the breadth of outreach means reaching out to the ever-widening group of clients (Conning, 1999). Quayes (2012) has termed depth and breadth of outreach as quality and quantity of microfinance respectively.¹⁵

Kleynjans and Hudon (2016) argued that mission drift happens when an MFI starts serving the relatively less poor to ensure or achieve higher financial sustainability in their

¹⁴ Outreach and social outreach are interchangeably used in this study.

¹⁵ Schreiner (2002) later conceptualized a total of six aspects of outreach, including depth and breadth. A detailed discussion on other aspects of outreach can be found in Schreiner (2002).

operations. To put it simply, Serrano-Cinca and Gutiérrez-Nieto (2014) assert that mission drift happens when MFIs do not give loans or other financial services to the poor. A comprehensive definition of mission drift can be found in Mersland and Strøm (2010). The duo defined mission drift as when an MFI moves to a new customer segment, to include either customers who are financially better off or existing clients who have observed success based on the average loan size. Moreover, focusing on the segment of the microfinance market, Christen (2001) argued that mission drift drives MFIs from the market where they should naturally locate themselves. From an institutional perspective, Copestake (2007) defined mission drift as “an unplanned or hidden change in preferences, which is also endogenous (i.e., a response to past performance): less rational than a conscious (even if contested) change in preferences, but more than total ignorance of actual performance outcomes.”

Based on the above definitions and discussions, mission drift simply means shifting from the original aim of MFIs; that is, to turn away from the poorest of the poor who deserve microfinance services.

2.2.4 Definition of Productivity

Although the term ‘productivity’ was first used by Quesnay (1766) more than two centuries ago (Sumanth, 1997), it has only become a buzzword in the banking industry in the last century (Tangen, 2005). Despite being used extensively in the economic literature, ‘productivity’ is a multidimensional term. Hence, its meaning may vary based on the context in which it is applied. Bernolak (1997) has provided a useful verbal definition which is relevant in the manufacturing sector as well as the banking sector,

“Productivity means how much and how well we produce from the resources used. If we produce more or better goods from the same resources, we increase productivity. Or if we produce the same goods from lesser resources, we also increase productivity. By “resources”, we mean

all human and physical resources, i.e. the people who produce the goods or provide the services, and the assets with which the people can produce the goods or provide the services. The resources that people use include the land and buildings, fixed and moving machines and equipment, tools, raw materials, inventories and other current asset (p. 204).”

It is notoriously difficult to define productivity in the context of the financial sector despite significant applied research in the banking industry (Johnston & Jones, 2004; Maroto-Sánchez, 2012; Niederkorn, 2006). This is mainly due to the complexity in measuring output. In general, the classical concept of productivity in banking may mean how much output is produced from given units of input in the production process, which is essentially the ratio of output and input (Bassem, 2014; Burger & Moormann, 2008; Fixler & Zieschang, 1999). Production can be defined as a process of combining various material inputs and immaterial inputs (plans, know-how) in order to create something for the purpose of consumption (the output). It is the act of creating goods, outputs, or services that have monetary value and enhance the utility of consumers.

Moreover, productivity is the rate of production for a business, individual, population, or even for a community (Al-Darrab, 2000). Al-Darrab (2000) argued that productivity is the interaction of efficiency, utilization and quality (productivity = quality × utilization × efficiency), putting forth a similar concept as that of Johnston and Jones (2004). Productivity and efficiency are interrelated in the sense that higher productivity will lead to higher efficiency, assuming all other things remain the same or *ceteris paribus* (Sánchez-Robles, 1997). Maroto-Sánchez (2012) further argued that productivity includes the concepts of effectiveness and efficiency, whereas effectiveness shows the ability of an enterprise to meet the dynamic needs and expectations of customers.

Based on the above discussion, productivity refers to the volume of business that is generated (output) for a given resource (input). It can be seen as one of the main engines

that drive a firm's growth. Productivity progress is evident if an entity can produce more output from a given amount of resources or yield the same amount of output from less input.

2.3 Bangladesh at a Glance¹⁶

Microfinance is an integral part of an economy and the growth of this financial innovation depends to a large extent on the socio-economic, macroeconomic and financial stability of a country. Thus, understanding key characteristics of a country where microfinance is an ongoing policy intervention for poverty alleviation is crucial both for academicians and policymakers. Hence, this section briefly discusses key information about Bangladesh, followed by her socio-economic and economic development.

Bangladesh, officially the People's Republic of Bangladesh, is located in South Asia, surrounded by India and Myanmar (Burma) on the west and east, respectively, and by the Bay of Bengal to the South (Figure 2.2). Bangladesh is ranked the 7th most populous country in the world. Bangla is the official language, as well as the 7th most spoken language in the world, shared by some Indian states such as West Bengal, Assam, and Tripura. The majority of the population is Muslim, accounting for roughly 88% to 90% of the population, and the remaining 10% to 12% are Hindus, Buddhists and others. The *Padma*, *Meghna*, and *Jamuna*, which are the three largest rivers in Asia, pass through Bangladesh, thus creating opportunities for millions of people to make their living in fishing and other related industries

¹⁶ Part of Section 2.3, 2.4 and 2.6 have published in the East Asian Journal of Business Management and Journal of Asian Finance, Economics and Business.

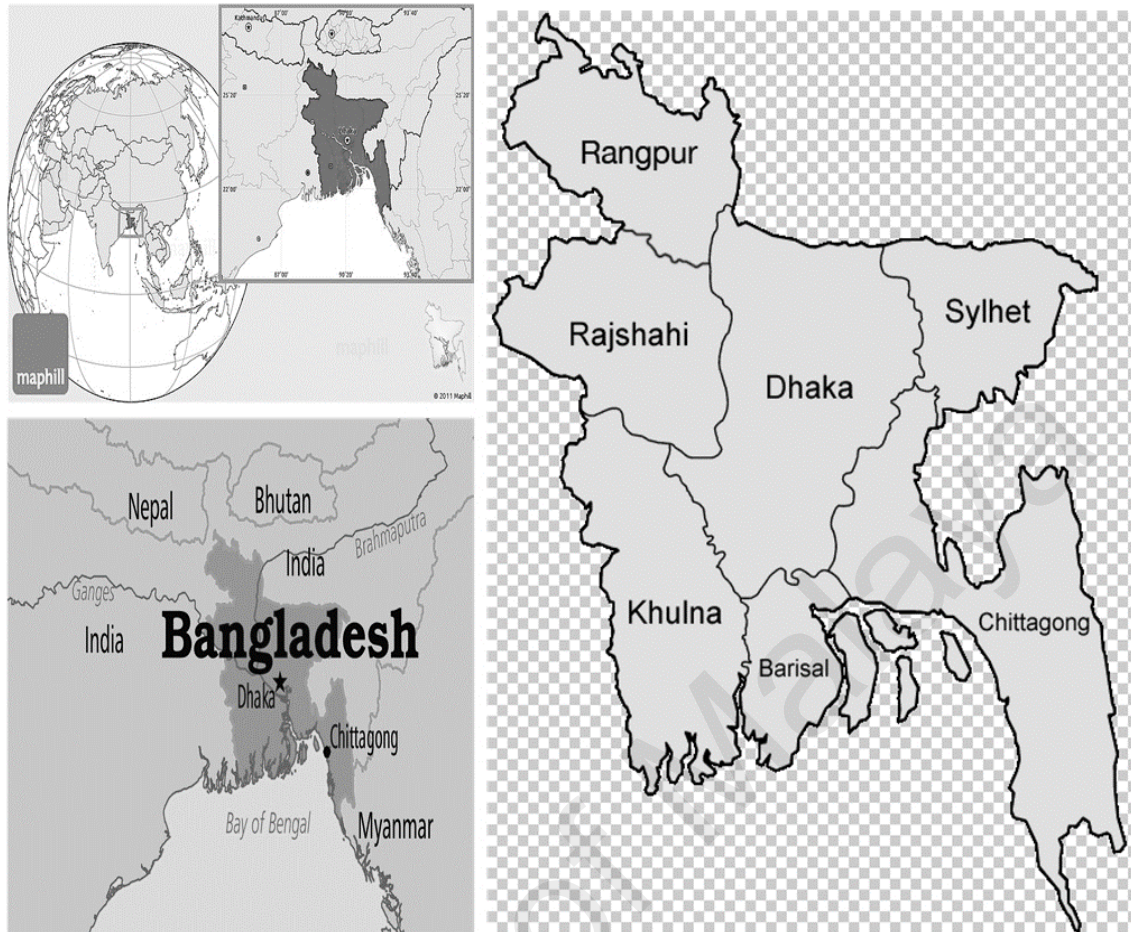


Figure 2.2: Geographical Location of Bangladesh.
Source: Author's compilation.

Politically, the government structure is a 'Unitary Parliamentary Constitutional Republic'. Administratively, Bangladesh has 7 divisions (highlighted in Figure 2.2). From an economic standpoint, Bangladesh has been included in the Next-11 (N-11) countries identified as having high potential to be the largest economy in the world by Goldman Sachs and 'Frontier Five' by JPMorgan (Rahman, 2013). Moreover, Bangladesh is a founding state of the South Asian Association of Regional Cooperation (SAARC), which was headed by Late President Ziaur Rahman in 1985. Recent papers by Mia, Nasrin, Zhang, and Rasiah (2015) and Noman et al. (2016) could provide important information on the major cities in Bangladesh, Chittagong and Narayanganj, respectively.

2.3.1 Socio-Economic Indicators

Bangladesh has made remarkable strides in socio-economic aspects, including literacy, employment, mortality, fertility and other socio-economic wellbeing indicators. Above all, the most significant improvement has been seen in the areas of poverty alleviation and women empowerment. These socio-economic developments in Bangladesh are remarkable among developing countries, placing Bangladesh in the forefront of the media as a successful development story (Dhume, 2010; Ramesh, Pande, & Bhandari, 2012; The Economist, 2012).

Bangladesh has observed significant improvements in terms of life expectancy at birth from 58 years in 1990 to 71 years in 2013, equivalent to a 22% increase in the last 23 years (roughly 1% increase in life expectancy per year). Despite being one of the most densely populated countries in the world (1,207 people per km²) with a total of 157 million people at the end of 2013, the population growth rate has remained relatively stable at 1.2% to 1.3% in the last decade. However, the urban population growth is double the national average in most of the years, perhaps due to the greater push-and-pull and industrial development in urban areas. Progress can also be seen in the provision of primary and secondary education for both males and females. The government of Bangladesh secured 100% primary education for the people, and the participation in secondary education increased threefold from 1990 to 2013 (Table 2.2).

In terms of health indicators, remarkable progress has been observed in the areas of immunization, mortality rate, access to clean water and improved sanitation. Apart from government intervention, NGO-MFIs have placed significant emphasis on such developments (Loewe & Rippin, 2015; Pronyk, Hargreaves, & Morduch, 2007). However, the public health expenditure of 0.81% GDP remains relatively low (six times lower than the world average) as compared to other countries in the South Asian region.

For example, in 2013, the public health expenditure (as a percentage of GDP) was 1% in Pakistan, 1.1% in India, 2.1% in Sri Lanka, 2.2% in Bhutan, 2.2% in Nepal, and 8.3% in Maldives (World Bank, 2015a).

Table 2.2: Socio-Economic Status of Bangladesh (1990-2013).

Items	1990	2000	2006	2010	2013
Population Indicators					
Population, total (millions)	105.983	131.280	144.839	151.616	157.157
Population growth (annual %)	2.467	1.949	1.327	1.135	1.216
Population density (people per sq. km of land area)	814	1008	1112	1164	1207
Urban population growth (annual %)	4.925	3.608	3.934	3.638	3.573
Social Indicators					
Life expectancy at birth, total (years)	58.418	65.348	68.426	70.080	71.245
Fertility rate, total (births per woman)	4.494	3.169	2.600	2.332	2.209
Mortality rate, under-5 (per 1,000)	143	88	63	49	41
Immunization, measles (% of children ages 12-23 months)	65	74	83	88	89
Prevalence of HIV, total (% of population ages 15-49)	0.100	0.100	0.100	0.100	0.100
Gross enrolment ratio, primary, both sexes (%)	81.048		99.401	100	
Gross enrolment ratio, secondary, both sexes (%)	20.401	48.110	46.098	50.119	58.309
Government expenditure on education as % of GDP (%)	1.519	2.125	2.131		1.966
Health expenditure, public (% of GDP)		0.947	1.039	1.050	0.810
Improved water source (% of population with access)	68.100	76.000	80.600	83.500	85.500
Improved sanitation facilities (% of population with access)	34.400	45.400	51.800	55.800	58.700
Mobile cellular subscriptions (per 100 people)	0.000	0.211	13.206	44.945	74.430
Internet users (per 100 people)	0.000	0.071	1.000	3.700	6.630
Poverty Indicators					
Number of poor at \$1.90 a day (2011 PPP) (millions)		78.729	73.723	66.181	
Number of poor at \$3.10 a day (2011 PPP) (millions)		111.287	116.488	117.670	
Poverty gap at national poverty lines (%)		12.800	9.000	6.500	
GINI index (World Bank estimate)		33.060	32.730	31.980	

Source: Author's compilation from World Development Indicators of World Bank
(collected in 2016).¹⁷

¹⁷ The dataset is from World View, Poverty and Shared Prosperity, People, Economy, States and Market.

Interestingly, the HIV prevalence among adults has remained static throughout the years. While looking into the technology usage, almost two-thirds of the total population use cellular phones despite a low level of internet usage. However, the trend of technology usage has substantially increased in the recent years.

2.3.2 Economic Indicators

Table 2.3 reports the recent development of Bangladesh based on economic indicators. Economically, Bangladesh has substantially improved conventional indicators such as GDP per capita and GDP growth. GDP per capita has increased threefold since 1990, standing at USD954 in 2013. In terms of purchasing power parity (PPP), the per capita GDP was well over USD 3000 in 2013 and maintain a balanced GDP growth of 5% to 6% per annum in the last decade. The gross domestic savings also increased twofold from 1990 to 2000 and then remained relatively stable at around 20% thereafter. The financial sector development has placed a significant role in mobilizing the people's deposits, and MFIs have played a particularly crucial role in increasing domestic savings for the poor. The gross capital formation also shows an increasing trend. However, there is a deficit of government finance for the observed years in 2006 and 2010.

Looking further into the economic structure, the contribution of industry and services to GDP has gradually increased whereas agriculture has observed a declining trend over the years. The contribution of agriculture in GDP accounted for roughly 16% in 2013, half of the figure compared to the 1990s. This shows that Bangladesh was once an agrarian economy but is gradually transforming into an industry and service-based economy. Although the net export has remained negative in the selected years, exports have quadrupled from 1990 to 2013, while imports have doubled in the same period. This indicates the openness of the Bangladesh economy, as well as greater vulnerability to international shocks or turbulence.

Developments in the financial sector, as measured by the domestic credit provided by the financial sector, have increased three times since the initial year of 1990. Nonetheless, the broad money that measures the supply of money in a country comprises more than physical money, for example, currency and coins increased threefold between 1990 and 2013.

Table 2.3: Economic Indicators of Bangladesh (1990-2013).

Items	1990	2000	2006	2010	2013
Income and Growth					
GDP per capita (current USD)	298	406	495	760	954
GNI per capita, PPP (current international \$)	850	1350	1980	2600	3180
GDP growth (annual %)	5.622	5.293	6.672	5.572	6.014
Savings and Investment (% of GDP)					
Gross Domestic Savings	9.309	19.175	20.739	20.492	21.169
Gross capital formation	16.459	23.809	26.144	26.247	28.390
Government Finance (% of GDP)					
Revenue (excluding grants)			8.778	9.744	
Tax revenue			7.043	7.835	
Cash surplus/deficit			-1.241	-0.814	
Economic Structure(% of GDP)					
Agriculture, value added	32.753	23.773	19.008	17.810	16.276
Industry, value added	20.697	23.314	25.397	26.144	27.636
Services, etc., value added	46.550	52.914	55.594	56.045	56.088
Trade (% of GDP)					
Exports of goods and services	5.908	12.344	16.353	16.024	19.538
Imports of goods and services	13.058	16.978	21.758	21.779	26.759
Money and Credit (% of GDP)					
Broad money	22.447	30.554	50.476	58.746	61.400
Domestic credit to private sector	16.074	21.779	31.166	40.961	41.795
Domestic credit provided by financial sector	21.631	30.178	50.105	57.408	57.922
Other items					
Inflation (annual %)	6.127	2.208	6.765	8.127	7.530
Total debt service (% of exports of goods, services and primary income)	34.160	10.601	5.374	4.293	5.283
Personal remittances (current USD billion)	0.779	1.967	5.427	10.850	13.866
Net FDI, (BoP, current USD, billion)	0.324	0.280	0.456	1.232	2.603
Net ODA and official aid received (current USD , billion)	2.092	1.173	1.221	1.403	2.629

Source: Author's compilation from World Bank (collected in 2016).

Personal remittance has also substantially increased due to the recent increase in export of manpower. Although the net FDI is positive; an indication of better domestic investment opportunities, the net development assistances has shrunk from 2000 to 2010

and slightly increased in 2013. Another good indicator of financial wellbeing could be the debt services that have substantially declined over the years, hinting that Bangladesh has attained a better financial position. However, the inflation rate has remained relatively higher (7.5% in 2013) despite a low level of inflation at 2% in the year of 2000. The next section provides a detailed overview of poverty in Bangladesh.

2.4 Overview of Poverty in Bangladesh: An Extension

It is unequivocally important to have a deep understanding of poverty in Bangladesh to better conceptualize the prospects of microfinance in battling poverty. Due to the multidimensional aspects of poverty, there are several poverty measurements available to better capture the essence of poverty. Each of the methods has their own advantages and disadvantages, but this study relied on secondary sources of poverty estimates. The poverty status has been adapted from the Bangladesh Economic Review (2014), jointly prepared by the Ministry of Finance and the Bangladesh Bureau of Statistics. They have reported three types of poverty measurements, namely the Head Count Index (HCI), Poverty Gap, and Squared Poverty Gap; these are similar to the World Bank estimates of poverty that are most commonly used in the literature.

The HCI¹⁸ or incidence of poverty is one of the simplest measurements that shows the proportion of the population that is poor (World Bank, 2015b). The measurement is easy to construct and simple to understand. It is possible to use various poverty lines to estimate incidence of poverty and extreme poverty levels. However, this method does not reveal the degree of poverty and refers to individuals rather than families or households.

¹⁸ The mathematical form of measuring HCI is as follows: $P_0 = \frac{N_P}{N}$

The Poverty Gap¹⁹ is a moderate measurement that shows the extent to which an individual falls below the poverty line (World Bank, 2015b). This shows how far people are from the poverty line, provided that the distances are meaningful and the resources required are available to bring the poor to the poverty line²⁰. This method is preferable when targeting cash transfer services to eliminate poverty, assuming the transfers are perfectly targeted and implemented. However, it also does not represent the inequality among the poor.

The Squared Poverty Gap²¹ averages the square of the poverty gaps relative to the poverty line. This measure not only measures the distance separating the poor from the poverty line but also indicates the inequality among the poor. Nevertheless, this measure lacks intuitive meaning and is not easily interpretable, thus resulting in poor acceptance and usage among development economists.

In Bangladesh, two types of poverty line measurements are considered: upper poverty line and lower poverty line. Upper poverty lines are roughly 20% higher than lower poverty lines. Overall, Bangladesh has shown remarkable success in battling poverty and the poverty rate has decreased considerably in the last decade. Based on the HCI, the poverty rate was roughly 31.5% in 2010 at the national level (Table 2.4). It was also found that poverty is more common in rural areas than in urban areas. Subsequently, the poverty

¹⁹ To measure the poverty gap (P_1), the mathematical formula is as follows: $P_1 = \frac{1}{N} \sum_{i=1}^N \frac{G_i}{z}$, Where G_i is the poverty gap, z is the poverty line, and N is the total population.

²⁰ The poverty line is estimated based on the cost of basic needs approach. This shows the minimum expenditure required to fulfil the basic needs or threshold consumption needed for a household to escape poverty. It can be estimated based on the cost of acquiring enough food for adequate nutrition, for example, 2100 calories per person per day associated with costs of other essential goods (e.g. clothes, shelter). Individuals or households that live below this consumption threshold are known as poor.

²¹ $P_2 = \frac{1}{N} \sum_{i=1}^N \left(\frac{G_i}{z}\right)^2$

This shows that the poverty gap is divided by the poverty line, then squared and averaged to obtain P_2 .

gap also narrowed and squared poverty gap estimates are showing gradual improvement in income inequality among the poor.

Table 2.4: Trend of Income Poverty

	2010	2005	Annual Change (%) (2005 to 2010)	2000	Annual Change (%) (2000 to 2005)
Head Count Index					
National	31.5	40.0	-4.67	48.9	-3.90
Urban	21.3	28.4	-4.28	35.2	-4.20
Rural	35.2	43.8	-5.59	52.3	-3.50
Poverty Gap					
National	6.5	9.0	-6.30	12.8	-6.80
Urban	4.3	6.5	-7.93	9.1	-6.51
Rural	7.4	9.8	-5.46	13.7	-6.48
Squared Poverty Gap					
National	2.0	2.9	-7.16	4.6	-8.81
Urban	1.3	2.1	-9.15	3.3	-8.64
Rural	2.2	3.1	-6.63	4.9	-8.75

Source: Bangladesh Economic Review (2014).

Table 2.5: Division-Wise Incidence of Poverty by Head Count Index.²²

National/Division	2010			2005		
	Using the Lower Poverty Line					
	National	Rural	Urban	National	Rural	Urban
National	17.6	21.1	7.7	25.1	28.6	14.6
Barisal	26.7	27.3	24.2	35.6	37.2	26.4
Chittagong	13.1	16.2	4.0	16.1	18.7	8.1
Dhaka	15.6	23.5	3.8	19.9	26.1	9.6
Khulna	15.4	15.2	16.4	31.6	32.7	27.8
Rajshahi	21.6	22.7	15.6	34.5	35.6	28.4
Rajshahi (new)	16.0	16.4	14.4	-	-	-
Rangpur ²³	27.7	29.4	17.2	-	-	-
Sylhet	20.7	23.5	5.5	20.08	22.3	11
	Using the Upper Poverty Line					
National	31.5	35.2	21.3	40.0	43.8	28.4
Barisal	39.4	39.2	39.9	52.0	54.1	40.4
Chittagong	26.2	31.0	11.8	34.0	36.0	27.8
Dhaka	30.5	38.8	18.0	32.0	39.0	
Khulna	32.1	31.0	35.8	45.7	46.5	
Rajshahi	35.7	36.6	30.7	51.2	52.3	45.2
Rajshahi (new)	29.7	29.0	32.6	-	-	-
Rangpur	42.3	44.5	27.9	-	-	-
Sylhet	28.1	30.5	15.0	33.8	36.1	18.6

Source: Bangladesh Economic Review (2014).

²² Cost of Basic Need (CBN) method has been used to estimate incidence of poverty.

²³ Before the formation of the Rangpur division in 2010, it was part of the Rajshahi Division.

Moreover, understanding the division-wise incidence of poverty is useful in designing policy interventions and prioritizing resource allocation for gradual development of the region, particularly the spatial distribution of MFIs to combat poverty. While the division-wise incidence of poverty shows that affluent areas, particularly Dhaka, Chittagong and Khulna, observed lower levels of poverty incidence, the highest incidence of poverty was observed in the Northern (Rangpur) and Southern (Barishal) divisions of Bangladesh (Table 2.5).

2.5 Evolution of Microfinance: Bangladesh's Experience

Microfinance grew spectacularly from its inception in the mid-1970s, but changes in market structure and operational dynamics since 2000 – such as competition, innovation and product diversification, high market penetration and cost efficiency – have transformed the mix of services rendered in Bangladesh. Despite its initial aim to provide credit only to the unbanked and socially disadvantaged people, the microfinance industry has been transformed by demand for other financial services such as savings, micro-insurance, and remittances. In addition, rapid technological change has also transformed a once traditional, labor-intensive industry into a modern industry which provides financial services through mobile banking and electronic transmissions (Gómez-Barroso & Marbán-Flores, 2014; Kumar & McKay, 2010). In addition, MFIs have expanded their scope of activity to include the advocacy of ‘sustainable development’ through the promotion of environment-friendly activities, which is known as the third bottom line (Allet, 2012).²⁴ Among them, ‘Green Microfinance’ and ‘Microfinance Plus’ are two important features that have been targeted to cater to clients located in both rural and urban areas.

²⁴ The two bottom lines or ultimate goals of microfinance are ‘financial sustainability’ and ‘social outreach (sometimes referred to as ‘outreach’)’.

The massive proliferation of microfinance among the developing economies as a viable financial instrument to alleviate poverty, and the subsequent impasse it faced in Bangladesh, presents a mystery that development economists and economic historians have attempted to unravel. With the exception of Hollis and Sweetman (2001), few works have examined the economic efficacy of the microfinance industry in robust and sufficient detail. Hollis and Sweetman (2001) analyzed the life cycle of the 'Irish Loan Fund' longitudinally over 200 years and pointed to agency problems as the prime cause of its eventual decline. Meanwhile, using a broad and historical approach, Di Martino and Sarsour (2012) found macroeconomic instability, high-interest rates and attributes of borrowers as the main determinants of sluggish growth in 1995-2008 for the microfinance industry in Palestine.

Therefore, the aim of this section is to document historically the development of microfinance in Bangladesh by drawing on the evolutionary perspective advanced by the Life Cycle Theory (LCT).²⁵ Developed by Vernon (1966),²⁶ the LCT offers a useful framework for investigating phases of growth, change, and possible decline of particular firms and industries. Following the LCT perspective, an item or product will be developed through research in the initial phase. As the innovation becomes economically viable, the product would be produced and marketed by firms for sale to customers. As the product matures and the market becomes saturated with it, demand for the product would start to decline. Ultimately, the product would become obsolete and the technology to produce it becomes standardised. Firms then relocate the production of that obsolete product abroad to access new markets, while launching new products in the parent market. The lifecycle of a product can be divided into five phases, namely, introduction, growth, maturity,

²⁵ For brevity, this study assumes the homogeneity between life cycle and industry life cycle.

²⁶ Vernon (1966) had analyzed the phases of new product launch, maturity and decline, and how multinationals determine location decisions on the basis of these phases.

saturation and decline or demise.²⁷ Figure 2.3 shows the historical development of microfinance and provides a map of the various phases of development since 1976, which are elaborated in the next section.

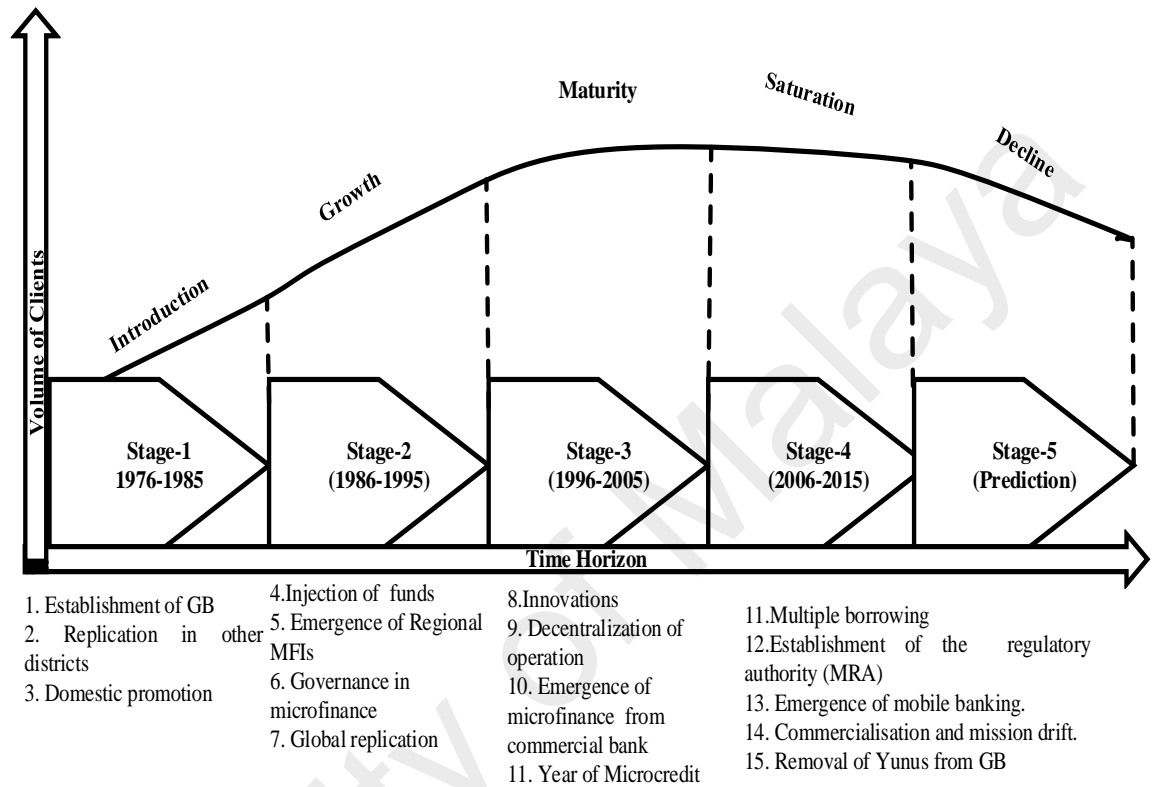


Figure 2.3: Stages of Development of Microfinance in Bangladesh (1976-2015).

Source: Authors' adaptation of the Life Cycle Theory.

This study discusses the main four stages that microfinance operations have passed through in Bangladesh. The focus is on the industry as a whole rather than any single MFI. Moreover, the duration of each phases is likely to be constant for 10 years based on the overall understanding of microfinance operation in Bangladesh. Nonetheless, this study also refers to Zaman (2004) arguments in a joint report published by Consultative Group to Assist the Poor (CGAP) and the World Bank to classify various

²⁷ Maturity and saturation are sometimes combined together to form a single stage in LCT.

phases of microfinance life cycle in Bangladesh. He stated that, “the 1980s witnessed a growing number of non-governmental organizations (NGOs) experimenting with different modalities of delivering credit to the poor. The various models converged around the beginning of the 1990s toward a fairly uniform “Grameen-model” of delivering microcredit. This last decade, especially, saw a sharp increase in access to microcredit. And in a recent years, the standard Grameen-model has undergone greater refinement in order to cater to different niche markets as well as to different life-cycle circumstances.” In addition to that, the study also considered Ahmed (2004, 2009)’s discussion when classifying the duration of the each stage. By doing so, this helps to simplify the LCT model and discussion herein. However, the duration for each of the phases should not be treated as an absolute measure and it may slightly vary.

2.5.1 Stage -1 (1976-1985): Experimentation and Introduction

Microfinance was introduced in Bangladesh during the mid-1970s, amidst economic turmoil arising from the combination of being born as a new nation and experiencing the first OPEC oil crisis. At Bangladesh’s independence in 1971, the country was emerging from the liberation war with Pakistan, which had devastated the economy and aggravated poverty, particularly in the rural areas. The situation was exacerbated by the great famine in 1974 when thousands of Bangladeshis perished as a result of the failure of the then newly-formed government to provide adequate assistance to over 80% of the total population who were living below the poverty line during 1973-1974 (Hossain, 2014). Military coups in 1975 further destabilized the economic situation. Economic growth at around 2% per annum in 1971-1975 denied policy makers the resources to help the poor. Bangladesh had to rely on international aid from the United States, Japan, Soviet Union and India to meet its development expenditure (Racioppi, 1994). However, even then the rural areas remained largely isolated from aid.

Concerned over the economic downfall and the harsh lives of the poor in Bangladesh, Muhammad Yunus was inspired to investigate such a failure while affiliated with Chittagong University. He brought several students with him to the nearby *Jobra* village of Chittagong district to experiment with novel approaches to assist the poor. After working with them, he realized that most of the poor people were trapped in a vicious cycle of borrowing and repaying as they did not have any financial capital for their small scale businesses. Moreover, the women were repaying much of their earnings to capital providers at overpriced rates. Yunus (2003) explained in his book by referring to a woman named Sufiya Begum, who is his one of the 'first lady' in microfinance as follows;

I watched as she set to work again, her small brown hands plaiting the strands of bamboo as they had every day for months and years on end. This was her livelihood...How would her children break the cycle of poverty she had started? How could they go to school when the income Sufiya earned was barely enough to feed her, let alone shelter her family and clothe them properly? It seemed hopeless to imagine that her babies would one day escape this misery...It seemed to me the existing economic system made it absolutely certain that Sufiya's income would be kept perpetually at such a low level that she would never save a penny and would never invest in expanding her economic base...It seemed impossible to me, preposterous. Should I reach into my pocket and hand Sufiya the pittance she needed for capital? That would be so simple, so easy. I resisted the urge to give Sufiya the money she needed. She was not asking for charity. And giving one person twenty-two cents was not addressing the problem on any permanent basis (Yunus, 2003: 47-48).

Impressed by the villager's skills, efforts and hard work, he realized that they needed access to loans with affordable terms and conditions (Levin, 2012). So instead of giving charity, Yunus created hope for the poor by creating a bank named Grameen Bank, not only to meet the credit demand of Sufiya alone, but also to meet the demand of hundreds of rural poor women. The concept of modern microfinance started in 1976, when he lent his own money, an amount of USD 27, to 42 women (Yunus, 2007). This small financial contribution to the poor created hope for their lives, means for their employment and

foresee a bright generations without poverty. Because nobody had gone to them or provided such financial services, but Yunus did. By doing so, he enabled the poor villagers (women) to break out from the cycle of debt. Due to his ground breaking idea of providing financial services to the poor and challenging the conventional banking system, Yunus is globally recognized. As a result of his contribution towards the poor and international development, he has been showered with hundreds of high levels international and national awards.²⁸

After years of negotiating with skeptical bankers, haggling reluctant government politicians and bureaucrats, Grameen Bank (GB) was officially established in 1983 as an independent bank legislated by the government through the enactment of the ‘Grameen Bank Ordinance-1983’. Nonetheless, during the introductory phase between 1976 and 1985 the program was extended to other districts of Bangladesh, such as *Tangail*, (a district North of Dhaka city). Inspired by the success of Grameen Bank, microfinance activities were gradually started by the Bangladesh Rural Advancement Committee (BRAC), Association for Social Advancement (ASA), *Jagorini Chakra* Foundation and *Proshika*.

2.5.2 Stage-2 (1986-1995): Growth and Expansion

The growth of microfinance gained momentum in the mid-1980s when similar types of MFIs were established across the country (Ahmed, 2009), which expanded strongly through ‘franchising’ as new branches replicated the procedures and norms of other branches of their parent organization (Zaman, 2004). The program also witnessed another distinguished feature with the introduction of locally developed MFIs to serve the poor

²⁸ Awards include the Nobel Peace Prize, Presidential Medal of Freedom (the Highest Civilian Honour in USA), Congressional Gold Medal (USA) and honorary doctorate degrees from over 20 countries. Additionally, Yunus also received highest national awards in Bangladesh including Presidents’ Award, Central Bank Award and Independence Day Award among others.

alongside the leading MFIs countrywide. For example, Basic Units of Resources and Opportunities of Bangladesh (BURO-Bangladesh), *Tenghamara Mahila Sabuj Sangho* (TMSS), and other leading MFIs emerged from different regions to meet the local financial demands of the poor. The sector expanded rapidly and the loans were disbursed through solidarity groups usually comprising five women, which came to be known as the ‘Grameen Classic System (GCS)’.

However, the group-based lending method gave way to individual lending owing to rising free riders problems among the group members. The relative failure of the group lending method was also caused by loose social ties (Lehner, 2009), high operational costs associated with group forming, group training and higher frequency of loan instalments (Shankar, 2007), penalties that discouraged good credit risk bearers (Giné & Karlan, 2014) and strategic defaults and lower repayment rates (Kono, 2006). It is for these reasons that GB discarded joint liability schemes from 2002, a move which was followed by other MFIs in the sector (Kono, 2006). Individual lending added impetus to the rapid growth of microfinance programs in Bangladesh. Indeed, Lehner (2009) predicted that the demand for individual lending will be further expanded in the sector. This is corroborated by the fact that it has significant impact on extending its outreach, operational sustainability and low delinquency (Kodongo & Kendi, 2013). Although women are the ultimate target in microfinance program, credit services have also been extended to men. Nevertheless, women still outnumber men and account for 80% to 85% of Bangladesh’s microfinance denominated loans.

The sources of funding also played a significant role in expanding the credit activities of MFIs during the growth phase. The sector grew rapidly after the establishment of *Palli*

*Karma-Sahayak Foundation (PKSF)*²⁹ in 1990, an apex body aimed at supporting financing activities of partner MFIs. The financing of microfinance operations was augmented by the joint participation of international development agencies, including the World Bank (WB), the United Nations (UN), Ford Foundation, Oxfam, Aga-Khan Foundation, and other national and international private donors. Nonetheless, the successful MFIs, particularly the leading and large MFIs, such as BRAC, ASA, Grameen Bank that had become financially stable, declined to receive further donations (Zaman, 2004). Thus, most aid from international agencies was channeled to newly-formed MFIs.

Additionally, the growth of the sector was augmented by the well documented and innovative success stories of the poor people during this growth phase (Ledgerwood, 1998). These success stories came at the moment when there were thousands of failure recorded by state-run, donor-driven and international-specialized financial institutions. The Nobel Prize winner, Joseph Stiglitz (2003), called the decade the “Roaring Nineties”, which saw the mainstream financial sector losing almost all sense of moral responsibility. The failure of the rural banks to reach targeted poor households further diminished in Bangladesh during this time (Khandker, 2005). Policy makers turned to microfinance as an effective financing platform to alleviate poverty. Apart from that, the lack of comprehensive formal regulation and supervisory oversight fuelled the growth of microfinance in Bangladesh during the period of 1986 to 1995 (Asian Development Bank, 2000).

²⁹ *Palli Karma-Sahayak Foundation (PKSF)* is an apex development organization established by the government of Bangladesh in 1990. They focus on financing partner MFIs by mobilizing funds from various sources, including government agencies and private funds.

This growth phase can also be referred to as a ‘scaling up’ phase as microfinance became institutionalized as the leading channel of financial support to the poor. Zaman (2004) distinguishes three important factors to elucidate the rapid expansion of microfinance in the early 1990s: leadership, staff incentives and learning by doing. The leading MFIs strongly held on to their conviction despite skepticism in society that microfinance could be a viable and replicable way for financing the poor. This vision attracted a dynamic workforce, which together with training, organizational building, and incentives, both monetary and non-monetary, boosted the growth of the sector. Effective learning by doing also synergized the MFIs to orientate their operations to the needs of the poor and the market. Moreover, community feedback, formal and informal assessments and academic evaluations of the program further strengthened the progress of MFIs. The spread of microfinance globally to East Asia, Latin America and the Caribbean, and African countries in the early 1990s was a consequence of the success achieved in Bangladesh.

2.5.3 Stage-3 (1996-2005): Maturity

As microfinance operations grew rapidly to become crowded domestically, it acquired several features over the period of 1996-2005 consonant with the LCT’s maturity stage. It was at the end of this period that microfinance, gained global recognition, culminating in the United Nations’ declaration of 2005 as the ‘Year of Microcredit’. The maturity phase was characterized by a range of developments, encompassing the formalization of governance practices of MFIs, decentralization of management practices, autonomy of branches, leadership skills development, inclusion of management information systems and controls (mostly in administrative operations), learning from mistakes, employee’s incentives and standard recruitment procedures. Gradually, the sector started to invest in human capital development, computerization of operational activities and began reducing

dependency on donors. In addition, MFIs from Bangladesh started to establish international branches in various regions across Asia, Africa and the Americas.³⁰ Figure 2.4 shows two important attributes of microfinance that relate to the LCT. First, it shows growth in the number of MFIs in Bangladesh between 1985 and the mid-1990s, and subsequently a gradual slowdown until 2000.

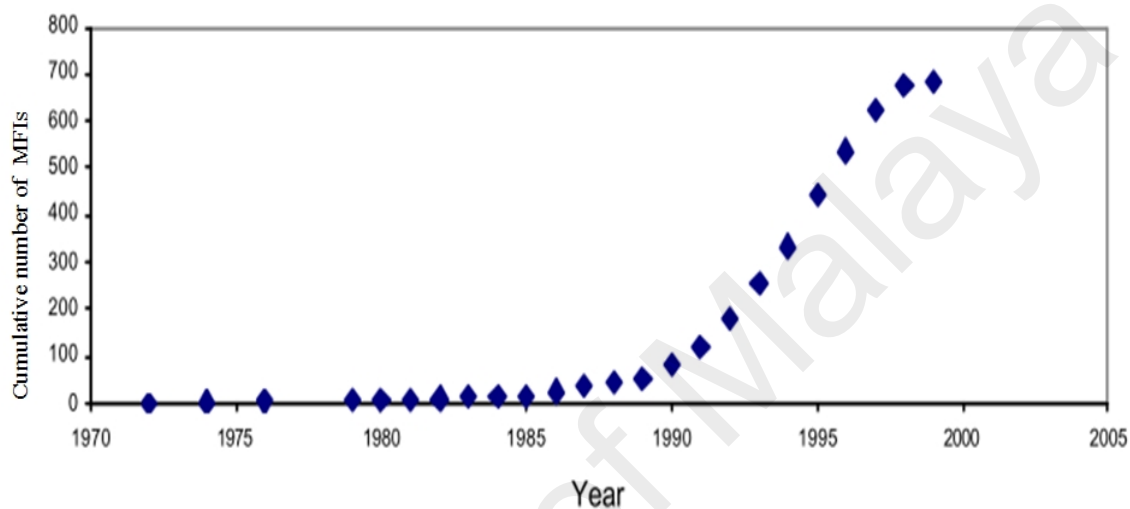


Figure 2.4: Evolution of Number of MFIs in Bangladesh (1970-2000).

Source: Adapted from Ahmed (2009).

Note: The number of MFIs only includes those that responded to the bi-annual survey by the Credit and Development Forum (CDF).

