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Moral Hazard, Adverse Selection, and Capital Structure in Fintech Microfinance in Indonesia

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Abstract

This study examines the relationship between moral hazard and adverse selection in Indonesia's fintech-driven microfinance sector. Its objective is to assess the impact of these economic factors on the operational strategies and financial frameworks of fintech-enabled microfinance institutions (MFIs). To achieve this, the study investigates how fintech addresses the issue of informational asymmetry, commonly associated with moral hazard and adverse selection, by way of comparing and contrasting previous literature and empirical studies. The findings suggest that improved credit scoring processes facilitated by fintech have led to a noticeable reduction in adverse selection. However, the existing literature also reveal that while fintech solutions can mitigate moral hazard to some extent, challenges remain due to borrowers' limited digital financial literacy. Furthermore, the adoption of technology has brought about changes in the capital structures of MFIs, resulting in increased efficiency but also introducing new regulatory complexities. This research has two key implications. Firstly, it emphasizes the importance of policymakers developing robust regulatory frameworks that can adapt to the rapid technological advancements in the microfinance industry. Secondly, the findings can provide guidance to the microfinance industry on how to optimize the benefits of fintech. Investing in capacity building and education for borrowers, as well as technology infrastructure, are crucial in harnessing the potential of fintech to enhance the effectiveness and sustainability of microfinance services in Indonesia.

Keywords: *Moral Hazard, Adverse Selection, Capital Structure, Fintech, Microfinance*.

Introduction

Financial technology (fintech) has led to significant improvements to the microfinance business in Indonesia. Indonesia, a major economy in Southeast Asia, has seen a rapid growth in fintech platforms that seek to democratize access to financial services (Maharani et al., 2023; Utami, 2023). These platforms, according to Utami (2023), have had a significant impact on microfinance, an industry where rural and unbanked communities frequently lack access to conventional banking, especially in Indonesia's most distant and remote regions. Agustin (2023) disclosed that Fintech's contribution to Indonesian microfinance industry is demonstrated by its ability to improve financial inclusion by offering quick loan disbursements, adaptable repayment plans, and lower operating costs.

		2023	2022	2021	2020	2019
Number of firms		94	95	96	104	128
Total assets (in billion rupiah)		6,905	5,379	3,986	3,711	2,985

Table 1. Fintech Microfinance in Indonesia

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31 December 2019-31 December 2023

Source: Otoritas Jasa Keuangan 2019-2023 extracted and summarized.

However, despite fintech's promising future in promoting financial inclusion, the industry faces numerous challenges, including adverse selection and moral hazard Armendáriz and Morduch, 2007), which have among others contributed to failures of some fintech firms. Table 1 shows that as at 31 December 2023, there were 94 fintech firms recorded and licensed by OJK, which is down from 128 firms as at 31 December 2019.

In his study, Salman (2023) discloses that moral hazard results when borrowers are motivated to take on more risk after obtaining a loan due to information asymmetry with the lender. Consequently, Salman (2023) also mentions that the risks involved in determining a borrower's creditworthiness prior to loan acceptance are known as adverse selection. According to Agustin (2023), these problems are made worse in Indonesia's dynamic, loosely regulated fintech-driven microfinance market by the disparity in socioeconomic status and the digital gap between urban and rural areas.

This study investigates a number of research inquiries:

1. How does fintech impact the prevalence of adverse selection and moral hazard in Indonesia's microfinance industry?

2. In a fintech context, what strategies have microfinance organizations put in place to reduce these risks?

3. How has the integration of fintech affected the capital structures of microfinance institutions?

4. What effects do these changes have on borrowers, microfinance companies, and regulators?

This research has practical implications for various stakeholders, such as policymakers, academia and fintech microfinance industry. For policymakers, to effectively draft policy that protects the interests of marginalized populations and promotes the growth of the fintech industry, this study provides deeper understanding of the intricate relationships between moral hazard, adverse selection, and fintech. As to microfinance institutions (MFIs), this research offers broader comprehension of sound risk management techniques which are important for their continued operations and successful implementation of fintech advancements.

Literature Review

The concepts of moral hazard and adverse selection play an important role in the theory of financial intermediation as they provide insight into the dynamics between lenders and borrowers. Moral hazard as explained by Rowell and Conelly (2012) arises when borrowers engage in riskier activities after acquiring financing, confident that the lenders will bear the consequences of their decisions.

