THOMPSON RIVERS UNIVERSITY

CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE OF MICRO-FINANCE INSTITUTIONS (MFIS) IN BANGLADESH

BY

SYEDA SONIA PARVIN

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SUPERVISED BY: DR. BELAYET HOSSAIN, PROFESSOR

COMMITTEE MEMBERS: DR. HASNAT DEWAN & DR. LI ZHANG

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ABSTRACT

This study identifies the effects of capital structure on the financial performance of Microfinance Institutions (MFIs) in Bangladesh. A dataset of 187 MFIs developed by UK donor agencies with the collaboration of The Institute for Inclusive Finance and Development, InM was used to study the relationship between Capital Structure and Financial Performance of MFIs from Bangladesh. Panel data regression analysis was used for this study using the Random effect and Fixed effect models. Return on Asset (ROA), and Net Income to Expenditure (NIER) are used as measures of financial performance. The findings indicate that Equity to Asset Ratio (EAR), Debt to Loan Ratio (DTL), Risk, and Size are the factors that influence NIER. Furthermore, EAR, and DTL have a positive effect on ROA and Risk has a negative effect. The findings have implications for policymakers and management of MFIs for attaining sustainable financial performance with optimum debt and equity portfolios.

Keywords: Microfinance institutions, Microcredit, Capital structure, Financial performance

DECLARATION

This research is my original work and has not been presented for examination in any other university.

Signed _____

Date _____

Syeda Sonia Parvin

This research has been submitted for examination with my approval as the university supervisor.

Signed _____

Dr. Belayet Hossain Professor, Department of Economics School of Business and Economics Thompson Rivers University Date _____

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LIST OF ABBREVIATIONS

- BKB Bangladesh Krishi Bank
- DAR Deposit to Asset Ratio
- DETL Deposit to Loan Ratio
- DTL Debt to Loan Ratio
- EAR Equity to Asset Ratio
- FSP Financial Service Providers
- GB Grameen Bank
- GNI Gross National Income
- MFIs Microfinance institutions
- MM theorem Modigliani and Miller's theorem
- MRA Microcredit Regulatory Authority
- NGO Non- Governmental Organizations
- NIER Net Income to Expenditure Ratio
- OSS Operational-self-sufficiency
- PKSF Palli Karma Sahayak Foundation
- RAKUB Rajshahi Krishi Unnayan Bank
- ROA Return on Assets
- ROE Return-on-Equity
- SMEs Small and medium-sized enterprises
- SUR Seemingly Unrelated Regression

CHAPTER ONE 1.0: INTRODUCTION

Poverty alleviation is one of the main objectives of the United Nation's Sustainable Development Goals, and microcredit is used as an effective tool in poverty alleviation around the globe (Al-Mamun & Mazumder, 2015; Karim & Osada, 1998; Weber, 2013). Microcredit is a significant innovation in development policy and a key element for the 21st century's socio-economic development as microcredit helps to improve socioeconomic conditions of the poor, and it has also reached millions of customers, billions of dollars are distributed to micro-entrepreneurs over the last few decades (Al-Mamun & Mazumder, 2015; Roodman & Morduch, 2013). These loans are very small, as low as US\$ 75, and are usually short-term loans repaid on a weekly basis over one year. Globally there are more than 67 million households served by microfinance programs (Armendáriz de Aghion & Morduch, 2005). There are 1033 large scale Microfinance Institutions (MFIs) globally that offered their services to 116.6 million borrowers in 2015 (MIX, 2017). These financial service providers (FSP) have a gross loan portfolio of US\$ 92.4 billion and US\$ 58.9 billion of deposits. The South Asian region, Bangladesh, India, Pakistan, Afghanistan, Nepal, and Sri Lanka, have a greater coverage with the primary focus on serving female borrowers, representing 92% of total borrowers (MIX, 2017). At a global level, FSPs recorded an annual growth of 8.6% in the loan portfolio and 13.5% in borrowers (MIX, 2017). Further, microcredit performance in terms of repayment and financial sustainability is exemplary (Evans, Adams, Mohammed, & Norris, 1999).

Microfinance can be defined as the financial service *package* such as credit, savings, insurance and other financial services targeted at the poor. Thus, microfinance has a broader scope than the microcredit. Institutions offering financial service packages targeting the poor are called Microfinance Institutions (MFIs). MFIs often start lending operations to a low-income community and help them to develop different types of micro-entrepreneurial ventures in developing countries. Usually, these clients have a lack of credit history, collateral, or both (Baklouti, 2013; Hartungi, 2007; Quayes, 2012).

MFIs are different types of business organizations that provide microfinance services, ranging from small non-profit organizations to large profit ones, like Grameen Bank, Credit Unions, Credit Co-operatives, Rural Banks, and NGOs in Bangladesh. In the beginning, microfinance service was offered by non-government organizations and gradually it is migrating towards an institutional foundation offering microfinance services based on market principles. There are different types of sources of funds for MFIs. They receive funds from international donors, local government, and market-based sources such as banks, financial markets, and other investors. Donor funding and subsidized funding were the main sources of funds for MFIs in Bangladesh in the beginning. However, over time, donor support and subsidized funding declined. As a result, MFIs are increasingly relying on market-based funding. Thus, the source of funding of MFIs now is the different combination of subsidized and market-based funding.

Unlike the traditional banking system, the landing of MFIs is known as supervised credit. Most of the clients of microfinance institutions live in remote areas and these micro-financing operations are extensively dependent on personal contacts. Moreover, MFIs offer other non-financial services such as training, education, and health services to their clients besides the financial services. Field workers of the MFIs go to clients' houses to get access to them to provide loans and get the weekly collection. Field workers also supervise and advise MFIs' clients about financial and nonfinancial services. As many field workers are involved to provide different services to their clients, microfinance institutions have greater transaction cost per loan. That is why MFIs charge very high, 30%–60%, nominal interest rates to their clients (Dehejia, Montgomery, & Morduch, 2005). Commercial banks calculate interest-rates considering costs of funds, bad-debt costs, and administrative costs; whereas MFI loans are subject to additional higher transaction costs including all other costs (Cull, Demirgüç-Kunt, & Morduch, 2009). Despite the higher interest rates, poor households take loans from MFIs as they do not have a cheaper alternative. They do not have access to a loan from other financial institutions except for local money lenders because of a lack of collateral. Money lenders ask for almost 100% interest rates which are two to three times higher than the MFIs' interest rates. That is why the poor take loans from MFIs to change their socio-economic condition. With the loan from MFIs, they can create small micro-entrepreneurs, create income-generating activities for themselves and their family members and can come out

of poverty. Thus, it can be concluded that MFIs contribute to socio-economic development of poor clients.

Unlike typical banks or other financial intermediaries, MFIs are facing two types of challenges; first, they have to provide different types of financial services to the poor and secondly, they have to also cover their costs or expenditure to sustain the business. That is why MFIs have both financial and social performance goals. The financial goal which is also known as sustainability is related to the institution's financial feasibility and its capacity to earn profits and run its operations smoothly. On the other hand, the social performance goal or outreach has two scopes: Depth of outreach and Breadth of outreach. The depth of outreach is measured by the average loan size divided by the country's gross national income (GNI) per capita, which reflects the poverty level of clients. And the breadth of outreach is measured by the number of clients reached, which reflects the size of the clientele base. MFIs need to arrange their capital to maintain sustainable operations and also to focus on outreach for their success. Although, both social sustainability and financial sustainability are the goals for NGOs (Dichter, 1996); in many cases, however, it is costly to provide credit to the poor. Many MFIs in developing countries have had limited achievements in cost efficiency (Hermes & Lensink, 2011). There is a trade-off/ challenge for MFIs to choose between financial sustainability and/or social sustainability (Baklouti, 2013). According to Microcredit pioneer Yunus (2007), MFIs' financial sustainability can lead to social outreach as a financially sustainable institution can ensure long-term operation and service to the poor community. A sustainable or efficient MFI can serve the social purpose better than a bankrupt MFI.

