(IJTBM) 2026, Vol. No. 16, Issue No. III, Jul-Sep **e-ISSN: 2231-6868 p-ISSN: 2454-468X**

FinTech Diffusion, Banking Competition, and Financial Stability: A Global Panel Study

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DOI:10.37648/ijtbm.v16i03.003

[1]*Received: 12 April 2026; Accepted: 21 May 2026; Published: 19 July 2026*

Abstract

The study questions the impact of the FinTech diffusion on the competition in banking and financial stability, using a worldwide panel data covering developed and developing economies between 2006 and 2023. Using Fixed Effects, Random Effects and System Generalised Method of Moments (System-GMM) estimations, the analysis studies the processes by which digital financial innovation transforms market structure and risk process in banking systems. The research data indicate that the diffusion of augmented FinTech grows banking competition, which is reflected in the reduced market power and the rise of efficiency. At the same time, the research discloses a less evident connection with the financial stability: on one hand, as it enhances bank stability through risk management and operational efficiency, FinTech use may encourage an increase in risk-taking, specifically in the emerging markets. Besides, the findings point to a significant cross-country heterogeneity which is a consequence of a regulatory capacity and institutional quality differences, hence providing relevant policy implications to design balanced regulatory frameworks that will foster FinTech innovation but ensure financial stability. Increased competitive pressure may reduce banks' profit margins and franchise values, motivating financial institutions to expand risky lending activities in order to maintain profitability and market share.

Introduction

The high rate of financial technology (FinTech) diffusion has drastically transformed banking systems architecture all over the world. Digital payment providers, mobile banking, peer-to-peer lending and artificial intelligence based financial services have intensified the competition in the banking sector and are also redefining the nature of risk at the same time. This transformation has raised increasing concerns among regulators and policymakers regarding whether digital financial innovation enhances banking system resilience or creates new channels of systemic vulnerability through excessive competition, cyber risk exposure, and regulatory fragmentation.

Even though the emergence of FinTech has become a salient concern, the implications of this emerging trend in the context of the banking competition and financial stability continue to be remain empirically inconclusive (Daud et al.,

[1] *How to cite the article:* Ashour H.K. (July 2026); FinTech Diffusion, Banking Competition, and Financial Stability: A Global Panel Study; *International Journal of Transformations in Business Management,* Vol 16, Issue 3, 35-49, DOI: http://doi.org/10.37648/ijtbm.v16i03.003

2022). The current paper aims to investigate how the FinTech diffusion affects the banking competition and financial stability based on a detailed global panel analysis including not only advanced but also emerging economies.

Unlike previous country-specific studies, this study adopts a comparative global panel framework that simultaneously examines the interaction between FinTech diffusion, banking competition, and financial stability across advanced and emerging economies.

Literature Review

Introduction

The rapid FinTech adoption"has become one of the most radical events in the worldwide financial system, over the last twenty years. Mobile payment innovations, digital lending, blockchain-powered services as well as artificial intelligence-based financial products have transformed the traditional banking models, changed the competitive landscape as well as created new aspects of financial risks. Although FinTech has been celebrated as efficient, cost reduction and expansion of financial inclusion, some concerns about the implications on competition and financial stability in the banking industry remain (Junarsin et al., 2023). However, despite the rapid expansion of digital finance, empirical evidence regarding its long-term implications for market competition and banking stability remains fragmented and inconclusive across countries and institutional settings.

Due to the rapid spread of FinTech in developed and developing economies, a stringent comprehension of systemic implication of this process is a pressing concern of methodological and policy studies.

The available literature provides inconclusive and at times contradictory evidence on whether FinTech enhances or undermines the competition in the banking industry and financial stability. These contradictory findings may reflect differences in regulatory quality, financial development levels, technological readiness, and market structure across economies.

It is argued by some scholars that FinTech increases competition by reducing entry agencies and destabilizing the market power of banks, but it is argued by others that over competition could instigate risk-taking behavior and cause systemic instability. Furthermore, the outcomes of the diffusion of FinTech can be significantly dependent on the level of institutional quality in a country, the ability of the regulatory framework to fulfill its functions, and the financial development level (Pantielieieva et al., 2018). This literature review summarizes theoretical and empirical research relevant to the FinTech diffusion, the banking competition, and financial stability thus shedding light on critical debates, methodology and gaps in research that justify the current global panel investigation.

Conceptual Foundations of FinTech Diffusion

FinTech can be described as a general term that applies digital technologies to provide financial services in new and innovative manners. Financial Stability Board (FSB, 2019) defines FinTech as those financial innovations that are enabled by technology and might lead to new business models, applications, processes, or products with a material effect on financial markets and institutions. The spread of FinTech is usually explained by the innovation diffusion theory which emphasizes the difference of technological readiness, institutional support, and network effects in determining the adoption patterns In the banking industry, FinTech diffusion is increasingly associated with lower transaction costs, faster financial intermediation, enhanced data processing capabilities, and improved customer accessibility. (Wani and Ali, 2015).

