Regional Digital Finance and Its Effect on IPO Performance: A Chinese Market Analysis

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Abstract:

This paper explores the intricate relationship between the rise of digital finance and initial public offering (IPO) outcomes within China's diverse regional economies. As digital finance transforms traditional financial services through technological innovations such as online lending, mobile payments, and blockchain, its influence on capital markets becomes increasingly significant. This research investigates how varying levels of digital finance adoption across different regions in China impact IPO performance, including factors such as stock pricing, liquidity, and post-IPO valuation. By analyzing regional disparities in digital finance infrastructure and integration, the study provides insights into the role of financial technology in shaping market dynamics and offering strategic guidance for companies considering going public in digitally evolving economies. The findings aim to contribute to the broader understanding of how regional financial innovations can influence capital market efficiency and investor behavior in emerging markets like China.

Keywords: Regional Digital Finance, IPO Performance, Chinese Market, Financial Technology

I. Introduction

Digital finance has become a transformative force in global financial systems, driven by advancements in technology such as mobile payments, blockchain, and digital banking platforms. Worldwide, consumers and businesses are increasingly adopting digital financial services due to their accessibility, convenience, and efficiency. The global digital finance landscape includes a range of services like online lending, digital wallets, peer-to-peer payments, and cryptocurrency transactions, which have fundamentally reshaped financial interactions. In China, digital finance has experienced unprecedented growth, fueled by the rapid adoption of mobile payments, the proliferation of fintech giants like Ant Group and Tencent, and supportive government policies[1]. The Chinese government's commitment to fostering innovation, coupled with the tech-savvy population, has positioned China as a global

leader in digital finance. As companies accelerate digital transformation, digital technologies play a crucial role in equity financing activities of Chinese A-share listed firms, optimizing processes and enhancing efficiency[2, 3]. The development of China's digital finance infrastructure has not only accelerated financial inclusion but also had significant effects on capital markets, including the dynamics of initial public offerings (IPOs). IPOs are a critical mechanism in capital markets, allowing private companies to raise funds by offering shares to the public. The success of an IPO is indicative of market confidence in a company's future prospects, and the funds raised through an IPO can fuel growth, innovation, and expansion. IPOs provide investors with an opportunity to participate in the ownership of growing companies and capitalize on their future earnings potential. In capital markets, IPOs also serve as a gauge of economic health, reflecting the availability of capital, investor sentiment, and the vibrancy of the market. In the context of China, where a growing number of tech companies seek to go public, IPOs are particularly important as they reflect the intersection of the country's robust economic growth and the increasing influence of digital finance on market outcomes[4]. Fintech, encompassing innovations such as blockchain, robo-advisory services, and mobile banking, has grown to become a disruptive force in global financial markets[5]. Fintech companies have redefined how financial services are delivered, improving efficiency, reducing costs, and expanding access to underbanked populations. Additionally, biometric authentication and anomaly detection systems offer new solutions for data security and identity verification, further enhancing risk control and transaction safety in financial markets[6-8]. In financial markets, fintech platforms play an increasingly pivotal role in capital allocation, trading, and investment decision-making. By leveraging big data analytics, machine learning, and artificial intelligence, fintech companies are reshaping investor behavior and introducing new financial products. In China, fintech's impact is particularly notable due to the large-scale adoption of mobile payments and digital financial platforms, which have facilitated seamless access to capital markets[9]. However, as financial markets grow more complex, some firms have engaged in financial fraud, posing greater regulatory challenges[10]. To address these risks, companies must strengthen internal controls and data security systems to maintain investor confidence and market stability[11-13].