MFIs of Bangladesh started as NGOs to serve financial services and other nonfinancial services to the poorest of the poor. They have gone through an important evolution from donor-funded projects to market-based financial institutions. They have both social and economic objectives and need to be financially solvent in an era of declining foreign aids and other subsidized financial supports. They need to cover their cost for the social service as well as for the financial service. For many MFIs, members are the owner and shareholder of the institutions, other institutions may own jointly by private shareholders and members. In this study, the main objective is to analyze the capital structure and its impact on financial viability, as MFIs are now using different sources of funds. Many studies (Tchuigoua,2015; Tchuigoua,2014; Kyereboah-Coleman, 2007; Khachatryan, Hartarska & Grigoryan, 2017; Kar, 2012; Bogan, 2012; Abrar & Javaid, 2016) analyzed the financial performance of MFIs of all over the world using capital structure. This study focuses on the effect of capital structure on MFIs performance and to identify the opportunities for increasing the sustainability and growth of lending institutions. There is a lack of empirical studies on capital structure and performance of MFIs from Bangladesh. This study fills this gap by investigating the relationship between capital structure and performance of MFIs from Bangladesh.

In the beginning, most of the MFIs used to receive donor funding and subsidized funding in Bangladesh. Gradually donor support and subsidized funding dried up. As a result, they are increasingly relying on market-based funding. Thus, the source of funding of MFIs now is the combination of subsidized and market-based. It is our interest to examine if the source of financing has any significant effect on the financial performance of MFIs in Bangladesh. If proportional subsidized financing is more than other sources of financing, it may affect their performance negatively because they might not be very serious in utilizing their capital. On the other hand, because of low-cost funds, it may affect their performance positively because they may perform efficiently. Again, MFIs that function with private money needs to work hard to make it a profitable business as they have costly funds, so it may affect their performance positively or negatively. Thus, the capital structure or source of funding may influence positively or negatively the financial performance of the MFIs.

As micro-credit has a significant role in poverty alleviation, that is why it brings a lot of attention both from policymakers as well as in academic researchers (Hermes & Lensink, 2007; Hermes & Lensink, 2011; Weber & Ahmed, 2014). However, the studies (Bhanot & Bapat, 2015; Al-Mamun, Mohiuddin, & Mariapun, 2014) reveal that a large number of microfinance programs still depend on donor subsidies to meet the high costs collateral free delivery approach as well as high-interest rate called as "Poverty Penalty" paid by poor borrowers (Gutiérrez-Nieto, Serrano-Cinca, Cuéllar-Fernández, & Fuertes-Callén, 2016). Moreover, MFIs' declining financial performances came into the attention to the need for examining the efficiency of MFIs (Wagner & Winkler, 2013; Azad, Munisamy, Masum, & Wanke, 2016). Several studies were conducted to investigate the impact of various Microfinance program's effectiveness in different regions of the world; however, there is insignificant research on MFIs (Haq, Skully, & Pathan, 2010). More specifically, only a few studies that address the relationship between capital structure or sources of funds for MFIs and performance of the MFIs. No serious empirical work in Bangladesh exclusively focuses to understand the relationship between the capital structure of MFIs and their financial performance. This study tries to fill this gap. More particularly, this study attempts to measure the effects of capital structure on microfinance institutions performance measured by financial self-sufficiency and return on asset.

There is a growing realization that profit-oriented programs supported by the private sector will give more opportunities to fulfil the social objectives by expanding access to a range of borrowers unable to reach by donor-funded MFIs. The fundamental question remains to explore is: Does the financial structure in terms of financial leverage affect the financial performance: financial sustainability, depth, and breadth of outreach of MFIs? For MFIs to become financially sustainable, the source of financing is important. The main objective of this study is to examine how capital structure affects the financial performance of MFIs from Bangladesh where the level of poverty is wide, and deep and MFIs are fastest in growing. To identify how capital structure composition (Equity to Asset, Debt to Loan, Deposit to Loan, and Deposit to Asset) affects the performance of MFIs by focusing on Return on Assets (ROA), Net Income to Expenditure (NIER), operational and financial self-sufficiency. This study shows how different sources of their capital affect their performances. As donor funds for microcredit services are depleting, only financially sustainable MFIs might survive and get more investment for this purpose from private investors on a cost-benefit basis. That is why this study investigates the role of different kinds of capital sources and their effects on the performance of MFIs from Bangladesh, the birthplace of the micro-finance movement.

Research Questions:

Based on the previous discussions, the current study aims to answer the following research questions: "Is there any relationship between capital structure or sources of capital and the performance of the MFIs? What are the factors that determine the financial performance of MFIs"?

1.1: MICRO-FINANCE INSTITUTIONS IN BANGLADESH

In Bangladesh, the microcredit program was initiated by Prof. Muhammad Yunus in 1976 in order to improve the socio-economic condition of the poorest of the society, and that microcredit movement has been pioneering in early 1980. Further, microcredit programs have occupied a central place in poverty-oriented strategies as poverty alleviation largely depends on microcredit programs in Bangladesh (Kabeer, 2001; Karim & Osada, 1998). Since 1990, Bangladesh experienced rapid growth and also achieved tremendous success in developing innovative microcredit models, service and diversification (Chowdhury, Ghosh, & Wright, 2005).

About 2,116 NGOs, some of which are very small, provide microcredit service to the millions of poor rural people at a low cost in Bangladesh. Specifically, Bangladeshi NGOs provide collateral-free microcredit to poor women to improve their socioeconomic condition. Further, NGOs and rural people are connected and also mutually dependent through microcredit operations in Bangladesh. NGOs have become successful to improve socio-economic conditions of rural poor people (Ahmad & Townsend, 1998); for instance, 'BRAC' is considered as one of the largest successful NGOs in the world (Develtere & Huybrecht, 2005). A study (Nawaz, 2010) claims that although microfinance has resulted in a moderate reduction in the poverty alleviation, there are still more prospective clienteles remaining out of reach of many MFIs.

In Bangladesh, there are mainly four types of institutions involved in micro-finance activities. These are 1) Grameen Bank (GB), a member-owned specialized institution, 2) around 1500 Non- Governmental Organizations (NGO) like BRAC, Proshika, ASA, BURO-Tangail, BEES, CODEC, SUS, TMSS, Action- Aid, etc. 3) Commercial and Specialized banks like Bangladesh Krishi Bank (BKB), Rajshahi Krishi Unnayan Bank (RAKUB) and 4) Government sponsored microfinance projects/ Programs like BRDB, Swanirvar Bangladesh, RD-12 and others which are run through several ministries viz., Ministry of Women & Children Affairs, Ministry of Youth & Sports, Ministry of Social Welfare, etc. Credit services of this institutions can be divided into six groups: i) general microcredit for small-scale self-employment-based activities, ii) microenterprise loans, iii) loans for ultra-poor, iv) agricultural loans, v) seasonal loans, and vi) loans for disaster management. Loan amounts up to BDT 50,000 or US\$600 are generally considered as microcredit and loans above this amount are considered as microenterprise loans. As per Microcredit Monetary Authority, for 2015-2016 economy year total loan amount of Microcredit was BDT 1005.57 billion or US\$12.07 billion, outstanding amount was BDT 618.76 billion or US\$7.43 billion), number of microcredit clients were 31.07 million, total clients of microfinance institutions were 36.20 million, savings was BDT 372.00 billion or US\$4.46 billion that accelerates the overall economic development process of the country. Bangladesh government developed a framework, rules, and regulations for the smooth functioning of MFIs and established a regulatory body which is known as Microcredit Regulatory Authority (MRA). MRA is the central body to monitor and supervise microfinance operations of NGO-MFIs and to promote and foster sustainable development of the microfinance sector in Bangladesh (Badruddoza, 2013). MRA ensures the enforcement of sanctions in the event of any MFI failing to meet the licensing and ongoing supervisory requirements.

