The Impact of Free Cash Flow on Performance in Microfinance Institutions and Its Moderators

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To my family and my parents

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3. Yan, Z. Corporate governance and free cash flow in microfinance. Working paper.

OVERVIEW OF THE DISSERTATION: THE IMPACT OF FREE CASH FLOW ON PERFORMANCE IN MICROFINANCE INSTITUTIONS AND ITS MODERATORS

1. Introduction

The importance of hybrid organizations, which provide market-based solutions to social and environmental issues, has been growing in response to the increasing demand for socially and environmentally conscious products and services (Tabares, 2021). These hybrid organizations, also known as social enterprises or the fourth sector, offer sustainable approaches to address various social challenges such as unemployment, poor health, and illiteracy (Moroz & Gamble, 2021). They serve as innovative solutions to fill institutional voids when governments worldwide face resource limitations as they struggle to effectively tackle numerous social problems (Villani, Greco, & Phillips, 2017). The establishment of hybrid organizations has garnered significant interest from policymakers, investors, and scholars worldwide (Secinaro, Corvo, Brescia, & Iannaci, 2019).

One prominent example of a hybrid organization is the microfinance institution (MFI) (Lam, Zhang, Ang, & Jacob, 2020). MFIs aim to alleviate poverty, empower individuals, and promote economic development by providing access to capital and financial resources, such as small loans, savings accounts, and insurance, to low-income individuals and communities that are typically excluded from traditional banking services (Chikwira, Vengesai, & Mandude, 2022). Operating with dual goals of achieving social impact and financial sustainability (Daher & Le Saout, 2013), MFIs play a crucial role in addressing institutional voids and resource constraints in many developing countries (Bharti & Malik, 2022). To fulfill their social mission, MFIs need to maintain a certain level of profitability to cover high operational costs (Cull, Demirgüç-Kunt, & Morduch, 2018) and reduce funding risk (Cull, Demirgüç-Kunt, & Morduch, 2009). Their innovative approach and focus on social inclusion make MFIs a prominent example of a hybrid organization that bridges the gap between the social and financial sectors.

Over the years, microfinance has experienced remarkable growth in terms of the number of households served, funding sources, and the size of MFIs (Liñares-Zegarra & Wilson, 2018). This growth has been accompanied by a shift in funding from donors to subsidies and more recently, from subsidies to the international capital market (Green, 2023). As a result, some MFIs may accumulate excess cash reserves even after achieving their dual

goals (Lopatta, Tchikov, Jaeschke, & Lodhia, 2017). This surplus cash, known as free cash flow (FCF), has significant implications for the performance and sustainability of MFIs. Additionally, the transformation of certain leading MFIs from philanthropic organizations to regulated banks, along with an increase in competition between MFIs, has introduced new challenges (Caballero–Montes, Godfroid, & Labie, 2021). In certain countries and regions, the saturation of microfinance supply has created pressure on MFIs to develop effective strategies to maintain their market position and financial performance (Mia, Lee, Chandran, Rasiah, & Rahman, 2019). Given these dynamics, it is crucial to understand the concept of FCF and its implications for MFIs.

Agency theory suggests that the separation between ownership and control in firms leads to an agency problem, where managers may prioritize their personal interests over the interests of shareholders (Jensen, 1986). In firms with high FCF and limited growth opportunities, managers may engage in nonvalue-maximizing decisions, resulting in FCF overinvestment (Lang, Stulz, & Walkling, 1991). In the context of microfinance, the agency problems associated with FCF include overinvestment in risky projects, poor lending practices, and weak financial performance (Al-Fasfus, 2020).

Despite the potential significance of FCF overinvestment in microfinance, there is a notable research gap regarding the impact of FCF overinvestment on MFI performance and the available mechanisms for mitigating this problem. Therefore, this dissertation has two primary objectives: (1) to investigate the practice of FCF overinvestment in microfinance and its implications for performance, and (2) to explore potential mechanisms for addressing FCF overinvestment. Specifically, this study will examine two key mechanisms, namely debt utilization and corporate governance, as means to control FCF overinvestment in microfinance.

The findings of this research are expected to have substantial implications for policymakers, regulators, investors, and MFI managers. By shedding light on the relationship between FCF overinvestment and MFI performance, as well as the effectiveness of debt and corporate governance in mitigating FCF overinvestment, this research aims to provide valuable insights and recommendations for enhancing MFI performance, sustainability, and social impact. Ultimately, the research endeavors to

contribute to the development of informed strategies and practices within the microfinance industry.

Overall, this research is timely and relevant in the context of the increasing importance of MFIs in promoting financial inclusion and poverty reduction. The research aims to contribute to the existing literature on FCF in microfinance, agency problems, and corporate governance while offering practical insights for shareholders in the microfinance industry.

2. Understanding Hybrid Organizations: Microfinance Institutions

Hybrid organizations are characterized by their unique integration of activities, structures, processes, meanings, and organizational forms from different domains (Battilana & Lee, 2014). These organizations effectively combine social and financial goals, operating with multiple institutional logics (Gamble, Parker, & Moroz, 2020). Their primary objective is to address sustainable development challenges, ranging from poverty and inadequate healthcare to illiteracy, unemployment, and pollution, by employing innovative business models that bridge institutional voids in a sustainable manner (Tabares, 2021).

Hybrid organizations can be traced back to the 1970s, when a growing number of social entrepreneurs started experimenting with novel organizational structures (Minkoff, 2002). Their expansion was facilitated by the growth of the social enterprise movement and shifts in regulatory frameworks (Chan, Ryan, & Quarter, 2017). Given their distinctive approach to solving social and environmental problems, hybrid organizations have garnered significant attention from scholars (Grossi, Kallio, Sargiacomo, & Skoog, 2020), policymakers, and practitioners worldwide (Wilson & Post, 2013).

Hybrid organizations differ from both for-profit (Siqueira, Guenster, Vanacker, & Crucke, 2018) and non-profit organizations (Doherty, Haugh, & Lyon, 2014). In contrast to for-profit organizations that prioritize profit maximization over corporate social responsibility, hybrid organizations prioritize the social goal over the financial one (Haigh, Walker, Bacq, & Kickul, 2015). In contrast to non-profit organizations that primarily rely on donations or charity, hybrid organizations strive for long-term financial sustainability through business income or commercial funding sources (Doherty et al., 2014).

MFIs are considered hybrid organizations because they combine social goal and financial goal (Lam et al., 2020). They aim to provide financial services, including loans and savings, to individuals and small businesses who lack access to traditional banking services (Agaba & Mugarura, 2023). Yet, to achieve their social goal of promoting financial inclusion and reducing poverty, they must also achieve financial sustainability and profitability (Sangwan & Nayak, 2019).

MFIs face challenges in finding the right balance between their social and financial goals (Hermes & Lensink, 2011). In pursuing their social goal, MFIs run the risk of lending to individuals with limited creditworthiness, which can negatively impact their financial performance. On the other hand, in pursuing their financial goal, they run the risk of lending at high interest rates, which can negatively impact their social performance (Bensalem & Ellouze, 2019; Hermes & Lensink, 2011). To address this tradeoff, MFIs need to implement strategies that combine far-reaching social practices with prudent financial practices, such as risk management and service diversification (Hermes & Lensink, 2011). Only by such means can MFIs hope to strike the right balance between their social and financial goals.

MFIs can take various organizational forms, including banks, non-bank financial institutions, cooperatives, and non-governmental organizations (NGOs). These forms can be categorized into two ownership structures: shareholder-owned firms (banks and non-bank financial institutions) and mutually-owned organizations (cooperatives and NGOs) (Mersland, 2009). Shareholder-owned MFIs generally have more stringent managerial oversight compared to mutually owned MFIs (Galema, Lensink, & Mersland, 2012b). Irrespective of the ownership structure, MFIs commonly adopt a group-lending approach, where loans are provided to groups of clients who share responsibility for each other's debts (Garcia, Lensink, & Voors, 2020). This model effectively serves individuals who lack traditional collateral or credit records. Additionally, some MFIs offer non-financial services, such as training and educational programs, to enhance the financial knowledge and entrepreneurial skills of their clients (S. A. Shaikh, 2021).

MFIs rely on diverse funding sources to support their operations. These sources include donations, governments grants, investment from social investors, client deposits, commercial debt, and shares issued to investors (Aslam, Kumar, & Sorooshian, 2019; Tchakoute Tchuigoua, 2015). Achieving financial sustainability is a crucial objective for MFIs, which involves generating profits while ensuring affordability and accessibility for low-income clients. The primary source of profit for MFIs is the interest income generated from their loan portfolio (Gashayie & Singh, 2015).

The regulatory environment and legal structures of the microfinance sector have been improving, enabling MFIs to generate profits more effectively (Nayak & da Silva, 2019). However, the microfinance sector still faces challenges related to inadequate regulation compared to traditional finance (Karimu, Salia, Hussain, & Tingbani, 2021), which can lead to issues such as overindebtedness and client exploitation (Navin & Sinha, 2019), as well as insufficient consumer protection (Chikalipah, 2017).

To achieve their dual goals, MFIs employ various strategies. Cross-subsidization is one approach, where profits generated from more financially viable activities subsidize services offered to low-income clients (Shifa & Fuller, 2022). Additionally, social performance management plays a crucial role in ensuring that MFIs effectively measure and track their social impact (Ghising, 2022). By implementing these strategies, MFIs can simultaneously create positive social change and maintain financial sustainability (Abera & Asfaw, 2019).

In summary, hybrid organizations like MFIs have emerged as a distinctive approach to addressing sustainable development challenges. They integrate multiple institutional logics and combine social and financial goals in their operations. The success of MFIs is measured by their ability to achieve both the social and financial objectives. Through strategies such as cross-subsidization and social performance management, MFIs can make a positive impact on the lives of low-income individuals and communities while ensuring their own financial sustainability.

3. Theoretical Foundation

The main applicable theory in this dissertation is agency theory, which provides valuable insights into the relationship between the principal (the shareholders) and the agent (the managers) and their conflicting interests. Agency theory helps explain the phenomenon of FCF overinvestment and its implications for microfinance. FCF refers to the excess cash generated by a firm's operations that is not immediately needed for reinvestment. In microfinance, the FCF overinvestment becomes particularly significant due to the presence of weak governance systems (Galema, Lensink, & Mersland, 2012a), high information asymmetry between managers and shareholders (S. Ghosh & Van Tassel, 2013), and the involvement of multiple shareholders such as donors, creditors, and investors (Green, 2023). These factors contribute to the potential misallocation and misuse of idle cash, resulting in adverse effects on financial and social performance. Therefore, understanding and addressing the FCF overinvestment activities is crucial for enhancing the efficiency and sustainability of microfinance institutions.

3.1 Agency theory

Agency theory is a widely studied theory that focuses on understanding the relationship between the principal and the agent, who are bound by limited or unlimited contracts within an organization (Alchian & Demsetz, 1972). The principal is typically the owner or shareholder of a company, while the agent is the manager or executive responsible for making business decisions on behalf of the principal. Agency theory addresses the potential conflicts of interest that may arise between the principal and the agent, as well as ways to mitigate these conflicts (Panda & Leepsa, 2017).

There exists a fundamental conflict of interest between the principal and the agent that arises from the separation of ownership and control, from information asymmetry, and from the divergent objectives of the principal and the agent (Jensen & Meckling, 1976). Specifically, the principal's objective is to maximize return on investment, while the agent's objective is to maximize own interests, which need not align with those of the principal. This conflict of interest can lead to a variety of issues, such as shirking (Evans & Tourish, 2017), overinvestment (I. A. Shaikh & O'Connor, 2020), or underinvestment (I. A. Shaikh, O'Brien, & Peters, 2018).

The agency problem can also lead to additional costs for an organization. These costs referred to collectively as agency costs, can be categorized into three types: monitoring costs, bonding costs, and residual loss (Jensen & Meckling, 1976). Monitoring costs are the costs of monitoring and assessing the agent's performance in the firm, such as payment for supervision and evaluation of the agent's behavior (external auditor cost). Bonding costs are the costs of establishing and operating the firm. Residual loss is the costs incurred due to managerial decisions that promote the interests of the manager at the expense of the interests of the principal.

Originally studied in the context of joint-stock companies, the agency problem has been found to affect almost all organizations in various forms. It has been identified in different academic fields, including accounting (Raimo, Vitolla, Marrone, & Rubino, 2021), finance (Bradley & Roberts, 2015), economics (Cuervo-Cazurra, 2016), management (Vitolla, Raimo, & Rubino, 2020), organizational behavior (Poletti-Hughes & Briano-Turrent, 2019), and marketing (Chohan, 2020). The prevalence of the agency problem has made agency theory one of the most important theories in accounting, finance, and economic literature.

Research on the agency problem has expanded its coverage from interest conflict between shareholders and managers to interest conflict between major and minor shareholders. The agency problem occurs between managers and shareholders when managers take riskier investment decisions against the will of the shareholders (Panda & Leepsa, 2017). Similarly, the agency problem occurs between major and minor shareholders when major shareholders make decisions for their benefit at the expense of the minor shareholders (Gilson & Gordon, 2003; Shleifer & Vishny, 1997).

According to agency theory, the agency problem can be mitigated through incentive alignment and monitoring. Incentive alignment seeks to align the interests of the agent with those of the principal by various mechanisms, such as performance-based compensation (Core, Holthausen, & Larcker, 1999), debt application (Frierman & Viswanath, 1994), stock options (Jensen & Meckling, 1976), and market takeovers of firms with poor performance (Kini, Kracaw, & Mian, 2004). Monitoring can also be

achieved through various mechanisms, such as board oversight (Rosenstein & Wyatt, 1990), blockholder monitoring (Burkart, Gromb, & Panunzi, 1997), and internal controls (M. B. Adams, 1994). However, the aforementioned mechanisms may not be effective in all cases, especially when the agent has significant bargaining power or when there is a lack of transparency.

Although agency theory is very pragmatic and popular, it still suffers from various limitations (Panda & Leepsa, 2017). Agency theory assumes that individuals are purely self-interested and fails to consider other motivations, such as ethical considerations and social norms (Donaldson, 1990). Moreover, agency theory tends to oversimplify the complex nature of organizational relationships and the factors that influence them (Pepper & Gore, 2015). Yet, despite its limitations, agency theory still yields valuable insights into how to design contracts and incentives to align the interests of principals and agents in many situations.

3.2 Free cash flow

Agency theory is related in this dissertation to the phenomenon of FCF and its implications for MFIs. FCF arises when a firm has access to a cash flow that exceeds what is required for day-to-day operations and necessary investments (Jensen, 1986). While FCF can be beneficial for a firm's development, it also carries the risk of being misused or wasted. The interest conflict between managers and shareholders may lead managers to use FCF for personal gain instead of maximizing shareholder value (Kargi, 2021), which is FCF agency problem.

The FCF agency problem can result in investments in projects that do not generate positive returns (Jensen, 1986). Examples include non-value creating mergers and acquisitions (Glambosky, Jory, & Ngo, 2020), excessive capital expenditures (Bhandari & Adams, 2017), investments in low-return projects (Belkhir, Boubaker, & Derouiche, 2014), and empire-building activities (Fakhroni, Ghozali, Harto, & Nur, 2018). These investment reduce the value of firms by lowering their ability to operate, invest in growth, and meet financial obligations (Setiany, 2021).

To address the FCF agency problem, various measures have been proposed, as discussed above. These include: increasing shareholder oversight through mechanisms like shareholder activism or proxy contests (Aburisheh, Dahiyat, & Owais, 2022); establishing an independent board of directors to provide oversight and ensure that excess cash flow is used for value-creating investments (Guizani & Abdalkrim, 2022); incentivizing management to act in the interests of shareholders through performance-based compensation or equity ownership (Chien, Chen, & Chang, 2020); limiting FCF availability to managers and creating external monitoring through debt covenants (Guizani & Abdalkrim, 2022); and implementing financial forecasting, budgeting, and cash flow management to help anticipate and manage cash flow needs (Plenborg, 2002). Additionally, policies such as dividend payments or share buybacks can return FCF to shareholders, while reducing available cash for inefficient investments (Guizani, 2018).

Overall, mitigating the FCF agency problem requires a careful consideration of the available mechanisms for aligning the interests of managers with those of shareholders.

3.3 FCF in MFIs

Hybrid organizations, particularly MFIs, face specific agency problems that can affect their financial sustainability and social impact. These problems arise when there is a misalignment of incentives between the managers of the MFI and its shareholders, which include donors, creditors, and investors (Panda & Leepsa, 2017). In the case of MFIs, the FCF agency problem can be particularly pronounced due to factors such as high information asymmetry (S. Ghosh & Van Tassel, 2013), the accumulation of cash flow (Lopatta et al., 2017), and limited growth opportunities (Mia et al., 2019). These factors create a scenario where managers have significant discretion in allocating funds, potentially leading to value-destroying activities and FCF agency problems (Madhani, 2017).

Firstly, MFIs often experience high levels of information asymmetry, making it challenging for shareholders (donors, investors, and creditors) to monitor fund utilization and prevent value-destroying activities (Mersland & Strøm, 2008). This is mainly due to the high costs associated with gathering information (Quayes & Hasan, 2014). Moreover, some MFI managers may deliberately resist transparency in order to maximize their

personal benefits and control (Tadele, Roberts, & Whiting, 2018). In the absence of transparency, managers are freer to engage in activities that primarily serve their own interests rather than those of the MFI or its shareholders.

Secondly, certain MFIs accumulate significant amounts of FCF due to various factors related to their business model and operation. The success of microfinance, characterized by high repayment rates and competitive interest rates (Sengupta & Aubuchon, 2008), attracts profit-oriented providers who prioritize financial self-sufficiency over social impact (Abdul Zalim, 2022). This shift of priority from the social goal to the financial goal, combined with changes in funding sources and an increased reliance on international funding and credit markets, has expanded the availability of funds for MFIs (Goodman, 2006). Additionally, the regular and timely collection of loan repayments contributes to the accumulation of cash reserves. As repayments are collected on a regular basis, the MFI may accumulate cash that is not immediately needed for reinvestment or expansion, resulting in cash reserves (Lopatta et al., 2017).

In addition, the growing number of MFIs has intensified competition among these institutions to attract clients (Sinah, 2010). This competition has been further fueled by the shift of priority towards achieving financial sustainability, prompting MFIs to increasingly seek commercial funding sources (Cull et al., 2018). Additionally, the entry of profit-oriented providers, including international commercial banks, into the microfinance sector has added to the competitive pressure (Assefa, Hermes, & Meesters, 2013). As a result, MFIs face the challenge of diversifying their financial services to retain existing clients and attract new ones. In this competitive landscape, managers are more likely to engage in FCF overinvestment in order to engage in value-destroying activities to gain a competitive edge or maintain their market position (J. Ghosh, 2013)

Taken together, the above findings show that managers in microfinance, given significant discretion over the allocation of funds, may engage in value-destroying activities such as FCF overinvestment. These activities may lead to various consequences, including low returns on investments, high transaction costs, and the inability to reach underserved clients, thereby undermining the financial sustainability and social impact of the MFIs (Madhani, 2017). Therefore, the practice of FCF overinvestment in MFIs raises concerns

about how managers will utilize these funds. Effective governance mechanisms and monitoring systems are necessary to mitigate the FCF agency problem and ensure that funds are used in ways that both fulfill the institution's social mission and benefit its shareholders.

In conclusion, the FCF agency problem is a potential risk for MFIs. Thus, it is important to investigate the FCF agency problem in MFIs in order to understand its drivers and develop effective strategies to ensure that resources are allocated in a prudent manner.

4. Empirical Context and Data Sources

Context

In this dissertation, I focus on global microfinance as an empirical context for several reasons. The microfinance industry is a unique hybrid sector that pursues both social and financial objectives (Battilana & Dorado, 2010). MFIs play a critical role in promoting financial inclusion by offering sustainable financial solutions to low-income individuals with limited access to traditional banking services (Agaba & Mugarura, 2023). The remarkable growth of microfinance in the latter part of the 20th century has been notable, with millions of new customers being served each year (Cull et al., 2009). The increasing popularity of microfinance has spurred a surge of research aiming to understand and theorize about MFIs (Doherty et al., 2014). In parallel, practitioners, investors, and policymakers worldwide have shown a keen interest in furthering their understanding of the development and potential issues surrounding microfinance (Ayayi & Wijesiri, 2022).

However, despite the unprecedented growth and significant attention garnered by microfinance, several issues within the industry have raised questions about the true impact of microcredit (Banerjee et al., 2015). These issues include concerns about mission drift, where MFIs deviate from their original social mission (Copestake, 2007), high interest rates charged to borrowers (Morduch, 2000), involvement in stock market speculation (Cull et al., 2009), pressure related to loan repayment (R. Islam, Karim, Ahmad, & Nittoli, 2018), and agency problems within MFIs (Laher & Proffitt, 2020).

Some MFIs have become comparatively rich by accumulating a large amount of cash over decades of rapid growth (Assefa et al., 2013), high returns and repayments (Sengupta & Aubuchon, 2008), and international investment (Goodman, 2006). Additionally, the high information asymmetry between MFI managers and shareholders (donors, creditors, and investors) increases the likelihood of managers making self-interested growth decisions through FCF overinvestment (Bruett, 2004). Thus, from an agency-theoretic perspective, there is cause for concern about FCF overinvestment in MFIs.

With the commercialization and internationalization of microfinance in recent years, specialized rating agencies for MFIs have been arisen to improve transparency and information disclosure among microfinance shareholders (Simo, Tchuigoua, & Nzongang, 2023). These rating agencies provide high-quality data on the global microfinance industry, which is often not the case for other types of hybrid organizations (Magruder, 2018).

The availability of financial data has enabled researchers to investigate FCF overinvestment in microfinance, its impact on the financial and social performance of MFIs, and its possible mitigation. Overall, the unique hybrid model of microfinance, combined with the availability of the financial data, provides a fruitful context for understanding FCF overinvestment in microfinance.

Data sources

This dissertation analyzes a comprehensive dataset consisting of 4,010 firm-year observations of 484 MFIs, operating in 74 countries from 1998 to 2019. The dataset was constructed using information gathered from reports produced by five rating agencies that received approval from the Consultative Group to Assist the Poor (CGAP), which is the World Bank's microfinance unit (Zamore, Beisland, & Mersland, 2019). Highly skilled experts collect the data by conducting onsite visits to each MFI and meticulously auditing their financial statements for accuracy. The reports, ranging from 10 to 40 pages in length, do not follow an industry standard, resulting in potential variations in the number of observations across time, variables, and MFIs. Nevertheless, the data can be considered random as there are no discernible systematic differences among the rating reports. The dataset encompasses a wide range of information, including factors related to FCF, debt utilization, corporate governance, board of directors' characteristics, financial performance, and social performance.

Table 1 displays the annual count of MFIs included in the dataset, ranging from a minimum of 1 MFI in 2019 to a maximum of 397 MFIs in 2006. The majority of observations are concentrated in the years 2001 to 2013, while the number of MFIs observed per year outside this period is below 100.

Table 1
Distribution of MFIs by year

Year	Frequency (No. of MFIs)	Percent
1998	12	0.30
1999	35	0.87
2000	83	2.07
2001	149	3.72
2002	205	5.11
2003	279	6.96
2004	348	8.68
2005	386	9.63
2006	397	9.90
2007	376	9.38
2008	333	8.30
2009	323	8.05
2010	278	6.93
2011	216	5.39
2012	164	4.09
2013	117	2.92
2014	95	2.37
2015	68	1.70
2016	65	1.62
2017	49	1.22
2018	31	0.77
2019	1	0.02
Total	4010 (MFI-year)	100

The dataset undergoes regular updates to ensure its accuracy. The dataset has been utilized in notable published (Beisland, Djan, Mersland, & Randøy, 2021; Pascal, Mersland, & Mori, 2017; Zamore et al., 2019) and unpublished studies. The responsibility for updating the dataset is entrusted to the PhD students who work under the supervision of Professor Roy Mersland, the original architect of the dataset.

In addition to the above dataset, this dissertation incorporates data from various other sources. For example, the dissertation draws on the World Bank's World Development Indicators database for information on gross domestic product (GDP) and from the World Bank's Worldwide Governance database for information on country level governance.

5. Research Design

In the realm of scientific inquiry, researchers adopt specific philosophical orientations that shape their writing approach. These philosophical positions involve making assumptions about the nature of reality (ontology) and how knowledge is constructed regarding this reality (epistemology) (Al-Ababneh, 2020). The choice of a philosophical position falls along a continuum, with positivism (objectivism) at one end and constructivism (subjectivism) at the other, while critical realism occupies a position between these two extremes. These three philosophical positions are the most prevailing philosophical positions in social science research (Moon & Blackman, 2014).

