FinTech and Inefficient Investment in Enterprises: A Review and Outlook

Chengqi Shi, Hanrui Zhang

Shaanxi University of Science & Technology, Xi'an 710021, Shaanxi, China
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Abstract: The deep integration of finance and technology is an important driver for deepening the structural reform of the financial supply side and serving the high-quality development of the real economy. This paper first organizes and analyzes the relevant concepts of FinTech, and then reviews related research from three perspectives: corporate governance, financing constraints, and risk-taking, aiming to provide useful insights for scholars studying the "impact of FinTech on inefficient investment in enterprises". Based on a summary of existing literature, the paper suggests that future FinTech research should focus on risk regulation and sustainable development, hoping to provide references and inspiration for subsequent related studies.

***Keywords*:** FinTech; inefficient investment; corporate governance level; financing constraints; risk-taking capacity

1. Introduction

The Central Economic Work Conference emphasizes that adhering to high-quality development must be regarded as a hard truth in the new era, promoting the economy to achieve effective qualitative improvement and reasonable quantitative growth. Enterprises are the main body of the market economy and the basic unit of the national economy, playing an indispensable role in promoting high-quality economic development. Their high-quality investment efficiency has become a fundamental aspect of high-quality economic development. With the emergence of emerging frontier technologies such as big data, artificial intelligence, the Internet of Things, blockchain, and cloud computing, the world has already entered the digital age. After more than a decade of development, FinTech in our country has penetrated various fields of traditional finance, significantly and profoundly impacting our financial market. In this context, there has been intense discussion in academia regarding the investment efficiency of enterprises against the backdrop of the rapid development of FinTech. It is of great significance to systematically sort out and summarize the impact of FinTech on enterprise investment efficiency, propose research prospects based on this, and further explore the issue of enterprise investment efficiency, grasp the opportunities presented by the development of FinTech, promote financial services to the real economy, and facilitate high-quality economic development. Therefore, this paper summarizes and refines the impact mechanisms of FinTech on inefficient enterprise investment based on a review of relevant research literature, and looks forward to future research directions, aiming to promote financial services to the real economy, assist in the high-quality development of our economy, and provide new insights for subsequent research.

2. Definition and Measurement of FinTech

2.1 Definition of FinTech

The term FinTech was first proposed by John Reed, the chairman of Citibank, in 1993, combining "Finance" and "Technology." With the continuous advancement of socio-economic practices, the landscape of FinTech is rapidly developing, and its connotations and scope are constantly expanding. However, there is still no universally recognized standard for its definition, and it is often used interchangeably with new financial concepts such as "Tech Finance" and "Internet Finance" in both academic and practical economic fields. Both FinTech and Tech Finance encompass elements of finance and technology, representing the mutual penetration and deep integration of finance and technology brought about by a new round of technological revolution (Zhang, 2019)[1]. However, their means and purposes differ; the former focuses on enhancing the efficiency and convenience of financial services through technological innovation, promoting the development of the financial industry and the real economy, while the latter emphasizes the support of finance for the technology industry, facilitating the development of technological innovation (Huang, Tao, 2023)[2]. Wang et al. (2023) believe that FinTech mainly derives from Internet Finance and is an upgrade of Internet Finance[3]. The former emphasizes driving financial innovation through technological means, highlighting the application and practice of technology in the financial sector, while the latter refers more to the penetration of traditional financial markets by internet companies using

internet technology and information communication technology (Wang, 2023)[4].

Based on the authoritative definition by the Financial Stability Board (2016), FinTech refers to financial innovations driven by emerging frontier technologies, which help to give rise to new business models, technological applications, business processes, and innovative products, thereby having a significant impact on the entire financial system. The U.S. National Economic Council (2017) believes that FinTech encompasses a range of technological innovations that profoundly affect financial activities from multiple dimensions. The People's Bank of China (2019) considers FinTech to be a transformative force centered on technology that promotes the transformation and upgrading of the financial industry, and emphasizes the need to fully leverage technology to empower financial innovation and drive high-quality development in China's financial sector. Lee et al. (2018) argue that FinTech is financial innovation based on cutting-edge technologies, bringing disruptive changes to the business models of traditional finance[5]. The connotation of FinTech includes not only emerging digital technologies at the backend but also technology-driven financial innovations at the frontend (Liu et al., 2021)[6]. However, its core essence remains finance, with the main goal of optimizing and enhancing the overall efficiency of financial services through technological means (Thakor, 2020; Taherdoost, 2023)[7][8].