Conversely, adverse selection, according to Akerlof (1970), occurs when lenders are unable to distinguish high-risk borrowers from low-risk ones prior to extending credit, leading to inconsistencies in loan terms and the suitability of recipients. These concepts are fundamental in influential works such as Akerlof's "The Market for 'Lemons'" (Akerlof, 1970), and subsequently scholars like Stiglitz and Weiss (1981) have further explored them within the realm of microfinance.

Asymmetric Information, Adverse Selection and Moral Hazard

Rowell and Conelly (2012) mentioned that moral hazard is actually a phenomena originated in the insurance industry. It describes how people change their behavior to take on more risk when they are protected from the repercussions because there is asymmetry in the information between the parties involved. This happens in the context of microfinance once a loan is disbursed; knowing that the lenders assume some risk, borrowers may misallocate funds or invest in riskier projects. By balancing the incentives of lenders and borrowers, interest rates and collateral help reduce moral hazard in credit markets, according to the seminal work of Stiglitz and Weiss (1981).

Innovations which are pursued by MFIs such as by establishing continuous borrower activity monitoring using digital means, provide MFIs with real-time data to curb risky behaviors. Haldar and Stiglitz (2016) disclosed that the use of financial technology for loan disbursement and repayment also reduces the discretion borrowers have, directly tying loan conditions to their ongoing financial behavior.

Adverse selection - which was first introduced by Akerlof (1970) in his seminal paper "The Market for 'Lemons.'", describes a scenario in which sellers are able to more properly assess items than the buyers because of information asymmetry, which causes a majority of lower-quality goods in the market. This relates to microfinance and the difficulty which MFIs have in differentiating between high-risk and low-risk clients before loans are disbursed; improper management of this distinction could lead to higher default rates.

Previous studies on adverse selection highlighted how digital platforms have enhanced data analytics, improving borrower profiling exercises (Berg et al., 2020). In the case of Indonesia, fintech MFIs are using mobile and internet transaction data in developing accurate credit scoring models, in addition traditional financial histories, which are often incomplete or absent in developing markets (Wijaya, 2023).

Fintech's Effect on Conventional Theories of Financial Intermediation

Fintech advancements possess the capability to considerably mitigate information asymmetry, especially in the domains of data analytics and mobile technology. The foundational theory of information asymmetry was first established by three 2001's nobellaureates - George Akerlof, Michael Spence and Joseph Stiglitz, in their studies of markets with asymmetric information (Löfgren et al, 2002). Some explicit examples of information asymmetric are agents on one side of the market have much better information than those on the other side, or borrowers who know more than the lender about their repayment prospects, as well as the CEO and the board who know more than the shareholders about the profitability of the firms – as such demonstrating typical agency problem (Jensen dan Meckling, 1976).

In his 1970 studies, Akerlof alluded to an illustrative example of adverse selection, from credit markets in India in the 1960s, where local lenders charged interest rates that were twice as high as the rates in large cities. However, a financial intermediary who borrows money in large cities and then lends it in the countryside, but does not possess sufficient information of the borrowers' creditworthiness, is taking risks of attracting borrowers with poor or weak repayment prospects, thereby he will be potentially exposed to heavy credit losses.

Wijaya (2023) in her studies unveiled that digitalization has facilitated a proliferation of non-peer-to-peer fintech startups, companies, and investors leveraging data to improve and automate the delivery and use of financial services. According to Wijaya (2023), fintechs are joining forces

with e-wallet players and e-commerce platforms, linking digital platforms and providers through a wide range of data-driven business models and innovations (Sutrisno, 2022).

As part of this trend, a growing number of innovative credit scoring (ICS) companies has been recorded by the Indonesian Financial Services Authority (OJK) tracking Digital Financial Innovation (Inovasi Keuangan Digital). "Digital Financial Innovation" refers to any type of activity to revamp business processes, business models, and financial instruments to provide new added value in the financial services sector and ultimately boost the digital ecosystem (AdIns, 2022). For MFIs, this enables more accurate risk evaluations of debtors provided by automated credit scoring algorithms that use broader data sources such as utility bill payments, internet transaction history, and mobile phone usage as shown in Diagram 1.

