

The FinTech effect: a comparative analysis of bank profitability in Europe and Asia

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Abstract

Purpose – This study investigates the divergent impact of financial technology (FinTech) on the profitability of incumbent commercial banks in Europe and Asia. It resolves contradictory findings in existing literature by demonstrating that FinTech’s effect is context-contingent—moderated by regulatory stringency, customer entrenchment, and capital depth—rather than universally disruptive or complementary.

Design/methodology/approach – We analyze a unique panel dataset of 16 Global Systemically Important Banks (G-SIBs) and national champions across Europe and Asia from 2013 to 2023. To address endogeneity and the constraints of a small sample size ($N = 16$), we employ a parsimonious Dynamic Panel IV (Anderson-Hsiao) estimator alongside a static First-Difference model. Robustness is tested using Return on Assets (ROA).

Findings – The results reveal a stark regional divergence. In mature European markets, FinTech development shows no statistically significant impact on bank profitability ($p = 0.7765$), supporting the “Incumbent Resilience” hypothesis. Stringent frameworks like General Data Protection Regulation (GDPR) and PSD2 function as a “regulatory moat,” enabling European banks to co-opt innovation through superior capital resources and strategic acquisitions. Conversely, in dynamic Asian markets, FinTech exerts a highly significant negative impact on profitability ($\beta = -0.1005, p = 0.0004$). We theorize this as a “Double Squeeze”: Super-App ecosystems unbundle high-margin services through technological leapfrogging while incumbents remain burdened by the high fixed costs of legacy physical infrastructure.

Practical implications – The study offers distinct strategic mandates for practitioners. European banks should leverage capital buffers for inorganic growth and strategic acquisitions to access new customer segments, while Asian incumbents must urgently adopt “Offensive Digitization” and Banking-as-a-Service (BaaS) models to retain transaction volume amid margin compression. Regulators face divergent mandates: Europe should expand regulatory sandboxes to foster competition without sacrificing stability, while Asia must implement “same activity, same regulation” principles to close arbitrage gaps exploited by lightly regulated Super-Apps.

Originality/value – This paper contributes the first direct comparative analysis demonstrating that FinTech’s impact is geographically contingent rather than universal. It theoretically reconciles the “efficiency versus competition” debate by grounding European neutrality in the Resource-Based View and Asian disruption in Schumpeterian Creative Destruction—resolving literature contradictions through explicit boundary conditions rather than binary interpretations.

Keywords FinTech, Bank profitability, Dynamic panel IV, Double squeeze, Regulatory moat, Super-apps, Creative destruction

Paper type Research article

1. Introduction

The global financial landscape is navigating a period of profound transformation, driven by the accelerating advancement of financial technology, or FinTech. By 2026, this evolution has moved beyond basic automation into an era of “intelligent transformation,” where the integration of Agentic AI and real-time risk assessment has redefined operational benchmarks. While these innovations offer remarkable opportunities for optimization, they also present a formidable, existential competitive threat to incumbent commercial banks.



The promise of FinTech is often framed in terms of efficiency—lowering transaction costs and broadening financial inclusion. However, for traditional institutions, the impact remains empirically ambiguous. While banks can theoretically harness these tools to streamline legacy processes, they also face agile ‘digital natives’ capable of attacking the most profitable segments of the banking value chain, such as payments and consumer lending. Recent scholarship indicates that this transition was permanently catalyzed by the pandemic; for instance, [Lee, Li, Yu, and Zhao \(2021\)](#) demonstrate that FinTech innovation significantly improves operational efficiency in China’s banking industry through technology spillover effects by enhancing operational efficiency and customer engagement, confirming that digital platforms have become the primary delivery channel for modern finance.

