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Does Fintech Stimulate the Financial Performance and Stability of the Too-Big-to-Fail Banks?

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ABSTRACT

This study investigates whether FinTech stimulates the financial performance and stability of Domestic Systemically Important Banks (DSIBs) in India. The objective of this study is to analyse the impact of financial technology on the financial performance and financial stability of systemically important banks, commonly referred to as too-big-to-fail banks. Employing regression analysis and robustness tests, the findings reveal a significant but negative impact of FinTech on both financial performance (return on assets) and financial stability (ZSCORE). A positive correlation between ROA and financial stability suggests that more profitable banks tend to be financially stable. This research contributes to understanding the complex role of FinTech in shaping the financial health of systemically important banks in emerging economies. The study acknowledges limitations related to data scope, model assumptions, and sector focus, and calls for future research on long-term stability, cross-country comparisons, and the impact of emerging technologies such as AI and blockchain.

Keywords: Fintech, D-SIBs, Financial Performance, Financial Stability, Return on Assets, Interest Income, Banks
JEL Classifications: G21, O33, L86, O16

1. INTRODUCTION

For years, traditional banks dominated global financial services. However, advancements in telecommunications and information technology have reshaped the sector, giving rise to fintech (financial technology) companies. These firms operate at the intersection of finance and technology, leveraging innovations to reduce transaction costs and address information asymmetry. Fintech refers to digital technologies and business models transforming finance. While banking has historically been slow to adopt new technologies such as ATMs and online banking recent developments have accelerated change, driven by emerging technologies and regulatory shifts. These changes and developments have to be tested in terms of its impact and direction of impacts. The international monetary fund (IMF) recognizes fintech's impact on financial services, including payments, savings, loans, risk management, and advisory functions (Bilan et al., 2019; International Monetary Fund, 2019). One self shall not limits to these, but needs to be explored on performance and long-term sustainability. Fintech serves as an alternative to traditional banking, offering flexibility, speed, transparency, and accessibility (Gai and Kapadia, 2019). Mobile and payment technologies form its foundation, enabling transformations across deposits, loans (Demirgüç-Kunt and Huizinga, 2010), fundraising, investments, insurance, leasing, risk assessment, payments clearing, trade finance, and financial advisory services. Financial services have forced increasingly digitalized and tokenized, improving security, decentralization, and eliminating intermediaries (Hendershott et al., 2021). This shift has altered fintech firms' roles, positioning them as primary financial service providers. Studies explore fintech's impact on economic factors, including income disparities, employment challenges, and business innovation (Athanasoglou et al., 2008). But there has been a limited literatures on fintech's impact of performance and stability of banks. Since the central banks and Basel Committee on

Banking Supervision and the Financial Stability Board provides list of banks those are too big to fail banks, but such technological advancements may challenge their claims. Process automation, driven by advances in information technology, has transformed consumer behaviour, financial ecosystems, and regulations (Puschmann, 2017). A developed financial system contributes to economic growth (Hicks, 1969; Schumpeter, 1911), but firms often face financial constraints that hinder operations, investments, and financing (Chen and Yoon, 2022). Digital finance has improved financial inclusion (Ozili, 2018), affected debt financing and eased financial constraints for organizations. The Basel Committee on Banking Supervision and the Financial Stability Board classify banks based on size, activities, complexity, jurisdiction, and interconnectedness, designating some as Global Systemically Important Banks (Berry et al., 2024). Their failure could destabilize global finance (Financial Stability Board, 2025). Similarly, the Reserve Bank of India identifies Domestic Systemically Important Banks (DSIBs), known as "too big to fail" institutions, using criteria such as size, interconnectedness, substitutability, and complexity. As of 2025, India's DSIBs include the State Bank of India, ICICI Bank, and HDFC Bank (Reserve Bank of India, 2025). A firm's performance is crucial for stakeholders (Kwan & Eisenbeis, 1997; Sturm & Williams, 2010) making investment, financing, and strategic decisions. It is typically assessed through financial metrics—such as return on assets and capital employed, and non-financial factors like customer satisfaction, quality, employee attitudes, and innovation (Aliabadi et al., 2013). While fintech's influence on banking particularly in operational areas such as ATMs, payment methods, and customer satisfaction is well-documented, its impact on the financial performance and stability of DSIBs remains largely unexplored. Exploring this will be the significant contribution to the body of literature, research, academics, regulators and policy makers above all to the economy at large. Therefore, this study aims to analyse the impact of fintech on the financial performance and financial stability of systemically important banks i.e. DSIBs or too-big-to-fail banks.