This sector is basically financed by the different types of sources: savings collected from clients, cumulative surplus or profit, concessional loan received from sources such as PKSF, grants received from national and international donors and commercial bank borrowing. Initially, the foreign donation was the major source of fund for these organizations, the contribution of which stood too near about 50% of the total fund until 1996. After 1996 it had declined sharply and became only 17% of the total fund in December 2001 as per Microcredit Monetary Authority. Because of the declining trend of foreign donation, the MFIs-NGOs have concentrated on accumulating funds from internal sources such as saving mobilization from their members. While the total fund increased significantly over time, there was only a little change in terms of the composition of the fund. The most important source of funds turned out to be clients' savings which was the single most important fund support for the sector. The cumulative surplus was the second most important source of fund. Loans from commercial Banks turned out to be the next more important one. Loan from Palli Karma Sahayak Foundation (PKSF), a microfinance wholesale funding agency also provides a large portion of loan fund at a subsidized rate. The least important source appeared to grant from the donor agencies as the previously donor driven NGOs are now trying to rely more and more on local sources of funds with the decline in foreign funding. Table 1 shows the evolution of sources of funds for MFIs

in Bangladesh. Donor funds are declining and loans from the commercial bank are increasing.

Source of	June,	June,	June,	June,	June,	June,
Funds	2011	2012	2013	2014	2015	2016
Clients'	63.3	74.99	94	107	135.41	170.46
Savings	(34.46%)	(32.62%)	(33.63%)	(34.21%)	(33.94%)	(34.42%)
Loan from	31.77	33.58	34.07	34.52	37.77	40.76
PKSF	(17.30%)	(14.61%)	(12.19%)	(11.04%)	(9.47%)	(8.22%)
Donors'	7.01	7.06	7.1	6.86	5.22	5.11
Fund	(3.82%)	(3.07%)	(2.54%)	(2.19%)	(1.31%)	(1.03%)
Cumulative	50.3	65.44	83.26	100.94	137.71	166.97
Surplus	(27.38%)	(28.47%)	(29.79%)	(32.28%)	(34.52%)	(33.67%)
Loan from	23.58	32.65	42.7	51.5	68.57	95.01
Commercial	(12.84%)	(14.20%)	(15.28%)	(16.47%)	(17.19%)	(19.16%)
Banks						
Other	7.73	16.17	18.39	11.91	14.24	9.85
Funds	(4.21%)	(7.03%)	(6.58%)	(3.81%)	(3.57%)	(2.02%)
Total·	183.69	229.89	279.52	312.73	398.92	488.16
I Utar.	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

 Table1: Evolution of sources of funds for MFIs in Bangladesh (Billion in BDT)

Data source: Microcredit Regulatory Authority Database

1.2: MICRO-FINANCE AND ITS COMPONENTS

Microfinance is a package of several services including a small dollar value loan that MFIs provide to their clients. Microfinance provides not only financial services but also human and social capital development services to their economically marginalized clients to help them succeed in their endeavor of social entrepreneurship.

1.2.1: Clients

The clients of MFIs are basically poor, self-employed, low-income entrepreneurs performing their activities at their household. Their small businesses are focused on retail

stores, street sale, handicraft production, agriculture, animal farming, and small production or different types of services. Though MFIs provide financial assistance to poor, low-income people, they are not considered as the "poorest of the poor" (Ledgerwood,1999). MFIs do not provide financial services to extremely poor, skill-less, ill people. Though microfinance is considered one of the powerful instruments against poverty, financial services, particularly loans, are not always suitable for everyone. Loans are appropriate for the people who are able to take the economic opportunity in generating profits, and who are able to pay the repayment schedules after adjusting their cost. People who are extremely poor, ill, malnourished, and without skills or employment opportunities need grants or other public funding sources for the improvement of their economic situation (Robinson, 2001). Grants or other kinds of supports are the most efficient form of supporting this category of the population since the majority is not able to timely service the loans.

Most of the MFIs' clients are women, with only 33 percent of all microfinance clients being men. (CGAP,2012). Women are better than men at paying back loans. Women clients tend to have a lower risk of having overdue loans than men.

1.2.2: Microfinance Providers

Various types of microfinance providers offer microfinance ranged from informal to formal (Ledgerwood, 1999). This formal-informal structure depends on the degree of supervision by governments outside of the organizational structure and governance (Helms, 2006).

Informal providers have a simple organizational structure, lack government supervision, and consist of moneylenders, traders, deposit collectors, pawnbrokers, community savings clubs, friends-family, and agricultural input providers. Formal providers are credit unions, commercial banks, NGOs (Non-governmental Organizations), cooperatives, member-based organizations, and sectors of government banks. NGOs mainly work in remote rural areas thereby providing financial services to the persons with no access to banking services. They also provide health services, education services: especially to women and children, and training for unemployed people besides financial services.

1.2.3: Products and Services

MFIs offer different types of products and services to their clients. These products and services are mainly financial services, in addition, they provide some nonfinancial services. Some most common products and services are described below:

1.2.3.1: Credit Service:

MFIs provide credit to poor people who are not able to provide collateral or any other security. Because of the lack of security, poor people do not have access to a credit facility from the formal credit sources (Helms, 2006). The main purpose of these credits is not only for productive purpose but also for other non-productive purposes, for example: households, consumptions, education, marriage, or others.

Microfinance institutions basically provide credits to the poor through group or individual lending (Hermes & Lensink, 2007; Lehner, 2009). Individuals who have some level of security, such as their reputation among peers and society, and income sources, may get loans directly from MFIs (Lehner, 2009; De Aghion & Morduch, 2000). Another way to provide loans is to create a small group of people who have a common wish of getting the same type of financial service. Usually, poor people organize themselves in small groups, and each participant accepts joint responsibility which is called *joint liability*, liability for own self and also for other members of the group, for the loan (Hermes, 2006; Hermes & Lensink, 2007). Some empirical studies show that self-selected groups perform better than groups selected by MFIs as problems of under-investment may be ameliorated and repayment rates are also improved (Natarajan, 2004). The poor also create a larger group, usually 30-100 members, which is known as the village banking model and access loans to the group itself rather than to individuals (Ledgerwood, 1999).

1.2.3.2: Human and Social Capital Development

Micro-finance services are provided to poor households principally in rural areas. More than 90% of clients are poor women with little or no formal education. The socioeconomic, religious and cultural context in developing countries such as Bangladesh is not welcoming to social entrepreneurship headed by women. To make them successful social entrepreneurs, MFIs need not only to provide credit services but also access to human and social capital development services (Khanam et al. 2018). They could help the village ladies to form groups, raise their voice, make them aware of their rights and help them with basic education so that they can run their micro-businesses properly. MFIs such as Grameen Bank organize a weekly meeting of their members, help them to organize as a group, provide them training on socio-cultural and political issues that concern them, motivate them to work together, and become a social force.

CHAPTER TWO 2.0 LITERATURE REVIEW

Sources of funds for MFIs are not only various kind of donations, charities, but also subsidized loans, commercial loans, savings, equity, and debts. Because of financial crises, stagnant or low economic growth of major donor countries, there is a diminishing trend of donor funding. MFIs need to search for their funding from commercial sources to meet the demand of their microfinance services. This trend indicates that MFIs need to achieve sustainability by using commercial funds. However, many skeptics consider that with commercial funds, the social objective of MFIs will be compromised (Ledgerwood & White, 2006). At the same time, MFIs need to achieve financial sustainability; i.e., a status when their service, infrastructure level, and standards are delivered according to a long-term plan without the need to increase interest rates or reduce services. Sustainability of MFIs refers to economic viability (Zeller & Myer, 2002). NGO-turned-MFIs started to get better access to external capital as they shifted from donor-dependent, subsidized capital to private funding by attracting private investors as a part of their transformation into regulated institutions through commercialization (Christen & Drake 2002; Tchuigoua 2015). Over the years, microfinance institutions have started to collect the deposit from their clients, which allows the poor to be savings-oriented. Moreover, MFIs provide the needed services to more poor clients, as well as lower the costs of capital by transforming into deposit-collecting institutions (Delgado et al. 2015; Hartarska, Parmeter, & Nadolnyak 2010; Malikov & Hartarska 2017).