In China, regional differences in digital finance development have a profound impact on IPO performance. In regions with well-developed digital finance ecosystems, companies benefit from greater access to capital, improved financial transparency, and enhanced investor confidence. These regions tend to have a more robust financial infrastructure, which facilitates smoother capital flows and more efficient pricing mechanisms. In these regions, intelligent

recommendation systems, such as ad recommendation algorithms, play a vital role in promoting the recognition of innovative technologies in capital markets, driving the development of the financing ecosystem[14, 15]. On the other hand, companies in regions with less developed digital finance systems may face challenges in pricing their IPOs accurately or achieving sufficient liquidity in the aftermarket[16]. The level of digital finance adoption can also influence the demand for shares, as well as the ability of companies to attract long-term institutional investors who rely on advanced fintech tools for investment analysis. Understanding the relationship between regional digital finance and IPO performance is crucial for both investors and policymakers. For investors, it offers insights into how digital finance infrastructure in specific regions can affect the risk and return profiles of newly listed companies. It enables them to make more informed decisions about where to allocate capital based on regional financial conditions. For policymakers, understanding this relationship can help guide the development of regulations and policies aimed at enhancing financial inclusion, supporting market efficiency, and promoting balanced regional growth. By fostering the development of digital finance across regions, policymakers can ensure that capital markets operate more efficiently and that companies have equitable access to the resources needed to succeed.

Regional digital finance development directly affects key IPO metrics such as pricing, liquidity, and post-IPO valuation. In regions with mature digital finance ecosystems, IPOs tend to be more accurately priced due to the availability of sophisticated fintech tools that enable better market analysis and forecasting. Additionally, liquidity tends to be higher, as digital platforms facilitate faster transactions and wider market participation. Post-IPO valuation is also influenced by the level of digital finance development, with companies in regions with higher fintech adoption generally experiencing more stable valuations due to improved investor access to real-time financial data. China's regional disparities in digital finance adoption create a varied landscape for IPO outcomes[17]. Regions like Beijing and Shanghai, with their advanced fintech ecosystems, offer companies better opportunities for successful IPOs, whereas less developed regions may struggle with capital constraints and lower investor confidence. These disparities highlight the importance of addressing regional imbalances in digital finance infrastructure to ensure more equitable market conditions for companies across the country.

Figure 1, illustrates the Since 2020, Initial Public Offering (IPO) activity in the Shanghai and Shenzhen Stock Exchanges has seen significant growth, driven by China's economic recovery, government support, and regulatory reforms. The Shanghai Stock Exchange (SSE), particularly

through its STAR Market (Science and Technology Innovation Board), has been a hub for technology companies and high-growth industries. The STAR Market, launched in 2019, gained momentum, with numerous companies from sectors like biotech, artificial intelligence, and semiconductors going public. This market operates under a registration-based IPO system, which has streamlined the process for innovative firms to access capital. By 2023, the STAR Market accounted for a substantial portion of Shanghai's IPO activity.



Figure 1: Shanghai and Shenzhen Stock Exchange IPO activity since 2020

In Shenzhen, the ChiNext board has become a prime venue for small and medium-sized enterprises (SMEs), particularly in technology, to raise capital. ChiNext's IPO activity surged as the regulatory framework became more flexible, aligning with reforms introduced in the STAR Market. Both exchanges have seen an influx of capital, with many firms oversubscribed during their IPOs, reflecting strong investor confidence in China's tech-driven economy. Overall, the IPO activity on both exchanges has been marked by increased participation from private enterprises, a shift towards technology and innovation sectors, and regulatory developments fostering a more market-driven capital-raising environment. The rise of digital finance has revolutionized financial markets globally, transforming how companies access capital and how investors engage with markets. Digital finance, powered by innovations like mobile payments, online lending platforms, blockchain, and artificial intelligence, has reshaped traditional banking and financial services. This paper examines the impact of regional digital finance development on IPO performance in China, focusing on how regional disparities affect IPO pricing, liquidity, and post-IPO valuation. By analyzing regional digital finance ecosystems and their influence on capital market efficiency, the study provides insights for investors and policymakers.