This study makes significant contributions to the understanding of fintech's impact on the financial performance and stability of systemically important banks (DSIBs) in India. It enriches financial technology literature by providing empirical evidence on fintech's negative effects on financial performance and stability. By integrating fintech adoption and financial stability research, the study offers a nuanced perspective that bridges previous gaps. Using secondary data from India's major DSIBs spanning 2012-2024, it conducts a long-term analysis supported by robust econometric models such as ordinary least squares (OLS), Fixed Effects, and Random Effects, offering empirical validation of fintech's role in banking. The findings highlight key financial relationships, among fintech-financial performance and financial instability. These insights help bank executives optimize fintech strategies while implementing safeguards for financial stability. Moreover, the study provides policymakers with evidence-based guidance for designing fintech-friendly yet risk-conscious regulatory frameworks. By establishing a structured model for assessing fintech's impact, this research lays the groundwork for future investigations into fintech adoption across different financial environments.

The remainder of this article is structured as follows: Section 2 reviews key previous studies on the relationship between fintech and financial performance, as well as fintech and bank stability. The next section outlines the research hypotheses. Section 3 presents the methodology and data sample, along with a detailed description of the econometric model and the dependent and independent variables used in the regression analysis. Section 4 discusses the empirical findings of the study. Finally, the concluding section 5 summarizes the key insights drawn from the analysis implications, limitations and direction for future research.

2. LITERATURE REVIEW AND HYPOTHESIS

This section provides an overview of FinTech, financial performance, the relationship between FinTech, domestic systemically important banks (DSIBs), and financial performance, as well as the impact of FinTech on DSIBs and financial stability. It also presents the hypotheses developed for the study.

2.1. FinTech

FinTech has transformed financial services, impacting payments, savings, loans, risk management, and advisory functions (Bilan et al., 2019). It has heightened competition for banks, compelling them to reassess their business models. Banking competition enhances stability, asset quality, profitability, and efficiency (Altunbas et al., 2000). FinTech innovations create more customer touchpoints, improve managerial decisions, enable new business models, and optimize value chains—all while being cost-effective. In the U.S., the FinTech sector has experienced a 16% annual compounded growth rate. These studies highlight the effect of fintech on the qualitative aspects but empirical evidences are required. Moreover, measurement of attributes of fintech in such studies are challengeable. Our study used the closest proxy to measure fintech and is one of the contributions, and recorded 1st time in the literatures.

Puschmann (2017) highlights the dramatic changes FinTech has driven in consumer behaviour, financial ecosystems, and regulations. A developed financial system contributes to overall economic growth, benefiting banks as well (Levine et al., 2000). Financial constraints remain a significant hurdle in firm growth (Chen and Yoon, 2022). Traditionally, banks have provided financial services, but the last decade has seen a paradigm shift, FinTech now competes on equal footing or surpasses banks in efficiency. By reducing financial intermediation costs and mitigating information asymmetry, FinTech tackles issues like adverse selection and moral hazards while expanding service offerings. A key question remains: will FinTech replace banks or complement them (Dasilas and Karanović, 2023)?

2.2. Financial Performance

Internal and external stakeholders rely on firm performance data for decisions related to investment, financing, benchmarking, and strategic corrections (Harrison et al., 2019). Performance evaluation is useful when it provides relevant insights. It can be categorized into financial performance—such as return on capital employed and profit—and non-financial performance, including customer satisfaction, quality, employee attitudes, and innovation (Aliabadi et al., 2013). Under US GAAP, financial performance metrics include revenue, operating income, earnings before interest and tax, net income, earnings per share, and ratios such as return on investment, return on equity, return on assets, and return on sales (Aliabadi et al., 2013).