The positivist perspective asserts the belief in a singular, objective, tangible, static, and measurable "reality" or "truth" that exists independently of the researcher. The researcher's role is to distance him or herself and observe, measure, and test reality without influencing the findings. According to this perspective, researchers have direct access to the real world, enabling them to observe, measure, test, and theorize about it (Wynn & Williams, 2012). Positivism is often associated with quantitative approaches (Bashir, Syed, & Qureshi, 2017).

The constructivist perspective asserts the belief in a subjective, personal, unique, and flexible reality or truth (Ataro, 2020). This implies that reality is not independent of the researcher and can be perceived in multiple ways. Hence, human subjectivity and opinions are of paramount importance, as they provide a comprehensive understanding and explanation of a particular phenomenon within its unique context (Raqib, 2019). Constructivism is often associated with qualitative research approaches (Ataro, 2020).

In contrast to the previously mentioned positions, the critical realist perspective argues that the world is a dynamic reality (Bhaskar, 2013). This is attributed to the presence of unobservable causal laws that interact in contingent ways, leading to changes at the observable event level (Cruickshank, 2012). According to critical realism, events are generated by mechanisms operating under specific conditions, and these events are observed and experienced (Wynn & Williams, 2012). The objective of critical realism is

to provide comprehensive causal explanations of events within specific contexts (Wynn & Williams, 2012).

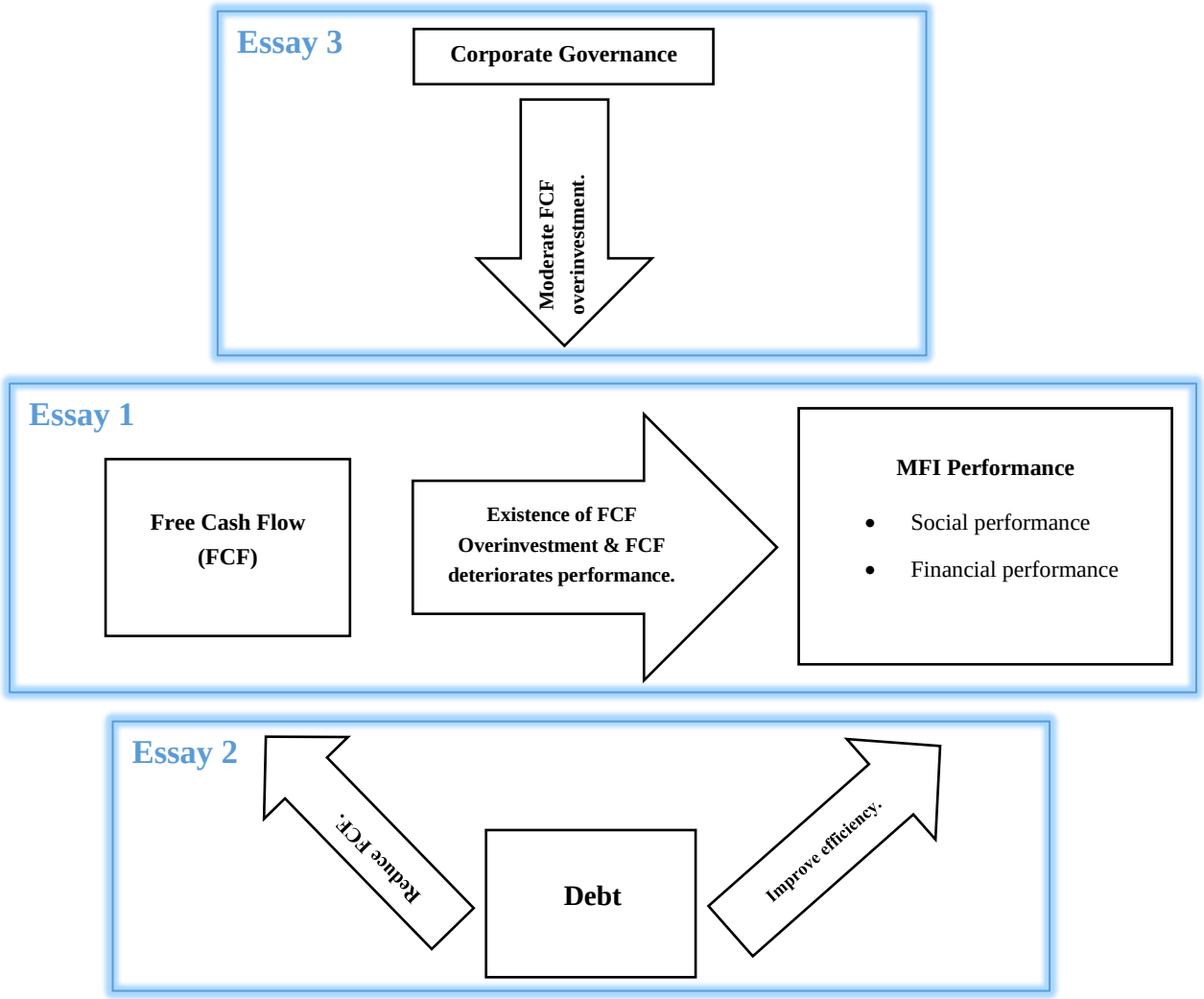
In all three essays of this dissertation, my objective is to conduct an unbiased examination of various issues related to FCF in microfinance. Additionally, I aim to analyze the effect of moderating variables on FCF and on the financial and social performance of MFIs. To achieve this, I formulate testable hypotheses rooted in relevant theoretical frameworks. Consequently, I adopt a positivist perspective with the aim of achieving wide applicability and generalizability.

Given the predominantly quantitative nature of the dataset, I employ a quantitative analytical approach in all three essays. This entails utilizing various techniques, including ordinary least squares (OLS) regressions, panel-data methods such as random effects, fixed effects, and the generalized method of moments (GMM). The choice of appropriate models is guided by the characteristics of the variables, particularly the dependent variables, and is determined through specification tests such as the Hausman specification test and the Breusch-Pagan test of independence.

6. Summary of Studies

This dissertation contains three essays: “Free Cash Flow and Performance of Microfinance Institutions,” “Debt, Free Cash Flow and Financial Performance in Microfinance: A Global Analysis,” and “Corporate Governance and Free Cash Flow in Microfinance.” Essay 1 investigates the existence of FCF overinvestment in MFIs and the negative effects of FCF overinvestment on the social and financial performance of MFIs. Essays 2 and 3 address how debt application and corporate governance, respectively, mitigate the negative effects of FCF overinvestment on the social and financial performance of MFIs. The essays have benefited from the feedback of reviewers and participants in academic conferences. In what follows, I summarize each of the three essays in turn.

Figure 1. Illustration of the focus of the essays



Essay 1. Free Cash Flow and Performance of Microfinance Institutions

This essay focuses on examining the presence of FCF overinvestment in MFIs and the effect of FCF on the social and financial performance of MFIs. Using agency theory, which explores conflicts of interest between managers and shareholders, the essay investigates the possibility of FCF overinvestment in MFIs. Prior research has identified FCF overinvestment in industrial firms (Jaggi & Gul, 1999) and commercial banks (Al-Fasfus, 2020), particularly when they face limited growth opportunities (Artiach, Lee, Nelson, & Walker, 2010). Given the availability of excess cash in some MFIs (Cull et al., 2018) and their constrained growth prospects (Assefa et al., 2013), the essay extends the literature by showing that the conditions for FCF overinvestment also obtain in the microfinance industry.

While previous studies have highlighted the negative effect of FCF overinvestment on the financial performance of industrial firms (Heydari, Mirzaeifar, & Javadghayedi, 2014), to the best of our knowledge, no empirical research has specifically examined its impact on MFIs. This knowledge gap is concerning, especially given the increasing influx of impact capital into the microfinance industry and the potential implications for both social and financial performance. Therefore, this paper aims to fill this gap by being the first to investigate the phenomenon of FCF overinvestment in microfinance and its associated implications. By doing so, it seeks to contribute to a deeper understanding of FCF dynamics within the microfinance sector.

The empirical analysis consists of two stages. Firstly, drawing on existing studies, the analysis shows that FCF-related firm growth of industrial firms is commonly characterized by increased firm size (Brealey, Myers, & Allen, 2008), intensified investment activities (Pawlina & Renneboog, 2005), and weakened financial performance (Wang, 2010). Applying these performance indicators to a sample of 484 MFIs across 74 countries from 1998 to 2019, the analysis obtains the same results with regard to FCF overinvestment in MFIs. Overall, the findings reveal a shift in asset allocation from core operations to investments, resulting in increased firm size and weakened financial performance. The findings provide evidence for the existence of FCF overinvestment in microfinance.

Secondly, the empirical analysis examines the effect of FCF overinvestment on the social and financial performance of MFIs. Social performance is measured using average loan amount and credit clients, while financial performance is measured using return on assets (ROA), return on equity (ROE), operational self-sufficiency (OSS), and financial self-sufficiency (FSS) (Mersland & Strøm, 2009). The analysis reveals a significant negative relationship between FCF and all the performance indicators, suggesting that FCF may lead to mixed social performance and lower financial performance in MFIs. The findings underscore the negative impact of FCF on microfinance performance. Further tests indicate that shareholder ownership of MFIs may exacerbate this negative relationship.

In summary, this essay contributes to the understanding of FCF dynamics in microfinance by confirming the practice of FCF overinvestment in MFIs and examining its implications for their social and financial performance. Overall, the findings reveal a shift in asset allocation from core operations to investments with consequent negative effects on both social and financial performance. The findings shed light on the importance of managing FCF effectively in MFIs and provide valuable insights for practitioners and policymakers in the field.

Essay 2. Debt, Free Cash Flow and Financial Performance in Microfinance: A Global Analysis

The objective of this essay is to investigate the effect of debt on FCF and financial performance in microfinance. Firms that separate between ownership and control often face an agency problem where managers prioritize personal interests over shareholder interests (Jensen, 1986). In firms with high FCF and low growth opportunities, managers may make non-value-maximizing decisions through FCF overinvestment (Lang et al., 1991). Prior literature suggests a positive relationship between FCF and overinvestment in profit-seeking firms (Al-Fasfus, 2020), but it is unclear whether the same positive relationship obtains in MFIs with dual goals. Like profit-seeking firms, MFIs face information asymmetry (Finkelstein & D'Aveni, 1994) and limited growth opportunities (Mia et al., 2019), making FCF overinvestment possible and highlighting the need to explore potential mitigation strategies.

Debt is proposed as a mechanism for mitigating the agency problem of FCF overinvestment (Gul & Tsui, 2001). It can reduce FCF by pre-committing payments (Zwiebel, 1996) and improve financial performance by motivating managers to meet payment terms in order to avoid bankruptcy and job loss (Berger & Di Patti, 2006). The effects of debt on FCF may vary depending on whether it is short-term debt or long-term debt (Gul & Goodwin, 2010). Short-term debt, which requires frequent renewal and immediate repayment, is expected to be more effective in reducing FCF, while long-term debt, which does not have these requirements, is expected to be less effective.

In microfinance, debt application has been increasing (Goodman, 2006), which can potentially enhance operational efficiencies in MFIs. By motivating managers to reduce costs and improve efficiency in order to meet payment obligations and avoid default (Berger & Di Patti, 2006), debt may act as a disciplining mechanism that promotes value creation and discourages wasteful spending. However, the improved efficiency may be counterbalanced by increased financial costs associated with higher debt levels, leading to a reduction in bottom-line profit.

Using the same international sample of MFIs as in Essay 1, this essay examines the impact of debt on FCF and operational efficiency in microfinance. The results indicate a significant negative relationship between total debt and FCF, with short-term debt showing a stronger negative correlation with FCF than long-term debt (Gul & Goodwin, 2010). Debt also motivates managers to increase operational efficiency (Berger & Di Patti, 2006), resulting in lower operational costs and higher operational profits. However, the higher financial costs associated with higher debt levels may lead to a reduction in bottom-line profit.

This essay contributes to the literature by providing international evidence on the effects of debt on FCF and performance in microfinance. The findings suggest that debt can serve as both a mitigating factor for FCF overinvestment and a motivator for operational efficiency. However, it is important to consider its impact on bottom-line profit, as increased financial costs may offset the efficiency gains.

Essay 3. Corporate Governance and Free Cash Flow in Microfinance

This study examines the impact of corporate governance on FCF in microfinance. Unlike conventional profit-maximizing firms, MFIs have dual goals of social impact and financial sustainability (Daher & Le Saout, 2013). As MFIs have experienced rapid expansion (Reed et al., 2015), increased funding from international capital markets (Mersland & Urgeghe, 2013), and growing competition (Assefa et al., 2013), they have accumulated substantial amounts of cash (Lopatta et al., 2017) and face limited growth opportunities (Mia et al., 2019). Managers in firms with high cash flow and low growth may engage in FCF overinvestment activities (Jensen, 1986). Therefore, investigating the effectiveness of corporate governance in microfinance becomes crucial.

The positive relationship between investment activities and cash flow has been demonstrated in the literature (Oded, 2020). Given that information asymmetry (S. Ghosh & Van Tassel, 2013) and lack of regulation (Galema et al., 2012a) are common in MFIs, I predict that the agency problem in MFIs can be severe, making FCF overinvestment highly likely.

Corporate governance plays a crucial role in mitigating agency problems and protecting shareholder interests (Madhani, 2017). The board of directors (BOD) is an important corporate governance mechanism for monitoring management (Cai, 2013). Dispersed shareholders often rely on the BOD to monitor managers, align shareholder and managerial interests, and reduce FCF overinvestment in profit-seeking firms (Hanson & Song, 2006). However, there is a lack of research on the relationship between BOD governance and FCF in microfinance. This study investigates the governance effect of board characteristics (board size and board committee) and director characteristics (CEO duality and client director) on FCF in MFIs.

Using the same international sample of MFIs as in Essays 1 and 2, this essay provides evidence on the governance effect of BOD on FCF in microfinance. The findings demonstrate that both board characteristics and director characteristics significantly impact FCF. Specifically, a larger board size and CEO duality exhibit a significant

positive relationship with FCF (Lipton & Lorsch, 1992; Yermack, 1996), while the presence of a board committees and client directors demonstrates a significant negative relationship with FCF (Gill & Shah, 2012; Madhani, 2015; Salamon, 2015). Regarding director characteristics, CEO duality is positively related to FCF (Gill & Shah, 2012), whereas the presence of client directors is negatively related to FCF (Salamon, 2015). Overall, the results support our hypotheses and provide valuable insights for practitioners and regulators in the microfinance field. Understanding how corporate governance affects FCF in MFIs can help shareholders assess the adequacy of the governance mechanisms in place for monitoring managers and protecting shareholder interests.

7. Conclusion

This dissertation makes a valuable contribution to the research on FCF in hybrid organizations by examining three main topics: 1) the existence of FCF overinvestment in MFIs, 2) the effect of debt on FCF and the performance of MFIs, and 3) the effect of corporate governance on FCF in MFIs. In relation to the first topic, the dissertation investigates the existence of FCF in MFIs and its relationship to MFI performance. The findings indicate the existence of FCF overinvestment behavior in MFIs, resulting in mixed social performance and weakened financial performance.

Regarding the second topic, the dissertation suggests that increased debt application can motivate managers to reduce operating costs and improve operating efficiency in order to meet their payment obligations and avoid default (Berger & Di Patti, 2006). Debt serves as a disciplinary mechanism that promotes value creation and discourages wasteful spending (Jensen & Meckling, 1976).

Regarding the third topic, the dissertation highlights the critical role of corporate governance in mitigating agency problems and protecting the interests of shareholders. The board of directors (BOD) is identified as a significant corporate governance mechanism for monitoring management. Specifically, a larger board size and CEO duality exhibit a significant positive relationship with FCF (Lipton & Lorsch, 1992; Yermack, 1996), while the presence of board committees and client directors demonstrates a significant negative relationship with FCF (Gill & Shah, 2012; Madhani, 2015; Salamon, 2015). Understanding the impact of corporate governance on FCF in MFIs helps shareholders assess the effectiveness of the governance mechanisms in place for monitoring managers and protecting shareholder interests in microfinance.

The findings of the dissertation will provide guidance for future research on FCF in hybrid organizations. Subsequent studies can focus on refining the measurement of FCF and assessing the best performance indicators for MFIs. Exploring the influence of institutional factors on FCF overinvestment and MFI performance can also enhance understanding in this area. Furthermore, investigating FCF in different types of MFIs, including regulated and deposit-taking institutions, can offer further insight into the role

of FCF in microfinance. Additionally, further research can delve into other factors that may influence the relationship between debt and FCF, as well as the relationship between debt and performance. In terms of governance, potential research areas include examining the optimal outreach level and the factors affecting it, expanding the scope of board characteristics, studying the interaction between board characteristics and governance efficiency on FCF, and exploring the interplay between CEO characteristics, board traits, and their joint effect on FCF.

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ESSAY 1
FREE CASH FLOW AND PERFORMANCE OF MICROFINANCE INSTITUTIONS

Free Cash Flow and Performance of Microfinance Institutions

Yan Zhang, Stephen Zamore, Roy Mersland

Abstract

We investigate the existence and implications of free cash flow (FCF) in microfinance institutions (MFIs) using a unique global dataset collected from third-party rating agencies. We apply different panel data estimators (fixed effect, random effect, and GMM) to our sample and find evidence of the existence of FCF in microfinance. Our results suggest that FCF has negative implications for the dual goal of MFIs, as it is associated with a lower financial performance (measured by ROA, ROE, OSS, and FSS), and a mixed social performance – both positive and negative effects on social performance (measured by average loan amount and number of credit clients, respectively). Furthermore, we find that this negative relationship between FCF and performance is exacerbated by shareholders ownership compared to mutual ownership of the MFI.

Keywords: Free cash flow; Overinvestment; Microfinance institutions; Hybrid firms; Agency theory; Performance
JEL codes: M41, G2

1 Introduction

This paper examines the existence of free cash flow (FCF) in microfinance, and the relationship between FCF and performance in microfinance. According to agency theory, there is a conflict of interest between managers and owners of firms (Jensen, 1986, 1989). Managers have personal goals that differ from those of the organization; hence, they may be tempted to pursue organizational growth for personal benefits as such growth guarantees employment and a salary increase for managers due to the greater responsibilities of managing a larger firm (Murphy, 1985). Prior literature has documented FCF overinvestment in industrial firms (Jaggi & Gul, 1999) and commercial banks (Al-Fasfus, 2020), but not in hybrid firms, i.e., firms pursuing both financial and social objectives such as microfinance institutions (MFIs).

Through continued development and investment, some MFIs have accumulated substantial cash reserves (Cull et al., 2018). Additionally, due to heightened competition, MFIs have been facing limited growth opportunities, leading to the accumulation of idle cash (Sengupta & Aubuchon, 2008). This is particularly relevant in the context of the FCF literature, as overinvestment is more apparent in firms with low growth prospects (Artiach et al., 2010). Furthermore, given the high information asymmetry between managers and stakeholders (including donors, creditors, and investors) in microfinance, managers may be tempted to utilize the accumulated cash for personal gain. Consequently, there is a high likelihood of FCF overinvestment in microfinance, which can have adverse effects on the social and financial performance of MFIs. Therefore, it is crucial to comprehend the occurrence of FCF overinvestment in MFIs and its impact on their performance. This research setting presents an intriguing opportunity to extend the FCF literature into a hybrid setting, as MFIs serve as prime examples of organizations pursuing double bottom lines (Battilana & Dorado, 2010).

Previous studies have shown that FCF overinvestment has a negative effect on the financial performance of industrial firms (Heydari et al., 2014; K. Park & Jang, 2013; Wang, 2010). However, to the best of our knowledge, there is no empirical study that addresses the effect of FCF overinvestment on firm performance in hybrid firms such as MFIs. This is an unfortunate research gap given that FCF plays an important role in the

microfinance industry in the form of investments and donations. Indeed, investors and sponsors have the intention of putting their money to work in MFIs. Moreover, it is a fact that many MFIs have huge growth opportunities but lack capital while others have too much FCF. Thus, although overinvestment in FCF should be of concern to microfinance managers as it may jeopardize the social and financial performance of MFIs, the problem remains unexplored in the scholarly literature.

Our empirical analysis of FCF in MFIs proceeds in two stages. First, according to the evidence of existing studies, the growth of MFIs through FCF is often measured by common phenomena, such as enlargement in firm size (Brealey et al., 2008; Stulz, 1990), increased investment activities (Brealey et al., 2008; Conyon & Murphy, 2000; Pawlina & Renneboog, 2005), and weakened financial performance (Fu, 2010; Liu & Bredin, 2010; Titman, Wei, & Xie, 2009; Yang, 2005). Similarly, we measure the above variables in a sample of 484 MFIs in 74 countries over the period 1998 – 2019. The test results from fixed effect, random effect, and GMM estimations show the expected behavior pattern of FCF overinvestment undergoing a shift of capital allocation from main operation to investment. Consistent with agency theory, this finding provides evidence for the existence of FCF overinvestment in microfinance.

In the second stage of our analysis, we examine the influence of FCF overinvestment on the social and financial performance of MFIs. Specifically, we use the common indicators of average loan amount and number of credit clients to measure social performance, and we use ROA, ROE, operational self-sufficiency (OSS), and financial self-sufficiency (FSS) to measure financial performance (Mersland & Strøm, 2009). Our results reveal a significant negative relationship between FCF and all the performance indicators. Consistent with agency theory, our results indicate that that there is a significant negative relationship between FCF and both social and financial performance in microfinance. Further tests show that this negative relationship may be exacerbated by shareholder ownership compared to mutual ownership of the MFI. Hence, while ownership has been shown to facilitate more transparent governance (Mersland, 2009), it has the potential downside of reducing FCF in microfinance.

The remainder of the paper is organized as follows. Section 2 discusses the theoretical literature and presents our hypotheses. Section 3 describes the data and variables. In section 4, we construct the econometric models. Section 5 reports and discusses the empirical findings, and Section 6 concludes.

2 Theoretical background and hypotheses

In a world of perfect capital markets, firm-level investment should not be related to cash flows (Modigliani & Miller, 1958). However, the literature has documented a positive relationship between investment and cash flow in firms that have accumulated substantial cash reserves (Richardson, 2006). According to agency theory, this positive relationship can be interpreted as a demonstration of FCF overinvestment (Jensen, 1986). Specifically, some MFIs have accumulated a large amount of cash through decades of rapid growth (Assefa et al., 2013), high returns and repayments (Sengupta & Aubuchon, 2008), and international investment (Goodman, 2006).

According to agency theory, there is a conflict of interest between managers and owners of a firm, and this conflict is severe in firms with high FCF and low growth opportunities (Jensen, 1986, 1989). When managers' objectives differ from those of the owners, the presence of FCF creates the potential for overinvestment with the aim of enlarging firm size albeit at the expense of profitability[1]. Growth in firm size guarantees employment and salary increase for managers due to the greater responsibilities of managing a larger firm (Murphy, 1985). Thus, managers make FCF investment decisions in their own interest rather than in the best interest of the owners.

In addition, managers of MFIs increasingly face a situation of more cash and limited growth opportunities. Following a period of unprecedented constant growth, managers of MFIs are currently witnessing shrinking growth opportunities in the form of a decline in the number of clients served by MFIs and the number of MFIs (Assefa et al., 2013; Hermes & Hudon, 2018). As a result, these managers are under pressure to sell financial services, which has in turn led to the saturation of markets and the overleveraging of clients in some countries and regions (Armendariz & Labie, 2011; Assefa et al., 2013; Copestake, 2007; Mersland & Strøm, 2010). Additionally, managers of MFIs are likely to make self-interested growth decisions through FCF overinvestment due to the high

[1] The activity of utilizing FCF to achieve growth in firm size at the cost of profitability is often named as empire building, since the growth in firm size enlarges the control power of managers and guarantees employment and salary increases.

information asymmetry that exists between them and stakeholders (donors, creditors, and investors) (Bruett, 2004).

