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LIFE-CYCLE STAGE THEORY: THE FUNDING PATTERN OF MICROFINANCE INSTITUTIONS

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ABSTRACT

Microfinance is well-known as a development tool that provides financial services to the poor in improving their lives in a better way. The sustainability of the institutions is the key to robust economic growth of the country especially in developing countries in continuing the intention in alleviating the poor and improving living standards of the poor. By using life-cycle stage theory as a lens, this paper identifies the funding pattern of MFIs in each stage alongside their institutions' life cycle. Based on longitudinal data of 10 years (2005-2015) of 2, 330 MFIs operating across 116 countries, this paper provides an insight into funding pattern of MFIs towards their sustainability, by using MFIs financial structure as the main characteristic in explaining the pattern. Findings reveal new MFIs are heavily dependent on soft loan from the government for initial capital for financial survival. When they grow in operation, young MFIs rely on borrowings and deposit as a source of fund, while mature MFIs are more inclined to use total assets and borrowings as their primary funding or long-term financial sustainability.

Keywords: Funding Pattern; Financial Structure; Life-Cycle Stage Theory; Sustainability

INTRODUCTION

It is well-known that microfinance institutions (MFIs) help the poor gain access to formal financial services. However, most MFIs expose to the systematic risk of undiversified loan portfolios and mobilise few savings, which leads them to depend on donors and governments to fund their growth and financial self-sufficiency (Zeller & Meyer, 2002). The funding is crucial for MFIs to reduce transaction costs involving in serving the poor as a borrower to be an entrepreneur because it requires a high cost to the MFIs by offering a loan in small size and a small amount of deposit savings to suit the needs of new entrepreneurs in opening small businesses. Therefore, MFIs receive financial supports regarding soft capital and grants from donor community such as multilateral banks, government aid agencies, foundations, and apex organisations (Fehr & Hishigsuren, 2006). These funds are at a low-interest rate to stimulate initial capital to achieve the social goal set by those donors' community (Fehr & Hishigsuren, 2006). All financial providers make a move to meet the promise of reaching the poor, by providing large funds for MFIs to offer loans to the unprivileged people with a low-interest rate, easy access, and low collateral to open a new small business.

Donors play an essential role in microfinance, providing following services; grants for institutional capacity buildings, grants to cover operating shortfalls, grants for loan capital and equity, concessional loans to fund on-lending, lines of credit, guarantees for commercial funds, and technical assistance (Ledgerwood, 1998). However, many institutions move to traditional sources of capital financing (Fehr & Hishigsuren, 2006), which are equity and debt financing. The transition from non-commercial capital to commercial capital occurs along with their maturity level and involves regulation.

Prior literature (Cull, Demirgu̇ç-Kunt & Morduch, 2007; Adhikary & Papachristou, 2014; Abdulai & Tewari, 2017) intensely debate on the trade-off between financial and social objectives by MFIs. They argue the emerging of mission drift between profitability and sustainability of MFIs while serving the poorest to suit their current goals when expanding their scale of operations. However, only a few literatures address the funding pattern of MFIs from the institutions' life-cycle theoretical perspectives. Therefore, by using life-cycle theory as a lens, this paper focuses mainly on theoretical views by exploring the funding pattern of MFIs in each stage of their operation life cycle, towards fulfilling their dual mission, outreach, and financial sustainability. This paper explores whether MFIs are shifting towards their financial and operational sustainability, changing their

social mission when they grow-up in business and operations. By using pooled panel data of 2,330 MFIs of 116 countries from 2005 to 2015, this paper implies that new MFIs heavily dependent on the government support for financial survival, young MFIs rely on debt and deposits in a growth stage, while mature MFIs rely more on assets debt for their operational and financial sustainability.

The rest of the paper is organised as follows. Section 2 discusses the providers of MFIs and theoretical underpinnings, and develop proposition linking MFIs financial structure with business life-cycle stage theory. Section 3 discusses the data and empirical methodology. Section 4 reports descriptive statistics and regression results. The last section concludes this paper.