Various types of subsidized funding and/or donations and commercial funding are the two major funding sources of microfinance institutions. Commercial funding creates pressure on the governance of MFIs to provide their services and ensuring payback of the loans. It also enables the recipients to develop a sense of responsibility and proper use of the fund for successful ventures. Commercially funded MFIs focus not only on increasing revenues but also decreasing expenses so that they can have enough revenue to cover operating expenses. Conversely, grants and donations create some inertia as the fund providers do not expect the return. MFIs with access to donor funds may not have these pressures to make the profit; that is why they may deliberately choose outreach over efficiency by serving poorer or rural clients with higher delivery costs (Armendáriz de Aghion & Morduch, 2005). According to Lehner (2009), Westley (2006), and Arianto and Indonesia (2004) profit-driven loans from private sources can be more successful at achieving social objectives than money from the public, or tax-payer sources. The financing structure of the MFIs can also be categorized as liability financing and equity financing. Policymakers need to know the optimum mix of liability and equity financing for the MFIs. Depending on the sources of funds, each fund has different costs that contribute to the rate applied while lending loans to borrowers. MFIs collect fund from diverse sources in order to create an optimum mix of funds that reduce overall cost. Again, commercial funds are necessary for the on-going expansion of the micro-finance services. According to Khachatryan, Hartarska, & Grigoryan (2017), the performance of MFIs is influenced by the interest of the stakeholders behind the capital. They used panel data from MFIs from Eastern Europe and used seemingly unrelated regressions (SUR) method. They mentioned that the grants are helpful for better depth of outreach; concessional loans are useful for improving outreach without affecting financial results. Tchuigoua (2014) found that creditors rights and financial sector development of a country influence the level of external funds of MFIs. Thus, if the financial sector is on a well-established foundation and obeys the rules, MFIs will have more access to external funding and they will be complementary to the classic financial sector. However, Tchuigoua (2015) found that there is no difference in terms of having access to external funds whether the MFI is for for-profit market based or not-for-profit MFIs.

Bhagat and Bolton (2008) tried to estimate the relationship between corporate governance and performance considering the inter-relationships among corporate governance, corporate performance, corporate capital structure, and corporate ownership structure in their paper. They found that better governance is positively correlated with better operating performance, and board independence is negatively correlated with operating performance.

To investigate the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five-year period, Abor (2005) used regression analysis in the estimation of functions relating the Return on Equity (ROE) with measures of capital structure. This study found a significantly positive relationship between the short-term debt ratio and profitability, and a negative relationship between long-term debt ratio and profitability. However, for the total debt, this study indicated a significant positive relationship between total Debt to Total Asset Ratio and profitability as Return on Equity (ROE) (Abor, 2005). This research suggests that profitable firms depend more on debt as their main source of fund and in this Ghanaian case 85% of the debt is short-term debt. Some other studies also provided empirical evidence supporting this positive relationship between debt level and firm's performance (Gill, Biger, & Mathur, 2011; Hadlock & James, 2002). On the other hand, there have been some other studies that have indicated empirical evidence of the negative relationship between debt level and firm's performance (Abor, 2007; Cassar & Holmes, 2003; Gleason, Mathur, & Mathur, 2000)

Abor (2007) analyzed the effect of debt policy or capital structure on the financial performance of small and medium-sized enterprises (SMEs) in Ghana and South Africa. Using various measures of performance, the results of this study indicated that capital structure, especially long-term and total debt ratios, negatively affect the performance of SMEs.

Abrar & Javaid (2016) considered Return on Assets (ROA), Operational Self Sufficiency (OSS), and Return on Equity (ROE) as dependent variables to measure the profitability and Deposit to Asset, Net Deposits, and Debt to Equity ratio as independent variables and number of women borrowers, size regulations, and age as control variables. This study used the random-effect-model to analyze cross-sectional unbalanced-panel data for the years of 2004-2010 of about seventy countries from all over the world. They found that deposit is the lowest cost financial source for MFIs. They also found that highly leveraged MFIs enjoy higher profitability relative to the less leveraged MFIs, and MFIs with more women borrowers enjoy significantly higher profitability because of less default-risk. Generally, female borrowers have the tendency to pay regular loan repayments compared to males.

Bogan (2012) studied the effects of capital structure on self-sufficiency and efficiency for a global sample of MFIs and indicated that the size of an MFI's assets and an MFI's capital structure are associated with performance. It showed that asset size of MFIs has an effect on sustainability, and outreach and grants as a percentage of assets are significant and negatively related to sustainability but are positively related to MFI cost per

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borrower. Bogan (2012) also found causal evidence supporting the assertion that increased use of grants by large MFIs decreases operational self-sufficiency. It emphasizes the concept to use long-term grants may be related to inefficient operations due to a lack of competitive pressures associated with attracting market funding. Thus, grants could hamper the development of MFIs into competitive, efficient, sustainable operations.

Kar (2012) studied the impact of capital and financing structure on the performance of MFIs with a large panel dataset using (GMM) and (IV) estimations with the agency theory as a theoretical foundation. Kar (2012) used ROA, ROE, and operating expenses per dollar lent (OELP) as indicators for financial performance and capital-asset ratio, debt-equity ratio, loan-asset ratio, and PAR30 as the indicators for capital structure and found that an increase in leverage raises profit-efficiency in MFIs. However, Kar (2012) concluded capital structure does not have any noticeable impact on the breadth of outreach.

Kyereboah-Coleman (2007) used ROA, ROE as performance indicators, and total debt, short term debt and long term debt as indicators for capital structure, and size, age and risk level as control variables for a panel data of 52 MFIs from Ghana for a period of ten years from 1995 to 2004, applied fixed and random effects techniques and found that most of the MFIs are highly leveraged, and these MFIs use more long term debt than short term debt. The study also found that highly leveraged MFIs perform better by reaching out to more clientele, enjoy scale economies, and are therefore better able to deal with moral hazard and adverse selection (Kyereboah-Coleman, 2007).

Dorfleitner, Rohe, and Renier (2017) found the positive relationship between the maturity of the MFIs and access to debt capital. Because of organizational form and the legal environment in the country, many MFIs are not permitted to collect deposits and are therefore forced to rely on alternative sources of funding; for example, borrowings from microfinance investment vehicles (MIVs). Dorfleitner, Rohe, and Renier (2017) examined a worldwide data set for the years 2007–2010 and used ROA and portfolio at risk as financial performance and the size of the MFI, and the Debt to Asset ratio as independent variables. Furthermore, they found that MFIs with a solid financial performance in terms of portfolio quality exhibit better access and suggested that MFIs

maintaining their social mission experience easier access to funding from MIVs. Contrary to Dorfleitner, Rohe, and Renier (2017); Abrar and Javaid (2016), and Pati (2014) did not find the relationship between age and higher profitability of MFIs. Moreover, Pati (2014) found the profitability of the MFIs allows them to have access to cheaper debt financing by issuing bonds/debentures instead of institutional sources such as formal banks. For example, the interest rates in developing countries are relatively high compared with other developed countries. Hartarska, Shen, and Mersland (2013) shows that the larger MFIs are more cost-effective due to the advantages afforded by potential economies of scale and potential scope economies between deposits and loans. MFIs with higher nonperforming loans require more resources to manage the higher risk (Hartarska, Nadolnyak, & Shen, 2012). Because of this lower asset quality, they face challenges to achieve outreach and sustainability.