Innovation also characterizes mature microfinance markets. The shift from GCS to Grameen General System (GGS) (or Grameen-II) proceeded during this phase, and is considered one of the key milestones in microfinance operations, drawing on experiences of the preceding two decades of operation. This was prompted by at least two significant events: first, the boycott movement in 1995 by male chauvinists and religious fundamentalists who disapproved the activities of GB and pressured borrowers to stop repayment of loan instalments; second, a huge flood in 1988 which undermined economic

³⁰ For example, BRAC is operating in several countries, including Afghanistan since 2002), Pakistan, Myanmar, Sri Lanka, the Philippines, Haiti, Sierra Leone, Liberia, Tanzania, and Uganda.

activities in Bangladesh (Mainsah, Heuer, Kalra, & Zhang, 2004). These two events grossly raised financial defaults by the poor borrowers, thereby lowering repayment rates and posing a credible threat to the financial sustainability of MFIs. Consequently, the existing microfinance model during that time was redesigned by GB into Grameen-II, which includes comprehensive saving products, improvement of loan contracts and flexibility in loan repayments. Grameen-II' gained popularity quickly due to its distinctive and well-received financial features. A comprehensive discussion on Grameen-II and its various financial products can be found in Rutherford (2006) and Dowla and Barua (2006).

Other important innovations in microfinance included Green Microfinance (GM), Microfinance Plus (MP) (also known as credit-plus) and Micro Health Insurance (MHI), which were initiated during the mature stage to retain loyal customers while attracting new ones. Indeed, the new instruments have assisted microfinance operatives to compete well by enhancing their management of reputational risk with commercial banks and state banks, albeit the focus of the former is on the poor (Biosca, Lenton, & Mosley, 2014a). These innovations were initiated during the growth phase, but were not scaled up during that time due to the unavailability of funds and donors' focus on financial sustainability issues (Goldmark, 2006). Hence, these instruments gained momentum during the maturity phase when MFIs have already shown some level of financial viability (Lanao-Flores & Serres, 2009; Viswanath, 2015; Biosca, Lenton, & Mosley, 2014b).

GM and MP ideally operate in tandem. On one hand, GM provides basic incentives to the poor in energy and environment related activities to encourage environment friendly practices and sustainable development, such as, in the formulation of environmental policy, clients environmental risk assessment, use of environment friendly technologies in organisations, intervention in improving use of energy efficiency, organic production,

ecotourism, agroforestry, recycling and creating mass environmental awareness in the society (Forcella & Hudon, 2016). On the other hand, MP provides developmental services to clients, including human development training, capacity building, housing, education, health, disaster management, marketing of products, and most importantly, information related to basic civil rights. MP basically constitutes non-financial services that are provided to the socially underprivileged (Lensink, Mersland, & Nhung, 2011). Although Grameen Bank, BRAC, ASA, TMSS and other leading MFIs initiated those services, it has been largely promoted by other MFIs in the industry.

To enhance the health status of the poor, the MHI scheme started to cover health-related financial expenses of the poor by generating small and regular payments from the clients as a premium that substantially reduces their vulnerability (Mosley, 2003). This was started by GB in 1996 when it incorporated health services for the poor through the establishment of the Grameen *Kalyan* (Wellbeing). The MHI service by GB officially started in 1997 and aimed to work both as an insurer and service provider (Ahmed, Islam, Quashem, & Ahmed, 2005). In 2001, BRAC officially started the ‘Micro Health Insurance project for Poor Rural Women in Bangladesh (BRAC-MHIB)’ with financial and technical assistance from the International Labour Organization (ILO). This initiative shaped and expanded micro-insurance activities across the country (Matin, Imam, & Ahmed, 2005). According to Werner (2009), the top three MHI providers of GB, BRAC and Society for Social Service (SSS) had 115,000 policy holders and 560,000 lives insured under the scheme in Bangladesh.

While conventional microfinance loan products were dominating the industry, the initiation of asset transfer program as suggested by the field workers to target the ultra-poor in Bangladesh started in 2002 by BRAC with a coverage of 100,000 households (Mair & Marti, 2009). This is one of the prompt delivery mechanism to provide a local

solution to the extremely poor districts, such as *Rangpur*, *Nilphamari* and *Kurigram* (located in the northern part of Bangladesh). The main purpose to initiate such program is to target the ultra-poor women because they are most likely to stay on the homestead due to socio-cultural and religious norms (Roy et al., 2015; Meyer, 2002). Such asset transfer program by MFIs in Bangladesh is largely found effective and a hope for the marginalized (Roy et al., 2015; Raza et al., 2012; Krishna et al., 2012). Moreover, when *SafeSave*³¹ realized that frequent small deposits by the poor could guard their spending temptation, they started to collect savings by employing a (poor) worker (can also be a member) from the collection area (Sengupta & Aubuchon, 2008). This has helped at least in two ways. First, the convenient for the poor who wants to deposit and second, low cost for the institutions as they employ local who can understand the needs of the poor better. Nonetheless, the savings services provided by MFIs also gradually changes over the years from compulsory to flexible savings scheme with various attractive features (short term, long term and savings for non-member) as discussed by Dowla and Alamgir (2003). Moreover, after two rounds of face to face interview with Yunus, Esty (2011) comprehensively discussed the gradual change in operational activities of Grameen, management style and several innovations (including savings scheme).

The successful expansion of MFIs and the financial viability of their operations attracted the interest of commercial banks to provide microfinance services in Bangladesh. The Islami Bank of Bangladesh Limited (IBBL) was the first to start the 'Rural Development Scheme' in late 1995 (Alamgir, 2010). Furthermore, state banks, such as *Rajshahi Krishi Unnayan Bank* and *Bangladesh Krishi Bank*, and commercial banks, such as *BASIC Bank*, *Ansar VDP*, *National Bank*, and *Trust Bank* started to

³¹ *SafeSave* established in 1996 as an MFI, which works in eight low income areas in Dhaka. Currently, it is now a project of BRAC. For more details, see <http://www.safesave.org/home>.

finance small and medium enterprises to foster entrepreneurship among the poor (Mia, 2016). In 1998, CGAP welcomed the entry of commercial banks into microfinance activities and described them as ‘new actors in the microfinance world’. However, microfinance has remained a small share of operations of commercial banks and tend to be targeted at small-scale operatives led by financially-sound owners (Mia, 2016).

2.5.4 Stage-4 (2006-2015): Saturation

Although the conferment of the “Nobel Peace Prize in 2006” to microfinance and Professor Muhammad Yunus expanded its programs to other countries, the sector showed signs of overcrowding in Bangladesh. The potential market for microfinance had reached its limit, suggesting the onset of a saturation phase. Particular MFIs were only able to expand their shares in the market by squeezing out other shares. The market share of the two largest MFIs in terms of total loans outstanding fell from 57% in 2009 to 48% in 2014 (MRA, 2009, 2013). Furthermore, the total number of clients and borrowers in Bangladesh, which had peaked in 2011 following a dip in 2007 and began to fall thereafter (Figure 2.5). On other hand, average number of clients per branch gradually decreased from 2006 to 2012 and then remained relatively stable from 2013 to 2015 (Figure 2.6). This declining trend of total, and average number of clients per branch is mainly due to a rapid horizontal expansion in a geographically saturated market. For example, based on Table 2.6, it can be understood that the number of branch was gradually increasing from 2007 to 2012 and then followed a decline till 2015. In response, average number of clients gradually decreased till 2012 and remained stable after a sudden increase thereafter. A similar kind of trend could also be observed for the average number of borrowers per branch.

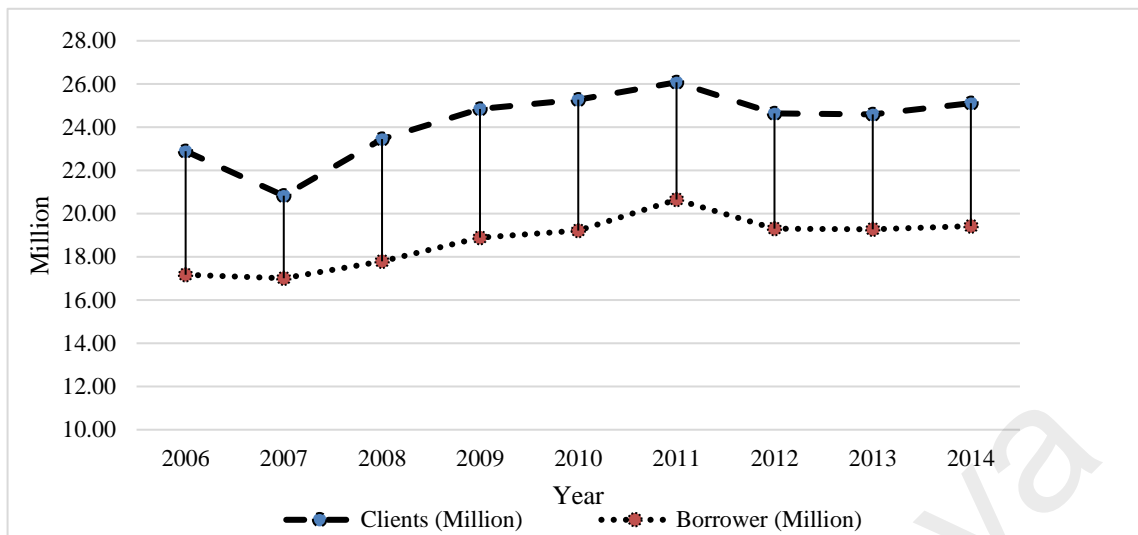


Figure 2.5: The Trend of Total Clients and Borrowers in Bangladesh (2006-2014).

Source: Authors' computation from various MRA annual reports.

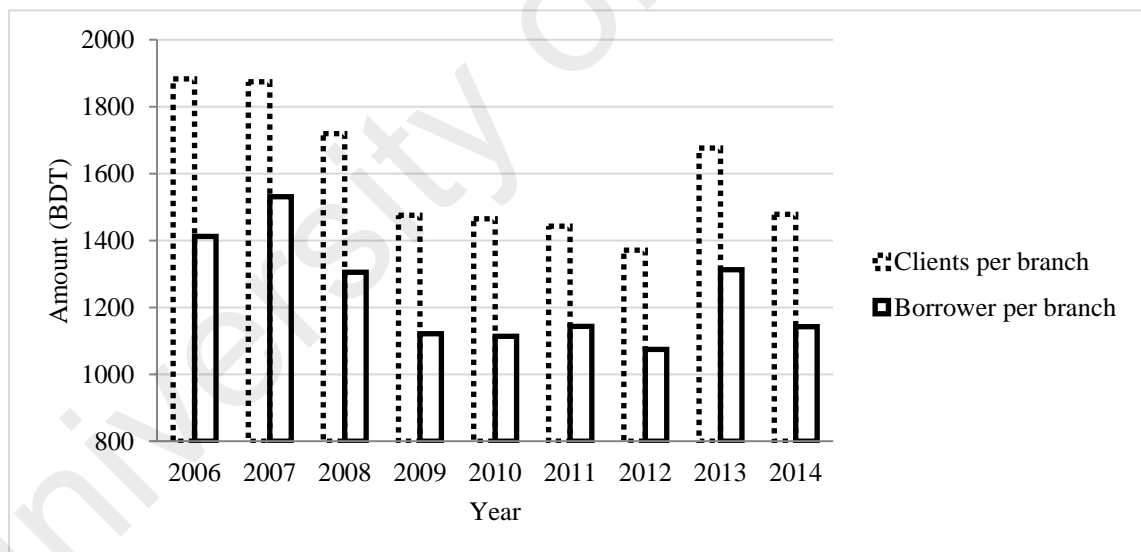


Figure 2.6: Average Number of Clients and Borrowers per Branch (2006-2014).

Source: Authors' computation from various MRA annual reports.

Another salient state of saturation is the presence of multiple borrowing (also known as 'cross membership'). Multiple borrowing simply refers to multiple microfinance membership by an individual or a household. When an individual borrower takes loans

from more than one MFI, it is called '*individual multiple borrowing*', and if more than one person from the same household borrows from the same or different MFI, it is called '*multiple household borrowing*' (Faruqee & Khalily, 2011b). Figure 2.7 describes the trend of multiple borrowing in the microfinance sector in Bangladesh from 2002 to 2009. Faruqee and Khalily (2011b) found that individual and multiple household borrowings grew by over twofold during 2002-2009. Moreover, the trend of multiple household borrowing remains higher with that of the former, and a wider gap can be observed between the two in the later period of the study. Rational borrowers when facing smooth loan application processes, tend to encourage family members to obtain loans rather than increasing their own individual borrowings from MFIs.

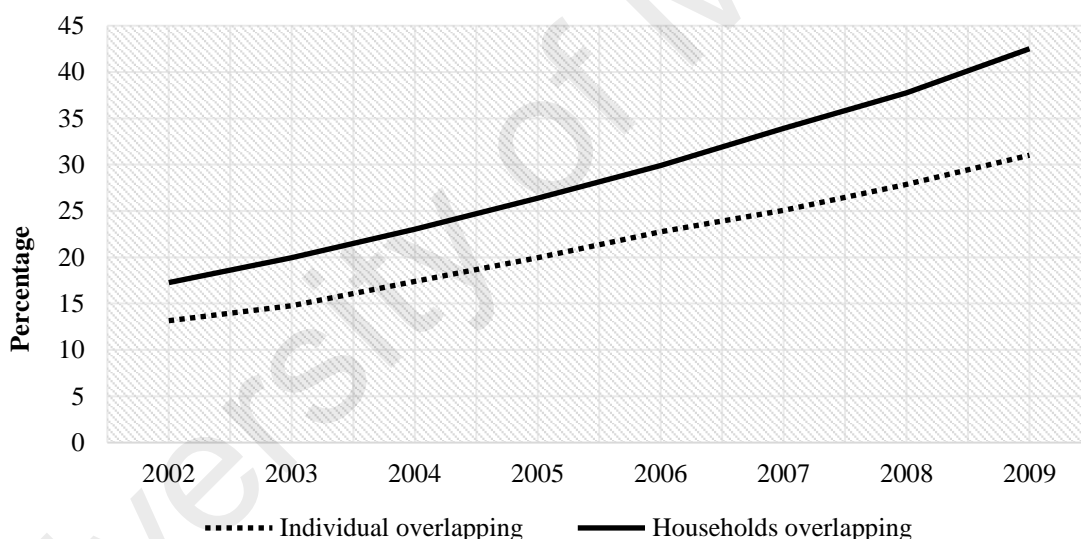


Figure 2.7: Multiple Membership in Microfinance, Bangladesh (2002-2009).

Source: Authors' calculation based on the estimates of Faruqee and Khalily (2011b).

Under certain conditions, multiple borrowings could represent negative developments for the poor and society at large as the system becomes biased towards borrowers with a track record rather than new borrowers. When significantly large loans are taken by a few borrowers, loan reserves may reach exhaustion; this limits access for potential new borrowers from the poorest of the poor. Additionally, multiple borrowing can also be a

drain on the poor. For example, Chaudhury and Matin (2002) observed that ‘some households went without food when they had difficulty in repaying loans as a consequence of multiple borrowing’. This has also forced borrowers into ‘debt trap’ or ‘debt peonage’; such borrowings are no longer pulling them out from the vicious cycle of poverty (Fafchamps & Gubert, 2007; Faruqee & Khalily, 2011b). This multiple borrowing is further caused by the outcome of loan pushing (an attempt to increase the market share), consumption loan, size of the loan³² and characteristics of borrowers and households.

Table 2.6: Basic Indicators of NGO-MFIs in Bangladesh (2006-2014).

Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014
No. of Licensed NGO- MFIs	641	344	293	419	516	576	590	649	742
Branch	12,156	11,112	13,636	16,851	17,252	18,066	17,977	14,674	14,730
Borrower to client’s ratio (%)	75.01	81.66	75.86	76.02	75.99	79.18	78.37	78.33	77.34
Loan Outstanding (LO) (Taka)	75.20	85.87	134.68	143.13	145.02	173.79	211.32	257.01	282.20
LO (USD)	0.96	1.10	1.73	1.83	1.86	2.23	2.71	3.30	3.62
Loan Outstanding per Branch (Mill)	6.19	7.73	9.88	8.49	8.41	9.62	11.76	17.51	19.16
Total Savings (TS) (Taka)	27.64	37.76	47.38	50.61	51.36	63.30	75.25	93.99	106.99
TS (USD)	0.35	0.48	0.61	0.65	0.66	0.81	0.96	1.21	1.37
Savings to LO ratio	36.76	43.97	35.18	35.36	35.42	36.42	35.61	36.57	37.91
Recovery Rate (%)	90.00*	95.00*	98.06	97.93	97.35	95.52	97.74	97.69	95.64

Source: Authors’ compilation from various MRA annual reports. *Reported as equal or above 90% and 95% for 2006 and 2007 respectively. Note: LO and TS are in Billion.

The saturated market has also adversely impacted the financial performance of MFIs. For example, the loan recovery rate, (a proxy of the quality of the loan portfolio), has been negatively affected, which is apparent because expanding credit in the saturated market to the pool of borrowers results in deteriorating portfolio quality and exposure to risky loans (Gonzalez, 2010; Lutzenkirchen & Weistroffer, 2012). Gonzalez (2010) argues that when market penetration rates exceed 8% of the total population, portfolio quality diminishes. In the case of Bangladesh’s microfinance sector, on average the market penetration rate is above 25 %, which is three times more than the threshold

³² Due to small average loan size, people may borrow from various MFIs and tie them together for business expansion or new venture.

estimated by Gonzalez (2010). Despite few oscillations, the loan recovery rate have remained relatively stable from 2008 to 2013, however, the overall industry recover rate dropped over 2 percent in 2014 (Table 2.6). By looking at the loan collection rate for one of the largest MFIs, Grameen Bank, it could be seen that there is indeed a declining trend between the period of 2002 to 2013 (Roodman, 2010). While the highest loan collection rate was 99% in 2003, the lowest was in the year of 2011 (slightly below 96.5%) (Figure 2.8). It can be argued that the ensuing effect of multiple borrowing that increases liability and irregularity of loan repayments may also contribute to the low recovery rates or loan collection rates (Chaudhury & Matin, 2002; Mpogole, Mwaungulu, Mlasu, & Lubawa, 2012).

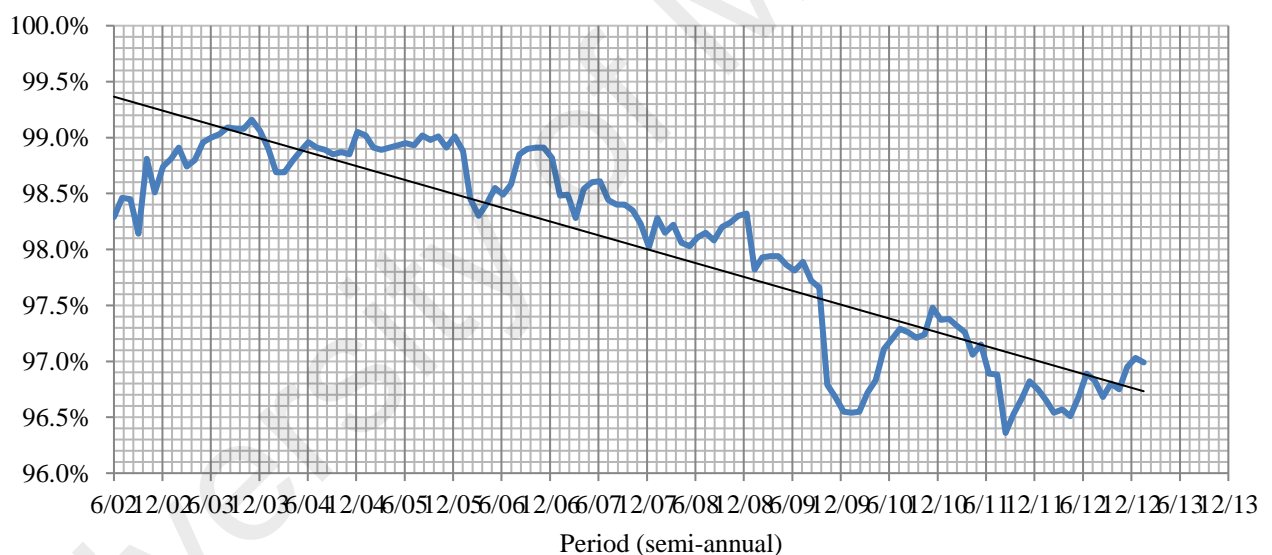


Figure 2.8: Grameen Bank Loan Collection Rate (2002-2013)

Source: Roodman (2010). Note: Amounts due actually paid.

Furthermore, the ‘commercialization’ aspect of microfinance, has been an increasing concern among academics and policy makers, raising questions and debates on whether microfinance has suffered from ‘mission drift’ and deviated from its founding purpose of serving the poorest of the poor. Although the initial aim was to help poor borrowers without any financial gain, profit motive now encroach on the operations of MFIs.

Commercialization and the corresponding higher interest rates confine social outreach, because MFIs find it easy to make profits by providing larger loans to wealthier clients and by-pass the poorest of the poor (Abrar & Javaid, 2014; Lensink, Meesters, & Hermes, 2011; Perera, 2010).³³ Moreover, the former are the lower risk borrowers to whom MFIs gravitate as they wish to make fewer but larger loans with less risk as part of the commercialisation drive. Data also show that the average loan size per borrower steadily grew from 2006 to 2008, became stagnant from 2008 to 2010 and then increased again from 2011 to 2014 in the microfinance sector in Bangladesh (Figure 2.9). This stagnation from 2008 to 2010 could be attributed to the global financial crisis in 2008/2009 that shrunk the financing opportunities of MFIs from both the local and international capital markets as well as contractionary policy intervention by MFIs as a response to the crisis.

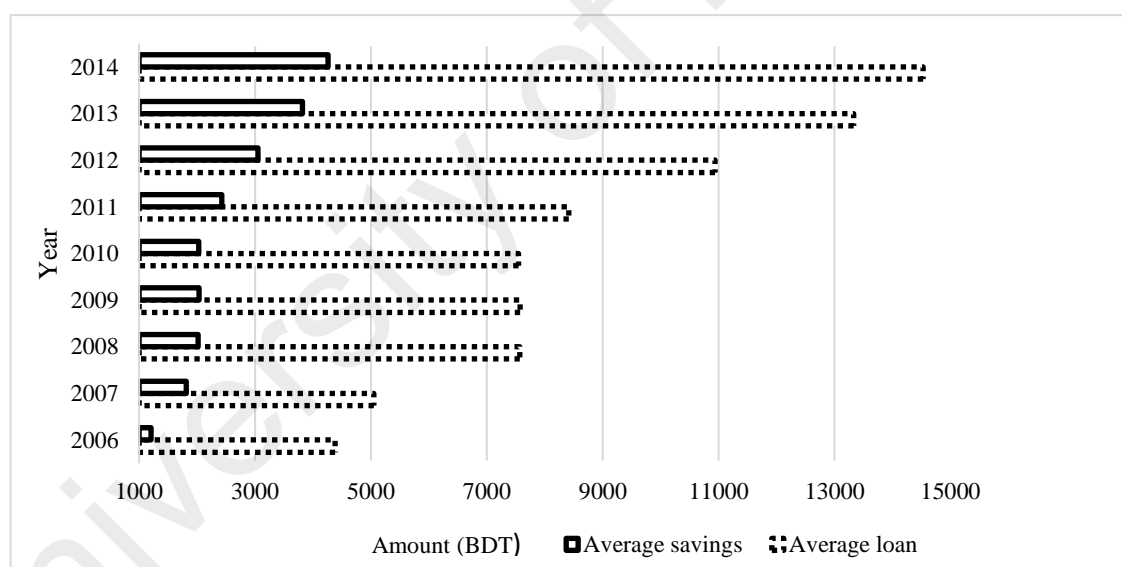


Figure 2.9: Average Loan and Savings in MFIs (2006-2014).

Source: Authors' computation from various MRA annual reports.

³³ Generally, poor people demand small amount of loans and average loan size is used as a depth of outreach indicator in the existing literature. Smaller the size of average loan, greater the depth of outreach.

This shift of commercialized MFIs to provide larger loans to the non-poor is justified by their claims that poor people are riskier; granting loans to them retards the quality of the loan portfolio and increases non-performing loans cum lower profits. Due to these commercialization intentions, Sinclair (2012) pointedly argues that today's microfinance has been hijacked by the profiteers, and urges the relevant authorities to reclaim it for the greater benefits of the poor. Moreover, mission drift may also result from particular lending methodology, focus market and gender biased (Mersland & Strøm, 2010). The duo found that average cost significantly increases when focused on group lending, rural market and more female customers. Thus, MFIs may allegedly turn to provide individual loans, service clients from urban areas and focus on fewer women to minimize their cost of operations. In line with the market focus of MFIs, Sharma and Zeller (1999) also claimed that there is a tendency of MFIs to locate their branches or establish a new MFI in more well-off areas. However, whether this commercialisation aspect is further promoted by the involvement of commercial banks, government banks, credit unions or financial cooperatives requires further attention from the academics.

Recognizing the problems arising from a saturated market, the government responded by establishing a regulatory authority to supervise and control the microfinance sector in Bangladesh. The MRA was officially established in 2006 through the enactment of the 'Microcredit Regulatory Act 2006'. Since then, the microfinance sector in Bangladesh has observed some changes targeted at averting further saturation through controlling the number of MFIs in the industry, which is a move welcomed by both the policymakers and practitioners. Although the job scope of MRA is diverse in nature, their main role is in issuing, rejecting or withdrawing licenses of MFIs. However, it has remained a challenge for the MRA to maintain a healthy and conducive microfinance environment.

Despite shortcomings, the saturation phase was also characterized by the advent of technology based services to target clients, such as mobile banking. Although the use of technology in microfinance operations is not new, using it to target clients is a relatively novel approach. Despite being in its nascent stage, there is a potential of such services to expand in the market (Islam, 2013). The leading NGO-based MFI in Bangladesh, i.e. BRAC, pioneered an innovation called '*bKash*'.³⁴ The microfinance sector has benefited through the scaling up of these innovative financial products to provide hassle free and reliable financial services to clients, which has reduced operation costs and bolstered financial sustainability among MFIs.

2.6 Overview of the Microfinance Industry in Bangladesh

In this section, some key characteristics of the microfinance industry in Bangladesh are presented, including the regulatory framework, governance structure of the MRA, locations of the head offices of MFIs and sources of funds.

2.6.1 Regulatory Framework

The microfinance sector has flourished as a private initiative all around the world and in Bangladesh in particular. Initially, the sector was not regulated, and there was neither a stratagem nor an independent regulatory authority to control and supervise microfinance in Bangladesh. Before 2006, MFIs were registered under different acts. Following remarkable success and spectacular growth, the microfinance sector worldwide has gradually come under regulations, either through existing bank legislations or independent regulatory authorities. In 2006, almost three decades after the initiation of microfinance in Bangladesh, an independent regulatory authority was established, known

³⁴ *bKash*, established in 2011 as a joint venture between BRAC Bank Ltd. and Money in Motion LLC, USA, gained popularity in a very short period of time. The ultimate objective of *bKash* is to ensure access to a broad range of financial services for the people of Bangladesh. For more information please browse, <http://www.bkash.com/about/company-profile>.

as the Microcredit Regulatory Authority (MRA) (Law 32 of the year 2006). The original aim behind the establishment of the MRA was to create a conducive and healthy environment for microfinance practices across the country and to secure the interests of clients of MFIs without altering the long-term sustainability of MFIs. To achieve these two goals, MRA has provided detailed guidelines for MFIs to enhance governance practices. Additionally, they advocate for prudential policy design, greater competition, productivity and efficiency for long-term sustainability of the sector (MRA, 2015).

The MRA was set up in 2006 as a culmination of several short-term regulatory committees and commissions. For example, in 1997, the Central Bank of Bangladesh commissioned a study to examine the viability of regulatory aspects of MFIs and a formal committee was formed in 2000 for this purpose. Based on the recommendation of the commission, the government then took necessary steps to establish a formalized independent authority to monitor and control the sector. Six years after forming the committee, the government finally enacted the 'Microcredit Regulatory Authority Act 2006' in 2006.

With the enactment of the Act, all NGO-MFIs are now under the control of MRA. However, other types of MFIs, such as cooperatives, credit unions, non-bank financial institutions, and state-owned or commercial banks (that provide microfinance) are not under the jurisdiction of the MRA. Rather, they are supervised under the Acts of their respective authorities, from which they have obtained their operating licenses. These types of MFIs are also beyond the scope of this study as they do not have comprehensive data. Thus, constitutionally, MRA is the only legal entity that monitors and supervises NGO-MFIs operational activities in Bangladesh.

Each MFI requires a license from the MRA to carry out microfinance activities in the country. The registration process of MFIs is accomplished in two steps. First, an MFI should get a license from the NGO Affairs Bureau of Bangladesh to be eligible to register under MRA. After receiving the application, the MRA designates a provisional period to observe the performance of the MFI. Depending on the MFI's performance during the provision period, a license to operate microfinance programs may be granted. NGO registration can be done under any of the following existing Acts in Bangladesh;

- I. The Societies Registration Act, 1860 (Act XXI 1680)
- II. The Trust Act, 1882 (Act II of 1882)
- III. The Voluntary Social Welfare Agencies (Registration and Control) Ordinance, 1961 (Ordinance number, XLVI of 1961)
- IV. The Companies Act, 1994 (Act XVIII of 1994)

To ensure transparency and accountability of microfinance operations and activities, the authority is also in charge of withdrawing licenses if MFIs fail to comply with requirements set by the MRA.

2.6.2 Governance Structure and Scope of the MRA

Figure 2.10 shows the organogram of the MRA. Based on data provided by the MRA, there is a total of 63-65 personnel headed by an Executive Vice Chairman and 7-8 members on the Board of Directors. Under the Director of Operations, 9 staff members are responsible for onsite supervision and 4 are in command of audit and offsite supervision. This small human resource pool is certainly insufficient to supervise and control a sector with over 33 million clients and more than 700 MFIs (MRA, 2015). Implementing the acts and regulations of MRA requires significant manpower, fiscal strength and collaboration of the associated parties.

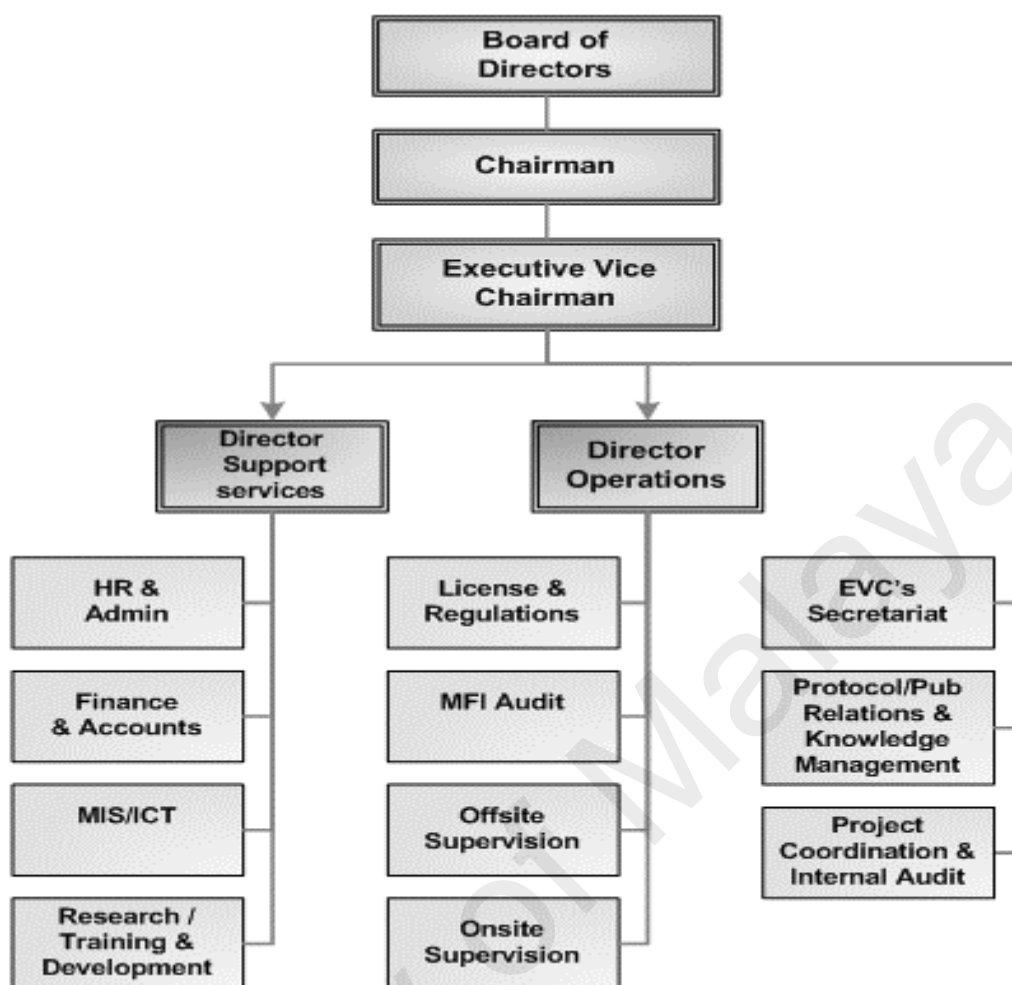


Figure 2.10: Governance Structure of the MRA

Source: Adapted from MRA (2015).

Generally, MRA announces rules targeted to MFIs or associated parties through circulars. Up to July 2016, there were a total of 36 published circulars, the majority of which are rules and regulations meant for MFIs. However, more comprehensive amendments were published in 2010 and 2014. The 2010 amendment broadly discusses registration procedures, the structure of MFIs and their governing body, operational activities of MFIs (such as sources of funds), rights of the clients, products and services, and other relevant issues in the industry. The 2014 amendment added several clauses related to the governance practices of MFIs and extended rules related to the deposits of the clients. Recently, another important initiative of MRA is to publish legal notices on

its official website if the license of an MFI has been canceled or terminated. The aim of such initiative is to better inform the clients and relevant authorities, such as funders, as the information becomes easily accessible and available to the masses.

Ultimately, the main limitation of the MRA is its weak and low institutional capacity. The microfinance sector is large and scattered across the country, whereas a centralized regulatory authority has limited operational capacity. To achieve its aim, the MRA should have regional offices for effective monitoring and control of microfinance activities.

2.6.3 Locations of the Head Offices of MFIs

The majority of the head offices of MFIs are located in the Dhaka division, particularly in Dhaka districts, including Grameen Bank, BRAC, Association of Rural Advancement (ASA), *Thengamara Mohila Sabuj Sangha* (TMSS), Basic Unit for Resources and Opportunities of Bangladesh (BURO-Bangladesh) and other leading MFIs (Table 2.7). Although some of the MFIs originated from other parts of the country, they have established their head offices in Dhaka (for example, TMSS and Grameen Bank, *Gram Unnayan Karma – GUK*). This is due to the accessibility, facilities and other associated locational advantages that enhance MFIs' domestic and international connections. The second largest number of MFIs was once in the Rajshahi division. With the emergence of the new Rangpur Division in 2010, the Rajshahi division stood at 4th place after Khulna and Chittagong in 2014. The number of head offices in Khulna gradually increased and exceeded the Chittagong division in 2014, while the number of MFIs in the Sylhet division remained stable from 2009 to 2012 and increased slightly in 2013 and 2014.

Table 2.7: Division-Wise Head Offices of MFIs.

Division	June, 2009		June, 2010		June, 2011		June, 2012		June, 2013		June 2014	
	MFIs	%	MFIs	%	MFIs	%	MFIs	%	MFIs	%	MFIs	%
Dhaka	195	46.60	240	45.78	269	46.38	273	44.17	294	42.61	302	43.33
Rajshahi	78	18.20	97	19.06	105	18.10	86	13.92	95	13.77	95	13.63
Rangpur							34	5.5	36	5.22	36	5.16
Khulna	64	15.53	73	14.34	82	14.14	91	14.72	107	15.51	109	15.64
Chittagong	51	12.14	66	12.79	81	13.97	92	14.89	106	15.36	101	14.49
Barishal	23	5.58	30	5.89	33	5.69	32	5.18	38	5.51	39	5.60
Sylhet	8	1.94	10	1.96	10	1.72	10	1.62	14	2.03	15	2.15
Total	419	100	516	100	580	100	618	100	690	100	697	100

Source: MRA (2012).

2.6.4 Evolution of Sources of Funds in MFIs

The understanding of sources of funds in microfinance is significant for two main reasons, namely, sustainability and professionalism. When the sources of funds are expensive, MFIs find it difficult to lend to clients at cheap rates. Furthermore, to maintain the financial self-sufficiency mandated by the funders, MFIs may tend to charge higher prices for their products and it could be consonant with the ‘commercialization’ aspects of microfinance (Rahman & Charitonenko, 2002). Hence, the usage of expensive sources of funds not only diverts MFIs from their original focus, but also becomes an obstacle to financial sustainability due to high operating costs. Secondly, subsidized funds, soft loans and donations that support the activities of MFIs may also be challenging professionalism in microfinance operations. Dependency on subsidy or donations could ultimately hamper the competitiveness and effectiveness of MFIs (MRA, 2015). Hence, the following section will discuss the evolution of sources of funds and their role in MFIs.

Credit or financial constraint is a common phenomenon in developing and underdeveloped countries as the availability of loanable funds are not abundant (Schmidt-Hebbel, Webb, & Corsetti, 1992) and Bangladesh is no exception. Moreover, in rural settlements, the lack of banking facilities is considered detrimental to the poor and their ability to save. This has been supported by the ‘institutional savings theory’ regarding the effects of institutional factors, such as availability of the financial institutions, on the

saving behavior of low-income families (Beverly & Sherraden, 1999). As such, MFIs face considerable challenges and competition to fund their microfinance activities as they do not have access to the capital market and personal investors (Servin, Lensink, & van den Berg, 2012). Hence, it is interesting to investigate how MFIs obtain funds. The following section will provide an answer to that question.

While most MFIs were heavily funded by donations during the initial stage of microfinance evolution (Figure 2.11), however, the pattern of the sources of funds in the microfinance sector in Bangladesh has changed dramatically in the last two decades. Although the funds were mostly limited to internal financing (cumulative surplus and savings) as well as donations or soft loans, the microfinance sector observed nine sources of funds during the study period (2009-2014). In comparison with other countries, the microfinance sector in Bangladesh has the most diverse capital structure portfolio and sources of funds.

Based on data provided by the MRA, NGO-MFIs in Bangladesh mostly depend on clients' savings, cumulative surplus, funds from PKS³⁵, government funding, commercial bank loans, other loans, donor funds and other funds. The lion share of the capital structure of the sector comes from savings, cumulative surplus, commercial banks, funds from PKS, borrowing from MFIs and donations (Figure 2.12).

³⁵ *Palli Karma-Sahayak Foundation (PKS)*, an apex development organization, was established by the government of Bangladesh in 1990. They focus on financing their partner MFIs by mobilizing funds from various sources including government agencies and private funds.

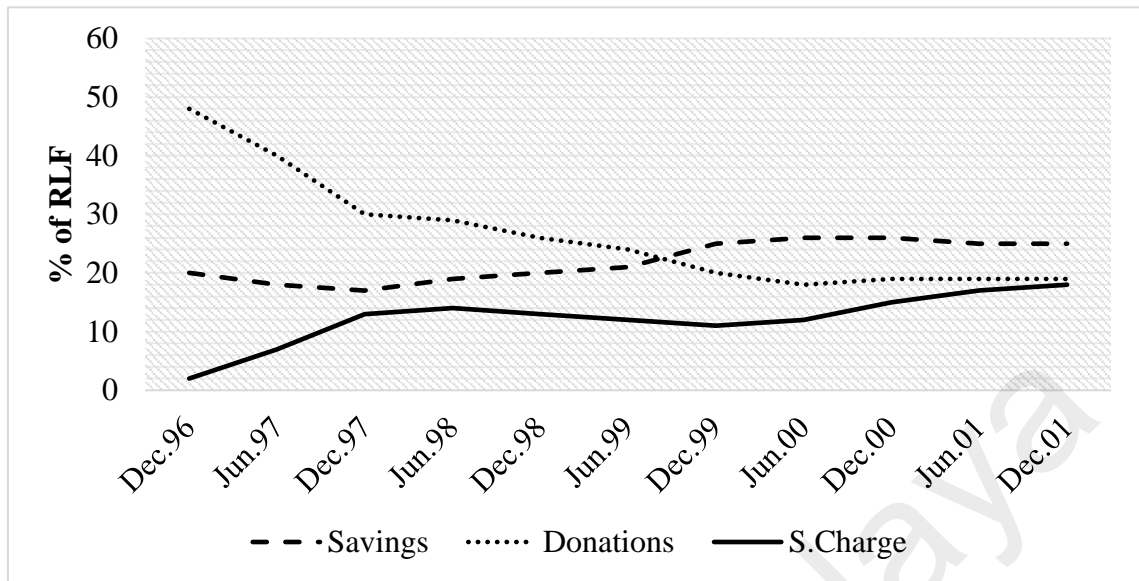


Figure 2.11: Funding Evolution in the Microfinance Sector (1998-2001).

Source: Haque and Rashid (2002).

Note: RLF: Revolving Loan Fund, S. Charge: Service Charge.