LITERATURE REVIEW

Providers of MFIs

It is important to understand the financial provider of microfinance institutions. According to Ledgerwood (1998), microfinance providers divide into three types based on their financial characteristics and funding sources: formal, semi-formal, and informal providers. Formal providers are financial institutions bound with banking regulation and supervision set by state and governments, consisting of private and public sector institutions. Private institutions such as commercial

banks and cooperative banks supply large loans to borrowers above the poverty line. On the other hand, public institutions such as savings institutions and rural banks, offer microfinance to the poor near poverty or below poverty line under the welfare program. Sources of fund for formal provider include savings and deposits, government-distributed grants and donors, cross-border funds, securitisations, borrowings, bonds, equity, and international capital.

Semi-formal providers are institutions that receive a license to operate as financial institutions and under supervision by other government agencies, but subject to commercial law only, not to banking laws and regulations. This provider includes non-bank financial institutions (NBFIs), credit union and non-government organisations (NGOs), where they provide microfinance with the medium amount and focus attention to deposit from borrowers. International or local donors, the government supports, and subsidies are the primary sources of funds for this provider.

Meanwhile, informal institutions do not comply with any regulations and supervision, such as non-registered self-help groups, moneylenders, pawnshops, and traders, where they provide a small amount of credit to the borrower and unable to attract deposits (Hollis & Sweetman, 2007). Table 1 provides a basic example on MFIs provider.

Table 1: Actor of MFIS Provider

Name	Subtype	Definition	Example
Development Finance Institution (DFI)	None	Financial institutions owned by a government or governments and that raise private capital to finance projects with development objectives	IFC, SIDBI
Government	Multi- and Bilateral Development Agency	Bilateral or multilateral aid agencies, owned by governments	JICA, UNCDF
Government	Development Program	Government or other public program with development objectives.	USAID-Tijara, IDESI National, CAMFA
Government	Government Agency/ Program	The administration, departments, or agencies of any sovereign entity	Ministry of Finance - Luxembourg, BmZ Deutsch - GEO
Government	Regulator	A domestic central bank	Central Bank of BiH, IAS
Financial Institution	Commercial bank	Bank or other regulated financial institution where private entities are majority shareholders	Citibank Nicaragua, Banplus
Financial Institution	Cooperative Society	Financial institution owned by its members, not external shareholders	ALTERFIN, Consorzio Etimos
Financial Institution	Public bank	Bank or other regulated financial institution where the government is a majority shareholder.	United Bank of India, Republic of Srpska Investment-Development Bank
Fund	None	Professionally managed type of collective investment scheme that pools money from many investors	Dexia Microcredit Fund, Minlam Microfinance Fund, Oikocredit
Other	Private corporation	Registered legal entities. The category does not include governments, non-profits, funds , or financial institutions	Genesis Steel
Other	NGO or self-help group	Non-governmental organization	CORDAID, CARE
Other	Foundation	A non-profit corporation or other non-profit entity	ECLOF, FWWB, Hivos
Other	Individuals	A person or persons	

Source: Sapundzhieva (2011)

Theoretical underpinnings

Microfinance Institution financial structures' theories have been developed and tested among scholars because of its unique funding structure, such as Agency Theory, Profit-Incentives Theory, Trade-off Theory, Pecking-Order Theory, and Life-Cycle Theory, which are discussed briefly below.

Agency theory or principal-agent theory involves one party as principal and another party as an agent, which carry principal agents on behalf of the principal (Jensen & Meckling, 1976). However, both parties have a conflict of interest where in this case, the principal, who is the donors, persists on focusing welfare mission, meanwhile the agents, MFIs management are in pursuit with profitability for the sake of the institutions' financial position. This cost-efficiency and benefit-efficiency issue has been discussed in the finance literature, for instance, Kyereboah-Coleman (2007), Mersland (2009), Dawar (2014).

Profit-Incentive's theory, also known as venture capitalist approach, applies when MFIs relies on commercial funding compared to donor funding to meet the needs of the poor and at the same time being financially viable. This is because, donor funding has a limit in quantity, and has received many criticisms (Hudon & Traca, 2011; Vanroose & D'espallier, 2013; and Nawaz, 2010) where the heavy dependence of subsidies for operating costs restrains MFI efficiency.