The current literature on this field is heterogeneous in terms of their definition of capital structure and profitability/sustainability, i.e., economic sustainability of MFIs. These are focused on the determinants of financial structure to explain how an MFI can finance business activities by using debts and equities to maximize the benefits for shareholders based on their advantages. What is missing from the literature is the inquiry that addresses the effects of the financial structure of MFIs on their performance. The heterogeneous aspects of MFIs also need to investigate the relationship between microfinance funding structure and financial performance/sustainability as well as social outreach, depth versus breadth of microfinance in MFIs have been few. Despite that Bangladesh has more MFIs than many other countries, no study has specifically focused on the capital structure and performance of MFIs from Bangladesh.

CHAPTER THREE 3.0 METHODOLOGY

3.1: THEORETICAL MODEL

3.1.1: Theories of Capital Structure:

Current works of literature on the financial structure of firms are dominated by two theories which are trade-off theory and pecking order theory (Swinnen et al., 2005). Both emanated from Modigliani and Miller's (MM) theorem, which is considered as the most important theory in finance (Pagano, 2005). These theories provide a framework for the effects of financial structure on the performance of firms, more specifically performance of financial institutions. As MM theory advocates that the cost of funds is the same in a perfectly competitive market. However, there are many imperfections in the market and there are relationships between financial structures and MFI performances.

3.1.1.1: Modigliani and Miller (MM) theorem:

In 1958 Modigliani & Miller published an important work in the capital structure which is known as Modigliani-Miller Theorem. They concluded to the broadly known theory of "capital structure irrelevance" where the capital structure is irrelevant to the value of a firm in perfect capital markets (Abor, 2005; Miller & Modigliani, 1958). The Modigliani-Miller theorem explains the relationship between a company's capital asset structure and dividend policy, and its market value and cost of capital. The theorem suggests an efficient market which means the absence of taxes, bankruptcy costs, agency costs, homogenous expectations where individuals and firms trade at the same rates, and symmetric market information where companies and investors have the same information (Berk & DeMarzo, 2007; Kyereboah-Coleman, 2007). It states that the valuation of a firm is irrelevant to the capital structure of a company, whether a firm is highly leveraged or has lower debt component. Instead, debt only changes the allocation of cash flows between debt and equity, without changing the total cash flows of the firm and the market value of a firm is dependent on the operating profits of the company (Berk & DeMarzo, 2007). In the absence of bankruptcy and agency costs, debt has a tax benefit shield, which leads firms to maximize their value by using as much debt as possible (Modigliani & Miller, 1963). Modigliani–Miller theorem is often called the capital structure irrelevance

principle, as the value of the firm depends neither on its dividend policy nor its decision to raise capital by issuing stock or selling debt.

Modigliani and Millers' propositions are still the foundations of capital structures; however, their theory is based on very unrealistic assumptions that do not exist in the real world (Abor, 2005; Kyereboah-Coleman, 2007). In real life, there are taxes, transaction costs, bankruptcy costs, differences in borrowing costs, information asymmetries and effects of debt on earnings. There are a number of theoretical and empirical studies (Bradley et al., 1984; Long & Malitz,1985; Titman & Wessells, 1988) that largely support Modigliani-Miller theorem. Besides that, several studies have rejected the Modigliani and Miller Theorem because of these unrealistic assumptions (Jensen & Meckling, 1976; Myers, 1977; Harris & Raviv, 1990; Jensen, 1986).

3.1.1.2: Trade-off theory:

Trade-off theory of capital structure refers to the trade-off between the benefits and costs of debt and equity financing. It is the concept that a company chooses how much debt finance and how much equity finance for market imperfections such as taxes, bankruptcy costs and agency costs. Usually, corporations are financed with a combination of debt and equity. There is an advantage to financing with debt which is the tax benefit and a cost of financing with debt which is the costs of financial distress including bankruptcy costs, agency costs, etc. Firms with high profit prefer more debt to equity as interest paid from the net income for debt will be deducted before paying the corporate income tax. Again, firms with low profit prefer internal funds as external funds may be more expensive and non-debt tax shields may be bigger than the advantage of tax benefits (De Angelo & Masulis, 1980). At first, the marginal benefit of financing with debt increases as debt increases. However, when the marginal cost increases, the marginal benefit of further increases in debt declines. So, a firm needs to focus on the optimal or trade-off point to choose how much debt and equity to use for financing. The trade-off theory states that the optimal capital structure is a trade-off between interest tax shields and the cost of financial distress. It can be explained as:

Value of firm = Value if all-equity financed + PV (Interest tax shield) – PV (cost of financial distress)

Initially, PV (tax shield) increases as the firm borrows more until additional borrowing rapidly increases the probability of financial distress. Then the value of the firm decreases because of the financial distress (Myers, 2001). The firm cannot be sure to get benefit from the full tax shield if it borrows excessively as the cost of financial distress is assumed to increase with the debt level.

The trade-off theory explains why capital structures differ between industries. However, it fails to explain why profitable companies within the same industries have lower debt-ratios because according to the trade-off theory profitable firms have a larger scope for tax shields and therefore subsequently should have higher debt levels.

3.1.1.3: The pecking order theory:

The pecking order theory has developed an alternative theory to the trade-off theory. Rather than introducing corporate taxes and financial distress into the MM framework, the key assumption of the pecking order theory is asymmetric information which means managers know more about their company's prospects, risks and value more than outside investors and their actions, therefore, provide a signal to investors about the prospects of the firm.

Pecking order theory claims that firms follow a financing hierarchy to minimize the problem of this information asymmetry (Myers, 1977 and 1984; Myers & Majluf, 1984). According to this theory, firms first prefer internal financing; when it is depleted, they prefer debt financing; finally, when it is no longer sensible to use any more debt, firms use equity. When firms want to raise funds through equity financing, it makes potential investors believe that the firm is over-valued, and they tend to place a lower value on the newly issued shares because of the information asymmetry (Myers, 1984). This problem leads firms to use debt financing, which helps them mitigate the inefficiencies in making investment decisions caused by the information asymmetry (Myers, 2001). Even debt financing might create information problems if the probability of default is significant since a pessimistic manager will issue debt just before bad news gets out. Because of these reasons, firms have hierarchical preferences over sources of funds, which are given to internally generated funds first, followed by debts and then equity as a last resort.

3.2: EMPIRICAL MODEL

This study attempts to examine the effect of capital structure on microfinance institutions performance by investigating the relationship between the observed performance indicators and a set of explanatory variables using multiple regression methods. That is, the study focuses on the source of funding of the MFIs and their relative profitability. The performance of MFIs is measured by Return on Asset (ROA) and Net Income to Expenditure (NIER) and these two variables are used as dependent variables which are related to the profitability as well as sustainability. Independent variables include Equity Asset Ratio (EAR) Debt to Loan (DTL), Deposit to Loan Ratio (DETL) and Deposit to Asset Ratio (DAR). Moreover, it considers two control variables which are Risk and Size. Some explanatory variables could be endogenous. To address the endogeneity issue 2SLS, 3SLS models are usually used with the help of instrumental variables. Unfortunately, this data set did not have credible instruments to use. In case of panel data, the fixed-effect model and the random-effects model are commonly used. Panel data are multi-dimensional which contain observations of many firms or individuals over a period of time. Panel data can take an explicit account of individual-specific heterogeneity, gives more data variation, less collinearity and more degree of freedom. It is considered better in detecting and measuring the effects than other methods. Many studies (Abrar & Javaid, 2016; Abor, 2005; Abor, 2007; Kyereboah-Coleman, 2007; Dorfleitner, Rohe & Renier, 2017) used panel data to determine the relationship between capital structure and financial performance.

Fixed effects model: Fixed effects model is a model in which parameters are fixed or non-random quantities. In econometrics, a fixed effects model refers to a regression model in which group means are fixed or non-random. In panel data where, longitudinal observations exist for the same subject, fixed effects represent the subject-specific means. In panel data analysis the term fixed effects estimator is used to refer to an estimator for the coefficients in the regression model including those fixed effects.