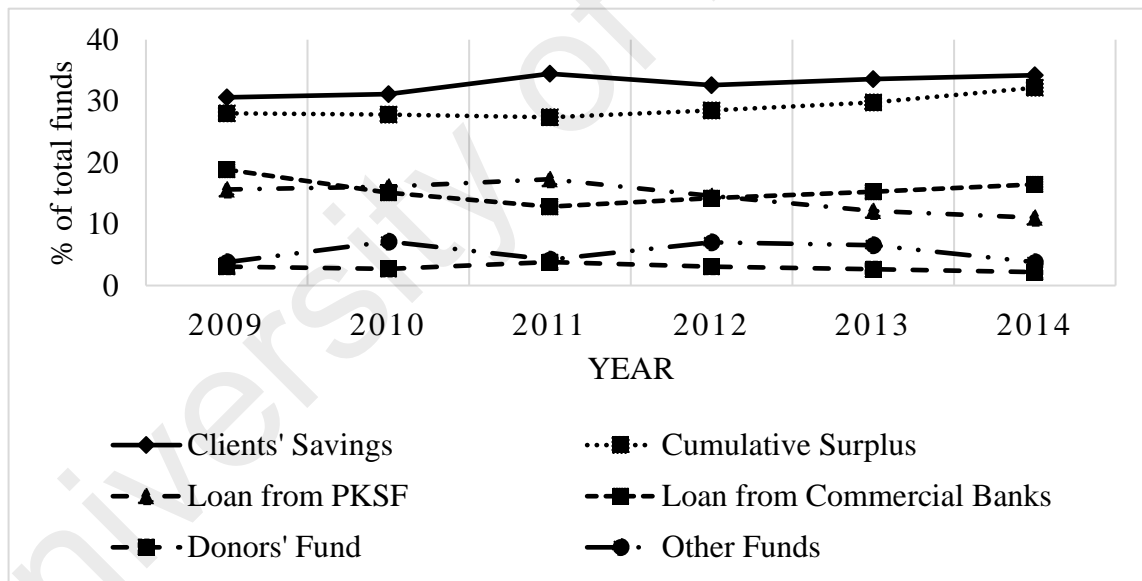


Figure 2.12: Funding Evolution in the Microfinance Sector (2009-2014).

Source: Author's calculation from various MRA annual reports.

There are distinguishable differences between sources of funds. If an MFI uses internally-generated sources of funds, such as from clients' savings and cumulative surplus, their funding structure could be linked to the Grameen-Model of funding

(Hoque, Hoque, Chishti, & Hallaway, 2011). This is due to the fact that Grameen Bank, a role model in the global microfinance industry, uses these two sources of funds extensively in their operations. Loans and subsidies from PKSF, government funds, peer borrowing from other MFIs and donors are considered to be soft loans. These sources of funds are most likely to fall under the category of quasi-equity, which refers to funds with a mixture of debt and equity components. Other sources of funds, such as loans from the commercial banks, are considered hard loans and debt financing. The remaining two sources of funds, other loans and other funds, are most likely to be from philanthropy or charity; these do not constitute much of the capital structure in Bangladesh's microfinance industry. Figure 2.13 categorizes the sources of funds based on these four broad classifications.

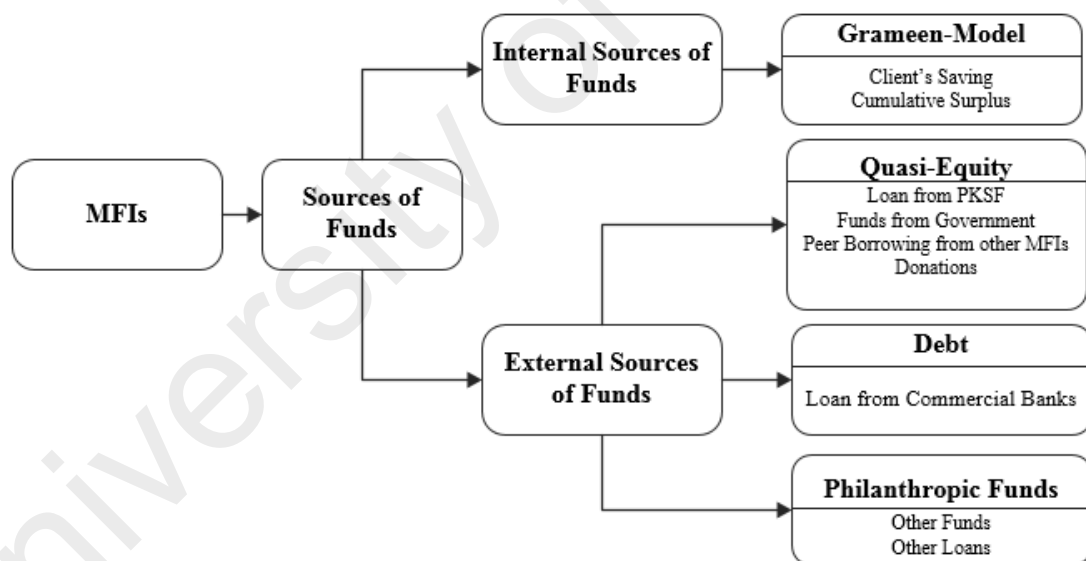


Figure 2.13: Categorization of Sources of Funds

Source: Author's.

Initially, the main source of funds for MFIs was donations, with a percentage that stood at almost 50% in December 1998 (see Figure 2.11). However, the contribution of donations substantially decreased to less than 20% at the end of 2001, causing a radical

change in the financing pattern of MFIs in Bangladesh. The rationale behind the donors injecting millions of dollars into microfinance operations was to deepen the social outreach, as extending credit to the poor is expected to enhance their livelihoods (Quayes, 2015). Thus, donors in microfinance are viewed as a social investor (Morduch, 2000; Woller et al., 1999). These social investors who emphasize more on social change than monetary gain are agreed to expect lower return as they also gain intrinsic value by financing microfinance projects (Brau & Woller, 2004). Hence, donations are given on the conditions that MFIs achieve financial sustainability as well as extend their financial services to the poorest of the poor to achieve social outreach goals. Additionally, in conventional wisdom, providing financial services to the financially excluded is a noble idea which benefits not only the clients but also the overall society. Such a charitable project attracts international donor community and funding agencies to become involved with the microfinance scheme (Vanroose, 2015). However, it should be kept in mind that there are donors who do not expect any return from their investment in microfinance, be it social or financial return, rather than their sole intention to just donate.

The recent scenario is more opaque as the amount of donations had declined to only 3% of the total loan outstanding at the end of 2014 (Figure 2.12). It may be possible that donors have shifted their focus from the microfinance market in Bangladesh to those in other countries, or it may reflect an actual decline in the total donations. Aggregately, however, the amount of donations to the worldwide microfinance industry amounts to almost 1 billion US dollars per year (Hudon & Traca, 2011). There are several types of donations; for example, firstly, donations may come in the form of loans for the poor. The majority of donations received in the microfinance sector in Bangladesh fall under this category. Secondly, the donations may be provided to enhance the operational capacity of the MFIs, such as through training and professional development. Thirdly, donations

can also be used for infrastructural development, for instance, subsidizing the cost of operations and supplying the initial cost of establishing an MFI. When donations are used for giving loans to the poor, it is likely to secure the ownership of the donors in that particular MFI; the other two types of donations may not result in donor ownership.

In Bangladesh, the dramatic drop in donations has been counterbalanced by the clients' savings – currently the largest source of funds for MFIs – which contributed around 38% in 2014 (Figure 2.12). Usage of savings as a source of funds was further promoted to enhance the financial sustainability of MFIs as it is less costly, more flexible and more secure. However, MFIs are obliged to set aside a portion of their savings as a required reserve – currently, it is roughly 15% in Bangladesh's microfinance sector (MRA, 2015).

Although a significant number of MFIs worldwide are non-deposits-taken (Galema, Lensink, & Spierdijk, 2011), the uniqueness of the microfinance sector in Bangladesh is that the lion share of funding comes from clients' savings. There are several benefits when MFIs take deposits from their clients. First, the amount of deposits or number of savers can be considered an outreach output (Yaron, 1994) and a value-added financial product of MFIs. Due to these value-added services by the MFIs, the poor can now invest their savings with a competitive return (Mia & Tabet, 2016). From an intermediation point of view, MFIs which take deposits have better outreach compared to those which do not take deposits. By taking deposits, MFIs enhance their outreach, particularly the breadth of outreach. Moreover, using these deposits, they create loans to serve the poor, which enhances the depth of outreach. Furthermore, a deposit can also be viewed as a financial collateral or pre-requisite to secure loans and reinforce contracts (Tchuigoua, 2014). It creates a win-win situation for the institutions and clients.

Apart from that, providing credit to the unbanked poor is considered as one of the ways to battle poverty, however, it is not a 'panacea' or a 'silver bullet' (Mia & Tabet, 2016). Providing savings facilities could be one of the best anti-poverty intervention for poorest of the poor, which could be used to generate additional income through investment (Dowla & Alamgir, 2003). That is why; credit and savings are both complementary to each other and showed to have significant impact in combating poverty and enhancing socio-economic development of the poor. It is often argued that savings services could be more important in alleviating poverty than normal credit (Robinson, 2001). Moreover, poor families should save not only to be eligible for paying the debt but also to use their savings as a reserve for their future precautionary expenses (Sherraden & Barr, 2006). Apart from that, savings can also work as a stabilizer for smoothening the consumption and expenditure at the time of financial turmoil/shocks. In this context, microfinance institutions (MFIs) play an important role in providing various savings services for the unbanked poor.

The second largest source of funds is the cumulative surplus of MFIs. Generally speaking, the portion represented by this source has gradually increased over the years (Figure 2.12). This is in line with the recent emphasis on MFIs' operational self-sustainability that aims to reduce dependency on external funds. Moreover, this drive for self-generated capital structure minimizes the presence of outside ownership claims and associated risks, which usually works in favor of the clients. When an MFI uses deposits from clients and cumulative surplus as the main sources of funds, it is considered to be following the Grameen-Model of capital structure (Hoque et al., 2011).

Nonetheless, other sources of funds, such as loans from PKSF and commercial banks contribute significantly to the capital structure of MFIs in Bangladesh. It must be noted that using commercial bank loans to finance microfinance activities is relatively

expensive for MFIs due to high-interest rates and inflation; nevertheless, some MFIs still rely on commercial bank loans, perhaps as a last resort, after exhausting other sources of funds. Kent and Dacin (2013) claim that the overall efficacy of performance from MFIs has created a space for commercial banks to influence the microfinance industry through funding, whereas Sriram (2010) argued that moving MFIs into the mainstream financial sector relies greatly on capital requirements to maintain the pace of growth.

Concessionary and subsidized loans from the government and PKSF are less costly; however, not all MFIs are eligible to receive such support. There are certain institutional requirements that need to be fulfilled before an MFI can request access to such funds. For example, the PKSF loans are only available to its partner organizations, whereas in Bangladesh, only approximately 20% of MFIs are partnered with PKSF. The same scenario applies to government subsidized funds as well. Hence, strong connections and bargaining capability with the government authorities and relevant departments could be an important factor in securing funds from these two sources.

Finally, inter-borrowing among MFIs has emerged as one of the sources of funds promoted by the MRA. In particular, small and medium MFIs may choose to borrow from large NGO-MFIs. Additionally, the MRA is exploring other sources of funds such as funds from the capital markets to secure a long-term solution that meets the credit constraints of MFIs. However, to avail capital market as a source of funds for MFIs, the sector requires further adjustment and institutional backup from the respective authorities. A comprehensive analysis and investigation of the countries that use the capital market to fund microfinance operations is needed before potential implementation in Bangladesh. For example, 'Banco Compartamos' in Mexico initiated their path-breaking IPO in 2007; this was heavily criticized by the founding father of microfinance, Professor Muhammad

Yunus due to their exorbitant interest rates which only secure financial benefits for the shareholders.

2.7 Theoretical Consideration

In this section, relevant theories related to the objectives of this study are chronically discussed.

2.7.1 Market Structure

Industrial organization (IO) is one of the central theories in microeconomics that builds upon the theory of firm.³⁶ The IO theory basically deals with several issues related to firm, including firm strategic behavior, market competition, and application to antitrust and regulatory policy. Although this theory previously lacked comprehensive theoretical and empirical support, substantial progress has been achieved since the 1970s. One of the pioneers in documenting and formalizing the IO theory is Tirole (1988), who wrote ‘The Theory of Industrial Organization’, one of the most cited books in the field. He has comprehensively discussed every aspect of industrial organization and provided theoretical and empirical evidence.

Looking into the historical evolution of IO, Tirole (1988) has documented two big waves that has shaped the theory of IO. The first is the ‘Harvard tradition’ headed by Joe Bain and Edward Mason for their significant contribution in developing the comprehensive structure-conduct-performance (SCP) approach (Bain, 1956; Mason, 1939). The SCP approach fundamentally shaped the formalization of IO theory. Moreover, the ‘Chicago tradition’ also stood out for its methodological contribution in the field, particularly for its permissive view on market behavior. The Chicago tradition

³⁶ The theory of the firm built upon the concept of microeconomics during neoclassical economics that postulates the existence of firms and their profit maximization behavior. For more details, please see Tirole (1988).

was headed by Aaron Director and George Stigler, who emphasized rigorous theoretical analysis and empirical identification of the competing theories to a greater extent. The second wave is related to the theoretical movement started in 1970s due to deficiencies in cross-sectional empirical analysis. Economic theorists initially dismissed the field of IO; however, the importance of such aspects to understand a firm's behavior led the top theorists to think further about IO. The two main components in studying the IO mostly focus on market concentration and competition. Audretsch, Baumol, and Burke (2001) have cogently explained the differences and evolution of various competition measures in terms of both static and dynamic perspectives. Audretsch et al. (2001) points out that investigating the dynamic nature of the markets is complex but yields a better depiction of competition.

According to the classical theory of competition (usually named the Bertrand model), equilibrium prices are assumed to be equal to marginal cost and firm makes zero profits even in the presence of at least two firms (Dufwenberg & Gneezy, 2000). However, this model has largely failed to achieve expected outcomes in real life observations which economists have named the 'Bertrand Paradox'. Typically, in a competitive market environment, all firms/institutions share almost similar marginal costs and traditionally the market concentration is too negligible to create significant impact to the overall market. In contrast, the monopoly firm(s) can charge as much as they need to maximize their profit (usually, up to marginal revenue, equivalent to marginal cost) because their market share is substantial enough to influence the overall market prices. In reality, the true picture may not fall under these two extreme cases, particularly for informal lending institutions like MFIs (Sagrario Floro & Ray, 1997).

There are several important features for a perfectly competitive market. For instances, competitive markets have a lot of buyers and producers, perfect information, a

homogeneous product (everybody is selling the same product), no potential barrier to entry or exit, zero transaction costs and free mobility of resources (Wetzstein, 2013). Everyone is a price taker in a competitive market, regardless of whether they are buyers or suppliers. In contrast, if the market is concentrated in the hands of few firms, they can charge as much as they wish, to maximize profit through non-competitive or collusive behavior (Ahamed, 2012). The concentrated market will provide MFIs with greater market power generated from their significant market share, thus lowering deposit prices and increasing prices for the loan products to achieve financial gain. This is why poor people are worse-off in the concentrated market.

2.7.2 Capital Structure

Capital structure is one of the most fundamental aspects of corporate finance that may possibly affect the performance of a firm or enterprise (Jensen & Meckling, 1976). Generally, the capital structure comprises two types of sources, namely equity and debt. Although there is no universal theory to determine the optimal level of debt-to-equity ratio (Haron, 2016; Myers, 2001), there are certain theories that evaluate a firm's decision on various levels of debt or capital or a mix of both. However, for several reasons, the capital structure may vary slightly in MFIs compared to conventional financial institutions. Based on the sources of funds, MFIs can be divided into several groups. First, some MFIs may be donor-driven; hence, those MFIs have large amounts of capital from donations. Second, MFIs are deposit-driven when they depend heavily on the deposits of their clients as a source of capital. Apart from that, the capital structure also includes concessionary funds or soft loans from the government apex body or directly from the government. Lastly, the recent trend is such that MFIs' capital structures comprise a significant percentage of commercial borrowing and the trend is most likely to increase in the future.

Since the capital structures of MFIs are diverse in nature, it would be fairly difficult to incorporate a single theory to explain the motives of financing of MFIs in the presence of numerous capital structure theories. So far, the most popular and extensively-used theories of capital structure are Modigliani and Miller (MM) theory, Trade-off Theory (TOT), Pecking Order Theory (POT), Agency Theory (AT), Profit-Incentive Theory (PIT), Stakeholders Theory (ST) and Life Cycle Theory (LCT). This study only includes those which are relevant and can explain the capital structure effect of MFIs on mission drift – in line with the second objective of the thesis. A preliminary analysis ended with selecting MM, PIT, AT and ST. The following section provides a brief overview on these theories of capital structure.

2.7.2.1 Modigliani and Miller Theory (MM)

One of the ground-breaking and earliest theories in capital structure in finance was pioneered by Modigliani and Miller (1958) where they argued the irrelevance of capital structure to firm value in a perfect capital market. The main assumptions of this theory rely on no tax, no transaction and no bankruptcy cost, thus questioning the applicability of the theory in reality (Abor, 2005). There are two main propositions of the theory. According to Berk and DeMarzo (2014), the MM proposition I is as follows:

‘In a perfect capital market, the total value of a firm is equal to the market value of the total cash flows generated by its assets and is not affected by its choice of capital structure’ (p. 483).

Based on that, whether or not a firm generates money by selling debt or issuing equity will not have any impact on the value of the firm or ‘nothing matters’ according to Miller (1988). To incorporate tax in the MM proposition I, Modigliani and Miller (1963) proposed MM proposition II, which is as follows:

“The cost of capital of levered equity increases with the firm’s market value debt-equity ratio (p. 489).”

After incorporating tax, the value of the firm should increase since debt is a tax-deductible account and provides a tax shield for the firm, ultimately increasing the value of the firm. However, as debt increases in proportion to the capital structure, the bankruptcy cost also increases; this leads to the ‘trade-off’ theory, particularly for firms that are less profitable and face fluctuating profit. Generally, the trade-off theory postulates that, at a target or optimum debt level, a marginal increase of present value of tax savings offsets the same amount by bankruptcy cost (Kiiru, 2013). Due to this significant contribution in the field of modern finance, the Nobel Prize was awarded to Modigliani in 1985, followed by Miller in 1990.

2.7.2.2 Profit-Incentives Theory (PIT)

The PIT postulates that MFIs should use commercial funding to achieve its promise. There are two thoughts behind this argument. First, since there are limited amounts of donations in microfinance, depending solely on donations will significantly reduce the outreach of an MFI. Second, donor-driven MFIs may not excel in efficiency as the outreach objective outweighs the operational sustainability, either deliberately or by the donors relaxing the pressure on financial sustainability. Due to these contrasting effects, the emergence of commercial funds in microfinance posits a significant role. In general, commercially-funded MFIs work with the theme of profit incentives, that is, to increase revenue, reduce operational costs and balance the two to become operationally self-sufficient. This is consonant with the argument of Morduch (2000), where he proposed a ‘win-win’ situation for both the clients and MFIs. He argued that good MFIs which follow the principles of good banking are also most effective at alleviating poverty (Morduch, 2000). However, an intensive and systematic empirical analysis is needed to prove this

hypothesis, and the fourth analytical chapter of this thesis is directed at filling this gap. Formally, the PIT was first applied by Bogan (2012) in microfinance as an attempt to explain the capital structure choice of MFIs.

2.7.2.3 Agency Theory (AT)

Generally, agency problems arise when there is a conflict between various stakeholders in a firm or an institution. Costs related to agency problems are termed as the 'agency cost' (Hartarska, 2005). One of the pioneering works in agency cost theory is accredited to Jensen and Meckling (1976), which is based on information asymmetry.³⁷ For example, managers of a firm or institutions will favorably make decisions that increase the value of the shares, as they often hold the shares of the firm and are recruited by the board of directors (Lislevand, 2012). Jensen and Meckling (1976) define agency relationship as;

“a contract under which one or more persons (the principal(s)) engage another person (agent) to perform some service on their behalf which involves delegating some decision making authority to the agent (p.5).”

However, if the firm has leveraged its capital and subsequent management decisions have different consequences on equity and debt, the agency cost will arise. So in general, agency cost is the outcome of various types of ownership and control that lead to the differences in managers' objectives (Kar, 2012). Based on AT, an optimal capital structure can be achieved by minimizing the agency cost (Razali, 2016). Thus, Berger and Di Patti (2006) claimed that a low-equity ratio or high leverage of a firm or an institution minimizes the agency cost of outside equity that promptly increases the value of the firm

³⁷ In general, information asymmetry means one party has more or better information than others in any transactions.

by restraining and encouraging managers to uphold shareholders' interest. Jensen and Meckling (1976) further identified three important components of agency cost. They are:

1. Expenses related to monitoring, auditing, budgeting, control and compensation.
2. Expenditure related to the bonding of various parties by the agent (firm or institution).
3. Residual loss incurred by the divergence of interest among parties, such as between the agent and principal.

2.7.2.4 Stakeholders Theory (ST)

One of the earliest work in stakeholders' theory is accredited to Freeman (1984). He defined stakeholder as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984). In general, different stakeholders are involved in organizations (stockholders, creditors, managers, employees, customers, suppliers, local communities and the public) who provide critical resources and have a legitimate claim on the organization/firm. Since there are various parties involved in an organization, stakeholders' theory is often viewed as a linking platform to coordinate among all resource holders, which include both the explicit and implicit contractual relationship (Hill & Jones, 1992). In line with how the various goals/objectives of a firm/ organization work towards social responsibility, Argandoña (1998) claimed that there are basically two extremes. First, related to the firm's ability to maximize profit for its shareholders and second, firms responsibility to include wide range of actors with an interest or stake in the firm. Moreover, any company may achieve sustainability by taking care of financial performance while having regards for the interest of all stakeholders, among them, the civil and physical environments (Freeman, 1984).

In the context of corporation, Donaldson and Preston (1995) argued that the stakeholders' theory has been developed in the management literature in three different aspects, namely, descriptive accuracy, instrumental power and normative validity. In general, descriptive aspects of stakeholders theory describes what a corporation is as well as it also describes "corporation as a as a constellation of cooperative and competitive interests possessing intrinsic value" (Donaldson & Preston, 1995). The instrumental aspects establishes a framework to examine the connections between various parties as well as various performance goals of a corporation. Then, the normative aspects of stakeholders' theory postulates that the stakeholders are identified by their interest in the corporation or firm and their interest are considered to be intrinsic, which is often represented by the interest for their own sake rather than other groups.

2.7.3 Theory of Productivity

The modern theory of productivity can be traced back to work by Cobb and Douglas (1928) in the 'theory of production'. Although it does not explicitly provide a comprehensive discussion on productivity, it establishes the relationship between inputs and outputs and shows how the production process varies based on different combinations of inputs and outputs. Their work has laid the foundation for a definition of productivity as the relationship between inputs and outputs.

Productivity started out by being linked to economic development and improving material standards of living for the citizens of a country, but it soon become a building block in almost every aspect of life (McMillan, Rodrik, & Verduzco-Gallo, 2014). For example, Krugman (1997) profoundly argued that, "Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker." There are

ample research studies that have shown the linkages between productivity and economic growth in the macroeconomic context. Moreover, productivity has become an indispensable element for the long-term sustainability of a firm or institution. To understand the importance of achieving productivity at the enterprise level, Grossman (1993), as cited in Tangen (2005), has stated that,

“Companies need to realize that gains in productivity are one of their major weapons to achieve cost and quality advantages over their competition.”

Historically, there are several types of productivity, namely, partial productivity, total factor productivity and total productivity (Marković, Knežević, Brown, & Dmitrović, 2015). Partial productivity, also known as single productivity, considers only one input to construct productivity. For example, labor productivity and machine productivity are manipulated, but other inputs are held constant. In agriculture productivity, it is measured by estimating how many bushels of wheat are produced from an acre of land. Single productivity indicators suffer from severe limitations in industrial sectors where several inputs are critically important to produce services. In contrast, total factor productivity (TFP) is the combined productivity of all relevant inputs, which gained popularity among the researchers due to its relevance in the banking industry (Owyong, 2000). On the other hand, total productivity refers to “the ratio of output to all combined inputs including labor, materials, capital, energy and other inputs” (Kirikal, 2005). A detailed discussion on TFP measurement in the context of microfinance is presented in the methodology of Chapter 5.

Theoretically, productivity growth not only minimizes the cost of operation through innovation, development, technical process and efficient uses of resources, but also produces maximum output from the given resources. Two important terms can be linked

with general productivity, namely productive efficiency and allocative efficiency. Productive efficiency means producing goods and services at minimum cost, while allocative efficiency means using resources to produce goods and services most wanted by the society. These two types of efficiency are only achievable in the presence of perfect competition. Moreover, efficient usage of inputs (such as resources) to produce outputs (such as loans) is a fundamental target for an institution, whether a bank or an MFI. Productivity trends that show changes over time are very crucial and significant for firms or authorities to have an overview of their progress.

2.8 Summary

This chapter has provided a comprehensive discussion of the microfinance industry in Bangladesh, including key characteristics of the Bangladesh economy ranging from socio-economic to macroeconomic indicators. It was found that Bangladesh has made remarkable progress in both aspects. Additionally, Bangladesh has significantly improved in terms of poverty alleviation during the last decades.

One of the remarkable institutional developments in the microfinance industry is the establishment of the MRA in 2006. The MRA now controls and supervises the industry to ensure smooth flow of credit and sustainability of the sector. However, this study pointed out the weak institutional and fiscal strength of the MRA, which is insufficient to control such a vast sector. The government should expand the activities of the MRA and allow it to exercise its fiscal strength to promote sustainability in the industry.

In terms of funding, the microfinance industry in Bangladesh has observed significant changes in capital structure. It is the general perception that most of the MFIs are NGO types and the majority of their financing comes from donors, soft loans or philanthropic funds. Indeed, most MFIs were heavily funded by such sources during the initial stage of

microfinance evolution. However, the sources of funds in the microfinance sector in Bangladesh have changed dramatically over the last two decades as argued earlier. Recently, the lion share of the funding comes from savings, cumulative surplus, commercial banks, funds from PKSF, borrowing from MFIs and donations. Additionally, the majority of the MFIs head offices are located in Dhaka, due to geographical advantages.

The evolution of microfinance in Bangladesh based on the LCT theory has unraveled several interesting findings. The Grameen Bank framework of microfinance was developed after intensive research and experimentation by Muhammad Yunus. Bangladesh had a financial environment where banking operations were limited and poor people were excluded from banking facilities, and their predicament was further exacerbated by the mushrooming of village moneylenders with usurious interest practices. In addition, the economic situation was worsened by the prevailing political instability and economic stagnation in the aftermath of the 1971 war of independence. Massive famines and natural disasters in the 1970s set the stage for the introduction of microfinance as a developmental tool. Bolstered by its tangible impact in alleviating poverty, the program was rapidly replicated across the country. The rapid growth of the industry and the easy availability of microfinance in Bangladesh is evidenced by the difficulty that the Bangladesh Institute of Development Studies (BIDS) has faced in finding a control village with no MFIs in operation (Chaudhury & Matin, 2002). The microfinance sector in Bangladesh shows characteristics broadly consistent with the saturation phase (2006-2015) — which potentially has adverse impacts on both microfinance clients and institutions. The maturity phase (1996-2005) of microfinance is characterized by competition and several innovations (financial and non-financial). However, the saturation phase sees increasing presence of uncoordinated microfinance

institutions and resulting expansion of multiple borrowing, as well as commercialization and ‘mission drift’, which constitute important challenges warranting policy responses.

The last section of this chapter highlights several theories in line with the objectives of this study. In a nutshell, the Modigliani and Miller capital structure theory postulate no effect of capital structure on firm value in a competitive market environment. Thus, under this theory, it is possible to assume that the sources of funds in MFIs’ capital structure should not affect performance in social outreach. Furthermore, the profit incentive theory and agency cost theory highlighted that debt capital is better for a firm to achieve its objectives since it minimizes the presence of external pressures, particularly from the equity holders. Nonetheless, higher leverage also implies higher variability of returns. Thus, relying on more debt financing in MFIs should be aligned with greater outreach to promote sustainability in the sector. Since these theories have not been extensively applied in the microfinance literature, it would be interesting to examine whether these views hold in the microfinance context to better explain the mission drift of MFIs.

CHAPTER 3: EVOLUTION OF MARKET STRUCTURE IN THE MICROFINANCE INDUSTRY

3.1 Introduction

This chapter addresses the first research question that is to understand the evolution of market structure in the microfinance industry of Bangladesh.

Although the microfinance industry emerged in Bangladesh more than four decades ago, the prices of loan products remain relatively high at present. Professor Muhammad Yunus has criticized higher interest-charging MFIs by calling them the ‘new loan sharks’ as they have deviated from the mission of providing affordable financial services to the poor (Amy, 2010; Mitra, 2009). There are ample research studies identifying the factors that cause high interest rates in microfinance. The underlying factors giving rise to high interest include cost of funds (include relevance of transaction costs and their repercussion on fees applied to customers), loan tenure, size of loan, risk, collateral, gender of clients, exchange rates risk, institutional status, and profit margin (Al-Azzam & Mimouni, 2016; Dorfleitner, Leidl, Priberny, & von Mosch, 2013; Fernando, 2006; Ghosh, 2013; Roberts, 2013). Apart from that, researchers have also pointed out the importance of industrial organization, and identified market structure as one of the possible determinants of interest rates (Assefa, Hermes, & Meesters, 2013; Cotler & Almazan, 2013).

It is generally perceived that the dominance of a few large MFIs may compromise the competitive environment, which would force borrowers to pay more than the normal price with limited options. This is because higher prices are the by-product of a highly-concentrated and less competitive market. The higher interest-charging behavior of MFIs is consequently detrimental to consumers, who face increased costs, lower output levels, and loss in social welfare. In some cases, the practices of higher interest rates and coercive

loan repayment have led to the implementation of harsh laws and regulations; for instance, MFIs in Andhra Pradesh are finding it impossible to operate normally due to the legal climate in that particular state in India (Mader, 2015; Mahajan & Navin, 2013; Sane & Thomas, 2016). Given the similarities between microfinance operations in Bangladesh and India, similar effects could also be expected in the Bangladesh microfinance industry. Hence, any policies that could lower the interest rates should enhance social welfare and make microfinance an effective credit system for the poor, while ensuring that MFIs remain sustainable in the long-run. Thus, understanding the market structure of the microfinance industry is paramount to policy design and implementation.

The existing literature argued that competition in the microfinance sector may be intensifying due to the emergence of profit-making and commercialized MFIs (Assefa et al., 2013; Kar, 2016). Yet there is a lack of evidence to show how competitive the market is. To the authors' knowledge, there is a paucity of comprehensive analyses of market structure in Bangladesh, and global or regional analyses are also limited. For example, only Assefa et al. (2013), Kar and Swain (2014) and Kar (2016) have directly examined the competition in the microfinance industry based on regional or global data on MFIs. In contrast, there is a considerable literature on the financial market in the banking sector in both the developing countries (Asongu, 2015; Soedarmono, Machrouh, & Tarazi, 2013; Uddin & Suzuki, 2015; Yeyati & Micco, 2007) and developed countries (Anzoátegui, Pería, & Melecky, 2012; Liu, Molyneux, & Wilson, 2013; Shaffer, 1989; Uchida & Tsutsui, 2005). To fill the gap in microfinance research, this chapter aims to evaluate concentration and competition in the microfinance industry in Bangladesh. The intention is to fully understand the evolution of market structure in the sector, in order to provide useful and pertinent suggestions to policymakers and the management of the MFIs.

The rest of the chapter is organized as follows: Section 3.2 provides a brief overview of the literature from theoretical and empirical aspects. Then, a comprehensive discussion on methodology is presented in Section 3.3. Findings and discussions are included in Section 3.4, followed by a general conclusion in Section 3.5.

3.2 Literature Review

In this section, an overview of concentration and competition are discussed based on both theoretical and empirical aspects.

3.2.1 Theoretical Aspects of Concentration and Competition

Since the work of Adam Smith, economists and conventional laws have supported policies that foster and enhance competition (McIntosh, Janvry, & Sadoulet, 2005). Claessens (2009) has discussed theoretical aspects of three major effects of competition in the financial sector, namely, development and efficiency, access to financial services and stability. For example, greater competition enhances efficiency in the production of financial services (Maudos, Pastor, & Pérez, 2002). When the sector is competitive, quality financial products will be developed and production cost should gradually decrease as a result of technological changes (Matsa, 2011; Stiglitz, McFadden, & Peltzman, 1987). Nevertheless, Beil, Kaserman, and Ford (1995) have demonstrated that encouraging entry to a regulated market will shift the equilibrium in the direction of social welfare. To reiterate the prominence of competition in microfinance, Toindepi (2016) highlighted that innovations and product development are necessary for the sector to ensure access to financial services for the impoverished, which is only possible in the competitive market environment. In a similar vein, Besanko and Thakor (1992) also found that when entry barriers are relaxed, equilibrium loan rates decline and deposit rates increase; this makes financial intermediation more efficient for the poor. Thus, MFIs would be able to provide affordable services and greater returns to clients in a competitive

market environment. To highlight how important competition is, Judge Learned Hand expressed that, as cited in Audretsch et al. (2001),

“Possession of unchallenged economic power deadens initiative, discourages thrift and depresses energy... Immunity from competition is a narcotic, and rivalry a stimulant to industrial progress”.

Moreover, competition may also be linked to greater access of financial services for the unbanked population. Competition enhances financial depth, which is the provision of services to a diverse set of clients regardless of their geographical location (Dick & Lehnert, 2010; Rice & Strahan, 2010). In the microfinance sector, it is important to establish relationship banking between MFIs and their clients. Good relationship banking can help both parties through punctual and increased loan repayments, as well as information sharing (Brown & Zehnder, 2007). When relationship banking is strong, MFIs can also better understand the need of their clients through the latter's repeated banking activities. If competition is too low, it results in high dependency on a few institutions, which may lead to tie-up problems and prevent relationship lending (Boot & Thakor, 2000; Petersen & Rajan, 1994). In contrast, if competition is too high, the industry participants may not invest in relationship banking as it is less likely to incentivize their financial goals (Rajan, 1992).

With regard to the effect of competition on the stability of the industry, there are two general hypotheses most commonly cited by researchers (Schaeck et al., 2009). On one hand, the ‘competition-stability’ hypothesis postulates that higher interest rates in a less competitive business environment prompt borrowers to take more risky loans, thus resulting in higher probability of non-performing loans, exacerbated moral hazards, and adverse selection problems (Berger, Klapper, & Turk-Ariss, 2009). Hence, the empirical literature has argued that competition is better to ensure stability of financial institutions

(Boyd & De Nicolo, 2005). On the other hand, the ‘competition-fragility hypothesis’ states that high competition erodes the market power and profit margins of the banks or financial institutions, thus reducing franchise value and increasing banks’ risk-taking behavior (Berger et al., 2009). However, Koskela and Stenbacka (2000) have argued that there may not necessarily be a trade-off between competition and financial fragility.

A concentrated market may also perform better in certain aspects. For example, Beck, Demirgüç-Kunt, and Levine (2006) have argued that the possibility of a financial crisis is less likely in a concentrated market and more likely in a competitive market. The concentrated market is believed to be well-monitored and closely-screened, and the activities of financial institutions are regulated by the central bank to absorb losses or shocks in the case of financial crises. Additionally, the concentrated market environment provides additional synergies to institutions towards achieving economies of scale, which would not be possible in a perfect competitive market (Ozawa, 1998).

3.2.2 Competition in Microfinance: An Empirical Review

The most comprehensive studies that directly measures concentration and competition in the microfinance industry have been carried out by Assefa et al. (2013), Kar and Swain (2014) and Kar (2016). Assefa et al. (2013) investigated competition in the microfinance market by using the Lerner index, a non-SCP approach. The study had a large sample size consisting of 362 MFIs from 73 countries and covering the period of 1995 to 2008. They concluded that the microfinance sector experienced greater competition during the later period of the study, which could be due to a substantial number of emerging MFIs and rapid branch expansions. They also found that South Asian MFIs outperformed MFIs from other regions in competition, as the South Asian sector has almost reached maturity.

On the other hand, Kar and Swain (2014) used the SCP approach (e.g. HHI) to measure competition in the microfinance industry of 71 countries between 2003 and 2008. Their estimates revealed that the global microfinance industry is moderately concentrated, with an average HHI value of 0.372. After categorization of the sample into various subsamples based on geographical location, it was found that South Asian MFIs observed the highest levels of competition among all developing regions, with the lowest HHI value for that region.³⁸ This finding is similar to that of Assefa et al. (2013), which is that the South Asian microfinance industry observed greater competition.

In a more recent study, Kar (2016) estimated the competition of the microfinance industry by deploying a non-structural approach, namely the Boone indicator (Boone (2008)). This indicator estimates the elasticity of the profits to marginal cost. The investigation of microfinance markets in 10 countries included 521 MFIs and covered the period of 2002 to 2008, yielding two interesting results.³⁹ First, the microfinance markets in Bangladesh and Bolivia observed a gradual decline in competition due to the partial reconstitution of market power by giant MFIs in the industry. Second, it was found that the microfinance markets in other countries experienced relatively constant levels of competition throughout the study period, which may be attributed to the consolidation and revitalization of the markets in those countries.

Overall, it seems that levels of competition have risen in the microfinance industry recently, although the magnitude varies from country to country. Several major reasons are linked to the rising competition in the microfinance industry (Assefa et al., 2013).

First, increased competition among MFIs is due to substantial growth in the number of

³⁸ It is worth highlighting that this study observed a discrepancy between Kar and Swain (2014) value of HHI in Table 11.3 and writing in the following paragraph. They argued that “for MFIs in the Eastern Europe and the Sub-Saharan Africa regions, competition appears to be higher on average than for MFIs in South Asia (HHI being 0.573, 0.554 and 0.242, respectively).” This is because there is an inverse relationship between HHI and competition, which means that the higher the value, the lower the competition and *vice versa*.

³⁹ The 10 countries are Bangladesh, Bolivia, Ecuador, India, Indonesia, Mexico, Nepal, Nicaragua, Peru, and Philippines.

MFIs receiving financial support from donors and other sources of funds. Second, MFIs compete for commercial funding to meet growing needs of capital, which has stimulated competitive behavior among MFIs. There is high pressure within the conventional business model of MFIs to achieve financial sustainability, which also instigate competitiveness in operations. Third, competition in the microfinance industry has also intensified due to the resurgence of profit-making and commercial-oriented MFIs. In addition, an increasing number of NGO-MFIs have undergone an unusual transformation from non-profit to profit-making, thus stimulating competition in the sector (Assefa et al., 2013).

Competition in the microfinance industry may have positive and negative effects. On the positive side, Ghosh and Van Tassel (2011) found that competition for external funds could substantially reduce aggregate poverty. For example, when MFIs pay higher returns to external investors, it raises interest rates. Thus, higher costs of external funds force inefficient MFIs out of the market, and the funds are then channeled to the most efficient MFIs. On the other hand, Ly and Mason (2012) documented how competition negatively impacts project funding speed. They provided a case study on Kiva⁴⁰, in which there was competition for subsidized funds from individual social investors. A resource-based view of competitive advantage and firm performance has been cogently explained by Peteraf (1993) in a study that emphasized the importance of competitiveness in corporate and business strategy.

Competition has the potential to affect other outcome variables, such as outreach and profitability. In the extant literature, only Assefa et al. (2013) and Kar and Swain (2014)

⁴⁰ Kiva Microfunds is a 501 non-profit organization that allows people to lend money to low-income entrepreneurs and students in over 80 countries. Kiva's mission is "to connect people through lending to alleviate poverty" and transactions are carried out via the Internet. For more information, please visit <https://www.kiva.org/>

have explicitly investigated this matter. For example, Assefa et al. (2013) found a weak inverse relationship between competition and outreach, whereas there was very strong adverse impact of competition on the repayment performance of MFIs. The latter finding could be because higher competition leads to greater exposure to risky loans and higher levels of loan write-off. The findings also corroborate the argument of McIntosh et al. (2005) that competition induces declining in repayment and savings deposited to the incumbent. They also highlighted multiple borrowing as one of the factors behind the gradual decline in loan repayment, similar to the arguments of Chaudhury and Matin (2002) and Mpogole et al. (2012). Moreover, the negative association between competition and depth of outreach have also been discussed in Olivares-Polanco (2005).

Upon testing how competition affects the stability of the industry, Kar and Swain (2014)'s empirical assessment supported the competition-fragility view. This is due to the fact that strong competition among MFIs may adversely affect selection standards and monitoring processes, as well as induce multiple memberships with high loan default (McIntosh & Wydick, 2005). In a competitive business environment, the screening procedures of borrower characteristics may not reveal the true picture, and imperfections in the screening model itself may go undetected (Shaffer, 1998). Furthermore, Guha and Chowdhury (2014) proclaimed that competition may have adverse impacts on targeting borrowers, but positive effects in the presence of double-dipping or multiple borrowing. There has also been speculation that higher competition can lead to client dropouts, but McIntosh et al. (2005) found no such evidence.

Thus, it can be inferred that competition in the microfinance industry is sensitive to other aspects of the market performance. However, despite these drawbacks, competition is mostly preferred over concentration as the former nurtures innovation, promotes stability and absorbs economic volatility (Acs & Audretsch, 1988; Mitton, 2008).

Nonetheless, one direct benefit of competition is that it reduces interest rates. Researchers have unanimously agreed that usurious interest rates and coercive collection processes severely affect the living standards of the poor and cage them in ‘death traps’. This phenomenon remains one of the greatest causes for concern among policymakers and higher authorities, as microfinance programs aim for financial inclusion of the poor (Fernando, 2006). In general, it can be argued that the effect of competition is ambiguous. Thus, it is important to first understand the extent of competition in the microfinance industry of Bangladesh before implementing any policies or decisions.

3.3 Methodology

A pictorial representation of the empirical strategy is presented in Figure 3.1 to illustrate the procedures used in this analytical chapter. The following section discusses details of the procedure.