Despite the widespread discourse, the actual impact on bank profitability is conflicted. One strand of research suggests FinTech acts as a complement, enhancing performance through technological spillovers ([Lee et al., 2021](#)), while another argues it acts as a substitute, eroding market power ([Wang, Yahya, Rahim, & Ashhari, 2024](#)). This pervasive ambiguity points to a critical gap: a lack of comparative analysis across different economic and regulatory contexts. It is highly improbable that the “FinTech effect” is invariant to local market conditions. In mature markets like Germany, FinTech may be a feature of the existing system, whereas in underbanked markets like India, it represents a primary portal for access.

This research addresses this gap by asking: How does the impact of FinTech on the profitability of incumbent commercial banks differ between the mature markets of Europe and the dynamic markets of Asia? To answer this, we analyze a panel dataset of 16 Global Systemically Important Banks (G-SIBs) from 2013 to 2023. Methodologically, we move beyond standard OLS or unstable System Generalized Method of Moments (GMM) estimators—which often fail in small-N samples—by employing a robust Dynamic Panel IV (Anderson-Hsiao) estimator with exact identification.

The study makes three key contributions:

- (1) First, it demonstrates that “efficiency” and “competition” effects are geographically bifurcated.
- (2) Second, it provides a theoretical resolution by grounding European results in the Resource-Based View (RBV) and Asian results in Schumpeterian Creative Destruction. This includes exploring the “Double Squeeze” effect, where Super-App ecosystems unbundle high-margin services while incumbents remain burdened by legacy costs.
- (3) Finally, it offers tailored implications that recognize the unique structural realities of different global markets.

The remainder of this paper is structured as follows: [Section 2](#) establishes the theoretical framework and develops the core hypotheses. [Section 3](#) provides a detailed review of the relevant literature, highlighting the tension between efficiency and disruption. [Section 4](#) outlines the data collection process and the rigorous econometric methodology employed. [Section 5](#) presents the empirical results of the comparative analysis. [Section 6](#) discusses these findings in depth, interpreting the mechanisms driving the regional divergence. [Section 7](#) outlines practical implications for managers and regulators, and [Section 8](#) concludes.

2. Theoretical framework and hypothesis development

To interpret the divergent impact of FinTech on bank profitability, we cannot rely on a one-size-fits-all economic theory. Instead, we ground our analysis in two contrasting theoretical frameworks that align with the distinct structural realities of our two regions: the RBV of the firm for Europe, and Schumpeterian Creative Destruction for Asia.

2.1 *The resource-based view and incumbent resilience (Europe)*

The RBV of the firm, popularized by [Barney \(1991\)](#), posits that sustained competitive advantage derives from internal resources that are valuable, rare, inimitable, and non-substitutable (VRIN). In mature European markets, incumbent G-SIBs possess three VRIN resources that neutralize FinTech disruption:

First, capital depth enables strategic co-optation. Unlike capital-constrained startups, European G-SIBs leverage vast liquidity pools to acquire threatening FinTechs before they achieve critical mass—treating innovation as a procurement exercise rather than a competitive threat ([Dapp, Slomka, AG, & Hoffmann, 2014](#)). Second, regulatory expertise functions as a “moat.” Stringent frameworks like GDPR and PSD2 create immense compliance costs that protect incumbents with established legal infrastructure while deterring digital natives ([European Court of Auditors, 2025](#)). Third, customer entrenchment provides switching-cost insulation. In markets with “sticky” deposit relationships, consumers remain reluctant to migrate primary accounts to unproven platforms despite digital adoption ([European Central Bank, 2024](#)).

Critically, [Stulz \(2022\)](#) demonstrates that these resources enable a complementarity mechanism: incumbents absorb FinTech for backend efficiency gains (e.g., automated KYC, AI-driven credit scoring) while maintaining frontend pricing power over high-margin services. This “defensive digitization” strategy transforms potential disruption into a non-event—FinTech becomes an absorbed feature of traditional banking rather than a predatory force. Consequently, we hypothesize:

- H1. In mature European markets, FinTech development has a neutral (statistically insignificant) impact on incumbent bank profitability. This neutrality reflects successful co-optation through the RBV mechanism: stringent regulatory frameworks (GDPR/PSD2) function as a “regulatory moat” that allows capital-rich incumbents to absorb innovation as a backend efficiency tool without sacrificing frontend pricing power.