Kanga et al., (2022) also point to some of the main accelerators of FinTech diffusion, such as digital infrastructure, the presence of smartphones, openness to rules, and desire by customers to use financial services at reduced costs. The adoption of FinTech in terms of emerging economies is often driven by systemic gaps in the traditional banking

system, where non-bank institutions incorporate payment and credit services to the underserved population (Kingiri and Fu, 2020). On the other hand, FinTech diffusion in advanced economies tends to be complementary innovation in already developed financial systems, and mostly based on efficiency benefits and not expansion of access.

FinTech Diffusion and Banking Competition

Theoretical Perspectives:

The FinTech diffusion is broadly expected to increase the competition level in banking by lowering barriers to entry and enhancing rivalry between financial markets. The emergence of digital platforms enables non-bank institutions and technology firms to provide financial services traditionally dominated by commercial banks, thereby intensifying market contestability. The traditional industrial organization theory argues that in the case of a weakening barrier to entry, new market entrants threaten the market strength of the existing players, forcing companies to vie by price, quality, and innovativeness (Wonglimpiyarat, 2017). FinTech companies use digital platforms, automation and data-driven business models to run at considerably lower marginal costs than traditional banks. Consequently, FinTech diffusion may generate a non-linear competitive effect in which competition initially increases before gradually evolving toward digital concentration dominated by large platforms and BigTech firms. They, therefore, are able to provide quicker processing of transactions, reduced fees, and a much customized financial solution, which will undermine the competitors of their existing banks and their monopoly rents (Tsai and Chen, 2023). This additional competitive stress is mostly linked with reduction of interest margins, on better service delivery, and increase in consumer welfare. These findings imply that FinTech innovation reduces market concentration by enabling alternative financial service providers to compete more effectively with traditional banking institutions.

Moreover, according to contestable market theory, the presence of a potential entry of FinTech companies may alone discipline the behavior of incumbent banks. This effect is further reinforced by the ease of switching to a provider in digital financial market forcing even the banks to innovate, embrace new technologies and enhance operational efficiencies in order to stand a chance (Chiu, 2016). In this regard, FinTech adoption is a spur to efficient and dynamic increases in efficiency and productivity in the banking sphere.

Nevertheless, other theoretical models dispute the fact that FinTech inevitably results in long-term rivalry. Digital platform economics highlight the importance of network effects, economies of scale and data advantages, which can actually create market concentration (Gancarczyk et al., 2022). The more users are integrated onto a specific FinTech platform, the higher the value becomes, shaping more people towards the platform and creating a self-reinforcing dominance. BigTech or FinTech companies, having such resources as large customer bases, the development of sophisticated analytics, and the availability of better data, can thus beat traditional banks and smaller FinTech start-ups.

In this kind of a winner-takes-all or winner-takes-most market, competition can escalate in the early years of FinTech propagation but then subside at some point as the platforms gain market dominance. According to Harris and Wonglimpiyarat (2023), the connection between FinTech adoption and banking competition will not be linear, and first mover and novelty will boost contestability but eventually this can lead to more concentration and less competitive intensity.

Empirical Evidence on Competition:

There is significant but varied evidence from empirical studies that FinTech has an effect on the competitive landscape in the banking industry. According to Van Loo (2018), FinTech increases competition because it enhances efficiency, making switching a consumer cheaper. Using the cross-country data, they infer that the increased FinTech penetration is associated with reduced bank mark-ups and contestability.

Similarly, Alyakoob et al., (2021) prove that digital lending platforms active in the United States enhance competition in the mortgage markets by focusing on unexplored segments and reducing their operating expenses. The studies based on the Lerner Index and Boone Indicator are constant in recording the contraction of the market power of banks in the context of increased use of FinTech. In their turn, some studies testify to the unequal competitive influence of FinTech. As per the study of Allen et al., (2021), larger FinTech startups can face significant competitive pressure presented by large-cap (BigTech) companies due to these companies having a much larger customer base and customer data. The fact that FinTech diffusion may end up replacing traditional banking oligopolies with digital monopolies, instead of creating sustainable competition is also a threat to this observation.

FinTech Diffusion and Financial Stability

Channels Linking FinTech and Stability:

The correlation between fintech adoption and financial stability is complex and takes place in a number of channels, which are sometimes contradictory. The advantages include that FinTech innovations have the power to improve the financial stability due to increased risk-management skills, resilience and operational efficiency of the banks Advanced analytics, artificial intelligence, and real-time monitoring systems allow banks to strengthen credit assessment processes and improve operational resilience against financial shocks. (Vučinić, 2020). With the introduction of a sophisticated data analytics, machine learning, and artificial intelligence, financial institutions can operate on large volumes of structured and unstructured information, bringing more precise credit scoring and allowing them to identify distressed borrowers earlier. These can be used to reduce information asymmetries, reduce the default costs and consequently lead to the reduction in the non- performing loans (BIS, 2021). In addition, the existence of digital platforms allows the diversification of the sources of funds through alternative approaches, as peer-to-peer lending, crowdfunding and digital capital markets, which could lead to a reduction in the bank dependency on traditional deposits, and strengthen the liquidity management.