Random-effects model: In statistics, a random effects model is a model where the parameters are random variables. In econometrics, random effects models are used in the analysis of hierarchical or panel data when one assumes there are no fixed effects. The random effects model is a special case of the Fixed effects model.

The following hypotheses have been tested:

• H1: Highly debt-financed microfinance institutions are expected to be more sustainable and profitable.

• H2: Higher Deposit to Loan Ratio microfinance institutions are expected to be more sustainable and profitable.

- H3: Large-scale microfinance institutions are expected to be more sustainable.
- H4: Highly risked microfinance institutions are expected to be less sustainable

3.3: DATA:

This study has used an unbalanced panel data of 187 MFIs of Bangladesh which are collected from The Institute for Inclusive Finance and Development (InM), a Non-profit research organization in Bangladesh that gathers data in collaboration with UK donor agency funded projects. It is a well-respected organization that collects empirical household data from microfinance institutions and clients. This data set contains a period of ten years of data from 2005 to 2014. Each MFI has data for a minimum of three years and a maximum of ten years. The same dataset has been used for other research and thus can be considered as reliable. All numbers in the dataset are in BDT currency. In this study, STATA-15 has been used for data analysis. STATA is a very well-known statistical program all over the world and is a reliable tool for analyzing quantitative data. The effect of capital structure on MFIs performance has been identified using "Multiple Regression Analysis" with the numerical data.

In this study, profitability or sustainability of an MFIs is measured by Return on Asset (ROA) and Net Income to Expenditure Ratio (NIER). ROA measures how well MFI uses its total assets to generate income. NIER describes how well MFI can cover its costs through financial and operating income. For example, NIER ≥ 0 implies MFIs are sustainable and NIER < 0 implies MFIs are not sustainable. Different models are used to find the answers to the above-mentioned research questions in this study.

3.3.1: Specification of Variables:

Debt: Debt of MFIs is the money borrowed for short-term or long-term from other financial institutions, which an MFI must pay back to lenders with interest after a specific agreed upon period of time. Due to a lack of enough internal funds or equity, MFIs use

borrowed money to expand their businesses. If an MFI is well established and has steady return and profitable growth, it tends to rely more on debt financing to fund their businesses.

Deposit: Deposit of MFIs refers to the sum of savings deposited by their members. There are two types of deposits: voluntary deposits and compulsory deposits. Voluntary deposits refer to the savings deposited voluntarily by the members when members of MFIs are solvent enough to make some savings at the market-driven interest rates and can withdraw their savings any time. Compulsory savings refer to a sum of money which borrowers must save at regular intervals with MFIs as a condition for receiving a loan. This savings is considered as collateral and used to cover missed payments. The borrower can withdraw this savings after repayment of the loan.

Loan: Loans of MFIs are the money that their borrowers must pay back with interest. Generally, this microcredit or loan is paid on a weekly basis. In accounting, a loan is considered as the asset of the firm. For MFIs, the loan is the major part of the asset, sometimes up to 99%. Usually, MFIs don't have any other types of assets.

Equity: Equity of MFIs is the money received from the current owners or potential investors to finance business activities. According to Chasnow & Johnson (2010), there are two types of investors: social investors and commercial investors. First, social investors invest with social objectives as a high priority and commercial investors or private-equity funders focus more on financial returns from their investments. In Bangladesh, members of some MFIs are considered as the shareholders or owners of the MFIs.

3.3.1.1: Dependent Variables:

Return on Asset (ROA): ROA measures how well the institution uses its assets. It reflects the profit margin as well as the efficiency of the institutions. ROA is widely accepted and used in several studies to measure the financial performance of Banks and other financial institutions. Kyereboah-Coleman, 2007; Silva, 2008; and Kar, 2012 used ROA as an indicator of financial performance in their studies. ROA is measured as follows:

$$ROA = \frac{Net \ Income}{Total \ Asset}$$

Net Income to Expenditure Ratio (NIER): NIER measures net operating revenue as a percentage of operating and financial expenses. It counts all the cash costs of running a firm, loan loss provision, depreciation. It describes how well MFI can cover its costs through financial and operating income. NIER is calculated as (revenue and income are used as synonymous):

$$NIER = \frac{(\text{Total Revenue} - \text{Total Expenses})}{Total \text{ Expenses}}$$

where, revenue and income are used as synonymous.

3.3.1.2: Independent Variables (Measure of capital structure):

The explanatory (independent) variables in this study are Equity to Asset Ratio (EAR), Debt to Loan Ratio (DTL), Deposit to Loan Ratio (DETL) and Deposit to Asset Ratio (DAR). These four ratios serve as a proxy for capital structure.

Equity to Asset Ratio (EAR): Equity to Asset Ratio (EAR) indicates the proportion of a firm's total equity contributed to its operation. EAR is measured as:

$$EAR = \frac{Equity}{Asset}$$

Debt to Loan Ratio (DTL): The Debt to Loan ratio measures the amount of funds borrowed by the firm in relation to its loan. If the use of debt is increased, it will lead to a higher Debt to Loan Ratio. DTL is calculated as:

$$DTL = \frac{Debt}{Loan}$$

Deposit to Loan Ratio (DETL): The Deposit to Loan Ratio measures the members saving or deposit of the firm in relation to its loan. DETL is calculated as:

$$DETL = \frac{Deposit}{Loan}$$

Deposit to Asset Ratio (DAR): The Deposit to Asset Ratio is a common ratio which measures the amount of deposits of the firm in relation to its assets. Deposit to Asset Ratio is comparatively highly relevant for the MFIs which mobilize the deposits. DAR is calculated as:

$$DAR = \frac{Deposit}{Asset}$$

3.3.1.3: Control Variables:

Apart from the capital structure, there are several other factors that may have an impact on MFIs performance, therefore control variables are included in the model. This study considers two control variables which are Size and Risk.

Size: This study has included Size as one of the main independent variables in all regressions and defined as the natural logarithm of total assets to control the effects of diversification and differences associated with MFIs. Economies of scale is an important concept in economics; therefore, the size of a firm is considered an important determinant of a firm's performance. Larger well-known firms may have better access to the long-term capital market. Whereas smaller unknown firms arrange short-term funding.

Size =
$$\log(\text{Total assets})$$

Risk: It has been hypothesized that MFIs are not careful in risk management. As a result, they may have more default loans which are considered as a risk of the MFIs. So, the risk is a measure of the quality of the portfolio and it has a negative effect on profit, efficiency, and performance of the MFIs. In this study, risk is defined as a ratio of loan provision to outstanding loans of MFIs which indicates how well the MFIs are collecting their loans and also the proportion of the provision amount against default loans to total outstanding loans.

$$Risk = \frac{Loan \ provision \ amount}{Total \ outstanding \ loans}$$

3.4: PROPOSED MODELS

• Model-1

 $NIER = \alpha_0 + \alpha_1 EAR + \alpha_2 DTL + \alpha_3 DAR + \alpha_4 DETL + \alpha_5 RISK + \alpha_6 SIZE + \epsilon_i$

• Model-2

 $ROA = \beta_0 + \beta_1 EAR + \beta_2 DTL + \beta_3 DAR + \beta_4 DETL + \beta_5 RISK + \beta_6 SIZE + \epsilon_j$

where,

- α_0 , β_0 = regression coefficients / Constant
- α_i , β_i = regression coefficients / Slope Coefficients i=1,2,....,6
- E_i and E_j = error terms
- ROA = Return on Asset
- NIER = Net Income to Expenditure Ratio
- EAR = Equity to Asset Ratio
- DTL = Debt to Loan Ratio
- DETL= Deposit to Loan Ratio
- DAR = Deposit to Asset Ratio

Above regressions are estimated using panel regression technique.

