

Fintech Innovation, Bank Competition, and Credit Access: Evidence from a Panel of Asian Economies

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Abstract

Financial technology (fintech) innovation has emerged as a transformative force reshaping credit markets across Asia, with implications for bank competition dynamics, financial inclusion, and the efficiency of credit allocation. This study examines the effects of fintech lending growth on traditional bank competition, measured by the Boone indicator and Lerner index, and on credit access for small and medium enterprises (SMEs) and households in a panel of 14 Asian economies covering 2013–2023. Employing panel fixed effects, instrumental variable estimation, and mediation analysis through structural equation modeling, the findings reveal that a 10% increase in fintech credit penetration is associated with a 4.2% reduction in bank market power (Lerner index), suggesting significant competitive disciplining effects. The competition reduction is accompanied by a significant improvement in SME credit access ($\beta = 0.318$, $p < 0.001$) and household credit inclusion ($\beta = 0.274$, $p < 0.001$), consistent with fintech's role in serving previously underserved credit demand. Mediation analysis reveals that the competition channel (fintech → bank

competition → credit access) accounts for approximately 42% of fintech's total effect on credit access, with the direct channel (fintech platforms providing credit directly) accounting for the remaining 58%. Regulatory quality significantly moderates fintech's impact: economies with enabling regulatory frameworks (measured by a composite Fintech Regulatory Environment Index) achieve substantially larger credit access improvements from equivalent levels of fintech adoption. The findings carry implications for financial sector regulation, SME finance policy, and the design of proportional regulatory frameworks for fintech in emerging Asian economies.

Keywords: fintech, bank competition, credit access, SME finance, Asia, Lerner index, regulatory environment

1. Introduction

The digitalization of financial services has accelerated substantially over the past decade, with financial technology firms—broadly designated as "fintech"—fundamentally challenging the operational models of traditional banking institutions across virtually all product lines: payments,

lending, insurance, wealth management, and foreign exchange (Claessens et al., 2021). In the credit markets specifically, fintech lending platforms—operating variously as peer-to-peer lending marketplaces, balance sheet digital lenders, or algorithm-driven credit scoring intermediaries—have grown from negligible participants to significant credit providers in several Asian economies, with China's fintech credit market alone estimated to have reached USD 280 billion in outstanding credit at its 2018 peak (BIS, 2022).

The theoretical implications of fintech credit expansion for traditional bank competition and credit market efficiency are complex and multidirectional. Proponents of fintech credit argue that it operates primarily through a market-completing mechanism: by applying alternative data sources and machine learning algorithms to credit assessment, fintech lenders can extend credit to creditworthy borrowers underserved by traditional banks constrained by collateral requirements, credit history standardization, and geographical concentration. This "democratization of credit" narrative predicts efficiency-enhancing effects on credit allocation without necessarily displacing traditional lending relationships (Frost et al., 2022).

Skeptics raise several counterarguments. First, fintech credit may engage in regulatory arbitrage—operating outside the prudential frameworks that constrain traditional banks—enabling aggressive risk-taking that is only temporarily sustainable. Second, fintech's reliance on alternative data and algorithmic scoring may encode existing socioeconomic biases in ways that disadvantage already-marginalized borrowers, despite superficially appearing more inclusive. Third, the entry of fintech

lenders may cream-skim the most profitable and easiest-to-assess borrowers from traditional banks, leaving them with adverse-selected portfolios that deteriorate credit quality without commensurate efficiency gains (Buchak et al., 2018).

In the Asian context, these debates carry particular urgency given the region's extraordinary heterogeneity in financial development and the critical role of SME credit access in supporting employment and growth. From China—where fintech credit development is among the most advanced globally—to Bangladesh and Vietnam—where conventional banking penetration remains limited but smartphone penetration is rapidly expanding—Asian economies offer a natural laboratory for examining fintech credit's competitive and inclusionary effects across different stages of financial development.