II. Literature Review

Digital finance refers to financial services that utilize digital technologies to offer more efficient, accessible, and innovative solutions. In China, digital finance has emerged as a

powerful force in transforming traditional financial systems, driven by key components such as mobile payments, blockchain, and online lending[18]. Mobile payments, dominated by platforms like Alipay and WeChat Pay, have become ubiquitous, enabling seamless peer-topeer transfers, in-store purchases, and bill payments. Blockchain technology, another critical element, underpins innovations in decentralized finance (DeFi), offering secure, transparent financial transactions without intermediaries. Additionally, online lending platforms have revolutionized credit access, providing loans to individuals and businesses that may not qualify through conventional banking systems. These technologies have expanded financial inclusion, bridged the gap between urban and rural populations, and spurred the growth of the digital economy in China. China's digital finance landscape has experienced exponential growth over the past decade, driven by several factors. Rapid technological advancements, government support, and the widespread use of smartphones have made digital financial services accessible to millions. As of 2023, China boasts the world's largest mobile payment market, with hundreds of millions of users relying on platforms like Alipay and WeChat Pay for everyday transactions. Additionally, the Chinese government has actively supported the fintech sector by promoting innovation, providing regulatory frameworks, and encouraging the development of a digital currency (e-CNY) to further enhance the digital finance ecosystem. This robust growth has not only transformed consumer behavior but has also reshaped China's capital markets, particularly in the realm of initial public offerings (IPOs)[19].

Figure 2, illustrates the research framework of digital finance and explores key components such as technology infrastructure, digital financial services, and the regulatory environment. It identifies critical stakeholders, including consumers, financial institutions, and policymakers. The framework assesses dimensions like access, adoption, usage, and innovation, focusing on how digital finance enhances financial inclusion and reshapes market structures. It also addresses challenges like cybersecurity risks, regulatory complexities, and the digital divide. This framework evaluates digital finance's impact on financial markets and the broader economy, providing insights into policy implications, strategic investments, and the need for financial literacy programs to drive sustainable growth.

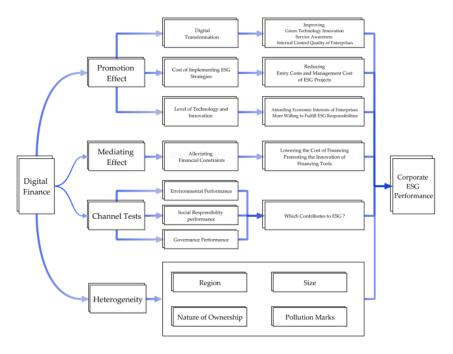


Figure 2: Research Framework.

IPOs play a crucial role in capital markets by allowing private companies to raise capital by offering shares to the public. Several key metrics are commonly used to measure the success of an IPO, including the initial stock price, the level of underpricing, and post-IPO performance. The initial stock price reflects market confidence in the company's valuation, while underpricing, which occurs when a stock's opening price is lower than its initial offering price, can signal high demand but also represent potential lost value for the company. Post-IPO performance, often measured by stock price stability and long-term growth, is another critical indicator of success. In traditional settings, various factors influence IPO performance[20]. These include the overall market environment, economic conditions, investor sentiment, and the company's financial health and growth potential. In China, regulatory policies, such as listing requirements and government intervention, also play a significant role in shaping IPO outcomes. However, with the rise of digital finance, new dynamics are influencing IPO performance, particularly through the effects of fintech innovations on investor behavior, capital allocation, and market liquidity. China's vast geographical size and diverse economic landscape result in significant regional variations in economic development and financial infrastructure. While cities like Beijing, Shanghai, and Shenzhen boast highly developed financial markets and advanced digital finance ecosystems, less developed regions, particularly in the interior and western parts of China, face challenges in terms of infrastructure, access to capital, and financial inclusion[21]. These disparities extend to the IPO market, where companies from more developed regions tend to perform better due to stronger financial backing, more sophisticated investor bases, and better access to digital finance tools.

Existing studies on regional factors affecting IPO performance highlight the importance of economic and financial development in influencing IPO success. For instance, research has shown that companies based in regions with more developed financial infrastructure and higher levels of digital finance adoption tend to experience better IPO outcomes, including higher initial stock prices and greater liquidity. These findings underscore the need to consider regional disparities when analyzing IPO performance in China's complex and evolving market. The influence of fintech and digital finance on capital markets has become a growing area of interest in recent years. Prior research indicates that digital finance plays a pivotal role in enhancing market efficiency, improving liquidity, and broadening access to investment opportunities. For example, mobile payment platforms and digital wallets enable more participants, including retail investors, to engage in capital markets, increasing liquidity and reducing transaction costs. Blockchain technology, with its ability to provide transparent and secure financial transactions, is also poised to revolutionize trading and settlement processes, making capital markets more efficient. In the context of IPOs, the rise of digital finance has the potential to reshape the way companies raise capital and how investors interact with newly listed companies[22]. It is hypothesized that regions with higher levels of digital finance adoption will experience better IPO performance due to greater market liquidity, more accurate pricing mechanisms, and improved investor confidence. This relationship is particularly relevant in China, where fintech innovations have already demonstrated a significant impact on financial services and market dynamics.