Moreover, MFIs are typical examples of hybrid firms (Battilana & Dorado, 2010). Such firms have "dual goals": a social goal to help the poor and a financial goal to achieve self-sufficiency (Daher & Le Saout, 2013; Mersland, Randøy, & Strøm, 2011). Moreover, these two goals are interdependent. To achieve the social goal, MFIs need to achieve a certain profit to cover their high operational cost (Cull et al., 2018) and reduce funding risk (Cull et al., 2009). To achieve the financial goal, MFIs need to grant a large number of small-loan applications (Mumi, Joseph, & Quayes, 2020). Thus, there is an optimal balance between the social goal and the financial goal for each MFI, given its individual characteristics. The optimal balance reflects the MFI's maximum capacity to help the poor without weakening its ability to survive and develop. Therefore, the realization of this optimal balance leads to the best performance for MFIs.

Through constant development, some MFIs may end up with extra cash on hand after achieving their social and financial performance goals (Lopatta et al., 2017). This extra cash can be categorized as FCF according to Jensen (1986). Jensen defines FCF as the remaining cash flow after the costs of positive net present value ventures have been subtracted. As hybrid firms, MFIs do not aim for profit maximization, and the achievement of their dual goals reflects the combined effect of all positive net present value ventures. In microfinance, FCF can thus be seen as the remaining cash flow after the MFI pays its operational costs and grants its loan applications. As noted above, granting loan applications fulfils the social goal, and being able to pay all operational and financial expenses fulfils the financial goal.

FCF overinvestment is often related to several firm activities that can be captured by a set of accounting and operating data. These activities commonly include increasing firm size (i.e., total assets) (Brealey et al., 2008; Stulz, 1990), increasing investment activities (i.e., investment assets) (Brealey et al., 2008; Conyon & Murphy, 2000; Pawlina &

Renneboog, 2005), and, as a result of the above activities, decreasing the loan portfolio[2] (i.e., shifting capital allocation from the main business to investment). Given that growth oriented FCF overinvestment is expected to generate lower profits than the main business, the total revenue of the MFI is most likely to decrease proportionally in response to the shift of capital allocation from the loan portfolio to investment. Following this line of reasoning, we propose the following hypotheses:

H1(a): FCF has a positive relationship with the growth rates of total assets and total investment, and a negative relationship with the growth rate of total loan portfolio.

H1(b): FCF has a negative relationship with total revenue.

In addition, FCF overinvestment is often related to weakened firm performance (Dechow, Richardson, & Sloan, 2008). This suggests that FCF overinvestment may lower the financial performance of MFIs. On the other hand, the shift of capital allocation from the loan portfolio to other investments (i.e., investment instruments) (Bruett, 2004) may reduce the outreach to the poor, thereby reducing the social performance of MFIs. Accordingly, we propose the following hypotheses:

H2 (a): FCF has a negative relationship with the financial performance of MFIs.

H2 (b): FCF has a negative relationship with the social performance of MFIs.

According to agency theory, the conflict of interest between managers and owners can be mitigated by aligning managers' interests with owners' interests (Zhang, 2009). Thus, we investigate the effect of the ownership structure of MFIs.

Ownership structure. Studies show that ownership structure can play a role in MFI performance. MFIs are normally registered either as shareholder-owned firms (banks and non-bank financial institutions) or as mutually-owned firms (cooperatives and non-

[2] The main business of MFIs is to offer loans to the poor. Hence, we use loan portfolio to represent the activities of the main business.

governmental organizations) (Mersland, 2009). Agency theory predicts that shirking activity is higher in a mutually-owned firm than in a shareholder-owned firm due to the former's lack of incentive alignment between managers and owners (Alchian & Demsetz, 1972). Thus, some microfinance studies suggest that shirking activity in mutually-owned MFIs occurs because they lack owners with the pecuniary as well as mission-commitment incentives to monitor management (Hardy, Holden, & Prokopenko, 2003; Jansson, Rosales, & Westley, 2004). On the other hand, shareholders do have incentives to monitor management more closely through a governance system; hence, FCF activities are likely to be controlled (Hansmann, 2000; Mersland, 2009). Galema et al. (2012b) show that shareholder-owned MFIs are stricter in monitoring managers compared to mutually-owned MFIs. Thus, it is expected that FCF overinvestment may be lower in shareholder-owned MFIs than in mutually-owned MFIs. Accordingly, we propose the following hypothesis:

H3: Shareholder-owned firms have a moderating effect on the relationship between FCF and the performance of MFIs.

Figure 1 illustrates what we seek to study. It shows the effect of FCF on MFI performance and the moderating effect of ownership structure on the FCF–MFI performance link.

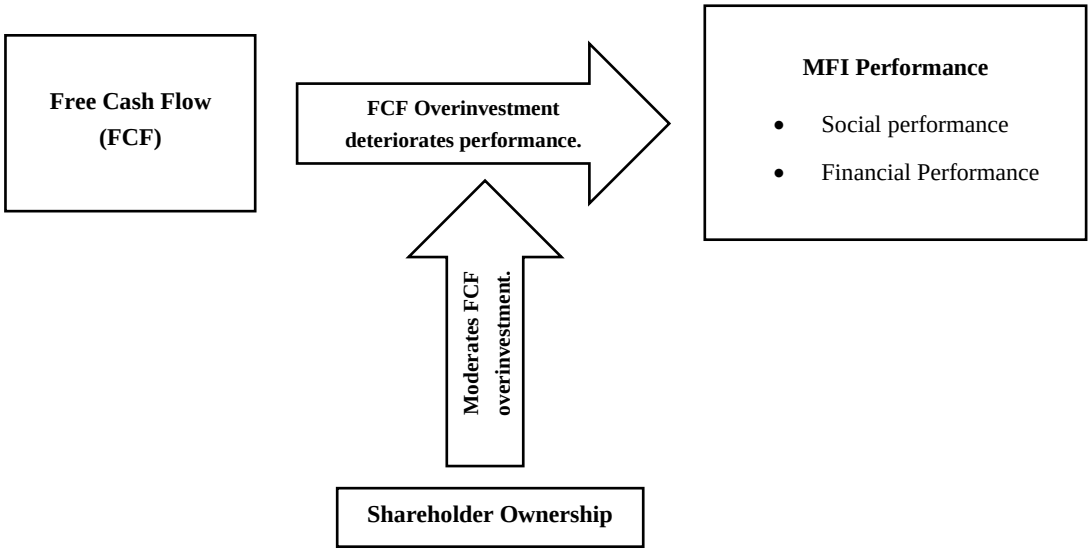


Figure 1. The relationship between MFI performance, FCF and ownership

3 Data and variable definitions

3.1. Data

We use an unbalanced panel sample dataset of 484 MFIs from 74 countries covering the period 1998–2019, with a total of 4,010 MFI-year observations. The dataset was compiled from rating reports of five microfinance rating agencies that were originally approved by the Consultative Group to Assist the Poor (C-GAP), the microfinance branch of the World Bank. Using rating reports is a reliable and representative source of data for microfinance studies (Gutierrez-Nieto, Serrano-Cinca, & Molinero, 2007; Hudon & Traca, 2011; Zamore et al., 2019).

The five rating agencies apply different methodologies to assess MFIs, but there are no major differences in the variables investigated in this study across the agencies. However, the information availability varies across and within the rating agencies, resulting in an unbalanced dataset with varying numbers of observations across variables and years. For example, the variable *Growth of total investment* has the lowest number of observations (1,755), while the control variable *MFI age* has the highest number of observations (4,010). Thus, in regressions involving the *Growth of total investment*, the maximum number of observations is 1,527, whereas in regressions without this variable the number of observations is higher.

To complement the MFI data, we use country-level data from the World Bank's World Development and Worldwide Governance databases (Zamore et al., 2019). Overall, we have compiled a robust dataset that allows us to investigate the existence of FCF overinvestment and the relationship between FCF and performance of MFIs while controlling for various factors.

3.2. Definitions of variables

Table 1 presents the definitions of the independent, dependent, control, and moderating variables used in the analysis. The concept of FCF originates from profit-seeking firms (Jensen, 1986) and can be applied to hybrid firms with dual goals, such as MFIs. In the case of MFIs, FCF represents the cash flow that exceeds the amount of cash necessary to

cover operational costs and fulfil loan applications. Despite extensive research on FCF in various fields, there is a lack of a consensus regarding its calculation (Bhandari & Adams, 2017). To address this, we follow the approach proposed by Pascal et al. (2017), which calculates FCF as the ratio of total cash and short-term investments to total assets, considering the availability of financial information on MFIs and their operational characteristics.

FCF overinvestment is often characterized by growth in firm size accompanied by a decline in financial performance. The growth rate of total assets reflects the expansion speed of the empire built and controlled by managers. Previous studies have shown a positive relationship between FCF and the growth rate of total investment (Biddle, Hilary, & Verdi, 2009; Richardson, 2006). FCF overinvestment can lead to a deviation from the best performance by shifting capital allocation from loan portfolio to investment. Revenue represents the profit-generating capacity of MFIs based on available resources (Ukhriyawati, Ratnawati, & Riyadi, 2017). An increase in FCF overinvestment may reduce the revenue-generation capacity, thus deviating from the best performance of MFIs. Therefore, this study investigates the behavior of FCF overinvestment in microfinance by examining changes in the growth rate of total assets, total investments, and the loan portfolio. Additionally, financial results such as total revenue, investment revenue, and portfolio revenue are analyzed. All growth rates are calculated using the log difference[3] approach, which involves taking the natural logarithm of the variable and calculating the difference in log values between two years, considering the distribution of the variables.

An MFI's performance is evaluated based on its dual goals of achieving self-sufficiency in covering costs and extending services to a large number of impoverished borrowers. Operational self-sustainability (OSS) and financial self-sufficiency (FSS) are commonly used indicators to assess an MFI's self-sufficiency. OSS measures the MFI's capacity to cover costs through operational revenue, while FSS evaluates its capacity to cover costs

[3] In alternative models, we used growth rates calculated by percentage of the difference of same variable between two years. The test results present no significant differences from the models using growth rates calculated by log difference method.

through total revenue (Yaron & Manos, 2007). These indicators are widely utilized in assessing the financial performance of MFIs due to the industry's institutional diversity and diverse accounting practices, which make alternative measures like return on assets (ROA) or return on equity (ROE) less suitable for comprehensive industry-wide analyses (Tucker & Miles, 2004). Social performance, represented by outreach, is measured using two common indicators in microfinance: the average loan amount and the number of credit clients (Mersland & Strøm, 2009).

Table 1

Definitions of variables

Variables	Type of variables	Definitions
FCF (free cash flow)	Independent variable	Ratio of total cash and short-term investment to total assets.
Growth rate of total assets	Dependent variable	Log difference of total assets (log difference of total assets refers to the process of taking the natural logarithm of total assets and then calculating the difference in log values between two years).
Growth rate of total investment	Dependent variable	Log difference of total investment.
Growth rate of total loan portfolio	Dependent variable	Log difference of total loan portfolio.
Total revenue	Dependent variable	Ratio of total financial revenue to total assets.
Investment revenue	Dependent variable	Revenue from investment activity, measured as the ratio of investment revenue to total assets.
Portfolio revenue	Dependent variable	Revenue from the total outstanding loan portfolio, which is the ratio of portfolio revenue to total assets.
Average loan amount	Dependent variable	Average outstanding loan amount per loan client, measured by the natural logarithm of average loan amount.
Credit clients	Dependent variable	Total number of credit clients that are active with the MFI at the end of the year, calculated as natural logarithm of credit clients.
FSS (financial self-sufficiency)	Dependent variable	Degree of financial self-sufficiency, measuring the extent to which the revenue of an MFI covers its total costs.
OSS (operational self-sufficiency)	Dependent variable	Degree of operational self-sufficiency, measuring the extent to which the revenue of an MFI covers its operational costs.
Leverage	Control variable	Ratio of total debt to total assets.
MFI size	Control variable	Natural logarithm of total assets.
MFI age	Control variable	Difference between the year of observation and the starting year of the MFI.
Voluntary savings	Control variable	Clients' total voluntary savings with the MFI, calculated as the ratio of total voluntary savings to total assets.
PAR30	Control variable	Portfolio at risk, measured by dividing portfolio with loans in arrears for more than 30 days by the total loan outstanding.
GDP growth	Control variable	Annual percentage rate of GDP. Data are taken from the World Bank database.
Country governance	Control variable	Sum of six global governance scores on voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Data are taken from the World Bank database.
Ownership	Moderating variable	1= shareholder-owned MFI, 0 = mutually-owned MFI

In addition to the variables mentioned above, several control variables are included based on previous research findings. These control variables consist of leverage (Chauhan, Kumar, & Verma, 2020), firm size (Hermes & Hudon, 2018), firm age (Barba Navaretti, Castellani, & Pieri, 2014), voluntary savings (Bayai & Ikhide, 2016), PAR30 (Bibi, Balli,

Matthews, & Tripe, 2018), GDP growth (Jensen, 1989), and country governance (Silva & Chávez, 2015). Furthermore, we introduce ownership as a moderating variable (Gutierrez–Goiria, San–Jose, & Retolaza, 2017), taking into consideration that MFIs are primarily categorized into two ownership types: shareholder-owned MFIs and mutually-owned MFIs (Zamore et al., 2019).

4 Methodology

In our analysis, we utilize panel-data regressions to examine the relationship between FCF and overinvestment and between FCF and MFI performance, as well as the moderating effect of shareholder ownership on the latter relationship. Panel data has advantages over time-series and cross-section data (Hsiao, 2014). Panel data can capture individual-specific effects and time effects to control for heterogeneity that might not be observed in cross-sectional or time-series models (H. M. Park, 2011). Application of panel-data regressions can diminish the risk of obtaining biased results. Moreover, panel data contains more information, variability, degrees of freedom, and efficiency (Baltagi, 2008). Our empirical models are expressed in equations (1)-(3)[4]. Equation (1) tests the relationship between FCF and overinvestment with all control variables. Equation (2) tests the relationship between FCF and MFI performance with all control variables. Based on equation (2), equation (3) adds a moderating variable and its interaction with FCF.

$$Overinvestment_{it} = B_0 + B_1 FCF_{it} + B_2 Leverage_{it} + B_3 Size_{it} + B_4 Age_{it} + B_5 Saving_{it} + B_6 PAR30_{it} + B_7 GDP_{it} + B_8 Governance_{it} + C_i + u_{it} \quad (1)$$

$$Performance_{it} = B_0 + B_1 FCF_{it} + B_2 Leverage_{it} + B_3 Size_{it} + B_4 Age_{it} + B_5 Saving_{it} + B_6 PAR30_{it} + B_7 GDP_{it} + B_8 Governance_{it} + C_i + u_{it} \quad (2)$$

$$Performance_{it} = B_0 + B_1 FCF_{it} + B_2 Leverage_{it} + B_3 Size_{it} + B_4 Age_{it} + B_5 Saving_{it} + B_6 PAR30_{it} + B_7 GDP_{it} + B_8 Governance_{it} + B_9 Ownership_{it} + B_{10} Ownership_{it}*FCF_{it} + C_i + u_{it} \quad (3)$$

In equation (1), $Overinvestment_{it}$ represents the indicators for overinvestment in MFI *i* at time *t*, namely, the growth rate of total assets, the growth rate of total investment, the growth rate of the total loan portfolio, total revenue, investment revenue, and portfolio revenue. In equations (2) and (3), $Performance_{it}$ represents the social and financial

[4] In alternative models, we also test time fixed effect. The test results show that time fixed effects do not have significant influence on the coefficients.

performance of MFI *i* at time *t*. Social performance is measured by the average loan amount and the number of credit clients, where a lower average loan amount represents better depth of microfinance outreach and a higher number of credit clients represents better breadth of microfinance outreach (Schreiner, 2002). Financial performance is measured by ROA, ROE, OSS, and FSS. In equation (3), $Ownership_{it}$ is the moderating variable, i.e., a dummy variable taking the value of 1 if the MFI is owned by shareholders and 0 otherwise. $Ownership_{it}*FCF_{it}$ is the interaction variable between shareholder and FCF.

In all three equations, FCF_{it} is the sum of total cash and short-term investment divided by total assets. $Leverage_{it}$ is total debts scaled by total assets. $Size_{it}$ represents firm size and is the natural logarithm of total assets. Firm age, Age_{it}, is the difference between the year of observation and the starting year of the MFI. $Saving_{it}$ is the ratio of total voluntary savings to total assets. $PAR30_{it}$ is portfolio at risk and is calculated by dividing the portfolio with loans in arrears for more than 30 days by the total loan outstanding. GDP_{it} and $Governance_{it}$ are, respectively, GDP growth[5] and institutional quality of the country in which the MFI operates in year *t*. B_0 is the mean of unobserved heterogeneity, and B_1 to B_{10} represent coefficients to be estimated. *Ci* is the firm-specific unobserved effect, and u_{it} is the remaining error term that varies across both *t* and *i*.

We begin our empirical analysis with the Breusch–Pagan test (Baltagi, 2008) to determine whether a panel-data regression or an ordinary least squares (OLS) regression is better suited to our dataset. The OLS regression produces efficient and consistent parameter estimates if the individual effect C_i equals zero. When C_i is not zero in the longitudinal data, the assumptions of the OLS regression are violated, and hence the OLS estimator is no longer the best unbiased linear estimator (H. M. Park, 2011). The results of the Breusch–Pagan test (untabulated) indicate that the panel-data regression is better suited to our dataset.

[5] In alternative models, we applied GDP per capita, which yields results with no significant difference from the models using GDP growth.

The next step in our empirical analysis is to employ a Hausman test (Hausman, 1978) to determine whether the random effects (RE) estimator or the fixed effects (FE) estimator is better suited to our dataset. The RE estimator assumes that *Ci* is uncorrelated with the explanatory variables, while the FE estimator assumes that *Ci* is correlated with all the explanatory variables. The Hausman test compares fixed and random effect estimators under the null hypothesis that individual effects are uncorrelated with the explanatory variables (Hausman, 1978). A rejection of the null hypothesis suggests that the FE estimator is preferable. In the empirical section, the results of the Hausman test will determine whether the RE or the FE estimator is appropriate for each regression.

We also apply the system generalized method of moments (GMM) model (Blundell & Bond, 1998). First, the system GMM model helps to control for possible endogeneity bias (Hansen, 1982) by utilizing lagged dependent and explanatory variables as instruments to improve efficiency. Second, the system GMM model incorporates instruments by integrating both lagged dependent and explanatory variables, thereby transforming the instruments to achieve uncorrelated (exogeneity) with fixed effects (Wintoki, Linck, & Netter, 2012). Third, the system GMM model minimizes the data loss characteristic of the difference GMM model (Roodman, 2009). The diagnostic test for GMM models (Arellano & Bond, 1991), the test for serial correlation of the error term, and the test for instruments validity are applied in our analysis.

5 Results and discussion

5.1. Descriptive statistics and correlations

Table 2 presents a summary of the descriptive statistics of the variables utilized in this study. On average, the MFIs have been in business for 25 years, with total assets amounting to US$ 15 million. Among these assets, 17% are characterized as FCF, as depicted in the scatter plot shown in Figure 2. Additionally, 54% of the total assets are attributed to leverage.

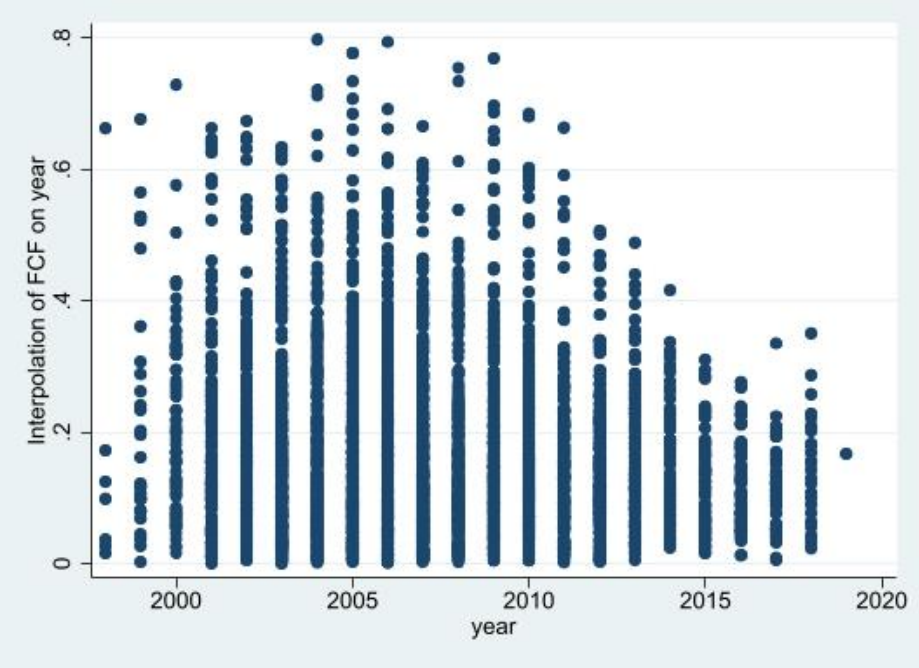
Table 2
Descriptive statistics.

Variable	Mean	Std. dev.	Min	Max	Obs.
Total assets (US$ thousands)	14800	26600	0.130	197000	3821
MFI age	25	8	8	57	4010
Free cash flow (FCF)	0.168	0.137	0.000	0.797	3499
Leverage	0.537	0.266	0.000	0.998	3815
Total loan portfolio (US$ thousands)	9702	15600	0.702	99900	3769
Total investment (US$ thousands)	641	838	0.042	3953	2380
Total revenue (US$ thousands)	2760	3905	0.166	20000	3646
Portfolio revenue (US$ thousands)	2627	3782	0.101	19900	3658
Investment revenue (US$ thousands)	66	108	0.003	586	3196
ROA	0.024	0.079	-0.389	0.373	3647
ROE	0.084	0.171	-0.592	0.599	3382
Growth of total assets	0.271	0.296	-0.793	1.906	2857
Growth of total loan portfolio	0.291	0.325	-0.991	1.992	3113
Growth of total investment	0.105	0.553	-1.976	1.996	1755
Average loan amount	1033	1176	100.000	7933	3218
Credit clients	14100	18179	10	98796	3459
Voluntary savings (US$ thousands)	1648	4984	0.000	39800	3361
PAR30	0.049	0.052	-0.044	0.300	3585
Operational self-sufficiency (OSS)	1.130	0.337	0.088	2.960	1887
Financial self-sufficiency (FSS)	0.960	0.280	0.103	1.936	1768
Shareholder-owned (Ownership)	0.398	0.490	0.000	1.000	3876
GDP growth	4.884	3.145	-7.382	17.333	3973
Country governance	-2.754	2.242	-10.480	8.635	3893

The average total loan portfolio is US$ 9.7 million, and the average total investment is US$ 641 thousand. In terms of profitability, the average total revenue is US$ 2.8 million and it is composed of two main sources: the average portfolio revenue of US$ 2.6 million and the average investment revenue of US$ 66 thousand. The average ROA and ROE are

2% and 8%, respectively. As for annual growth, the average growth rate of total assets is 27%, the average growth rate of the total loan portfolio is 29%, and the average growth rate of total investment is 11%.

Figure 2. Scatter plot of FCF over time



In terms of social performance, on average, MFIs have 14100 credit clients, and the average loan amount is US$ 1033. The average amount of total voluntary savings is US$ 2 million. In terms of loan risk, the average PAR30 is 5%, indicating that loans in arrears for over 30 days represent 5% of the total outstanding loans. Regarding financial sustainability, OSS and FSS are 1.13 and 0.96, respectively, implying that the revenue of MFIs can cover 113% of its operational expenses and 96% of its total costs. OSS measures the MFI's ability to cover operating costs through total revenues, while FSS evaluates its capacity to cover total costs through total revenue (Yaron & Manos, 2007). As for ownership type, 40% of the MFIs are shareholder-owned, and the rest are mutually-owned MFIs. Regarding country-level factors, the average GDP growth is 5%, and the average country governance value is -2.8. A higher country governance value implies a higher quality of governance in the country.

Table 3
Pairwise correlation matrix and variance inflation.