This study addresses the empirical questions surrounding fintech credit's effects on bank competition and credit access across 14 Asian economies spanning the full range of financial development levels. The contribution is threefold: first, it employs the Boone indicator alongside the Lerner index for bank competition measurement, providing a more multidimensional competitive assessment than single-indicator studies; second, it employs IV estimation using regulatory change events as exogenous instruments for fintech adoption, strengthening causal identification; and third, it explicitly models the regulatory environment as a moderator of fintech's competitive and inclusionary effects, providing evidence directly relevant to the policy debates surrounding fintech regulatory design.

2. Literature Review

2.1 Fintech Credit: Mechanisms and Market Development

Fintech credit encompasses a range of digital lending modalities that share the characteristic of using digital technology—including alternative data, machine learning algorithms, and digital distribution infrastructure—to originate and manage credit products outside conventional bank branch networks (Claessens et al., 2021). The primary modalities in the Asian context include marketplace lending (peer-to-peer platforms), balance sheet digital lending (fintech firms lending from their own balance sheets), and embedded lending (credit products embedded within digital commerce or payment platforms, as exemplified by Ant Financial's Huabei and Jiebei products).

The growth of fintech credit in Asia has been extraordinary in scale and speed. China's fintech credit sector, though substantially contracted following regulatory action from 2019–2021, expanded from near zero in 2012 to an estimated outstanding stock of USD 280 billion by 2018, making it the world's largest fintech credit market by an order of magnitude (BIS, 2022). Southeast Asian fintech credit has grown more gradually but is accelerating, with Indonesia, Vietnam, and the Philippines hosting the region's most active markets outside China.

2.2 Fintech and Bank Competition

The impact of fintech entry on traditional bank market structure has been theorized through both industrial organization and banking theory frameworks. From an industrial organization perspective, fintech

entry increases the effective number of competitors in retail credit markets, shifting market structure toward more competitive outcomes and reducing incumbent bank market power (Vives, 2019). Banking theory introduces additional complexity: traditional banks' informational advantages in relationship-based lending may be eroded by fintech platforms' algorithm-based screening, but banks may also respond to fintech entry by investing in their own digital capabilities, potentially intensifying rather than reducing competitive pressure.

Empirical evidence on fintech's competitive effects on banking markets is growing but still limited, particularly outside the United States and China. Hau et al. (2021) examine the effect of Alipay's credit scoring system on bank lending behavior in China and find significant competitive pressure, with banks reducing credit to borrowers that fintech assessments identify as creditworthy, consistent with adverse selection concerns. Buchak et al. (2018) examine US mortgage markets and find that fintech lenders have gained substantial market share in segments where traditional banks face regulatory capital constraints, suggesting regulatory arbitrage as a competitive mechanism.

2.3 Fintech and Credit Access

The financial inclusion potential of fintech credit is among its most frequently cited policy justifications. By extending credit assessment to data types excluded from conventional credit bureau frameworks—mobile payment history, e-commerce transaction records, social network connectivity—fintech lenders can theoretically reach creditworthy individuals and firms excluded from conventional credit markets (Frost et al., 2022). In developing country contexts, where formal credit bureau

coverage is often limited to a fraction of the adult population, this alternative data advantage may be particularly consequential.

Empirical evidence on fintech's financial inclusion effects, while encouraging, is not uniformly positive. Frost et al. (2022) examine fintech credit in 79 countries and find that it is positively associated with financial inclusion metrics, but that the relationship is stronger in countries with lower conventional financial development, consistent with a gap-filling rather than a displacement interpretation. Hau et al. (2021) find that Alipay's credit scoring enabled millions of first-time credit recipients in China, directly demonstrating inclusion effects.

2.4 Regulatory Environment and Fintech Development

The regulatory environment for fintech is increasingly recognized as a critical determinant of both the pace of fintech development and the extent to which it generates beneficial outcomes for credit markets. Regulatory approaches range from strict licensing regimes that treat fintech lenders identically to banks, through proportional frameworks that apply lighter-touch regulation calibrated to fintech's risk profile, to regulatory sandboxes that permit experimentation with temporary licensing exemptions (Claessens et al., 2021). The choice of regulatory approach has significant implications: overly restrictive frameworks that impose bank-equivalent requirements on fintech lenders may stifle innovation and perpetuate credit exclusion, while insufficiently protective frameworks may allow predatory or unsustainable lending practices that harm consumers.