2.2 Quantification and Measurement of FinTech

Given that there is no unified standard for defining the scope of FinTech and statistical criteria, along with the limited availability of commercial data, FinTech still lacks standardized, comprehensive, and authoritative statistical indicators. Effectively quantifying and measuring the level of FinTech development has become an important prerequisite for examining the impact of FinTech on corporate debt financing. In terms of the research context of existing literature, there are mainly three types of measurement methods for FinTech.

The first type uses the Digital Inclusive Finance Index from Peking University to measure FinTech. Guo et al. (2020) utilized the vast micro-user data from Ant Financial to compile a Digital Inclusive Finance Index at the provincial, municipal, and county levels. They also constructed a multi-level indicator system based on three dimensions: the breadth of digital financial coverage, the depth of usage, and the degree of digitization[9]. Due to the ability of this indicator system to effectively reflect the actual development of FinTech in China, it has been widely applied in existing research.

The second category uses text mining methods to construct a FinTech index. Shen Yue and Guo (2015) conducted a statistical analysis of the frequency of keywords related to FinTech in news reports and developed an indicator system that reflects the national level of FinTech development[10]. Based on this idea, Sheng et al. (2020) utilized the Baidu search index for FinTech-related keywords to assess the level of FinTech development at the provincial level[11]; Li et al. (2020) compiled 48 core terms related to FinTech and, using web crawling technology, created an indicator system to measure the level of FinTech development at the city level[12].

The third category measures the level of FinTech development by the number of FinTech companies. Song et al. (2021) argue that FinTech companies are highly dependent on technology and invest significantly in innovation. As a result, traditional financial institutions in China often choose to collaborate with FinTech companies or establish FinTech departments (subsidiaries) to engage in FinTech, so the number of FinTech companies can comprehensively reflect the level of FinTech development in a region[13].

3. Research on the Impact of FinTech on Inefficient Investment in Enterprises

Richardson (2006)[14] believes that investment efficiency refers to the degree of deviation between a company's actual investment and the optimal investment decisions it should make in a specific market and economic environment. Currently, most scholars agree that the development of FinTech can effectively enhance the investment efficiency of enterprises. The characteristics of FinTech, such as "inclusiveness," "industrial support," and "latecomer advantages," have a significant impact on improving the investment efficiency of enterprises (Lv et al., 2022) [15]. Research by Demirgüç and Maksimovic (1998) confirmed that a high-level financial market improves investors' ability to access information, helping enterprises enhance their investment efficiency[16]. In contrast, a low-level financial market leads to differences in internal and external financing costs for enterprises, forcing them to focus excessively on cash flow, resulting in insufficient investment efficiency. Liu et al. (2018)[17] found that there is a "U"-shaped relationship between FinTech and enterprise investment efficiency, meaning that in the early stages of development, FinTech may reduce the investment efficiency of real economy enterprises, while in the later stages, accompanied by financial regulation, it can help improve investment efficiency. In other words, financial regulation has a corrective effect on the reduction of inefficient investment by FinTech in enterprises (He et al., 2023) [18].

On this basis, some scholars further subdivide inefficient investment into two forms: underinvestment and overinvestment, based on different investment behaviors of enterprises, and explore the directional effects of FinTech on