CHAPTER FOUR

4.0 DATA ANALYSIS

4.1: DESCRIPTIVE STATISTICS:

Table 2 shows the descriptive statistics of both dependent and independent variables and Table: 3 shows the proportion of NIER and ROA of MFIs, where about 84% of MFIs has ROA greater than zero and mean value of ROA is about 2.72%. The standard deviation score of NIER is 1.26 and the spread of minimum and maximum values is from -0.84 to 46.15 with a mean value of 0.24. If the proportion of MFIs is considered, only 0.33% of MFIs has NIER more than 5 which affects the mean of NIER. However, 83.13% of MFIs has NIER more than zero and 16.87% has NIER less than or equal to zero. The mean of Deposit to Asset Ratio is 43% and Equity to Asset ratio is 16%. Most of the MFIs are highly leveraged, shown by the mean DTL of 64%. Again, the mean of DETL is 60%. The average default rate in terms of provision of default loan to total loan is about 1.7%.

Variable	Obs	Mean	Std. Dev	Min	Max
NIER	1,535	0.2370705	1.264884	-0.8430468	46.15266
ROA	1,545	0.0272149	0.0925431	-0.7981663	1.87372
DAR	1,545	0.4265337	5.948581	0	234.0478
EAR	1,073	0.1631065	0.1604394	-1.052481	0.7474034
DTL	1,563	0.6362096	1.128827	0	29.05021
DETL	1,551	0.5959346	8.301851	0	325.681
Risk	1,563	0.0172511	0.0467612	-0.0369679	1.398942
Size	1,547	18.52943	1.885723	12.41364	25.27294

Table 2: Descriptive Statistics

Table 3: Proportion of MFIs' observations and level of NIER and ROA

	No. of observations	Percentage (%)
NIER ≤ 0	259	16.87 %
NIER > 0 to <5	1271	82.80 %
NIER > 5 to <10	4	0.26 %

$NIER \ge 10$	1	0.07 %
Total	1535	100.00 %
$ROA \le 0$	251	16.25 %
ROA > 0 to <5	1294	83.75 %
ROA > 5 to <10	0	0.00 %
ROA ≥ 10	0	0.00 %
Total	1545	100.00 %

Correlation Matrix between NIER, ROA, Independent variables and Control Variables:

Table 4 indicates the correlation matrix for all the variables in the regression model. The values are spreading from -1 to 1 which are known as Pearson Correlation coefficients. A value near to 1 means having a strong correlation and negative value indicates an inverse relationship, that means when one increases other decreases.

 Table 4: Correlation Matrix between NIER, ROA, Independent and Control

 Variables

	NIER	ROA	DAR	EAR	DTL	DETL	Risk	Size
NIER	1							
ROA	0.6885	1						
DAR	-0.0048	-0.0065	1					
EAR	0.2881	0.2284	0.1366	1				
DTL	0.0220	0.0764	-0.0028	-0.1214	1			
DETL	-0.0013	-0.0022	0.9950	0.0689	0.0579	1		
Risk	-0.0792	-0.3756	-0.0038	-0.0041	-0.0009	-0.0039	1	
Size	0.0359	0.0658	-0.0816	-0.0190	0.0354	-0.0828	-0.0456	1

The size of MFIs has a negative impact on Risk. The fact is that as the institution expands, it is able to arrange its structure to ensure repayment of loans and also able to

manage the risk associated with non-payment of loans. However, the coefficient between size and risk is very small and it is not significant with a p-value of 0.07.

The correlation between Deposit to Asset Ratio (DAR) and Deposit to Loan Ratio (DETL) is 0.995. DAR and DETL are almost the same in the case of MFIs as the loan is the major part of the asset for most of the MFIs. That is why, at the time of regression for model-1, DAR was excluded to measure the impact of the independent variable on NIER. Again, for model-2, DETL was excluded to measure the impact of the independent variable on ROA, as DAR and DETL are almost the same.

4.2: REGRESSION RESULTS

The study utilizes unbalanced panel data of different MFIs of Bangladesh for a period of ten years from 2005 to 2014. As all the data are from MFIs of Bangladesh, the operating environment is the same for all MFIs. Table:5 presents the regression results, showing the effect of different measures of capital structure on Net Income to Expenditure Ratio (NIER).

Independent	Random Ef	fect Model		Fixed Effect Model			
Variable	Coefficient	Std Error	p-value	Coefficient	Std Error	p-value	
EAR	0.6519422	0.0849522	0.000	0.2113232	0.1166586	0.070	
DTL	-0.0404781	0.0116809	0.001	-0.122877	0.0116693	0.000	
DETL	0.0215626	0.0148351	0.146	0.0942912	0.0144173	0.000	
Risk	-1.89085	0.2242217	0.000	-2.006688	0.2106253	0.000	
Size	0.0149981	0.0075153	0.046	0.0193064	0.0217192	0.374	
Wald chi2 (5)	159.36			329.90			
Prob > chi2	0.00			0.00			

Table 5: Regression results of Model 1 with NIER as dependent variable

The NIER describes how well MFI can cover its costs through its income. As per regression results, Equity to Asset Ratio (EAR) has a positive and significant impact on NIER with a p-value of 0.000 under the Random effect model. When EAR is increased by 10%, NIER is also increased by 6.52 %. On the other hand, under Fixed effect model EAR positively affects NIER but it is not significant at 5% level.

Again, Deposit to Loan (DETL) has also a positive relation with NIER. However, it is not significant under the Random effect model. Though, under the Fixed effect model, the regression result is significant with a p-value of 0.000.

Size shows positive and significant influence on NIER under the Random effect model. The implication is that when Size is increased by 10 %, NIER is increased by 0.15%.

While Risk, as expected, has a negative effect on NIER and it is significant with a p-value of 0.000 under both models. The NIER is decreased by 18.91 % and 20.07 % when Risk is increased by 10% under the Random effect model and the Fixed effect model respectively.

Debt to Loan Ratio (DTL) has a negative significant impact on NIER under both models which is contrary to the expectation. When DTL is increased by 10 %, NIER is decreased by 0.40% under Random effect model. Among all these variable EAR and Risk are most important because they have more impact on NIER.

Independent	Random Ef	fect Model		Fixed Effect Model			
Variable	Coefficient	Std Error	р-	Coefficient	Std Error	р-	
			value			value	
EAR	0.1108284	0.0136441	0.000	0.067849	0.0242801	0.005	
DTL	0.0039397	0.0017446	0.024	0.0031973	0.001969	0.105	
DAR	0.0152798	0.0185971	0.411	0.0229454	0.0355431	0.519	
Risk	-0.6457785	0.0406714	0.000	-0.6403198	0.0442438	0.000	
Size	0.0021729	0.0011617	0.273	-0.0034844	0.0045779	0.447	
F	47.89			44.13			
Prob > F	0.00			0.00			

 Table 6: Regression results of Model 2 with ROA as dependent variable

ROA indicates profitability as well as the efficiency of MFIs. The regression results using Return on Asset (ROA) as the dependent variables to measure the performance of MFIs and EAR, DTL, and DAR as a measure of capital structure are presented in Table 6 using the Random effect model and Fixed effect model. Results show EAR and Risk have a strong impact on ROA compared to DTL, DAR, and size.

Estimation identifies EAR as having a significantly positive effect with a p-value of 0.000 on ROA which supports that the more the assets are financed through equity, there is more profitability. When EAR is increased by 10%, ROA also is increased by 1.11 % under the Random effect model. The same positive and significant result is also observed under the Fixed effect model.

It is also identified that Risk has a significant negative impact on the ROA, which supports the hypothesis that an increased risk leads to a decrease in profitability. when Risk is increased by 10% under the Random effect, ROA is decreased by 6.5 %.

DTL has a positive significant relation with ROA, but its effect is relatively small. When DTL is increased by 100 %, ROA is increased by 0.4 % under the Random effect model.

DAR has a positive impact on return on asset, but it is not significant under both Random Effect Model and Fixed effect Model. Like DAR, size also has a positive effect on ROA but not significant under Random effect model.