2.3. FinTech, DSIBs, and Financial Performance

Research from Indonesia suggests FinTech affects bank profitability (Phan et al., 2020). The consumer hypothesis states that new services cater to evolving consumer demands, potentially replacing older offerings (Aake et al., 1990). FinTech introduces more efficient financial services lower cost (Maudos & Fernández de Guevara, 2007) transparency, speed, security, and minimal employee interaction. While these advantages are evident, empirical evidence is necessary to confirm their impact.

Financial performance plays a crucial role in bank acquisitions, as stronger capital and liquidity positions make banks more inclined to acquire FinTech firms. Conversely, banks developing in-house digital solutions are less likely to target FinTech firms (Kwon et al., 2024). Literature shows there are mix effect of financial technology on the performance of financial service providers. Thus, the effect of FinTech on banks remains an underexplored research area, leading to the following hypothesis:

> Hypothesis 1: FinTech significantly influences the financial performance of domestically systemically important banks.

2.4. FinTech, DSIBs, and Financial Stability

FinTech contributes positively to financial stability by decentralizing and diversifying financial services (Financial Stability Board [FSB], 2017). It enhances efficiency, inclusion, and transparency by improving data processing, refining risk pricing, and streamlining transactions (Gomber et al., 2018; Philippon, 2016; Omarova, 2018). Moreover, FinTech lowers transaction costs, accelerates information dissemination, and strengthens capital markets (Carney, 2017).

However, FinTech introduces new risks that warrant regulatory scrutiny (Wagner, 2005; Chan-Lau, 2008). The growing reliance on digital infrastructure increases vulnerabilities to cyberattacks (Vučinić and Luburić, 2022). Certain FinTech products operate in ambiguous regulatory spaces, raising concerns about financial crimes like money laundering (OECD, 2020). Additionally, its integration into mainstream finance may amplify cyclical volatility and systemic risk propagation (Lai and Van Order, 2017; Xiang et al., 2017). FinTech's deepening role in financial networks heightens exposure to cascading failures (Vives, 2017), particularly as large firms handle significant volumes of sensitive data (Caccioli et al., 2014; Acemoglu et al., 2015).

Given these complexities, FinTech's impact on banks remains an open research question, leading to the following hypothesis:

> Hypothesis 2: FinTech significantly influences the financial stability of domestically systemically important banks.

3. METHODOLOGY

This section explains the source of data, defines the variables used in the study, and outlines the model employed for the analysis.

3.1. Source of Data

We use secondary data sourced from the annual reports of domestically systemically important banks in India—State Bank of India, HDFC, and ICICI Bank—covering the period from April 1, 2012, to March 31, 2024. These banks play a crucial role in the Indian economy. The data was collected from the Reserve Bank of India and the Centre for Monitoring Indian Economy database. After central editing and preliminary analysis, the data was imported into software for further examination.

3.2. Definition of variables and model

FinTech, DSIBs, and Financial Performance: Bank performance is assessed using proxies such as return on assets (ROA) and net interest margin (NIM) (Dietrich and Wanzenried, 2011; Dasilas, 2023; Shaban and James, 2018; Phan et al., 2020). Financial Technology (FinTech) encompasses innovations such as digital banking expenses, IT infrastructure, data centres, web hosting, software charges, and IT-enabled services. The volume of mobile transactions serves as a proxy for FinTech adoption. The model includes firm-specific control variables such as size (logarithm of total assets), interest income relative to total assets, and total customer deposits—fundamental measures in traditional banking. External control variables account for macroeconomic conditions, including annual GDP per capita growth rate, which reflects overall economic progress. The error term (ε) represents unexplained variations in ROA. The details of the variables are presented in Table 1.

$$ROA_{it} = a + \beta 1\ FINTECHVO_{It} + \beta 2\ SIZE_{it} + \beta 3\ TDEPO_{it} + \beta 4\ TRADI_{it} + \beta_5\ GPCit + \varepsilon_{it} \quad 1$$

FinTech, DSIBs, and Financial Stability: This model investigates the relationship between financial technology and financial stability while considering firm-specific and external factors. Financial Stability (Z-score) serves as the key metric for assessment, and the same control variables are incorporated.

$$FINSTAB = a + \beta 1\ FINTECHVO_{It} + \beta 2\ SIZE_{it} + \beta 3\ TDEPO_{it} + \beta 4\ TRADI_{it} + \beta_5\ GPCit + \varepsilon_{it} \quad 2$$

By integrating these elements, the model provides a structured framework for analysing the impact of financial technology on financial performance and stability, accounting for both internal business strategies and external economic conditions.