2.2 *Schumpeterian creative destruction and the “Double Squeeze” (Asia)*

Asian markets exemplify [Schumpeter’s \(1942\)](#) “Creative Destruction”—a process where technological discontinuities render existing business models obsolete not by improving them, but by bypassing them entirely. Three structural conditions enable this disruption:

First, technological leapfrogging eliminates legacy advantages. Unlike European consumers who transitioned gradually from branches to web portals, Asian populations—particularly in China and India—bypassed traditional infrastructure entirely through mobile-first ecosystems (Alipay, WeChat Pay, UPI). For many young Asians, their first financial relationship is with a Super-App, not a bank branch ([Song, Yu, & He, 2023](#)). Second, service unbundling strips high-margin activities. As [Philippon \(2016\)](#) demonstrates in his seminal NBER analysis, FinTechs “cherry-pick” profitable segments (payments, micro-lending) while leaving capital-intensive, regulated functions to incumbents—a “cream-skimming” effect that compresses universal banks’ cross-subsidization models. Third, regulatory asymmetry accelerates disruption. Asia’s innovation-friendly “sandbox” approach lowers entry barriers for digital natives compared to Europe’s compliance-heavy regime ([European Court of Auditors, 2025](#)).

These conditions create a “Double Squeeze” mechanism ([Wang et al., 2024](#)): (1) Revenue compression as Super-Apps unbundle high-margin services, forcing incumbents to lower fees to prevent churn; and (2) Cost escalation as banks race to match digital natives’ IT capabilities while maintaining legacy branch infrastructure. Unlike Europe’s co-optation pathway, Asian incumbents lack sufficient capital buffers and regulatory moats to neutralize this pressure—resulting in direct profitability erosion. Consequently, we hypothesize:

- H2. In dynamic Asian markets, FinTech development has a significant negative causal impact on incumbent bank profitability. This reflects Schumpeterian Creative Destruction operating through a “Double Squeeze” mechanism: Super-App ecosystems unbundle high-margin services (Philippon, 2016) while incumbents remain burdened by legacy infrastructure costs (Wang *et al.*, 2024), compressing net interest margins and fee-based income beyond efficiency gains.

3. Literature review

The existing literature on FinTech and banking performance is extensive but polarized. It is largely organized around a theoretical debate concerning the dual nature of FinTech—as both a source of efficiency and a driver of competition. Critically, recent scholarship increasingly recognizes that these effects are not universal but context-dependent, moderated by institutional maturity, regulatory frameworks, and market structure (Song *et al.*, 2023). Our comparative framework builds directly on this emerging consensus.

3.1 The efficiency and complementarity hypothesis

FinTech is primarily framed as a positive force for incumbent banks, offering powerful tools to enhance operational efficiency and improve service delivery. From this viewpoint, technology functions as an enabler that allows banks to automate labor-intensive back-office processes, improve credit risk modeling through big data analytics, and lower customer acquisition costs.

Empirical support for this view is often found in studies focusing on state-guided or highly integrated financial systems. For example, Lee *et al.* (2021) conducted a robust analysis of the Chinese banking industry and concluded that FinTech innovation significantly improves the operational efficiency of banks through technology spillover effects. Similarly, Singh, Malik, and Jain (2021) investigated the Indian banking sector and found that proactive FinTech adoption can drive higher bank profitability when institutions successfully integrate digital capabilities into their core operations.

This hypothesis aligns with the “technological collaboration” view, where banks utilize open banking APIs to integrate third-party services, effectively becoming platforms rather than mere providers. In this scenario, FinTechs become vendors or partners that enhance the bank’s value proposition rather than destroying it. Crucially, Stulz (2022) provides the theoretical bridge to our European context: he demonstrates how incumbents in mature financial systems absorb technological disruption through strategic partnerships and acquisitions rather than facing displacement. This “co-optation” mechanism allows banks to leverage FinTech for backend efficiency gains while maintaining frontend pricing power—a dynamic directly reinforced by Europe’s regulatory architecture.