III. Theoretical Framework

To analyze the impact of regional digital finance on IPO performance in China, comprehensive and reliable data sources are crucial. The primary data on IPOs are sourced from Chinese stock exchanges, specifically the Shanghai Stock Exchange (SSE), the Shenzhen Stock Exchange (SZSE), and the Hong Kong Stock Exchange (HKEX). These exchanges provide detailed IPO-related information, including initial offering prices, underpricing, and post-IPO stock performance metrics. Financial reports and prospectuses released by companies undergoing IPOs also provide critical data on firm-level factors such as revenue, profitability, and growth projections[23]. Additionally, financial databases like Wind and China Securities Index (CSI) are widely used to gather historical IPO performance data, market conditions, and investor sentiment. These databases compile data across various sectors, providing a holistic view of IPOs and their market environments. They offer data on factors like IPO pricing, stock returns,

and volatility, which are essential for assessing the influence of regional digital finance development on IPO success. To measure the level of digital finance development across China's regions, specific indices and metrics are employed. Regional fintech development indices, often compiled by governmental bodies or financial research institutes, track the extent of digital finance adoption across different provinces and cities. These indices consider factors such as the number of fintech companies operating in a region, digital finance transaction volumes, and the presence of mobile payment infrastructure. Metrics like digital finance penetration rates (e.g., the proportion of the population using mobile payments or online lending platforms) are crucial in quantifying the regional diffusion of digital finance technologies. Additionally, reports from organizations like the People's Bank of China (PBoC) and China Internet Network Information Center (CNNIC) provide granular data on the adoption of digital finance services, including mobile payment volumes, online lending statistics, and the growth of blockchain applications[24]. These regional digital finance indices serve as key independent variables in assessing the impact of digital finance on IPO outcomes. In examining the relationship between digital finance and IPO performance, the study considers several dependent and independent variables. IPO Pricing: The initial stock price at the time of offering, reflecting the market's valuation of the firm. Liquidity: Post-IPO trading volume and turnover ratio, measuring how easily stocks can be traded without affecting prices. Post-IPO Valuation: The firm's market capitalization over time, assessing the long-term value after the IPO. Volatility: The degree of price fluctuations in the stock post-IPO, indicating the stability of stock performance. Regional Digital Finance Development: Measured by regional fintech development indices and digital finance penetration rates, capturing the extent of digital financial services in different areas. Economic Indicators: Regional GDP, income levels, and industrial structure, which affect overall economic activity and investor confidence.

Figure 2, illustrates the highlights the varying levels of digital finance adoption across different regions. It captures the growth of digital financial services, such as mobile payments, online banking, and fintech innovations, which are transforming traditional financial systems. Regions with higher digital finance development, typically characterized by strong infrastructure, regulatory support, and widespread internet access, are shown to have greater integration of digital financial tools. These areas, particularly in parts of North America, Europe, and East Asia, demonstrate robust usage of mobile banking, e-commerce transactions, and digital wallets. In contrast, regions with lower levels of digital finance development, such as parts of Sub-Saharan Africa, South Asia, and Latin America, face challenges related to digital infrastructure, financial inclusion, and regulatory barriers. The figure emphasizes how

digital finance is driving economic growth by improving access to financial services, enabling faster transactions, and promoting financial inclusion, while also highlighting the regional disparities that shape its global adoption.