	VIF	1	2	3	4	5	6	7	8
1. FCF	1.08								
2. Leverage	1.25	-0.1732*							
3. MFI size	1.24	-0.0789*	0.1336*						
4. MFI age	1.27	-0.0713*	-0.1069*	0.2484*					
5. Voluntary savings	1.33	0.1806*	-0.2446*	0.2113*	0.1912*				
6. PAR30	1.16	0.0265	0.0186	-0.0846*	0.1360*	0.1365*			
7. GDP growth	1.12	-0.0435*	-0.0833*	-0.1387*	-0.0434*	0.0036	-0.0696*		
8. Country governance	1.09	0.0279	0.0793*	0.1163*	-0.0117	-0.1338*	0.0690*	-0.2377*	
9. Ownership	1.19	0.0107	0.0827*	0.1588*	-0.2827*	0.0530*	-0.0123	0.0840*	-0.0016

Notes: The table reports pairwise correlations between the explanatory variables. FCF is calculated as the ratio of total cash and short-term investment to total assets. Leverage is calculated as the total debt over total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Voluntary savings is the ratio of total voluntary savings to total assets. PAR 30 is calculated by dividing the portfolio with loans in arrears for more than 30 days by the total loan outstanding. GDP growth indicates the annual percentage rate of GDP in each country and country governance captures macro-institutional differences between countries. Ownership represents firms that are owned by shareholders when the value equals 1, and by mutual owners when the value equals 0. VIF denotes variance inflation factor.

∗ Statistical significance at the 5% level or lower.

Table 3 presents pairwise correlations and variance inflation between the independent and control variables. Most of the correlations are significant at the 5% level or lower, and all of them are below 0.50. That is, all of the correlations are below the threshold of concern for multicollinearity (Hair, 2009; Kennedy, 2008; Studenmund, 2014). Similarly, all the VIF scores are below 5 (Studenmund, 2014).

5.2 The existence of FCF overinvestment in microfinance

Table 4 presents the fixed effects estimates based on Hausman (1978) tests to determine the relationship between FCF and six variables that indicate the existence of overinvestment activities in microfinance. The six variables are total asset growth, total investment growth, total loan portfolio growth, total revenue, investment revenue, and portfolio revenue.

As can be seen in the table, FCF is highly significant at the 1 percent level for all coefficients. Overall, the results support the existence of FCF overinvestment in microfinance. Specifically, positive coefficients are observed for the growth of total assets and total investments, while a negative coefficient is found for the growth of the total loan portfolio. In other words, an increase in FCF leads to an increase in total assets and total investment, but to a decrease in total loan portfolio, suggesting overinvestment.

Given that the allocation of capital is mainly to total investment and the total loan portfolio, the results reported in columns (1)-(3) indicate that as FCF increases, MFIs tend to allocate more assets to investment and less to the loan portfolio. These results are consistent with the activities of empire building through FCF overinvestment (Hope & Thomas, 2008).

Total revenue (column 4) and portfolio revenue (column 6) exhibit significant negative coefficients, while investment revenue (column 5) shows a significant positive coefficient. In other words, as FCF increases, total revenue and portfolio revenue decrease, while investment revenue increases. Investment revenue and portfolio revenue are the two main sources of total revenue. As investment revenue increases, portfolio revenue and total revenue decrease. This indicates that the decrease in portfolio revenue is greater than the increase in investment revenue. As for the shift of capital allocation from the total loan portfolio to total investment, the decrease in portfolio revenue is greater than the increase in investment revenue. Therefore, total investment yields less profit compared to the loan portfolio (assuming that the profit levels are constant). This finding is consistent with the consequence of the behavior of FCF overinvestment, where empire-building activities (i.e., growth in firm size) lead to a decrease in profitability (Liu & Bredin, 2010).

As for the control variables, leverage has a significant effect in all six columns, supporting the pattern of FCF overinvestment. Large MFIs often exhibit a low growth rate in terms of firm size, and MFI age has a weak effect on FCF overinvestment. Both voluntary savings and PAR30 show a significant negative effect on the behavior of empire building. GDP growth boosts FCF overinvestment and has a significant effect on all coefficients, while country governance has a weak effect on the activity of empire building.

Table 4
The relationship between FCF and overinvestment: Fixed effects estimates

	(1) Total asset growth	(2) Total investment growth	(3) Total loan portfolio growth	(4) Total revenue	(5) Investment revenue	(6) Portfolio revenue
FCF	0.1913***	1.8439***	-0.5794***	-0.1183***	0.0080***	-0.1144***
	(0.0409)	(0.2456)	(0.0801)	(0.0031)	(0.0007)	(0.0029)
Leverage	0.1729***	0.4059***	0.1424***	-0.0602***	0.0024***	-0.0529***
	(0.0329)	(0.1515)	(0.0508)	(0.0034)	(0.0006)	(0.0031)
MFI size	-0.0472***	0.0087	-0.0880***	0.0019	-0.0008***	0.0029**
	(0.0064)	(0.0264)	(0.0098)	(0.0007)	(0.0001)	(0.0006)
MFI age	-0.0048	-0.0039	0.0056	0.0011	0.0001	0.0032***
	(0.0068)	(0.0741)	(0.0143)	(0.0015)	(0.0002)	(0.0014)
Voluntary savings	-0.1718**	-0.3654*	0.0045	-0.0593***	0.0016	-0.0527***
	(0.0721)	(0.2656)	(0.1291)	(0.0131)	(0.0016)	(0.0123)
PAR30	-1.0123***	-1.0957**	-1.0006***	0.1207***	0.0002	0.0357
	(0.1000)	(0.4337)	(0.1520)	(0.0070)	(0.0015)	(0.0065)
GDP growth	0.0167***	-0.0202**	0.0124***	-0.0017***	-0.0001**	-0.0011***
	(0.0012)	(0.0073)	(0.0019)	(0.0001)	(0.0000)	(0.0001)
Country governance	-0.0092	-0.0501	-0.0152	-0.0146***	-0.0003	-0.0129***
	(0.0102)	(0.0403)	(0.0149)	(0.0015)	(0.0002)	(0.0014)
Observations	2342	1527	2276	2923	2702	2924
Number of MFIs	393	391	447	440	423	439
Chi2/F test (*p*-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test (*p*-value)	0.0000	0.0092	0.0000	0.0000	0.0000	0.0000
Estimator	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Notes: This table lists fixed effects estimates on the relationship between FCF and six indicators of overinvestment. Total asset growth measures the growth rate of total assets and is calculated by the log difference of total assets. Total investment growth is the growth rate of investment and is calculated by the log difference of total investment. Total loan portfolio growth is the growth rate of total loan portfolio, calculated by the log difference of total loan portfolio. Total revenue is the ratio of the total financial revenue to total assets. Investment revenue is the ratio of investment revenue to total assets. Portfolio revenue is the ratio of portfolio revenue to total assets. FCF is calculated as the ratio of total cash and short-term investment to total assets. Leverage is calculated as the ratio of total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Voluntary savings is the ratio of voluntary savings to total assets. PAR 30 is the ratio of the portfolio with loans in arrears for more than 30 days to the total loan outstanding. GDP growth indicates the annual percentage rate of GDP in each country and country governance captures macro-institutional differences between countries. Standard errors are in parentheses.
** Statistical significance at the 10% level.*
*** Statistical significance at the 5% level.*
**** Statistical significance at the 1% level.*

Overall, the test results imply a shift of capital allocation from the main business (i.e., loan portfolio) to investment with the increase of FCF, leading to a reduction in profitability. In general, the results of Table 4 are consistent with our Hypothesis 1 and the findings of prior studies in showing that FCF overinvestment is correlated with increased firm size (total assets) (Brealey et al., 2008), increased investment (Pawlina &

Renneboog, 2005), and reduced profitability (Liu & Bredin, 2010). Therefore, the findings in Table 4 provide evidence of the existence of FCF in microfinance.

Table 5
The relationship between FCF and overinvestment: GMM estimates

	(7) Total asset growth	(8) Total investment growth	(9) Total loan portfolio growth	(10) Total revenue	(11) Investment revenue	(12) Portfolio revenue
FCF	-0.0541**	0.9798***	-0.1301*	-0.0571***	0.0099***	-0.0751***
	(0.0718)	(0.2001)	(0.0960)	(0.0219)	(0.0027)	(0.0255)
Leverage	0.0216*	0.0977	0.0081	-0.0256***	-0.0006	-0.0233**
	(0.0372)	(0.1000)	(0.0441)	(0.0110)	(0.0006)	(0.0114)
MFI size	-0.0106**	0.0063	-0.0149**	-0.0065***	0.0001	-0.0066***
	(0.0057)	(0.0142)	(0.0076)	(0.0019)	(0.0001)	(0.0019)
MFI age	0.0008	0.0034	0.0002	-0.0008***	0.0000	-0.0008**
	(0.0010)	(0.0030)	(0.0013)	(0.0004)	(0.0000)	(0.0003)
Voluntary savings	0.0267	0.0197	0.0496	-0.0485***	-0.0017***	-0.0436***
	(0.0391)	(0.1025)	(0.0475)	(0.0153)	(0.0006)	(0.0152)
PAR30	-0.9510***	-0.8195**	-1.2135***	0.0048	0.0006	-0.0611
	(0.1693)	(0.4224)	(0.2523)	(0.0549)	(0.0040)	(0.0573)
GDP growth	0.0143***	-0.0088	0.0176***	-0.0021***	-0.0001***	-0.0017***
	(0.0030)	(0.0078)	(0.0036)	(0.0007)	(0.0000)	(0.0007)
Country governance	-0.0038	-0.0194*	-0.0024	0.0041***	-0.0000	0.0042***
	(0.0037)	(0.0137)	(0.0046)	(0.0017)	(0.0001)	(0.0017)
Observations	1860	1003	1937	2388	2180	2391
Number of MFIs	393	358	446	440	423	439
Number of instruments	27	27	27	28	28	28
AR (1) test (*p*-value)	0.000	0.000	0.003	0.000	0.000	0.000
AR (2) test (*p*-value)	0.119	0.600	0.149	0.144	0.413	0.141
Hansen test (*p*-value)	0.244	0.817	0.325	0.150	0.249	0.484

Notes: This table reports the results of the two-step system GMM. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test for over-identification is under the null hypothesis that the instrument set is valid. In the system GMM specification, we used the "forward" orthogonal deviations transformation instead of first differencing because our data is an unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Standard errors are in parentheses. See Table 1 and the notes in Table 4 for definitions of the variables.
** Statistical significance at the 10% level.*
*** Statistical significance at the 5% level.*
**** Statistical significance at the 1% level.*

Overall, the results presented in Table 5 provide further evidence for the existence of FCF overinvestment in microfinance. The GMM estimates show that FCF consistently has significant coefficients with the same signs across all columns (7)-(12) as in Table 4, indicating the robustness of our results. Additionally, the consistency of the OLS regression results (untabulated) with the fixed effects and GMM regressions further supports the robustness of our results.

5.3 The relationship between performance and FCF

Table 6 presents fixed and random effects estimates based on Hausman (1978) tests to determine the relationship between FCF and performance (social and financial). Average loan amount (Column 13) and credit clients (Column 14) are proxies for social performance. For financial performance, four commonly applied indicators are utilized: ROA (Column 15), ROE (Column 16), OSS (Column 17), and FSS (Column 18).

In all six columns (13)-(18) of Table 6, FCF has highly significant coefficients at the 1 percent level. The results indicate that FCF is associated with mixed social performance and diminished financial performance of MFIs. Specifically, FCF has a significant negative effect on the average loan amount (Column 13)[6] and credit clients (Column 14). A decrease in average loan amount indicates that FCF is associated with higher social performance, while a decrease in credit clients suggests that FCF is related to lower social performance. As for financial performance, FCF has a significant negative effect on ROA (Column 15), ROE (Column 16), OSS (Column 17), and FSS (Column 18). These results indicate that FCF lowers financial performance.

Regarding the control variables, leverage has a positive effect on social performance (Kyereboah‐Coleman, 2007) and a negative effect on financial performance (Sekabira, 2013). Firm size has a positive effect on both social and financial performance (Hermes & Hudon, 2018), while MFI age may not be important to the performance of MFIs (Abrar & Javaid, 2016; Pati, 2015). Voluntary savings has a positive effect on social performance (Woller, 2006), but, contrary to the findings of (Bayai & Ikhide, 2016), it has a negative effect on financial performance. PAR30 has a significant negative effect on financial performance (Daher & Le Saout, 2015) and an insignificant effect on social performance. GDP growth has a positive effect on financial performance and an insignificant effect on social performance, which is contrary to our hypothesis that GDP growth may improve social performance. Country governance has a negative effect on both social and financial performance.

[6] A negative effect on average loan amount means that the MFI reduces the loan amount. In microfinance this is considered improved social performance since smaller loans indicate reaching poorer clients (often referred to as depth of outreach).

Overall, the results of the fixed and random effects estimates show that an FCF is associated with the mixed social performance and diminished financial performance of MFIs. These findings support our Hypothesis 2.

Table 6
The relationship between FCF and performance: Fixed and random effects estimates

	(13) Average loan amount	(14) Credit clients	(15) ROA	(16) ROE	(17) Operational self-sufficiency	(18) Financial self-sufficiency
FCF	-0.2454***	-0.6741***	-0.0919***	-0.1840***	-0.2007***	-0.2467***
	(0.0108)	(0.0157)	(0.0061)	(0.0106)	(0.0343)	(0.0240)
Leverage	0.2908***	0.0345	-0.0633***	-0.0024	-0.2285***	-0.0461*
	(0.0113)	(0.0152)	(0.0055)	(0.0102)	(0.0323)	(0.0257)
MFI size	0.2793***	0.6157***	0.0174***	0.0230***	0.0440***	0.0498***
	(0.0021)	(0.0028)	(0.0010)	(0.0019)	(0.0060)	(0.0052)
MFI age	0.0006	0.0049	0.0027*	0.0011	-0.0002	0.0024*
	(0.0062)	(0.0084)	(0.0016)	(0.0030)	(0.0099)	(0.0076)
Voluntary savings	0.4345***	0.3156***	-0.0714***	-0.0119	-0.1654***	0.0084
	(0.0342)	(0.0497)	(0.0146)	(0.0264)	(0.0796)	(0.0489)
PAR30	0.1350	-0.4023**	-0.3216***	-0.5171***	-0.7085***	-0.8987***
	(0.0259)	(0.0340)	(0.0136)	(0.0256)	(0.0998)	(0.0805)
GDP growth	0.0023	0.0022	0.0015***	0.0042***	0.0084***	0.0064***
	(0.0003)	(0.0004)	(0.0002)	(0.0003)	(0.0011)	(0.0008)
Country governance	0.0235**	-0.0316***	-0.0042**	-0.0042	-0.0009	-0.0044
	(0.0053)	(0.0074)	(0.0021)	(0.0036)	(0.0115)	(0.0086)
Observations	2794	2865	2919	2752	1495	1454
Number of MFIs	435	442	442	423	287	286
Chi2/F test (*p*-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test (*p*-value)	0.0001	0.0002	0.0067	0.2217	0.1507	0.1125
Estimator	Fixed	Fixed	Fixed	Random	Random	Random

Notes: This table lists fixed and random effects estimates on the relationship between FCF and performance. The average loan amount is the average outstanding loan amount per loan client. Credit clients is the ratio of total credit clients to total assets. ROA is the return of assets, and ROE is the return of equity. Operational self-sufficiency is the degree of operational self-sufficiency, while financial self-sufficiency is the degree of financial self-sufficiency. FCF is calculated as the ratio of total cash and short-term investment to total assets. Leverage is the ratio of total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Voluntary savings is the ratio of voluntary savings to total assets. PAR 30 is calculated by dividing the portfolio with loans in arrears for more than 30 days by the total loan outstanding. GDP growth indicates the annual percentage rate of GDP in each country and country governance captures macro-institutional differences between countries. Standard errors are in parentheses.
** Statistical significance at the 10% level.*
*** Statistical significance at the 5% level.*
**** Statistical significance at the 1% level.*

Table 7 presents the results of GMM estimates, which generally mirror the fixed and random effects estimates reported in Table 6. Across all columns in Table 7, the sign of the coefficients for FCF is consistent with those of the corresponding columns in Table 6. Additionally, the test results produced by the OLS estimator (untabulated) are consistent with those produced by the fixed effects and GMM estimators in terms of the sign of the

coefficients for all variables. The consistency of the test results on the relationship between FCF and proxies for social and financial performance indicates the robustness of the finding that FCF is associated with the mixed social performance and diminished financial performance of MFIs.

Table 7
The relationship between FCF and performance: GMM estimates

	(19) Average loan amount	(20) Credit clients	(21) ROA	(22) ROE	(23) Operational self-sufficiency	(24) Financial self-sufficiency
FCF	-1.2253***	-0.1159**	-0.0789***	-0.1944***	-0.3016***	-0.1616***
	(0.2906)	(0.2838)	(0.0308)	(0.0641)	(0.0850)	(0.0690)
Leverage	0.4196***	-0.2863*	-0.0333***	0.0245	-0.2427***	-0.0706***
	(0.1541)	(0.1804)	(0.0130)	(0.0318)	(0.0569)	(0.0318)
MFI size	0.2613***	0.7119***	0.0039**	0.0164***	0.0342***	0.0215***
	(0.0226)	(0.0240)	(0.0020)	(0.0050)	(0.0084)	(0.0108)
MFI age	-0.0018	0.0039	0.0004	0.0018**	-0.0001	0.0015*
	(0.0064)	(0.0069)	(0.0003)	(0.0009)	(0.0013)	(0.0011)
Voluntary savings	0.9553***	-0.9175***	-0.0371***	-0.0205	-0.1704***	-0.0551*
	(0.1865)	(0.2063)	(0.0138)	(0.0301)	(0.0586)	(0.0329)
PAR30	1.8383**	-1.8923***	-0.1991***	-0.3897***	-0.9138***	-1.0528***
	(0.8123)	(0.7207)	(0.0683)	(0.1523)	(0.2699)	(0.2856)
GDP growth	-0.0066	0.0171*	0.0005	0.0029*	0.0043	0.0035*
	(0.0084)	(0.0103)	(0.0007)	(0.0020)	(0.0042)	(0.0021)
Country governance	0.0768***	-0.0620***	-0.0000	-0.0052*	-0.0027	-0.0022
	(0.0227)	(0.0245)	(0.0016)	(0.0035)	(0.0081)	(0.0031)
Observations	2794	2865	2919	2752	1495	1454
Number of MFIs	435	442	442	423	287	286
Number of instruments	28	28	28	28	28	26
AR (1) test (p-value)	0.000	0.000	0.002	0.000	0.042	0.000
AR (2) test (p-value)	0.165	0.174	0.385	0.231	0.267	0.125
Hansen test (*p*-value)	0.460	0.254	0.489	0.727	0.137	0.139

Notes: This table reports the results of the two-step system GMM. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test for over-identification is under the null hypothesis that the instrument set is valid. In the system GMM specification, we used the "forward" orthogonal deviations transformation instead of first differencing because our data is an unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Standard errors are in parentheses. See Table 1 and notes in Table 6 for definitions of the variables.
** Statistical significance at the 10% level.*
*** Statistical significance at the 5% level.*
**** Statistical significance at the 1% level.*

5.4. Effect of ownership on relationship between FCF and performance

In this section, we examine the effect of ownership structure on the relationship between FCF and the performance of MFIs. We use the variable, ownership, to represent shareholder-owned MFIs (equal to 1) and mutually-owned MFIs (equal to 0). The

interaction variable, *Ownership*FCF*, shows the effect of ownership structure on the relationship between FCF and performance.

Table 8
The effect of interacting ownership on the relationship between performance and FCF: Fixed and random effect estimates

	(21) Average loan amount	(22) Credit clients	(23) ROA	(24) ROE	(25) Operational self-sufficiency	(26) Financial self-sufficiency
FCF	-0.2040***	-0.5163***	-0.0789***	-0.1361***	-0.0880***	-0.1369**
	(0.0897)	(0.1136)	(0.0181)	(0.0312)	(0.0841)	(0.0603)
Leverage	0.2646***	0.0679	-0.0628***	-0.0043	-0.2231***	-0.0561*
	(0.0485)	(0.0603)	(0.0098)	(0.0162)	(0.0384)	(0.0312)
MFI size	0.2810***	0.6122***	0.0179***	0.0226***	0.0462***	0.0506***
	(0.0086)	(0.0108)	(0.0018)	(0.0029)	(0.0071)	(0.0060)
MFI age	0.0032	0.0045	0.0026*	0.0012*	-0.0012	0.0016
	(0.0080)	(0.0103)	(0.0017)	(0.0009)	(0.0019)	(0.0016)
Voluntary savings	0.4301***	0.3220***	-0.0656***	-0.0116	-0.1708***	-0.0050
	(0.0899)	(0.1163)	(0.0190)	(0.0239)	(0.0554)	(0.0440)
PAR30	0.1547	-0.4232**	-0.3231***	-0.5198***	-0.6627***	-0.8505***
	(0.1697)	(0.2093)	(0.0338)	(0.0618)	(0.1820)	(0.1451)
GDP growth	0.0029	0.0023	0.0015***	0.0043***	0.0089***	0.0070***
	(0.0026)	(0.0034)	(0.0006)	(0.0010)	(0.0028)	(0.0022)
Country governance	0.0183*	-0.0294**	-0.0043**	-0.0050*	-0.0025	-0.0069*
	(0.0118)	(0.0150)	(0.0025)	(0.0027)	(0.0061)	(0.0049)
Ownership	0.1220***	0.0089	-0.0093	0.0256**	-0.0087	0.0127
	(0.0496)	(0.0623)	(0.0104)	(0.0141)	(0.0335)	(0.0269)
Ownership*FCF	-0.0182*	-0.4963***	-0.0268**	-0.1216***	-0.2027*	-0.2532***
	(0.1404)	(0.1792)	(0.0289)	(0.0498)	(0.1295)	(0.0995)
Observations	2744	2816	2874	2711	1466	1422
Number of MFIs	428	435	436	418	282	281
Chi2/F test (*p*-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test (*p*-value)	0.0004	0.0008	0.0197	0.1110	0.3964	0.4016
Estimator	Fixed	Fixed	Fixed	Random	Random	Random

Notes: This table reports the fixed and random effects estimates on the relationship between FCF and performance. Ownership represents firms that are shareholder-owned when equals to 1, and mutually-owned otherwise. Robust standard errors are in parentheses. See Table 1 and notes in Table 6 for definitions of the other variables.
** Statistical significance at the 10% level.*
*** Statistical significance at the 5% level.*
**** Statistical significance at the 1% level.*

Table 8 presents the results of fixed and random effect estimations based on the Hausman test (Hausman, 1978). After interacting with shareholder ownership, FCF has significantly negative coefficients across all columns (21)-(26), consistent with the corresponding results in Table 6. The interaction term has significantly negative coefficients across all six models (21-26), indicating that shareholder ownership has a negative effect on the relationship between FCF and performance (social and financial). This finding is inconsistent with our Hypothesis 3 and the argument that shareholder-

owned MFIs have better outreach and stronger financial performance than mutually-owned MFIs (Barry & Tacneng, 2014).

One possible explanation for this finding is that the conflict between managers and owners is more significant in shareholder-owned MFIs due to the high level of information asymmetry in microfinance (Mersland & Strøm, 2009). Shareholder-owned MFIs, in particular, may experience even greater information asymmetry compared to mutually-owned MFIs. This is because shareholder-owned MFIs often have concentrated ownership, while mutually-owned MFIs have ownership dispersed among various stakeholders, including donors, creditors, and investors from around the world. Furthermore, shareholder-owned firms have the advantage over mutually owned MFIs accessing capital through equity investments. In situations where there are limited growth opportunities and high information asymmetry, this additional capital can increase the availability of FCF, thus leading to FCF overinvestment activities. Unfortunately, such overinvestment tends to result in lower financial and social performance.

Overall, the results of the fixed and random estimations suggest that FCF may lead to growth through investment that deviates from the best performance of MFIs, which could result in lower financial performance and mixed social performance. This finding is consistent with agency theory, which suggests that managers may prioritize growth at the expense of the best interests of the MFI owners, given sufficient FCF and limited growth opportunities. Shareholder ownership may exacerbate this opportunistic behavior through FCF.

6 Conclusion

As a type of hybrid organization, MFIs operate with the dual goals of achieving social impact and financial sustainability (Lam et al., 2020). Given their high operational costs (Cull et al., 2018), MFIs need to carefully utilize their resources to optimize the balance between social and financial objectives, aiming to maximize client outreach while ensuring business sustainability (Reichert, 2018). It is reasonable to assume that managers working in microfinance appreciate the core values of hybrid organizations and leverage their capacities to help MFIs achieve the dual goals. While managers in MFIs have significant discretion due to high asymmetry (S. Ghosh & Van Tassel, 2013) and limited regulation and governance (Galema et al., 2012a), they are expected to align their values with the organization and act responsibly in the best interests of the MFI owners. However, we cannot disregard the possibility of managers misusing their discretion for personal gain, potentially neglecting the interests of the owners and the MFIs themselves. This is particularly concerning when MFIs have accumulated substantial cash reserves but face limited growth opportunities (Assefa et al., 2013), leading to the risk of missed targets, decreased performance, reduced compensation, and even job insecurity (Berger & Di Patti, 2006). The consequences of overinvesting FCF can deviate from the best performance of MFIs, adversely affecting both their financial and social goals. Therefore, it is crucial to understand the issue of FCF in hybrid organizations.