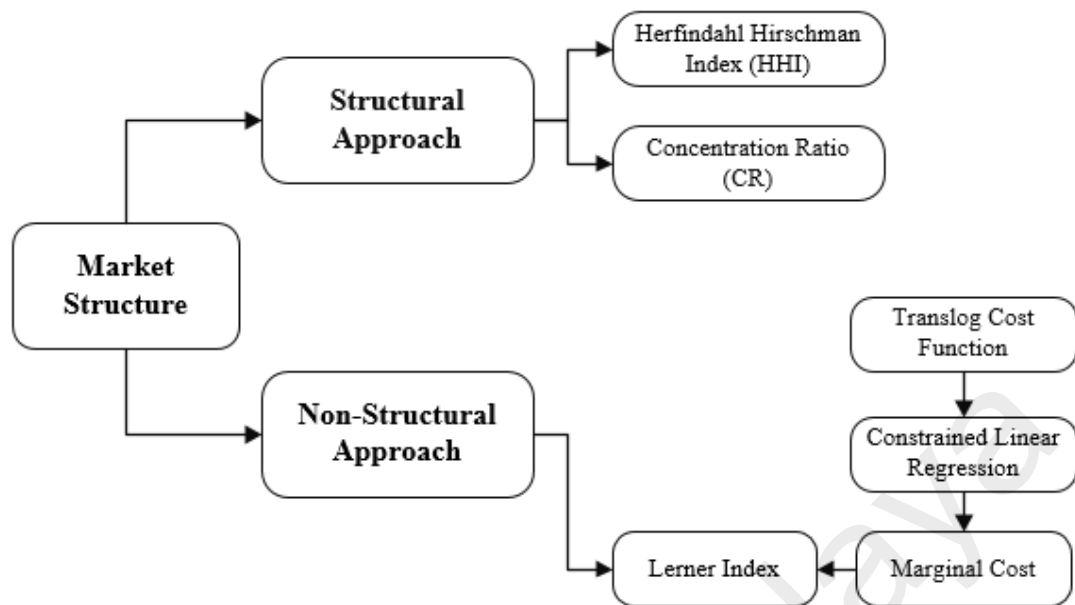


Figure 3.1: Estimation Strategy of Market Structure.

Source: Author's.

3.3.1 Measuring Market Concentration: A Structural Approach

Until recently, there has been no specific empirical technique or model that can perfectly measure concentration or competition. However, to capture the notion of competition in the market, researchers have used several measurement techniques with an econometric approach as a proxy. Competition is complex and not observable in a direct sense, thus leading to the development of several methods for its assessment (Leon, 2014).

According to the SCP approach, market structure determines conduct, which enhances market performance (Tirole, 1988). The fundamental proposition of SCP assumes that the presence of a few firms in a market reflects greater concentration, which results in less competitive conduct and less competitive performance (Brewer & Jackson, 2004). Within the SCP approach, the market structure can be assessed using the Herfindahl-Hirschman Index (HHI) (Herfindahl, 1950; Hirschman, 1964), Concentration Ratio (CR4 or CR8 –

for the largest four or eight firms) and the number of firms in an industry. However, the SCP approach may be insufficient for evaluating the market structure or level of competition. For example, the Concentration Ratio does not take into account all the firms in the industry (it rarely considers the big three, big eight or top 20 firms). Furthermore, these methods do not provide sufficient information regarding the distribution of the firm, but merely indicates the level of competition (Bikker & Haaf, 2002a).

Nonetheless, despite certain advantages, the HHI may not capture the actual competition of the market. For instance, Calkins (1983) described the important properties of the HHI and explained its advantages in the financial industry. First, the high responsiveness of the HHI measurement to asymmetric market shares is a principal benefit. This means that when the market value or share prices of a firm change, the HHI also changes proportionately. Second, it takes into consideration every single firm in the market. Third, any value of the HHI can be interpreted as a 'number equivalent', which simply refers to reliable and easy interpretation of the results (Adelman, 1969). These are the reasons why the HHI has been touted as one of the most important and significant methods compared to other market concentration measurements available during the early stage of industrial organization development (Laine, 1995). However, it is worthwhile to note that higher concentration does not necessarily imply less competition or *vice versa* (Bikker & Haaf, 2002b). Moreover, the number of firms is not a reliable indicator or predictor of market structure (concentration and competition); rather, we should look at the potential number of entrants (Stiglitz et al., 1987).

Considering all these circumstances, this study also relies on the non-structural approach to better evaluate competition in the microfinance sector. Compared to the SCP approach, the non-SCP approach provides more robust assessments on competition of the individual firms (see next section). However, this study employed both techniques to gain

insight into the market structure and for the sake of comparison between SCP and non-SCP measurements.

Under the SCP approach, the HHI and concentration ratio (CR_k) are used, where the value of k depends on the arbitrary decision of the researcher. Hence, the mathematical formula to obtain HHI value of any industry can be defined as follows:

$$\begin{aligned}
 HHI &= S_1^2 + S_2^2 + S_3^2 + S_4^2 \dots \dots \dots + S_n^2 \\
 &= \sum_i^n S_i^2
 \end{aligned}
 \tag{3.1}$$

where S_i is the market share of the i^{th} firm in the industry and n is the total number of firms. This equation is a numerical threshold to gauge the concentration of an industry. According to the new Horizontal Merger Guidelines by the United States Department of Justice and Federal Trade Commission, HHI values less than 1500 ($HHI < 0.15$) are considered unconcentrated, values between 1500 and 2500 ($0.15 < HHI < 0.25$) are moderately concentrated and values more than 2500 ($HHI > 0.25$) are considered highly concentrated (, 2012). Generally, HHI values ranges from $1/n$ to 1 when the decimal value of market share is used in the estimation, whereas it can go up to 10,000 (for a single firm) if the percentage value of market share is used. Although there are no specific concentration guidelines available in the context of Bangladesh microfinance industry, the guidelines from the United States are globally acceptable and applicable; hence, they can be transferred into the context of Bangladesh.

To understand how the microfinance industry is controlled by only a few MFIs, we decided to use the concentration ratio of the largest 3, 8 and 20 MFIs. As there is no rule of thumb for the number of firms used to estimate CR, researchers have the prerogative to decide the number of firms (MFIs, in our case) (Bikker & Haaf, 2002b). This study followed the approach of previous studies that used a similar number of firms to estimate

CR. For example, Denizer (1999), Fu, Lin, and Molyneux (2014); Saeed and Sameer (2015) used the largest three banks/SMEs to measure concentration of the respective industry. However, Odošić, Burilović, and Tolušić (2014) used both the largest 8 and 20 banks to measure concentration of the Croatian banking industry.

The concentration ratio of the largest three, eight and 20 MFIs is measured by the following formula:

$$CR_3 = S_1 + S_2 + S_3 \quad (3.2)$$

$$CR_8 = S_1 + S_2 + S_3 + S_4 \dots \dots + S_8 \quad (3.3)$$

$$CR_{20} = S_1 + S_2 + S_3 + S_4 \dots \dots + S_{20} \quad (3.4)$$

The calculation of market share (S_i) in CR is similar to the calculation of market share in HHI.

However, due to the mixed nature of microfinance programs, it has not been easy to accurately identify the variables that can best represent the microfinance market. For overall representativeness, the market indicators have been chosen based on recent literature and the objectives of MFIs. Most of the banking literature used total assets as a market indicator as well as a proxy measure of the relative size of the bank (Bashir, 2003; Bongini, Laeven, & Majnoni, 2002; Demirguc-Kunt & Maksimovic, 2002). However, in the event that asset data is unavailable, other indicators are used to represent the market, including total loan outstanding (Y), net total savings (TS), clients (CL) and a number of active borrowers (BR). Although using CL could have been sufficient, the study also used BR to investigate whether there were any significant differences between the two different market indicators. This is due to the fact that there are credit-centric MFIs that mostly serve loans, whereas others provide both financial and non-financial services. Hence, using only one indicator may not truly reveal the exact market concentration of the overall industry. Thus, this study opted to use both indicators. While the former two

indicators (loans and savings) show the monetary values of the microfinance services, the latter two represent the original target audience of MFIs. The loans and savings indicators also represent both the credit and deposit markets respectively.

3.3.2 Measuring Market Competition: A Non-Structural Approach

Due to the limitations and low applicability of the SCP approach, as discussed above, various non-SCP methods have been developed to analyze competition in the era of new empirical industrial organization (NEIO). Leon (2014) categorizes the development of NEIO into two generations. The first generation of non-SCP approach is fundamentally based on the ‘theory of oligopoly’, a neoclassical conception of competition which developed three different models of competition, namely the Lerner index (Lerner, 1934), the conjectural variation model (Bresnahan, 1982; Iwata, 1974) and Panzar-Rosse (PR) (Panzar & Rosse, 1987). The second generation of the NEIO is based on the market dynamics that tacitly follow the arguments of the *Austrian (dynamic) concept of competition* (Leon, 2014) and has resulted in two models. The ‘Persistence of Profit’ model was proposed by Mueller (1977) and the ‘Boone Indicator’ was developed by Boone (2008). Although the three models of the first generation are based on common theoretical ground, results could vary between models (Carbó, Humphrey, Maudos, & Molyneux, 2009), and the same is true for the second generation models as well.

The PR measure or H-statistic is a frequent indicator used in the banking sector literature to measure overall competition. Additionally, the PR measure is based on the impact of variations in factor input prices on firm-level revenues (Assefa et al., 2013). However, there are some limitations with the PR measure. Koetter, Kolari, and Spierdijk (2012) reported two main shortcomings of this method. First, the H-statistic does not vary over time (unless estimates are separated by year) and hence, it is less appropriate for investigating the evolution of competition over time. Second, it only provides an

overview of competition for the whole sector, but does not allow the measurement of competition at the firm level. Similar types of limitations have also been observed in other methods that aim to estimate competition for a market or industry.

Apart from limited applicability, there are some restrictions in choosing the output or the dependent variable of interest. For example, the PR measure relates inputs to the financial revenue of a firm. Revenue, however, may only represent the financial aspects of MFIs and fail to capture their outreach objective. The banking sector literature frequently utilizes this method because the main goal of conventional banking or any formal financial institutions is to maximize profit through generating as much revenue as possible. In contrast, MFIs' ultimate aim is not to maximize profit; hence, relying on this method to measure competition may result in a bias towards financial goals and significantly undermine social aspects. Moreover, the Boone indicator also sometimes fails to correctly indicate competition based on the traditional regression approach (Schiersch & Schmidt-Ehmcke, 2010).

Due to these shortcomings and theoretical contradictions with MFIs' objectives, this study relies on the Lerner index (L), also known as 'price-cost margin', to estimate market power and subsequently competition in the sector. The social output variables, such as number of clients, number of borrowers and total amount of loans, can be used to estimate translog cost function as a proxy of marginal cost. Although it is not the best technique, the method is relevant to the microfinance industry in Bangladesh due to the objectives and nature of MFI operations. Moreover, since this index captures firm-level market power, it can vary over time.

Generally, the way of estimating L is comparatively easy as it is measured by the difference between price and marginal cost of production (the figure or amount of marginal cost is readily available). The empirical approach to measuring L is as follows:

$$L_{it} = \frac{(P_{it}-MC_{it})}{P_{it}} \quad (3.5)$$

where p is the output price and MC is the marginal cost. In our case, the output is total loan outstanding (Y) and P is the portfolio yield charge on loans by an MFI. In a perfectly competitive market, the divergence between P and MC is 0, whereas the divergence would be higher in a less competitive market. A larger difference between P and MC indicates greater monopoly; a difference equal to 1 indicates a pure monopoly market. Hence, theoretically, the value of L ranges between 0 and 1. Practically, the value of L could be less than zero; this means that the firm is making a loss as the marginal cost is higher than the marginal revenue or returns. One reason could be that some MFIs charge prices lower than their costs due to their commitment to social outreach.

Estimating L could be easier if the value of MC is given. However, in the absence of exact MC , measuring L may be challenging as it would require first estimating the MC . Since there is no exact value of MC in the microfinance market in Bangladesh, this study needed to estimate MC before obtaining L . One of the ways to obtain MC is by estimating translog cost function. Hence, this study uses a similar methodology to the one applied in the banking literature, for example in Anginer, Demirguc-Kunt, and Zhu (2014) and Demirguc-Kunt and Martínez Pería (2010). Based on the two studies, the conventional translog cost function is as follows:

$$\begin{aligned} \text{LNC}_{it} = & \alpha_0 + \alpha_1 \text{LN}(Y_{it}) + \frac{1}{2} \alpha_2 [\text{LN}(Y_{it})]^2 + \beta_1 \text{LN}(W_{1,it}) + \beta_2 \text{LN}(W_{2,it}) + \\ & \frac{1}{2} \gamma_1 [\text{LN}(W_{1,it})]^2 + \frac{1}{2} \gamma_2 [\text{LN}(W_{2,it})]^2 + \partial_1 \text{LN}(W_{1,it}) * \text{LN}(Y_{it}) + \partial_2 \text{LN}(W_{2,it}) * \\ & \text{LN}(Y_{it}) + \phi_1 \text{LN}(W_{1,it}) * \text{LN}(W_{2,it}) + \varphi \text{Year Dummies} + \varepsilon_{it} \end{aligned} \quad (3.6)$$

where C_{it} stands for total cost of producing services for an MFI i in the year t . The independent variable Y represents total loan outstanding of an MFI, and W_j represents the inputs. Two inputs, capital and labor, are used to estimate translog cost function. Financial capital cost (W_1) and total administrative cost (W_2) are calculated as ratios with respect to Y , then W_1 and W_2 are treated as a proxy of capital and labor cost respectively. Although the exact cost of labor would have been a better indicator, data limitations were a constraint. Nonetheless, the administrative cost serves as a good proxy since the majority of associated costs comes from labor-related expenses due to the labor-intensive nature of the industry. A similar proxy is also used in Assefa et al. (2013). Financial capital cost (W_2) is the cost of borrowing for funds. Apart from that, to capture technological progress over time, time dummies were also included in model 3.6, similar to the approach of Assefa et al. (2013), Anginer, Demircuc-Kunt, and Zhu (2014) and Kar (2014). This is mainly due to the fact that technological progress leads to the shift of cost function over time (Demircuc-Kunt and Martínez Pería, 2010). Similarly, Babu (2014) also asserted that technological progress will ensure the optimal combinations of inputs so as to ensure the expansion of MFIs' outreach goal. Hence, including the time dummy impacts the overall cost function of MFIs. All variables are transformed to natural logarithms except time dummies.

Since the cost function must be homogeneous to the first degree (Lapteacru, 2014), this study imposes the following four restrictions on regression coefficients in line with Anginer et al. (2014), as follows:

$$\beta_1 + \beta_2 = 1; \gamma_1 + \gamma_2 = 0; \delta_1 + \phi_1 = 0; \delta_2 + \phi_2 = 0 \quad (3.7)$$

After estimating the translog cost function, the marginal cost of MFI i at year t can be estimated by taking the first derivative of equation (3.6) with respect to output Y_{it} , as follows:

$$MC_{it} = \frac{\partial C_{it}}{\partial Y} = \frac{C_{it}}{Y_{it}} (\alpha_1 + \alpha_2 \text{LNY}_{it} + \sum_{j=1}^2 \partial_j W_{jit}) \quad (3.8)$$

Table 3.1 shows the definition and units of measurement of the variables used in this analytical chapter.

Table 3.1: Definition of Variables

Variable	Definition	Unit
Borrower (BR)	The number of individuals or entities who currently have outstanding loan balances with a specific MFI.	Number
Clients (CL)	Total number of clients taking financial and/or non-financial services from an MFI.	Number
Loan Outstanding (Y)	Total amount of loan outstanding to the borrowers of an MFI.	Taka
Net Savings (TS)	Total net savings generated from clients by an MFI.	Taka
Financial Expense (W_1)	Total financial expenses divided by total loan outstanding.	Ratio
Administrative Expense (W_2)	Total administrative expenses divided by total loan outstanding.	Ratio
Total Cost (C)	Total operating expenses by an MFI for a fiscal year, including depreciation, administrative, amortization and etc.	Taka
Portfolio Yield (P)	Total financial revenue income divided by total loan outstanding.	Ratio

Source: Author's compilation from MRA annual reports.

3.4 Empirical Findings

Table 3.2 reports descriptive statistics of the variables used to measure concentration and competition. First, the raw values (without winsorization) of the variables (BR, CL, TS and Y) were used to compute HHI and CR. Winsorized variables can be used as well, but may underestimate the actual value of CR and HHI. When measuring competition through the translog cost function, the variables of interests are winsorized at the 1st and 99th percentile level to minimize the effect of outliers on the analysis. A similar practice

is also observed in the banking (Anginer et al., 2014) and microfinance literature (Tchuigoua, 2015).

Descriptive statistics show that the sample includes both larger and smaller MFIs in terms of their market indicators, such as clients (CL), borrowers (BR), total net savings (TS) and total loan outstanding (Y). While the smallest MFI has only 551 clients, the largest MFI accounted for over 800,000 clients. The number of borrowers is always lower than the number of clients, as some MFI clients only deposit savings or use other financial and non-financial services, such as insurance, remittances, health services, etc. It has been observed that the mean value of Y is roughly three times higher than TS, which means that one-third of the funds come from savings of clients.

Table 3.2: Descriptive Statistics of the Variables (2009-2014)

Variable	Mean	S.D.	Min	Max
<u>Without Winsorization</u>				
BR('000)	94.738	528.803	0.408	6408.802
CL('000)	119.974	678.135	0.551	8357.249
Y(Million)	988.653	5814.918	3.232	81172.940
TS(Million)	368.871	2221.901	0.361	30925.760
<u>Winsorized</u>				
W1	0.045	0.023	0.004	0.117
W2	0.157	0.051	0.057	0.349
P	0.230	0.053	0.068	0.345
C(Million)	150.909	711.383	0.331	7563.941
Y(Million)	793.035	3885.069	3.770	35662.150

Source: Author's calculation. S.D. = Standard Deviation. Y, TS and C are in Bangladeshi Taka (BDT).

Although the interest rate in the microfinance sector in Bangladesh has been capped at 27% per annum (on a declining basis) effective from 2011, the mean portfolio yield is lower than the cap. However, interest rates charged by MFIs range from 7% to 35%, which means that clients could be paying interest rates far greater than the interest cap threshold. The financial cost of an MFI (W_1), is found to be relatively low; mean value stood at 5%. The average administrative cost (W_2), one of the most cited factors for higher

interest rates in microfinance, was at 16%. The average total cost (C), which is the operating cost of an MFI, amounted to several millions of Bangladeshi Taka for large-scale MFIs.

3.4.1 Concentration in Bangladesh's Microfinance Industry

Concentration of the microfinance industry is measured by two indicators, namely, the HHI and CR. Discussions on HHI and CR are presented separately in the following section.

3.4.1.1 Herfindahl Hirschman Index (HHI)

Table 3.3 reports the HHI results based on four different market indicators. While CL and BR show the number of people served, Y and TS represents value of credit and deposit market respectively. During the study period, HHI gradually decreases for BR and CL. The HHI for Y and TS, however, observed a similar trend; HHI decreased at the beginning of the study period, then increased slightly from 2013 to 2014. Overall, the extent of change between deposit market and credit market has a slight variation. For example, although HHI declined from 0.24 to 0.21 during 2009 to 2010 in terms of Y, TS marginally decreased from 0.24 to 0.23 during the same period.

Table 3.3: HHI of the Microfinance Sector in Bangladesh (2009-2014)

	MFIs	2009	2010	2011	2012	2013	2014
Clients	169	0.2337	0.2211	0.2061	0.1729	0.1618	0.1601
Borrower	169	0.2260	0.2068	0.1943	0.1746	0.1644	0.1671
Loan Outstanding	169	0.2402	0.2118	0.1955	0.2033	0.1848	0.1901
Net Savings	169	0.2485	0.2312	0.2042	0.1999	0.1879	0.2111

Source: Author's.

Apart from that, the increase in HHI for the deposit market was slightly greater than that of the credit market in 2014. Regardless of the indicators used, the findings suggest that the sector is moderately concentrated as the HHI values range from 0.15 to 0.25.

Figure 3.2 shows the trend of average HHI (average of the four different indicators) from 2009 to 2014 in the microfinance sector in Bangladesh. In earlier studies, for example, Kar and Swain (2014) depicted a similar trend despite the differences in sample size and time periods. The duo observed that, on average, the HHI was 0.24 in the South Asian region.

If this study compares the concentration of the microfinance industry to the concentration of the conventional banking sector of Bangladesh, some interesting findings can be observed. For example, in the banking industry of Bangladesh, Uddin and Suzuki (2015) found a decreasing trend of HHI between the period of 1983 and 2011. However, the values of the HHI in Uddin and Suzuki (2015) range between 0.143 and 0.037, which supports unconcentrated banking market structure. However, the microfinance industry is moderately concentrated in this study. Furthermore, the finding of this study is similar to the estimates of Ahamed (2012) which show a gradual decline in the concentration of the Bangladeshi banking sector over the years. Moreover, in reference to the non-bank financial sector of Bangladesh, Uddin and Gupta (2012) also observed that concentration has gradually decreased and competition has increased during the period of 1997-2010. So overall, it can be inferred that the concentration of the microfinance industry follows the declining trend which has been observed in both the banking and non-banking financial industries in Bangladesh.

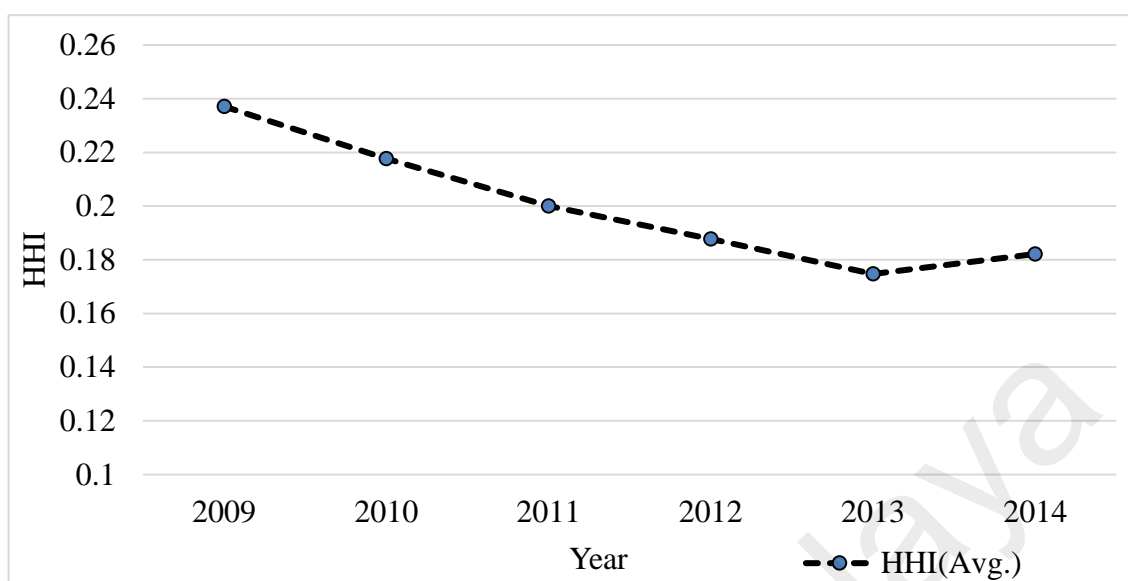


Figure 3.2: Trend of Average HHI in the Microfinance Sector.

Source: Author's.

Several plausible explanations could be linked to the gradual decline in HHI. First, the total number of MFIs and their rapid branch expansion have systematically increased over the years, which may have had an impact on the overall concentration of the sector. For example, when there is a significant number of MFIs and branches available in the markets, clients have many available options for microfinance services, which generally impairs the overall concentration of the market. The findings also corroborate Glaser, Rahman, Smith, and Chan (2013), where it was found that growth in the microfinance industry has brought decline in the overall concentration of the industry, which has enhanced the welfare of the poor. Additionally, the emergence of more localized MFIs that provide financial services to their local community deteriorates the influence of large MFIs. Second, the establishment of the MRA in 2006 further promoted competition in the sector as they started providing operating licenses to new MFIs. This opportunity created a level playing field for all MFIs. It is further associated with the eligibility of the registered MFIs to apply for several financial and non-financial incentives from domestic

and international sources, including concession loans, donations, borrowing from commercial banks and non-financial assistance. In general, these funding opportunities have helped newly-created MFIs in expanding their operations to gain market share, which has resulted in gradual decline in overall concentration. Third, the overall socio-economic development in Bangladesh may also have had an impact on the gradual decline in HHI. Amidst rising economic growth and socio-economic development, people prefer complex and comprehensive financial products; hence, they leave the microfinance market. Thus, MFIs may observe a decline in their client base, impacting overall market concentration.

In a nutshell, the empirical findings on HHI show that the sector is currently transitioning from a moderately concentrated to a closely unconcentrated market.

3.4.1.2 Concentration Ratio (CR)

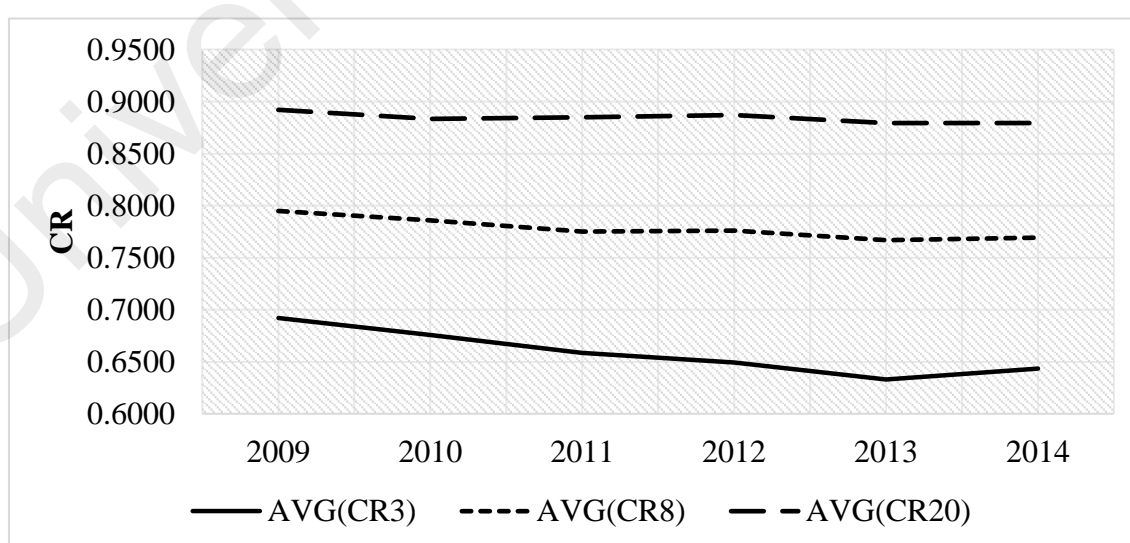
Table 3.4 reports the CR results of the big three, big eight and 20 MFIs based on the four different market indicators. Interestingly, the number of people served by the big three, big eight and top 20 MFIs has slightly decreased over the years. In contrast, the big three and big eight MFIs slightly lose their deposit and credit market share, however, the market share of the top 20 remains almost the same. These findings show that although the top 20 MFIs may lose borrowers and clients, they maintain their market share through two other monetary indicators (TS and Y). This could mean that the average loan size of these large-scale MFIs has systematically increased throughout the period. The higher average loan size could also indicate the presence of comparatively wealthier clients, which in turn increases average savings. Hence, these two indicators move in similar directions.

Table 3.4: Concentration Ratio of the Largest 3, 8 and 20 MFIs (2009-2014)

		2009	2010	2011	2012	2013	2014
BR	CR ₃	0.6896	0.6703	0.6619	0.6358	0.6191	0.6184
	CR ₈	0.7921	0.7799	0.7737	0.7617	0.7528	0.7541
	CR ₂₀	0.8867	0.8783	0.8827	0.8739	0.8710	0.8709
CL	CR ₃	0.7007	0.6792	0.6678	0.6442	0.6192	0.6140
	CR ₈	0.8029	0.7854	0.7781	0.7649	0.7492	0.7481
	CR ₂₀	0.8957	0.8817	0.8771	0.8778	0.8666	0.8586
SAV	CR ₃	0.6892	0.6786	0.6524	0.6513	0.6408	0.6878
	CR ₈	0.7944	0.7877	0.7746	0.7828	0.7786	0.7928
	CR ₂₀	0.8961	0.8918	0.8898	0.8987	0.8954	0.8965
Y	CR ₃	0.6893	0.6753	0.6524	0.6662	0.6532	0.6533
	CR ₈	0.7902	0.7907	0.7746	0.7943	0.7868	0.7825
	CR ₂₀	0.8899	0.8814	0.8898	0.8978	0.8850	0.8917

Source: Author's. Note: CR3, CR8, CR20 are the market concentration ratio of the largest 3, 8 and 20 MFIs respectively.

Figure 3.3 shows the average concentration (in terms of clients, borrowers, savings and loans) of the largest three, eight and 20 MFIs. CR3, CR8 and CR20 observed slight decline till 2013; however, the magnitude of decline was different for each of the three categories. CR3 observed the highest gradual decline, followed by CR8 and CR20. The findings show that despite the emergence of hundreds of MFIs and regulatory enforcement, the sector is still controlled by the top 20 MFIs.

**Figure 3.3: Average Concentration Ratio of the Largest 3, 8 and 20 MFIs**

Source: Author's.

3.4.2 Competition in Microfinance: A Proxy by the Lerner Index

Since estimating the Lerner index requires the estimation of translog cost function, it is necessary to examine if there is multicollinearity among the independent variables. Table 3.5 reports the pairwise correlation and Variance Inflation Factor (VIF) between the main independent variables used in estimating translog cost function. The VIF quantifies the severity of multicollinearity in a regression analysis. The findings show no serious multicollinearity among the main independent variables as the value of the correlation coefficient is very low and does not exceed the maximum threshold of 0.8 (Kennedy, 2008). Similarly, the value of VIF is also very low and does not cross the maximum threshold of 10 (O'brien, 2007).

Table 3.5: Pairwise Correlation between Main Independent Variables

	LN _Y	LN _{W₁}	LN _{W₂}	VIF
LN _Y	1			1.05
LN _{W₁}	0.225***	1		1.03
LN _{W₂}	-0.023	-0.0244	1	1.03

Source: Author's. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.6 reports two estimated models based on constrained linear regression: model-1 and model-2. The root mean squared error (RMSE) represents the variance of the residuals and can be treated as a reliability of the performance of the models (Chai & Draxler, 2014). In general, lower RMSE values indicate better goodness of fit. Lewis-Beck, Bryman, and Liao (2003) further argued that a large RMSE value indicates that the model does not explain a large amount of variance in dependent variables. Thus, they also use RMSE to measure goodness of fit for the overall model. Nonetheless, Lewis-Beck et al. (2003) also explained that RMSE could compare with a conventional measure of fit like R^2 . This study observed very low RMSE for both of the models (only 0.02 in both models), which depicts the goodness of fit for both models.

Table 3.6: Estimated Translog Cost Function

	Dependent Variable: LNC	
	Model-1	Model-2
Outputs		
LNY	1.0207*** (0.0074)	1.0142*** (0.0081)
0.5*(LNY)2	-0.0009** (0.0004)	-0.0006 (0.0004)
Input Prices		
LNW1	0.3348*** (0.0138)	0.3478*** (0.0162)
LNW2	0.6652*** (0.0138)	0.6522*** (0.0162)
0.5*(LNW1)2	0.1272*** (0.0020)	0.1264*** (0.0025)
0.5*(LNW2)2	0.1272*** (0.0020)	0.1264*** (0.0025)
Cross products between output and input prices		
LNY*LNW1	0.0034*** (0.0007)	0.0026*** (0.0008)
LNY*LNW2	-0.0034*** (0.0007)	-0.0026*** (0.0008)
Cross products between input prices.		
LNW1 *LNW2	-0.1272*** (0.0020)	-0.1264*** (0.0025)
Year Dummies		
	Yes	Yes
<i>CONS</i>	0.4214*** (0.0730)	0.4824*** (0.0803)
<i># of Observations</i>	1014	741
<i>RMSE</i>	0.0262	0.0254

Source: Author's. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

This study first estimates the marginal cost based on model-1 (equation (3.8)) and subsequently estimates L using equation (3.5). Model-1 includes a full sample with an observation of 1014 from 2009 to 2014. The results of the Lerner index seem impressive at first (Table 3.7). Some MFIs have negative L , which means that they are making a loss (marginal cost exceeded marginal revenue), as predicted earlier in the methodology (Section 3.3.2). Similar results have also been observed in Assefa et al. (2013). To deal with such outcomes in measuring competition, Assefa et al. (2013) suggested adjusting the operating cost using subsidies or donations. However, in this study, donations accounted for roughly 2% to 3% of the total loan outstanding in the microfinance sector in Bangladesh. These donations were not meant for operational cost subsidies, but most

likely for loan outstanding purposes. The financial cost of MFIs, which is the first input (W_1), has already been adjusted based on donations. Hence, donations should not be subtracted from the total operating costs, as it also includes financial costs. It is likely that these MFIs had incurred actual losses as their marginal revenue is lower than their marginal cost. The following section will describe how to deal with negative L .

Table 3.7: Initial Estimates of the Lerner Index

Year	Obs.	Mean	S.D	Min	P25	P50	P75	Max
2009	169	0.014	0.412	-3.405	-0.065	0.077	0.219	0.752
2010	169	0.054	0.342	-2.570	-0.006	0.099	0.213	0.520
2011	169	0.092	0.267	-1.386	-0.011	0.151	0.230	0.553
2012	169	0.113	0.274	-1.435	0.017	0.162	0.258	0.650
2013	169	0.090	0.231	-0.898	0.016	0.113	0.224	0.595
2014	169	0.085	0.226	-0.983	-0.002	0.107	0.224	0.514
Total	1014	0.075	0.300	-3.405	-0.011	0.118	0.233	0.752

Source: Author's.

As the L should theoretically be between 0 and 1, this study re-estimated the translog cost function (model 2) after dropping the observation that $L < 0$ from the initial estimates. The final estimates of L are reported in Table 3.8. It is also possible to calculate how many MFIs have observed financial losses. For example, within the sample, L was less than 0 for 60 MFIs in 2009, 44 MFIs in 2010, 45 MFIs in 2011, 37 MFIs in 2012, 40 MFIs in 2013 and 44 MFIs in 2014.

Table 3.8: Final Estimates of the Lerner Index

Year	Obs.	Mean	S.D	Min	P25	P50	P75	Max
2009	109	0.201	0.137	0.009	0.098	0.183	0.257	0.752
2010	125	0.175	0.127	0.003	0.076	0.134	0.260	0.520
2011	124	0.209	0.121	0.002	0.126	0.181	0.278	0.553
2012	132	0.218	0.132	0.000	0.119	0.206	0.287	0.650
2013	129	0.187	0.128	0.002	0.084	0.166	0.262	0.595
2014	125	0.181	0.117	0.001	0.092	0.152	0.262	0.514
Total	744	0.195	0.127	0.000	0.100	0.172	0.270	0.752

Source: Author's.

Despite higher competition, some MFIs still enjoy greater market power. High levels of market power could have been achieved by modifying the loan products that provide synergistic benefits to particular MFIs, such that MFIs can charge more than the market rate. Nevertheless, the highest market power of the MFIs was reduced from 0.752 to 0.515 during the study period.

Figure 3.4 shows the trend of competition from 2009 to 2014, considering both the initial and final estimates of L . Both sets of values follow a similar trend in average market power where L peaks in 2012, and then gradually declines. These findings support earlier findings by Assefa et al. (2013) on enhanced competition in the South Asian microfinance sector. The average estimate of L (0.195) in this study is almost three times lower than the findings of Assefa et al. (2013). Relatively higher competition could be the outcome of structural changes and regulatory enforcement in the Bangladesh microfinance industry, which has helped to foster a competitive environment. However, the findings of this study are in contrast with Kar (2016) as he found a decline in competition in the Bangladesh microfinance industry.

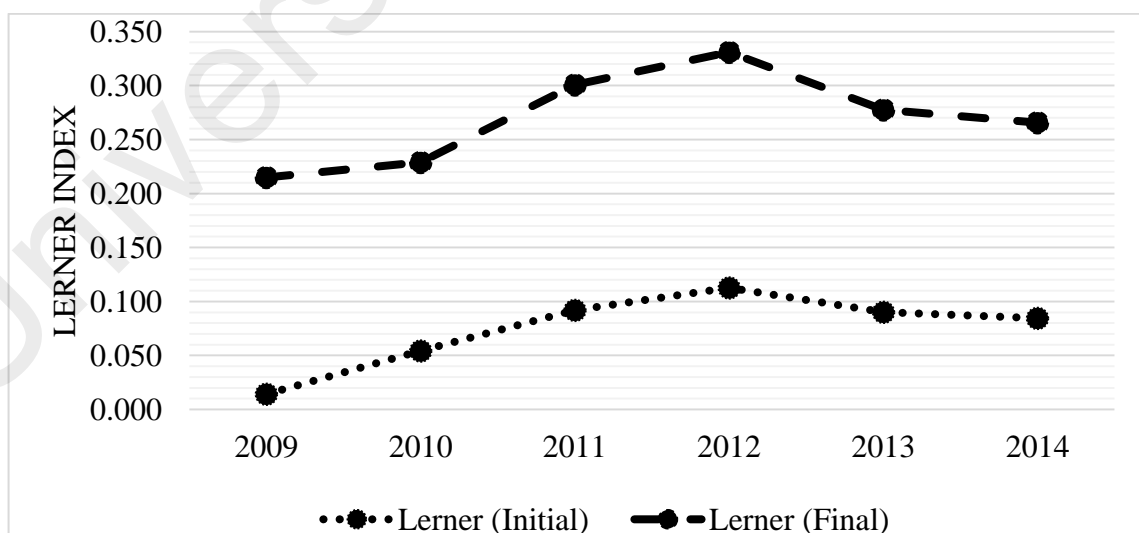


Figure 3.4: Evolution of the Lerner Index (2009-2014)

Source: Author's.

Overall, the findings depicted a better albeit imperfect competitive market in the microfinance sector in Bangladesh. Compared to the banking industry, the microfinance sector in Bangladesh has enjoyed better competition, as measured by Uddin and Suzuki (2015). So, despite the fact that the sector has been controlled by a few large MFIs, the results showed that it did not influence the competition level of the industry at large. Moreover, the final estimates of L value were quite similar to the ranges of HHI in this study, which showed the compatibility of HHI and Lerner index.

3.5 Summary

Despite competition being preferred by economists, policymakers and conventional laws, the effect of competition is ambiguous and depends on various contextual factors (e.g. geographical location, historical background and regulatory environment of the country). Two general effects of competition can be observed from the existing banking and microfinance literature. On one hand, competition is a welfare-enhancing factor for the poor as it reduces product prices and increases the range of available options. Competition is also good for institutions as it motivates them to undertake various innovations and incorporate efficient technologies into the production process. On the other hand, competition may increase default rates and multiple borrowing, as well as induce fragility in the industry.

Regardless of the outcome of competition, this chapter aimed to measure the extent of concentration and competition of the microfinance industry in Bangladesh by using SCP and non-SCP techniques that are grounded in convention. Based on the SCP approach, concentration ratio in particular, a few large MFIs have controlled the lion share of the microfinance industry. For example, the three largest MFIs managed to control 69% of the borrowers in 2009; however, that percentage had reduced to roughly 61% by 2014. Interestingly, except for the number of clients, the other market share indicators show that

the CR of the 20 largest MFIs remains the same. The market share losses by the largest three MFIs are actually gained by the other MFIs in the top 20 spectrum. However, the top 20 MFIs have slightly lost market share in terms of clients, part of which has been captured by other players, particularly the new entrants to the industry. The HHI results showed that the market is moderately concentrated as the values range from 0.24 to 0.16, which is very close to the unconcentrated market threshold. While HHI observed a gradual decline in terms of number of clients and borrowers, the other two indicators (credit and deposit) have shown a slight increase after a gradual decline. Overall, there is also a declining trend in terms of HHI, which may indicate increased competition within the sector.

Since the SCP measurements have several limitations to capturing the competitiveness of a market, non-SCP measurement techniques – such as the Lerner index – have also adapted. Employing the Lerner index is challenging due to the unavailability of the marginal cost, thus the study used translog cost function to estimate marginal cost, which was then used to measure Lerner index. Initially, the results revealed that the microfinance sector was very competitive during the study period. However, some MFIs observed negative L , which means that their marginal cost was higher than the marginal revenue, leading to financial losses in operations. This may indicate that some MFIs incurred actual financial loss as a result of serving the poor with lower costs. The final results revealed that Bangladesh's microfinance industry enjoyed relatively better competition; however, the industry was not perfectly competitive as there were MFIs that charge prices several times higher than their marginal cost. Overall, the competition level in the microfinance industry is inverted U-shape based on the Lerner index.

CHAPTER 4: MISSION DRIFT IN MICROFINANCE

4.1 Introduction

This chapter addresses the second research question that is to identify the factors of mission drift.

It has been forty years since the inception of microfinance; within this time frame, the landscape of microfinance has changed (Afonso, Morvant-Roux, Guérin, & Forcella, 2016; Tavanti, 2013). Certainly, some of the innovations and transformations (e.g., savings, remittances, insurance) have brought significant benefits to the poor (Mia, 2016); however, not all the transformations in microfinance have positive impacts. One of the recent transformations in microfinance is the shift of focus from social mission (outreach) to commercial interest or profit motive (Ambe Shu & Oney, 2014; Nurmakhanova, Kretschmar, & Fedhila, 2015). This phenomenon has raised apprehension among both policy makers and academicians, so much so that a new term has emerged: ‘mission drift’ (Aubert et al., 2009; Copestake, 2007; Mersland & Strøm, 2010; Xu et al., 2016).

Mission drift indicates that an MFI has deviated from the original intent of serving the poorest of the poor, and transformed in way that violates the business ethics of MFIs (Serrano-Cinca and Gutiérrez-Nieto, 2014). In fact, this kind of transformation in microfinance is very much similar to Hudon (2011) and Hudon and Sandberg (2013) argument of an ‘ethical crisis’ in microfinance. Because the promoters of microfinance come with an aim to help the impoverished, including a commercial aspect within such mechanisms does not support professionalism. Moreover, the ‘father of microfinance’ — Professor Yunus — has expressed his unhappiness and fears about the future of microfinance due to surging profit-seeking MFIs in the industry. In view of these, for MFIs to be legitimate and proper, they should pursue socially acceptable goals in a socially acceptable manner that is constructed from social norms and values (Chiu, 2014).