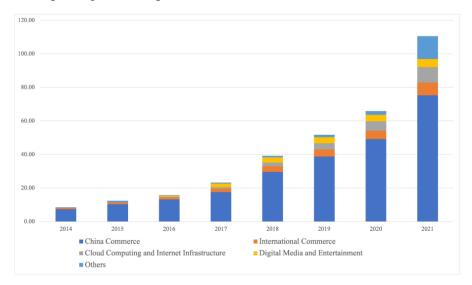


Figure 2: Regional Digital Finance Development

To quantitatively assess the relationship between regional digital finance development and IPO performance, econometric modeling techniques will be applied. A regression analysis will be used to explore the impact of digital finance development (independent variable) on IPO pricing, liquidity, and post-IPO valuation (dependent variables). The model will control for other factors that can influence IPO performance, including firm size, industry, market conditions at the time of the IPO, and regional economic conditions. By doing so, the analysis can isolate the effect of digital finance on IPO outcomes while accounting for other variables. It is hypothesized that companies from regions with more developed digital finance ecosystems, such as higher mobile payment adoption or a strong fintech presence, will experience better IPO outcomes. This may be due to enhanced investor participation, improved capital flows, and better financial information access in these regions. The hypothesis suggests that digital finance infrastructure—such as mobile payments and blockchain technology facilitates more active trading and reduces transaction costs, thereby improving stock liquidity and stabilizing valuations post-IPO. This results in less volatility and greater investor confidence, leading to more stable long-term stock performance. Testing these hypotheses will provide valuable insights into the role of digital finance in shaping the capital market landscape in China, with broader implications for investors, companies, and policymakers[25].

IV. Empirical Analysis and Implementations

The descriptive statistics provide an overview of the IPO landscape across different regions in China and the levels of regional digital finance development. IPO activity in China varies significantly by region, with major financial hubs such as Beijing, Shanghai, and Shenzhen hosting the highest concentration of IPOs. These regions, which have better-developed financial infrastructures and more mature capital markets, tend to attract high-profile IPOs, including those of technology giants and large state-owned enterprises (SOEs). By contrast, less economically developed regions, particularly in western and rural China, witness fewer IPOs and often involve smaller companies with lower market valuations. In terms of regional digital finance levels, coastal areas and first-tier cities tend to have the highest digital finance penetration rates. These regions boast extensive mobile payment infrastructure, advanced fintech ecosystems, and a high degree of internet and smartphone penetration. Conversely, inland regions display lower levels of digital finance adoption, with fewer fintech companies, lower mobile payment usage, and a less developed technological infrastructure. The distribution of digital finance across China aligns with broader economic and financial disparities, with wealthier regions enjoying more advanced financial services. To assess the relationship between regional digital finance and IPO performance, a regression analysis is employed, where the dependent variables include IPO pricing, liquidity, and post-IPO valuation. The key independent variable, regional digital finance development, is measured using fintech penetration rates and the presence of digital payment platforms[26].

Figure 4, presents a detailed view of the number of Chinese A-share Initial Public Offerings (IPOs) and their corresponding equal-weighted average first-day returns for each calendar quarter from 1990 to 2018. The number of IPOs fluctuated significantly over this period, reflecting varying market conditions, regulatory interventions, and broader economic factors influencing the Chinese stock market. From 1990 to the early 2000s, the number of IPOs remained relatively low, reflecting the nascent stage of China's capital markets. However, as China's economy expanded and reforms were implemented, the frequency of IPOs increased notably. This growth is evident in the mid-2000s and into the early 2010s, with certain quarters showing a marked spike in IPO activity.

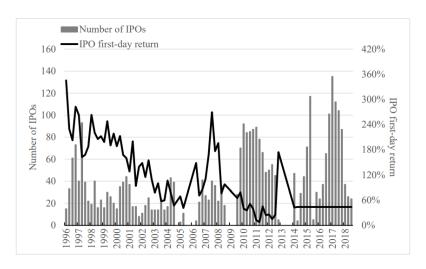


Figure 4: Chinese A-share IPOs and Average First-Day Returns by Quarter (1990-2018)