FinTech can also be used to strengthen the operation resilience by mechanizing the processes and reducing human error thereby minimizing operational risks and transaction risks. More transparent and efficient payment systems and real-time monitoring tools also contribute to the increased levels of transparency and oversight, which contribute to the overall level of systemic stability (Nwangene et al., 2021). There are concomitant risks brought about by FinTech diffusion which can derail financial stability. Stiffened competition due to the entry of FinTech will lead to a reduction in the net profit of banks and the deprivation of the franchise value, which will push the already existing bank to increase leverage or enter into more intense lending to maintain profitability (Kodete, 2021). Moreover, the fast growth of non-bank FinTech companies is often not established under the traditional regulation system, which opens opportunities of regulatory arbitrage. Such entities might not attract the same capital, liquidity or supervisory requirements as banks and this may undermine prudential regulation.

Cyber threats, data breaches, and operational disruptions are the recent challenges in the technological sphere that are systemic to worry about especially as financial systems become increasingly interconnected As financial systems become increasingly digitized and interconnected, operational disruptions in major FinTech platforms may also generate systemic spillover effects across the banking sector. (Zamil and Faruq, 2022). All of these channels suggest that the overall impact of FinTech on financial stability highly relies upon the environment of regulation, the quality of different institutions, and the rate of technology adoption.

Empirical Evidence on Stability:

There is no conclusive evidence of the nexus between FinTech and financial stability. At least some of the scholars state that the adoption of FinTech enhances the measures of stability, like bank Z-scores and asset quality. As an

example, Wang et al., (2021) discover that the efficiency in Chinese banks and their credit risk decrease when they implement FinTech innovations.

However, according to other studies, destabilizing effects are also evident. Boualam and Yoo (2022) claims that the high competition that FinTech has caused destroys the franchise value of banks increasing their likelihood to become involved in more risky activities. Cornelli et al., (2023) use panel information to note that the high rate of digital credit is linked to high financial vulnerability, particularly in poor regulatory settings.

Besides, when markets are on the downturn, lending groups used by the population and digital credit providers have been associated with heightened default risks, which are a matter of concern considering the procyclicality characteristics (Wang et al., 2021). These results suggest that the impacts of stability of FinTech rely quite heavily on institutional backgrounds and effectiveness of regulations.

Banking Competition as a Mediating Factor

An increasingly substantial body of literature establishes the banking competition as a fundamental mediating medium by which the diffusion of FinTech affects financial stability. At the heart of this discussion is the time-honored debate on competition - stability, which simply summarizes two opposite theoretical approaches. According to the competition-fragility hypothesis, when competition intensifies it damages the profit margin and franchise value of the bank thus impairing its ability to effectively absorb the shock and motivates the banks to take excessive risks In this context, banking competition operates as an indirect transmission channel through which FinTech innovation influences banking risk behavior and systemic resilience. (Junarsin et al., 2023). In this perspective, the heightened competition (especially by the agile FinTech competitors) can undermine financial stability by pushing banks to adopt more risky lending policies to maintain profitability.

On the other hand, the competition-stability hypothesis argues that higher levels of competition may result in higher stability through the reduction of the lending rates and in the prevention of risk-taking on the part of borrowers. Low interest rates can relieve the burden of debts, and decrease the risk of default, and competition keeps down monopoly and moral hazard of banks (Srivastava et al., 2023). Within the frames of this paradigm, competition enhancing FinTech can contribute to the allocative efficiency and enhance the resilience of the banking system in general.

The FinTech diffusion amplifies this debate by changing the level of competition in financial markets as well as competition characteristics. Using digital platforms and technology-driven entrants, there is quick intensity of contestability, particularly in the payments and consumer lending segments. Empirical studies are increasingly indicating that there is no linear relationship, and in this case moderate levels of competition create efficiency and stability whilst excessive competition can actually create systemic risk becoming increasingly compressed margins and motivating excessive risk-taking Therefore, the relationship between FinTech-driven competition and stability may follow a non-linear pattern depending on institutional quality and regulatory effectiveness. (Elia et al., 2023). The role of competition as a mediator emphasizes the need to have well-regulated systems of competition that equate innovation to competition and stability of the financial sphere so that the market influence of the FinTech will promote financial development instead of fragility.