While concern grows toward mission drift as broadly observed, relatively less attention has been paid to the causes of mission drift in MFIs. Moreover, there is an insufficient policy response from the government and regulatory authorities to tackle mission drift in the Bangladesh microfinance industry. There are various reasons which could lead an MFI to turn away from serving the poor. One of the potential reasons that contribute to the mission drift of MFIs may be the sources of funds. The drastic changes in the capital structure or sources of funds of the microfinance industry demonstrates the interest of public and private institutions to take part in such social movements (Postelnicu & Hermes); however, identity and role of the funders become complex in the management of MFIs. The emergence of commercial funding for MFIs – notably, banks and profit-driven financial institutions – is a surprising turn in microfinance, given the initial reluctance of the mainstream financial system to provide financial support to the poor (Casselmann, Sama, & Stefanidis, 2015; Chiu, 2015). Thus, the main objective of this study is to evaluate the effects of major sources of funds on mission drift.

The rest of the chapter is organized as follows: Section 4.2 briefly discusses the concept of ‘mission drift’, and builds hypotheses on its relationship with sources of funds. Section 4.3 explains the methodology, with attention to the modelling of mission drift. Section 4.4 presents the empirical results and discussion. Section 5 concludes the chapter.

4.2 Literature Review and Hypothesis Development

Since there is a paucity of research that directly deals with mission drift aspects of MFIs in Bangladesh, this study reviewed both theoretical and empirical literature drawn from global sample of MFIs.

4.2.1 Sources of Funds and Mission Drift

There is very limited literature that discusses the importance of capital structure, particularly for the purpose of analyzing its effect on the mission of MFIs. Of the few studies, Kyereboah-Coleman (2007), Tchuigoua (2014), Bogan (2012) and Hoque et al. (2011) attempted to investigate the capital structure and performance of MFIs. However, none of the existing studies have comprehensively investigated the role of specific sources of funds in mission drift of MFIs. One of the main reasons for the paucity of literature is the scarcity of data. Additionally, there is the general perception that investigating the capital structure of MFIs is less interesting, since most MFIs are NGO-types and the majority of their financing comes from either donors or soft loans. Nevertheless, drastic changes in sources of funds in the microfinance industry in Bangladesh (as reported earlier) entail an investigation of their role in mission drift.

In general, sources of funds are one of the basis to form ownership to any firm or an institution. The larger the amount of funding that a source contributes to a firm's capital structure, the greater control it has in deciding the firm's governance structure. Hartarska (2005) defined governance in microfinance as "the mechanisms through which donors, equity investors, and other providers of funds ensure themselves that their funds will be used according to the intended purposes". Labie and Mersland (2011) have cogently explained the importance of governance in microfinance. Since governance is a key factor in determining the operations of a firm or institution (MFIs in this case), it also affects the extent of outreach and financial sustainability. For example, a socially-driven MFI's managers may opt to serve the poorer community in accordance with the original purpose of such informal banking creation; however, the commercial-oriented providers of the funds may exert pressure on the MFIs to focus on commercial interests. Hence, a problem

between the management of the MFIs and owners (who provided funds) may arise, which is linked to the agency problem.

Based on the sources of funds, the governance of MFIs can be categorized as having an external or internal governance structure. For example, external governance includes MFIs which use donations, commercial loans and other outside funds, whereas internal governance is exemplified by MFIs which are limited to internal sources of funds only (such as savings and cumulative surplus). External governance can be defined as the exercise of control by outsiders such as stakeholders and the market (Hartarska, 2009). While there is no threshold level at which an MFI can be classified as being external governance-controlled or internal governance-controlled, as long as there is a presence of external sources of funds, the MFI would be considered as being under the influence of external governance.

Initially, the Grameen model of financing utilized internal sources of funds, where a cumulative surplus of income and clients savings constitute the main sources of funds (Hoque et al., 2011). This minimizes the presence of external governance as they do not incur commercial debt or other external sources of capital for their operations. Moreover, as the clients are the stakeholders, MFIs that follow Grameen-Model of capital structure are able to make any decisions or strategies in favor of the poor without any conflict of interest. Furthermore, Annim (2012) argued that self-mobilized funds significantly help MFIs to reach out to the very poor.

On the other hand, the emergence of commercial funds, which some authors have identified as one of the turning points in the history of microfinance, may have advantages and disadvantages too. In general, most commercial funds come with profitability or commercial gain motives, rather than socially-oriented goals. Hence, if an MFI is heavily

dependent on commercial funds, two things will happen: first, the commercial funding sources will gain access to the governance of MFIs based on their shareholding portion; second, their main intention would be to maximize profit. However, not all commercial sources or banks follow the same style of operations, but it is generally assumed that the commercial funds come with commercial gain or profit motive in MFIs. In terms of advantages of commercial funds, there is evidence supporting a positive correlation between the commercial funds and financial performance of MFIs (Mersland & Urgeghe, 2013). Moreover, as discussed previously, the agency cost and profit incentive theories have also suggested that commercial debt is preferred over equity or other funds.

4.2.2 Institutional Characteristics and Mission Drift

Institutional types and characteristics also matter in the mission drift of MFIs. For example, Kar (2013) found that the size of an MFI has an effect on mission drift in terms of depth of outreach. Large-scale MFIs do not perform well in providing services to the poor, suggesting that those MFIs may opt to provide services to wealthier clients within a society. However, upon examining the interaction between size and lending types, Kar (2013) found insignificant effects of size on mission drift, based on a dataset of 401 MFIs from 71 countries. A more comprehensive study by Mersland and Strøm (2010), using total assets as a size indicator of an MFI, found insignificant results for the effect of size on mission drift. By using lending types (individual or group) and gender bias in microfinance as an unconventional measure of mission drift, the duo found that large MFIs focus on individual lending and target female customers. Based on the statistical results drawn from a panel analysis of 11 years with a large data sample, Mersland and Strøm (2010) concluded that there is no mission drift in the microfinance industry.

The age of MFIs may also be associated with mission drift. For example, an older MFI may be prompted to provide larger loans, thus drifting towards the higher-income

segment (Mersland & Strøm, 2010) and repeating their services towards existing clients, rather than focusing on new markets or clients. Mersland and Strøm (2010) argues that two benefits accrue to such MFIs: the first benefit is materialized through cost efficiency as focusing on existing clients lowers expenses and increases the rate of good repayment; the second benefit is the lower risk from services offered repeatedly to the same creditworthy clients. Certainly, the older MFIs have better advantages in these two aspects compared to novice MFIs. Nonetheless, an experienced MFI is more likely than a relatively new MFI to lend to a smaller customer, hence dismissing the view that older MFIs have drifted from their mission (Mersland & Strøm, 2010). In contrast, Kar (2013) found no significant effect of age on mission drift of MFIs even for its interaction with size variables. However, Ghosh and Van Tassel (2008) and Hermes and Lensink (2007) hold the view that as MFIs grow and mature, it is quite likely that they would tend to focus on clients who can absorb large amounts of loans, particularly when targeting individual clients.

MFIs now not only provide credit but also a wide array of financial and non-financial products (Mia, 2016). However, it is important and timely to examine whether this shift of MFIs is causing mission drift, because the scope and expertise of MFIs may also matter. For instance, a credit-making MFI may perform very well in providing services to the poor by repeating their services with clients. The main argument here is the specialty of operations. When MFIs want to cast a wider net by offering various financial and non-financial products, they may not target the poorest of the poor due to shift of focus to various market niches. Moreover, when an MFI focuses on financial and non-financial services other than credit, there is a high possibility of shifting resources in such a way that may understate the depth of outreach of MFIs.

In recent years, financial interests have increasingly influenced microfinance institutions (MFIs), with financial gain overshadowing service to the poor. This phenomenon has caused apprehension among academicians as well as policy makers, for its negation of the fundamental social ethos of MFIs and the mandate of sustainable financial inclusion. More focus on financial gain or profit motive adversely affects the outreach goals of MFIs, which means that there is a trade-off. In view of the trade-off arguments, Von Pischke (1996), Rhyne (1998), Navajas, Schreiner, Meyer, Gonzalez-Vega, and Rodriguez-Meza (2000), and Schreiner (2002) contend that MFIs incur higher cost per dollar loaned when the loan size is small, and it is more cost-effective to increase loan sizes. As a result, placing more weight on depth of outreach would result in higher transaction costs (administrative and service costs), which translates into poor financial performance (Quayes, 2012). In contrast, financial gain and outreach may also be complementary to each other. It is also perceived that small loans have identical loan structure, which enables innovative loans products (group loans). This significantly reduces administrative and monitoring expenses, thus incurring lower service costs (Lariviere & Martin, 1998; Paxton & Cuevas, 2002). Existing empirical literature on microfinance have found evidence supporting both trade-off (Hartarska, Shen, & Mersland, 2013; Hermes et al., 2011) and complementary or no trade-off (Kar, 2013; Quayes, 2012, 2015) between these two goals of MFIs.

4.2.3 Macroeconomic Factors and Mission Drift

As argued earlier, the microfinance market is an integral part of an economy; hence, it is expected that the performance of MFIs may be influenced by the macroeconomic settings of a country where it operates. To highlight the importance of macroeconomic factors on microfinance performance, Ahlin et al. (2011) highlighted that ‘any assessment that does not take into account the macro-economic and macro-institutional environment

... is incomplete', and Xu et al. (2016) examined the role of macroeconomic factors in mission drift of MFIs. One of the main agenda of MFIs is to support small-scale entrepreneurs. In the context of overall rising economic development, measured by GDP growth, the demand for microfinance services and larger loans is projected to increase. This is because entrepreneurs will require more capital to expand their microenterprises. Thus, overall progress in GDP growth is likely to have an impact on the outreach mission of MFIs.

Inflation (INF), a persistence increase in consumer price or the declining of the purchasing power parity, affects both individuals and institutions. A recent study by Xu et al. (2016) found that in the presence of high inflation, MFIs may switch their preference from poor people to relatively wealthier clients. They highlighted two key points behind their arguments. First, in the face of rising inflation, poor people become more vulnerable to high borrowing costs and inflation risks.⁴¹ Secondly, due to high costs of borrowing, demands for loans would be lower from lower-income clients as compared to the wealthier clients. Thus, higher inflation would increase the loan size and shift the target market to relatively wealthier clients; from the perspective of MFIs, this minimizes risks and reduces operating costs because poor people are more vulnerable than financially-secure clients.

Another important factor that makes MFIs susceptible to mission drift is the development of the domestic financial sector. In general, financial sector development can have significant impacts on poverty alleviation. Zhuang et al. (2009) identified two channels by which this happens: one is through the growth effect or indirect effect and

⁴¹ However, rising inflation may favors those who are already into debt.

another is attributed to financial access or direct effect. To highlight the direct effect of financial sector development, Zhuang et al. (2009) noted that access to financial resources reduces poverty. In other words, a healthy financial sector would allow the poor to access the financial market to meet their credit requirements.

There are two perceptions towards the interactions of the microfinance and domestic financial sectors due to their complex relationship (Xu et al., 2016). On one hand, if the domestic financial sector is more developed, direct competition between the two sectors (formal and informal) would allow MFIs to enhance their depth (Vanroose & D'Espallier, 2013). MFIs may focus more on down market (the poor segment) which is bypassed by the formal financial sector, thus avoiding mission drift. Vanroose and D'Espallier (2013) also argued that MFIs are believed to perform better where the formal financial sector fails or is less developed. On the other hand, MFIs may find it easier and more cost-effective to lend larger loans to the poor in order to compete with commercial banks in the context of a developed financial sector. As a result, the depth of outreach may decline (Xu et al., 2016).

MFIs also borrow from international markets denominated in USD, but lending in the local Bangladeshi currency (Taka) involves exchange rate risks. In general, exchange rate risk refers to the potential gain or loss from the exchange rate, which occurs in three dimensions: depreciation or devaluation, convertibility risk and transfer risk (Littlefield, Mwangi, & Featherston, 2006). Since foreign exchange rate risk is one of the most important factors in microfinance operations and a significantly determiner of interest rates (Al-Azzam & Mimouni, 2016), it is highly likely to have an effect on loan size.

The quality of the governance structure of a country may significantly determine the performance of MFIs. For this reason, the worldwide governance indicator (WGI) that

captures six different aspects has been incorporated in microfinance literature. For example, Barry and Tacneng (2014) examined how institutional quality alters MFIs' behavior when serving the poor in Sub-Saharan Africa. They found that when institutional quality is strong, there is no advantage of NGOs over other types of MFIs (e.g. cooperatives, banks etc.) in terms of outreach. Thus, mission drift is less likely to happen when high institutional quality and good governance are present.

4.2.4 Hypotheses Development

A socially-driven MFI's managers may opt to serve the poor in accordance with the original purpose of such informal banking creation; however, the commercial-oriented providers of the funds may exert pressure on the MFIs to focus on commercial interests. Hence, a problem between the management of the MFIs and owners (who provided funds) may arise. If the sources of funds give more weight on financial interest or profitability and ignore the mission of social outreach, it certainly goes against the ethos and premise of MFIs. Furthermore, the profit incentive theory (PIT) highlights that debt capital is better for a firm to achieve its objective since it minimizes the presence of external pressures, particularly from the equity holders. Thus, this study derives a following general hypothesis based on the above discussion, that;

H1: Funding source has a significant effect on average loan size over GNI per capita (proxy of mission drift) of MFIs.

4.3 Methodology

As an attempt to simplify the methodological discussion, a methodological framework is developed and mapped in Figure 4.1. This would allow the readers to have a glimpse of ideas about the procedures followed in this analytical chapter.

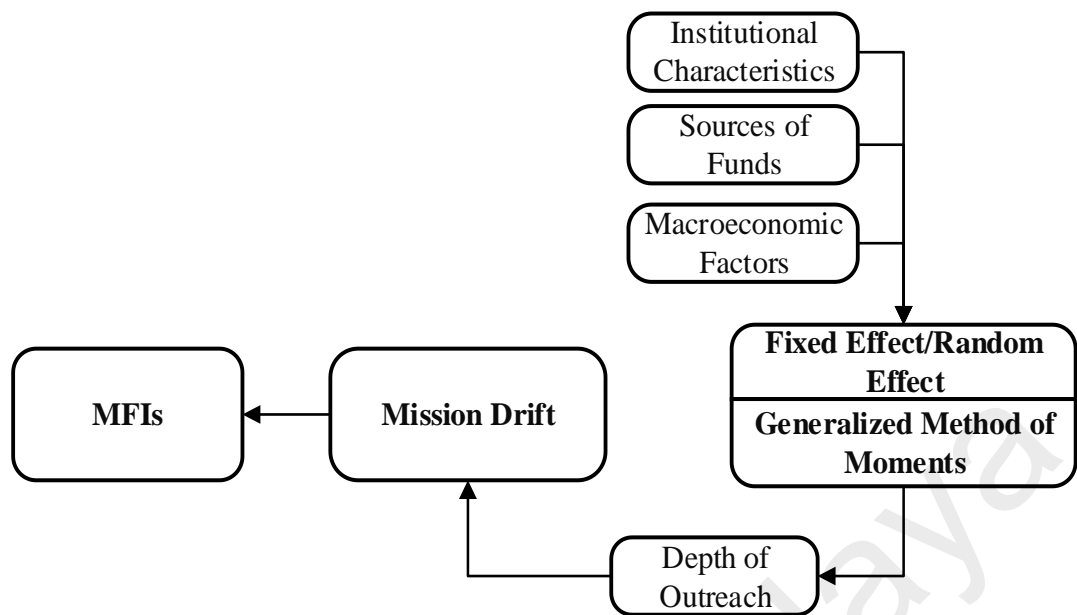


Figure 4.1: Estimation Strategy of Mission Drift.

Source: Author's.

4.3.1 Modelling Mission Drift: Proxy by Depth of Outreach

Measuring the social benefits of microfinance and identifying the presence of mission drift has never been an easy task. However, a few studies have provided explanations of various proxies of mission drift. Based on Schreiner (2002)'s proposal of six aspects of outreach and defining criteria of mission drift in this study, depth of outreach is used as a proxy variable to capture the mission drift aspects of MFIs.

Schreiner (2001), among others, proposed that the average loan outstanding of an MFI can be used to capture both the notion of the very poor and the depth of outreach.⁴² Due to its theoretical ground and simplicity, the indicator remains one of the most preferred among the researchers (Bos & Millone, 2015; Cull, Demirgüç-Kunt, & Morduch, 2007; D'espallier, Guérin, & Mersland, 2011; Mersland & Strøm, 2010; Quayes, 2012, 2015).

⁴² Schreiner (2001) further discusses about the seven aspects of loan size, ranging from maturity, instalments, time between instalment, dollar disbursed and etc.

Mersland and Strøm (2010) argued that mission drift happens when the size of average loan increases. To be more specific, loan size can roughly represent the client poverty status and a poor person usually requires a small amount of loans. In contrast, better off clients will not be interested to take small loans. Because the loan size increases as the economic well-being of a person improves. Quayes (2012) also argued that there is strong positive correlation between income level and size of loans. Hence, there is an inverse relationship between the average loan size and depth of outreach. This means that if the average loan size is small, MFIs are catering the poorest of the poor, hence, increasing the depth of outreach. Alternatively, if average loan size is large, means MFIs are serving relatively wealthier clients, thus less depth of outreach. Nevertheless, as the increase in average loan size may be due to the gradual economic development of a country, this average loan balance often normalizes with GNI per capita (Cull et al., 2007; Hisako, 2009; Mersland & Urgeghe, 2013; Quayes, 2012; Xu et al., 2016). Thus, this study uses average loan over GNI per capita (AVLGNI) as a main dependent variable to capture mission drift. It has also been estimated that if the AVLGNI is less than 20%, it can be regard that MFIs are serving the poorest of the poor (Rosenberg, 2009). Thus, using AVLGNI to capture mission drift serve as an excellent indicator in this study.

4.3.2 Static Panel Model

Since the study has balanced panel data, the initial static econometric model of mission drift is as follows;

$$LNAVLGNI_{it} = \alpha_1 + \beta (SF_{i,t}) + \gamma (IC_{i,t}) + \partial (MF_t) + \varepsilon_{it} \quad (4.1)$$

$$\varepsilon_{it} = \vartheta_i + \mu_{it}$$

where, *LNAVLGNI* is the natural logarithm of dependent variable and '*i*' represents the MFI with a time period '*t*'. ε_{it} denotes the disturbance term with ϑ_{it} capturing firm

specific unobservable effect and μ_{it} representing idiosyncratic error. The main variable of our interest is major sources of funds (SF) that are susceptible to mission drift, whereas the other two categories of variables – institutional characteristics (IC) and macroeconomic factors (MF) – are included as control variables. The major sources of funds comprise both internal and external funds and the extension of equation 4.1 is as follows:

$$\text{LNAVLGNI}_{it} = \alpha_0 + \beta_1 \text{SAV}_{it} + \beta_2 \text{CUMS}_{it} + \beta_3 \text{MFIB}_{it} + \beta_4 \text{BANK}_{it} + \gamma(\text{IC}_{i,t}) + \partial(\text{MF}_t) + \varepsilon_{it} \quad (4.2)$$

In equation 4.2, the internal funds include clients' saving (SAV) and cumulative surplus (CUMS). The effect of internal funds on mission drift can be mixed. In one hand, when MFIs generate much of savings, it could indicate that their client base is relatively wealthier.⁴³ Apart from that when an MFI focus on cumulating their earnings, it does indicate their preference of financial interest. Hence, focusing more on the savings and cumulative surplus may lead to mission drift. On other hand, internal fund minimizes the presence of external governance as they do not incur debt or other external sources of capital for their operations. Moreover, as the clients are the stakeholders, MFIs that follow Grameen-Model of capital structure are able to make any decisions or strategies in favor of the poor without any conflict of interest. Similarly, Annim (2012) argued that self-mobilized funds significantly help MFIs to reach out to the very poor.

Another recent trend of peer borrowing among MFIs (MFIB) is also included in equation 4.2. This type of peer borrowing is usually meant to finance large-scale loans,

⁴³ However, savings by poor also depends on their willingness and right incentives.

to target relatively wealthier clients. Recently, commercial bank (BANK) has also started to provide capital to MFIs, thus we also included this variable in the model.

Now, this study includes several institutional characteristics in equation 4.2, thus yielding equation 4.3, as follows;

$$\begin{aligned} \text{LNAVLGNI}_{it} = & \alpha_0 + \beta_1 \text{SAV}_{it} + \beta_2 \text{CUMS}_{it} + \beta_3 \text{MFIB}_{it} + \beta_4 \text{BANK}_{it} + \\ & \gamma_1 \text{OSS}_{it} + \gamma_2 \text{ROA}_{it} + \gamma_3 \text{PY}_{it} + \gamma_4 \text{BCR}_{it} + \gamma_5 \text{LNBRANCH}_{it} + \gamma_6 \text{LNAGE}_{it} + \\ & \gamma_7 (\text{LNAGE})^2_{it} + \gamma_8 \text{LNAGE} * \text{LNBRANCH}_{it} + \partial(\text{MF}_t) + \varepsilon_{it} \end{aligned} \quad (4.3)$$

As this study also aims to examine whether there is any potential trade-off between profit motive and depth of outreach, hence, operational self-sustainability (OSS), return on assets (ROA) and portfolio yield (PY)⁴⁴ have been treated as an independent variable. In one hand, OSS indicates the ability of an MFI generate financial revenue to cover up its total cost including, financial, operational and loan loss provision.⁴⁵ On the other hand, ROA shows how well a MFI uses their assets to generate return, while PY is the nominal interest charge to the clients of MFIs. Christen (2001) argued that PY (nominal interest rates) is detrimental to depth of outreach. Hence, if these variables have a positive impact on the AVLGNI, then there will be trade-off, and if negative means there is a complementary relationship exists.

Apart from that, the size of an MFI, represented by number of branch (BRANCH) is included to capture size effect. It is generally understood that MFIs expand their operation through creating new branch to provide financial support to the rural poor in an aim to enhance their outreach. Hence, more number of branch, greater the depth of outreach. Moreover, another important characteristic of MFIs, AGE, is also included to examine

⁴⁴ It is used as P in the previous chapter.

⁴⁵ One of the main limitations of using OSS is that it does not account for the level of subsidies for operating expenses (Hartarska & Nadolnyak, 2007). Thus, it could only measure the reasonable approximation of financial performance of MFIs.

the effect of experience and longevity on mission drift. Generally, the higher the age, the greater the experience of an MFI; it is thus more likely to have cultivated long-term relationships with its clients and to enhance outreach through understanding of clients' financial needs. Hence, this study also included AGE² to explore the possibility of a non-linear relationship with mission drift, as it is common practice in the existing literature to capture the 'learning curve' effect. Additionally, in line with Kar (2013), this study also includes the interaction term between age and size variables to examine the scaling up effect on mission drift of MFIs.

The other macroeconomic and regulatory variables are also taken into consideration as the macroeconomic factors may determine the performance of MFIs (Ahlin et al., 2011). Hence, including the macroeconomic and regulatory variable, the equation 4.3 can be re-written as follows;

$$\begin{aligned} \text{LNAVLGNI}_{it} = & \alpha_0 + \beta_1 \text{SAV}_{it} + \beta_2 \text{CUMS}_{it} + \beta_3 \text{MFIB}_{it} + \beta_4 \text{BANK}_{it} + \\ & \gamma_1 \text{OSS}_{it} + \gamma_2 \text{ROA}_{it} + \gamma_3 \text{PY}_{it} + \gamma_4 \text{BCR}_{it} + \gamma_5 \text{LNBRANCH}_{it} + \gamma_6 \text{LNAGE}_{it} + \\ & \gamma_7 (\text{LNAGE})^2_{it} + \gamma_8 \text{LNAGE} * \text{LNBRANCH}_{it} + \delta_1 \text{INF}_t + \delta_2 \text{WGI}_t + \delta_3 \text{GDPGR}_t + \\ & \delta_4 \text{EXC}_t + \delta_5 \text{CREDIT}_t + \delta_6 \text{RP}_t + \delta_7 \text{INTCP}_t + \varepsilon_{it} \end{aligned} \quad (4.4)$$

Inflation (INF) may have an effect on mission drift of MFIs. For example, Xu et al. (2016) found that in the presence of higher inflation, MFIs may shift their preference from poor people to relatively wealthier clients. Moreover, the quality of the governance structure of a country, for example, the worldwide governance indicator (WGI) that captures six different aspects to measure its governance has also been incorporated.⁴⁶ This study expects that a better governance quality could enhance the role of MFIs to enhance

⁴⁶ Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them. For more details, please visit, <http://info.worldbank.org/governance/wgi/index.aspx#home>.

their outreach mandate. In the context of overall rising economic development measured by GDP growth (GDPGR), the demand of microfinance services is expected to rise. This is because the entrepreneur's will demand comparatively a larger loan to expand their microenterprises with an aim to maximize the gain from economic growth.

To capture the effect of exchange rate risk on mission drift, this study also included exchange rate (EXC). Another important macroeconomic factor is the development of domestic financial sector. To examine how financial sector affect the mission drift of MFIs, credit coverage to the private sectors by bank (CREDIT) is also included as an independent variable. Demographically, the demand of microfinance services is high in the rural than urban areas in Bangladesh due to high density of poverty in the former. For example, the rural poverty rate in Bangladesh was 35.2% ,while it was only 21.3% in the urban areas in 2010 (Bangladesh Economic Review, 2014). Thus, this study expects that increasing number of rural population will proportionately increase the number of poor and hence, lower loan size will be demanded. This study also considers how market intervention may affect mission drift of MFIs. Hence, interest rate caps (INTCP), which is introduced effectively from 2011 function as a dummy variable. The definitions of the variables and expected sign of the coefficients are reported in Table 4.1.

Table 4.1: Definitions of the Dependent and Independent Variables.

Variable	Definition	Unit	Expected Sign
Average Loan over GNI per Capita (AVLGNI)	Average loan outstanding per borrower divided by Gross national income (GNI) per capita.	Ratio	
Operational Self-Sustainability (OSS)	Financial revenue divided by total expense that equals the sum of financial expense, loan loss provision expense and operating expense.	%	+
Return on asset (ROA)	Total return divided by total asset	Ratio	+
Portfolio Yield (PY)	Portfolio yield shows the average gross returns as a proportion of the portfolio outstanding.	%	+
Borrower- Clients Ratio (BCR)	Total number of borrower over total number of clients of an MFI.	Ratio	-
AGE	Years of operation since the initial date of registration.	Year	+/-
BRANCH	Total number of branch of an MFI.	Number	-
JOINT EFFECT	Interaction between number of branch and age of the MFIs.	Number	+
Savings (SAV)	Amount of savings divided by the total amount of fund of an MFI*100.	%	+/-
Cumulative Surplus (CUMS)	Amount of cumulative surplus divided by the total amount of fund of an MFI*100.	%	+/-
Peer Borrowing (MFIB)	Total amount of borrowed capital from peer MFIs divided by the total capital structure (amount of fund) of an MFI*100.	%	+
Commercial Banks (BANK)	Total amount of borrowed capital from commercial banks divided by the total capital structure (amount of fund) of an MFI*100.	%	+
Inflation (INF)	Rate of price change in the economy as a whole.	%	+
GDP Growth (GDPGR)	Annual Gross Domestic Product growth.	%	+
Rural Population (RP)	(Total population-urban population)/total population *100	%	-
CREDIT	Domestic Credit to Private Sector by Banks (% of GDP)	%	+/-
EXC	Official exchange rate, local currency unit per USD , period average.	Taka	+
World Governance Indicator (WGI)	Average of the six dimensions of governance, includes voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption.		-
Interest Rate Cap (INTCP)	0 before the interest rates cap implementation in 2011 and 1 after.	0, 1	+

Source: Author's compilation from MRA and World Bank.

4.3.3 Dynamic Panel Model: Two Step System GMM (SGMM)

The relationship between outreach and financial variables can run in both directions or simultaneously (can serve both as a dependent and independent variable), and is also likely to be dynamic rather than static. And if this is the case, there is a possibility that the estimates are biased, inefficient and not robust. For example, Quayes (2012, 2015) and Kar (2013) have raised the issue of endogeneity between the financial and outreach variables in MFIs. Outreach is a function of financial performance, while financial performance may also depend on the level of outreach (Adhikary & Papachristou, 2014; Quayes, 2012, 2015). Apart from that, Mersland and Strøm (2010) also highlighted that specific financial variables, such as profit, cost and risk are likely to be simultaneous with the average loan size, requiring us to apply an appropriate econometric technique that overcomes the endogeneity issue. One of the ways to correct for endogeneity would be by identifying appropriate external instruments that are independent of the error term.

However, identifying an appropriate external instrument has never been an easy task in microfinance literature (Kar, 2013). This study elected to apply a two-step generalized method of moments (SGMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998). The added advantage of SGMM is that instruments can be generated from the set of data, such as lag of dependent and independent variable (Adhikary & Papachristou, 2014; Deaton, 1995). As a result, the SGMM method has been very popular recently due to its significant advantages among other conventional methods that correct for endogeneity, such as instrumental variable (IV) (e.g.: 2SLS and 3SLS). Apart from endogeneity, SGMM also performed efficiently to check the consistency of results for unobserved heterogeneity and omitted variables bias. Moreover, Roodman (2009) also argued that this approach is best suited for small T and large N , which is also the characteristics of our dataset. Hence, this study opted to use SGMM. Following the

procedure of Roodman (2009) to implement SGMM in STATA12 software package, the dynamic GMM model is as follows,

$$\begin{aligned} \text{LNAVLGNI}_{it} = & \alpha_0 + \alpha_1 \text{LNAVLGNI}_{i,t-1} + \beta_1 \text{SAV}_{it} + \beta_2 \text{CUMS}_{it} + \beta_3 \text{MFIB}_{it} + \\ & \beta_4 \text{BANK}_{it} + \gamma_1 \text{OSS}_{it} + \gamma_2 \text{ROA}_{it} + \gamma_3 \text{PY}_{it} + \gamma_4 \text{BCR}_{it} + \gamma_5 \text{LNBRANCH}_{it} + \gamma_6 \text{LNAGE}_{it} + \\ & \gamma_7 (\text{LNAGE})_{it}^2 + \gamma_8 \text{LNAGE} * \text{LNBRANCH}_{it} + \delta_1 \text{INF}_t + \delta_2 \text{WGI}_t + \delta_3 \text{GDPGR}_t + \delta_4 \text{EXC}_t + \\ & \delta_5 \text{CREDIT}_t + \delta_6 \text{RP}_t + \delta_7 \text{INTCP}_t + \varepsilon_{it} \end{aligned} \quad (4.5)$$

where $\text{LNAVLGNI}_{i,t-1}$ is a one year lag of the dependent variable.

4.4 Empirical Findings

This study winsorized the variables (sources of funds and institutional variables) at the 1st and 99th percentile level to minimize the effect of outliers in the econometric analysis. Hence, the descriptive statistics reported in Table 4.2 are winsorized and discussions are carried out accordingly. Several points from this table are noteworthy. For example, the amount of the maximum average loan is almost half of the GNI per capita, as the value of the dependent variable of our interest (AVLGNI) is 0.46, and the mean value is 0.20. In terms of sources of funds, SAV constitutes the largest source in capital structure, followed by CUMS, BANK and MFIB based on their mean value. In sum, these four sources contribute around 60% of the total funding in the microfinance industry in Bangladesh. Interestingly, the finding also shows that minimum CUMS is negative, depicting that when an MFI makes losses, it substantially reduces the percentage of CUMS in the capital structure. In terms of operational sustainability (OSS), the mean value is above 100%, showing that most of the MFIs are operationally sustainable in our sample. If the OSS is greater than 100%, it signifies that MFIs are self-sustainable and does not necessarily depend on subsidies or donations. The mean value of ROA was 3.226 while there are MFIs observed negative return for their assets. While the smallest MFIs have only 1, the largest MFIs accounted for 2029 branch. The sample size of this study

also includes the youngest and oldest MFIs based on the year of operation (AGE). Looking into the macroeconomic variables, the GDPGR was around 6% per annum, while the mean value of CREDIT was 41.335%. Still, the largest proportion of population are settled in rural areas in Bangladesh based on the mean value of RP. Another finding is that INF remains relatively stable during the study period.

Table 4.2: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
AVLGNI	1014	0.207	0.080	0.070	0.456
SAV	1008	37.571	16.508	12.660	88.650
CUMS	1003	18.828	15.358	-22.710	63.100
MFIB	1011	1.585	4.832	0.000	28.420
BANK	1011	4.627	11.082	0.000	54.130
OSS	1001	109.352	26.785	35.150	196.300
ROA	1012	3.226	3.956	-10.170	16.000
PY	1014	23.009	5.268	6.760	34.520
BCR	1014	0.761	0.119	0.402	0.977
AGE	1014	16.878	7.582	4.000	38.000
BRANCH	1014	56.512	229.056	1.000	2029.000
WGI	1014	-0.854	0.043	-0.921	-0.782
INF	1014	7.499	1.678	5.423	10.705
GDPGR	1014	5.950	0.525	5.000	6.500
EXC	1014	78.483	8.973	65.558	86.742
CREDIT	1014	41.335	2.435	36.200	43.500
RP	1014	68.391	1.302	66.484	70.291
INTCP	1014	0.500	0.500	0.000	1.000

Source: Author's. Note: Sources of funds and institutional variables are winsorized at 1st and 99th percentile level.

Since this study is dealing with panel data, special attention should be given to multicollinearity, whereby one or more independent variables may strongly correlate with each other. The presence of multicollinearity may severely bias the overall estimation of the regression and the regression analysis may not produce robust estimates. To examine how the independent variables are correlated with each other, a pairwise correlation is reported in Table 4.3. To be in the safe side, this study runs separate model if the

correlation coefficient exceeds above 0.7 to eliminate any possible multicollinearity arising from strong correlation.

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Table 4.3: Pairwise Correlation between Independent Variables.

	1	2	3	4	5	6	7	8	9	10
SAV(1)	1.0000									
CUMS(2)	0.0283	1.0000								
MFIB(3)	-0.0117	0.0829***	1.0000							
BANK(4)	-0.1198***	-0.0668**	-0.0522	1.0000						
OSS(5)	-0.0111	0.4185***	0.0215	-0.0682	1.0000					
ROA(6)	-0.0504	0.4205***	0.0754**	-0.0858***	0.7389***	1.0000				
PY(7)	0.0645**	0.1962***	0.1481***	0.0926***	0.3468***	0.3434***	1.0000			
BCR(8)	-0.4558***	-0.0371	0.0606**	0.0161	0.0576*	0.0394	-0.0973***	1.0000		
LNAGE(9)	-0.1681***	-0.0307	-0.0285	0.0083	0.0271	0.0277	-0.0725**	0.2277***	1.0000	
LNAGE2(10)	0.0872***	0.0761**	-0.0007	-0.0718**	0.0895***	0.0887***	0.0339	-0.0927***	-0.0863***	1.0000
LNBRANCH(11)	-0.2876***	-0.1076***	-0.0949***	0.1967***	0.0779**	0.0790**	0.0823***	0.2787***	0.4086***	0.3070***
JOINT(12)	-0.2561***	-0.0833***	-0.0880***	0.1689***	0.0955***	0.0962***	0.0776	0.2651***	0.5745***	0.3793***
WGI(13)	-0.0006	0.0068	0.0074	0.0224	-0.0424	0.0364	-0.0058	0.0164	0.0079	0.0142
INF(14)	0.0115	-0.0068	-0.0118	-0.0032	0.0263	0.0110	0.0315	-0.0259	0.0184	-0.0138
GDPGROWTH(15)	0.0253	0.0373	-0.0720**	0.1025***	0.0938***	0.0600	0.0207	-0.0479	0.1641***	-0.0203
EXC(16)	0.0334	0.0489	-0.0736**	0.1149***	0.0849***	0.0576*	0.0016	-0.0532	0.1907***	-0.0170
CREDIT(17)	0.0216	0.0435	-0.0715**	0.1317***	0.0809**	0.0746**	0.0110	-0.0531	0.2032***	-0.0154
RP(18)	-0.0286	-0.0641**	0.0708**	-0.1643***	-0.0546*	-0.0805**	0.0237	0.0541	0.2509***	0.0046
IC(19)	0.0214	0.0594*	-0.0669**	0.1471***	0.0596*	0.0632**	-0.0277	-0.0434	0.2204***	-0.0045
	11	12	13	14	15	16	17	18	19	
LNBRANCH(11)	1.0000									
JOINT(12)	0.9671***	1.0000								
WGI(13)	-0.0007	0.0016	1.0000							
INF(14)	0.0033	0.0055	0.1164***	1.0000						
GDPGR(15)	0.0186	0.0449	-0.0768**	0.5176***	1.0000					
EXC(16)	0.0203	0.0515	-0.2312***	0.3991***	0.9010***	1.0000				
CREDIT(17)	0.0239	0.0565	0.0971***	0.4474***	0.8999***	0.7684***	1.0000			
RP(18)	-0.0278	-0.0691**	-0.0738**	-0.0434	-0.6214***	-0.7325***	-0.7892***	1.0000		
IC(19)	0.0240	0.0604*	-0.2188***	-0.3497***	0.4762***	0.6191***	0.5896***	-0.8788***	1.0000	

Source: Author's.

4.4.1 Mission Drift: Proxy by Depth of Outreach (Base Regression)

At the very first outset, this study estimated a base model comprises of major sources of funds and institutional characteristics of MFIs based on Fixed Effect (FE) and Random Effect (RE) as it has been used in the existing microfinance literature (Assefa et al., 2013; Xu et al., 2016). The results are reported in Table 4.4. The results estimated by ordinary least square (OLS) also presented for the comparison purpose. Then, the study chooses the estimated models (FE or RE) based on the Hausman (1978) test. The initial analysis indicate that FE is statistically preferred over RE (Table 4.4). Hence, the discussions are based on the FE results in this section. It should further be noted that any coefficient with positive sign indicates larger AVLGNI, hence causing mission drift. In contrast, negative coefficient values mean the AVLGNI become small to target the very poor and does not lead to mission drift.

Based on FE results in Table 4.4, the model specification is very good as the explanatory power (R^2) of the model is around 60% (Model-3 & 4). The overall fitness of the models are good as well since the *F-statistics* remained statistically significant at 1% both in Model-3 and Model-4. However, the diagnostic test suggested that there is a presence of heteroscedasticity and autocorrelation. Thus, in the next step, when controlling for macroeconomic variables, the final FE models are estimated by clustering on the panel variable that produces Huber/White/sandwich variance-covariance matrix (VCE) and robust standard errors. This approach is generally robust to cross-sectional heteroscedasticity and within-panel (serial) correlation (Baum, 2006; Vogelsang, 2012).

Table 4.4: Factors of Mission Drift in MFIs (base regression)

	Dependent Variable: LNAVLGNI					
	OLS	OLS	FE	FE	RE	RE
	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
Sources of Funds						
SAV	-0.0055*** (0.0007)	-0.0057*** (0.0007)	-0.0015* (0.0008)	-0.0017** (0.0008)	-0.0021*** (0.0007)	-0.0023*** (0.0007)
CUMS	-0.0011 (0.0007)	-0.0017** (0.0007)	-0.0002 (0.0008)	-0.0012 (0.0008)	-0.0003 (0.0007)	-0.0012 (0.0007)
MFIS	-0.0011 (0.0022)	0.0020 (0.0021)	0.0026 (0.0019)	0.0028 (0.0018)	0.0023 (0.0018)	0.0026 (0.0018)
BANK	-0.0011 (0.0010)	-0.0003 (0.0010)	0.0062*** (0.0009)	0.0059*** (0.0009)	0.0051*** (0.0008)	0.0050*** (0.0008)
Institutional Characteristics						
ROA	0.0133*** (0.0030)		0.0049*** (0.0017)		0.0056*** (0.0017)	
PY	0.0138*** (0.0022)		-0.0046*** (0.0017)		-0.0018 (0.0017)	
OSS		0.0044*** (0.0004)		0.0017*** (0.0003)		0.0020*** (0.0003)
BCR	-0.6365*** (0.1000)	-0.7613*** (0.0997)	-0.3239*** (0.0862)	-0.2884*** (0.0858)	-0.3004*** (0.0833)	-0.2853*** (0.0820)
LNAGE	-0.0736*** (0.0244)	-0.0834*** (0.0241)	-0.1509* (0.0810)	-0.1141 (0.0806)	-0.0674 (0.0439)	-0.0579 (0.0441)
LNAGE2	0.0004 (0.0049)	-0.0017 (0.0048)	-0.0036 (0.0036)	-0.0049 (0.0035)	-0.0013 (0.0035)	-0.0028 (0.0034)
LNBRANCH	0.0482*** (0.0077)	0.0517*** (0.0076)	-0.0805*** (0.0239)	-0.0711*** (0.0237)	0.0200 (0.0130)	0.0173 (0.0130)
YD	yes	Yes	yes	yes	yes	yes
<i>Cons</i>	-1.420*** (0.1202)	-1.394*** (0.1122)	-0.905*** (0.2386)	-1.2877*** (0.2348)	-1.4068*** (0.1392)	-1.6446*** (0.1344)
<i># of Observations</i>	998	987	998	987	998	987
<i>F-Statistics</i>	29.209***	33.270***	69.583***	79.594***		
<i>R²</i>	0.3085	0.3240	0.5618	0.5809	0.1955	0.2449
<i>Wald chi²</i>					958.557***	1073.406***
<i>Hausman</i>			75.300***	630.720***		
<i>Heteroscedasticity Test</i>			64842***	36689***		
<i>Wooldridge Test</i>			74.591***	69.917***		

Source: Author's. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.4.2 Controlling for Macroeconomic and Regulatory Variables

This study incorporates macroeconomic and regulatory variables into the base regression. Since the operational sustainability (OSS) and profitability (ROA) variables showed relatively high levels of correlation, the results are reported separately in Table 5.5 and 5.6 respectively. As discussed earlier, a robust standard errors is calculated in both of the tables. The results reconfirmed that even after controlling for the macroeconomic and regulatory variables, the sign and values of the coefficients largely remain the same for most of the variables across the models (Model 7 to 12). However,

there are slight changes in the significant levels for some variables comparing with Table 4.4.