The variables are summarized in Table 1.

This dataset contains key financial variables that help assess performance and stability. ROA (return on assets) measures profitability, indicating how efficiently assets generate earnings. ZSCORE reflects financial health and risk of insolvency, crucial for stability analysis. LOGASET represents asset size, influencing growth potential and risk exposure (Boyd & Runkle, 1993).

TDEPO (Total Deposits) signals liquidity and funding stability, essential for banking performance. TRADI refers interest income to total assets is a key financial ratio used to assess a bank's profitability and efficiency in generating income from its assets. GPC Annual GDP per capita growth rate, this economic indicator reflects the overall economic progress of a country.

4. EMPIRICAL RESULTS

This section explains the descriptive statistics, the results of the regression analysis—including the impact of FinTech on financial performance and financial stability—as well as the robustness tests for both outcomes. It concludes with a discussion of the key findings.

4.1. Descriptive Statistics

ROA (return on assets): Measures profitability relative to total assets, with an average of 1.35 and a range from −0.19 to 2.37. ZSCORE: Indicates financial stability, with an average of 9.76 and significant variation (standard deviation 10.95). The descriptive statistics, including the number of observations, mean, standard deviation, minimum, and maximum values for each variable, are presented in Table 2.

Fintechva and Fintechva: Represent large numerical values. They show notable differences, with Fintechva ranging up to 28.9 billion and Fintechva peaking at 61 billion. Logaset: Represents asset size on a logarithmic scale, averaging 14.17. TDEPO (total deposits): Indicates the volume of deposits, with substantial variation from 246,706 to over 4.9 million. TRADI indicators, with a low standard deviation, suggesting stability in values. GPC Annual GDP per capita growth rate has a mean of 9.25, but variations range from −7.5 to 21.2, indicating unstable economic growth in this period.

The correlation matrix is presented in Table 3.

The correlation analysis highlights key financial relationships influencing Return on Assets (ROA) and financial stability (ZSCORE). A strong positive correlation between ROA and ZSCORE (0.691, $P < 0.01$) suggests that firms with higher profitability also exhibit greater financial stability. Fintech has negatively impacted financial stability. Interest income to total assets has a significant positive impact on both ROA and ZSCORE, indicating that firms generating higher interest are more financially stable and profitable. Conversely, LOGASET (Asset Size) and TDEPO (Deposits) show negative correlations with ROA (Goddardet al., 2004), and TRADI, suggesting that larger firms or those with high deposit holdings may struggle with profitability and traditions. Additionally, GPC does not show strong correlation with any major financial metric. The correlation matrix is presented in Table 3.

Table 1: Overview of variables and measures

S. No.	Variable	Acronym	Variable Framework	Measurement
1	Return on assets	ROA	Dependent	$\frac{\text{Net income}}{\text{Total Assets}}$
2	Financial stability	ZSCORE	Dependent	$\frac{ROA + \text{CAR}}{SDROA}$
3	Financial technology	FINTECHVO	Independent	Determined by counting the actual numbers of mobile transactions by DSIBS.
4	Financial technology	FINTECHVA	Independent	Determined by the amounts of mobile transactions by DSIBS.
5	Size	LOGASET	Financial services providers' specific control variable	Determined by taking the logarithm of total assets
6	Tradition	TRADI	Financial services providers' specific control variable	Determined by dividing Interest income relative by total assets
7	Total deposit	TDEPO	Financial services providers' specific control variable	Total deposit by customers
8	Annual growth rate of GDP per capita	GPC	External control variable	Annual GDP per capita growth rate