Trade-off theory by Myers (1984) describes the decision-maker of the firm evaluates firm cost and benefit of alternative leverage plans. In microfinance case, it is related to trading off the outreach with profitability, between pursuing institutions' social mission, reaching the poor or financial mission, and being financially sustainable. These mission drift issues have been debated intensely in previous studies, for instance, Cull, Demirgü¨ç-Kunt & Morduch (2007), Anduanbessa (2009), Hermes, Lensink & Meesters (2011).

Pecking Order Theory introduced by Donaldson in 1961, posits that institutions use internal funding instead of external funding where they use retained earnings or liquid assets to finance their investments and will support with any of external funds if internal funding insufficient. The reason is to avoid raising an external fund to cover the equity used for investment financing (Luigi & Sorin, 2009).

Life-Cycle Theory is related to MFI development where the transition into private capital takes place (Farrington & Abrams, 2002; de Sousa-Shields & Miamidian, 2004). In the early stage, MFIs focusing on a social mission where their primary funding sources are grants and soft loans from donors and social investors; and when MFIs reach maturity, MFIs focus on attracting private capital to fund their sources financial sustainability. Based on reviews of all theories above, this paper uses Life-Cycle Stage Theory as a lens to formulate testable propositions on MFIs funding patterns concerning on how the choices of MFIs sources of fund in each stage of their institutions' life cycle might affects the goals in reaching to the poor, moving towards institutions' financial sustainability.

Life-Cycle Stage Theory: The link with financial structure and firm-specific characteristics

Prior literature suggests new MFIs at the formative stage receive grants, soft or subsidies loans from governments, donors, or charitable institutions, with the primary mission of reducing poverty as they are not sustainable to attract commercial funding (de Sousa-Shields & Miamidian, 2004; Fehr & Hishigsuren, 2006; Mersland & Urgeghe, 2013). Besides, they suggest MFIs at this stage fund themselves, which can be in the form of tangible or intangible assets. Funding at this early stage is essential for the operational self-sufficiency of MFIs in achieving the poor's objectives through a loan. Thus, the first proposition is:

Propositions 1: New MFIs depends more on assets and equity funds in early stage for survival

The next stage is the growth stage where the institutions are growing in assets and operations, categorise into young MFIs. According to the theory of life-cycle stage of MFIs, young MFIs needs more capital and acquire large sums of long-term debt to achieve economies and operational scale, in which the investors in this stage are from large multilateral financial institutions, commercial banks, and private investments funds (de Sousa-Shields & Miamidian, 2004). Mersland & Urgeghe (2013) emphasise that young MFIs at this stage must increase their scale and gain market shares through retained earnings and subsidised loan as primary sources of funding. This is because internal resources are insufficient for these young institutions to support their businesses (Rocca, Rocca & Cariola, 2011) These sources of fund are the combination of both commercial and non-commercial capital, where young MFIs are in transmission process by opting to debt and equity financing, at the same time relies on donation and subsidies to support the operation. It means that MFIs require mezzanine financing or equity infusions and require them to

prepare for public share offerings (de Sousa-Shields & Miamidian, 2004). Compulsory savings also are used to support the operation in the case of borrowers' default. Second propositions as follows:

Proposition 2: In the growth stage, young MFIs less depends on assets, but rely on equity financing and debt financing for their institutions' growth

As MFIs grows, capital will decrease over time, means capital have a downward slope due to their advantage of increased borrowings (Ledgerwood, 1998; Hoque & Halloway, 2011). This is because the maturity level of MFI has curve effects where MFI below 18 years operation has a positive correlation, but it turns into negative correlation after 18 years, indicating that MFI with a matured level of operation leads to less performance (Al-Azzam, Hill & Sarangi, 2012). At the maturity stage, MFIs are similar like other formal financial institutions, where their financing will be in large volume but low costs, such as commercial bank loans, retained earnings, deposits, and medium-term debt (de Sousa-Shields & Miamidian, 2004; Hoque & Halloway, 2011). They also suggest commercial bank debt can be important, as deposit, for those MFIs can collect them legally. Based on other studies (Rocca, Rocca & Cariola, 2011) on the firm life cycle, enhancing firms in this stage have higher debt financing.