The commercial debt that is being used in the microfinance capital structure has showed significant positive effects on AVLGNI. The more an MFI relies on commercial sources of funds, the larger its average loan size. Generally, the commercial sources of funds prefer higher returns from their investment, thus prompting management of MFIs to substantially increase the average loan size. By doing so, MFIs can minimize the cost of operation to maintain a high return for their investors. Because, large size loans usually cost less compare to small loan size. This has been corroborated by the fact that debt financing in MFIs promote greater profitability (Muriu, 2011), indicating the possibility of by-passing the social mission of MFIs. Kiweu (2011) also issued a warning about the need of MFIs to satisfy the investors' interest and requirements when MFIs resort to commercial funding, such as from banks. Hence, the findings of this study is in oppose to the conventional dominant view that leveraging capital structure would enhance depth of outreach. In contrast to the findings of this study, Kar (2012) documented how leverage has significant negative effects on average loan balance over GNI per capita, suggesting an increase in depth when MFIs leverage their capital structure. Moreover, this finding also partially opposes the claim of Mersland and Urgeghe (2013), where international debt financing was found to have positive effects on depth of outreach.

Table 4.5: Factors of Mission Drift in MFIs (Operational Sustainability) (FE).

	Dependent Variable: LNAVLGNI					
	Model-7	Model-8	Model-9	Model-10	Model-11	Model-12
Sources of Funds						
SAV	0.0004 (0.0012)	-0.0000 (0.0012)	-0.0017 (0.0013)	-0.0017 (0.0013)	-0.0017 (0.0013)	-0.0004 (0.0012)
CUMS	0.0008 (0.0015)	0.0004 (0.0014)	-0.0012 (0.0015)	-0.0012 (0.0015)	-0.0012 (0.0015)	-0.0000 (0.0015)
MFIS	0.0032 (0.0037)	0.0036 (0.0034)	0.0028 (0.0027)	0.0028 (0.0027)	0.0028 (0.0027)	0.0025 (0.0033)
BANK	0.0082*** (0.0012)	0.0078*** (0.0012)	0.0059*** (0.0012)	0.0059*** (0.0012)	0.0059*** (0.0012)	0.0078*** (0.0012)
Institutional Characteristics						
OSS	0.0020*** (0.0004)	0.0017*** (0.0004)	0.0017*** (0.0003)	0.0017*** (0.0003)	0.0017*** (0.0003)	0.0018*** (0.0004)
BCR	-0.3957** (0.1621)	-0.3577** (0.1610)	-0.2884* (0.1555)	-0.2884* (0.1555)	-0.2884* (0.1555)	-0.3718** (0.1540)
LNBRANCH	-0.0474 (0.0348)	-0.0515 (0.0333)	-0.0711** (0.0342)	-0.0711** (0.0342)	-0.0711** (0.0342)	
LNAGE	0.7910*** (0.0754)	0.6359*** (0.0752)	-0.1141 (0.1290)	-0.1141 (0.1290)	-0.1141 (0.1290)	
LNAGE2		0.0038 (0.0048)	-0.0049 (0.0046)	-0.0049 (0.0046)	-0.0049 (0.0046)	
JOINT						0.0091 (0.0128)
Macroeconomic and Regulatory Variables						
WGI		-0.1198 (0.0740)				
INF		-0.0089*** (0.0025)				
GDPGR		0.0795*** (0.0138)				
EXC			0.0092*** (0.0012)			
CREDIT				0.0548*** (0.0075)		
RP					-0.1051*** (0.0144)	
INTCP						0.2035*** (0.0182)
YD	no	no	yes	yes	yes	no
<i>cons</i>	-3.666*** (0.2554)	-3.7356*** (0.2583)	-1.8912*** (0.3303)	-3.2720*** (0.2190)	6.1003*** (1.3450)	-1.7408*** (0.1652)
<i># of Observations</i>	987	987	987	987	987	987
<i>F-Statistics</i>	40.606***	35.8117***	36.8161***	36.8161***	36.8161***	52.7899***
<i>R²</i>	0.4908	0.5139	0.5809	0.5809	0.5809	0.4898
<i>Adj. R²</i>	0.4866	0.5079	0.5748	0.5748	0.5748	0.4856

Source: Author's. Robust standard clustered errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Based on the results reported in Table 4.5 and 4.6, it is also evident that when MFIs focus more on commercial interest (in terms of ROA and OSS), they are found to be mission drifted as the sign of the coefficient is positive. In all the estimated models, the two main proxy of financial sustainability, OSS and ROA are found to be statistically

significant. This indicates that focusing more weight on commercial interests or profit motive increases the average loan size, and hence cause mission drift. Our findings is in line with other studies where a tradeoff between commercial interest and outreach variables also observed (Cull et al., 2007; Hermes & Lensink, 2007; Xu et al., 2016). However, another profitability measure, PY found to be significant and negatively related to average loan size in Table 4.6. This finding supports the law of demand that states higher the price, lower the amount of loans demanded by the borrowers. So, if PY is considered as a measure of financial interest, then it does not cause mission drift.

The size of the MFIs measured by BRANCH shows negative sign and is statistically significant in most of the models in Table 4.5 and 4.6. The finding supports the conventional views that expanding microfinance operation through increasing number of branch indeed enhances depth of outreach. Expanding branch helps MFIs to effectively target the poorest of the poor and it does not cause mission drift. Hence, the result opposes the findings of Xu et al. (2016) where they found that large-scale MFIs provided comparatively larger loans to their clients, and identified size (proxy by loan portfolio) as a factors of mission drift. Additionally, size of MFIs measured by total asset also found to be associated with higher average loan size in the studies of Mersland, Randøy, and Strøm (2011) and Assefa et al. (2013). Apart from that, AGE variable shows that older MFIs are estimated to offer larger loan and deviate from serving the poorest of the poor. However, this finding is only statistically significant at all conventional levels when year dummies (YD) are not included in Table 4.5 and 4.6 (Model-7, 8, 13 and 14). Moreover, when considering a non-linear relationship by including the squared term of AGE, this study did not find any statistically significant evidence of a U-shape or inverted U-shape relationship.

Table 4.6: Factors of Mission Drift in MFIs (Profitability) (FE).

	Dependent Variable: LNAVLGNI					
	Model-13	Model-14	Model-15	Model-16	Model-17	Model-18
Sources of Funds						
SAV	0.0007 (0.0012)	0.0002 (0.0012)	-0.0015 (0.0013)	-0.0015 (0.0013)	-0.0015 (0.0013)	-0.0002 (0.0012)
CUMS	0.0016 (0.0014)	0.0012 (0.0014)	-0.0002 (0.0015)	-0.0002 (0.0015)	-0.0002 (0.0015)	0.0009 (0.0015)
MFIS	0.0028 (0.0036)	0.0033 (0.0033)	0.0026 (0.0027)	0.0026 (0.0027)	0.0026 (0.0027)	0.0021 (0.0031)
BANK	0.0086*** (0.0012)	0.0082*** (0.0012)	0.0062*** (0.0012)	0.0062*** (0.0012)	0.0062*** (0.0012)	0.0081*** (0.0013)
Institutional Characteristics						
ROA	0.0068** (0.0027)	0.0063** (0.0026)	0.0049** (0.0025)	0.0049** (0.0025)	0.0049** (0.0025)	0.0051** (0.0025)
PY	-0.0041 (0.0026)	-0.0051** (0.0025)	-0.0046* (0.0024)	-0.0046* (0.0024)	-0.0046* (0.0024)	-0.0045* (0.0025)
BCR	-0.4382*** (0.1567)	-0.4017*** (0.1532)	-0.3239** (0.1464)	-0.3239** (0.1464)	-0.3239** (0.1464)	-0.3913*** (0.1467)
LNBRANCH	-0.0600 (0.0374)	-0.0625* (0.0357)	-0.0805** (0.0360)	-0.0805** (0.0360)	-0.0805** (0.0360)	
LNAGE	0.7677*** (0.0779)	0.5900*** (0.0784)	-0.1509 (0.1399)	-0.1509 (0.1399)	-0.1509 (0.1399)	
LNAGE2		0.0051 (0.0050)	-0.0036 (0.0048)	-0.0036 (0.0048)	-0.0036 (0.0048)	
JOINT						0.0051 (0.0133)
Macroeconomic and Regulatory Variables						
WGI		-0.1528** (0.0700)				
INF		-0.0100*** (0.0026)				
GDPGR		0.0902*** (0.0139)				
EXC			0.0096*** (0.0013)			
CREDIT				0.0557*** (0.0079)		
RP					-0.1067*** (0.0151)	
INTCP						0.2060*** (0.0190)
YD	no	no	yes	yes	yes	no
<i>cons</i>	-3.2846*** (0.2514)	-3.378*** (0.2605)	-1.5378*** (0.3409)	-2.9202*** (0.2144)	6.5977*** (1.4176)	-1.4465*** (0.1563)
<i># of Observations</i>	998	998	998	998	998	998
<i>F-Statistics</i>	28.1278***	28.0047***	28.6884***	28.6884***	28.6884***	39.6079***
<i>R²</i>	0.4639	0.4946	0.5618	0.5618	0.5618	0.4708
<i>Adj. R²</i>	0.4590	0.4879	0.5551	0.5551	0.5551	0.4660

Source: Author's. Robust standard clustered errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Macroeconomic variables also found to be significantly important to explain mission drift of MFIs. Among others, the findings of GDPGR is in line with our initial expectation that overall economic progress will increase the average loan size. Additionally, EXC and CREDIT also statistically significant and positive. The findings reflect that MFIs prefer to have larger loans as a mitigation approach to minimize the risk arising from the higher

exchange rate. Moreover, the static results show that the domestic financial sector development push MFIs to increase their loan size to compete with commercial banks, hence it causes mission drift. The regulatory variable in the microfinance industry, INTCP implemented since 2011 has a significant positive sign. In a way of explanation, MFIs would most likely to increase their average loan size to reduce operating expenses and ensure balance between cost and revenue income in the presence of interest rate cap. These findings also support the conventional arguments, as interest rates ceilings always hurt the poor and distort the overall market (CGAP, 2004; Mohane, Coetzee, & Grant, 2000). This signifies that in the presence of market interventions, particularly those involving capping the interest, severe pressure is inflicted on the management of MFIs. It leads inevitably to the reshuffling of operational activities, particularly in MFIs that operate in a remote or rural area where the density of the poor is relatively high.

4.4.3 Dynamic Panel Analysis: Two Step System GMM

To implement SGMM, this study treated MFIs specific variables (sources of funds and institutional characteristics) as endogenous to form GMM-type instruments. First differences of the strictly exogenous variables (macroeconomic and regulatory variables, and year dummies) used as standard instruments based on the earlier studies (Adhikary & Papachristou, 2014). To appropriately identify the lag levels, various levels of lags were explored to identify a good instrument. Having said that, this study strictly followed the rule of thumb in selecting the maximum number of instruments and suggestions by Roodman (2009) to overcome instrument proliferation. In accordance with the claim, the number of instruments should not be more than the number of groups and can be maximum to the number of groups. In all of the estimated models reported in Table 4.7 and Table 4.8, this criteria is uphold and actual number of instruments chosen are well below than the maximum threshold.

As for the diagnostics tests, Hansen J-statistics test the null hypothesis that the over-identification restrictions are valid. To be more specific, this test examines the lack of correlation between the instruments and the error term. The value ranges from 0 to 1 and higher the better. AR (1) and AR (2) tests the existence of the first and second-order serial correlation in the first-differenced residuals. It is expected to observe a significant AR (1) and insignificant AR (2) results. Since the sample size is relatively small, the study uses robust small sample corrected standard errors proposed by Windmeijer (2005).

Similar with the static results above, the SGMM results also reported in two different tables (Table 4.7 and Table 4.8). Based on the diagnostic test, the results reported in Table 7 and Table 8 confirmed the properties of SGMM. For example, the AR (1) test indicates that the errors terms in all regressions are significantly first-order serial correlated at 1% level while the second-order are not significant in any conventional levels. The insignificant Hansen test also shows that there is no over-identification problem of instrumental variables. Therefore, the instrumental variables are valid and effective, which ensure that the results are credible.

One significant result observed from Table 4.7 and 4.8 is that, although SAV was insignificant in the static model, it turns to be significant in the dynamic model and the coefficient sign is negative. This means that those MFIs rely more on savings for their capital, they are less likely susceptible to mission drift. The result highlight that an MFI can effectively target the amount of loan a poor person needs based on his/her savings behavior. Furthermore, as the clients of the MFIs are the stakeholders in MFIs, this study expect decisions or strategies in favor of the poor. Hence, the possibility of mission drift is less likely as it would directly involve going against the interest of the poor cum the stakeholders when more savings are used in the operation. To some extent, CUMS – shows statistically negative effects on AVLGNI in some models in Table 4.7.

Table 4.7: Factors of Mission Drift in MFIs (Operational Sustainability) (SGMM).

	Dependent Variable: LNAVLGNI					
	Model-19	Model-20	Model-21	Model-22	Model-23	Model-24
L. LNAVGGNI	0.8892*** (0.0259)	0.8977*** (0.0316)	0.9574*** (0.0355)	0.9574*** (0.0355)	0.9574*** (0.0355)	0.9044*** (0.0364)
Sources of Funds						
SAV	-0.0017* (0.0010)	-0.0017* (0.0009)	-0.0016* (0.0009)	-0.0016* (0.0009)	-0.0016* (0.0009)	-0.0015 (0.0009)
CUMS	-0.0018** (0.0008)	-0.0015* (0.0009)	-0.0009 (0.0008)	-0.0009 (0.0008)	-0.0009 (0.0008)	-0.0021** (0.0009)
MFIS	0.0037 (0.0026)	0.0034 (0.0024)	0.0023 (0.0024)	0.0023 (0.0024)	0.0023 (0.0024)	0.0044 (0.0027)
BANK	0.0013** (0.0006)	0.0014*** (0.0005)	0.0016*** (0.0005)	0.0016*** (0.0005)	0.0016*** (0.0005)	0.0017*** (0.0006)
Institutional Characteristics						
OSS	0.0019*** (0.0005)	0.0016*** (0.0005)	0.0013*** (0.0005)	0.0013*** (0.0005)	0.0013*** (0.0005)	0.0018*** (0.0005)
BCR	-0.2568** (0.1101)	-0.2654** (0.1128)	-0.2718** (0.1131)	-0.2718** (0.1131)	-0.2718** (0.1131)	-0.2667** (0.1156)
LNAGE	0.0040 (0.0149)	0.0008 (0.0145)	-0.0066 (0.0131)	-0.0066 (0.0131)	-0.0066 (0.0131)	
LNAGE2	0.0003 (0.0262)	0.0073 (0.0253)	0.0285 (0.0231)	0.0285 (0.0231)	0.0285 (0.0231)	
LNBRANCH		0.0020 (0.0046)	0.0020 (0.0044)	0.0020 (0.0044)	0.0020 (0.0044)	
JOINT						0.0021 (0.0038)
Macroeconomic And Regulatory Variables						
WGI		-0.1751* (0.1025)				
INF		0.0039 (0.0033)				
GDPGROWTH		0.0134 (0.0123)				
EXC			0.0003 (0.0006)			
CREDIT				-0.0220** (0.0085)		
RP					0.0180** (0.0070)	
INTCP						-0.0160 (0.0125)
YD	no	no	yes	yes	yes	no
CONS	-0.0445 (0.1463)	-0.2776 (0.1822)	0.0655 (0.1583)	0.9870** (0.4183)	-1.1699** (0.4672)	-0.0038 (0.1564)
# of Observations	826	826	826	826	826	826
F-Statistics	250***	193***	222***	222***	222***	279***
AR-1(p)	-3.5994 (0.0003)	-3.6039 (0.0003)	-3.5578 (0.0004)	-3.5578 (0.0004)	-3.5578 (0.0004)	-3.5719 (0.0004)
AR-2(p)	0.5638 (0.5729)	0.6822 (0.4951)	0.7212 (0.4708)	0.7212 (0.4708)	0.7212 (0.4708)	0.5462 (0.5849)
Hansen Test (p)	115.3922 (0.3940)	124.4021 (0.3976)	122.8489 (0.4108)	122.8489 (0.4108)	122.8489 (0.4108)	108.5409 (0.2406)
# of Instruments	122	135	135	135	135	109

Source: Author's. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: AR1 and AR2 is the test of first order and second order autocorrelation respectively. Hansen J-statistics test the null hypothesis that the model is correctly specified and the instruments are valid. Robust standard error proposed by Windmeijer, (2005) in parentheses.

The dynamic assessment further reiterated that loans from commercial banks indeed increase AVLGNI, hence resulting mission drift. Moreover, the profitability and operational sustainability variables, ROA and OSS positively significant to AVLGNI, showing the consistent and robustness of the results. However, despite having a significant negative sign of PY in the static model, it turns to be insignificant in the dynamic model. Moreover, this study also consistently found that scope of operation (BCR) is significantly important to ensure the outreach goal of MFIs, particularly when targeting poorest of the poor. This finding indicates that the credit only MFIs could perform better to uphold outreach mission, which is in similar vein with the argument of Helms (2006). Although the static panel showed that BRANCH has a significant negative effect on AVLGNI, however, in the dynamic panel, it found to be statistically insignificant despite the same negative coefficient sign.

Among other macroeconomic variables, WGI showed that a better institutional quality in the country level can ensure the access of loans for the poor as the sign of the coefficient is negative both in static and dynamic models. Moreover, there is exist a complementary relationship between the financial sector development (CREDIT) and AVLGNI, when dynamic panel estimation is concerned. Another contrasting finding is that, there is a negative association between percentage of rural population and AVLGNI in the static models (Table 4.5 & 4.6), however it turned to be positive when dynamic relationship is considered (Table 4.7 & 4.8). The dynamic results may indicate that the overall progressive development in Bangladesh, the rural people may start to demand a larger loan, given that the overall cost of establishing and maintaining microfinance-supported enterprise has increased over the years.

Table 4.8: Factors of Mission Drift in MFIs (Profitability) (SGMM).

	Dependent Variable: LN(AVLGNI)					
	Model-25	Model-26	Model-27	Model-28	Model-29	Model-30
L.LNAVGNI	0.8830*** (0.0255)	0.8927*** (0.0279)	0.9489*** (0.0337)	0.9489*** (0.0337)	0.9489*** (0.0337)	0.8921*** (0.0374)
Sources of Funds						
SAV	-0.0017* (0.0009)	-0.0017** (0.0008)	-0.0015* (0.0008)	-0.0015* (0.0008)	-0.0015* (0.0008)	-0.0014 (0.0009)
CUMS	-0.0008 (0.0010)	-0.0003 (0.0010)	-0.0002 (0.0009)	-0.0002 (0.0009)	-0.0002 (0.0009)	-0.0007 (0.0010)
MFIS	0.0021 (0.0025)	0.0020 (0.0025)	0.0010 (0.0028)	0.0010 (0.0028)	0.0010 (0.0028)	0.0029 (0.0028)
BANK	0.0013* (0.0007)	0.0014** (0.0007)	0.0017*** (0.0006)	0.0017*** (0.0006)	0.0017*** (0.0006)	0.0017** (0.0007)
Institutional Characteristics						
ROA	0.0099** (0.0038)	0.0095*** (0.0034)	0.0099*** (0.0033)	0.0099*** (0.0033)	0.0099*** (0.0033)	0.0100** (0.0039)
PY	0.0010 (0.0026)	0.0007 (0.0023)	-0.0013 (0.0028)	-0.0013 (0.0028)	-0.0013 (0.0028)	-0.0002 (0.0027)
BCR	-0.3055** (0.1237)	-0.3369*** (0.1136)	-0.3650*** (0.1033)	-0.3650*** (0.1033)	-0.3650*** (0.1033)	-0.3154*** (0.1171)
LNAGE	0.0068 (0.0113)	0.0072 (0.0136)	-0.0037 (0.0120)	-0.0037 (0.0120)	-0.0037 (0.0120)	
LNAGE2	0.0033 (0.0221)	0.0026 (0.0258)	0.0305 (0.0216)	0.0305 (0.0216)	0.0305 (0.0216)	
LNBRANCH		-0.0022 (0.0042)	-0.0016 (0.0041)	-0.0016 (0.0041)	-0.0016 (0.0041)	
JOINT						0.0043 (0.0034)
Macroeconomic and Regulatory Variable						
WGI		-0.2835*** (0.0937)				
INF		0.0048 (0.0033)				
GDPGROWTH		0.0154 (0.0128)				
EXC			0.0001 (0.0007)			
CREDIT				-0.0273*** (0.0094)		
RP					0.0223*** (0.0077)	
INTCP						-0.0162 (0.0131)
YD	no	no	yes	yes	yes	No
CONS	0.1035 (0.1283)	-0.2236 (0.1459)	0.2595* (0.1384)	1.3843*** (0.4469)	-1.2869** (0.4967)	0.1417 (0.1537)
# of Observations	831	831	831	831	831	831
F-Statistics	241***	200***	225***	225***	225***	215***
AR(1)(p)	-3.5685 (0.0004)	-3.6317 (0.0003)	-3.6100 (0.0003)	-3.6100 (0.0003)	-3.6100 (0.0003)	-3.5353 (0.0004)
AR(2)(p)	0.5321 (0.5946)	0.8085 (0.4188)	0.8118 (0.4169)	0.8118 (0.4169)	0.8118 (0.4169)	0.4850 (0.6277)
Hansen Test (p)	131.6484 (0.3022)	137.3676 (0.3799)	134.8088 (0.4158)	134.8088 (0.4158)	134.8088 (0.4158)	125.8773 (0.1583)
# of Instruments	135	148	148	148	148	122

Source: Author's. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: AR1 and AR2 is the test of first order and second order autocorrelation respectively. Hansen J-statistics test the null hypothesis that the model is correctly specified and the instruments are valid. Robust standard error proposed by Windmeijer, (2005) in parentheses.

4.4.4 Non-parametric Test: Effect of Interest Rate Cap on Loan Size

Although FE models in Table 4.5 and 4.6 have consistently showed that interest rates cap has a significant positive effect on the AVLGNI, however, the coefficient sign turned out to be negative and insignificant when this study considered the more robust SGMM reported in Table 4.7 and 4.8. This provide us with enthusiasm to further analyze whether the INTCP has really had a significant effect or not. To test this claim, this study relied on testing the mean of AVLGNI before and after the introduction of interest rates cap in 2011. In doing so, this study used both parametric (t-test) and non-parametric (Mann-Whitney test, Kruskall-Wallis test and Kolmogorov-Smirnov test) mean test. The results reported in Table 4.9 shows that AVLGNI significantly different before and after the interest rates cap. And to be more specific, the AVLGNI after the regulatory intervention is higher than without intervention. Gonzalez-vega (1981) also argued that “the iron law of interest rate restrictions, claims that constrained interest rates redistribute credit portfolios, favoring larger, safer, and older borrowers over smaller, more innovative and riskier, newer clients, and concentrate loan portfolios in fewer hands, thus worsening the distributive consequences of differential access to credit”. Hence, it is likely that interest rates cap effective from July, 2011 did increase the average loan size and can be considered as one of the factors behind mission drift.

Table 4.9: Mean Test of AVLGNI (before and after the interest rate cap).

Test Statistics	Parametric Test		Non-Parametric Test			
	<i>t</i> -test		Mann-Whitney test	Kruskall-Wallis test	Kolmogorov-Smirnov (K-S) test	
	Mean	<i>t</i>	Rank Score	X^2 (Prb> X^2)	(Prb>K-S) Distribution	
AVLGNI						
Before	0.1810	-	208979.5	-	107.401***	0.2702***
After	0.2338	10.838***	305625.5	10.364***		

Source: Author's. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5. Summary

To contribute to the extant literature, this study analyzed the effect of major sources of funds on mission drift of MFIs, while controlling for the effects of integrating institutional, macroeconomic and regulatory variables. This study applies depth of outreach, as measured by AVLGNI, as a dependent variable. At first, the static panel data estimation technique showed that funding from commercial bank and more weight on financial interest (OSS and ROA) are mostly susceptible to mission drift. The dynamic panel data models also reconfirmed the findings. Hence, the findings are in line with the conventional claim that focusing more on commercial interest or profit motive will deviate MFIs from serving the poorest of the poor.

Moreover, older MFIs are likely to be mission drifted when static model is considered and did not include the time dummies. The regulatory enforcement in terms of interest rate cap has increased the AVLGNI, hence a factor behind mission drift. The more robust two-step SGMM has revealed that internal sources of funds, particularly savings, enhance the depth of outreach. A complimentary relationship between financial sector development and depth of outreach also observed in the dynamic model. The overall institutional quality of a country, as measured by WGI has identified as a depth of outreach enhancing factor. Additionally, credit-centered MFIs are not mission drifted. Overall, the findings highlighted that not only sources of funds and characteristics of MFIs are important to explain the mission drift, but also it depends on the macroeconomic and regulatory factors.

CHAPTER 5: MICROFINANCE INSTITUTIONS' PRODUCTIVITY AND ITS DETERMINANTS

5.1 Introduction

This chapter addresses the third research question that is to evaluate productivity and its determinants of MFIs.

Productivity evaluation is one of the ways to investigate a firm's performance – whether it is progressing, regressing or remaining stagnant over time. Therefore, evaluating MFIs' productivity and understanding their constraints will help policymakers, managers and higher authorities set out specific plans to make microfinance a successful development tool. Furthermore, policy reforms and efforts in mitigating the hurdles faced by MFIs will help to ensure resource efficiency. In a nutshell, assessing the productivity of MFIs warrants in-depth understanding to make sure that the sector is using their scarce resources effectively and efficiently to promote sustainable access to financial services for the poor on a continuous basis.

There are a number of studies assessing the productivity of MFIs (Babu & Kulshreshtha, 2014; Bassem, 2014; Gebremichael & Rani, 2012; Wijesiri & Meoli, 2015). The majority of studies have found that, on average, MFIs have experienced progress in productivity. However, the existing literature on microfinance productivity has only decomposed productivity scores to understand the sources of growth or change in productivity. Existing studies have not extended their analysis to how other environmental factors could affect productivity. Interestingly, Mia and Ben Soltane (2016) and Wijesiri and Meoli (2015) were the exceptions. These two studies investigated determinants of productivity using a two-stage estimation technique. In the first stage, the productivity score is estimated; in the second stage, the score is regressed against the environmental variables. Wijesiri and Meoli (2015) considered a few institutional factors

(e.g. ROA and age) whereas Mia and Ben Soltane (2016) considered both institutional (e.g. ROA, size, and debt-to-equity ratio) and macroeconomic factors (e.g. inflation and GDP).

However, to the best of the author's knowledge, none of the existing studies have taken into consideration external sources of funds as environmental factors. The inclusion of external sources of funds to understand productivity of MFIs is significant because Bangladesh's microfinance sector has observed significant changes in its capital structure in the past few years (see discussion in Section 2.6.4). Once a donor-driven initiative, microfinance has seen numerous sources of funds emerge recently, including funds from commercial banks. Hence, this chapter would like to examine how various sources of external funds contribute to the productivity of MFIs, along with other institutional and macroeconomic factors. This is very important from the institutional perspective since achieving productivity is crucial for sustainability in microfinance. Thus, this chapter specifically addresses the following two research questions:⁴⁷

- 1) What is the state of productivity in the microfinance sector in Bangladesh?
- 2) What determines the productivity of MFIs?

The rest of the chapter is organized as follows: Section 5.2 discusses the existing literature. Methodology, selection of inputs and outputs, and modelling of the determinants of productivity are presented in Section 5.3. Section 5.4 presents empirical results and discussions, and Section 5.5 concludes the chapter.

⁴⁷ The main ideas of this chapter have been published in two journals, namely, *Social Indicators Research* and *Economic Analysis and Policy*. Part of the analysis (determinants of productivity) has also been accepted for publication as a book chapter by Palgrave Macmillan.

5.2 Literature Review

Although MFIs' primary mission is to provide banking and financial support to the poor, the long-term sustainability of MFIs depends on their capacity to support their own financing activities. Hence, productivity progress is desired from an institutional perspective as it increases efficiency and provides financial relief through cost-cutting delivery methods and innovations. Institutional economists always refer to sustainable institutions (Gustafson, 1994; Padmanabhan & Beckmann, 2009). An anecdotal argument is that a sustainable MFI should be able to absorb any shocks and minimize adverse effects through prudent utilization of resources, and effective and timely managerial decisions, thus securing the welfare of the poor.

Next, the question arises as to how the existing literature has evaluated productivity for a firm or institution. It was found that most of the researchers have used the Malmquist approach, which is the extension of Data Envelopment Analysis (DEA), due to its non-parametric nature and its ability to distinguish performance between two periods (Cooper, Seiford, & Tone, 2007). Cooper (2013) defined DEA as a 'data-oriented' approach used to evaluate the performance of Decision Making Units (DMUs) by converting multiple inputs into multiple outputs. In this study, the Malmquist Productivity Index (MPI) is used, which is the ratio of Malmquist output quantity index to a Malmquist input quantity index, introduced by Bjurek (1996). Generally, indices estimated by the Malmquist approach are known as Total Factor Productivity (TFP) as it deals with all conventional inputs and outputs.

This approach allows us to decompose the TFP into technological change (TC) and technical efficiency change (TEC) when dealing with panel data (Färe, Grosskopf, Norris, & Zhang, 1994). TEC is the ability to use a minimal level of inputs to achieve a given level of outputs (catching up with their own frontier). A firm or institution is said be

technically inefficient if it fails to produce an output combination of its production possibility frontier and falls beneath this frontier (Worthington, 1999). TEC can be further decomposed into pure technical efficiency change (PTE) and scale efficiency change (SE). PTE refers to the ability of the management to avoid wastage of inputs and produce as much as inputs allow, while SE is the ability to work on an optimal scale (Bassem, 2014).

TC is the optimal combination of inputs and outputs generated from better technology and capital equipment used in the production process (frontier shift over time) (Chandran & Pandiyan, 2008). In this context, better technology could refer to incorporating information and communication technology (e.g. using computers, the internet, mobile banking, ATMs, etc.) in microfinance operations, while latest equipment could refer to new loaning methodology, new products and close proximity to the clients, etc. The usage of technology and latest equipment in the production process shifts the firm's production frontier upward and allows more output from the same level of inputs or the same level of output from a lower amount of inputs. Thus, the productivity either improves or deteriorates. Therefore, decomposing TFP will allow policymakers and managers to identify the causes of TFP changes, which will benefit them in decision-making and performance evaluation (Nishimizu & Page, 1982). Table 5.1 defines the various components of TFP.

Table 5.1: Definition of the Components of TFP.

Productivity	Determinants	Definition	Sub-determinants	Definition
Total Factor Productivity (TFP)	Technical Efficiency Change (TEC)	TEC means the ability to use a minimal level of inputs to achieve a given level of outputs (Sathye, 2003).	Pure Technical Efficiency Change (PTE)	PTE means the ability to avoid waste by producing as much output as possible from a given set of input. It refers to managerial performance.
		It is related to the productivity of inputs and emphasizes management practice. Also known as the “catch-up” effect.	Scale Efficiency Change (SE)	SE refers to the ability of a firm to work at its optimal scale (Bassem, 2014). It emphasizes on effect size.
	Technological Change (TC)	TC represents the efficiency changes of the firm by adopting cutting-edge technology and capital equipment in the production process (Chandran & Pandiyan, 2008; Cooper et al., 2007). It is considered the “frontier shift” effect.		Technological equipment refers to the usage of information and communication technology (ICT) in the production process – such as computers, mobile banking, internet banking, new software and any other technology-based platforms that enable smooth financial transactions (Babu & Kulshreshtha, 2014; Mia & Chandran, 2016). Latest equipment means the use of innovative delivery methods or innovations in products and services.

Source: Author’s compilation.

Recently, Bassem (2014) used the TFP approach to study productivity of 33 MFIs in the Middle East and North Africa (MENA) during the period of 2006 to 2011. The study found an annual positive TFP rate of change of 4.9%, mainly attributed to TEC. In contrast, there was a 2.9% decline in TC in the performance of the best MFIs. This finding corroborates the work of Mia and Chandran (2016), who found that improvements in the productivity of Bangladeshi MFIs were due to better management practices and TEC progress. They further argued that productivity growth could be hindered by a lack of comprehensive savings products, lack of innovations of financial products, and lack of technology-based services in microfinance operations.

Furthermore, after analyzing the productivity of 34 MFIs covering the period of 2005 to 2011 in the Indian microfinance industry, Babu and Kulshreshtha (2014) found a decline in productivity at a rate of 3.7% per annum due to regress in TC. This finding is in contrast with Wijesiri and Meoli (2015) where the productivity progress of 20 Kenyan MFIs was mainly due to the progress in TC during the period of 2009 to 2012. Although managerial and operational effectiveness in the Indian microfinance industry has improved over time (Babu & Kulshreshtha, 2014), the Kenyan microfinance industry has not progressed in terms of TEC (Wijesiri & Meoli, 2015).

Similarly, Gebremichael and Rani (2012) observed an average of 3.8% growth in TFP between 2004 and 2009 in Ethiopian MFIs. Further decomposition of TEC revealed that Ethiopian MFIs' positive productivity was due to improvements in management practices (PTE), rather than improvements in size (SE). Studies by Bassem (2014) and Mia and Ben Soltane (2016); Mia and Chandran (2016) similarly found that TEC drives increases in MFI productivity. In contrast, Wijesiri and Meoli (2015) found that TC has been the main factor behind the annual productivity improvement of 7% in Kenyan MFIs. Based

on the above studies, it seems that technology-driven productivity growth is higher compared to managerial efficiency-driven productivity growth.

In a case study of MFIs in India, Twaha and Rashid (2012) found that the number of active borrowers had a positive effect on productivity whilst the average size of the loan had an inverse relationship with productivity. As productivity concerns output, the number of active borrowers has a positive impact on Indian MFIs' productivity. Additionally, using cost per loan as a proxy for efficiency, Twaha and Rashid (2012) found a statistically significant negative relationship between efficiency and productivity. This can be related to the cost structures of MFIs. Generally, managing short-term, small loans is cost inefficient, hence the negative impact on the productivity of the Indian microfinance sector. However, there are differences in cost structures between MFIs due to variations in operating models, information asymmetry, experience and management of multiple sources of funds.

While looking at countrywide performance, Wu (2011) found that MFIs in India had higher efficiency than MFIs in China, demonstrating the existence of regional differences. Another study shows that around half of the MFIs in Eastern Europe and Central Asia were able to reduce operational costs, which was not evident in other developing regions (Caudill, Gropper, & Hartarska, 2009). This has been attributed to the ability of successful MFIs to apply innovative techniques in providing loans and adopt the latest capital equipment in rendering financial services (Corvoisier & Gropp, 2009; Frankiewicz, 2003). In contrast, Mia, Nasrin, and Cheng (2016) have cautioned that adaptation of capital-intensive services may impair the financial and social outreach performance of MFIs, citing the large capital investment (less loanable funds) involved and the inherent labor-intensive maneuver in microfinance operations.

As a whole, although information technology has been used extensively in the modern banking sector, only one-third of the MFIs in South East Asia and Africa have been computerized, while the use of technology has reached two-thirds of MFIs in some Latin American, Eastern European, and Central Asian countries (Corvoisier & Gropp, 2009; Frankiewicz, 2003). Low utilization of technology in MFIs' operations ultimately explains why productivity was not driven by TC in most of the earlier studies. Furthermore, Kauffman and Riggins (2012) argued that ICT has played a vital role in the operations of matured MFIs, especially in sustaining business in competitive environments. Table 5.2 shows the summary of literature that used the TFP/MPI approach to estimate productivity of MFIs.

Table 5.2: Summary of Previous Studies using DEA based MPI/TFP.

Studies	Country/ Region	Observation	Period	Input/output	Findings
Wijesiri and Meoli (2015)	Kenya	Balanced panel, 20 MFIs	2009-2012	Input – total assets, operating expense, labour Output – borrowers, financial revenue	Improvement in technological change led to 7% productivity growth per year. Return on assets and age impact productivity.
Bassem (2014)	Middle East and North Africa	A balanced panel with 198 observations from 33 MFIs	2006-2011	Inputs – number of employees, operating and administrative expense Output – interest and fee income, gross loan portfolio, loans outstanding	Overall productivity progress of 4.9% per annum. Technical efficiency change (management practices) improves productivity while scale efficiency resulted in detrimental impact.
Babu and Kulshreshtha (2014)	India	A balanced panel data with 34 MFIs covering the period from 2005-2011		Inputs – number of employees, operating cost Outputs – gross loan portfolio, average loan size, total number of active borrowers	Overall regress in productivity, at a rate of 3.7% per annum, due to deterioration in TC. On average, there is a progress in TEC.
Gebremichael and Rani (2012)	Ethiopia	Balanced panel, 114 observations from 19 MFIs	2004-2009	Inputs – employees, operating and administrative expense Outputs – interest and fee income, gross loan portfolio, loans outstanding	Improvement of technical efficiency (e.g. management practices) is the main source of productivity growth.
Nawaz (2009)	54 countries	204 MFIs	2005-2006	Outputs – gross loan portfolio, financial revenues Inputs – assets, operating cost, number of staff	1.1% productivity progress due to the enhancement in technical efficiency change with subsidies. Overall regress in TC.

Source: Author's compilation.

Based on the literature review above, there is limited empirical evidence providing insight into the ongoing debate of MFIs' productivity. Nevertheless, existing studies on productivity of MFIs have focused on analyses of general productivity and have not moved into the second stage by examining how environmental variables could affect productivity except Mia and Ben Soltane (2016); Wijesiri and Meoli (2015). On the other hand, quite a number of studies in the banking sector literature have employed this two-step procedure, such as Sufian (2011); Pancurova and Lyócsa (2013); Pasiouras, Delis, and Papanikolaou (2009), among others. As there remains a gap in the microfinance literature seeking to understand and identify determinants of productivity, this chapter aims to unravel important policy prescriptions for the regulatory authority and management of MFIs.

5.3 Methodology

Most of the earlier work to evaluate productivity of an institution or firm has been based on ratio analysis. However, as discussed earlier, normal ratio analysis does not provide sufficient information about scale economies or other crucial components. With the advent of time, several methods have been developed to capture the diverse objectives of a firm and provide better analysis of efficiency and productivity. Among these complex methods, parametric approaches (Stochastic Frontier Analysis-SFA, Thick Frontier Analysis-TFA, and Distribution Free Approach-DFA) and non-parametric approaches (Data Envelopment Analysis-DEA and Free Disposal Hull-FDH) are most frequently used to measure productivity or efficiency. However, the selection of the method largely depends on a researcher's choice and context, as well as the suitability of the data.

Parametric approaches use econometric concepts whereas non-parametric approaches utilize linear programming methods. These two approaches further differ in how they handle random errors and assumptions to construct the most efficient frontier (Mokhtar,

Abdullah, & Alhabshi, 2008). However, in the microfinance literature, the SFA and DEA approaches are frequently used in analyzing the efficiency and productivity of MFIs. Some of the earlier studies have also used Tornqvist indices for productivity measurements (Kerstens & Van de Woestyne, 2014). However, the limited features rarely make this a better option than the traditional DEA.

There are several advantages of using DEA to analyze the efficiency or productivity of the formal and informal financial industry. The developers of DEA, Charnes, Cooper, and Rhodes (1978), assert that its application is suitable for non-governmental entities. This is important as this study includes only NGO-MFIs in its sample. Conventional methods use a normal ratio between inputs and outputs, but DEA stands out as it can handle multiple inputs and outputs at the same time. In addition, since DEA is a non-parametric method, it does not require any prior functional form. Compared to other methods, DEA also provides flexibility with the choice of measurements of inputs and outputs. For example, the DEA is a unit invariance and has no influence on the estimated efficiency or productivity. Thus the unit of inputs and outputs can be numbers, ratios, etc.

The most unique feature of DEA is that the indices can be decomposed, which is highly significant to the management and policymakers in the microfinance industry. This feature could lead to important guidelines for understanding the operational strengths and weaknesses of MFIs. Furthermore, it also helps in understanding the past performance of a decision making unit (DMU) and providing guidelines for future planning. Another principal advantage of using TFP is the ability to observe the performance of each MFI for more than one year. This allows for tracing the changes of productivity at the individual and industry levels (Isik & Hassan, 2002). It can also be used to compare the performance of various DMUs at a single point in time or over a period of time. Finally, the assumption of conventional DEA is that it uses a simple concept of the production

process – a single black box where the inputs are transformed into outputs.⁴⁸ The results are easy to understand and interpret since there are no complex assumptions or multi-stage production processes involved. As there are multiple types of benefits, a conventional DEA-based MPI is used in this study, as proposed by Färe et al. (1994). Figure 5.1 shows the estimation procedures used in this analytical chapter.