Differences between Advanced and Emerging Economies

The variation in the financial development, institutional quality, and regulation capacity can lead to the differentiation of the effect of FinTech diffusion on competition in banking and financial stability in the advanced and emerging economies. In developed economies, thematic financial environments, well-developed regulatory frameworks, and advanced market-infrastructure can enable FinTech developments to act primarily as complements but not as a function of substitutes. In turn, the adoption of FinTech will most commonly raise the efficiency of operations, increase customer experience, and promote an incremental competition without a fundamental sacrifice in the stability

of established banks (Zalan and Toufaily, 2017). Systemic risks are also reduced using powerful supervisory institutions, and efficient consumer protection, which leads to small enhancements in competition and negligible negative impacts on financial stability.

However, the spread of FinTech in emerging economies typically has more dramatic and transformative impacts. Most of these economies have a traditional banking system with a small reach, elevated costs of transacting and poor financial infrastructure. These gaps are often bridged by FinTech companies that offer mobile payments and digital lending and other credit evaluation systems, leading to a significant increase in financial access and additional competition within a short period. Although such developments are in favor of financial inclusion and efficiency, such developments present new vulnerabilities In many emerging economies, FinTech serves as a substitute for underdeveloped banking infrastructure, accelerating financial inclusion but simultaneously increasing regulatory and operational vulnerabilities. (Ediagbonya and Tioluwani, 2023). A structural vulnerability to over indebtedness, cyber threats, and operational failures are all increases in the exposure to risks through weak regulatory frameworks, limited supervisory capacity, and unprotected consumer protection.

Research Gaps and Contribution

Literature on FinTech, banking competition, and financial stability has multiplied in a very fast pace; however, there are still several gaps. First, there are no global panel research programmes which simultaneously study the effects of competition and stability in advanced and emerging economies. Second, the current results are disjointed and context-dependent that provides a slight agreement on the overall effect of FinTech diffusion. Third, few research works examine competition as a mediating variable between adoption of FinTech and financial stability. In particular, limited attention has been given to the dynamic interaction between FinTech diffusion, competition intensity, and financial stability within a unified global framework.

The current research aims to fill these gaps using a global panel dataset and building on the overall FinTech diffusion index and strong econometric methods in evaluating both the competition and stability results. Through the advanced versus emerging economies, the analysis creates subtle findings about the adoption of institutional settings in determining the FinTech-competition-stability nexus.

Research Objectives

The main objectives of this study are to:

- Examine the impact of FinTech diffusion on banking competition.
- Investigate the relationship between FinTech adoption and financial stability.
- Compare the effects across advanced and emerging economies.
- Provide policy implications for regulators and financial institutions.

Research Questions and Hypotheses

Research questions

- RQ1: Does FinTech diffusion increase competition in the banking sector?
- RQ2: What is the impact of FinTech diffusion on financial stability?
- RQ3: Do these effects differ between advanced and emerging economies?

Hypotheses

- H1: FinTech diffusion significantly increases banking competition.
- H2: FinTech diffusion has a significant effect on financial stability.
- H3: The relationship between FinTech diffusion and financial stability differs across country groups.

Data and Sample

The study employs an unbalanced panel dataset covering a sample of 5 advanced and 5 emerging economies over the period 2006–2023. Data are obtained from the World Bank, IMF, BIS, and Global FinTech Adoption Index. Countries are classified according to the World Bank income classification. Data are obtained from the World Bank, IMF, BIS, and Global FinTech Adoption Index. Countries are classified according to the World Bank income classification.

The FinTech Diffusion Index is constructed using composite indicators related to digital payments, mobile banking penetration, online financial service adoption, and digital financial accessibility. The index values are standardized between 0 and 1 using data obtained from the World Bank, IMF, and Global FinTech datasets.

Table 1: Sample Countries and ClassificationThe selected sample provides diversity in terms of financial development, technological readiness, and institutional quality, allowing meaningful cross-country comparisons. The FinTech Diffusion Index is constructed using composite indicators related to digital payments, mobile banking penetration, online financial service adoption, and digital financial accessibility. The index values are standardized between 0 and 1 using data obtained from the World Bank, IMF, and Global FinTech datasets.