Cull, Demirgü̈ç-Kunt & Morduch (2007) address that when institutions grow and mature, they tend to increase clients to sustain financial position in the market. Therefore, this indicates that if the MFIs with high dependencies on deposit-taking are usually large institutions as they meet minimum capital requirements, they focus on offering a larger loan to meet the borrower's demand. Deposit regulation applies for regulated entities; thus, they will face management challenges to transform into regulated institutions. They also need to meet a minimum capital requirement by regulatory authorities (Fehr & Hishigsuren, 2006), suitable for mature MFIs, impossible for MFIs in the beginning stage of growth. Based on the above arguments, this paper posits the following propositions:

Propositions 3: In a mature stage, matured MFIs utilise all types of resources; however, highly relies on debt financing and deposits for financial sustainability.

The link between firm-specific characteristics and life-cycle stage

In this section, this paper discusses how firm-specific characteristics such as regulations, legal ownership

status, and size that used as control variables influence MFIs life-cycle stage. It is underlined that appropriate regulations and supervisions for MFIs microloan portfolios be safely funded with commercial sources (Ledgerwood, 1998). Hartarska & Nadolnyak (2007) emphasise that regulated MFIs achieve social mission better when collecting deposits and savings, despite the source coming from more affluent clients who bear the fixed costs.

Young MFIs in the growth stage prepare a transition to regulated entity by complying with banking regulations and transparency standards to receive deposits and easy access to commercial funding (Mersland & Urgeghe, 2013). At maturity stages, matured MFIs are completely transformed into regulated institutions where MFIs financing focuses on the cost and flexibility of funds, instead of the number of loans offered (de Sousa-Shields & Miamidian, 2004). This explains those MFIs at this stage, focusing on people above the poverty line instead of poor people below or near the poverty line, for financial sustainability purposes and increasing retained earnings for stockholders.

The primary purpose MFIs transform to regulated MFIs are due to the desire of long-term financial viability, which can be attained through transformation by accepting voluntary deposits, entering the inter-bank market, or opening access to credit lines (Berenbach & Churchill, 1997). Besides, transformed MFIs better access to commercial funding and can access voluntary client deposit savings in most jurisdictions, which is the core source of a funding strategy for financial institutions because savings mobilisation is considered cheap sources of a fund but stable and reduce the dependency level of external borrowing (Fehr & Hishigsuren, 2006; Pati, 2014).

MFIs governance varies according to their ownership status, for instance, NGOs and cooperatives do not have rights to distribute profit as their governance does not tie to ownership due to lack of financial knowledge or less experience in risk management, compared to NBFIs and banks (Servin, Lensink & van den Berg, 2012). Also, central banking authorities do not regulate NGOs and cooperatives because they do not offer saving product, unlike NBFIs and banks.

RESEARCH METHODOLOGY

Data

This paper involves secondary data collected from the Microfinance Information Exchange database. It is a data hub of self-reported MFIs on their financial,

operational, and social information. This paper covers 10 years period (2005-2015) of 2,330 MFIs across 116 countries. Meanwhile, information on countries macroeconomic and demographic is gathered from World Bank portal.

Method

This paper employs a pooled ordinary least square (OLS) model, assuming that the variance of the errors is unrelated to any predictor or any linear combination of the predictor variables (Hayes & Cai, 2007). The dependent variable, life-cycle stage of MFIs (new, young, mature), as Mix Market classifies based on their microfinance operations (the differences between the year they started their microfinance operations and the year of data submitted by the institutions). Further details can be referred to in Table 2. This paper runs OLS regression with independent variables (financial structure and sustainability) through STATA software.