This study investigates FCF in hybrid firms by studying the existence of FCF in MFIs and the relationship between FCF and performance of MFIs. Prior literature presents positive relationships between FCF and investment activities in cash-rich firms in industrial sectors (Jaggi & Gul, 1999) and commercial banks (Al-Fasfus, 2020). When MFIs accumulate cash on hand through donations, growth, and investment, it is important to examine the existence of FCF overinvestment in microfinance. Notably, the empirical studies have shown that FCF has negative effects on performance in manufacturing firms (K. Park & Jang, 2013) and banking (D'Mello & Miranda, 2010). We extend the scope of the FCF literature to hybrid firms and study MFIs aiming to achieve a double bottom line to serve the poor and realize financial self-sufficiency (Hermes & Hudon, 2018).

Based on the characteristics of MFIs, we define FCF as the remaining cash flow after paying all operating costs, granting loan applications that fulfill the social goal, and paying all operating costs that fulfill the financial goal. Since the amount of FCF is unobservable, we design a test of existence of FCF based on the accounting results of a set of operational activities. Following the common pattern of FCF overinvestment (Brealey et al., 2008), we measure overinvestment in terms of the growth of total assets, of total investment, and of total loan portfolio, as well as the growth of total revenue, of investment revenue, and of portfolio revenue. The fixed effect estimates reveal an increase in total assets (Stulz, 1990) and total investment (Brealey et al., 2008), but a decrease in total loan portfolio, which implies a shift of allocation of total assets from the loan portfolio (main operation of MFIs) to investment (Pawlina & Renneboog, 2005).

Next, we examine the relationship between FCF and the performance of MFIs. We choose commonly used indicators for social performance (average loan amount and credit clients) and for financial performance (ROA, ROE, OSS, and FSS) (Mersland & Strøm, 2009). The test results indicate that FCF is related to mixed social performance and diminished financial performance. Further investigation shows that the significant negative coefficients between FCF and MFI performance can be exacerbated by shareholder ownership of MFIs. All the investigations are conducted using a global panel dataset and applying fixed and random effects and GMM estimations to examine the existence of FCF in microfinance and its impact on performance. All the results from the fixed and random effect estimates are consistent with the corresponding GMM estimates.

This study contributes to the literature by examining the existence of FCF in hybrid firms represented by MFIs providing banking services to financially excluded populations. The findings suggest that FCF overinvestment occurs in MFIs, and leads to mixed social performance and diminished financial performance. Additionally, shareholder ownership exacerbates the negative effect of FCF on MFI performance. These results highlight the importance of effective management of FCF and governance mechanisms in microfinance institutions.

Future research can build on this study by improving the measurement of FCF and best performance in MFIs and examining the effect of institutional factors on FCF

overinvestment and MFI performance. Additionally, investigating FCF in different types of MFIs, such as regulated and deposit-taking MFIs, can provide further insights into the role of FCF in microfinance. Finally, exploring the effect of FCF on other types of hybrid firms or on other aspects of microfinance, such as outreach to marginalized communities, can broaden our understanding of the implications of FCF for hybrid firms and the communities they serve.

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ESSAY 2
DEBT, FREE CASH FLOW, AND FINANCIAL PERFORMANCE IN MICROFINANCE: A GLOBAL ANALYSIS

Debt, free cash flow, and financial performance in microfinance: A global analysis

Yan Zhang, Stephen Zamore, Roy Mersland

Abstract

This study investigates the impact of debt on both free cash flow (FCF) and financial performance in microfinance. Previous literature suggests that debt has two levels of effects on FCF. First, debt reduces the availability of FCF due to the pre-committed interest payment. Second, debt enhances operational efficiency and leads to better financial performance, as defaulting on interest and principal payments can result in bankruptcy and job loss. Our study finds that total debt has a negative relationship with FCF, with short-term debt having a more pronounced effect. In terms of performance, we find that total debt is associated with improved operational performance but diminished financial performance. While debt leads to increased operational efficiency and hence improved operational profit, in large enough amounts it increases funding expenses that ultimately offset the profit, leading to a decline in financial performance.

Keywords: FCF; Debt; Performance; Agency theory; Microfinance institutions; Hybrid firms

JEL codes: M41, G21

1 Introduction

The objective of this study is to investigate the effect of a firm's debt on its free cash flow (FCF) and performance in microfinance. The separation between ownership and control of firms causes an agency problem where managers may prioritize their personal interests over shareholders' interests (Jensen, 1986). In firms with high FCF and low growth opportunities, self-serving managers may make non-value-maximizing decisions through FCF overinvestment (Lang et al., 1991).

The literature provides evidence of a positive relationship between FCF and overinvestment in profit-seeking firms (Al-Fasfus, 2020; Richardson, 2006; Ukhriyawati et al., 2017). In contrast to profit-seeking firms, hybrid firms, such as microfinance institutions (MFIs), have "dual goals" of providing financial services to the poor and achieving financial sustainability (Daher & Le Saout, 2013). This raises the question of whether hybrid firms with dual goals face the same FCF issues as profit-seeking firms. As a type of hybrid organization, microfinance institutions (MFIs) face situations like profit-seeking firms. These situations are information asymmetry between management and shareholders (including donors, creditors, and investors), limited growth opportunities (Hermes & Hudon, 2018), and accumulated cash (Assefa et al., 2013) in MFIs. Therefore, it is reasonable to expect FCF overinvestment issue in MFIs, and it is important to investigate possible mitigation channels.

To mitigate the agency problem of FCF overinvestment, several mechanisms have been proposed, including the use of debt in a firm. The literature shows that debt may have two effects on a firm: reducing FCF (Zwiebel, 1996) and improving performance (Berger & Di Patti, 2006). Debt may alleviate FCF overinvestment by reducing the availability of FCF due to the pre-committed repayment of the interest and the principal (Hart & Moore, 1994; Jensen, 1986; Stulz, 1990; Zwiebel, 1996). Additionally, debt may enhance operational efficiency by motivating managers to meet payment terms since failure to pay the interest and the principal can lead to bankruptcy and job loss (Berger & Di Patti, 2006).

Debt comes in different forms, each with a different set of attributes, and so debt's effect on FCF may vary across theses different forms (Gul & Goodwin, 2010). For example, based on the parameter of maturity, debt can be disaggregated into short-term debt and long-term debt. Short-term debt requires frequent renewal and immediate repayment of the interest and the principal, making it more effective in reducing FCF than long-term debt. By contrast, long-term debt does not require immediate repayment of the principal, making it less effective in reducing FCF than short-term debt. Overall, the effect of debt on FCF is expected to be negative, with the effect enhanced by short-term debt but weakened by long-term debt.

With the increasing use of debt in microfinance (Dorfleitner, Röhe, & Renier, 2017), MFIs contain a growing proportion of debt relative to total assets, on average. The increased application of debt may motivate managers to be more efficient in their operations, which is particularly crucial in microfinance, given the high operational costs associated with small-scale operations, high risk, and the need for client outreach (Hermes & Lensink, 2011). The application of debt can encourage managers to reduce operational costs and improve operational efficiency to meet their payment obligations and avoid default (Berger & Di Patti, 2006), as debt can act as a disciplinary mechanism that encourages value creation and discourages wasteful spending (Jensen & Meckling, 1976). For these reasons it is important to understand the impact of debt on operational efficiency of MFIs. It is also important to investigate whether improved operational efficiency is offset by increased funding expenses on debt in order to determine the ultimate effect of debt on financial performance (measured by the bottom-line profit).

To the best of our knowledge, this is the first study to examine the effect of debt on FCF in MFIs from the perspectives of both FCF and operational efficiency. The study employs a sample of 484 MFIs in 74 countries from 1998 to 2019, providing initial international evidence on the effect of debt on FCF and operational efficiency. We use various panel data techniques, including fixed effects, random effects, and dynamic models.

We find that there is a significant negative relationship between total debt and FCF in MFIs. This effect varies across short-term debt and long-term debt: short-term debt has a significant negative relationship with FCF, while long-term debt has an insignificant

positive relationship with FCF. This finding is consistent with prior studies suggesting that short-term debt is an effective monitoring mechanism for firms with agency problems (Gul & Goodwin, 2010; Myers, 1977). At the second level, our findings suggest that debt can motivate managers to increase operational efficiency, resulting in lower operational costs and higher operational profit. This finding is consistent with prior studies suggesting that the presence of debt can encourage managers to reduce operational costs and improve operational efficiency in order to meet payment obligations and avoid default. However, this improved operational efficiency is offset by the increased funding expenses associated with the enlarged debt application, leading to reduced financial performance (measured by the bottom-line profit).

The rest of the paper is organized as follows. Section 2 presents the background literature and summarizes the hypotheses. Section 3 describes the data and variables. Section 4 outlines the econometric model. Section 5 presents and discusses the empirical findings and Section 6 concludes.

2 Theoretical background and hypotheses

Due to information asymmetry and imperfect supervision between management and shareholders, self-serving managers may exercise discretion to maximize personal interests at the expense of shareholders' interests (Jensen, 1986). In cash-rich firms with low growth opportunities, managers tend to engage in FCF overinvestment activities (Jensen, 1989). Previous literature supports these findings in profit-seeking firms with accumulated cash (Al-Fasfus, 2020; Richardson, 2006; Ukhriyawati et al., 2017). Unlike profit-seeking firms, which have a single goal of maximizing profitability (Jensen & Meckling, 1976), hybrid firms such are required to achieve two goals: providing financial services to the underprivileged and attaining financial sustainability (Randøy, Strøm, & Mersland, 2015). Moreover, based on the assertion by Jensen and Meckling (1976) that NGOs are susceptible to agency issues, we expect that MFIs also grapple with similar issues. Thus, we pose the question of whether MFIs also face FCF-related agency issues.

According to agency theory, there are three key elements contributing to the presence of FCF overinvestment activity in a cash-rich firm with limited growth opportunities and high information asymmetry (Jensen, 1986). Notably, MFIs operate in an environment encompassing all three of these elements. Specifically, MFIs accumulate substantial cash reserves over decades of rapid expansion (Assefa et al., 2013), high returns and repayments (Sengupta & Aubuchon, 2008), and international investments in microfinance (Goodman, 2006). However, the once-constant growth opportunities are diminishing, as evidenced by the change in the average annual growth rate of clients served by MFIs and the number of MFIs over time (Assefa et al., 2013; Hermes & Hudon, 2018). Furthermore, intense competition in the financial services market has led to market saturation and overleveraging of clients in certain countries and regions (Armendariz & Labie, 2011; Assefa et al., 2013; Copestake, 2007; Mersland & Strøm, 2010). Additionally, the lack of governance and transparency (Finkelstein & D'Aveni, 1994) has resulted in significant information asymmetry between managers and shareholders (including donors, subsidiaries, creditors, and investors) in microfinance. Taken together, the results demonstrate that the environment in which MFIs operate, may heighten the likelihood of managers engage in FCF overinvestment activity in order to

prioritize their personal interests over shareholders' interest (Bruett, 2004). Hence, it is reasonable to anticipate FCF overinvestment by managers of MFIs.

Previous studies have suggested that debt has the potential to mitigate FCF overinvestment through two channels (Hart & Moore, 1994; Stulz, 1990; Zwiebel, 1996). The first channel is the availability of FCF. Specifically, debt reduces the availability of FCF by repayment of the interest and the principal, which could lead to bankruptcy and job loss if not honored (Jensen, 1986). Therefore, debt can curtail managers' discretion over the use of FCF (Gul & Tsui, 1997; Jaggi & Gul, 1999). This leads to our first hypothesis.

H1: There is a negative relationship between debt and FCF of MFIs.

However, the effect of debt on FCF can vary depending on the type of debt (Gul & Goodwin, 2010). For example, based on the parameter of maturity, debt can be disaggregated into short-term debt and long-term debt. Short-term debt requires immediate repayment of both the interest and the principal, while long-term debt requires repayment of the interest only. Therefore, short-term debt places more immediate pressure on cash outflow and has a stronger negative effect on FCF than long-term debt. Hence, long-term debt is more likely to enhance the availability of FCF compared to short-term debt. Overall, the effect of debt on FCF is the net result of its negative and positive impacts. This leads to our second hypothesis.

H2: Short-term debt has a more significant negative relationship with FCF than long-term debt.

The second channel through which debt can mitigate FCF overinvestment is motivation of managers. Specifically, debt can motivate managers to enhance the operational efficiency of an organization. The threat of bankruptcy due to failure to meet debt service obligations can align the manager's interests with the MFI's responsibility to honor its debts. Such an alignment can mitigate agency problems (Gul & Tsui, 2001) and inspire managers to improve the firm's operational efficiency (Jensen, 1986), resulting in better financial performance. For example, MFIs seeking to honor their loans may intensify

efforts to repay micro-loans in order to augment revenue while reducing operational costs. This improved operational efficiency can bolster the profitability of MFIs. Nevertheless, the increased utilization of debt can also lead to higher funding expenses, offsetting the benefits of operational efficiency and resulting in an overall decline in financial performance. The effect on financial performance is therefore uncertain, but, for the sake of simplicity, we conclude that, overall, a negative relationship exists. This leads to the following hypotheses.

H3a: There is a positive relationship between debt and the operational efficiency of MFIs.

H3b: There is a negative relationship between debt and the financial performance of MFIs.

3 Data and variable definitions

3.1. Data

We employ an unbalanced panel dataset comprising 484 MFIs from 74 countries, over the 1998–2019 period, yielding a total of 4,010 MFI-year observations. This dataset is constructed by extracting information from the rating reports of five specialized microfinance rating agencies: MicroRate, MicroFinanza, Planet Rating, CRISIL, and M-CRIL. These agencies are endorsed by the Consultative Group to Assist the Poor (CGAP), which is the microfinance branch of the World Bank (Hartarska & Nadolnyak, 2008). The rating reports are widely recognized as one of the most reliable and representative sources of available data in the microfinance sector, as they are verified by third parties (Gonzalez, 2010; Hudon & Traca, 2011).

While there are no substantial differences in methodologies among the five rating agencies concerning the measurement of variables used in this study, variations exist in the availability of information within each rating report. Consequently, there are a diverse number of observations for different variables and different years, resulting in an unbalanced panel dataset. In other words, not all MFIs yield an identical number of observations for certain variables within the unbalanced panel dataset. For example, the variable *Funding expense ratio* has the lowest number of observations (1,987), while the variable *MFI age* has the highest 4,010. Thus, in regression analyses of the funding expense ratio, the number of observations is 1,471, whereas in regressions analysis of other variables, the number of observations is higher. Lastly, we incorporate country-level data from the World Bank's World Development Indicators and Worldwide Governance databases (Imai, Gaiha, Thapa, & Annim, 2012).

3.2. Variable definitions

Table 1 provides definitions of the independent, dependent, and control variables employed in the analysis. The independent variable, *Total debt*, is disaggregated into *Short-term debt* and *Long-term debt*. It is important to note that the measurement of FCF is different for MFIs than for profit-seeking firms. While MFI pursue value maximization, profit-seeking firms pursue profit maximization. As a result, the

recommended calculation of FCF in MFIs is the ratio of total cash and short-term investment to total assets (Pascal et al., 2017).

The dependent variables *Operating expense ratio* and *ROA* are proxies for operational efficiency and financial performance. Specifically, *Operating expense ratio* serves as an indicator of operational efficiency, and reflects the need for management to curtail operating expenses and enhance financial performance (Ayayi & Sene, 2010). *ROA*, encompassing both financial performance and operational efficiency (Skousen et al., 1998), functions as a comprehensive indicator of financial performance (Bharadwaj, 2000). Additionally, *Funding expense ratio* indicates the change of funding expenses to debt of MFIs, since increased debt application may lead to inadequate income generation for repaying funding expenses, thereby jeopardizing financial performance (Gonzalez, 2010).

Table 1
Definitions of variables

Variables	Definitions
Total debt	Percentage of total debt over total assets.
Short-term debt	Percentage of short-term debt over total assets.
Long-term debt	Percentage of long-term debt over total assets.
FCF	Free cash flow, calculated as the ratio of total cash and short-term investment to total assets.
Operating cost ratio	Ratio of operating expenses to annual average total assets.
Operating profit ratio	Ratio of operating profit to annual average total assets.
Funding expense ratio	Interests and fees paid on loans (excluded payments on savings over loan portfolio).
ROA	Return of assets at the end of a given period.
MFI size	Natural logarithm of total assets.
MFI age	Difference between the year of observation and the starting year of the MFI.
Productivity	Number of credit clients per loan officer.
PAR30	The outstanding balance of all loans with arrears over 30 days divided by the outstanding gross loan portfolio.
Voluntary saving	Ratio of voluntary savings to total assets.
GDP growth	Annual percentage rate of GDP. Data are taken from the World Bank database.
Country governance	Sum of six global governance scores on voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Data are taken from the World Bank database.

The control variables include both firm-level and country-level variables. Firm-level control variables include *Firm size* (Alnori, Bugshan, & Bakry, 2022), *Firm age* (S. M. T. Islam, Ghosh, & Khatun, 2021), *Productivity* (La Torre, Vento, & Tutino, 2006), *PAR30* (Adusei & Obeng, 2019), and *Voluntary savings* (Hartarska & Nadolnyak, 2007). Prior

research has shown that firm size significantly influences FCF (Alnori et al., 2022; S. Islam, 2012), and larger MFIs may exhibit higher operational efficiency and superior financial performance due to economies of scale in providing financial services (Hermes & Hudon, 2018). A positive connection between firm age and FCF has been suggested, as older firms may possess established operations and cash reserves conductive to FCF generation (Cho & Chun, 2016; S. M. T. Islam et al., 2021). Meanwhile, older firms typically exhibit higher operational efficiency due to operational learning (Berger & DeYoung, 1997). Productivity pertains to loan officer productivity, and is positively associated with FCF and operational efficiency in MFIs. *PAR30* denotes financial health risk, potentially resulting in increased operational costs and decreased cash flow (Adusei & Obeng, 2019). Voluntary savings denotes the total savings amassed from clients, often indicative of financial health and higher FCF levels (Hartarska & Nadolnyak, 2007).

The country-level control variables are *GDP growth* and *Country governance*. GDP growth[7] serves as an indicator of overall growth prospects and opportunities both for the country and for the MFIs operating in it. Managers in low GDP growth environments are more likely to focus on size growth via FCF (Jensen, 1986, 1989). We employ GDP growth data from the World Bank to account for growth opportunities in microfinance. Country governance controls institutional quality factors that influence microfinance operations (Silva & Chávez, 2015), and is constructed from six Word Bank Worldwide Governance indicators (Zamore et al., 2019).

[7] In alternative models, we applied GDP per capita, which yields results with no significant difference from the models using GDP growth.

Figure 1 illustrates the general model of this study and the hypothesized relationships.

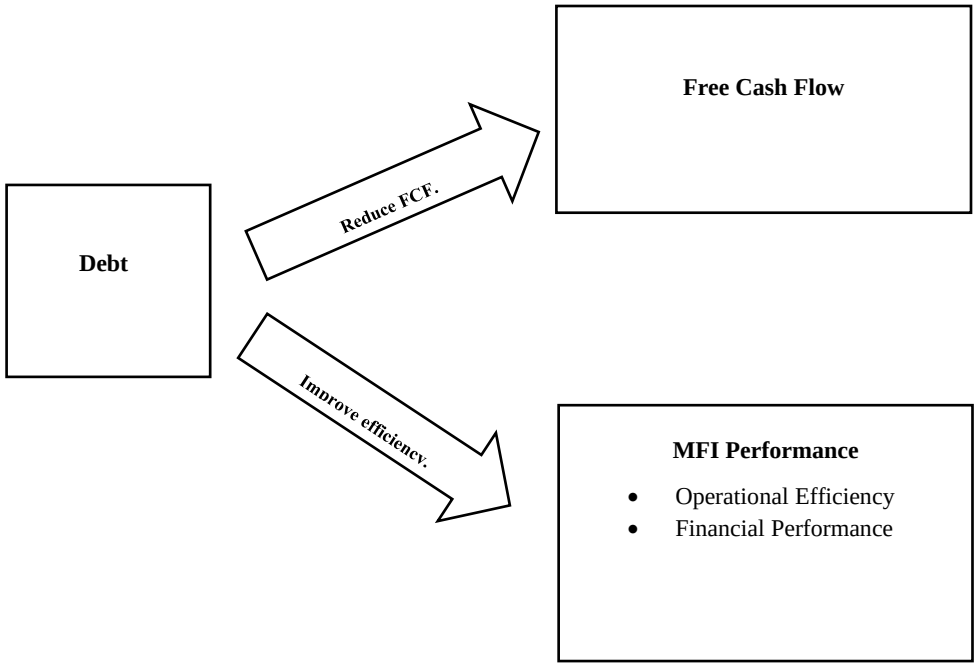

Figure 1. Construct of this study and relationship between groups of variables

4 Methodology

Our analysis employs panel-data regressions to investigate the relationship between debt, FCF, and financial performance. Panel data offer numerous advantages over time-series and cross-sectional data (Hsiao, 2014). Panel data help mitigate the risk of biased outcomes by enabling one to control for heterogeneity in cross-sectional or time-series models, whether apparent or latent (H. M. Park, 2011). Furthermore, panel data enhance information availability, variability, degree of freedom, and analytical efficiency (Baltagi, 2008). Our empirical models are established based on the notations introduced by Baltagi (2008), and encapsulated in equations (1) and (2). Equation (1) assesses the relationship between debt and FCF, while equation (2) assesses the relationship between debt and financial performance.

$$FCF_{it} = B_0 + B_1\, Debt_{it} + B_2\, Size_{it} + B_3\, Age_{it} + B_4\, Productivity_{it} + B_5\, Saving_{it} + B_6\, PAR30_{it} + B_7\, GDP_{it} + B_8\, Governance_{it} + C_i + u_{it} \quad (1)$$

$$Performance_{it} = B_0 + B_1\, Debt_{it} + B_2\, Size_{it} + B_3\, Age_{it} + B_4\, Productivity_{it} + B_5\, Saving_{it} + B_6\, PAR30_{it} + B_7\, GDP_{it} + B_8\, Governance_{it} + C_i + u_{it} \quad (2)$$

In equation (1), FCF_{it} denotes the percentage of FCF to total assets. In equation (2), $Performance_{it}$ denotes operational efficiency and financial performance. Operational efficiency is measured by the *operating cost ratio* and the *operating profit ratio*, while financial performance is measured by *ROA*. The *funding expense ratio* is also included in $Performance_{it}$ to demonstrate the effect of increased funding expenses on financial performance.

In both equations, $Debt_{it}$ denotes the percentage of total debt to total assets. In equation (1), *total debt* is disaggregated into short-term debt and long-term debt. $Size_{it}$ denotes firm size, indicating both scale and magnitude. Age_{it} denotes the operational duration of the MFI in the microfinance sector, measured in years. $Productivity_{it}$ denotes the loan officer's productivity, measured by the number of credit clients served per loan officer. $Saving_{it}$ denotes the ratio of voluntary savings to total assets. $PAR30_{it}$ denotes portfolios with loans in arrears by more than 30 days. GDP_{it} denotes the GDP growth rate of the

country in which the MFI operates, reflecting the macroeconomic context. $Governance_{it}$ measures the institutional quality of the country, including the regulatory and governance environments. B_0 denotes the average of unobserved heterogeneity, while B_1 to B_9 are coefficients to be estimated. *Ci* denotes unobserved firm-specific effects that persist over time but vary between different MFIs. Finally, u_{it} denotes the residual error component, which varies over time (*t*) and across individual units (*i*).

We begin the empirical analysis with the Breusch–Pagan test (Baltagi, 2008) to assess the suitability of panel-data analysis in comparison to ordinary least squares (OLS). OLS offers efficient and consistent parameter estimates when the individual effect C_i is zero. However, in longitudinal data where C_i is non-zero, OLS assumptions are violated, rendering OLS unsuitable (H. M. Park, 2011). The results of the Breusch–Pagan test (untabulated) indicate that panel-data analysis is more suitable for our data than OLS.