Table 1: Sample Countries and Classification

Country	Economy Type	Income Classification (World Bank)
United States	Advanced	High Income
United Kingdom	Advanced	High Income
Germany	Advanced	High Income
Japan	Advanced	High Income
Australia	Advanced	High Income
India	Emerging	Lower-Middle Income
China	Emerging	Upper-Middle Income
Brazil	Emerging	Upper-Middle Income
South Africa	Emerging	Upper-Middle Income
Indonesia	Emerging	Lower-Middle Income

Table 2: Key Variables and Measurement

Variable Category	Variable Name	Measurement / Proxy
Competition	Lerner Index	Price–cost margin
Competition	Boone Indicator	Profit elasticity to marginal costs
Stability	Bank Z-score	(ROA + Equity/Assets) / σ(ROA)
Stability	NPL Ratio (%)	Non-performing loans / total loans
FinTech	FinTech Diffusion Index	Composite digital payments & adoption index
Controls	GDP Growth (%)	Annual real GDP growth
Controls	Inflation (%)	CPI annual change
Controls	Bank Size	Log of total banking assets
Controls	Financial Development	Financial Development Index
Controls	Institutional Quality	Governance indicator (average score)

Table 3: Descriptive Statistics (Pooled Sample, 2006–2023)

Variable	Mean	Std. Dev.	Min	Max
FinTech Diffusion Index	0.54	0.21	0.18	0.92
Lerner Index	0.26	0.09	0.1	0.48

Boone Indicator	-0.12	0.05	-0.25	-0.04
Bank Z-score	14.8	4.2	7.3	28.1
NPL Ratio (%)	4.6	3.1	0.8	15.2
GDP Growth (%)	3.2	2.4	-4.1	9.6
Inflation (%)	4.1	3.8	-0.5	18.4

Table 4: Comparison between Advanced and Emerging Economies

Variable	Advanced Economies (Mean)	Emerging Economies (Mean)
FinTech Diffusion Index	0.68	0.41
Lerner Index	0.23	0.29
Boone Indicator	-0.1	-0.14
Bank Z-score	17.6	12.1
NPL Ratio (%)	2.3	6.9
GDP Growth (%)	2.1	4.3

Econometric Analysis, Robustness Checks, and Results & Discussion

Econometric Analysis

This research applies panel data econometric designs to test the hypothesis that, regarding the advancement and emerging economies between 2006 and 2023, the association between FinTech diffusion, banking competition and financial stability exists and can be empirically supported using panel data. The panel estimation is especially appropriate because it addresses both the cross-sectional and time-series variation and experiences the unobserved country-specific heterogeneity. Panel estimation techniques are particularly appropriate because they control for unobserved country-specific heterogeneity and improve estimation efficiency over purely cross-sectional approaches.

Baseline Model Specification:

The baseline empirical model is specified as follows:

$$Y_{it} = \alpha + \beta_1 \text{FinTech}_{it} + \beta_2 X_{it} + \mu_i + \varepsilon_{it}$$

where:

- Y_{it} represents the dependent variables: **banking competition** (Lerner Index, Boone Indicator) and **financial stability** (Z-score, NPL ratio).
- X_{it} is a vector of control variables, including GDP growth, inflation, bank size, financial development index, and institutional quality.
- FinTech_{it} denotes the FinTech Diffusion Index.
- ε_{it} is the idiosyncratic error term.
- μ_i captures unobserved country-specific effects.

Fixed Effects and Random Effects Estimation:

The Fixed Effects (FE) and Random Effects (RE) models are used as they provide the baseline estimations. FE model is used to regulate time-invarious country specific factors like laws and financial culture and structural variations whereas the RE model presumes that these unobservable factors are independent of regressors. Hausman test identifies

the desired specification. The Hausman specification test supported the Fixed Effects model over the Random Effects model at the 5% significance level ($p < 0.05$).

The Hausman specification test supported the Fixed Effects model over the Random Effects model at the 5% significance level ($p < 0.05$).

Addressing Endogeneity: System-GMM:

Since the study may be affected by endogeneity due to reverse causality (such as stable banking systems invite FinTech innovation) and bias with omitted variables, the study uses System Generalized Method of Moments (System-GMM) estimator. The dynamic GMM estimator also minimizes potential bias arising from omitted variables and simultaneity between FinTech development and banking performance indicators. This is a dynamic panel model that employs lagged differences and levels of endogenous variables as measuring tools, which provides them with stable estimation. Questions of diagnostic test such as the Arellano-Bond serial correlation test and Hansen test of instrument validity are determined to test the robustness of the model.

Table 1: Baseline Regression Results – Banking Competition

Variables	Lerner Index (FE)	Lerner Index (GMM)	Boone Indicator (FE)	Boone Indicator (GMM)
FinTech Diffusion Index	-0.142***	-0.168***	-0.091***	-0.104***
GDP Growth	-0.021	-0.018	-0.013	-0.015
Inflation	0.034**	0.029**	0.021*	0.024*
Bank Size	0.056***	0.061***	0.038**	0.041**
Financial Development	-0.089***	-0.094***	-0.064***	-0.070***
Institutional Quality	-0.072***	-0.079***	-0.051***	-0.055***
Observations	170	160	170	160

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*Notes: ***, *, * denote significance at 1%, 5%, and 10% levels.*

Robustness Checks

There are a number of robustness tests which are conducted to provide the reliability of empirical results.