The main explanatory variable is the financial structure (total assets, total equity, total borrowings, and total deposit), which reflect funding sources in each MFIs life cycle stage. This paper chose sustainability as a measurement to compare whether MFIs truly shifted their social mission into their financial and operational sustainability. Mix Market groups MFIs' sustainability according to their self-sufficiency level (financial self-sufficiency, non-financial self-sufficiency, operating self-sufficiency, and non-operating self-sufficiency), representing their ability to cover all costs. In a microfinance context, institutions' financial self-sufficiency is where they have enough revenue to pay for all the administrative costs, loan losses, potential losses, and fund. Meanwhile, operating self-sufficiency measure the ability to cover the costs through operating incomes (financial expenses, impairment losses on loans and operating expenses).

Table 2: Summary Statistics

Variables	Description	Mean	Std. Deviation	Min	Max
Dependent:					
Maturity level:					
New	1 to 4 years of microfinance operations	0.164	0.370	0	1
Young	4 to 8 years of microfinance operations	0.186	0.389	0	1
Mature	More than 8 years of microfinance operations	0.650	0.477	0	1
Independent:					
Financial structure:					
Assets	Ln; net of all contra-asset's accounts (such as loan loss allowance and accumulated depreciation).	15.488	2.315	0	24.567
Equity	Ln; shareholder's fund; sum of all equity accounts, less any distributions.	14.150	2.360	0	22.587
Borrowings	Ln; all borrowings from financial institutions at a market price or below market interest rate.	10.660	6.731	0	22.993
Deposits	Ln; to tal value of funds placed in an account, whether voluntary or compulsory (conditional of loan)	7.298	7.561	0	24.089
Sustainability:					
Financial self - sufficiency	Operating Income (Loans+Investments) - Operating Costs + Loan Loss Provisions + Financing Costs + Adjusted Cost of Capital 1 if Financial self-sufficiency = 100%, 0 otherwise	0.001	0.025	0	1
Non-financial self - sufficiency	1 if Financial self-sufficiency < 100%, 0 otherwise	0.001	0.027	0	1
Operating self - sufficiency	Financial revenue/ (financial expense on funding liabilities + Net impairment loss on gross loan portfolio + operating expenses) 1 if Operational self-sufficiency = 100%, 0 otherwise	0.737	0.440	0	1
Non-operating self - sufficiency	Financial revenue/ (financial expense on funding liabilities + Net impairment loss on gross loan portfolio + operating expenses) 1 if operational self-sufficiency < 100%, 0 otherwise	0.262	0.440	0	1

Non-operating self-sufficiency	Financial revenue/ (financial expense on funding liabilities + Net impairment loss on gross loan portfolio + operating expenses) 1 if operational self-sufficiency < 100%, 0 otherwise	0.262	0.440	0	1
Legal form:					
MFI-bank	1 if Yes, otherwise 0.	0.092	0.289	0	1
Cooperatives	1 if Yes, otherwise 0.	0.173	0.378	0	1
NGOs	1 if Yes, otherwise 0.	0.338	0.473	0	1
Rural bank	1 if Yes, otherwise 0.	0.043	0.205	0	1
Others (NBFIs)	1 if Yes, otherwise 0.	0.353	0.478	0	1
Controls:					
Regulation:					
Regulated	1 if institutions submitted to some regulatory authority, 0 otherwise	0.665	0.472	0	1
Non-regulated	1 if institutions not submitted to some regulatory authority, 0 otherwise	0.335	0.472	0	1
Profit status:					
Profit-oriented	Registered as a for profit institutions	0.428	0.495	0	1
Non-profit oriented	Registered as a non-profit status	0.572	0.495	0	1
MFI size	Ln; number of MFI branches.	2.419	1.309	0	4591
Gross domestic product	Ln; the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	25.003	1.995	19.578	30.035
Population density	Ln; midyear population divided by land area in square kilometres	4.446	1.168	0.966	7.122
Inflation	The consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly	6.918	5.146	-10.068	53.231
Region:					
Sub-Saharan Africa (SSA)	1 if Yes, otherwise 0. Countries included: Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea -Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, and Sierra Leone.	0.207	0.405	0	1
East Asia and Pacific (EAP)	1 if Yes, otherwise 0. Countries included: Cambodia, People's Republic of China, East Timor, Fiji, Indonesia, Laos, Malaysia, Myanmar (Burma), Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Tonga, and Vietnam.	0.123	0.328	0	1
East Eastern and Central Asia (EECA)	1 if Yes, otherwise. Countries included: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Kazakhstan, Kosovo, Kyrgyzstan, Macedonia, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Tajikistan, Turkey, Ukraine, and Uzbekistan.	0.174	0.379	0	1
Latin America and the Caribbean (LAC)	1 if Yes, otherwise. Countries included: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Suriname, Trinidad and Tobago, Uruguay, and Venezuela.	0.287	0.452	0	1
Middle East and North Africa (MENA)	1 if Yes, otherwise. Countries included: Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Sudan, Syria, Tunisia, and Yemen.	0.043	0.203	0	1
South Asia (SA)	1 if Yes, otherwise. Countries included: Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka.	0.166	0.372	0	1