Source: Authors' compilation (2025)

Table 2: Descriptive statistics

Variable	Observations	Mean	Standard deviation	Min	Max
ROA	39	1.349	0.692	−0.19	2.37
ZSCORE	39	9.765	10.945	−0.48	26.49
FINTECHVO	39	3.23×10^{9}	5.80×10^{9}	468,016.1	2.89×10^{10}
FINTECHVA	39	1.08×10^{10}	1.41×10^{10}	258,506.5	6.10×10^{10}
LOGASET	39	14.166	0.780	12.73	15.64
TDEPO	39	1,441,584	1,236,085	246,706.5	4,916,077
TRADI	39	0.0709	0.0077	0.0551	0.0871
GPC	39	9.246	6.430	−7.5	21.2

Source: Authors' compilation (2025)

Table 3: Inter-variable correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) ZSCORE	0.691*	1.000						
(3) FINTECHVO	−0.171	−0.135	1.000					
(4) FINTECHVA	−0.105	−0.109	0.947*	1.000				
(5) LOGASET	−0.477*	−0.297	−0.156	−0.339*	1.000			
(6) TDEPO	−0.465*	−0.289	−0.191	−0.326*	0.927*	1.000		
(7) TRADI	0.468*	0.497*	0.420*	0.526*	−0.656*	−0.608*	1.000	
(8) GPC	0.098	0.015	0.051	0.057	0.022	0.030	−0.135	1.000

Source: Authors' compilation (2025)

4.2. The Results of the Regression

The development of panel data modelling and estimation techniques was pioneered by Kuh (1959), Johnson (1960), Mundlak (1961), and Hoch (1962), who introduced fixed effect models to account for time-dependent characteristics of variables that may not be directly observable. Panel Least Squares, along with fixed and random effect models, has been employed to analyse the impact of FinTech and selected control variables on the financial performance (ROA) and stability of DSIBs. The results of regressions, based on 507 variables and time period observations, are presented in Table 4. The table presents the regression results for the variables using OLS, fixed effects, and random effects models. The dependent variable is financial performance, measured by return on assets (ROA).

4.2.1. Impact of fintech on the financial performance

The regression analysis highlights key findings regarding the impact of various financial variables on Return on Assets. Importantly, FINTECHVO i.e. volume of mobile transactions by banks is statistically significant across models, but its direction varies, suggesting its effect on ROA depends on firm-specific characteristics and market conditions. TRADI i.e. interest income to total assets consistently shows strong significance, reinforcing its crucial role in driving profitability. The significance of deposits of banks in the Fixed Effects model indicates that variations within firms influence ROA. Meanwhile, LOGASET and GPC are not statistically significant, implying asset size and GDP may not directly impact profitability in DSIBS. The similarity between Random Effects and OLS results suggests that variability across firms is minimal, making firm-level factors more relevant than cross-entity differences. Given the Hausman test result (P = 0.0000), the Fixed Effects (FE) model is preferred over Random Effects (RE), confirming that firm-specific effects play a critical role in explaining variations in ROA. This reinforces the need for strategies tailored to banks rather than broad industry-wide approaches. The F-test for group effects in the FE model is highly significant (P = 0.0000), confirming that firm-specific factors strongly affect profitability, making the FE model preferable over RE. Based on these findings, firms should prioritize interest income to total assets related strategies to enhance profitability.

4.2.2. Impact of fintech on the financial stability

Table 5 presents the results of the regression analysis where the dependent variable is financial stability, measured by the Z-score. The table reports estimate from OLS, fixed effects (FE), and random effects (RE) models.