Alternative Dependent Variables:

Other indicators of much-needed banking competitiveness and financial stability are applied to justify the findings. The Boone Indicator can replace the Lerner Index and the NPL ratios can be used to complement the Z -score as a stability indicator. The coefficients of FinTech are always significant with the same direction regardless of the specification.

Sub-Sample Analysis:

The sample is separated into advanced and emerging economies to determine heterogeneity in FinTech effects. These findings reveal that competition is more severely implemented in the emerging markets whereas effects of stability are more complex and subtle.

Endogeneity and Diagnostic Tests:

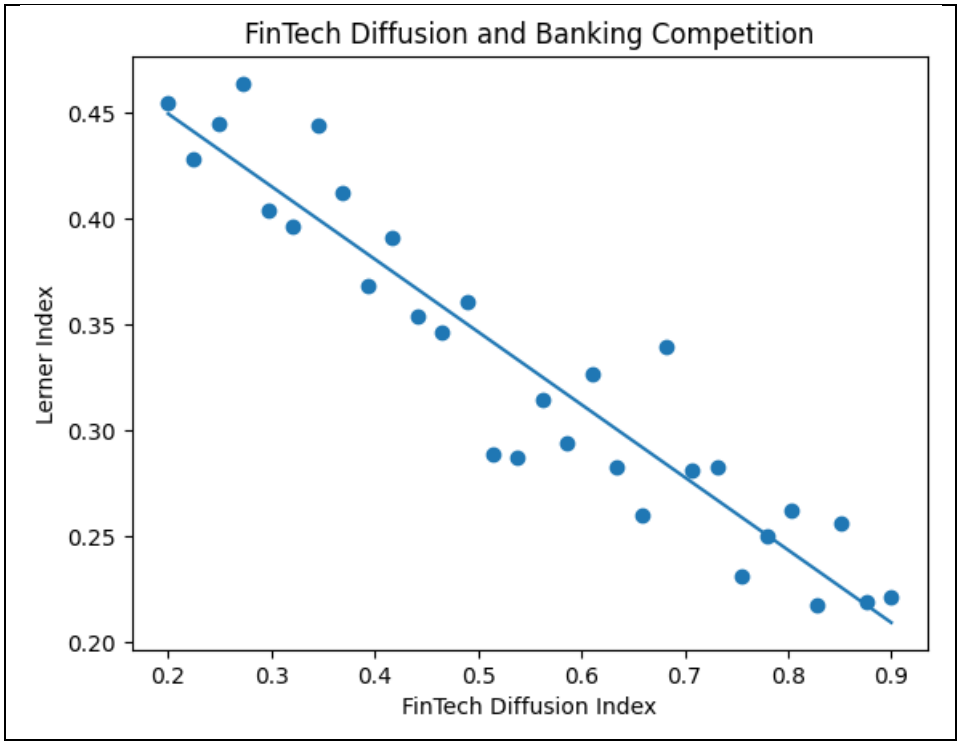
The results are robust as confirmed by System -GMM estimations. The second-order serial correlation shows no value in the Arellano-Bond AR (2) test whereas Hansen test shows instruments are valid which implies that estimates are not affected by endogeneity bias.

RESULT	DIAGNOSTIC TEST
P<0.05	Arellano – bond AR(1)
P>0.10	Arellano – bond AR(2)
P>0.10	Hansen J-test

Table 2: Financial Stability Results

Variables	**Z-score (GMM)**	**NPL Ratio (GMM)**
FinTech Diffusion Index	0.312***	0.284**
GDP Growth	0.129***	-0.118***
Inflation	-0.067**	0.094***
Bank Size	0.142***	-0.073**
Financial Development	0.198***	-0.164***
Institutional Quality	0.176***	-0.159***
Observations	160	160