MFIs ownership legal form consists of bank, cooperatives/credit union, NGOs, rural bank, and others such as NBFIs, which Mix Market defines as follows. Microfinance bank is a licensed financial intermediary regulated by a banking supervisory agency that provides several financial services such as deposit-taking, lending, payment services, and money transfers. Cooperatives or credit union is a non-profit, member-based financial intermediary, under supervision of regional or national cooperative council, may offer a range of financial services, including lending and deposit-taking, for its members' benefit. NGOs registered as non-profit and not regulated by banking supervisory agency, in which its financial services are more restricted, and does not take a deposit. The rural bank is a banking institution that targets clients who live and work in a rural area mostly involved in agricultural-related activities. NBFIs provide similar financial services like banks, but licensed under different state agencies, due to lower capital requirements, and have limited financial services offerings.

Furthermore, MFIs' profit status, regulation, size, years, region, and macro-economic variables such as GDP, inflation and population density are also used as controlled variables to prevent any biased results.

RESULTS & DISCUSSION

Descriptive statistics

Figure 1 shows the percentage of MFIs classified into their sustainability in each of their maturity stages. Over 10 years (2005-2015), it is surprising that new MFIs are more operationally sustainable with 71 per cent, followed by mature MFIs and young MFIs. In terms of financial self-sufficient, most matured MFIs with 50 per cent are more profitable to generate sufficient revenue to cover the costs, followed by new MFIs and young MFIs. This pattern can indicate that mature MFIs are indeed focusing on pursuing and maintaining their financial sustainability, which is crucial for long run.

Figure 1: Percentage of Sustainable MFIs Over Maturity Status
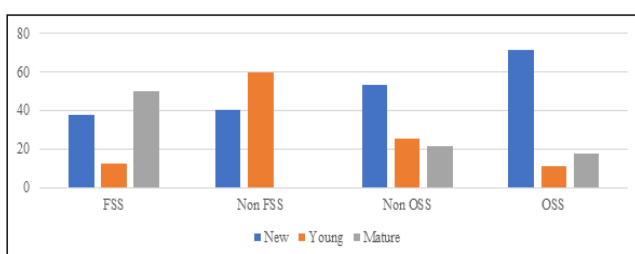

When divided into legal ownership status, cooperatives have the highest percentage of being financially self-sufficient, while NBFIs has the highest percentage of operationally self-sufficient. This result can suggest that NBFIs and cooperatives are more inclined to pursue their operational and financial sustainability than the rest of MFIs. Meanwhile, the rural bank has the lowest non-operational self-sufficient with 1.09 per cent, because they are more focused on reaching the rural population by providing small loans.

Figure 2: Percentage of Sustainable MFIs Over Ownership Legal Status
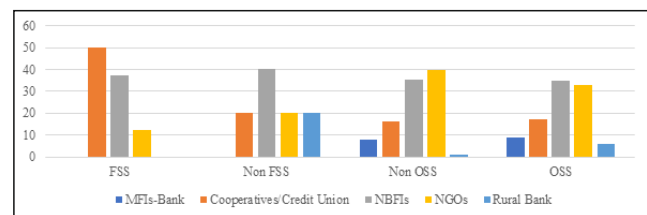
For the regional patterns on MFIs' sustainability, MFIs in Eastern Europe, and Central Asia (EECA) region lead with 62.5 per cent of being financially sustainable compared to other regions and followed by MFIs in South Asia region with 25 per cent. On the other hand, MFIs in both Sub-Saharan Africa and East Asia and Pacific (EAP) region are the most non-financially sustainable with 40 per cent. For operational self-sufficiency pattern, MFIs in Latin America, and the Caribbean (LAC) are growing with 30.88 per cent, followed by MFIs in the EECA region. Meanwhile, MFIs in the Sub-Saharan Africa region has 21.23 per cent being non-operationally sufficient. This result concludes that MFIs in Sub-Sharan Africa has the highest percentage of being non-financial and non-operational sustainable.