Subsequently, we apply the Hausman test (Hausman, 1978) to determine whether the fixed effects (FE) or the random effects (RE) estimator is more suitable for the dataset. The RE estimator assumes that *Ci* is not correlated with any explanatory variables, while the FE estimator assumes that *Ci* is correlated with all explanatory variables. The Hausman test compares both estimators under the null hypothesis that individual effects are not correlated with any regressors in the equation (Hausman, 1978). Rejecting the null hypothesis suggests a preference for FE. In the results section, the Hausman test determines the appropriate estimator (RE or FE) for each equation.

To address potential endogeneity concerns, a system generalized method of moments (GMM) model (Blundell & Bond, 1998) is also employed. The relationship between debt and FCF can be simultaneously determined. The pecking-order theory implies that firms use internal funds before seeking external sources like debt financing. Consequently, as FCF rises, debt levels may decrease. Similarly, a profitable firm may reduce debt over time, implying a relationship between debt and financial performance. Moreover, the GMM model helps control endogeneity bias (Hansen, 1982) by employing lagged dependent and explanatory variables as instruments to enhance operational efficiency (Wintoki et al., 2012). We utilize the system GMM model rather than the difference

GMM model due to our unbalanced dataset, which would lead to data loss with the latter model (Roodman, 2009).

Diagnostic tests for GMM models, as proposed by Arellano and Bond (1991), are implemented in our analysis. Two tests are performed: one for error term serial correlation and another for instrument validity. The serial correlation test assesses second-order autocorrelation in residuals from differenced equations. It tests the null hypothesis that the differenced error term lacks first- and second-order serial correlation. A failure to reject this null hypothesis implies correctly specified moment conditions and serially uncorrelated original error terms. In our study, an AR (2) value > 0.05 indicates correctly specified moment conditions and serially uncorrelated original error terms.

Instrument validity testing is typically done using Hansen (1982) J test for the presence of over-identifying restrictions. Failure to reject the null hypothesis supports instrument choice, as in our study. Additionally, the difference-in-Hansen test for exogeneity (Eichenbaum, Hansen, & Singleton, 1988) examines the null hypothesis that instrument subsets used in levels equations are exogenous. Our study's results reveal that this null hypothesis is not rejected, implying that the instrument subsets used in the system GMM estimates are exogenous. In summary, null hypotheses for the second-order autocorrelation test, the Hansen J test, and the difference-in-Hansen test remain unrejected, affirming the validity of our GMM estimates.

5 Results and discussion

5.1. Descriptive statistics and correlations

Table 2 provides an overview of the descriptive statistics of the key variables. On average, MFIs possess approximately US$ 15 million in total assets and boast an operational history spanning around 25 years. The mean FCF accounts for roughly 17 percent of total assets. Notably, debt constitutes around 54 percent of total assets, highlighting a distinctive funding structure compared to conventional banks which typically maintain a mere 10% equity. The debt component is disaggregated into short-term debt and long-term debt, constituting roughly 37 percent and 33 percent of total assets, respectively[8].

Table 2
Descriptive statistics.

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
Total assets (US$ million)	14.8000	26.6000	0.0001	197.0000	3821
MFI age	24.5908	7.6403	8.0000	57.0000	4010
Free cash flow	0.1673	0.1329	0.0053	0.6969	3457
Total debt	0.5369	0.2568	0.0121	0.9496	3712
Short-term debt	0.3714	0.2496	0.0043	0.9278	3461
Long-term debt	0.3269	0.2143	0.0100	0.8980	2877
Operating costs	0.2003	0.1297	0.0107	0.7899	3626
Funding expenses	0.0725	0.0400	0.0200	0.2410	1987
Operating profit (US$ million)	0.3254	0.7416	-1.9720	3.9950	3700
ROA	0.0225	0.0805	-0.4360	0.4470	3804
Voluntary savings	0.1576	0.1202	0.1000	0.5996	3203
PAR30	0.0495	0.0522	0.0000	0.3000	3544
Productivity	119.5810	74.0561	5.0000	430.0000	3632
GDP growth (%)	4.9773	2.9496	-3.9787	14.7217	3924
Country governance	-2.7542	2.2422	-10.4797	8.6353	3893

On average, operational costs and funding expenses constitute around 20 percent and 7 percent of total assets, respectively. The average MFI registers an operating profit of

[8] Due to the unbalanced dataset, the observations vary across variables total debt, short-term debt, and long-term debt. Hence, the sum of the percentage of short-term debt and long-term debt do not necessarily equal the percentage of total debt.

approximately US$ 0.3 million, leading to an ROA of 2 percent based on total assets. Each loan officer demonstrates an average productivity rate of 119 credit clients, emphasizing the efficient handling of credit operations. Voluntary savings constitute a significant portion, accounting for 16 percent of total assets, showcasing the active engagement of clients in savings initiatives.

The average value of PAR30 (percentage of loans in arrears for more than 30 days) stands at approximately 5 percent. This indicates a relatively low level of loan delinquencies, underlining the prudent credit management practices within MFIs.

Country-level variables further enrich the analysis. The gross domestic product (GDP) growth rate is estimated at 5 percent, signifying a positive economic environment for MFIs. The country governance index has a mean value of -2.8, where a higher value is associated with a higher quality country governance. This suggests that MFIs typically operate in countries exhibiting moderate institutional quality (Mersland, Nyarko, & Sirisena, 2020). These results provide valuable context for understanding the operational landscape in which MFIs function.

Table 3
Pairwise correlation matrix and variance inflation factor.

	VIF	1	2	3	4	5	6	7
1. Debt	1.19							
2. MFI size	1.21	0.1581*						
3. MFI age	1.15	-0.1198*	0.2484*					
4. Productivity	1.09	-0.0503*	0.1083*	0.0886*				
5. Voluntary savings	1.24	-0.2487*	0.2113*	0.1912*	-0.1440*			
6. PAR30	1.11	0.0185	-0.0846*	0.1360*	-0.1735*	0.1365*		
7. GDP growth	1.08	-0.0869*	-0.1387*	-0.0434*	0.0048	0.0036	-0.0696*	
8. Country governance	1.10	0.0847*	0.1163*	-0.0117	0.0306	-0.1338*	0.0690*	-0.2377*

Notes: The table reports pairwise correlations between explanatory variables. Debt is calculated as total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Productivity is loan officer productivity, which is measured by the number of credit clients per loan officer. Voluntary savings is the ratio of voluntary saving to total assets. PAR30 is calculated as the outstanding balance of all loans in arrears for more than 30 days divided by the outstanding gross loan portfolio. GDP growth is the annual percentage rate of GDP in each country and the country governance captures macro-institutional differences between countries. VIF is variance inflation factor.
∗ Denotes statistical significance at the 5 percent level or lower.

Table 3 displays the pairwise correlations and variance inflation factors (VIFs). The majority of correlations exhibit significance levels at 5 percent or lower, and all

correlations remain below 0.40. These results fall well below the commonly recommended upper bound of 0.80 (Hair, 2009; Kennedy, 2008; Studenmund, 2014).

Furthermore, all calculated VIF scores are below the commonly recommended upper bound of 5 (Studenmund, 2014). Overall, the above results collectively underscore the absence of multicollinearity between the variables in this study, thereby contributing to the robustness of the analysis.

5.2 The relationship between debt and FCF

Table 4
The correlation between debt and FCF: Random and fixed effects estimations

	(1) FCF	**(2) FCF**	**(3) FCF**
Total debt	-0.0493***		
	(0.0077)		
Short-term debt		-0.0334***	
		(0.0063)	
Long-term debt			0.0458
			(0.0061)
MFI size	-0.0124***	-0.0157***	-0.0162***
	(0.0014)	(0.0012)	(0.0012)
MFI age	0.0013**	0.0008	0.0018
	(0.0025)	(0.0025)	(0.0026)
Productivity	-0.0011*	-0.0021*	-0.0012**
	(0.0001)	(0.0000)	(0.0000)
Voluntary savings	0.1066***	0.1213***	0.0986***
	(0.0209)	(0.0198)	(0.0207)
Par30	0.0354	0.0038	0.0275
	(0.0195)	(0.0195)	(0.0198)
GDP growth	-0.0021***	-0.0020***	-0.0020**
	(0.0002)	(0.0002)	(0.0002)
Country governance	-0.0025	-0.0029	-0.0059*
	(0.0030)	(0.0030)	(0.0031)
Observations	2923	2825	2781
Number of MFIs	423	405	398
F test (*p*-value)	0.0000	0.0000	0.0000
Hausman test (p-value)	0.0696	0.0503	0.0195
Estimator	Random	Random	Fixed

Notes: This table reports random and fixed effects estimates of the correlation between debt and FCF. FCF is calculated as the ratio of total cash and short-term investment to total assets. Total debt is calculated as total debt to total assets. Total debt is disaggregated into short-term debt and long-term debt. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Voluntary savings is the ratio of voluntary savings to total assets. Productivity is the number of credit clients per loan officer. PAR30 is calculated by dividing the outstanding balance of all loans in arrears for more than 30 days by the outstanding gross loan portfolio. GDP growth is the annual percentage rate of GDP in each country and country governance captures macro-institutional differences between countries. Standard errors are in parentheses.
** Denotes statistical significance at the 10% level.*
*** Denotes statistical significance at the 5% level.*
**** Denotes statistical significance at the 1% level.*

Table 4 presents the findings from fixed and random effects estimations, guided by the results of the Hausman (1978) test. The objective is to scrutinize the relationship between three types of debt (total debt, short-term debt, and long-term debt) and FCF. The outcomes yield noteworthy insights.

In particular, there is a significant negative correlation between total debt Column (1) and FCF. This implies that an increase in total debt corresponds to a decrease in FCF, potentially highlighting the constraints imposed on FCF availability due to increased debt obligations. Closer scrutiny of the components of total debt reveals intriguing patterns. Short-term debt Column (2) exhibits a negative and significant correlation with FCF. This suggests that the regular renewal and immediate payment of the interest and the principal associated with short-term debt results in a significant reduction of FCF. By contrast, the analysis of long-term debt Column (3) indicates an insignificant positive correlation with FCF. This implies that long-term debt, characterized by its deferred repayment schedule for principal, might have a smaller effect on FCF availability.

This variation across forms of debt can be attributed to the distinctive characteristics of short-term and long-term debt. The frequent renewal and prompt payment obligations inherent in short-term debt can more severely constrain FCF compared to long-term debt, aligning with prior research (Gul & Goodwin, 2010)[9].

These results underscore the intricate nature of the relationship between diverse debt structures and FCF in microfinance. Specifically, they underscore the varying degrees to which different debt categories can influence FCF availability and emphasize the significance of tailoring debt strategies to the specific financial circumstances of MFIs.

In general, debt can exert two opposing effects on FCF. On the one hand, debt can decrease the availability of FCF due to the repayment of the interest and the principal. Conversely, debt can also increase the availability of FCF by bolstering cash reserves. The cumulative effect of debt on FCF stems from the interplay between these opposing

[9] In alternative models, we also test time fixed effect. The test results show that time fixed effects do not have significant influence on the coefficients.

effects: the negative effect of debt obligations and the positive effect of augmented cash holdings.

These opposing effects of debt on FCF also obtain when we disaggregate debt into short-term and long-term debt. Long-term debt, characterized by its extended repayment terms, can emulate the characteristics of equity and might even contain certain subsidies or lax oversight. As a result, the net impact of long-term debt on FCF could manifest as a positive correlation, reflecting the equilibrium between its negative and positive effect of debt on FCF.

Regarding the control variables, the majority of them exhibit significance across all three columns. Notably, firm size consistently has a significant negative coefficient with FCF across all three columns, indicating that larger MFIs tend to experience lower FCF. This can be attributed to the benefits of economies of scale (Hartarska, Shen, & Mersland, 2013) in providing financial services, which provide larger MFIs with greater resources and developmental opportunities (Hermes & Hudon, 2018). By contrast, firm age has an insignificant coefficient with FCF across all three columns, implying that the age of an MFI might not be a significant factor in controlling FCF. One possible interpretation of this finding is that older firms might have already reached a stage of maturity where growth prospects are no longer pertinent (Barba Navaretti et al., 2014).

Furthermore, the relationship between productivity and FCF suggests that a higher number of clients per loan officer is associated with reduced FCF. This result suggests that loan officers with greater productivity accept more loans applications, leading to a decrease in FCF. Conversely, voluntary savings exhibit a positive association with an increase in FCF. This result suggests that institutions capable of attracting higher levels of voluntary savings from clients tend to possess enhanced financial health and elevated FCF levels, following the maintenance of certain reserve amounts (Hartarska & Nadolnyak, 2007). Notably, PAR30 fails to establish a significant relationship with FCF, countering the notion that institutions with elevated levels of past-due loans tend to exhibit reduced FCF (Adusei & Obeng, 2019).

Table 5
The correlation between debt and FCF: GMM test estimations

	(4) FCF	(5) FCF	(6) FCF
Total debt	-0.0165∗∗		
	(0.0093)		
Short-term debt		-0.0081∗∗∗	
		(0.0093)	
Long-term debt			0.0169
			(0.0093)
MFI size	-0.0016∗	-0.0019∗∗	-0.0016∗
	(0.0014)	(0.0013)	(0.0013)
MFI age	0.0020∗	0.0018∗	0.0012∗
	(0.0002)	(0.0002)	(0.0002)
Productivity	-0.0041∗	-0.0038∗∗	-0.0031∗
	(0.0000)	(0.0000)	(0.0000)
Voluntary savings	0.0466∗∗∗	0.0449∗∗∗	0.0443∗∗∗
	(0.0112)	(0.0133)	(0.0117)
PAR30	0.1448∗∗∗	0.1133∗∗∗	0.1211∗∗∗
	(0.0603)	(0.0623)	(0.0601)
GDP growth	-0.0069∗	-0.0033∗	-0.0025∗
	(0.0006)	(0.0006)	(0.0006)
Country governance	-0.0054∗	-0.0079∗	-0.0087∗
	(0.0010)	(0.0010)	(0.0011)
Observations	2417	2337	2300
Number of MFIs	423	405	398
Number of instruments	28	28	28
AR (1) test (p-value)	0.000	0.000	0.000
AR (2) test (p-value)	0.656	0.368	0.357
Hansen test (*p*-value)	0.469	0.528	0.472

Notes: This table reports the results of two-step system GMM test. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test for over-identification is under the null hypothesis that the instrument set is valid, as is the case here. For the system GMM test, we used the "forward" orthogonal deviation transformation instead of first-differencing because our data is an unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Standard errors are in parentheses. See Table 1 and notes in Table 4 for definitions of the variables.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

Turning to the country-level control variables, GDP growth has a significant negative coefficient with FCF across all three columns. This result suggests that elevated GDP growth rates may indicate an abundance of investment opportunities, prompting managers to steer clear of FCF overinvestment (Jensen, 1986, 1989). However, the country governance index, surprisingly, has an insignificant negative coefficient across all three columns. This result suggests that country-level governance has a small effect on FCF in MFIs (Silva & Chávez, 2015).

Table 5 presents system GMM estimations (the dynamic tests). The estimations are similar to the random and fixed effects estimations (the static tests) presented in Table 4. The sign of the coefficients for the three variables (*total debt*, *short-term debt*, and *long-term debt*) remains the same across the corresponding columns for both the static and dynamic tests. Consequently, after addressing potential endogeneity concerns, we observe that the results continue to indicate a significant effect of both total debt and short-term debt on FCF. Moreover, the OLS estimations (untabulated) are similar to the Hausman and GMM tests in terms of the sign of coefficients for all variables.

5.3. The relationship between debt and financial performance

Table 6 reports the results on the relationship between debt, on the one hand, and the operational efficiency and financial performance of MFIs, on the other hand. The results are obtained through fixed effects and random effects tests, which are guided by the Hausman (1978) test. Each test examines the relationship between total debt and one of the four performance proxies. Specifically, operational efficiency is measured by the *Operating cost ratio* Column (7) and *Operating profit ratio* Column (8), while financial performance is proxied by *ROA* Column (10). In addition, the *Funding expense ratio* is reported in Column (9) to measure the change of funding expenses of MFIs. Notably, a decrease in the operating cost ratio is correlated with an increase in operational efficiency, which subsequently contributes to increases in operating profit ratio Column (8) and ROA Column (10). Simultaneously, increased reliance on debt raises funding expenses of MFIs, leading to lower ROA Column (10) and hence lower financial performance.

In general, the test results in Table 6 corroborate the hypothesis that total debt correlates with higher operational efficiency and lower financial performance. Column (7) reports a significant negative correlation between debt and the operating cost ratio, suggesting higher operational efficiency. Column (8) reports a significant positive correlation between debt and operational profit, suggesting that higher operational efficiency is correlated with high operational profit. This supports our hypothesis that there is a positive relationship between debt and the operational efficiency of MFIs.

Moreover, Column (9) reports a significant positive correlation between total debt and the funding expense ratio. This suggests that higher debt utilization correlates with higher funding expenses in the form of interest and fee payments, as expected. Similarly, Column (10) reports a significant negative correlation between debt and ROA, suggesting that lower financial performance correlates with higher debt utilization. This supports our hypothesis that increased funding expenses may counterbalance the profit yielded by improved operational efficiency, leading to lower financial performance (Hypothesis 3b).

Table 6
The correlation between debt and financial performance: Random and fixed effect estimations

	(7) Operating cost ratio	**(8) Operating profit ratio**	**(9) Funding expense ratio**	**(10) ROA**
Debt	-0.0743∗∗∗	0.0403∗∗∗	0.0549∗∗∗	-0.0380∗∗∗
	(0.0042)	(0.0034)	(0.0027)	(0.0043)
MFI size	-0.0346∗∗∗	0.0106∗∗∗	0.0031∗∗∗	0.0101∗∗∗
	(0.0007)	(0.0063)	(0.0005)	(0.0008)
MFI age	-0.0029∗	0.0010	-0.0011	0.0017∗
	(0.0018)	(0.0010)	(0.0009)	(0.0013)
Productivity	-0.0015∗∗∗	0.0024∗∗∗	-0.0024∗∗∗	0.0034∗∗∗
	(0.0000)	(0.0016)	(0.0000)	(0.0000)
PAR30	-0.0765∗∗	-0.1563∗∗∗	0.0514∗∗∗	-0.1820∗∗∗
	(0.0090)	(0.0086)	(0.0076)	(0.0109)
Voluntary savings	-0.0640∗∗∗	-0.0361∗∗∗	-0.0084∗	-0.0220∗
	(0.0123)	(0.0110)	(0.0052)	(0.0113)
GDP growth	0.0021	0.0014∗∗∗	-0.0015∗∗	0.0020∗∗∗
	(0.0001)	(0.0090)	(0.0001)	(0.0001)
Country governance	-0.0033∗	-0.0037∗∗∗	-0.0012∗	-0.0044∗∗
	(0.0019)	(0.0013)	(0.0010)	(0.0016)
Observations	2935	3011	1471	2958
Number of MFIs	455	459	288	453
F test (*p*-value)	0.0000	0.0000	0.0000	0.0000
Hausman test (p-value)	0.0000	0.0000	0.2208	0.0000
Estimator	Fixed	Fixed	Random	Fixed

Notes: This table reports random and fixed effects estimates of the correlation between debt and financial performance. Operating cost ratio is the ratio of operating expenses to total assets. Operating profit ratio is the ratio of operational profit to total assets. Funding expense ratio is the interest and fees paid on loans. ROA is the return of assets. Debt is calculated as total debt over total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of the institution. Productivity is the number of credit clients per loan officer. PAR30 is calculated by dividing the outstanding balance of all loans in arrears for more than 30 days by the outstanding gross loan portfolio. Voluntary savings is the ratio of voluntary savings to total assets. GDP growth indicates the annual percentage rate of GDP in each country and country governance captures macro-institutional differences between countries. Standard errors are in parentheses.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

Turning to the control variables, we observe that the majority of them have significant correlations with the four performance variables. Firm size, for example, has a significant negative correlation with operating cost ratio in Colum (7) and a significant positive

correlation with operating profit ratio, funding expense ratio and ROA in Columns (8)– (10), respectively. These results suggest that larger MFIs have higher operational efficiency Column (7) and higher financial performance Column (10), despite incurring greater funding expenses in Column (9), and are in line with previous research (Hermes & Hudon, 2018).

Similarly, firm age has a significant negative correlation with the operating cost ratio Column (7) and a significant positive correlation with ROA Column (10). These results suggest that operational efficiency Column (7) and financial performance Column (10) increase with firm age, supporting the claim that older MFIs tend to possess well-established operations and accumulated reserves (Ayayi & Sene, 2010).

Additionally, productivity has a significant correlation with all four performance variables Columns (7)– (10), suggesting that productivity increases both the operational efficiency and financial performance of MFIs (Bassem, 2014). PAR30 has a significant negative coefficient with the operating cost ratio Column (7), suggesting that an emphasis on risk management could enhance operating efficiency (Zamore, Beisland, & Mersland, 2023). By contrast, voluntary savings has significant negative coefficients across all four Columns (7)– (10), suggesting that MFIs with voluntary savings have higher operational efficiency Columns (7), lower funding expenses Columns (9), and lower financial performance Columns (10) (Alemayehu & Lemma, 2014).

Turning to country-level control variables, we observe that GDP growth has a significant coefficient in Columns (8)– (10). This result suggests that higher GDP growth correlates with lower funding expenses Columns (9) and higher ROA Columns (10). Country governance has significant negative coefficient in Columns (7)– (10), suggesting that higher country governance correlates with higher operational efficiency Colum (7), a lower funding expense ratio Columns (9), and lower financial performance Columns (10).

Table 7
The correlation between debt and financial performance: GMM test estimations

	(11) Operating cost ratio	**(12) Operating profit**	**(13) Funding expense ratio**	**(14) ROA**

Debt	-0.0152∗ (0.0143)	0.0260∗∗∗ (0.0049)	0.0236∗∗∗ (0.0086)	-0.0265∗∗∗ (0.0049)
MFI size	-0.0158∗∗∗ (0.0034)	0.0083∗∗ (0.0067)	0.0050∗ (0.0007)	-0.0089∗ (0.0007)
MFI age	-0.0065∗ (0.0045)	-0.0010 (0.0011)	-0.0012∗ (0.0001)	-0.0012∗ (0.0001)
Productivity	-0.0011∗ (0.0046)	0.0010 (0.0014)	-0.0023∗∗ (0.0000)	0.0026∗∗ (0.0000)
PAR30	0.0257∗ (0.0554)	-0.1402∗∗∗ (0.0260)	0.0195∗ (0.0221)	-0.1578∗∗∗ (0.0262)
Voluntary savings	-0.0236∗∗ (0.0149)	-0.0200∗∗∗ (0.0044)	-0.0075∗ (0.0062)	-0.0231∗∗∗ (0.0048)
GDP growth	-0.0017∗∗ (0.0084)	0.0032 (0.0032)	-0.0024∗ (0.0003)	0.0025∗ (0.0003)
Country governance	-0.0047∗∗ (0.0020)	-0.0029 (0.0044)	-0.0027∗ (0.0005)	-0.0045∗ (0.0005)
Observations	2381	2453	1136	2405
Number of MFIs	455	459	288	453
Number of instruments	28	28	28	28
AR (1) test (p-value)	0.001	0.000	0.054	0.000
AR (2) test (p-value)	0.127	0.785	0.834	0.965
Hansen test (*p*-value)	0.358	0.326	0.415	0.437

Notes: This table reports the results of the two-step system GMM test. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test of over-identification is under the null hypothesis that the instrument set is valid, as is the case here. In the system GMM, we used the "forward" orthogonal deviations transformation instead of first-differencing because our data is an unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Standard errors are in parentheses. See Table 1 and notes in Table 6 for definitions of the variables.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

Table 7 presents the system GMM estimations (the dynamic test). The estimations are similar to the random and fixed effects estimations (the static test) presented in Table 6. All variables have the same significance levels and the same signs of coefficients as their counterparts in Table 6. Furthermore, the OLS estimations (untabulated) are similar to the fixed effects, random effects, and GMM estimations, particularly with regard to the signs of coefficients for all variables. This uniformity of results across methodologies verifies the robustness of our results on the relationship between debt and financial performance.

Taken together, the results of the random effects, fixed effects, and GMM tests indicate that higher debt correlates with higher operational efficiency but lower financial performance in MFIs[10].

[10] We conduct robust tests on the relationship between debt and performance by variables personal cost ratio (representing operational performance), and financial self-sufficiency (representing financial performance). The test results, which are not reported, are consistent with the finding that total debt is related to higher operational efficiency and lower financial performance.