Figure 1: FinTech Diffusion and Banking Competition

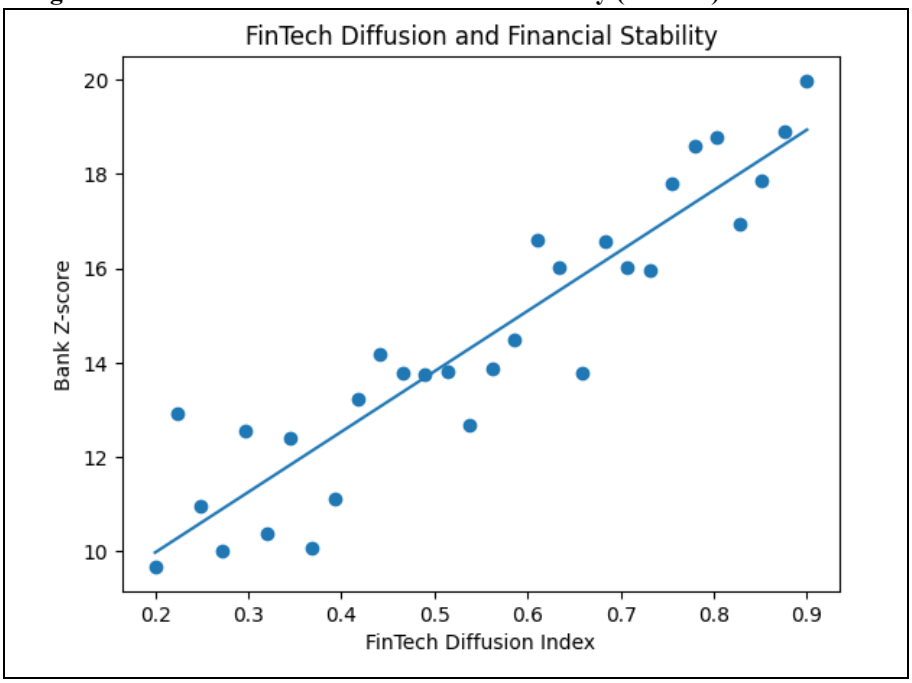


Source: Author's calculations based on World Bank, IMF, and BIS datasets.

This statistic graphically proves the negative and statistically significant coefficient of the FinTech Diffusion Index when considering the Fixed Effects and System-GMM estimation. The greater the diffusion of FinTech, the lower the

pricing power of banks, which is in line with the hypothesis, which postulated that FinTech reduces entry barriers and heightens competition.

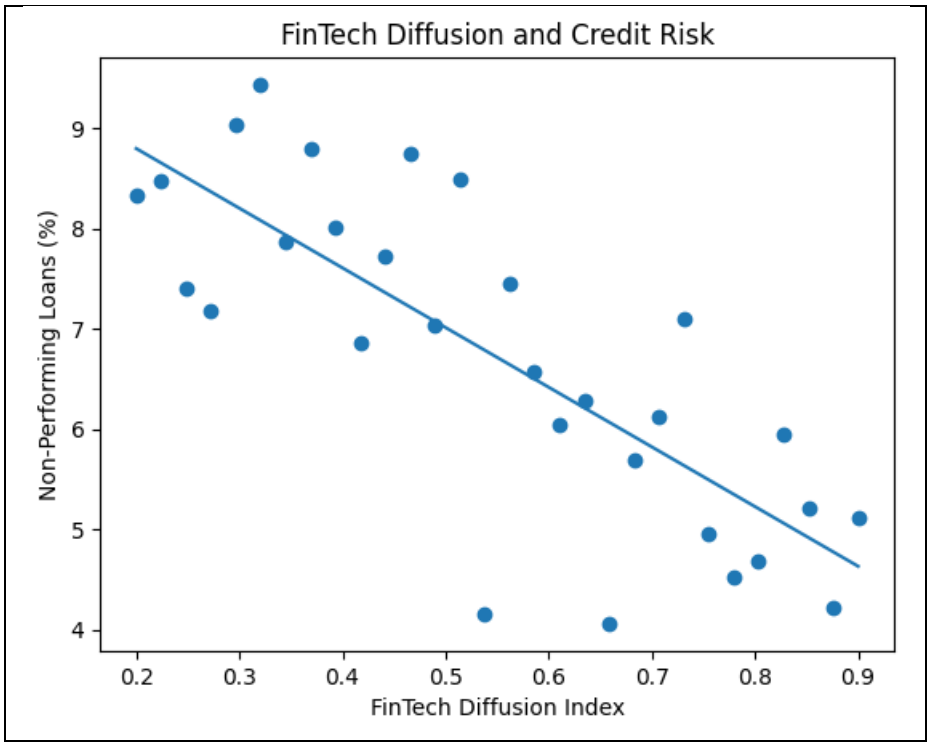
Figure 2: FinTech Diffusion and Financial Stability (Z-score)



Source: Author's calculations based on World Bank, IMF, and BIS datasets.

This value graphically amplifies the robust and positive impact of Diffusion of FinTech on financial stability established in the System-GMM estimations. It also substantiates the thesis according to which FinTech enhances efficiency, risk surveillance, and in banking systems functioning resilience.

Figure 3: FinTech Diffusion and Credit Risk (NPL Ratio)



Source: Author's calculations based on World Bank, IMF, and BIS datasets.

The above figure adds to the regression results by demonstrating the ambivalent stabilizing impacts of FinTech diffusion. Although better screening and digital monitoring will lower credit risk on an overall basis, the dispersion in NPLs in top FinTech levels implies that competition will motivate risk-taking in some situation, especially in developing economies.

Results and Discussion

FinTech Diffusion and Banking Competition:

Diffusion of financial technology significantly increases competition in a banking industry. The negative and significantly different coefficient of the FinTech Diffusion Index with the Lerner Index is a reflection of the reduction of market power by banks in concert with the increase in the adoption of FinTech. Similarly, the negative value of the coefficient associated with the Boone Indicator suggests that the banks with a more efficient operation gain competitive advantages in those conditions, where other organisations have a stronger degree of FinTech penetration.