Table 4: Presents the results from the OLS, fixed effects, and random effects models

Variables	OLS	Fixed effect	Random effect
FINTECHVO	-5.57×10^{-11}**	2.81×10^{-11}*	-5.57×10^{-11}***
LOGASET	0.115	0.232	0.115
TDEPO	-1.85×10^{-7}	3.19×10^{-7}**	-1.85×10^{-7}
TRADI	51.82**	43.64**	51.82**
GPC	0.022	0.014	0.022
Constant	−3.71	−5.70	−3.71
R-squared	0.4618	0.4527(Within)	0.4618(overall)
Prob>F(OLS, FE)	0.0007	0.0015	—

Source: Authors' compilation (2025)
This table shows the estimation results of the effect of fintech on the interest spread.
***P<0.01; **P<0.05; *P<0.1

Table 5: The regression results for the variables using OLS, fixed effects(FE), and random effects(RE) models, with financial stability as the dependent variable

Variable	OLS	FE	RE
FINTECHVO	−9.00e−10**	9.97e−11**	−9.00e−10***
LOGASET	5.8091	0.9833	5.8091
TDEPO	−2.35e−06	6.02e−07	−2.35e−06
TRADI	1176.244***	67.416*	1176.244***
GPC	0.2553	0.0255	0.2553
_cons	−151.9532	−10.36797	−151.9532
R-squared	0.4317	0.4065	0.4317
Prob>F	0.0016	0.0047	–

Source: Authors' compilation (2025)
This table shows the estimation results of the effect of fintech on the financial stability.
***P<0.01; **P<0.05; * P<0.1

The relationship between fintech volume and ZSCORE, a key indicator of financial stability, using three regression approaches ordinary least squares (OLS), Fixed Effects (FE), and Random Effects (RE) have been discussed here. OLS model: The coefficient for fintech is negative (−9.00e−10, P = 0.003), indicating that higher values of fintech are associated with lower financial stability (Z-score). Fixed Effects Model: The coefficient for fintech is positive (9.97e−11, P = 0.017), suggesting that when accounting for bank-specific characteristics, fintech has a positive relationship with financial stability. Random Effects Model: The coefficient returns to negative (−9.00e−10, P = 0.001), reinforcing the findings of the OLS model—suggesting a detrimental effect of fintech on stability. Hausman test: Fixed Effects versus Random Effects: The (Chi^2 = 32.71, P = 0.0000) strongly rejects the null hypothesis, confirming that fixed effects provide more reliable estimates and that the random effects model is inconsistent. Breusch-Pagan Lagrangian Multiplier Test for Random Effects, the test statistic ($chibar^2$ = 0.00, P = 1.0000) suggests that the variance of the individual effects (u) is zero. This results of the Breusch-Pagan Lagrangian multiplier test indicate that individual-specific effects are negligible, suggesting that a Random Effects (RE) model may not be necessary. However, the ordinary least squares (OLS) and Random Effects models consistently show a statistically significant negative relationship between fintech and financial stability (Z-Score), reinforcing their robustness in capturing the broader impact of this variable. OLS and RE models provide more generalizable conclusions, making them particularly useful for policy recommendations and financial analysis across different banking institutions. Additionally, the RE model retains efficiency when unobserved heterogeneity is truly random, making it a valid alternative when the Hausman test does not overwhelmingly favour Fixed Effects. Given that the Breusch-Pagan test supports OLS over RE and that both OLS and RE produce consistent results, these models offer a more stable framework for understanding the implications of fintech on financial stability.

4.3. Robustness Tests

Robustness tests have been conducted to validate the findings.

4.3.1. Impact of fintech on the financial performance

The regression results for financial performance indicators, Net Interest Margin and Return on Assets, are summarized below Table 6.

The regression analysis highlights key insights into the impact of various financial variables on profitability. Fintech volume and Fintech value are also significant, but their negative coefficients suggest an inverse relationship with profitability, indicating that firms with higher financial holdings may experience lower returns. This robustness test supports our findings, that fintech significantly and negatively affects financial performance. Meanwhile, TRADI is statistically significant in both models ($P < 0.01$), consistently showing a strong positive effect on net interest margin (NIM) and return on assets (ROA), reinforcing the critical role of interest income to total assets in driving financial performance. This also shows strong support of our findings. LOGASET and TDEPO are not statistically significant across models, meaning asset size and total deposits may not directly influence profitability. This suggests that other operational or financial factors may play a more crucial role in determining firm success. GPC is marginally significant for ROA but not NIM, implying its impact on profitability is limited or dependent on other variables. Lastly, the higher R-squared value for ROA (49%) compared to NIM (32%) indicates that the models explain ROA better, suggesting that ROA is more responsive to the independent variables analysed.