The equal-weighted average first-day returns follow a more volatile pattern, driven by investor sentiment, market conditions, and regulatory adjustments. In the early years, first-day returns were often exceptionally high, with some quarters exhibiting sharp increases, indicative of investor enthusiasm and market speculation. However, these high returns also reflect the less mature nature of the regulatory framework governing IPO pricing and market behavior during this period. A significant regulatory change occurred in January 2014, when the China Securities Regulatory Commission (CSRC) introduced price limits, capping IPO first-day returns at 44%. This policy was intended to curb excessive speculation and volatility in the IPO market. The effects of this change are noticeable in the figure, as post-2014 IPOs show a more controlled and stable range of first-day returns compared to earlier years. Overall, the chart captures the evolution of the Chinese A-share IPO market over nearly three decades, highlighting key trends in IPO volume and pricing behavior in response to both market forces and regulatory changes.

The results of the regression analysis reveal a statistically significant positive impact of regional digital finance on IPO performance. Companies based in regions with higher digital finance levels tend to exhibit higher IPO pricing, indicating that investors place a premium on firms from areas with more advanced fintech ecosystems. Additionally, post-IPO liquidity is higher in regions with better-developed digital finance infrastructure, likely due to the ease with which investors can engage in stock trading through digital platforms. Post-IPO valuations in these regions also tend to be more stable, reflecting greater investor confidence and more accurate price discovery facilitated by advanced digital finance services. The statistical significance of these results is confirmed through p-values and confidence intervals, showing that the relationship between digital finance and IPO performance is robust and unlikely to be

driven by random variation[14]. The interpretation of these results suggests that regional digital finance plays a critical role in shaping IPO outcomes, particularly in terms of market pricing and liquidity. A comparative analysis between high and low digital finance regions further highlights the disparities in IPO performance. In regions with advanced digital finance, such as Shanghai and Beijing, IPOs are generally characterized by higher initial pricing, stronger liquidity, and more stable post-IPO stock performance. For instance, companies in these regions attract more investor interest, resulting in lower underpricing and higher post-IPO trading volumes. Case studies of specific IPOs from high digital finance regions, such as major tech companies, demonstrate the strong correlation between digital finance infrastructure and market success. In contrast, IPOs in regions with lower digital finance adoption tend to experience weaker performance. These IPOs often suffer from higher underpricing, indicating that investors are more cautious, and post-IPO liquidity is generally lower, reflecting less active trading. For example, firms based in inland provinces or smaller cities with limited fintech infrastructure may struggle to achieve the same level of market engagement as their counterparts in digital finance hubs.

The findings of this analysis align with existing literature on the role of digital finance in enhancing market efficiency and liquidity. Prior research has demonstrated that fintech innovation, particularly in digital payments and online trading platforms, facilitates better price discovery and lowers transaction costs, leading to improved market outcomes. In the context of China, where regional disparities in both economic development and digital finance adoption are pronounced, these findings highlight the importance of regional factors in shaping IPO performance. From a policy perspective, the results suggest that further development of digital finance infrastructure in less-developed regions could improve their participation in capital markets and boost IPO performance. Enhancing fintech adoption in these areas could lead to greater liquidity, more accurate pricing, and increased investor confidence, which in turn would benefit firms seeking to go public. For investors, understanding the relationship between regional digital finance and IPO outcomes can offer valuable insights into market dynamics. Investors may prioritize IPOs from regions with better-developed digital finance ecosystems, as these tend to offer more favorable market conditions, greater liquidity, and lower volatility.

V. Conclusion

In conclusion, this analysis of regional digital finance and its impact on IPO performance in China highlights the significant role that digital finance plays in shaping capital market outcomes. The findings reveal that regions with advanced digital finance infrastructures experience enhanced IPO pricing, liquidity, and post-IPO valuations, underscoring the

importance of fintech development in fostering a vibrant investment landscape. By examining the disparities between high and low digital finance regions, the study illustrates the potential for targeted policy interventions to improve financial inclusion and market efficiency in underdeveloped areas. As digital finance continues to evolve, understanding its influence on IPO performance will be crucial for investors seeking to navigate the complexities of the Chinese capital markets and for policymakers aiming to support sustainable economic growth. This research not only contributes to the growing body of literature on digital finance but also emphasizes the need for ongoing investment in fintech initiatives to unlock the full potential of China's dynamic and diverse market landscape.

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