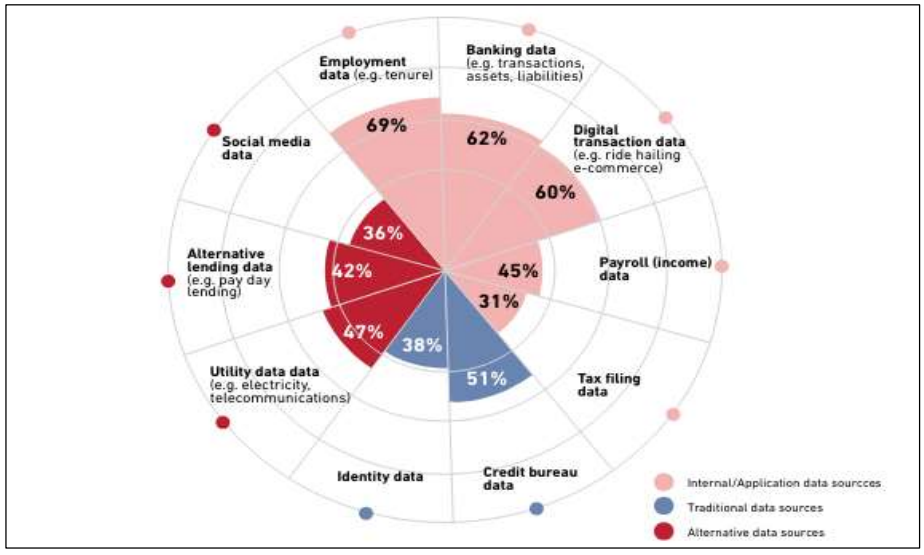


Diagram 1. Data Sources for Credit Scoring

Source: Sutrisno, 2022 in Trissia Wijaya, 2023, page 14.

By strengthening borrower monitoring and streamlining pre-approval screening procedures, these technological improvements address moral hazard and adverse selection, as they enable the financial intermediaries such as MFIs to build deeper and broader understanding of their potential borrowers' non-payment risks.

MFIs' capacity to keep an eye on borrowers and closely monitor loan conditions is improved by digital lending platforms (Wijaya, 2023). Borrowers' ongoing digital footprints can be examined to track their financial habits and spot possible hazards before they become serious. Furthermore, by lowering default and delinquency rates, automatic withdrawals for loan repayments from digital wallets can lessen moral hazard.

Adverse Selection, Moral Hazard and Capital Structure

The composition of debt and equity financing in fintech MFIs is important as it affects their risk, flexibility, and potential growth. The impacts of moral hazard and adverse selection on capital structure are tangible, as they influence risk assessments and, consequently, the cost of capital and access to funding (Myers, 1977).

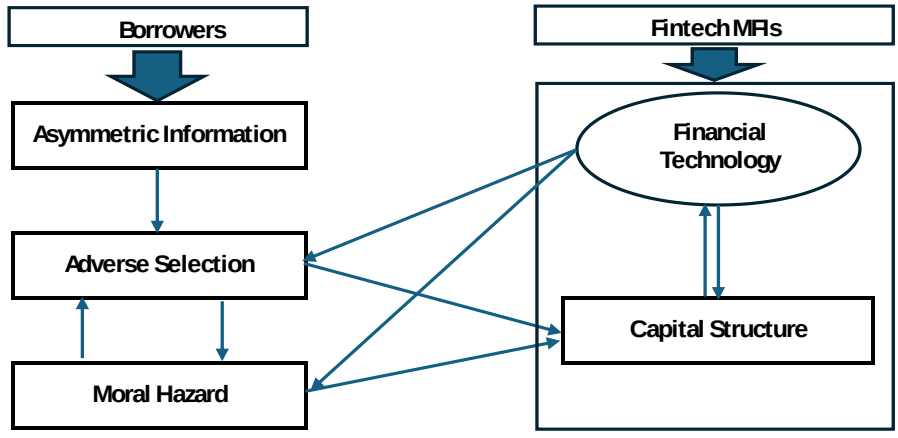
Previous studies on Indonesian fintech MFIs showed higher probability for loan defaults, due to the risk of adverse selection and moral hazard. For instance, Rahmi (2019) shows that the rapid approval processes characteristic of many fintech platforms can contribute to adverse selection risks by attracting higher-risk borrowers who seek immediate funding without thorough vetting. When the loan eventually defaults, the fintech MFIs' capital structure will be impacted.

In response to addressing adverse selection and moral hazard within the fintech MFIs ecosystem in Indonesia, Indonesian Financial Services Authority (OJK) has implemented regulations that mandate fintech lenders to enhance their lending practices. These include requirements for improved risk management frameworks and greater transparency (OJK Regulation No. 77/POJK.01/2016). Such regulations aim to curb the risks associated with moral hazard and adverse selection, hence stabilizing the capital structure of MFIs by ensuring more predictable and secure financial operations.