3. Research Gap

Three gaps limit the existing fintech-banking literature. First, multi-country Asian panel studies of fintech's competitive effects, using rigorous bank market power measures and addressing endogeneity, are absent. Second, the mediation pathway—through which fintech affects credit access both directly and through bank competition disciplining effects—has not been empirically decomposed. Third, the moderating role of the regulatory environment on fintech's credit access effects has not been quantified, limiting the policy-relevant evidence on regulatory design trade-offs.

4. Objectives

1. To estimate the effect of fintech credit penetration on traditional bank market power across 14 Asian economies.
2. To quantify fintech's impact on SME and household credit access and decompose direct versus competition-mediated pathways.
3. To assess the moderating role of regulatory quality on fintech's competitive and inclusionary effects.
4. To derive implications for proportional fintech regulatory framework design in emerging Asian economies.

5. Hypotheses

H1: Fintech credit penetration is negatively associated with traditional bank market power (Lerner index and Boone indicator).

H2: Fintech credit penetration is positively associated with SME credit access and household credit inclusion.

H3: Bank competition mediates the relationship between fintech credit penetration and credit access.

H4: Regulatory quality positively moderates the effect of fintech adoption on credit access improvements.

H5: The credit access effects of fintech are larger in economies with lower initial financial development (complementarity hypothesis).

6. Methodology

Data were collected for 14 Asian economies (China, India, Japan, South Korea, Indonesia, Malaysia, Thailand, Vietnam, Philippines, Bangladesh, Sri Lanka, Pakistan, Nepal, Cambodia) over 2013–2023. Bank market power measures (Lerner index, Boone indicator) were estimated from bank-level data sourced from BankFocus (Bureau van Dijk). Fintech credit penetration data were sourced from BIS digital finance database and Cambridge Centre for Alternative Finance surveys. Credit access measures include SME loan ratios (% SMEs with bank credit), formal credit ownership rates (adult population with active loans), and credit-to-GDP gap indicators. The Fintech Regulatory Environment Index was constructed from World Bank RegTech surveys and Global Financial Inclusion Regulatory Framework assessments. IV estimation uses regulatory sandbox introduction as an exogenous shock to fintech adoption. Mediation analysis employs the approach of Preacher and

Hayes (2008) within the panel fixed effects framework.

7. Data Analysis and Findings

7.1 Summary Statistics

Table 1: Key Variable Summary Statistics (N = 14 Countries, 2013–2023)

Variable	Mean	SD	Min	Max
Fintech Credit/GDP (%)	4.82	8.43	0.01	34.7
Lerner Index	0.284	0.112	0.084	0.512
Boone Indicator	-0.142	0.087	-0.341	-0.018
SME Credit Access (%)	38.4	18.2	12.4	78.3
HH Credit Inclusion (%)	42.8	21.4	14.6	84.2
Fintech Reg. Index (0–1)	0.512	0.187	0.142	0.841

7.2 Bank Competition Effects

Table 2: Fintech Credit and Bank Market Power (Panel Fixed Effects and IV)

	Lerner Index	Boone Indicator
	FE / IV	FE / IV
Fintech Credit/GDP	-0.384** -0.421*** (0.147)	/0.312** 0.348*** /(0.121)

	Lerner Index	Boone Indicator		SME Access	Credit HH Inclusion	Credit
	(0.141)	(0.114)	Reg. Index	(0.064)	(0.058)	
Financial Development	-0.218***	/0.184**	/	High Reg. Quality Mean Effect	0.486***	0.412***
GDP per capita (log)	-0.147**	/0.121*	/	Low Reg. Quality Mean Effect	0.178**	0.154*
	-0.138*	0.114*				
N	140	140	Difference	0.308***	0.258***	
First-stage F (IV)	18.42***	18.42***				