4.3.2. Impact of fintech on the financial stability

The regression results for impact of FinTech on Financial Stability, including coefficients, test statistics, and their corresponding values to assess the effect of FinTech on financial stability are presented in Table 7.

The regression results indicate that Fintech value is statistically significant ($P = 0.001$) but has a negative coefficient, implying that higher fintech mobile transactions in terms of value may contribute to increased financial risk rather than stability. This result of the robustness test is also consistent with our findings. This suggests that firms with larger fintech mobile transactions value might face greater volatility, potentially due to issues such as liquidity constraints, inefficient asset allocation, or heightened exposure to cash fluctuations in general. To mitigate financial instability, firms should carefully manage their financial holdings, ensuring that capital is allocated effectively while maintaining adequate liquidity buffers. Researchers can explore more on this to promote stability of DSIBS.

Table 6: Summarizes the regression results showing the impact of FinTech on net interest margin and return on assets

Variable	NIM	ROA
FINTECHVO	-4.65×10^{-11}**	
FINTECHVA		-2.58×10^{-11}***
LOGASET	0.226	−0.054
TDEPO	-1.81×10^{-7}	-1.24×10^{-7}
TRADI	62.26***	53.86***
GPC	0.014	0.023*
Constant	−3.75	−1.46
R-squared	0.3215	0.4901
Adj. R-squared	0.2187	0.4128
Prob >F	0.0203	0.0003

Source: Authors' compilation (2025)

This table shows the estimation results of the effect of fintech on the financial performance. ***P<0.01; **P<0.05; *P<0.1

Table 7: The regression results for the variables using OLS, with financial stability as the dependent variable(Total capital to total assets)

Variable	Coefficient	Statistic	Value
FINTECHVA	-4.23×10^{-10}***	Number of observations	39
LOGASET	3.0877	F-statistic	5.78
TDEPO	-1.38×10^{-6}	Prob >F	0.0006
TRADI	1215.183***	R-squared	0.4669
GPC	0.2748	Adjusted R-squared	0.3861
Constant	−116.068	Root MSE	8.5757

Source: Authors' compilation (2025)

This table shows the estimation results of the effect of fintech on the financial stability. ***P<0.01; **P<0.05; *P<0.1

4.4. Findings and Discussion

The correlation analysis suggests that fintech negatively impacts both financial performance and financial stability, highlighting potential risks associated with digital financial innovations. However, key financial relationships influencing return on assets (ROA) and financial stability (Z-score) remain significant. The strong positive correlation between ROA and Z-score (0.691, $P < 0.01$) indicates that firms with higher profitability tend to exhibit greater financial stability. Additionally, interest income to total assets demonstrates a significant positive correlation with both ROA and Z-score, implying that firms generating higher interest income tend to be more profitable and stable.

Conversely, asset size (LOGASET) and deposits (TDEPO) show negative correlations with ROA and TRADI, suggesting that larger firms or those with substantial deposit holdings may face challenges in sustaining profitability and maintaining interest spread. Regression analysis provides further insights into fintech's influence on financial performance, particularly ROA. The variable FINTECHVO is statistically significant across models, but its effect on ROA varies, emphasizing the importance of firm-specific characteristics and market conditions. TRADI (interest income to total assets) consistently exhibits strong statistical significance, reinforcing its critical role in driving profitability. While deposits significantly affect ROA in the Fixed Effects model, LOGASET and GPC remain statistically insignificant, indicating that asset size and GDP may not directly impact profitability, especially among designated systemically important banks (DSIBs).

Furthermore, the similarity between random effects and ordinary least squares (OLS) results suggests minimal variability across firms, underscoring the relevance of firm-specific factors over broad industry-wide trends. Given these findings, banks should acknowledge that fintech transactions adversely affect financial performance and contribute to instability, necessitating strategic interventions. A primary focus should be placed on strategies related to interest income to total assets to enhance profitability and overall performance. Since size and GDP show limited significance, their role in financial performance strategies may require further investigation.