Conceptual Framework

Diagram 2

Conceptual framework



Source: Synthesized from previous studies (Stiglitz and Weiss, 1981; Akerlof, 1970; Haldar and Stiglitz, 2016; Berg et al., 2020; Myers, 1970, Wijaya, 2023)

Previous literature suggests that asymmetric information being the driver of adverse selection as well as moral hazard (Stiglitz and Weiss, 1981; Akerlof, 1970). Following these studies, Haldar and Stiglitz (2016) found that the use of financial technology for loan disbursement and repayment reduces the discretion borrowers have, by directly tying loan conditions to their ongoing financial behavior. In this context, Berg et al., (2020) highlighted how digital platforms and innovation provided by financial technology have enhanced data analytics, improving borrower profiling exercises, hence helps reduce adverse selection and moral hazard. As much as these will preserve capital structure, the presence of financial technology also requires investments hence stronger capital structure is required.

Myers (1977) as well as Darrough and Stoughton (1986) find that the impact of adverse selection and moral hazard to the composition of debt and or equity being raised by the firm is tangible and therefore the ability of fintech MFIs in addressing and managing risks exposed by adverse

selection and moral hazard will define the capital structure. In addition, the challenge of differences in information due to rumors or disagreement opinion [see to Sawidji & Setyawan (2022) and herding behavior [Setyawan & Ramli (2016)] among team of management from MFIs and their stakeholders must also be anticipated.

Discussion

The utilization of fintech by Microfinance Institutions (MFIs) in Indonesia mitigates risks associated with adverse selection, as the precision of risk assessments has been enhanced through sophisticated credit scoring algorithms. These algorithms leverage a diverse array of data sources, including mobile phone usage and online transaction histories (Wijaya, 2023). However, moral hazard remains a concern, despite advancements in digital platform monitoring.

Compared to traditional environments, risk-taking behaviors persist post-loan issuance in fintech settings. Although digital transaction monitoring has reduced risk behaviors, issues remain as borrowers continue to struggle with the complexities of digital finance.

Pursuant to Regulation No. 77/POJK.01/2016 by the Financial Services Authority of Indonesia (OJK), which mandates enhanced risk management frameworks and increased transparency, fintech MFIs in Indonesia are gradually adopting more robust capital structures. These include a variety of loan products and dynamic pricing models tailored to the unique risk profiles identified by fintech platforms.

The existing literature suggests that fintech MFIs can diminish informational asymmetries and minimize adverse selection. However, it also underscores the technological limitations in addressing moral hazard, emphasizing the need for continuous development of technological solutions and borrower engagement strategies.

The adoption of fintech enables MFIs to enhance operational effectiveness and refine risk assessments. Nevertheless, comprehensive borrower education and engagement programs remain essential. These findings support the argument that technological improvements should be implemented in a responsible and inclusive manner, while still fostering technical innovation.

Conclusion and Policy Implications

This study provides important insights into how moral hazard and adverse selection are influenced by fintech within Indonesia's microfinance sector. Previous research indicates that fintech mitigates adverse selection by enhancing credit scoring methods that utilize alternative data sources. This improvement in borrower risk assessment contributes to lower default rates. However, despite technological advancements in monitoring, risk-taking behaviors continue post-loan disbursement, indicating that moral hazard remains a challenge. Moreover, the integration of fintech solutions into MFIs' capital structures has not only enhanced operational efficiency but also increased the complexity of managing these advancements.

This paper offers valuable guidance for policymakers aiming to reduce adverse selection through the effective application of fintech solutions. Nonetheless, the persistent issues related to moral hazard highlight the need for frameworks that address both the risks and the opportunities presented by fintech.

For Microfinance Institutions (MFIs), prioritizing capacity building and educational programs for borrowers is essential alongside the adoption of new technologies. The findings of this study

suggest that maximizing the benefits of fintech and reducing moral hazard necessitate the improvement of borrowers' financial literacy and understanding of their obligations.

Fintech developers have a significant opportunity to create more user-friendly and transparent platforms that facilitate better financial understanding and responsible behavior among consumers. Innovations should aim to include elements that enhance financial education, in addition to providing core financial services.

This paper recommends future research agenda to include the assessment of the long-term impact of fintech on the sustainability of microfinance, particularly in terms of borrower behavior and MFI capital structure strategies. Further studies comparing fintech-driven and conventional MFI models could illuminate the specific benefits of technological advancements in enhancing stability and financial inclusion.

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