these two forms. Regarding the impact of FinTech on underinvestment, most academic viewpoints agree that FinTech has a significant positive effect on alleviating underinvestment in enterprises (Ma et al., 2024; Wang et al., 2022) [19][20]. Xue et al.(2024) [21] point out that FinTech has resource effects and governance effects, and it has a significant suppressive effect on both overinvestment and underinvestment. FinTech can comprehensively enhance the quality of information in the processes of balancing, disclosing, transmitting, and acquiring information (Wei et al., 2023) [22], which to some extent improves the transparency and accuracy of information, allowing enterprises to obtain relevant investment information more quickly and efficiently, helping them make investment decisions more effectively. This can prevent underinvestment caused by excessive conservatism and also suppress overinvestment caused by excessive aggressiveness (He et al., 2023) [18].However, scholars have different views on the relationship between FinTech and corporate over-investment. Jing et al. (2024) believe that the development of FinTech can alleviate the problem of insufficient corporate investment and effectively improve investment efficiency. However, for companies that are over-investing, it may have a negative counterproductive effect on their inefficient investment situation[23]. Scholar Sisi Xiong (2019) found that while excessive confidence of corporate managers can help reduce under-investment, it can conversely lead to over-investment by the company[24]. From the perspective of financing constraints, in the context of digital finance, the issues of "difficult financing" and "expensive financing" have lessened their restrictive effects on large-scale corporate investments. When funds are abundant, the risk of fund misuse also increases (Liu et al., 2022)[25]. From the principal-agent perspective, the development of FinTech alleviates corporate financing constraints and information asymmetry, significantly improving the availability of credit funds for companies(Dong et al., 2023)[26]. However, companies that were originally over-investing may find that having more disposable funds increases managerial control, while the insufficient external supervision by creditors leads to inefficient and excessive investments as the scale of investment expands (Zhao et al., 2021)[27].

3.1 Corporate Governance Level

A sound corporate governance mechanism is beneficial for enterprises to make correct investment decisions and improve investment efficiency. The management, as the party with an advantage in information and the agent of operations, plays a key role in determining the investment efficiency of the enterprise. Research by Yao et al. (2022) [28] found that when a less capable manager holds significant power, it can lead to inefficiencies in corporate investment. Additionally, the agency problems arising from management's opportunism severely impact the investment efficiency of enterprises (Hutchinson et al., 2004) [29]. The corporate governance effects of FinTech can leverage its data capture capabilities to provide shareholders with precise governance information, thereby reducing short-sightedness and profit manipulation behaviors of the management (Sun et al, 2023) [30], alleviating internal agency conflicts, enhancing the information governance effect of the enterprise, and improving the level of corporate governance. In the investment process, internal control plays an important role; a higher level of internal control can help enterprises rationally supervise their investment activities, effectively reducing decision-making errors caused by communication barriers, opportunism, and information asymmetry in the decision-making process (Barney, 1991) [31]. FinTech, through the use of new generation information technology, can also to some extent standardize corporate management and investment decision-making processes by constructing a digital financial governance mechanism, thereby enhancing internal control levels to curb inefficient investments by enterprises (Qi et al., 2024) [32].

3.2 Financing Constraints

Financing constraints refer to the lack of external financing channels for enterprises when they face good investment opportunities due to market imperfections. This results in enterprises being unable to achieve the optimal investment scale (Fazzari et al., 1988) [33], thereby reducing their investment efficiency and limiting their high-quality development. FinTech, relying on emerging cutting-edge technologies such as artificial intelligence, big data, the Internet of Things, and cloud computing, has changed the way financial markets operate and has also promoted the innovative development of financial services. The deep integration of FinTech and financial services represents a breakthrough transformation that breaks traditional financing barriers, lowers financing thresholds, enhances financing convenience, and establishes a diversified, structured, and systematic financing system, significantly alleviating the financing constraints faced by enterprises. In terms of financing methods, compared to equity financing, debt financing has a significant inhibitory effect on inefficient investment behaviors, primarily reflected in under-investing enterprises, while it has not formed effective constraints on over-investing enterprises (Ye et al, 2024) [34]. In terms of resource integration, financial institutions use FinTech to aggregate and integrate vast amounts of data from the market. This not only allows them to obtain "hard data" such as financial and operational data of enterprises but also to acquire "soft data" like corporate reputation and management quality, enabling them to provide financial services and risk control at a lower cost. As clients, enterprises can also smoothly access relevant information about

the operations and transactions of financial institutions through various information systems and platforms, significantly reducing the degree of information asymmetry between the two parties in the financing process. This helps align the funding return requirements of enterprises with the risk characteristics of projects (Huang,2022) [35], thereby alleviating the issue of financing constraints.