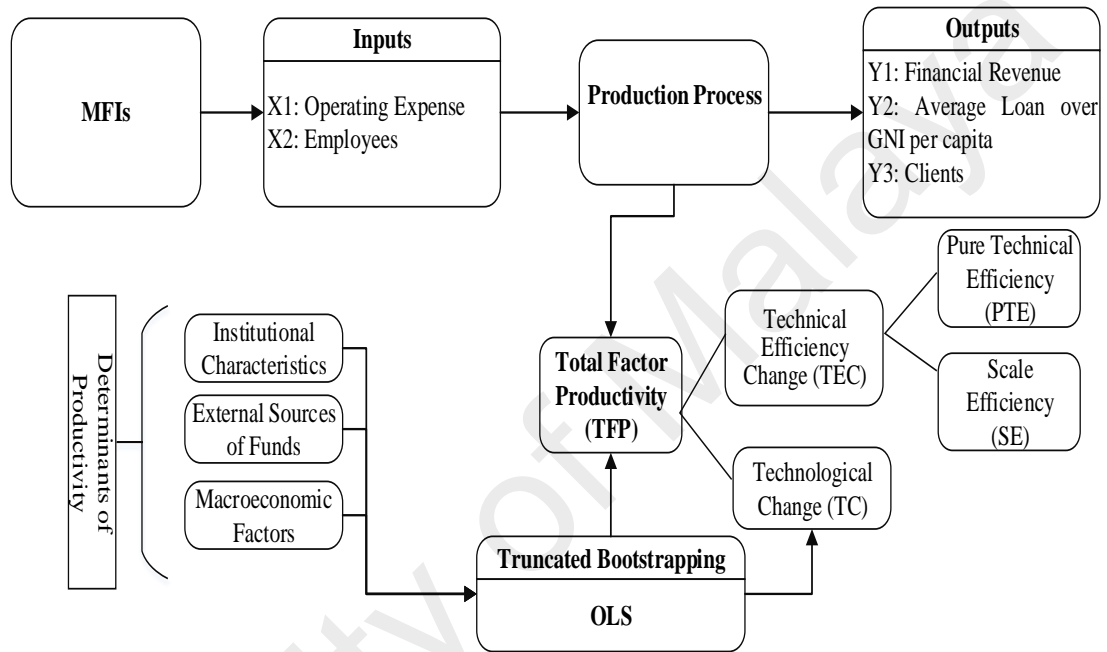


Figure 5.1: Estimation Strategy of Productivity and its Determinants.

Source: Author's.

5.3.1 Malmquist Productivity Index (MPI): A Brief Overview

The MPI is used to evaluate the productivity of MFIs, in line with the data and objective of this study. This method has been frequently used in the existing banking literature. It was first introduced by Caves, Christensen, and Diewert (1982), and then extended by Färe et al. (1994). Assuming the number of MFIs, $j = (1 \dots j)$, operate over t

⁴⁸ There are more recent forms of DEA that have been developed to use multiple stages of the production process. For more details on the review of network-based DEA, see Kao (2014).

= 1...T time period by utilizing n inputs and m outputs, the production technology during the time period t (S^t) can be written as:

$$S^t = \{(x^t, y^t): x^t \text{ can produce } y^t\} \quad (5.1)$$

where $x^t \in R_+^n$ and $y^t \in R_+^m$ are input and output vectors respectively.

Based on Shepherd (2015) and Färe et al. (1994), the output distance function at time t is defined as:

$$D_0^t(x^t, y^t) = \inf \left\{ \theta: \left(x^t, \frac{y^t}{\theta} \right) \in S^t \right\} \quad (5.2)$$

Equation 5.2 is defined as the reciprocal of the “maximum” proportional expansion of the output vector, y^t , given input x^t which refers to technology. D_0^t denotes the output-based distance function. Furthermore, as this study aims to estimate the MPI, the distance function in relation to time $t+1$ is

$$D_0^t(x^{t+1}, y^{t+1}) = \inf \left\{ \theta: \left(x^{t+1}, \frac{y^{t+1}}{\theta} \right) \in S^t \right\} \quad (5.3)$$

$$D_0^{t+1}(x^t, y^t) = \inf \left\{ \theta: \left(x^t, \frac{y^t}{\theta} \right) \in S^{t+1} \right\} \quad (5.4)$$

Based on Färe et al. (1994), the geometric mean of two MPIs between time period t and $t+1$ can be represented by the following equation:

$$M_0^{t,t+1} = \left[\frac{d_0^t(x^{t+1}, y^{t+1})}{d_0^t(x^t, y^t)} \times \frac{d_0^{t+1}(x^{t+1}, y^{t+1})}{d_0^{t+1}(x^t, y^t)} \right]^{1/2} \quad (5.5)$$

$M_0(y^{t+1}, x^{t+1} y^t x^t)$ is the output-based MPI for the most recent production unit at technology $t+1$ relative to earlier production unit, with respect to t technology as defined

by Caves et al. (1982). Moreover, Färe et al. (1994) further decomposed MPI into changes in technical efficiency and technological change, as follows:

$$M_0^{t,t+1} = \frac{d_0^{t+1}(x^{t+1}, Y^{t+1})}{d_0^{t+1}(x^t, y^t)} \times \left[\frac{d_0^t(x^{t+1}, y^{t+1})}{d_0^{t+1}(x^{t+1}, y^{t+1})} \times \frac{d_0^t(x^t, y^t)}{d_0^{t+1}(x^t, y^t)} \right]^{1/2} \quad (5.6)$$

The term outside the parentheses in equation (5.6) represents a ratio of two distance functions, which measures the changes in TEC between time period of t and $(t+1)$ (Farrel, 1957). A ratio greater than one represents a move towards the production frontier, whereas a ratio equal to one indicates productivity stagnation and a ratio less than one demonstrates a shift away from the production frontier. The square root term within the bracket measures technological change during the observed periods. A ratio greater than one indicates technological improvement, a ratio equal to one indicates no change and a ratio less than one indicates deterioration in technology. Based on Färe et al. (1994), the TEC in equation 5.6 can be further disentangled into two components: pure technical efficiency change (PTE) and scale efficiency change (SE). Fare et al. (1994) showed that $TFP = TC \times SE \times PTE$, where $TEC = SE \times PTE$.

The two components of TFP change, namely, TEC and TC can also be further referred to as the products of ‘catch-up’ and ‘frontier-shift’ respectively (Bassem, 2014). ‘Catch up’ or ‘recovery’ means the degree to which a production unit (in this case, MFIs) improves or worsens efficiency, whereas frontier shift (innovations) refers to changes in efficiency of the frontiers between two time periods (Cooper et al., 2007). In terms of economics, TEC is associated with the productivity of inputs (Sathye, 2003). TEC is in fact a comparative measurement tool that denotes how well a decision-making unit (DMU) processes its inputs into outputs or transforms multiple resources into multiple financial services (e.g. loans, credit, insurance) (Bhattacharyya, Lovell, & Sahay, 1997;

Kumar & Gulati, 2008). As Emrouznejad and Cabanda (2014) note, the "...SE measure is used to indicate the amount by which productivity can be improved by moving to the point of technically optimal productive scale". A value of TFP greater than one indicates positive growth whereas a value less than one indicates a decline in TFP. The value of one indicates stagnation in productivity, no progress or general regress.

To estimate the TFP of MFIs, this study has used the Data Envelopment Analysis Program (DEAP), developed by Coelli (1996), as well as Variable Return to Scale (VRS)⁴⁹ along with the output-oriented command. The output-oriented MPI identifies equi-proportionate increase of outputs subject to a given level of inputs, due to the inherent outreach objective of MFIs. A similar approach has been used by Basharat et al. (2015) to estimate the impact of efficiency on interest rates in microfinance. There are particular reasons for choosing an output-oriented command over an input-oriented VRS. Firstly, one of the main goals of MFIs is to increase their outreach by extending financial services to the unbanked poor. This approach also provides additional synergies for MFIs as extending more loans or other financial services to the poor generates more revenue, which directly enhances the financial viability of MFIs. Secondly, since the microfinance sector is still underdeveloped in most countries, MFIs have limited financial and human resources to invest in their operations. Thus, in the context of an imperfect economic environment and other market determinants, output-oriented production models along with VRS are seen to be more appropriate than other combinations in the productivity analysis of the microfinance sector.

⁴⁹ The conventional DEAP program does not distinguish between VRS and Constant Return to Scale (CRS).

5.3.2 Selection of Inputs and Outputs of TFP

Given that the nature of operations is unique to each firm or institution, one of the challenges in estimating productivity in MFIs is determining appropriate inputs and outputs. MFIs, in most cases, have two goals, namely financial sustainability and social outreach. This study puts special effort into identifying inputs and outputs that can best represent the dual goals of MFIs.

Before identifying the relevant inputs and outputs, it is necessary to understand the categories of financial markets. Researchers have used four main approaches, namely, production, intermediation, asset and value added (Bassem, 2014; Gutierrez-Nieto et al., 2007; Gutiérrez-Nieto, Serrano-Cinca, & Molinero, 2009; Sharma, Sharma, & Barua, 2013; Sufian, 2007, 2009; Sufian & Shah Habibullah, 2010).

The production approach in the financial sector refers to the production of loans and other financial services (e.g. savings, insurance) for the clients. The intermediation approach refers to the matchmaking of deposits and loans. In such a way, deposits are considered an input as well as an output in the production approach because of the value added to the account holders, including safekeeping, liquidity, and additional services (Benston, Hanweck, & Humphrey, 1982). Lastly, as financial institutions want to maximize loans to their clients, the market value of the total assets is considered one of the main outputs under the asset approach.

This study follows the framework proposed by Yaron (1994) and preferred not to strictly classify MFIs under any of the above approaches due to MFIs' mix production activities. As such, this study tacitly follows Gutierrez-Nieto et al. (2007) and Bassem (2014); both of these studies used a combination of two inputs and three outputs in the production process to estimate an MFI's efficiency and productivity respectively. MFIs

produce loans for the poor by utilizing scarce physical resources such as capital and employees (Haq, Skully, & Pathan, 2010). Hence, this study considers two inputs: operating expenses (OPTEXP) of the MFIs (Bassem, 2014; Berger & Humphrey, 1997; Gebremichael & Rani, 2012; Gutierrez-Nieto et al., 2007; Worthington, 1998) and the number of employees (EMP) (Bassem, 2014; Gebremichael & Rani, 2012; Gutierrez-Nieto et al., 2007; Tortosa-Ausina, 2002).

As for the outputs, the study uses financial revenue, average loan balance over GNI per capita (AVLGNI) and total number of clients (CL). Financial revenue (FINREV) represents the financial sustainability of the MFIs, which is important for the long-term viability and continuous flow of credit in the sector (Bassem, 2014; Gebremichael & Rani, 2012; Gutierrez-Nieto et al., 2007). Hisako (2009) and Quayes (2012) used AVLGNI to measure the depth of outreach; the smaller the AVLGNI, the greater the depth of outreach (Louis et al., 2013). To capture the breadth of outreach, Schreiner (2002) proposed considering the total number of clients. Likewise, this study uses AVLGNI and CL as the two other outputs to represent the outreach of the MFIs. Hence, this study uses a mix of three outputs and two inputs of the production process, which is a common set of input-output combination in the existing literature.

5.3.3 Modelling Determinants of Productivity

Estimation of productivity is of significant interest not only to academicians but also to policymakers and the management of MFIs, who would benefit from understanding what drives those productivities. Coelli and Rao (2005) suggested several ways to incorporate environmental variables into the efficiency or productivity analysis. One method is to estimate productivity in the first stage, and then regress the determinants against the estimated productivity scores in the second stage.

The existing literature has identified internal and external determinants in the efficiency or productivity of the banking industry. Internal determinants are those that originate from bank-specific characteristics such as size and profitability risk, whereas external determinants are macroeconomic factors and legal variables that affect the operations and performance of an institution (Pasiouras et al., 2009).

Thus, critical determinants are considered, namely the institutional characteristics, external sources of funds and macroeconomic conditions which do not form the inputs and outputs of the MFIs. Empirically, Ahlin et al. (2011); Mimouni and Ali (2012) showed that macroeconomic and socioeconomic factors play a significant role in MFIs' performance and could affect productivity. Past studies have considered the legal status or ownership structure of an MFI (usually a dichotomous variable), the scope of operation, sources of funds and macroeconomic and socioeconomic factors (such as GDP, GDP growth, inflation) as determinants or environmental variables in the analysis of efficiency and productivity (Mia & Ben Soltane, 2016; Sufian, 2011; Sufian & Habibullah, 2012).

By doing this two-stage analysis, the management of MFIs would gain understanding on important factors that are likely to influence productivity. This would allow them better control of their operations and enable them to enhance productivity. The two-stage analysis provides valuable information for choosing the optimal mix of inputs and outputs in the production process. Similarly, policymakers could gain an understanding on how macroeconomic and socioeconomic factors play a role in enhancing the productivity of the industry. Considering the institutional characteristics, macroeconomic factors and sources of funds as determinants of TFP, the following equation specifies the estimation model:

$$TFP_{it} = \alpha_0 + \beta_1 LNAGE_{it} + \beta_2 LN(AGE)_{it}^2 + \beta_3 ROA_{it} + \beta_4 LNBRANCH_{it} + \beta_5 LOC_{it} + \gamma_1 INF_t + \gamma_2 GDPGR_t + \gamma_3 WGI_t + \gamma_4 INTCP_t + \delta_1 PKSF_{it} + \delta_2 GOVT_{it} + \delta_3 DON_{it} + \delta_4 MFIB_{it} + \delta_5 BANK_{it} + \varepsilon_{it} \quad (5.7)$$

where subscripts i represents an MFI and t represents the respective time period or year. ε_{it} is the error term in the model. TFP is the productivity score estimated in the first stage. As a whole, equation (5.7) includes three sets of independent variables, namely, institutional characteristics (IC), macroeconomic factors (MF) and external sources of funds (SF). The IC includes the age of the MFI since its establishment (AGE) to capture the effect of firm experience. Generally, the higher the AGE, the greater experience an MFI has, which is likely to affect performance of MFIs. Additionally, this study also included AGE^2 to check for a non-linear relationship and to examine the effect of the ‘learning curve’. To capture the effect of firm size on productivity of MFIs, number of branches (BRANCH) is also included; this is because the usage of technology between large and small-scale MFIs may vary. AGE and BRANCH have been transformed into natural logarithms to improve the goodness of fit of the regression model and to overcome simultaneity bias (De Bandt & Davis, 2000; Staikouras, Mamatzakis, & Koutsomanoli-Filippaki, 2008). Moreover, the log transformation also aimed to simplify interpretation of the findings. Return on asset (ROA) is used to examine if profitability could have any effect on productivity. Lastly, another important institutional characteristic, MFI location (LOC), is also included as a dummy variable to investigate the effect of location on the productivity of MFIs.

Furthermore, this study also incorporates macroeconomic factors and regulatory variables, such as Inflation (INF), GDP growth (GDPGR), World Governance Indicator (WGI) and interest rate cap (INTCP). These factors are included to examine the macroeconomic impact on the productivity of MFIs. Since the microfinance sector is an

integral part of the economy and the financial sector, any changes in INF and GDPGR affect the operations of MFIs. For example, inflation in the economy increases the overall expenses of MFIs, hence, on the productivity of MFIs. Higher GDPGR shows the overall progress of an economy and is generally expected to have a positive effect on the productivity of MFIs. Furthermore, WGI captures the institutional quality of a country and INTCP is included to examine how market intervention affects the productivity of MFIs.

This study only considers the external sources of funds that MFIs use in their capital structure. They include quasi-equity (subsidies and donations), such as funds from *Palli Karma Sahayak Foundation* (PKSF), government concessionary funds (GOVT), and donations (DON). External sources of funds also include peer borrowing from other MFIs (MFIB) and debt financing from commercial banks (BANK) due to their significant contribution to the capital structure of the microfinance industry in Bangladesh. Table 5.3 shows the definitions and measurements of the variables used in this study.

Table 5.3: Definitions and Measurement of Variables

Variable	Definition	Unit
	Output/Input	
Financial Revenue (FINREV)	Total financial revenue income (total loan outstanding*portfolio yield).	Taka
Average Loan over GNI per capita (AVLGNI)	Average loan outstanding divided by Gross National Income (GNI) per capita.	Ratio
Clients (CL)	Total number of clients.	Number
Operating Expenses (OPTEXP)	Total operating expenses by an MFI, including depreciation, administrative, amortization, etc.	Taka
Employees (EMP)	Total number of employees.	Number
	Determinants of Productivity	
BRANCH	Size of an MFI based on the number of branch.	Number
Return on Asset (ROA)	Total earnings divided by total asset.	Ratio
Age (AGE)	Year of establishment (registration) of an MFI.	Number
Location (LOC)	Dummy variable-1, if the MFI was registered in the capital city of Dhaka, 0 otherwise.	0,1
Palli Karma Sahayak Foundation (PKSF)	Amount of PKSF funds divided by the total funds of an MFI*100.	%
Government Funds (GOVT)	Amount of government loans and concessionary funds divided by the total funds of an MFI*100.	%
Donations (DON)	Total amount of donations divided by the total funds of an MFI*100.	%
Peer Borrowing (MFIB)	Total amount of borrowed capital from peer MFIs divided by the total funds of an MFI*100.	%

Source: Author's compilation from the annual reports of MRA.

5.3.4 Sample Size

Although there is no specific 'rule of thumb' to determine the optimal sample size in DEA analysis, there is general consensus among the experts in the field. The determination of sample size shows how balanced the discrimination is between efficient and non-efficient DMUs (Sarkis, 2007). Sarkis (2007) reported two conflicting factors in determining appropriate sample size. On one hand, it is reasonable to argue that larger sample sizes allow estimations to capture high performance units, which will generate a more reliable and efficient frontier, as well as substantially improve the discriminatory power of the data. On the other hand, it can also be argued that a large sample size may

decrease homogeneity and increase the influence of exogenous variables or other factors that impact the overall results (Golany & Roll, 1989). Thus, using a moderate sample size to represent the microfinance sector may prove to be beneficial in the DEA analysis.

There have also been attempts to define the size of DMUs in DEA analysis. For example, Boussofiane, Dyson, and Thanassoulis (1991) note that the lower bound of the DMU should be a multiple of inputs and outputs due to flexibility in assigning weight for each of the units and indicators, while Golany and Roll (1989) proposed at least twice the number of inputs and outputs. Dyson et al. (2001) suggested a total of two times the product of inputs and outputs, while Bowlin (1998) proposed three times the total inputs and outputs. The sample size used in this study meets the minimum requirements, and is larger than the sample size used by Gebremichael and Rani (2012), and Wijesiri and Meoli (2015).

5.4 Empirical Findings and Discussion

Table 5.4 shows the descriptive statistics of the variables used in this analytical chapter. Some of the variables have been discussed in the preceding chapters and hence are not included here to avoid overlapping. In terms of external sources of funds, PKSf constituted the largest source of funds, followed by commercial loans, donations, peer borrowing and government subsidies. It was observed that there are also MFIs that do not depend on external sources of funds, with percentages of zero for all the external sources of funds. This means that some of the MFIs only depend on internally-generated funds such as savings and cumulative surplus. In contrast, there are MFIs that depend heavily on external sources of funds. For example, the contribution of PKSf and BANK observed the highest values of 89.54% and 54.13% respectively. Around 30% of the MFIs included in this sample have their head office or registration located in Dhaka, the capital city of Bangladesh.

Table 5.4: Descriptive Statistics (2009-2014).

Variable	Obs.	Mean	S.D.	Min	Max
Output/Input					
FINREV(million, BDT)	1014	208.165	1083.149	0.273	10894.790
EMP	1014	514	2351	3	25641
OPTEXP (million, BDT)	1014	150.910	711.380	0.330	7563.940
Determinants of Productivity					
PKSF	1011	22.610	27.620	0.000	89.540
GOVT	1011	1.550	4.710	0.000	28.360
DON	1011	2.100	7.450	0.000	43.990
LOC	1014	0.290	0.454	0.000	1.000

Source: Authors. Note: Determinants of productivity (except macroeconomic factors and LOC) are winsorized at 1% and 99% level to minimize the effect of outliers. BDT: Bangladeshi Taka. See Table 4.2 for descriptive statistics of the remaining variables.

5.4.1 Evolution of Total Factor Productivity (TFP)

Before discussing the findings on productivity, some important points should be noted. For example, since this study used panel data covering the period of 2009 to 2014, it should not come as a surprise that MFIs observed progress at certain periods and regress at other periods. Hence, variations could also occur in the components of TFP (TEC, TC, PTE and SE). This is relevant due to dynamic changes in the microfinance markets over the years. Furthermore, in a competitive business environment, usage of technology and methods of production may not be consistently effective throughout the years.

Figure 5.2 shows the evolution of overall TFP of MFIs in Bangladesh from 2009 to 2014. On average, the sector experiences 3.6% productivity progress per annum. Although the timing period and choosing of variables differ, this overall TFP change is slightly less than the microfinance sectors in MENA (4.9% per annum), Ethiopia (3.8% per annum) and Kenya (7% per annum) (Bassem, 2014; Gebremichael & Rani, 2012; Wijesiri & Meoli, 2015). In contrast, the productivity progress of MFIs in Bangladesh is greater than in its neighboring country, India (3.7% regress in TFP per annum) (Babu & Kulshreshtha, 2014). TFP growth was slightly above 6% per annum during 2009 to 2011,

however, it gradually declined afterward. For example, the average TFP growth was 3.8% and 1.6% during 2011-2012 and 2012-2013 respectively. Other than that, this study also observed a productivity decline of 0.2% during the period of 2013-2014, which indicates a marginal deterioration in productivity for that year.

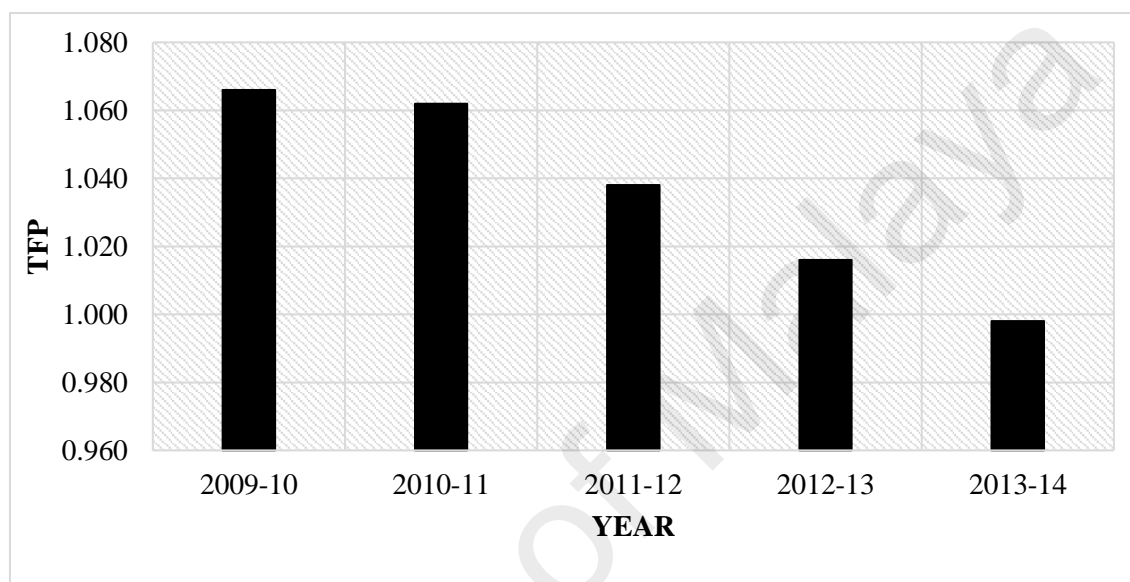


Figure 5.2: Trend of TFP Changes in MFIs (2009-2014)

Source: Author's.

Several reasons could be linked to the overall progress of productivity (3.6%) in MFIs. For example, due to the long existence and maturity of the Bangladeshi microfinance sector, MFIs have obtained 'know-how' through learning by doing (Mia & Chandran, 2016). Moreover, although MFIs provide labor-intensive and small loans, loan recovery rates remain relatively high and loans are immediately recycled into operations. This speedy recycling process imparts synergistic benefits to MFIs by providing more loans and gaining interest income, as well as enhancing outreach by expanding its clients base. These cumulative approaches and high turnover of inputs have most likely enhanced the productivity of MFIs in Bangladesh.

5.4.1.1 Decomposition of the Total Factor Productivity (TFP)

As discussed earlier, one of the benefits of using the DEA-based MPI is its ability to decompose the TFP to identify possible reasons behind progress or regress. The results from the TFP decomposition are reported in Table 5.5, which reveals that average productivity progress is due to changes in TEC, namely enhancements in management practices and diffusion of technology (Alam, 2001). The sector has been operating for more than three decades and most of the managers/administration have attained their 'know-how' through the 'learning by doing' process. The improvement in TEC can be further related to enhancement in intellectual capital as a form of human capital. Sumedrea (2013) defined intellectual capital by linking employees' knowledge, skills and capabilities with their commitment to the firm or company. As argued by Yalama and Coskun (2007), the importance of intellectual capital is vital and sometimes even more important than other tangible assets in the banking sector. However, this outcome is likely to oppose the findings of Servin et al. (2012) that NGOs and cooperatives have much lower technical efficiencies, as the changes in this study are due to improvements in TEC.

Table 5.5: Overall TFP Changes of MFIs in Bangladesh (2009-2014)

Year	TEC	TC	PTE	SE	TFP
2009-10	1.150	0.927	1.064	1.081	1.066
2010-11	1.086	0.978	0.999	1.087	1.062
2011-12	0.960	1.081	1.006	0.954	1.038
2012-13	0.928	1.095	0.967	0.960	1.016
2013-14	1.207	0.826	1.071	1.127	0.998
Mean	1.061	0.976	1.021	1.039	1.036

Source: Author's.

Since TEC is the product of PTE and SE, the components have observed average growth of 2.1% and 3.9% per annum respectively. Positive PTE suggests that dynamic labor force and experienced staff in Bangladeshi MFIs have resulted in better managerial ability in production process, thus enhancing PTE. Furthermore, SE observed substantial

progress from 2009 to 2011, which could be linked to the global financial crisis in 2007-2008. It is rational to expect post-crisis effects on the performance of MFIs and SE in particular. From the clients' perspective, a financial crisis also affects individuals. National or regional economic recession decreases employment opportunities in the formal sector and people may choose to get involved in informal sectors such as microfinance (McGuire & Conroy, 1998). This creates a positive shift in MFIs' client base. Hence, it is highly likely that the global financial crisis enhanced the scale economies of MFIs during 2009-2011.

However, SE shows negative change for 2011-2012 and 2012-2013 at rates of 4.6% and 4% respectively. Negative SE can be linked to important policies implemented during the studied time period because efficiency and productivity are heavily dependent on policy decisions (Mukherjee, Nath, & Nath Pal, 2002). For example, the MRA introduced an interest rate cap effective from 2011 (MRA, 2011), which always hurt the poor by lowering social outreach. In the face of an interest rate cap, MFIs might limit their client base owing to the fear of negative effects on further expansion. A similar effect can be found in the second analytical chapter where interest rate caps affect depth of social outreach. However, judging by the positive growth of 12.7% between 2013 and 2014, MFIs seem to have overcome the effects of interest rate caps implementation.

Another important component of TFP is TC, which shows a declining trend during the sample period, echoing the findings of Bassem (2014) and Gebremichael and Rani (2012). In contrast, Wijesiri and Meoli (2015) found that productivity progress in the Kenyan microfinance industry was mainly due to the increase in TC. There is further evidence to support our findings as MFIs are focusing more on adopting existing methods of operations rather than innovating new products and services, particularly in South Asian region (Mia & Ben Soltane, 2016). Researchers have also endorsed the low usage

of technology in microfinance operations (Kauffman & Riggins, 2012) and emphasized the importance of technological innovation for better performance in MFIs (Hartarska & Nadolnyak, 2007; Navajas, Conning, & Gonzalez-Vega, 2003). According to Frankiewicz (2003), almost 46% of MFIs worldwide have very low usage of technology in providing financial services to the poor; thus, low TC in MFIs could be caused by lack of access to latest technology.

5.4.1.2 Benchmarking MFIs in Bangladesh

This study identified the best-performing MFIs based on TFP change. The first criterion is consistent progress in TFP ($TFP > 1$), as well as in all of its components (TEC, TC, PTE and SE), in all the years of the study period. None of the MFIs fulfilled this criterion. However, it is noteworthy that BRAC partially fulfilled this criterion, with the exception of TEC which remained static during the study period. Additionally, BRAC observed an extraordinary TC, which stood at 9.3% per annum on average, the highest among all selected MFIs. As none of the MFIs met this criterion, MFIs were chosen if they observed positive TFP growth on average; a total of 18 MFIs were thus selected. Table 5.6 reports average TFP changes and other components for these 18 MFIs based on a hierarchical order. A deeper analysis of these 18 MFIs reveals that the set includes large (BRAC, GUK, TMSS, SSS), medium (Protyashi, PIDIM Foundation, Society for Development Initiatives, HEED Bangladesh, Mamata) and small MFIs (Rova Foundation, Palli Pragati Samity, Shiropa Development Society, AMDA Health & Environment Development Society, Nobo Jibon, Santal Mission Norwegian Board, Agragati, Shiropa Development Society, Village & City Development Society, Perfect

Trust).⁵⁰ Among the set of 18 MFIs, both local-oriented and regional or national level MFIs are included.

Table 5.6: Average TFP of Benchmark MFIs in Bangladesh

	TEC	TC	PTE	SE	TFP
Aragati (05774-00474-00189)	1.296	0.951	1.139	1.124	1.206
Gram Unnayan Karma (GUK) (02761-03196-00273)	1.127	1.002	1.051	1.070	1.125
Santal Mission Norwegian Board (00314-02594-00407)	1.173	0.962	1.074	1.095	1.118
Nobo Jibon (01510-00598-00166)	1.177	0.960	1.110	1.063	1.114
TMSS (00704-00470-00105)	1.103	1.001	1.044	1.060	1.102
Rova Foundation (00858-00806-00138)	1.136	0.975	1.085	1.046	1.098
Shiropa Development Society (02516-01291-00468)	1.108	0.999	1.047	1.058	1.096
Protyashi (00284-00304-00145)	1.100	0.996	1.024	1.076	1.095
BRAC (00488-00186-00065)	1.000	1.093	1.000	1.000	1.093
AMDA Health & Environment Development Society (00136-00610-00344)	1.080	1.006	1.022	1.069	1.086
Society for Social Service (SSS) (00645-01002-00025)	1.023	1.059	0.995	1.030	1.082
Village & City Development Society (00287-00086-00351)	1.154	0.948	1.051	1.097	1.080
PIDIM Foundation (00935-00094-00162)	1.052	1.028	1.013	1.040	1.078
Perfect Trust (0090-01828-00416)	1.146	0.947	1.035	1.104	1.062
Society for Development Initiatives (01239-03336-00154)	1.016	1.049	1.001	1.013	1.060
HEED Bangladesh (01399-00645-00258)	1.039	1.020	1.012	1.028	1.058
Mamata (00927-01082-00218)	1.024	1.021	0.994	1.033	1.045
Palli Pragati Samity (02223-01083-0019)	1.038	0.998	1.048	0.990	1.030

Source: Author's. Note: Numbers in the parentheses are the registration numbers provided by the MRA. Details of the annual TFP for these selected MFIs are provided in Appendix A. Average TFP of all MFIs are provided in Appendix B.

Following that, this study further classified the 18 MFIs into those that did or did not observe average positive progress (not by year) in components of TFP changes (TEC, TC, SE and PTE); a total of six MFIs fulfilled this criterion – Gram Unnayan Karma (GUK), TMSS, AMDA Health & Environment Development Society, PIDIM Foundation, Society for Development Initiatives, and HEED Bangladesh. Among them, GUK and TMSS are located at the same district (Bogra) in the northern part of Bangladesh. One commonality among five out of six best-performing MFIs (except Society for

⁵⁰ The size of MFIs is based on the number of clients, as classified by the MRA.

Development Initiatives) is that their productivity progress has been significantly enhanced by TEC, in particularly by PTE.

The findings on benchmarked MFIs partially support the arguments that operating on a local level requires lower costs to obtain information about the clients, thus lowering the operational costs, enhancing performance of MFIs and stimulating community development. Similarly, Bos and Millone (2015) stated that small institutions focusing on high breadth and depth of outreach are more efficient and productive. When institutions deal with a small number of clients, the interaction between MFIs and clients establishes a concentrated relationship. Transaction costs are reduced due to lower information asymmetry and minimal moral hazards, thus enhancing the productivity of MFIs.

5.4.2 Determinants of Productivity

The second stage of analysis can be executed through two approaches. First, the Truncated Bootstrapping advocated by Simar and Wilson (2007) can be used to examine the effects of other factors on productivity. This is better than the commonly-used Tobit estimator as it uses valid inferences and takes into account the bias caused by the serial correlation between productivity and efficiency (Simar & Wilson, 1999). This approach was used by Wijesiri and Meoli (2015). Second, Banker and Natarajan (2008) asserted that in a two-stage analysis, DEA followed by OLS regression yields consistent estimates of parameters. Furthermore, McDonald (2009) also statistically proved that use of DEA and OLS is consistent if the White's(1980) heteroskedastic consistent standard errors are calculated. Thus, this study corrects for potential heteroscedasticity through robust standard errors using the Huber-White sandwich estimator in OLS (White, 1980). This changes the standard errors, but not the coefficient of the independent variable; hence, it provides reasonably accurate p-values cum significance levels. A similar approach has also been used in Sufian and Habibullah (2010, 2012). Thus, truncated bootstrapping and

OLS have been used in this study to contribute to our understanding of whether the coefficient estimates remain consistent under both approaches in the context of microfinance.

5.4.2.1 Determinants of Total Factor Productivity (TFP)

The overall significance of the model, measured by the F -statistics in OLS and Chi-square (χ^2) in Truncated Bootstrapping, shows that the model is statistically significant at the 1% level, indicating overall goodness-of-fit (Table 5.7). It is important to note that the number of iterations in Truncated Bootstrapping is 2000 and the output included neither R^2 nor pseudo R^2 . However, the R^2 estimated by the OLS, roughly 7%, can serve as a reference.

With regard to institutional characteristics, this study found ROA to be positively related to TFP at the 1% significance level, and the coefficient remains the same in both models. MFIs with greater profitability are thus associated with higher TFP growth. This is imperative as ROA positively correlates with financial self-sufficiency and operational self-sufficiency, which in turn enhances productivity (Cull et al., 2007). Moreover, this finding also implies that productivity could be enhanced by the ability of an MFI to use their assets efficiently. Furthermore, positive ROA also helps MFIs to develop and support innovation, which ultimately contributes towards overall progress in productivity. In contrast, the negative effects of ROA have also been observed recently in the study conducted by Wijesiri and Meoli (2015) on the Kenyan microfinance industry. In addition, studies on the banking sector have found insignificant effects of ROA on banks' efficiency in the Malaysian and Indonesian banking sectors (Sufian, 2011; Sufian & Habibullah, 2012). The findings also showed that the size of an MFI (BRANCH) has a negative effect on productivity, as the coefficient sign remains negative across the models. This negative effect of size on the productivity of MFIs could be explained in

several ways. First, the decision-making process in larger MFIs is found to be complex as it would involve various departments of the same institution. As a result, it could increase the actual cost of operation and inefficiency in management after reaching an optimum size of a MFI. However, it could be simple and less costly for a small MFI. Second, the leadership challenges in MFIs, where not every employee add similar values to the MFIs when they move along the managerial ladder. Third, alignment with the mission of MFIs may be difficult and sometimes it is unrealistic that every employee in a large MFI will work up to the expectation set by the organization. Thus, it is likely that larger MFIs are relatively inefficient in converting the input into output. Additionally, the findings also mean that greater autonomy of the branch through decentralization could be counter-productive. Apart from ROA and BRANCH, other institutional variables are not statistically significant to explain variations in TFP in this study.

The results highlighted the impact of macroeconomic conditions on the productivity of the microfinance sector in Bangladesh. This study found that GDP growth, INTCP and WGI have statistically significant effects on variations in TFP, either in a positive or negative way. GDP growth shows a positive association with TFP that supports the arguments of economic growth. Several conclusions can be drawn from this finding. Generally, economic growth indicates a country's overall progress. As such, business expansion would take place, particularly in the small-scale enterprises supported by MFIs. This increases the demand for financial services and provides an impetus for MFIs to expand their operations and benefits from scale economies. Moreover, in a cross-country examination, Imai, Gaiha, Thapa, Annim, and Gupta (2011) also found a positive association between GDP and the financial performance of MFIs. The result indicates that when the overall economic performance (in terms of GDP growth) of a country improves, the income of the working population also improves. Thus, borrowers are able

to maintain the repayment of loans and become financially disciplined in a way which directly stimulates the productivity of MFIs.

Table 5.7: Determinants of Total Factor Productivity in MFIs

	Dependent Variable: TFP			
	OLS	OLS	Truncated Bootstrapping	Truncated Bootstrapping
Institutional Characteristics				
LNAGE	0.0055 (0.0103)	0.0056 (0.0103)	0.0055 (0.0103)	0.0056 (0.0103)
LNAGE2		0.0001 (0.0022)		0.0001 (0.0021)
ROA	0.0078*** (0.0012)	0.0078*** (0.0012)	0.0078*** (0.0012)	0.0078*** (0.0012)
LNBRANCH	-0.0070* (0.0037)	-0.0071* (0.0037)	-0.0070* (0.0036)	-0.0071* (0.0037)
LOC	-0.0160 (0.0106)	-0.0160 (0.0106)	-0.0160 (0.0105)	-0.0160 (0.0105)
Macroeconomic Factors and Regulatory Variables				
INF	0.0017 (0.0061)	0.0017 (0.0061)	0.0017 (0.0060)	0.0017 (0.0060)
GDPGR	0.0369* (0.0213)	0.0369* (0.0214)	0.0369* (0.0210)	0.0369* (0.0211)
WGI	-0.2335** (0.1147)	-0.2335** (0.1147)	-0.2335** (0.1176)	-0.2335** (0.1176)
INTCP	-0.0460** (0.0196)	-0.0460** (0.0196)	-0.0460** (0.0198)	-0.0460** (0.0198)
External Sources of Funds				
PKSF	0.0006*** (0.0002)	0.0006*** (0.0002)	0.0006*** (0.0002)	0.0006*** (0.0002)
GOVT	0.0011 (0.0011)	0.0011 (0.0011)	0.0011 (0.0011)	0.0011 (0.0011)
DON	0.0001 (0.0008)	0.0001 (0.0008)	0.0001 (0.0009)	0.0001 (0.0009)
MFIB	-0.0000 (0.0013)	-0.0000 (0.0013)	-0.0000 (0.0012)	-0.0000 (0.0013)
BANK	0.0013** (0.0005)	0.0013** (0.0005)	0.0013** (0.0006)	0.0013** (0.0006)
CONS	0.5924*** (0.1195)	0.5921*** (0.1205)	0.5924*** (0.1213)	0.5921*** (0.1224)
# of Observations	1009	1009	1009	1009
R ²	0.0667	0.0667		
F-Statistics	6.5291***	6.0568***		
Wald Chi ² (χ ²)			90.40***	90.46***
Number of Iteration			2000	2000

Source: Author's. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Robust standard errors are calculated under OLS.

Another important regulatory variable, INTCP was found to be inversely related to TFP of MFIs. This has raised apprehension and questions about interventions in the microfinance market by the MRA. It is likely that when there is a market intervention, particularly in terms of interest rate ceiling, it creates additional pressure on the management of MFIs. Market interventions could cause two possible effects that deteriorate the TFP of MFIs. First, due to the INTCP, high-cost MFIs would not be able to generate enough revenue to cover their total cost, given that the cost remains constant while revenue falls. This is an important consideration for newly-established MFIs as firms usually incur high costs at the beginning of their operations. Moreover, with respect to other industries, an interest rate ceiling in the environment of overall rising interest rates is not sustainable in the long run; it provides extra financial burden for the high-cost borrowing MFIs, which is detrimental to their performance (CGAP, 2004).

Second, as a result of interest rate caps, some MFIs may reallocate and restructure their client base. One of the major drawbacks of interest rate caps is that they substantially reduce the outreach of MFIs. MFIs become less interested in funding small loans due to the high cost of operations and monitoring expenses, consequently bypassing the poorest of the poor. Additionally, MFIs would find it more cost-effective to approve larger loans that reduce operating costs and offset the reduction in revenue, which results in a balance between cost and revenue. The lower end of the poor, who require small loans, would find it difficult to secure finances for their small-scale enterprises. This chain reaction supports the claim that interest rate ceilings always hurt the poor and distort the overall market (CGAP, 2004; Mohane et al., 2000). Hence, INTCP has a negative impact on TFP. This study also observed that WGI – an indicator used to gauge the governance of a country – has negative effects on TFP. Although a positive effect is generally expected, mixed results of four WGI indicators were observed in Assefa et al. (2013) in terms of

their effects on social outreach and loan repayment performance of MFIs. Based on the descriptive statistics of WGI, Bangladesh stands in the lower-end category of WGI since all six indicators of WGI had negative values during the study period.

The sources of funds have shown interesting results. This study included five external sources of funds, but only PKSF and BANK were found to be statistically significant and positively related with TFP. PKSF, a government apex body in Bangladesh which aims to finance the activities of its partner MFIs, contributed significantly to enhancing the productivity of the industry. The funding policy of PKSF is a quasi-equity type that ensures optimal allocations of funds to MFIs. Apart from providing funding to MFIs on a continuous basis, PKSF has several distinguishable activities that are hardly seen in other sources of funds. For example, PKSF provides capacity-building through institutional development and training. In terms of institutional development, PKSF provides comprehensive planning support to its partner MFIs. To ensure the sustainability of MFIs' clients, PKSF has set rules that need to be followed by partner MFIs, such as that their outreach must provide services to the poorest of the poor. Furthermore, partner MFIs are also required to monitor closely the activities of their clients, in order to safeguard the interest of the poor. Nonetheless, PKSF also provides guidance for partner MFIs to attain financial sustainability, operational efficiency, high portfolio loan quality, and long-term sustainability.

Another important aspect of PKSF is its provision of hands-on training facilities to the staff of MFIs. For example, PKSF has a total of 12 training facilities aimed at various types of employees, from beginner to mid and upper-level (PKSF, 2016). Financial product design and diversification, as well as strategic training are provided for senior or mid-level officers, and special training is available to loan officers or field-level staff to enhance interpersonal skills and ability to interact with clients. Increased interaction with

clients helps the staff to understand the needs of their target client group. In a nutshell, PKSF funding helps to enhance the productivity of MFIs due to its financing strategy, follow-up methods and institutional support, which is rarely seen in other sources of funds. Hence, PKSF as a source of funds has a positive effect on the TFP of MFIs.