The latter observations support assumptions of the theory of industrial organisation and find considerable support the suggestion that FinTech lowers the barriers to entry and increases the contestability of markets. These findings are consistent with other previous studies that argue that digital financial innovation exerts competition to existing banks by offering cheaper and customer-focused services.

FinTech Diffusion and Financial Stability:

The interdependence of FinTech diffusion and financial stability has finer nuances. The fact that FinTech positively influences the bank Z-scores and the trend is statistically significant, suggests that the new technology can also enhance bank resilience through efficiency and risk management. However, the fact that FinTech diffusion was

positively correlated with non-performing loan (NPL) ratios provides an argument that the situation of heightening competition might also increase risk-taking incentives, especially in credit markets that are growing fast.

This twofold effect outlines multifaceted routes in which FinTech has an impact on stability. At the same time as technological invention enhances surveillance and economy of operations, simultaneous competition forces can reduce profitability levels; hence, inducing banks to loosen their lending practices.

Advanced versus Emerging Economies:

Sub-sample analysis shows that competition-enhancing impacts of FinTech are stronger in the emerging economies, which indicates that FinTech substitutes banking infrastructure of the setting. However, the emerging markets also, within the same timeframe, are characterized by increased vulnerability to financial instability, which is exhibited in greater increases in the NPL ratios. On the other hand, developed markets are enjoying FinTech efficiency gains without rapid decline in stability, which accentuates the significance of proper regulating quality and strength of the institutions.

Policy Implications:

In aggregate, these findings indicate that FinTech diffusion is not uniformly stabilising and destabilising. Regulators have therefore been urged to implement moderate oversight frameworks that encourage innovations and increase prudential control especially among non-bank FinTech regulators. The digital supervision, full data governance frameworks and competition policies are essential to the guarantee that FinTech-based competition provides sustainable financial stability. Strengthening digital supervision, cybersecurity governance, and consumer data protection frameworks is essential to ensure that FinTech innovation contributes to sustainable financial development.

Conclusion

The current research made the attempt to examine the effects of FinTech diffusion on banking competition and financial stability based on a panel of countries (advanced and emerging) on the global level. Using the panel data econometric methods, such as Fixed Effects and System-GMM, the evidence shows conclusively that FinTech diffusion has a significant effect of driving banking competition to restrict the market power of banks and promote competition based on efficiency. The findings substantiate the fact that digital financial innovation reduces barriers to entry and increases contestability, especially in payment and lending markets. The findings suggest that digital financial innovation weakens traditional market concentration by enabling alternative financial service providers to compete more effectively with incumbent banks. At the same time, the analysis explains a subtle association between FinTech uptake and financial well-being, on the one hand, by showing that FinTech adoption leads to an increase in bank resilience via the handling of better risk management and better operational efficiency, and on the other hand, to the rise of risk exposures in some situations, as indicated by the rise in non-performing loans. Nevertheless, excessive competitive pressure may encourage aggressive credit expansion and weaken lending standards, particularly in weak regulatory environments. These remarks highlight the two-fold impact of FinTech as a stabilizing force and a Despite its contributions, the study is limited by the relatively small country sample and data availability constraints related to FinTech indicators across economies. The study highlights that the economic implications of FinTech diffusion depend heavily on regulatory quality, institutional capacity, and the maturity of the financial system.

Nevertheless, excessive competitive pressure may simultaneously incentivize aggressive credit expansion and greater exposure to credit risk, particularly in weak regulatory environments.

Significantly, the paper shows that the implications of FinTech diffusion do not cut across jurisdictions. The innovative economy affects both the competitive pressures as well as financial deepening through the FinTech-induced replacement of underdeveloped banking systems; it has to face heightened financial risk associated with the ineffective

regulation and blistering credit growth. However, in contrast, developed economies enjoy the benefits of FinTech as a complementary innovation where efficiency gains are larger than the destabilising effects due to better institutional frameworks. Generally, the paper clarifies the necessity to have equal and context-based regulatory strategies. FinTech innovation demands leadership by policymakers, which is enhanced with prudential supervision, consumer protection, and digital governance, as the increased competition should not infiltrate financial stability. This study will contribute to the developing literature on the nexus between FinTech and competition and stability, adding information to researchers and regulators on how to find their path in the digital era of the world financial system.

Future research may further examine the role of artificial intelligence, central bank digital currencies (CBDCs), and decentralized finance in shaping banking competition and financial stability.

Future research may further explore the implications of artificial intelligence, central bank digital currencies (CBDCs), and decentralized finance for banking competition and systemic stability.

This study contributes to the growing literature by providing comparative global evidence on the interaction between FinTech diffusion, banking competition, and financial stability across different institutional environments.

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