Figure 3: Percentage of Sustainable MFIs Over Region
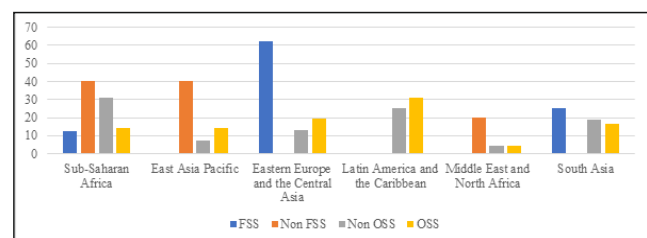
Regression Analysis

The OLS regression result reported in table 3 shows new MFIs surprisingly less depending on assets, borrowings, and deposits in their early stage, contradicting the theoretical proposition by de Sousa-Shields & Miamidian (2004) indicating MFIs at this stage relies on assets and shareholders' fund. When it

comes to sustainability, new MFIs are negatively significant, indicating they are not financially and operationally sustainable in this early stage. They might rely on soft capital or soft loan from the state or government for initial capital.

Table 3: OLS Regression Result (robust est.)

Variables	Maturity level: New	Maturity level: Young	Maturity level: Mature
Financial structure: Assets	-0.0398***	-0.0189***	0.0587***
	(0.00517)	(0.00565)	(0.00625)
Financial structure: Equity	-0.00112	0.00126	-0.000144
	(0.00474)	(0.00465)	(0.00518)
Financial structure: Borrowings	-0.00717***	0.00187**	0.00530***
	(0.000749)	(0.000808)	(0.000885)
Financial structure: Deposits	-0.000948*	0.00139**	-0.000438
	(0.000554)	(0.000667)	(0.000735)
Sustainability: FSS	-0.238***	0.233	0.00461
	(0.0640)	(0.238)	(0.230)
Sustainability: OSS	-0.0790***	-0.00744	0.0865***
	(0.00880)	(0.00975)	(0.0105)
⁺Sustainability: Non-FSS			
⁺Sustainability: Non-OSS			
Legal form: MFI-bank	0.0754***	-0.0529***	-0.0225
	(0.0136)	(0.0150)	(0.0167)
Legal form: Cooperative	-0.0932***	-0.0653***	0.159***
	(0.0133)	(0.0154)	(0.0170)
Legal form: NGO	-0.116***	-0.0580***	0.174***
	(0.0123)	(0.0148)	(0.0158)
Legal form: Rural bank	-0.223***	-0.178***	0.401***
	(0.0156)	(0.0195)	(0.0226)
⁺ Legal form: NBFIs			
Profit-oriented	0.0767***	0.0640***	-0.141***
	(0.0115)	(0.0134)	(0.0146)
⁺Non-profit oriented			
Regulated	0.0146*	-0.0285**	0.0138
	(0.00882)	(0.0111)	(0.0120)
⁺Non-regulated			
MFI-size	-0.00235	-0.0134***	0.0157***
	(0.00398)	(0.00478)	(0.00533)
GDP	0.0162***	0.0155***	-0.0317***
	(0.00209)	(0.00252)	(0.00265)
Population density	-0.00617*	-0.0132***	0.0193***
	(0.00364)	(0.00453)	(0.00471)
Inflation	-8.72e-05	-0.000410	0.000497
	(0.000807)	(0.000946)	(0.00106)
East Asia and Pacific	-0.0111	-0.0523***	0.0635***
	(0.0152)	(0.0183)	(0.0200)
Eastern Europe and Central Asia	-0.0327**	0.0140	0.0187
	(0.0135)	(0.0159)	(0.0166)
Latin America and The Caribbean	-0.0623***	-0.116***	0.178***
	(0.0113)	(0.0138)	(0.0150)
Middle East and North Africa	0.0388**	0.00670	-0.0455*
	(0.0192)	(0.0224)	(0.0246)
South Asia	-0.0249	-0.00474	0.0296
	(0.0153)	(0.0185)	(0.0198)
⁺Sub-Saharan Africa			
Years	Included	Included	Included
Constant	0.623***	0.271***	0.106
	(0.0674)	(0.0809)	(0.0866)
Observations	9,879	9,879	9,879
R-squared	0.219	0.057	0.260