It is quite likely that commercial banks selectively provide funding to MFIs that have shown a good record of operational self-sustainability and other financial indicators in the past. For example, Biekpe and Kiweu (2009) identified several criteria used by commercial lenders in funding microfinance activities, such as transparency in financial reporting, sound financial management and historical records of borrowing. In a similar vein, Tchuigoua (2015) also found that tangible assets, the size of MFIs and profit distribution significantly attract external debt. Moreover, in order to secure financing from a bank, MFIs are fundamentally required to demonstrate high standards in accounting, auditing, operational procedures as well as regulations disclosure. Hence, commercial funding is believed to have a positive effect on the productivity of MFIs. A similar effect has been observed in the Indonesian banking sector by Sufian and Habibullah (2012). The debt source of funds, BANK, shows a positive effect on TFP in their study. These findings also partially support the view of Jensen and Meckling (1976) on 'agency cost', which argues that higher leverage is associated with improved efficiency.

Two relevant explanations can be generated from the effects of commercial funds on TFP. First, commercial banks may have transferred relevant technological or operational strategies to ensure financial benefits to the MFIs that they have funded. Kyereboah-Coleman (2007) found that highly-leveraged MFIs expand their clientele, enjoy scale economies and abate moral hazard and adverse selection – all of which systematically enhance an MFI's ability to deal with various risks. Due to these positive effects, it is

estimated that inclusion of commercial funds enhances the productivity of MFIs. However, the findings of this study do not seem to corroborate the findings of Hoque et al. (2011), where they claimed that increasing commercial debt is counter-productive for an MFI.

Second, MFIs would try their best to maintain positive relationships with banks so as to uphold their reputation. Failing to settle debt would not only erode their reputation in the industry, it would also jeopardize future financing opportunities from commercial sources. Hence, showing a good performance by not only paying debts but also having productive operations could ensure positive long-term relationships with commercial funders. As such, this study provides evidence that a positive effect on TFP is associated with increased commercial funding in the capital structure of an MFI.

5.4.2.2 Determinants of Technological Change (TC)

Now, this study relates explanatory variables to explain variations in TC. Thus, the following econometric model has been estimated based on the same procedures discussed above.

$$TC_{it} = \alpha_0 + \beta_1 LNAGE_{it} + \beta_2 LN(AGE)_{it}^2 + \beta_3 ROA_{it} + \beta_4 LNBRANCH_{it} + \beta_5 LOC_{it} + \gamma_1 INF_t + \gamma_2 GDPGR_t + \gamma_3 WGI_t + \gamma_4 INTCP_t + \delta_1 PKSF_{it} + \delta_2 GOVT_{it} + \delta_3 DON_{it} + \delta_4 MFIB_{it} + \delta_5 BANK_{it} + \varepsilon_{it} \quad (5.8)$$

Equation (5.8) has been estimated by both the OLS and truncated bootstrapping, similar to the previous section. The explanatory power of the models is reasonably good, as 50% of the variations in TC can be explained by the selected independent variables. Apart from that, the overall significance of the models is also satisfactory as both Wald- χ^2 and F-statistics are significant at the 1% level (Table 5.8).

Since the size of an MFI (measured by number of branches) has a positive effect on TC, it is likely that larger MFIs are the main players in innovation and usage of modern capital and equipment in operations. This suggests that “size matters” for technological progress in the microfinance industry. The findings are also corroborated by earlier arguments that leading MFIs innovate different financial products and small-scale MFIs follow their lead in most of the cases. Additionally, a large number of branches could also represent a decentralized organizational structure; decentralization of microfinance operations could enhance TC as the branches would have the autonomy to actualize innovative ideas and implement local solutions to use their scarce resources more efficiently.

Another important finding which emerged from Table 5.8 is the significance of location of MFIs in technological change. The coefficient sign is positive and significant at the 10% level, which means that MFIs located in Dhaka are estimated to have better TC due to locational advantages and market difference, as Dhaka is the capital city of Bangladesh. Arnold, Mattoo, and Narciso (2008) have also observed significant positive effects of location on productivity for banks located in the capitals of Sub-Saharan African countries. Moreover, Aiello, Pupo, and Ricotta (2014) also explained that location is one of the most significant determinants in the productivity of the banking industry in Italy. Thus, there is strong evidence that if the head office of an MFI is located in the capital city, the MFI is most likely to observe better technological progress (Colwell & Davis, 1992).

Table 5.8: Determinants of Technological Change in MFIs

	Dependent Variable: Technological Change			
	OLS	OLS	Truncated Bootstrapping	Truncated Bootstrapping
Institutional Characteristics				
LNAGE	-0.0006 (0.0060)	-0.0005 (0.0060)	-0.0006 (0.0059)	-0.0005 (0.0060)
LNEAGE2		0.0002 (0.0012)		0.0002 (0.0012)
ROA	0.0004 (0.0007)	0.0004 (0.0007)	0.0004 (0.0007)	0.0004 (0.0007)
LNBRANCH	0.0083*** (0.0021)	0.0082*** (0.0021)	0.0083*** (0.0021)	0.0082*** (0.0021)
LOC	0.0113* (0.0062)	0.0113* (0.0062)	0.0113* (0.0063)	0.0113* (0.0063)
Macroeconomic and Regulatory Variables				
INF	-0.0204*** (0.0028)	-0.0204*** (0.0028)	-0.0204*** (0.0028)	-0.0204*** (0.0028)
GDPGR	0.0726*** (0.0098)	0.0727*** (0.0098)	0.0726*** (0.0098)	0.0727*** (0.0098)
WGI	-1.8683*** (0.0759)	-1.8683*** (0.0759)	-1.8683*** (0.0760)	-1.8683*** (0.0760)
INTCP	-0.0618*** (0.0108)	-0.0619*** (0.0108)	-0.0618*** (0.0110)	-0.0619*** (0.0110)
External Sources of Funds				
PKSF	0.0002 (0.0001)	0.0002 (0.0001)	0.0002 (0.0001)	0.0002 (0.0001)
GOVT	-0.0001 (0.0007)	-0.0001 (0.0007)	-0.0001 (0.0007)	-0.0001 (0.0007)
DON	-0.0000 (0.0006)	-0.0000 (0.0006)	-0.0000 (0.0006)	-0.0000 (0.0006)
MFIB	0.0011** (0.0005)	0.0011** (0.0005)	0.0011** (0.0005)	0.0011** (0.0005)
BANK	0.0003 (0.0003)	0.0003 (0.0003)	0.0003 (0.0003)	0.0003 (0.0003)
<i>CONS</i>	-0.8830*** (0.0726)	-0.8839*** (0.0729)	-0.8830*** (0.0717)	-0.8839*** (0.0720)
<i># of Observations</i>	1009	1009	1009	1009
<i>F-Statistics</i>	74.189***	68.9619***		
<i>Wald Chi²</i>			992.5186***	995.4636***
<i>R²</i>	0.4951	0.4951		
<i>Adj. R²</i>	0.4885	0.4880		
<i># of Iteration</i>			2000	2000

Source: Author's. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Robust standard errors are calculated under OLS.

Macroeconomic variables play a significant role in explaining variations in TC as well. The overall economic growth supports technological progress in MFIs. This means that in the face of rising economic growth, firm and institutions are likely to invest in better

capital equipment to attain technological progress. Interestingly, WGI, INTCP and INF have significant negative effects on TC, which is similar to the findings on determinants of TFP in the earlier section; this reflects the consistency of the results. Although WGI is expected to have a positive effect on TC, the findings are in contrast with a priori expectations.

The negative effect of INF is that in an increasingly inflationary environment, MFIs incur large costs for the operational activities, leaving fewer resources that could be channeled to product innovation or investment in modern equipment and technologies. Innovating new products requires large amounts of investment, marketability costs and other associated expenses. Furthermore, it also suggests that the increasing levels of INF in Bangladesh during this study period in the presence of an interest cap do not allow MFIs to adjust their interest rates accordingly. A similar effect of inflation has also been observed in the banking sector (Sufian, 2011; Sufian & Habibullah, 2012). Moreover, Ahlin et al. (2011) also found that INF slows the intensive growth of MFIs, and could cause delay or default in borrowers' incentives, ultimately deteriorating the performance of MFIs through technological regress.

Turning the discussion to sources of funds, this study found that, except for peer borrowing among MFIs (MFIB), none of the external sources of funds enhance technological progress of MFIs. Thus, it is likely that there is no significant technology transfer between commercial banks and MFIs in Bangladesh, nor between other concessionary sources of funds (PKSF, GOVT and DON) and MFIs. Since the existence of peer borrowing has a positive significant effect on technological progress in MFIs, there is the possibility of shifting required technology between the peer MFIs. These findings can be explained in two ways. First, it is likely that financially-sustainable and high-performing MFIs will be lending to low-performing MFIs. This is mainly because

if the lending institutions are not financially sustainable and performing well, they would not have sufficient resources to lend to others. As such, only MFIs that have a surplus of financial resources and observed greater performance in the past would be willing to fund other MFIs.⁵¹ This types of peer borrowing can be from a single or multiple MFIs, depending on the financial needs and capacity of the borrowing MFI.

Second, innovations and developments may be determined by joint cooperation and co-development. For example, Mirvis, Herrera, Googins, and Albareda (2016) also found the existence of knowledge exchange in corporate social innovation through shared interactions and experiences in multinational companies. Cohen and Levinthal (1990) further pointed out the importance of external sources as a platform to acquire different knowledge from what is already known in a firm. It has been further corroborated by Argote and Ingram (2000) that in a competitive market environment, a firm can access and co-develop knowledge and technologies through establishing alliances and partnerships. So, it is likely that MFIs learn from each other by way of interactions, which is determined by funder-borrower relationships through partnerships among MFIs.

5.5 Summary

This analytical chapter addresses an important dimension of microfinance by estimating productivity and its determinants. Overall, the sector observed 3.6 % productivity progress per annum, with a declining trend in the later period of the study. After decomposing the TFP index, the progress in productivity in the microfinance industry in Bangladesh is attributed mainly to technical efficiency improvement and best management practices. Having operated the business for a significant period of time, the

⁵¹ This study does not have cross-borrowing data of MFIs, or a list of MFIs that a particular MFI is borrowing from; rather, it only shows the amount borrowed, which naturally limits further discussion.

managers of the institutions have acquired 'know-how' techniques through the 'learning by doing' process. This stimulated their productivity as observed progress in TEC, which supports the findings of other earlier research studies. On the other hand, TC is observed to regress over time, which requires further attention from the management and higher authorities.

Additionally, this study also identified the best-performing MFIs based on several criteria. Among 169 MFIs, only 18 were selected as benchmark MFIs. This list includes small, medium and large MFIs. Apart from that, BRAC was the top performer in terms of TC (9.3% progress per annum).

While investigating the determinants of productivity in the second stage, this study observed several interesting findings. Inter alia, ROA is positively associated with TFP. This implies that better ROA can enhance MFIs' productivity. The size variable showed negative effects on overall productivity. However, decentralization of microfinance operations could enhance TC by allowing autonomy to the branches. Although the location variable was insignificant to explain variations in TFP, if the head offices of MFIs are located in Dhaka, they are likely to observe better technological progress. On the other hand, macroeconomic factors exhibited interesting findings as most of the included variables significantly affected TFP. In particular, GDP growth has a positive effect on TFP and TC, implying the importance of a good economic environment to enhance performance of MFIs, whereas an interest rate cap significantly deteriorates the productivity and technological progress of MFIs.

CHAPTER 6: CONCLUSION AND POLICY IMPLICATIONS

6.1 Introduction

Achieving sustainability in microfinance has remained a never-ending saga, and it is practically impossible to find a single simple solution for this conundrum. Inspired by a gap in the existing literature, this thesis evaluated three important aspects of microfinance in light of the sustainable development framework. The three issues investigated in this study are market structure, mission drift and productivity of the microfinance industry in Bangladesh. The investigation on these issues to promote sustainability in the microfinance industry is significantly important to achieve 'Vision-2021' of Bangladesh.

The background of the thesis is presented in Chapter 2, which discussed several important aspects in the microfinance context in Bangladesh. To highlight the importance of microfinance, the chapter defined various terms as well as provided a comprehensive discussion on poverty and socio-economic development in Bangladesh. One of the most important features of Chapter 2 is the discussion of the historical development of microfinance in Bangladesh over the last forty years. Grounded in the nomenclature of the life cycle theory, the chapter highlighted why microfinance evolved, how it evolved and what has been done by the management of MFIs. This section pinpoints the triumphs and troubles at each life stage of microfinance and presents strategic responses from the management perspective.

In this thesis, the three main research issues have been addressed independently in three different analytical chapters. The first research question or objective investigated the evolution of the market structure of microfinance in Bangladesh, with a particular focus on the market concentration and competition over the years (Chapter 3). The second objective explained the factors of mission drift that play an important role behind such transformations in the industry (Chapter 4). Third, a comprehensive analysis of the

productivity of MFIs and its determinants was carried out (Chapter 5). To execute these three research objectives, a balanced panel data of 169 MFIs covering the period of 2009 to 2014 was taken from the annual reports of the MRA. Based on the author's knowledge, this sample size is the latest and largest based on a single-country study.

The rest of the chapter is organized as follows: Section 6.2 summarizes the major findings from the three research objectives. Then, Section 6.3 derives policy implications based on the findings of the study. Lastly, Section 6.4 highlights the limitations and makes recommendations for future research.

6.2 Summary of Major Findings

The following section discusses the major findings of the three objectives investigated in this thesis.

6.2.1 Market Structure

After analyzing the market through structural and non-structural approaches, this study concluded that the sector is not perfectly competitive. The SCP approach to concentration measurement (i.e. HHI) indicates that the concentration level is modest. Based on the four different market indicators, the sector is currently transitioning to an unconcentrated market. The findings also revealed that despite the presence of several hundred MFIs in the industry, the sector is still controlled by the few large MFIs. To be more specific, the largest MFIs (CR3) control 60-70% of the market share regardless of the market indicators used. An interesting finding is that the market share of the largest 3 and 8 MFIs have observed a slight decline when clients and borrowers are considered as a market indicator. However, the market share remains almost static when the monetary values of loans and savings are considered to estimate market concentration.

Due to the limitations of the SCP method in predicting competition within the industry, this study also employed non-structural approaches. The non-SCP measurement of the Lerner index revealed that, during the study period, the microfinance industry in Bangladesh was moderately competitive and the evolution of competition depicted a U-shape trend. Several interesting findings emerged from these chapters. On one hand, there are MFIs who charged prices lower than their marginal cost, which is certainly a challenge for long-term economic viability. On the other hand, some MFIs charged several times higher than their actual marginal cost, which is detrimental to the welfare of the poor as they need to pay higher prices. This calls for the implementation of transparent pricing to make this credit system effective and sustainable in the long run.

Overall, the empirical assessment on market structure by employing several measurement techniques has shed light on the evolution of market structure in the microfinance market in Bangladesh. The findings on concentration (HHI and CR) and competition (Lerner index) measures have led to similar conclusions.

6.2.2 Mission Drift

The fourth chapter of the thesis addressed an ongoing fundamental issue by identifying factors behind mission drift in MFIs, taking into account the sources of funds, institutional and macroeconomic variables.

The findings of this study revealed that, indeed, an inverse relationship exists between commercial interest or profit motive and depth of outreach by MFIs. This means that when MFIs place more weight on commercial gain (considering ROA and OSS), they deviate from serving the poorest of the poor; this strengthens the argument that there is a trade-off between these two objectives of MFIs. Findings on the trade-off between financial interest and depth of outreach, which have been bolstered from a large single

country data, extended conventional views about the relationship between these two goals of MFIs.

Moreover, policymakers and proponents of microfinance have welcomed the emergence of commercial funds in the industry, but it has turned out to be detrimental to the poorest of the poor as they are bypassed by MFIs. Similarly, the findings also oppose the dominant theories of capital structure, such as profit incentive theory and agency cost theory, which assert that commercial funds in the microfinance industry could deepen social outreach. The empirical findings reject such claims.

Interestingly, internal funds, particularly savings, are not a cause of mission drift in MFIs, given that they are local savings generated from their own clients. When MFIs channel internal sources (such as retained earnings and savings) to finance operational activities, they incur lower costs and less information asymmetry. Hence, MFIs are less likely to experience mission drift if they rely on internally-generated funds, such as savings. This study also found various effects of specialization characteristics of MFIs; for example, MFIs focusing mostly on credit services do not experience mission drift.

Macroeconomic settings are also a significant factor to explain mission drift. Among others, leading factors of mission drift include GDP growth, exchange rates, the percentage of rural population and regulatory enforcement. For example, GDP growth leads to mission drift because borrowers would demand greater loans as the economy improves. Risk arising from exchange rates will also cause MFIs to shift financial burden to the borrowers by increasing the average loan size as a mitigation approach. Hence, MFIs depending heavily on funds denominated in USD will be most susceptible to mission drift. Amid overall rising economic progress in Bangladesh, a larger rural

population has also been found to be a factor of mission drift. Finally, regulatory enforcement causes mission drift in MFIs; for example, interest rates cap.

6.2.3 Productivity

The fifth chapter addressed an important dimension of microfinance by estimating productivity and its determinants based on a two-stage semiparametric approach: a combination of non-parametric (DEA) and parametric (OLS, Truncated Bootstrapping). The determinants of TFP include institutional characteristics, macroeconomic factors and external sources of funds. Based on the findings, the sector aggregately observed 3.6% productivity progress per annum, which is considered modest progress in Bangladesh's microfinance industry. Moreover, TFP changes have observed a declining trend over the years, which is certainly worrisome for the managers and policymakers who determine policy response.

After decomposing the TFP index, the main reason behind productivity progress was found to be the enhanced managerial efficiencies of the MFIs during 2009-2014. Further decomposing TEC also revealed that efficiency gain is derived from the managerial ability to reduce wastages and scale gain. The findings of this study are in line with the existing literature in which productivity growth is mainly due to enhancements in management practices. The long history of microfinance in Bangladesh, repeated microfinance services with clients and overall business environment have enhanced the managerial ability of MFIs.

The second stage of analysis found that determinants of TFP and TC are promising. Among other institutional characteristics, only ROA was found to be a productivity-enhancing factor. External supports to MFIs, particularly the PKSF and BANK found it important to enhance productivity of MFIs; however, the determinants of TC suggest that

there is no technological transfer currently taking place between the BANK and MFIs. Peer borrowing from other MFIs was found to be a TC-enhancing factor, which supports joint technological progress among MFIs. Although it was found that the size of an MFI, proxied by BRANCH, has negative impact on overall productivity, size had an important influence on TC. The bigger the size of an MFI and the greater their autonomy, the more likely the MFI is to progress in TC through innovations and technological incorporation. Moreover, MFIs with head offices located in the capital city, Dhaka, were observed to have better TC than MFIs with head offices in other parts of the country. This is mainly due to the locational advantages of greater connectivity in Dhaka and other synergistic benefits to the MFIs.

6.3 Promoting Sustainability in Microfinance

The three aspects investigated in this study could collectively promote sustainability in microfinance, provided that they are well coordinated and properly executed. For example, market structure, where concentration and competition are investigated in the third analytical chapter would promote sustainability in various ways. Both the clients and MFIs will benefit from the findings and policy implications. First, competition would promote transparent pricing and lower cost of microfinance services, which will directly enhance the welfare of the poor as they need to pay less. As a result, it is expected to increase financial inclusion. Second, promoting competition in the microfinance industry will promote long-term stability.

Financial inclusion is one of the main agendas of sustainable development goals. The factors identified behind mission drift in MFIs would enable policymakers and practitioners to provide key policy prescriptions on expanding the role of microfinance to meet their original promise of serving the poor. By doing so, microfinance could significantly contribute to promoting financial inclusion. Nonetheless, productivity could

also enhance sustainability in microfinance by ensuring resource efficiency through innovation. Thus, the three aspects investigated in this study play a crucial role in promoting sustainability in the microfinance industry.

6.4 Theoretical Applicability in Microfinance

The findings of this study have been influenced by several conventional theories and approaches. However, the specific context of microfinance in Bangladesh, its historical settings and remarkable socio-economic progress certainly distinguish it from other developing countries. Hence, most of the theories may not be able to explain the recent issues in microfinance. Thus, these theories may need to be revisited and the arguments may need further modification.

For instance, in the conventional banking system and market structure, the Lerner index consistently has a positive value of zero or greater than zero; however, this study found that certain MFIs observed negative Lerner indices. This means that those MFIs still charge prices lower than their marginal cost. On the flipside, the majority of the MFIs claim themselves as not-for-profit organizations, but they are making profit at the expense of the poor as their prices are several times higher than the marginal cost. Nonetheless, the microfinance sector in Bangladesh is exceptional in the sense that although there are over 700 MFIs, the market is not highly competitive and the majority of the market share is still controlled by the few major players in the industry. Hence, the strict properties of conventional market structure theories seem to have less explanatory power in the context of Bangladesh's microfinance industry.

Another important theoretical underpinning which emerged from Chapter 4 is related to the capital structure theories. The findings of this study are in contrast with the conventional dominant theories. For example, debt capital is mostly preferred by the

banking industry based on the agency cost and profit incentives theories, but the findings of this chapter were in contrast with the objectives of MFIs. Moreover, there are MFIs that deviate from serving the poorest of the poor, so this study has found a trade-off between the dual goals of MFIs. Hence, generalizing the purpose of NGO-MFIs may not be same for all, given that their specific characteristics matter to a significant extent. While, NGO-MFIs have to serve the active poor, however, only those poor that are eligible. The poorest of the poor who are not eligible must be served through other financial services to help them become eligible. In addition, NGO-MFIs have to seek positive financial results in order to survive in the long run. While not necessarily all NGO-MFIs can minimize cost, it may depend on their ability to solicit subsidies.

A fundamental assumption in the banking sector is that institutions always try to use their resources efficiently, but many MFIs fail to use their resources efficiently to achieve expected levels of productivity. This means that the sector has yet to operate at an optimum scale by fully utilizing their resources. Despite external financial support and financial incentives provided to MFIs, not all sources promote institutional viability by enhancing productivity. For example, donations and government subsidies were found to be statistically insignificant in promoting sustainability. Hence, it can be generally argued that not all financial support and subsidies injected into MFIs are efficient and effective. The issues highlighted above may have partially unveiled the limited capabilities of the existing theories when applied to an informal sector like microfinance and Bangladesh in particular.

6.5 Policy Implications

Despite some common hurdles, different MFIs face different challenges. To overcome those challenges, one of the significant contributions of this study is to generate plausible policy implications targeted at the regulatory authority, policymakers and management

of MFIs. Hence, this section puts forth recommendations based on the empirical findings of Chapter 3, Chapter 4 and Chapter 5.

6.5.1 Policies Related to Market Structure

From the measurement on market structure, several policy implications can be derived. For example, competition could be stimulated through *transparent pricing* in microfinance products and services. For long-term economic viability, it is necessary for MFIs to charge prices at least equal to their marginal cost whereas MFIs charging higher than their marginal cost should reduce their interest rates accordingly. Hence, the government and regulatory authority should come forward with effective management and monitoring so that the pricing of microfinance products are transparent and affordable.

Based on the properties of industrial organization, a resurgence of MFIs is expected in the future as microfinance remains profitable and competition remains imperfect. Therefore, the extent to which MFIs enter the market or reinvent themselves will depend considerably on the regulatory framework. If they are to be held strictly accountable to the mission of serving the poor, then public bodies will need to intervene to provide legitimacy and authorization for their presence, and to handle administrative issues such as licensing. This would ensure that MFIs do not position themselves to make profit rather than serve the poor in the best way possible. Moreover, a substantial number of new MFIs in the industry may face inefficiency and ineffectiveness in incentivizing operations and achieving growth. This is mainly due to the danger with infant industry arrangement, which seems inappropriate in most of the cases (Audretsch et al., 2001).

As the sector has a large number of MFIs, permitting new entries would not only make the sector congested, but also create additional problems. One issue in microfinance is

multiple borrowing, an unwanted outcome of uneven growth in the number of MFIs in Bangladesh (Mia, 2017). Hence, this study holds the view that regulatory enforcement should be kept in place in terms of restricting the number of MFIs and compelling existing MFIs to compete with one another. Moreover, the MRA could launch effective policy initiatives to mitigate multiple borrowing, which has already been increasing at a staggering rate. By creating a database of borrowers and facilitating information exchange between MFIs regarding client status, the MRA could help to minimize multiple borrowing. This is similar to the competition policy initiative by Audretsch et al. (2001), which posits that there should be appropriate interfirm – or inter-MFI – coordination so as to make competition beneficial for all parties, provided that it does not become a cartel. The MRA should initiate such coordination, effective immediately.

6.5.2 Policies Related to Mission Drift

Based on the empirical assessment in Chapter 4, this study underscores the importance for policy to ensure that poor people have viable access to financial services from MFIs, toward promoting long-term sustainable development. Some of the policy implications are incompatible when targeting mission drift and productivity; hence, it would be fairly difficult to achieve these two different goals simultaneously. This conundrum could also be linked with the triangle of microfinance as argued in Zeller and Meyer (2002). While the work by Ohio State University and other institutions in the early 1980s viewed that financial institutions should be able to cover up their total cost for a long-lasting impact, studies in late 1990s showed that there might be a trade-off between achieving financial sustainability and reaching out to the poorest. As a result, it is reasonable to expect that some factors may be in favor of institutional sustainability (e.g.: productivity) but not for the depth of outreach or vice versa. Hence, before implementing any policies, the management of MFIs should identify their priorities and target interventions accordingly.

Although the emergence of commercial funds in microfinance was initially welcomed and praised, findings have revealed that it is detrimental to the poorest of the poor. Commercial funds are found to be a productivity-enhancing factor; however, the relationship seems weak as it was not significant when examined for technological change. Hence, management and policymakers should review the role of commercial funds in the industry. Greater emphasis should be placed on generating internal funds (e.g. savings) as an alternative source of funds. This would result in several simultaneous benefits for MFIs. First, it averts the risk of mission drift; second, it enhances depth of outreach to retain the core mandate of MFIs; third, MFIs enjoy cost efficiency as generating internal funds incurs lower transaction costs and less information asymmetry. In this regard, clients' savings remain an important source of funds to meet the funding constraint of MFIs.

Besides, that, providing savings facilities could be one of the best anti-poverty intervention – more important than normal credit for poorest of the poor (Dowla & Alamgir, 2003; Robinson, 2001). Since the majority of the clients of microfinance are women, thus, innovation of gender-based savings products may attract more customers than general savings products. Vonderlack and Schreiner (2002) proposed two types of savings particularly targeting women in the context of developing countries. Firstly, 'safe deposit boxes' that help women to accumulate assets outside homes and 'matched savings accounts' for incentives-based facilities such as health, education and many more. Additionally, savings products should be developed based on the life events of a client, such as, marriage savings when a female child is born (to cover wedding expenses), education savings, old age savings (similar to pension fund) and many more. Since the offering of savings services under microfinance programs are not matured yet, developing comprehensive savings products and incorporating technology in operations will directly

enhance depth of outreach. The successful example of M-PESA in Kenya can be used as a model to design mobile money applications to deliver hassle-free savings services to the poor community (Ashta, 2010).

Considering the trade-off between commercial interest and depth of outreach, another way of tackling mission drift would be through effective corporate governance and performance management systems (Dillard, Pullman, Epstein, & Yuthas, 2010). In line with creating an effective management system, Aubert et al. (2009) proposed internal incentives for agents in MFIs. They argued that incentivizing agents to conduct random audits of the wealth of borrowers and their repayment status is necessary to ensure that the loans are given to the poor on the basis of their repayments and poverty levels. They further highlighted that if the cost of auditing is very high and there is a large number of poor within the population, pro-poor MFIs can focus on two methods: first, innovating financial products that only cater to the poor, and second, selecting impoverished geographical areas (Aubert et al., 2009). The second method can be an important policy choice to counter mission drift as MFIs in Bangladesh have the tendency to locate themselves in well-off areas, as highlighted in previous studies (Chaudhury & Matin, 2002; Mia, 2017). Thus, relocating MFIs to poor and vulnerable areas, such as the north and south parts of Bangladesh is important to ensure financial services for the poor and vulnerable.

Another important policy intervention involves the MRA reviewing its ongoing interest rate cap in the industry. As the findings indicate that interest caps cause the increase of AVLGNI, the MRA should rethink the implementation of such practices in the sector. In addition, the MRA should formulate comprehensive operational guidelines and a code of conduct with effective fiscal power to supervise and monitor the microfinance sector to secure sustainable financial support for the poor by tackling

'mission drift'. Other than that, mission drift could also be mitigated by promoting specialization of MFIs, for example credit-oriented.

Moreover, as this study also found that macroeconomic variables cause MFIs to be susceptible to mission drift, prudential macroeconomic policies targeting the microfinance industry could be useful to combat mission drift.

6.5.3 Policies Related to Productivity of MFIs

The findings of productivity lend strong policy support to the sector, particularly for the managers of the institutions to sustain balanced growth whilst better serving the poor. Since competition is not perfect in the microfinance industry in Bangladesh (based on the findings on Chapter 3), MFIs have failed to achieve both allocative and productive efficiency in their production. As a result, the overall productivity growth of the industry has gradually declined during the study period, which is a challenge for the long-term economic viability of MFIs. In this aspect, technological advancement and innovations could enhance productivity in the absence of perfect competition. However, innovations and technological advancement in MFIs are quite rare due to their preference for absorbing existing best practices. Thus, the study observes regress in TC, which warrants immediate attention to technological development. In view of this, product innovations are imperative in microfinance, as suggested by Chan and Lin (2015), for MFIs to be able to continuously provide services to the unbanked and poor. Therefore, the utilization of ICT in daily financial operations should be encouraged to boost technological progress in MFIs. Reference to the domestic banking sector could help in this respect, as the banking industry has led technological advancement in the country. Moreover, to appropriate synergies from best-performing MFIs, the government and respective authorities should stimulate the transfer of innovative practices to other MFIs.

The productivity of MFIs can be further improved by efficient and effective asset management, which would minimize the cost of operation and in turn generate a moderate return on assets. Efficient managerial capability is important and the conventional banking industry could provide an important lesson in this regard; however, it should be kept in mind that Chapter 4 found that profitability measures (ROA) cause mission drift. Thus, MFIs should perform cost-benefit analyses before implementing policies towards enhancing ROA. Moreover, some subsidies such as funds from PKSF have also been found to enhance productivity; hence, the government apex body, PKSF should extend their support to MFIs that have observed productivity regress. Financing from commercial banks could also enhance the TFP of MFIs; however, it is also a potential cause of mission drift, so MFIs need to prioritize their interventions.

Since interest rate caps are a significant factor behind mission drift and productivity decline, the issue should be carefully re-assessed. Adams, Graham and von Pische (1984) also recommended flexible interest rates policy in financial sector lending. The Indian microfinance industry provides a good case study for policy implications. In 2014, the Reserve Bank of India (Central Bank) lifted the microfinance interest cap that had been imposed in 2010. This was done to provide leeway for the lenders to charge interests according to their cost of operation with a determined margin. The removal of interest caps in India could have been motivated by the fact that controlling the vast informal sector of microfinance requires a huge amount of resources, particularly in terms of manpower, integrated institutional system and strong enforcement capacity. As an informal lending service, the regulatory authority of the microfinance sector lacks resources, not only in India, but in all developing countries including Bangladesh. Thus, the MRA should carefully review their ongoing interest rate caps and find an integrated way to ensure transparent pricing of loans.

There are several policy recommendations explicitly designed for the MRA. First, there are crucial variables not included in their annual report. For example, “total assets” is an important indicator to gauge the actual size of an MFI; thus, the MRA should include this variable when collecting financial and outreach data on MFIs. Second, not all MFIs’ data are audited – only the large-scale MFIs (e.g. BRAC, ASA, TMSS, etc.) and MFIs that are required to audit as per the requirements of their funding agencies or partners. Admittedly, small-scale and newly-established MFIs are among those whose annual report are less likely to be audited. The MRA could incentivize these MFIs to have their financial reports audited every year, which would ensure transparency in the financial practices among MFIs. This would also combat the recent phenomenon of corruption in the industry as highlighted in Chapter 2. Moreover, the audited data would enable robust empirical analyses in future research. Third, technological advancements in Bangladesh have been upgraded recently and the government is striving towards establishing a ‘Digital Bangladesh’. Hence, it would be beneficial if the MRA could integrate an online platform from which each registered MFIs can be accessed. Doing so will increase the visibility of MFIs and their activities on a global level, thus providing a one-click solution for donors and interested parties. There is certainly a lack of resources to implement huge projects, but stepwise implementation with assistance from the respective shareholders would ease the process.

In a nutshell, the policy implications highlighted in this study could promote sustainability in the Bangladesh microfinance industry, provided that these are effectively and efficiently implemented through coordination among various stakeholders. The regulatory authority, government apex body and the management of MFIs should come forward to overcome the challenges together rather than as separate entities, because coordinated execution of policies are necessary to ensure sustainability in the

microfinance industry as a whole. However, the policies highlighted in this study may not be fully enacted and these findings should be treated with caution when applied to other microfinance markets. Nevertheless, these policy suggestions can provide important lessons and guidance for microfinance markets in other countries, where microfinance remains a dominant development tool.

6.6 Directions for Future Research

While the market structure (concentration and competition) is measured aggregately for the whole industry, geographical (district or divisional level) measurements of market structure may provide more insightful information, given that disaggregated data are available. This would empower the local industry to take adequate and effective policy measures. Besides, as MFIs produce several services, future research may explore multi-output production functions to estimate translog cost function and competition. As the competition policy in the financial sector and microfinance in particular can be complex, establishing relationships between competition and other performance variables is important. Hence, future research could explore whether or not competition-stability or competition-fragility views hold in the context of the microfinance industry; this would be a significant finding as there is a paucity of research in the context of microfinance. Moreover, how market structure affects the outreach goals of MFIs needs to be further investigated to ensure that poor people are able to obtain the financial services they need and deserve. On top of that, although concentration has declined and competition has increased in the microfinance industry, declining productivity during the study period is not in line with conventional wisdom. Hence, it is necessary to dig deeper into the evidence regarding the nexus between these two aspects.

While Chapter 4 contributed empirically to the existing literature by looking at various factors such as major sources of funds, institutional characteristics and

macroeconomic variables, future research may benefit from investigating qualitative aspects of mission drift or replicate the findings of this study. The proxy variable (average loan size over GNI per capita) used to capture mission drift in this study is not perfect, but it is an excellent variable widely used in the literature. Besides that, this variable captures only one aspect of outreach and large MFIs may have a large AVLGNI due to their diversified portfolio in which it serves both the very poor and the less poor customers. Thus, this does not necessarily mean that they reach a smaller number of poor as compared to a small MFI with a small average loan size. The issue becomes important in the context where there is high diversification in terms of MFIs size in the sample. However, if data are available, future studies may consider using % of loans going directly to the poor to support establish/expand small-scale enterprise would be more directly relevant to measure mission drift. Furthermore, future research may also benefit from investigating qualitative aspects of mission drift or even test to reconfirm the findings of this study. Nonetheless, how various sources of funds affect other aspects of outreach, for example breadth of outreach, can also be explored in future studies.

Finally, the methodology deployed in Chapter 5 provided a quantitative assessment of changes in productivity in the Bangladeshi microfinance market. However, in-depth longitudinal case studies should be carried out to identify sources of innovation so that best practices can be transferred to augment the performance of MFIs. Hence, qualitative research targeted at management decision-making, as well as strategy formulation by leading MFIs may prove insightful in understanding the technological activities undertaken in Bangladeshi MFIs. As this study has identified several benchmark MFIs based on their productivity progress, future studies may conduct institutional investigations of the selected MFIs to understand their best practices. While mixed approach is used in identifying the inputs and outputs to estimate productivity, application

of the four different industry classifications could also be tested separately to examine the differences in results, if any.

The areas highlighted above are ripe for research and deserve concentrated efforts from academicians. It should also be noted that the limitations identified above do not detract the significance of the study, rather it indicates opportunities and directions for future research in microfinance. In so doing, microfinance may rejuvenate its appeal as an effective development tool to promote sustainable development goals globally.

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LIST OF PUBLICATIONS AND PAPERS PRESENTED

Journal Publication

1. **Mia, M.A., & Hwok-Aun, L.** (2017). Mission Drift and Ethical Crisis in Microfinance Institutions: What Matters? *Journal of Cleaner Production*, 164, 102-114. DOI: <https://doi.org/10.1016/j.jclepro.2017.06.176> (ISI-Tier 1).
2. **Mia, M. A.** (2017). Determinants of Total Factor Productivity in Microfinance Institutions: Evidence from Bangladesh. In D. Cumming, Y. Dong, W. Hou, & B. Sen (Eds.), *Microfinance for Entrepreneurial Development: Sustainability and Inclusion in Emerging Markets* (pp. 197-222). Cham: Springer International Publishing.
3. **Mia, M.A** (2017). What Causes Multiple Borrowing in Microfinance? A Developing Country Experience. *Strategic Change*, 26(2), 83-99. DOI: 10.1002/jsc.2112 (Scopus).
4. **Mia, M.A., Hwok-Aun, L., Chandran, VGR. Rasiah, R & Rahman, M. M.** (2017): History of Microfinance in Bangladesh: A Life Cycle Theory Approach. *Business History*. In Press (ISI-Tier-1).
5. **Mia, M.A (2017).** Interest Rate Caps in Microfinance: Issues and Challenges. *International Journal of Industrial Distribution & Business*, 8(3), 19-23. DOI: <http://dx.doi.org/10.13106/ijidb.2017.vol8.no3.21> (Non- Scopus/Non-ISI).
6. **Mia, M.A (2017).** An Overview of the Microfinance Sector in Bangladesh. *East Asian Journal of Business Management*, 7(2), 31-38. DOI:10.13106/eajbm.2017.vol7.no2.31. (Non- Scopus/Non-ISI).
7. **Mia, M.A. & VGR Chandran** (2016). Measuring Financial and Social Outreach Productivity of Microfinance Institutions in Bangladesh. *Social Indicators Research*, 127(2), 505-52. DOI: 10.1007/s11205-015-0979-5. (ISI-Tier 1).

8. **Mia, M. A., & Ben Soltane, B. I.,** (2016). Productivity and Its Determinants in Microfinance Institutions (MFIs): Evidence from South Asian Countries. *Economic Analysis and Policy*, 51, 32-45. DOI: 10.1016/j.eap.2016.05.003. (Scopus).
9. **Mia, M.A.** (2016). Microfinance Institutions and Legal Status: An Overview of the Microfinance Sector in Bangladesh. *Asian Journal of Finance, Economics and Business*, 3(2), 21-31. DOI: <https://doi.org/10.13106/jafeb.2016.vol3.no2.21>. (Non-Scopus, Non-ISI).
10. **Mia, M. A., & Tabet, I.,** (2016). Does Microfinance Institution has Institutional Properties to Generate Savings? *East Asian Journal of Business Management*, 6(3), 11-14. DOI: <https://doi.org/10.13106/eajbm.2016.vol6.no3.11>. (Non-Scopus, Non-ISI).
11. **Mia, M. A.** (2014). Does Lending to Women affect the Revenue Generation of Microfinance Institutions? *Empirical Econometrics and Quantitative Economics Letters*, 3(4), 59-65. (Non-Scopus, Non-ISI).
12. **Mia, M.A.** Evolution of Market Concentration and Competition in the Microfinance Industry in Bangladesh. *International Journal of Social Economics*. In Press (Scopus).

Conference Participation

1. Technological Change and Innovations in Microfinance Institutions: What Matters? 6th Sri Lanka Forum of University Economist, Rajarata University of Sri Lanka, Mihintale, Sri Lanka. 23rd - 24th November, 2017.

2. Evolution of Market Concentration and Competition in the Microfinance Industry: Evidence from Bangladesh, 3rd SAED Conference, South Asian University, New Delhi, India. 22nd -23rd of February, 2017 (Skype presentation).
3. Impact of Regulatory Enforcement on Market Concentration and Interest Rates in Microfinance: Evidence from Bangladesh, AsLEA Conference, Seoul National University, Seoul, South Korea. 24th -25th of June, 2016.
4. Productivity and Factors of Productivity in Microfinance Institutions: Evidence from South Asian Countries, 2nd SAED Conference, South Asian University, New Delhi, India. 18th -19th February, 2016.
5. Measuring Productivity of Microfinance Institutions in Bangladesh. International Congress of Bengal Studies (ICBS), Tokyo University of Foreign Studies, Tokyo, Japan. 12th -13th December, 2015.
6. Market Concentration and Interest Rates in Microfinance: The Case of Bangladesh, The LPEM's Conference on Economics and Finance in Indonesia, University of Indonesia, Jakarta, Indonesia. 30th November- 1st December, 2015.
7. Market Dynamics and Multiple Borrowing in Microfinance: The Case of Bangladesh, Postgraduate Conference on Economics, Public Administration and Business (PCEPAB), University of Malaya, Kuala Lumpur, Malaysia. 5th of September, 2015.
8. Productivity and Determinants of Productivity in South Asian Microfinance: A Malmquist Approach, 1st China-UK Microfinance and rural finance Conference. Southwestern University of Finance and Economics, Chengdu, China. 28-29 March, 2015.
9. Are Microfinance Institutions Productive Enough to Alleviate Poverty In Bangladesh? A Malmquist Index Approach. 7th IIUCIC, 2014. International Islamic University (IIUC), Chittagong, Bangladesh, 19th -20th December, 2014.

10. Financial and Social Outreach Productivity of Microfinance Institutions: A Malmquist Productivity Approach. GS-NRIC-2014 Conference (Best Paper Presenter), University Putra Malaysia (UPM). Port Dickson, Negeri Sembilan, Malaysia. 5th -7th December, 2014.
11. Reasons Behind the Failure of Microcredit System to Produce Expected Outcome. ASIP Conference, Nottingham University, Kuala-Lumpur, Malaysia, 3rd -6th August, 2014.

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