3.3 Risk-Taking Capacity

A company's ability to bear risk is a key reflection of its core competitiveness, which is crucial for its stability and development(John et al., 2008)[36]. The information effect of FinTech significantly reduces the marginal cost of collecting and analyzing core data, prompting management to accept a higher risk premium, thereby enhancing the company's risk-taking capacity and helping it accurately seize market opportunities during the investment decision-making process (Brown, 2013)[37]. From the perspective of the enterprise, FinTech can provide more accurate, comprehensive, and timely risk assessment and early warning services, helping companies to evaluate project risks and potential returns more thoroughly. This, in turn, allows them to reduce the uncertainties and risks they face while ensuring that risks remain controllable, ultimately improving the accuracy of investment decisions.From the perspective of financial institutions, the development of FinTech provides more diversified risk management tools, enhancing the ability to identify, assess, control, and transfer risks (Yan et al., 2024)[38]. It reduces the probability and severity of various risks such as credit risk, market risk, operational risk, and liquidity risk, establishing a more comprehensive and flexible risk response mechanism, and improving the level of risk-bearing for banks. Furthermore, FinTech can also build a financial ecosystem of information sharing and risk-sharing among enterprises, financial institutions, and regulatory bodies. In this ecosystem, all parties can fully leverage their strengths to collectively address risk challenges. Enterprises can utilize FinTech, and additionally, FinTech can create a virtuous cycle within the financial ecosystem among enterprises, financial institutions, and regulatory bodies. Driven by innovations in FinTech, all parties can collaboratively construct a risk management system (Lu, 2023)[39], achieving information sharing and risk-sharing, thereby efficiently optimizing resource allocation, minimizing investment risks for enterprises, and comprehensively improving investment efficiency.

4. Summary and Outlook

In recent years, FinTech has been thriving in our country. Based on its functional effects and potential risks, the academic community has conducted extensive research. This paper reviews the relationship between FinTech and corporate investment efficiency. Overall, according to existing literature, many scholars agree that FinTech can improve corporate investment efficiency from the perspectives of corporate governance, financing constraints, and risk-taking, especially for under-invested companies, as the development of FinTech significantly reduces companies' sensitivity to funding. However, the development of any phenomenon has its "dual nature." The advancement of FinTech may also bring certain risks; if new technologies and tools are misused, it could lead to a disconnection between the financial system and the real economy, hindering the healthy development of the real economy. The appropriateness of the application direction of FinTech within the financial system directly affects the ability of financial services to support the real economy. Accordingly, this paper proposes the following outlook:

(1) Focus on FinTech Risks. The deep integration of finance and technology has brought many positive impacts to the financial industry, but the inherent risks and regulatory challenges it poses also require sufficient attention. It is undeniable that FinTech has greatly enhanced the investment efficiency of real enterprises, improved corporate governance, alleviated financing constraints, and increased risk-bearing capacity, enabling them to more effectively match investment with returns. However, when FinTech is applied in the financial sector, its inherent characteristics disrupt and break through traditional financial regulatory frameworks, making financial risks more complex and severe. Therefore, future financial risk management will not only need to rely on existing policies and tools but also actively explore new technologies and methods, rethink the concepts and models of FinTech regulation, and apply efficient regulatory solutions and tools to enhance the agility and precision in responding to risks, thereby better serving the real economy.

(2) Focus on the sustainable development of enterprises. The development of FinTech has opened new pathways for improving the investment efficiency of enterprises. Through data-driven approaches, intelligent decision-making, and efficient capital flow, it injects new vitality into corporate investments. This not only helps enterprises accurately grasp investment opportunities but also effectively reduces investment risks, maximizing investment returns. However, with the advancement of industrialization, issues such as environmental protection and social responsibility have become increasingly prominent, prompting countries around the world to call for sustainable development in all areas of social production. Enterprises should use FinTech as a tool, adopt a holistic perspective, focus on long-term development, integrate social responsibility into investment decisions, and incorporate green concepts into FinTech innovation, achieving a unity

of economic and social benefits. In summary, while utilizing FinTech to enhance investment efficiency, enterprises should consider social benefits and environmental protection. By innovating FinTech applications, focusing on green industry investments, and practicing the concept of a circular economy, enterprises can only achieve true sustainable development by taking a long-term perspective.

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