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

This paper finds that young MFIs rely more on borrowings and deposits in the growth stage life cycle and less on assets. As predicted in the second proposition, as young MFIs grow in operations, they require large sums of long-term debt to achieve economies and operational scale (de Sousa-Shields & Miamidian, 2004), alongside compulsory savings. This finding reflects prior studies (Rocca, Rocca & Cariola, 2011; Mersland & Urghehe, 2013) on the significant increase of operation scale by young MFIs to gain market shares through retained earnings and subsidized loan for financial support.

Furthermore, mature MFIs are expected in the third proposition that they depend on borrowings and assets for operationally sustainable in this mature stage of life cycle. But they are leaning to use assets rather than relying on deposit, contradicting with the theoretical prediction. The plausible explanation is as MFIs grows and matured, the financing is in large volume, to meet the high demand of loan form borrower (de Sousa-Shields & Miamidian, 2004; Hoque, Halloway & Muhammad, 2011). As a robustness check, this paper runs logit binary estimation, and the logit results are like OLS regression, thus excluded in the report. The findings are simplified in figure 4.

Figure 4: Findings on MFIs Life-cycle Funding Pattern
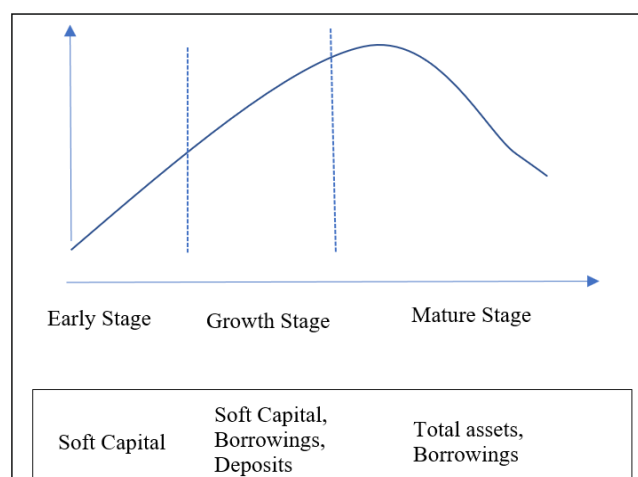
CONCLUSION

This paper uses a life-cycle theory as a lens to identify the impact of MFIs chosen funding sources in each stage of their life cycle, towards fulfilling their dual mission, outreach, and financial sustainability. Based on pooled panel data of 2, 330 MFIs in 116 countries of 10 years (2005-2015), this paper finds as MFIs growing in operation; they are more profitable in running their

businesses. Results from studies also support this argument that many MFI has difficulties achieving break-even points at an early stage and will achieve profitability in the long run. This finding also implies that MFIs rely more on debt financing at a mature stage, reflecting prior findings on the significance of international fund when MFIs grew older and are more commercial market based. This shows mature MFIs survival is at stake, thus require them to depend more on commercial funding concerning business life cycle theory. This paper gives an insight into the effect of an increase in commercialisation of capital towards MFIs social goals in the long-term.

However, scholars in the microfinance field widely use the secondary longitudinal data from Microfinance Exchange Market (M.I.X Market) because it is readily available on the website. Thus, this limits this paper to carry extensive research on the impact of chosen funding instruments on MFIs performance in maintaining their financial sustainability. Hence, future research can include additional data from other sources for broader analysis.

Conflict of Interests

The author declares that she has no conflict of interest.

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