Under the Fixed Effect Model, EAR, DTL, DAR have positive relation on ROA and Size, and Risk have negative relation. All results are significant except for DAR and Size.

The whole dataset is divided into two sub-samples based on means of assets to observe if results vary. Sub-sample results do not show much different results from the whole sample results.

Hausman Test: The Hausman test can be used to determine which model is better between Random and Fixed effect models. In this study, the Hausman test is used to differentiate between Fixed effect model and Random effect model in panel data. As the individual effects are not correlated with the other regressors in the model, both random and fixed effects are consistent and random effects is efficient due to the low distance between the models.

The differences between fixed and random effect models (Gelman, 2004):

1. Fixed effects are constant across individuals, and random effects vary.

2. Effects are fixed if they are interested in themselves or random if there is interest in the underlying population.

3. When a sample exhausts the population, the corresponding variable is fixed; when the sample is a small or negligible part of the population the corresponding variable is random.

4. If an effect is assumed to be a realized value of a random variable, it is called a random effect.

5. Fixed effects are estimated using least squares and random effects are estimated with shrinkage.

Results of Hausman test between Random effect and Fixed effect models

Chi2 (5) = (b-B) $((v_b-v_B) (-1))$ (b-B)

= 1113.16

Prob>chi2 = 0.0000

(v_b-v_B is not positive definite)

It describes that Random effect model is better than Fixed effect model.

4.3: DISCUSSION

Findings show that Equity to Asset Ratio (EAR) has positive and significative effects on both NIER and ROA. It is one of the important findings which suggests a preference for equity-based financing at the time of taking the decision about capital structure.

Risk of the MFIs, measured as the proportion of the provision amount against default loans to total outstanding loans, has a negative and significant effect on both operational efficiency and profitability. This is consistent with the hypothesis H4. This finding suggests that reducing risk can decline costs and improve the financial performance significantly; as MFIs with higher nonperforming loans require more resources to manage the higher risk (Hartarska, Nadolnyak, & Shen, 2012).

Size has a positive and significant influence on operating performance of MFIs under Random effect model that relates to Bogan (2012). However, Size has a positive, but nonsignificant impact on profitability. This finding is reasonable as there are fixed and variable expenditures of MFIs that can be influenced by the Size of the organization.

Deposit to Asset Ratio (DAR) which is used to measure the proportion of the assets financed by savings positively impacts on ROA under Random effect model, but it is not significant. Again, Deposit to Loan (DETL) has also a positive relation with NIER but not significant. Though, many MFIs use internal savings during the financial crises to solve the liquidity problems as savings has a relatively low cost of funds (Khanam et al., 2018; Abrar & Javaid; 2016).

This study also found that Debt to Loan Ratio (DTL) has a positive and significant impact on ROA under the Random effect model which is consistent with Abrar and Javaid (2016); Abor (2005); Dorfleitner, Rohe, and Renier (2017); Kar (2012); and Kyereboah-Coleman (2007). However, DTL has a negative and significant effect on NIER. This finding is consistent with the previous studies such as Abor (2007); Cassar and Holmes (2003); and Gleason, Mathur, and Mathur (2000). Reasons being negative are: first, investors do not have confidence to get the return of their invested amount, which is why they charge high interest to MFIs which increases the operating cost of MFIs. Second, institutions depend on more leverage to avoid agency conflicts, thus, this overleveraging negatively affects institution performance (Gleason, Mathur, & Mathur; 2000). Finally, MFIs could be employing debt excessively which is likely to result in high bankruptcy cost which could negatively affect performance (Abor, 2007). Both of these findings of DTL indicate that debt has a negative impact on an institution's operation, but a positive impact on profitability. So, top managers of MFIs need to understand how they can compose their capital structure with both equity and debt so that the MFI might have a positive outcome or performance.

4.4: STUDY CONTRIBUTIONS

This study contributes to the microfinance arena in several ways. First, capital structure theory is principally used in the corporate finance area of classic firms. Despite the differences in terms of objectives and operating modes of microfinance institutions (MFIs), this study has analysed the capital structure and performance using the same theoretical principles and found plausible results. Second, the impact of market-based financing on performance, which is the most commonly used financing mode of MFIs, is different from the usual belief that MFIs can only survive if they are financed by donor funds. Market-based financing and obligations to pay back the borrowed money encourage the MFIs' managers to find innovative ways to deliver their service, keeping in mind that the invested capital needs to be recovered and paid back to borrowers with interest. This pressure improves the productivity of MFIs which is dependent on market-based financing. Third, this study introduced the impact of size and risk of bad loans on

the sustainability of MFIs. It found that size has a positive correlation with ROA whereas risk has a negative correlation with ROA. It indicates that MFIs with less risk in terms of default loan enjoy more profitability and remain more sustainable, as well as the Size of the MFIs, in terms of their assets, also lead to higher profitability and sustainability. Fourth, this study analysed the operating self-sufficiency in terms of Net income to expenditure. This is an indicator that is developed here and describes the extent to which the cost of operations of MFIs can be covered by their own income.

Finally, the study contributes to a better understanding of how the capital structure affects the performances of financial sustainability. Policy makers may be able to adequately decide the capital structure based on the objective of their microfinance services proving that commercial microfinance services can be viable. They may be able to raise funds from internal savings, equity, and commercial sources such as banks, capital markets etc. and create the economy of scale. They will also be able to serve more poor clients and contribute both to financial sustainability, and to societal development. As microfinance continues to evolve both in depth and breadth, an adequate financial structure of the MFIs is needed to provide relevant and useful services to the poor. Overall results lead to the implication that MFIs should properly use capital funds like debt and equity to attain sustainability and profitability.

4.5: LIMITATIONS AND SUGGESTIONS

This study used secondary unbalanced panel data of 187 MFIs of Bangladesh which was collected from The Institute for Inclusive Finance and Development (InM), a Nonprofit research organization in Bangladesh. This dataset contains most of the important MFIs including BRAC, ASA, PKSF, and BURO Bangladesh, but excludes one of the most important MFI: Grameen Bank. Consequently, the data has a certain sample selection bias. There were also some missing data in the dataset.

The dependent variable of the regression model may influence some of the independent variables. As a result, they may have an endogeneity problem. To address the endogeneity problem, usually an instrumental variable technique is used. Unfortunately, this dataset does not have variables which can be used an instrument variable technique.

Performance of MFIs can be measured in several ways using different variables. This study only considered four independent variables, two control variables, and two

dependent variables: Return on Asset (ROA) and Net Income to Expenditure Ratio (NIER) as performance measures of MFIs. Further studies could include more or different dependent, independent, and control variables. This study only considered the financial performance of MFIs of Bangladesh and did not consider social performance. Further studies can be recommended to analyse the effect of capital structure on both financial and social performance of MFIs in Bangladesh. A further study could include Grameen Bank; it would also be interesting to take a closer look at the effects of capital structure on performance.

CHAPTER FIVE 5.0 CONCLUSION

This study attempts to examine how capital structure affects the financial performance of MFIs. The study used the fixed-effect and random effect model to analyse panel data of 187 MFIs of Bangladesh collected from the secondary source. Results show that there is a positive and significant effect of EAR and negative, but significant effect of DTL on operating performance of MFIs from Bangladesh. It implies a preference for equity-based financing over debt-focused financing. It is also found that Size does have a positive significant impact on NIER. This finding is plausible as there are many fixed and variable expenditures related to the Size of the organization which may influence their operational performance. Risk as the proportion of the provision amount against default loans to total outstanding loans has a negative and significant influence on both operational efficiency and profitability. Overall, all these findings contribute to improving the understanding of the capital structure of MFIs in Bangladesh and how it relates to performance and sustainability. This improved understanding could enable policymakers to develop a balanced capital structure for MFIs following the extent of individual capital source's contribution to performance and sustainability.

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