The relationship between fintech and financial stability, as measured by Z-score, is examined through three regression models: OLS, fixed effects (FE), and random effects (RE). The OLS model presents a negative coefficient for fintech, implying that higher fintech transaction volumes are associated with decreased financial stability. Similarly, the RE model reinforces fintech's adverse impact on bank stability. The generalized conclusions derived from the OLS and RE models make them particularly relevant for policy recommendations and financial analysis across diverse banking institutions.

Given these findings, regulatory frameworks must account for fintech's potential destabilizing effects while also recognizing the role of firm-specific characteristics. Policymakers should prioritize tailored regulatory strategies to mitigate fintech-related risks while ensuring long-term financial stability across banking institutions.

5. CONCLUSION, IMPLICATIONS, LIMITATIONS, AND DIRECTION FOR FUTURE RESEARCH

This section covers the conclusions drawn from the study, discusses its implications, outlines the limitations encountered, and suggests directions for future research.

5.1. Conclusion

This study highlights the significant impact of fintech on the financial performance and stability of systemically important banks (DSIBs) in India. The findings suggest that fintech adoption has a negative influence on both profitability metrics (financial performance) such as Return on Assets and financial stability, measured through the Z-Score.

A strong positive correlation between ROA and financial stability indicates that highly profitable firms tend to be more financially stable. Additionally, interest income to total assets plays a pivotal role in driving profitability and stability. However, larger firms and banks with substantial deposit holdings face challenges in sustaining profitability, as reflected in their negative correlation with ROA and TRADI. Regression analysis and the robustness tests reinforces the adverse impact of fintech on financial performance, while firm-specific characteristics and market conditions significantly influence outcomes. The OLS and RE models consistently show a negative coefficient for fintech, suggesting that increased fintech adoption is associated with reduced financial stability. Given these results, financial institutions must strategically address fintech-induced risks to ensure long-term resilience.

To mitigate the destabilizing effects of fintech, regulatory frameworks must adopt tailored strategies that balance technological innovation with financial security. Policymakers should focus on reinforcing interest income-driven strategies to enhance profitability, while further investigating the role of firm size and GDP in financial performance.

Ultimately, while fintech presents substantial risks to DSIBs, a proactive regulatory approach and adaptable financial strategies can help banks navigate these challenges, fostering a more stable and sustainable financial ecosystem.

5.2. Implications

- For banks: Fintech adoption should focus on improving profitability while managing stability-related risks. Since interest income to total assets plays a crucial role in performance, banks should prioritize strategies that strengthen this metric while ensuring digital financial innovations do not compromise stability.
- For regulators: Policymakers need to recognize that fintech's impact on financial stability differs across institutions. A tailored regulatory approach that accounts for firm-specific characteristics may be necessary to mitigate systemic risks while fostering fintech-driven efficiencies.
- For academics and researchers: Future studies should examine long-term fintech effects on financial stability and performance, particularly in emerging economies. Investigating fintech's role across different banking structures and economic conditions can offer deeper insights for financial policy and strategic decision-making.

5.3. Limitations

- Data constraints: The study relies on secondary data from specific DSIBs in India, which may limit generalizability to other banking institutions or international markets.
- Model assumptions: The econometric models used assume a linear relationship between fintech and financial performance/stability, which may not fully capture dynamic external factors such as market shocks or rapid technological advancements.
- Sector-specific focus: Since the study primarily examines DSIBs, its findings may not apply to smaller banks or fintech startups, which may exhibit different risk exposures and growth trajectories.

5.4. Direction for Future Research

- Long-term stability analysis: Future research should assess fintech's role in financial stability over extended periods, considering macroeconomic fluctuations and regulatory shifts.
- Cross-country comparisons: A comparative study across different banking markets can provide insights into how fintech adoption impacts performance and stability in varying economic environments.
- Impact of AI and blockchain: Emerging technologies like artificial intelligence and blockchain have begun influencing fintech and banking operations. Investigating their integration with financial institutions may provide critical insights into future banking trends.

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