7.3 Credit Access Effects and Mediation

Table 3: Fintech Credit and Credit Access — Mediation Analysis

Path	SME Access	Credit HH Inclusion	Credit
Total effect (c)	0.318*** (0.058)	0.274*** (0.051)	
Direct effect (c')	0.184*** (0.047)	0.162*** (0.042)	
Indirect competition (ab)	via 0.134** (0.038)	0.112** (0.033)	
Mediation ratio (ab/c)	42.1%	40.9%	

7.4 Regulatory Moderation

Table 4: Regulatory Environment as Moderator (Interaction Effects)

	SME Access	Credit HH Inclusion	Credit
Fintech Credit	×0.287***	0.241**	

7.5 Hypothesis Testing Summary

Table 5: Hypothesis Testing Summary

Hypothesis	Finding	Decision
H1: Fintech bank power (-)	→ Lerner: $\beta=-0.421$, $p<0.001$; Boone confirmed	Supported
H2: Fintech credit access (+)	→ SME $\beta=0.318$, HH $\beta=0.274$, $p<0.001$	Supported
H3: Competition mediates credit access	Mediation ratio ~42%	Supported
H4: Regulation moderates fintech effect	Interaction $\beta=0.287$, $p<0.001$	Supported
H5: Larger effects in lower-FDI economies	Sub-sample: low FD $\beta=0.441$ vs. high FD $\beta=0.196$	Supported

8. Discussion

The empirical results establish that fintech credit penetration generates significant competitive pressure on traditional banks,

reducing market power as measured by both the Lerner index and Boone indicator, and that this competitive disciplining effect is a significant pathway through which fintech improves credit access. The 42% mediation ratio suggests that nearly half of fintech's credit access effect operates through the indirect channel of bank competition stimulation, underscoring the systemic importance of competitive dynamics beyond fintech's direct lending activity.

The regulatory moderation finding—showing nearly three times larger credit access improvements in high-regulatory-quality environments than in low-quality environments—is arguably the most policy-relevant result, suggesting that the design of the regulatory framework is at least as important as the level of fintech adoption in determining credit market outcomes. This finding challenges the conventional dichotomy between "enabling" (minimal regulation) and "restrictive" (bank-equivalent regulation) frameworks, suggesting instead that well-designed proportional frameworks that provide appropriate consumer protection while enabling innovation generate superior outcomes to both extremes.

9. Theoretical Implications

The study contributes to banking and industrial organization theory by providing the first multi-country Asian panel evidence on fintech's competitive effects measured through multiple market power indices, resolving ambiguity in the theoretical literature about fintech's net competitive impact. The mediation decomposition advances understanding of the mechanisms through which technology-driven market

entry affects credit market outcomes beyond the direct lending activity of entrants. The regulatory moderation evidence contributes to the nascent literature on regulatory determinants of fintech outcomes, providing an empirical framework for evaluating the credit market consequences of different regulatory design choices.

10. Practical Implications

For financial regulators in Asian economies, the findings argue for proportional regulatory frameworks that differentiate fintech oversight requirements by activity type, risk profile, and systemic significance, rather than applying uniform bank-equivalent standards. Regulatory sandboxes—which allow experimentation under controlled conditions—are validated by the evidence as effective enabling frameworks that generate the credit access benefits of fintech innovation without foregoing consumer protection. For SME finance agencies and development banks, the evidence that fintech provides disproportionate credit access benefits in economies with lower financial development suggests that support for fintech ecosystem development is a viable complement to traditional SME credit programs.

11. Conclusion

This study provides comprehensive panel econometric evidence that fintech credit penetration reduces traditional bank market power and improves SME and household credit access across 14 Asian economies, with the competitive channel accounting for approximately 42% of the total credit access

effect. Regulatory quality substantially moderates fintech's credit access impact, with enabling regulatory frameworks nearly tripling the credit inclusion gains from equivalent fintech adoption levels. These findings carry important implications for fintech regulatory design, SME finance policy, and financial inclusion strategy across the diverse landscape of Asian emerging economies. Future research should examine the asset quality implications of fintech credit expansion through economic cycles and develop longitudinal assessments of fintech's effects on financial stability.

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