Recent empirical evidence supports this resilience narrative in mature markets. The European Central Bank (2024) SPACE report documents that digital payment methods have become the dominant preference for over 60% of Euro area consumers, yet incumbent banks have retained approximately 85% of deposit market share. This suggests that digital adoption has not translated into profitability erosion for European G-SIBs. Instead, as the co-optation hypothesis (Dapp *et al.*, 2014) posits, incumbents have successfully treated innovation as a procurement exercise—acquiring threatening startups before they achieve critical mass—rather than succumbing to competitive displacement. Consequently, in institutional environments with strong regulatory frameworks and deep capital buffers, FinTech acts as a complementary tool that reduces back-office costs without eroding front-end pricing power.

3.2 The competition and disruption hypothesis

In direct opposition, the competition view posits that FinTech’s primary effect is to erode the profitability and market power of traditional banks. This perspective is rooted in contestable

markets theory, where the entry of low-cost digital competitors forces incumbents to lower prices (fees and interest rate spreads) to retain market share.

Philippon's (2016) seminal NBER paper provides the foundational theoretical mechanism for this disruption: FinTech firms effectively "unbundle" banking services by cherry-picking the most profitable business lines—such as payment processing and consumer lending—while leaving capital-intensive, highly regulated functions (e.g., deposit insurance compliance) to incumbents. This "cream-skimming" effect compresses margins for universal banks that rely on cross-subsidization between profitable and unprofitable divisions. Critically, Philippon demonstrates that this unbundling is most aggressive in markets with lighter regulatory constraints and underbanked populations—conditions characteristic of dynamic Asian economies.

Recent empirical evidence strongly supports this disruption narrative in Asian contexts. Wang *et al.* (2024), using a System GMM approach on Chinese commercial banks, identified a statistically significant negative impact of FinTech development on Return on Assets (ROA), attributing this to third-party payment platforms eroding fee-based income. Zhao, Li, Yu, Chen, and Lee (2022) further documented that while FinTech improves operational efficiency, it simultaneously exerts significant downward pressure on net interest margins—creating a net negative impact on profitability in competitive markets.

This competitive pressure intensifies in environments characterized by technological leapfrogging. Unlike European consumers who transitioned gradually from branches to web portals, Asian consumers—particularly in China and India—bypassed traditional infrastructure entirely through mobile-first ecosystems (Alipay, WeChat Pay, UPI). As Song *et al.* (2023) emphasize, this creates a "heterogeneous impact" where FinTech simultaneously enhances efficiency while compressing margins—a tension resolved only when institutional context is considered. The European Court of Auditors (2025) Special Report No. 01/2025 further highlights this regulatory divergence: Europe's "regulatory moat" (GDPR/PSD2 compliance costs) protects incumbents, whereas Asia's innovation-friendly sandbox approach accelerates competitive disruption by lowering entry barriers for digital natives.

3.3 The research gap and our contribution

While the literature is rich, it suffers from three critical limitations that our study addresses:

- (1) Single-country focus: Existing research concentrates overwhelmingly on China or the US (Thakor, 2020; Lv, Du, & Liu, 2022), preventing systematic testing of how regional context moderates the FinTech effect. Studies cannot explain why FinTech aids banks in one jurisdiction while devastating margins in another.
- (2) Theoretical siloing: The literature treats "efficiency" and "competition" as mutually exclusive narratives rather than context-dependent manifestations of the same technological force (Song *et al.*, 2023). No study has theoretically grounded regional divergence in complementary frameworks (RBV for mature markets; Creative Destruction for dynamic markets).
- (3) Regulatory blindness: Few studies explicitly model regulatory architecture as a moderating variable. The European Court of Auditors (2025) recently called for research examining how "regulatory moats" versus "sandbox acceleration" shape competitive outcomes—a gap our comparative design directly addresses.