6 Conclusion

This study delves into the intricate interplay between debt, FCF, and financial performance in MFIs (Battilana & Dorado, 2010). While existing research underscores the effect of debt on FCF in profit-seeking firms (Al-Fasfus, 2020; Ukhriyawati et al., 2017), its effect on MFIs remains uncertain. This study seeks to elucidate the effect of debt on FCF in MFIs in light of the prevalent indicators of FCF overinvestment by managers of MFIs (S. Ghosh & Van Tassel, 2013; Lopatta et al., 2017; Mia et al., 2019).

Furthermore, existing literature postulates that debt can enhance operational efficiency, by motivating managers to meet payment obligations and avert bankruptcy and job loss (Berger & Di Patti, 2006). Given MFIs' increasing debt utilization (Dorfleitner et al., 2017) together with the need to lower operational costs (Hermes & Lensink, 2011), it is important to investigate whether higher operational efficiency is counterbalanced by higher funding expenses, resulting in lower financial performance.

Our empirical analysis yields significant insights. Total debt demonstrates a significant negative correlation with FCF, driven principally by short-term debt. Since the interest and principal of short-term debt must be repaid immediately, short-term debt tends to have a negative effect on cash flow. Moreover, our analysis shows that debt incentivizes managers to increase operational efficiency, by decreasing operational costs and increasing operational profit. However, this increase in operational efficiency comes with funding expenses linked to an increase in debt, ultimately leading to a decrease in financial performance.

The results of our empirical analysis have implications for investors, creditors, policymakers, and managers. Future research could build upon these results by investigating diverse forms of debt's impact on FCF and financial performance in other types of hybrid firms. Additionally, it would be interesting to explore the effect of debt on other facets of microfinance, such as outreach to marginalized communities.

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ESSAY 3
CORPORATE GOVERNANCE AND FREE CASH FLOW IN MICROFINANCE

Corporate Governance and Free Cash Flow in Microfinance

Yan Zhang

Abstract

Free cash flow (FCF) poses a source of agency problems, particularly in firms with substantial cash flow and limited growth opportunities. This study aims to examine the effect of corporate governance on FCF in microfinance. By utilizing a global sample of rated microfinance institutions (MFIs) and employing panel data analysis, this study sheds light on the potential relationship between board characteristics (board size and board committee) and director characteristics (CEO duality and client director) with FCF in MFIs. The test results reveal a significant positive relationship between board size and CEO duality with FCF, while a significant negative relationship is observed between board committee and client director characteristics with FCF. Overall, these findings suggest that effective corporate governance practices can help reduce FCF agency costs, whereas poor governance exacerbates such costs.

Keywords: Free cash flow; Corporate governance; Board of directors; Microfinance institutions; Hybrid firms; Agency theory
JEL codes: M41, G21

1 Introduction

This study investigates the impact of corporate governance on free cash flow (FCF) in microfinance institutions (MFIs), typical examples of hybrid firms (Battilana & Dorado, 2010). Unlike conventional profit-maximizing firms, hybrid firms have "dual goals," namely, a social goal of assisting the poor and a financial goal of achieving self-sufficiency (Daher & Le Saout, 2013; Mersland et al., 2011). Due to rapid and continuous development (Reed et al., 2015), increased funding from international capital markets (Mersland & Urgeghe, 2013), and growing competition (Assefa et al., 2013), MFIs have accumulated substantial amounts of cash (Lopatta et al., 2017) and are currently facing limited growth opportunities (Mia et al., 2019). According to Jensen (1986), managers in firms with significant cash flow and limited growth opportunities are prone to engaging in FCF overinvestment activities. While corporate governance theory has focused primarily on profit-maximizing firms, little is known about the effectiveness of corporate governance on FCF in the context of MFIs in particular and hybrid firms in general.

Agency theory suggests that agency problems arise when there is separation between ownership and control (i.e., between shareholders and managers). In such firms, managers make critical decisions concerning the daily operations of firms on behalf of and in the best interests of shareholders such as donors, creditors, and investors (Panda & Leepsa, 2017). However, the managers do not always act in the best interests of the shareholders when there are conflicts of interest, information asymmetry, and inadequate supervision between shareholders and managers (Jensen & Meckling, 1976). The concept of FCF suggests that self-serving managers tend to engage in overinvestment activities using FCF (Jensen, 1986), particularly in firms with substantial cash flow and limited growth opportunities. The literature has shown a positive relationship between investment activities and the amount of cash flow (Afiezan, Wijaya, & Claudia, 2020; Aktas, Andreou, Karasamani, & Philip, 2019; Oded, 2020). In the context of microfinance, MFIs often face high information asymmetry (S. Ghosh & Van Tassel, 2013) and a lack of regulation and supervision (Galema et al., 2012a), leading to severe agency problems. Therefore, with the increasing amount of cash flow and diminishing growth opportunities, the likelihood of FCF overinvestment can be significant in MFIs.

Corporate governance plays a crucial role in addressing agency problems and safeguarding the interests of shareholders. It serves as a vital mechanism through which shareholders can monitor management, particularly in situations where diffused shareholders face collective action problems. The board of directors (BOD) has the responsibility of overseeing managers on behalf of shareholders (Hanson & Song, 2006). By effectively aligning the interests of shareholders, who provide capital, and managers, who utilize that capital to generate value, BODs can mitigate the risk of FCF overinvestment in profit-seeking firms (Cai, 2013). Similarly, corporate governance can protect shareholders' interests from managers' FCF overinvestment activities in MFIs. However, there is a lack of research on the relationship between BOD governance and FCF in hybrid firms like MFIs. This study aims to explore the effect of BOD governance on FCF in a hybrid setting, focusing on MFIs as typical examples of firms pursuing dual goals (Battilana & Dorado, 2010). Specifically, we examine the effect of board characteristics (board size and board committee) and director characteristics (CEO duality and client director) on the level of FCF in MFIs.

Using a sample of 484 MFIs across 74 countries from 1998 to 2019, we provide initial international evidence on the governance effect of BOD on FCF in MFIs as examples of hybrid firms. Our findings reveal that both board characteristics and director characteristics play a significant role in the level of FCF. Specifically, we find that board size is positively associated with FCF (Moshashaei, 2020; Wirianata, Imelda, & Yetty, 2022), while the presence of board committees is negatively associated with FCF (Nobakht & Nobakht, 2021; Toumeh, Yahya, & Amran, 2020). Regarding director characteristics, we observe a positive relationship between CEO duality and FCF (Gill & Shah, 2012), and a negative relationship between the presence of client directors and FCF (Salamon, 2015). Overall, these results support Jensen (1986) claim that managers in firms with significant cash flow and limited growth opportunities are prone to engaging in FCF overinvestment activities. Moreover, the results yield valuable insights into FCF for practitioners and policymakers in microfinance. Understanding how corporate governance impacts FCF in hybrid firms – such as MFIs – enables shareholders to assess the adequacy of governance mechanisms in place for monitoring managers and protecting shareholders' interests.

The remainder of the paper is organized as follows. Section 2 reviews the literature and presents the hypotheses. Section 3 describes the data and variables employed in the study. The econometric model is introduced in Section 4. Section 5 presents and discusses the empirical findings and Section 6 concludes.

2 Theoretical Background and Hypotheses

2.1. Microfinance

As hybrid firms, MFIs have inherent dual goals: a social goal of serving the poor and a financial goal of maintaining financial sustainability (Armendariz & Labie, 2011). MFIs provide financial services to individuals and microenterprises that lack collateral and are excluded from traditional banking services. While the social mission is often seen as their primary objective (Mersland & Strøm, 2009), MFIs also need to generate profits to achieve financial self-sufficiency or, at the very least, break even. Thus, there is a necessary tradeoff between the social and financial goals for each MFI. This tradeoff represents MFIs' optimal balance in assisting the poor without jeopardizing their own survival and growth. Achieving this optimal tradeoff results in the best performance for MFIs.

Since its debut in the 1970s, microfinance has experienced rapid growth in terms of the number of households served, sources and amounts of funding, and the number and size of MFIs (Liñares-Zegarra & Wilson, 2018). As microfinance expanded worldwide, the main source of funding shifted from donors to bank debt (subsidies) and then to the international capital market (Mersland & Urgeghe, 2013). The transformation of some leading MFIs from not-for-profit philanthropic firms into regulated banks (D'Espallier, Goedecke, Hudon, & Mersland, 2017) and commercialization have resulted in increased competition among MFIs (Wagenaar, 2012). In some countries and regions, the pressure of competition has led to a degree of saturation in the supply of microfinance (Assefa et al., 2013).

2.2. FCF

Agency theory suggests that the separation of ownership (by shareholders – such as donors, creditors, and investors) and control (by managers) can result in conflicts of interest due to differing goals and interests (Panda & Leepsa, 2017). Shareholders delegate decision-making authority to managers, expecting them to act in the shareholders' best interests. However, when managers possess a certain level of discretion in making strategic decisions (Finkelstein & Hambrick, 1990), they may use

their firm-specific knowledge and expertise to prioritize their own interests over those of the shareholders, who are not involved in day-to-day operations. In other words, due to information asymmetry and imperfect supervision, there is a risk that self-serving managers will exploit their discretion to maximize personal interest at the expense of the interest of shareholders (Madhani, 2017). This conflict of interest between the shareholders and the managers is known as the agency problem (Jensen, 1986). The unique characteristics of microfinance, including its objectives, activities, lending technology, corporate governance, and environment, can further amplify managers' discretion (Glaeser, 2003).

Following Jensen (1986), we define FCF to be funds beyond what is required for all feasible projects with positive net present value. The existence of FCF exacerbates the agency problem by increasing potential conflicts of interests between managers and shareholders, as managers have discretion over the utilization of FCF (Fakhroni et al., 2018). In the presence of substantial cash flow and limited growth opportunities (Jensen, 1986; Richardson, 2006), managers are likely to invest FCF in pursuit of growth (Nekhili, Amar, Chtioui, & Lakhal, 2016). Continuous FCF investment allows managers to secure employment and salary increments due to the added responsibility of managing a larger firm (Peasnell, Pope, & Young, 2005).

As MFIs continue to develop and grow, they may accumulate surplus cash even after achieving optimal performance (Lopatta et al., 2017). This surplus cash can be considered as FCF according to agency theory. However, it is important to note that the traditional definition of FCF of Jensen (1986) is primarily based on profit-seeking firms. In the context of hybrid firms like microfinance, the objective is not profit-maximization, but rather achieving the best performance that balances social and financial goals.

In microfinance, the realization of best performance represents the cumulative effect of all positive net present value projects. Deviations from this optimal performance occur when cash is redirected from the loan portfolio to other investments that may primarily benefit managers. Therefore, in the microfinance context, FCF can be defined as the remaining cash flow after achieving the best performance of MFIs.

2.3. Corporate governance and FCF

According to agency theory, shareholders in a firm are often widely dispersed, resulting in individual shareholders lacking the incentive to monitor managers closely. Consequently, corporate governance mechanisms are designed to impose constraints on managers' actions (Madhani, 2017). Corporate governance mechanisms encompass the organizational controls that govern managers' behavior and define their discretionary powers (Mallin, 2016). They have been widely employed to mitigate the agency problem by aligning the interests of shareholders and managers (Fama & Jensen, 1983). Perhaps the most common corporate governance mechanism used by shareholders is the board of directors (BOD). In a firm with a separation of ownership and control, shareholders elect the board, which in turn selects the management team responsible for daily business decisions (Abdullah & Valentine, 2009). With board monitoring in place, managers have fewer opportunities to pursue their self-interests at the expense of shareholders' interest (Cai, 2013; X. Chen, Sun, & Xu, 2016; Chi & Lee, 2010; Francis, Hasan, Song, & Waisman, 2013; Wang, 2010).

The effectiveness of the BOD as a control mechanism often depends on board characteristics, such as board size (Almashhadani, 2021) and board committee (Madhani, 2015), as well as director characteristics (Patro, Lehn, & Zhao, 2003), such as CEO duality (Gill & Shah, 2012) and the presence of client director (Salamon, 2015).

2.3.1 Board characteristics

Board size. Board size plays a significant role in the governance effectiveness of the BOD, with smaller boards generally demonstrating greater effectiveness compared to larger boards. Large boards are susceptible to coordination problems, including divergent views among directors (R. B. Adams & Mehran, 2003), and social loafing, free riding, and higher coordination costs (Bennedsen, Kongsted, & Nielsen, 2008). These potential coordination issues can result in unclear powers and responsibilities of directors (Hartarska, 2005), slower decision-making processes (R. B. Adams & Mehran, 2003), reduced involvement in strategic decision-making (Judge & Zeithaml, 1992), and weakened monitoring of managerial discretion (Yermack, 1996). Consequently, companies with large boards are more likely to be controlled by managers (Bhagat & Black, 1999; Lipton & Lorsch, 1992), leading to inefficient operations (De Andres &

Vallelado, 2008), and ineffective monitoring of managers (Yermack, 1996). Thus, we hypothesize that MFIs with large boards will have a higher level of FCF.

H1: There is a positive relationship between board size and the level of FCF.

Board committee: Board committees play a crucial role in enabling effective board performance by diligently and comprehensively monitoring management activities (Madhani, 2015). The significance of board committees has increased over time due to growing legal requirements and the complexity of the business environment (Kesner, 1988). Composed of members with specialized expertise and skills, board committees execute tasks with greater efficiency and timeliness (Kolev, Wangrow, Barker, & Schepker, 2019). As board committees have well-defined purposes and clear expectations, they face scrutiny from various stakeholders, reducing individual free-riding tendencies and promoting the effective fulfillment of their duties (K. D. Chen & Wu, 2016; Klein, 2002). Madhani (2015) examined the differences in corporate governance among firms with varying numbers of board committees. The results indicated significant differences in corporate governance standards among firms with different numbers of board committees. Specifically, firms with a greater number of board committees are likely to exhibit higher standards of corporate governance compared to firms with fewer board committees. Therefore, our second hypothesis is formulated as follows:

H2: There is a negative relationship between the presence of board committees and the level of FCF.

2.3.2 Director characteristics

CEO duality: CEO duality refers to the appointment of the chief executive officer (CEO) as the board chairman (Dalton, Hitt, Certo, & Dalton, 2007). The accountability of the management team to shareholders is facilitated through the chairman and the board. However, when a CEO holds both positions, issues such as power concentration and conflicts of interest may arise (Madhani, 2017), potentially impeding communication channels and lines of authority, thus weakening shareholder protection (Nelson, 2003). In addition, CEO duality can undermine the governance effectiveness of the BOD, thus

providing the CEO with an opportunity and incentive to disregard shareholder interests (Madhani, 2017). To minimize agency problems, firms should separate the roles of CEO and chairman (Aktas et al., 2019). Therefore, CEO duality is considered a weak corporate governance mechanism and is likely to result in higher agency issues. In firms with high FCF, the agency issue is often shown as FCF overinvestment. Hence, CEO duality may boost the activities of FCF overinvestment. Accordingly, we form our third hypothesis as follows:

H3: There is a positive relationship between CEO duality and the level of FCF.

Client director: A client director is a board member elected by the clients (stakeholders) participating in the programs of an MFI. The involvement of clients in the strategic decision-making process serves as a means for them to protect their interests and influence the governance effectiveness of the BOD (Fama & Jensen, 1983). Client directors possess a better understanding of consumer behavior, client needs, and opportunities for firms to meet those needs. By considering the interests of their clients, MFIs are able to establish efficient operations and plans (Madhani, 2017). Given the fundamental purpose of microfinance to assist the poor with financial service, the presence of client directors is critical for fulfilling the function of monitoring managers and intervening when managers act opportunistically and misuse company assets (Post, Rahman, & Rubow, 2011). Overall, the presence of a client director can align the managers' interests with the shareholders' interests, hence, reduce the agency issues, such as FCF overinvestment. Therefore, our fourth hypothesis is formed as follows:

H4: There is a negative relationship between the presence of client directors and the level of FCF.

3 Data and Variable Definitions

3.1. Data

Our study utilizes an unbalanced panel sample comprising 484 MFIs from 74 countries covering the period 1998–2019, with a total of 4,010 MFI-year observations. The dataset incorporates information compiled from rating reports of five official microfinance rating agencies: MicroRate, MicroFinanza, Planet Rating, Crisil, and M-CRIL, which are approved by the Consultative Group to Assist the Poor (C-GAP) the microfinance branch of the World Bank. This dataset includes both financial and governance data, making it suitable for our study. Rating reports are widely considered as reliable and representative sources of data in microfinance research (Gutierrez-Nieto et al., 2007; Hudon & Traca, 2011; Zamore et al., 2019).

There are no significant differences observed in the variables examined in our study across the five agencies. However, due to varying information availability in reports from different rating agencies, variables have different numbers of observations across years. Therefore, the final dataset is an unbalanced panel dataset, since not all MFIs have the same number of observations for certain variables. For example, the independent variable *Board size* has the lowest number of observations (1,016), while the control variable *MFI age* has the highest number of observations (4,010). Consequently, in regressions involving the variable *Board size*, the number of observations is 773, whereas in regressions without this variable, the number of observations is much higher. Additionally, we incorporate country-level data from the World Bank's World Development and Worldwide Governance databases.

3.2. Variable definitions

Table 1 presents the definitions of the independent, dependent, control, and moderating variables used in the analysis. The concept of FCF originates from profit-seeking firms (Jensen, 1986) and can be applied to hybrid firms with dual goals, such as MFIs. In the case of MFIs, FCF represents the cash flow that exceeds the amount necessary to cover operating costs and fulfill loan applications. Despite extensive research on FCF in various fields, there is a lack of a consensus regarding its calculation (Bhandari & Adams, 2017).

To address this, we follow the approach proposed by Pascal et al. (2017), which calculates FCF as the ratio of total cash and short-term investments to total assets, considering the availability of financial information and operational characteristics of MFIs.

Table 1
Definitions of variables

Variable	Type	Definition
Free cash flow	Dependent variable	Ratio of total cash and short-term investment to total assets
Board size	Independent variable	The number of directors in the board.
Board committee	Independent variable	The number of committees in the board.
CEO duality	Independent variable	A binary variable that takes a value of 1 if the chief executive officer and the board president are the same person, and 0 otherwise.
Client director	Independent variable	A board member elected by stakeholders (clients) who has working experience in the social sector.
Leverage	Control variable - firm level	Ratio of total debt to total assets.
MFI size	Control variable - firm level	Natural logarithm of total assets.
MFI age	Control variable - firm level	Difference between the year of observation and the starting year of the MFI.
Productivity	Control variable - firm level	Loan officer's productivity measured by number of credit clients per loan officer.
Voluntary savings	Control variable - firm level	Ratio of voluntary savings to total assets.
PAR30	Control variable - firm level	Portfolio at risk, measured by dividing the outstanding balance of all loans in arrears for more than 30 days by the outstanding gross loan portfolio.
Credit client	Control variable - firm level	Total number of credit clients that are active with the MFI at the end of the year, calculated as natural log of credit clients.
GDP growth	Control variable - country level	Annual percentage rate of GDP. Data are taken from the World Bank database.
Institution	Control variable - country level	Sum of five global governance scores on voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Data are taken from the World Bank database.

Several factors of corporate governance have been shown to have significant effect on the discretion of managers in profit-seeking firms, and these factors may also have a significant impact in the context of microfinance. One such factor is the size of the board, which plays a crucial role in determining the effectiveness of governance mechanisms. Research has demonstrated that smaller boards are associated with better governance outcomes compared to larger boards. The challenges faced by larger boards include issues such as inefficient monitoring, which can lead to increased agency problems. Factors like social loafing, free riding, and higher coordination costs can hinder the effectiveness of monitoring efforts within larger boards (Eisenberg, Sundgren, & Wells, 1998). By contrast, smaller boards are more agile and can operate more efficiently, allowing for more effective oversight of managerial actions (Lipton & Lorsch, 1992; Yermack, 1996).

In addition to board size, specialized board committees are established within MFIs to further enhance governance efficiency and effectiveness. These committees enable the BOD to address complex issues by assigning specific responsibilities to sub-grouped directors with focused expertise (Kolev et al., 2019; Madhani, 2015). By leveraging the collective knowledge and skills of committee members, governance mechanisms are strengthened, leading to more effective oversight of managerial discretion (Aktas et al., 2019).

However, the presence of CEO duality can potentially undermine the governance function of the BOD. CEO duality occurs when the executive manager also serves as the chairman of the board. This concentration of power reduces the board's ability to independently monitor the CEO's actions and decisions, leading to potential governance challenges (Madhani, 2017).

In the pursuit of representing the interests of clients, MFIs often appoint client directors to their boards. These directors actively participate in the formulation of strategic decisions, ensuring that client interests are well-represented. Moreover, client directors play a crucial role in monitoring the behavior of managers on behalf of the clients and intervening when managerial opportunism or misuse of firm assets occurs (Post et al., 2011).

Overall, the mechanisms of corporate governance, such as board size, board committees, CEO duality, and client directors, can have a significant impact on the governance dynamics within MFIs. Smaller boards and specialized committees contribute to efficient and effective governance practices, while CEO duality and the inclusion of client directors play important roles in ensuring accountability and protecting client interests.

In addition to the variables mentioned above, several firm-level and country-level control variables for FCF are included based on previous research findings. These firm-level control variables consist of leverage (Hamada, 2010), firm size (Ahmed Al-Dhamari & Nor Izah Ku Ismail, 2014), firm age (Rashid, 2015), productivity (X. Chen et al., 2016), voluntary saving (Sapuan, Wahab, Fauzi, & Omonov, 2021), PAR30 (Bhandari & Adams, 2017), and credit client (X. Chen et al., 2016). Furthermore, we introduce

country-level control variables for GDP growth (Jensen, 1989), and institution (Silva & Chávez, 2015).

Figure 1 illustrates the general model of this study.

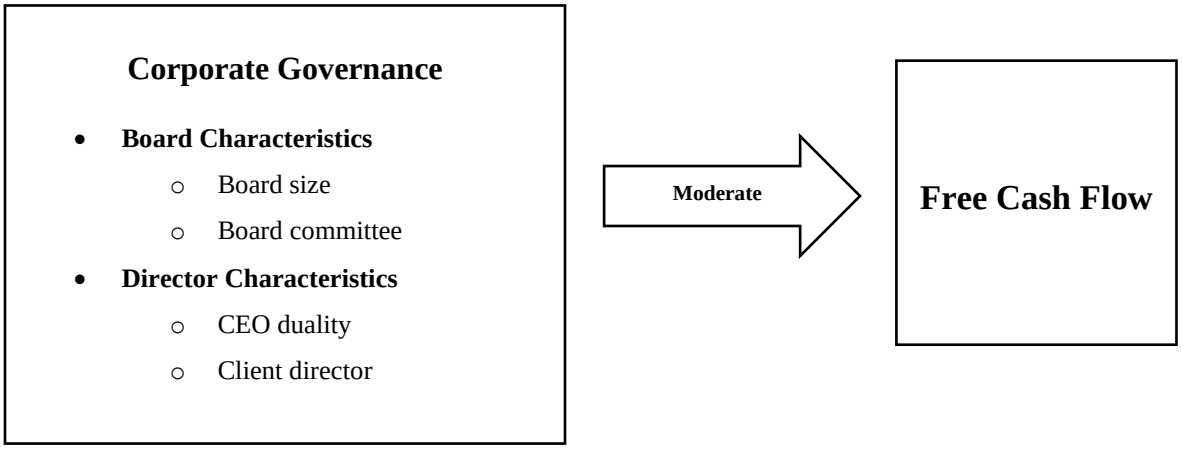

Figure 1. General model of this study

4 Methodology

This study employs panel-data regressions to investigate the relationship between corporate governance mechanisms and FCF. The utilization of panel data offers several advantages compared to time-series and cross-sectional data (Hsiao, 2014). Panel data analysis allows for controlling individual heterogeneity, thereby reducing the potential for biased outcomes. Furthermore, panel data provides a greater amount of information, variability, degrees of freedom, and efficiency. Moreover, panel data analysis has the capability to identify and quantify latent effects that may go unnoticed in cross-sectional or time-series models (Baltagi, 2008). Based on Baltagi (2008), our empirical equation[11] is expressed as follows:

$$FCF_{it} = B_0 + B_1\, Governance_{it} + B_2\, Leverage_{it} + B_3\, Size_{it} + B_4\, Age_{it} + B_5\, Productivity_{it} + B_6\, Savings_{it} + B_7\, PAR30_{it} + B_8\, Credit\_client_{it} + B_9\, GDP_{it} + B_{10}\, Institution_{it} + C_i + u_{it}$$

In the above equation, FCF_{it} denotes free cash flow, and is defined as the ratio of total cash and short-term investment to total assets (Pascal et al., 2017). $Governance_{it}$ comprises board characteristics (board size and board committee) and director characteristics (CEO duality and client director). $Leverage_{it}$ is defined as total debt scaled by total assets. $Size_{it}$ denotes firm size and is defined as the natural logarithm of total assets. Age_{it} is firm age and is measured as the difference between the year of observation and the starting year of the MFI. $Productivity_{it}$ is a loan officer's productivity and is measured by the number of credit clients per loan officer. $Savings_{it}$ is the ratio of total voluntary savings to total assets. $Credit\_client_{it}$ is the social performance of MFIs and is measured as the total number of credit clients that are active with the MFI at the end of the year, calculated as natural log of credit clients. $PAR30_{it}$ is the portfolio at risk and is measured by dividing the outstanding balance of all loans in arrears for more than 30 days by the outstanding gross loan portfolio. GDP_{it} and $Institution_{it}$ are GDP growth[12]

[11] In alternative models, we also test time fixed effect. The test results show that time fixed effects do not have significant influence on the coefficients.

[12] In alternative models, we applied GDP per capita, which yields results with no significant difference from the models using GDP growth.

and the institutional quality of the country in which the MFI operates, respectively. B_0 is the mean of unobserved heterogeneity, and B_1 to B_{10} are coefficients. C_i comprises firm-specific unobserved effects, and u_{it} is the remaining error term that varies across both t and i.

We begin our empirical analysis with the Breusch–Pagan test (Baltagi, 2008) to determine whether a panel data regression or an ordinary least squares (OLS) regression is better suited to our dataset. The panel data regression is recommended if the Breusch–Pagan test rejects the null hypothesis. The test results (untabulated) indicate that the panel data regression is appropriate for this study. The next step is to employ the Hausman specification test (Hausman, 1978) to determine whether the random effects (RE) estimator or the fixed effects (FE) estimator is better suited to the dataset. The RE estimator assumes that *Ci* is uncorrelated with the explanatory variables, while the FE estimator assumes that *Ci* is correlated with all the explanatory variables. A rejection of the null hypothesis of the Hausman test suggests that the FE estimator is preferable. In the empirical section, the results of the Hausman test determine whether the RE or FE estimator is better suited for each regression.

Following Blundell and Bond (1998), we use the system generalized method of moments (GMM) model to investigate the relationship between governance and FCF. The system GMM model is particularly relevant due to its ability to address methodological challenges. It corrects for weak instruments, handles endogeneity concerns, and minimizes data loss compared to the difference GMM model (Roodman, 2009).

In the context of the system GMM model, two diagnostic tests are necessary: the assessment of serial correlation in the error term and the evaluation of instrument validity. The examination of serial correlation focuses on identifying second-order autocorrelation in the residuals of differenced equations (Arellano & Bond, 1991). The results of this study indicate no second-order serial correlation, suggesting that the original error term is serially uncorrelated. The evaluation of instrument validity involves Hansen's J test of over-identifying restrictions (Hansen, 1982) and the difference-in-Hansen test of exogeneity (Eichenbaum et al., 1988). Both tests support the use of instruments in the system GMM estimates.

In summary, the Breusch–Pagan test confirms the suitability of panel data analysis, the Hausman test determines the appropriate estimator, and the GMM model with diagnostic tests addresses methodological challenges and provides robust estimates for the governance–FCF relationship in the microfinance industry.

5 Results and Discussion

5.1. Descriptive statistics and correlations

Table 2 presents a summary of the descriptive statistics for the variables used in this study. In terms of board characteristics, the average board size is 7, indicating the typical number of board members in the sample MFIs. The average number of board committees is 3, suggesting that MFIs generally establish multiple committees to address specific responsibilities and enhance governance effectiveness.

Turning to the director characteristics, the average CEO duality percentage is 8%. This indicates that in a small proportion of MFIs, the CEO also serves as the chairman of the board, consolidating power in a single individual. However, it is important to emphasize that this is relatively uncommon in the sample MFIs. On average, MFIs have one client director, indicating that they often appoint at least one director to represent the interests and perspectives of their clients in board deliberations and decision-making processes.

Table 2
Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
Board size	6.8602	2.8444	3.0000	23.0000	1016
Board committee	2.5515	1.8462	1.0000	8.0000	1048
CEO duality	0.0873	0.2823	0.0000	1.0000	3779
Client director	0.7407	2.1719	1.0000	10.0000	1881
Total assets (US$ millions)	14.8000	26.6000	0.0300	197.0000	3811
MFI age (years)	24.5908	7.6403	8.0000	57.0000	4010
Free cash flow	0.1608	0.1237	0.0000	0.5982	3558
Total debt	0.5369	0.2568	0.0121	0.9496	3712
Productivity	119.5810	74.0561	5.0000	430.0000	3632
Voluntary savings	0.1576	0.1202	0.1000	0.5996	3203
PAR30	0.0495	0.0522	0.0000	0.3000	3544
Credit clients (US$ thousands)	14.2005	18.3968	0.0070	98.7960	3546
GDP growth (%)	4.8843	3.1453	-7.3820	17.3325	3973
Institutions	-2.7542	2.2422	-10.4797	8.6353	3893

On average, the MFIs in the sample have been operating for 25 years, indicating a considerable level of business experience. The average total assets of these MFIs amount to US$ 15 million, reflecting the scale of their operations. Out of the total assets,

approximately 17% represents FCF, which indicates the excess cash flow available after covering operating costs and loan applications. Moreover, 54% of the total assets are financed through debt, indicating the level of leverage employed by the MFIs.

Turning to the firm-level factors, we observe that the average productivity of MFIs is 120 clients per loan officer, highlighting the efficiency of their operations in serving a significant number of clients. The average voluntary savings stands at 16% of total assets, indicating the proportion of funds voluntarily saved by the clients. The average PAR30 is 5%, representing the portion of the loan portfolio that is in arrears for more than 30 days. Additionally, the average number of credit clients is 14,000, demonstrating the extent of client participation in the microfinance services.

As for the country-level factors, the average GDP growth rate is 5%, indicating the economic growth experienced by the countries in which the MFIs operate. The average institution score is -2.8, where a higher institution score signifies a higher quality of governance structure within the country.

Table 3
Pairwise correlation matrix and variance inflation factor.

	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1. Board size	1.21												
2. Board committee	1.17	0.1537*											
3. CEO duality	1.07	-0.0608	-0.0735*										
4. Client director	1.36	0.1603*	0.0575	0.0078									
5. Leverage	1.32	-0.1350*	0.0757*	0.0601*	-0.1266*								
6. MFI size	1.29	0.0800*	0.2890*	-0.0257	-0.0103	0.1336*							
7. MFI age	1.33	0.1410*	0.2805*	-0.0032	0.1719*	-0.1069*	0.2484*						
8. Productivity	1.87	0.1055*	0.0486	0.0385*	-0.0741*	-0.0537*	0.1013*	0.0846*					
9. Voluntary savings	1.40	0.1053*	0.0562	-0.0531*	0.3703*	-0.2446*	0.2113*	0.1912*	-0.143*				
10. PAR 30	1.38	0.0307	0.0556	-0.0507*	0.0770*	0.0186	-0.0846*	0.1360*	-0.1706*	0.1365*			
11. Credit clients	2.25	0.0881*	-0.1527*	0.0123	-0.0880*	-0.0385*	-0.3286*	-0.0483*	0.4523*	-0.1335*	-0.1299*		
12. GDP growth	1.14	-0.0104	-0.0958*	-0.0132	-0.0206	-0.0833*	-0.1387*	-0.0434*	0.0071	0.0036	-0.0696*	0.1454*	
13. Institutions	1.13	0.0896*	0.0820*	0.0116	-0.1020*	0.0793*	0.1163*	-0.01	0.0322	-0.1338*	0.0690*	-0.1558*	-0.2377*

Notes: The table reports pairwise correlations between explanatory variables. Debt is the ratio of total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is number of years of operation of the MFI. Productivity is the number of credit clients per loan officer. Voluntary savings is the ratio of voluntary savings to total assets. PAR30 is calculated by dividing the outstanding balance of all loans in arrears for more than 30 days by the outstanding gross loan portfolio. Credit clients is the ratio of the total number of credit clients to total assets. GDP growth is the annual percentage rate of GDP in each country and Institutions capture macro-institutional differences in governance between countries. Board size is the number of board members of the MFIs in the sample, and board committee is the number of board committees. CEO duality is a binary variable that takes a value of 1 if the CEO and the board president are the same person, and 0 otherwise. Client director represents the number of board members in an MFI who are elected by the clients taking part in the programs of the MFI.
∗ Denotes statistical significance at the 5 percent level or below.

To assess the relationship between the independent variables, pairwise correlations and variance inflation factor (VIF) scores are presented in Table 3. Most of the correlations between the independent variables are significant at the 5% level or below, and the majority of them are below 0.50. These values align with suggested guidelines for acceptable correlations (Hair, 2009; Kennedy, 2008; Studenmund, 2014). Similarly, all of the VIF scores are below 5 (Studenmund, 2014), indicating that multicollinearity, or high intercorrelation between independent variables, is not a significant concern in this study.

5.2. The relation between corporate governance and FCF

5.2.1 Board characteristics and FCF

Table 4 displays the results of fixed effects estimates, which were selected based on the Hausman (1978) test, examining the relationship between board characteristics and FCF. Two specific board characteristics, namely, board size Column (1) and board committee Column (2), are analyzed.

Consistent with the findings of Wirianata et al. (2022) and Moshashaei (2020), the results indicate that board size Column (1) has a significant positive coefficient with FCF. This suggests that a larger board size is associated with higher levels of FCF. It is important to note that this positive relationship may be indicative of decreased governance effectiveness and potential inefficiency within larger boards, leading to greater managerial discretion in decision-making for MFI operations (R. B. Adams & Mehran, 2003; De Andres & Vallelado, 2008; Hartarska, 2005).

In Column (2), the analysis focuses on the impact of board committees on FCF. The results reveal a significant negative coefficient for board committees, indicating that having more committees is associated with a decrease in FCF. This finding aligns with the argument that specialized board committees enhance governance effectiveness by assigning specific responsibilities to sub-grouped directors with expertise in critical operational issues (Kolev et al., 2019; Madhani, 2015). The presence of board committees allows for more focused oversight and better governance outcomes in addressing key operational matters.

Table 4
The relationship between board characteristics and free cash flow: Fixed effects estimates

Dependent variable	**(1) FCF**	**(2) FCF**
Board size	0.0054∗	
	(0.0026)	
Board committee		-0.0065∗∗
		(0.0018)
Leverage	-0.0265∗	-0.0232∗
	(0.0270)	(0.0121)
MFI size	-0.0183∗∗∗	-0.0196∗∗∗
	(0.0054)	(0.0024)
MFI age	-0.0006	-0.0024
	(0.0047)	(0.0025)
Productivity	-0.0001∗	-0.0001
	(0.0001)	(0.0001)
Voluntary savings	0.0956∗∗	0.0016
	(0.0417)	(0.0251)
PAR30	-0.0495	0.0387
	(0.1102)	(0.0387)
Credit clients	-8.2339∗	-11.7226∗∗∗
	(4.0055)	(1.0937)
GDP growth	-0.0014∗∗	-0.0003∗
	(0.0013)	(0.0005)
Institutions	-0.0187∗∗	-0.0039
	(0.0082)	(0.0050)
Observations	773	920
Number of MFIs	113	234
Chi2/F test (*p*-value)	0.0000	0.0000
Hausman test (p-value)	0.0000	0.0001
Estimator	Fixed	Fixed

Notes: This table reports fixed effects estimates on the relationship between board characteristics and FCF. FCF denotes free cash flow and is defined as the ratio of total cash and short-term investment to total assets. Board size is the number of board members of the MFIs, and board committee is the number of board committees. Debt is the ratio of total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of operation of the MFI. Productivity is the number of credit clients per loan officer. Voluntary savings is the ratio of voluntary savings to total assets. PAR30 is calculated by dividing the outstanding loans in arrears for more than 30 days by the outstanding gross loan portfolio. Credit clients is the ratio of the total number of credit clients to total assets. GDP growth is the annual percentage rate of GDP in each country and Institutions capture macro-institutional differences in governance between countries. Standard errors are in parentheses.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

Regarding control variables, leverage has a significant negative relationship with FCF, which is consistent with the statement that MFIs that take on more leverage from banks are likely to have less FCF (Hamada, 2010; Mersland & Urgeghe, 2013). MFI size has a significant negative relationship with FCF. This finding is consistent with the statement that small firms experience fewer FCF agency conflicts because of their greater ability to control the actions of managers compared to large firms, thus deterring them from

spending FCF unwisely (Ahmed Al-Dhamari & Nor Izah Ku Ismail, 2014). For MFI age, the results show insignificant negative coefficients, indicating that MFI age has no critical influence on FCF. This contrasts with previous findings that suggest that older firms might reach a maturity stage where growth opportunities are limited (Barba Navaretti et al., 2014), which could lead to FCF overinvestment increasing with age (Rashid, 2015). Productivity has a significant negative relationship with FCF, which is consistent with the finding that productivity is the building block for profitability and increases the availability of cash flow (X. Chen et al., 2016). Voluntary savings has a significant positive relationship with FCF, supporting the finding that voluntary saving increases the availability of FCF (Sapuan et al., 2021). The test results show that PAR30 does not have a significant relationship with FCF, which contradicts the finding that PAR30 reduces FCF (Bhandari & Adams, 2017). Credit clients has a significant negative relationship with FCF, consistent with the assertion that MFIs utilize cash flow to achieve better social performance, and that more credit clients results in less FCF (X. Chen et al., 2016).

Regarding country-level control variables, GDP growth shows a significant negative relationship with FCF, consistent with the argument that high growth opportunities reduce FCF availability (Jensen, 1986, 1989). Institutions has a significant negative relationship with FCF, supporting the finding that a higher level of institutional control is associated with low FCF (Silva & Chávez, 2015).

Overall, the above fixed effects estimates provide support for the claim that both board size and board committees have an effect on FCF in the microfinance industry. Larger board sizes are associated with increased FCF, potentially due to reduced governance effectiveness and to operational inefficiency. On the other hand, the presence of board committees is linked to a decrease in FCF, indicating the positive role of specialized committees in strengthening governance mechanisms within hybrid firms like MFIs. These findings support our hypotheses.

Table 5 presents the system GMM estimates. These estimates generally mirror the fixed effects estimates in Table 4. The two variables, *Board size* and *Board committee*, in these dynamic tests exhibit the same sign of coefficients as the two variables in the

corresponding estimates in the static tests. Therefore, even after addressing potential endogeneity issues, we find that the results continue to suggest that BOD has a significant effect on FCF. Furthermore, the test results based on OLS estimates (untabulated) are consistent with those in Tables 4 and 5 in terms of the sign of coefficients for all variables.

Table 5
The relationship between board characteristics and free cash flow: System GMM estimates

Dependent variable	**(3) FCF**	**(4) FCF**
Board size	0.0308∗ (0.0184)	
Board committee		-0.0507∗∗ (0.0254)
Leverage	-0.0210 (0.0380)	0.0150 (0.0460)
MFI size	-0.0080∗ (0.0068)	0.0006∗ (0.0075)
MFI age	-0.0019∗ (0.0013)	0.0006 (0.0013)
Productivity	-0.0002 (0.0001)	0.0001 (0.0001)
Voluntary savings	0.0580∗∗∗ (0.0511)	0.0559∗∗ (0.0462)
PAR30	-0.2790∗∗ (0.2590)	-0.3193∗ (0.2093)
Credit client	-0.3528∗ (4.6720)	-4.0545∗∗ (4.3284)
GDP growth	-0.0002 (0.0031)	-0.0027 (0.0023)
Institutions	-0.0020∗ (0.0055)	-0.0090∗ (0.0054)
Observations	712	797
Number of MFIs	107	210
Number of instruments	28	28
AR (1) test (p-value)	0.000	0.007
AR (2) test (p-value)	0.795	0.510
Hansen test (*p*-value)	0.745	0.509

Notes: This table reports the results of the two-step system GMM test. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test of over-identification is under the null hypothesis that the instrument set is valid, as is the case here. In the system GMM specification, we used the "forward" orthogonal deviations transformation instead of first-differencing because our data is an unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Robust standard errors are in parentheses. See Table 1 and notes in Table 4 for definitions of the variables.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

5.2.2 Director characteristics and FCF

Table 6 presents the fixed effects estimates based on the Hausman (1978) test, by examining the relationship between director characteristics and FCF. The two characteristics tested here are CEO duality Column (5) and client director Column (6).

Table 6
The relationship between director characteristics and free cash flow: Fixed effects estimates

Dependent variable	**(5) FCF**	**(6) FCF**
CEO duality	0.0156∗∗	
	(0.0028)	
Client director		-0.0111∗∗∗
		(0.0040)
Leverage	-0.0368∗∗	-0.0091∗
	(0.0093)	(0.0124)
MFI size	-0.0188∗∗∗	-0.0221∗∗∗
	(0.0019)	(0.0020)
MFI age	-0.0002	-0.0013
	(0.0026)	(0.0026)
Productivity	-0.0004∗∗∗	-0.0001
	(0.0001)	(0.0001)
Voluntary savings	0.0914∗∗∗	0.0792∗∗
	(0.0261)	(0.0252)
PAR30	0.0539	-0.0493
	(0.0246)	(0.0272)
Credit clients	-9.3276∗∗∗	-9.9498∗∗∗
	(1.2028)	(1.0673)
GDP growth	-0.0024∗∗∗	-0.0012∗
	(0.0003)	(0.0004)
Institutions	-0.0021	-0.0060
	(0.0036)	(0.0040)
Observations	2126	1615
Number of MFIs	414	355
Chi2/F test (*p*-value)	0.0000	0.0000
Hausman test (p-value)	0.0000	0.0000
Estimator	Fixed	Fixed

Notes: This table reports fixed effects estimates on the relationship between director characteristics and FCF. FCF denotes free cash flow and is calculated as the ratio of total cash and short-term investment to total assets. CEO duality is a binary variable that takes a value of 1 if the CEO and board president are the same person, and 0 otherwise. Client director represents the number of board members in an MFI who are elected by the clients taking part in the programs of the MFI. Debt is the ratio of total debt to total assets. MFI size is the natural logarithm of total assets, and MFI age is the number of years of operation of the MFI. Productivity is the number of credit clients per loan officer. Voluntary savings is the ratio of voluntary savings to total assets. PAR30 is calculated by dividing the outstanding loans in arrears for more than 30 days by the outstanding gross loan portfolio. Credit clients is the ratio of the total number of credit clients to total assets. GDP growth is the annual percentage rate of GDP in each country and Institutions capture macro-institutional differences in governance between countries. Standard errors are in parentheses.
∗ Denotes statistical significance at the 10% level.
∗∗ Denotes statistical significance at the 5% level.
∗∗∗ Denotes statistical significance at the 1% level.

In Column (5), CEO duality demonstrates a significant positive coefficient with FCF, indicating that CEO duality is associated with higher levels of FCF. This finding aligns with the finding that CEO duality leads to CEO domination of the board, resulting in increased concentration of power and potential conflicts of interest (Madhani, 2017).

On the other hand, in Column (6), the presence of a client director exhibits a significant negative relationship with FCF. Directors elected by clients of MFIs can enhance governance mechanisms related to critical operational issues. This finding supports the claim that client directors can monitor managerial behavior on behalf of the firm's clients and intervene when managers act opportunistically by misusing firm assets (Post et al., 2011).

The results for the control variables are consistent in terms of sign and significance with the results for the corresponding control variables in Table 4.

In conclusion, director characteristics have a significant effect on FCF. Specifically, CEO duality has a significant positive effect on FCF, while the presence of a client director has a significant negative effect on FCF in hybrid firms like MFIs.

Table 7 presents the system GMM estimates. These estimates generally mirror the fixed effects estimates in Table 6. The two variables in these dynamic tests exhibit the same sign of coefficients as the two variables, *CEO chair* and *Client director,* in the corresponding estimates in the static tests. Therefore, even after addressing potential endogeneity issues, we find that the results continue to suggest that board characteristics have a significant effect on FCF. Moreover, the results from the OLS estimates (untabulated) are consistent with those obtained from the fixed effects and GMM estimates in terms of the sign of coefficients for all variables.

In summary, the results of the fixed effects, system GMM, and OLS tests consistently support the notion that board characteristics exert a significant effect on FCF. The results provide further evidence of the importance of considering board composition and structure in analyzing FCF.

Table 7

The relationship between director characteristics and free cash flow: System GMM estimates

Dependent variables	**(7) FCF**	**(8) FCF**
CEO chair	0.3634∗	
	(0.3048)	
Client director		-0.0221∗
		(0.0515)
Leverage	-0.0866∗	-0.0087∗
	(0.0639)	(0.0237)
MFI size	-0.0000	-0.0064
	(0.0114)	(0.0129)
MFI age	-0.0017∗	0.0008
	(0.0011)	(0.0021)
Productivity	-0.0007∗	0.0000
	(0.0005)	(0.0001)
Voluntary savings	0.1286∗∗∗	0.1510
	(0.0577)	(0.2764)
PAR30	-0.1911∗	-0.1038∗
	(0.1877)	(0.1297)
Credit client	-13.1217∗∗	-0.2536∗
	(7.8937)	(8.4839)
GDP growth	-0.0001∗	-0.0002∗∗
	(0.0034)	(0.0012)
Institutions	-0.0094∗∗	-0.0006∗
	(0.0088)	(0.0034)
Observations	1899	1458
Number of MFIs	408	346
Number of instruments	29	29
AR (1) test (p-value)	0.000	0.001
AR (2) test (p-value)	0.341	0.232
Hansen test (*p*-value)	0.833	0.106

Notes: This table reports the results of the two-step system GMM test. AR (1) and AR (2) are tests for first- and second-order serial correlation in the first-differenced residuals, under the null hypothesis of no serial correlation. The Hansen test of over-identification is under the null hypothesis that the instrument set is valid, as is the case here. In the system GMM specification, we used the "forward" orthogonal deviations transformation instead of first-differencing because our data is unbalanced panel. We also used the "collapse" option to prevent instrument proliferation. Robust standard errors are in parentheses. See Table 1 and notes of Table 6 for definitions of the variables.

∗ Denotes statistical significance at the 10% level.

∗∗ Denotes statistical significance at the 5% level.

∗∗∗ Denotes statistical significance at the 1% level.

6 Conclusion

This study investigates the relationship between corporate governance and FCF in hybrid firms like MFIs. Unlike common profit-maximizing firms, MFIs have dual goals of supporting the poor and achieving financial sufficiency. When MFIs receive increasing funding while facing limited growth opportunities, an agency problem arises whereby managers resort to FCF overinvestment to expand the MFIs' operations in order to maximize personal interest at the expense of the interest of shareholders such as donors, creditors, and investors.

The phenomenon of FCF overinvestment in MFIs raises questions about the efficiency of corporate governance mechanisms, particularly those involving the board of directors. Since corporate governance mechanisms are typically designed for profit-seeking firms, their effectiveness in curbing FCF overinvestment in hybrid firms like MFIs remains uncertain. To address this gap in the literature, this study examines four characteristics of board and director to determine their effect on FCF overinvestment in MFIs.

The test results reveal that all four board and director characteristics significantly affect the level of FCF in MFIs. Specifically, board size and CEO duality exhibit a significant positive relationship with FCF, indicating poor governance practices (Gill & Shah, 2012; Moshashaei, 2020; Wirianata et al., 2022). Conversely, board committees and client directors exhibit a significant negative relationship with FCF, indicating good governance practices (Nobakht & Nobakht, 2021; Salamon, 2015; Toumeh et al., 2020). Larger board sizes and CEO duality are associated with FCF overinvestment, while board committees and client directors serve as effective governance mechanisms to mitigate FCF overinvestment.

Due to limitations in data access and variable coverage, this study leaves certain testable issues unresolved. Future research could explore the measurement of the optimal outreach level and the factors influencing it, expand the scope of board characteristics, examine the interaction between board factors and governance effectiveness on FCF, and investigate the interaction between CEO characteristics and board characteristics in controlling FCF, among other relevant topics.

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