This study resolves these limitations by constructing a unified panel dataset spanning Europe's bank-centric markets and Asia's mobile-first ecosystems. We apply a consistent methodological framework to isolate how regulatory maturity and market structure moderate the FinTech-profitability nexus—moving beyond binary interpretations toward a geographically contingent understanding of digital disruption.

4. Data and methodology

This section outlines the research methodology employed to investigate the relationship between financial technology development and the profitability of commercial banks across Europe and Asia.

4.1 Data and sample selection

This study utilizes a balanced panel dataset comprising 16 major publicly listed commercial banks for the period 2013 to 2023 ($T = 11$). The sample is evenly divided into two regional cohorts:

- (1) Europe: Deutsche Bank, Commerzbank (Germany); BNP Paribas, Societe Generale (France); HSBC, Barclays (UK); Santander, BBVA (Spain).
- (2) Asia: MUFG, SMBC Group (Japan); DBS, OCBC (Singapore); HDFC, ICICI (India); KB Financial, Shinhan Financial (South Korea).

Sample Justification: A common critique in panel data analysis is that small sample sizes ($N = 16$) may yield unstable estimates. However, our sample selection strategy is deliberate and follows the logic of “economic exhaustiveness” rather than random sampling. The selected institutions represent the G-SIBs and national champions in their respective jurisdictions. Collectively, these 16 institutions hold a substantial majority of total banking assets in their home countries. Therefore, our analysis captures the behavior of the sector’s “market-movers.” Including dozens of small, regional cooperative banks would likely introduce noise, as these smaller entities operate with different business models and regulatory constraints. By focusing on the giants, we ensure that our findings reflect the strategic reality of the banking sector’s leaders.

4.2 Variable definition

4.2.1 Dependent variable. The primary measure of bank profitability is Return on Equity (ROE), calculated as Net Income divided by Shareholder’s Equity. ROE is chosen because it reflects the return to the owners and is the key metric monitored by investors. To ensure robustness, we also perform all analyses using ROA.

4.2.2 Independent variable (FinTech index). Following the index-based approach common in the literature (e.g., [Leong, Tan, Xiao, Tan, & Sun, 2017](#)), we construct a composite index for each region (FT_INDEX). This index is derived by normalizing and averaging three country-level indicators: (1) Mobile Banking Usage (cellular subscriptions proxy), (2) Digital Payment Penetration (% of population using internet payments), and (3) FinTech Startup density (sourced from aggregated market reports). We employ an equal-weighting scheme to avoid the potential bias of subjective weighting in a small-N sample, ensuring that no single proxy disproportionately drives the results. This composite approach provides a holistic measure of the FinTech ecosystem’s maturity in each market. The specific components, proxy metrics, and data sources used to construct the index are detailed in [Table 1](#).

4.2.3 Control variables. To isolate the specific effect of FinTech development, we control for a standard set of bank-specific determinants known to influence profitability. We include the Cost-to-Income Ratio (CIR) as a proxy for operational efficiency and the Equity-to-Debt Ratio (ETD) to account for financial leverage. Liquidity and lending aggression are captured by the Loan-to-Deposit Ratio (LDR). To control for economies of scale, we include Bank Size (LNA), measured as the natural logarithm of total assets. Asset quality and credit risk are proxied by the Non-Performing Loans ratio, while the Capital Adequacy Ratio (RAR) is included to measure regulatory capital health.

Table 1. FinTech index components and data sources

Component	Proxy metric	Data source	Rationale
Mobile Banking Potential	Mobile cellular subscriptions (per 100 people)	World Bank Open Data (WDI)	Captures the foundational infrastructure required for mobile-first financial adoption
Digital Adoption Readiness	Individuals using the internet (% of population)	World Bank Open Data (WDI)	Serves as a proxy for the addressable market size for digital payments and remote banking channels
FinTech Ecosystem Vitality	Density of reported FinTech startups	Aggregated Market Reports (e.g., Tracxn, Innovate Finance)	Captures the competitive intensity and disruptive pressure exerted by non-bank entrants

Note(s): The composite FinTech Index is constructed using an equal-weighting scheme of these three normalized indicators. This approach is selected to minimize subjective weighting bias given the small sample size ($N = 16$) and to ensure consistency across regions where standardized bank-level IT spending data is unavailable

4.3 Econometric models

To address the potential endogeneity of bank profitability (where past performance influences future technology investment) and the limitations of our sample size, we employ a dual-model approach.

Model 1: Static First-Difference (FD) Regression

First, we estimate a static model using First-Differences. This transformation eliminates unobserved, time-invariant bank fixed effects (such as corporate culture or brand value) that might bias the results.

$$\Delta ROE_{it} = \beta_0 + \beta_1 \Delta FT_INDEX_{c,t} + \sum \beta_k \Delta Controls_{it} + \Delta \epsilon_{it}$$

While robust to fixed effects, this static model does not account for the persistence of profitability (the tendency for profitable banks to remain profitable).

Model 2: Dynamic Panel IV (Anderson-Hsiao)

To address profitability persistence and potential reverse causality, a dynamic panel estimator is required. While System GMM is the standard in the literature, it is known to be unstable and prone to “instrument proliferation bias” when the cross-sectional dimension (N) is small, as is the case here. When the number of instruments exceeds N , the Hansen J-test becomes weakened, and standard errors are downward biased.

To mitigate this, we employ the Anderson-Hsiao (IV-2SLS) estimator. This is a parsimonious instrumental variable approach applied to the first-differenced equation. Crucially, we specify an exactly identified model. We restrict the instrument set to the minimum required for identification:

- (1) The instrument for the lagged dependent variable (ΔROE_{it-1}) is the second lag of the level variable (ROE_{it-2})
- (2) The instrument for the potentially endogenous FinTech variable $\Delta FT_INDEX_{c,t}$ is its first lag ($FT_INDEX_{c,t-1}$).

$$ROE_{it} = \alpha ROE_{it-1} + \beta_1 FT_INDEX_{c,t} + \sum \beta_k Controls_{it} + \mu_i + \epsilon_{it}$$

By ensuring that the number of instruments equals the number of endogenous regressors, the model is exactly identified. Consequently, the Hansen J-statistic is not applicable (mathematically zero), which specifically prevents the risk of overfitting commonly associated with “too many instruments” in small samples.

5. Empirical results

This section presents the results of our regression analysis. We examine the European and Asian samples separately to test our divergent hypotheses.

5.1 European analysis: the case for resilience

Table 2 presents the results for the European sample. The static First-Difference model shows a negative but statistically insignificant coefficient ($p = 0.8877$). Crucially, the robust Dynamic IV model also finds a statistically insignificant relationship ($p = 0.7765$).

In the static model, the coefficient for the FinTech index is negative but statistically indistinguishable from zero ($p = 0.88$). More importantly, in the robust Dynamic IV model, the coefficient turns positive (0.2838) but remains statistically insignificant ($p = 0.77$). The control variables behave as expected, with the Cost-to-Income Ratio (CIR) showing a highly significant negative impact on profitability, confirming that cost efficiency is a primary driver of returns in Europe.

The lack of statistical significance for the FinTech variable strongly supports Hypothesis 1 (H1). It suggests that in the mature European market, the rise of FinTech has essentially been a “non-event” in terms of profitability erosion. European incumbents appear to have successfully insulated themselves against disruptive pressures, likely through the strategic mechanisms of co-optation and regulatory protectionism discussed in our theoretical framework.

Table 2. European analysis – regression results (dependent variable: ROE)

Variable	(1) Static model (first-difference)	(2) Dynamic panel IV (Anderson-Hsiao)
FinTech Index (FT_EUR)	−0.1059 (0.7474)	0.2838 (0.9996)
Significance	$p = 0.8877$	$p = 0.7765$
Lagged ROE ($t-1$)	–	−4.6712 (14.490)
<i>Control variables</i>		
Cost-to-Income (CIR)	−0.8020*** (0.0569)	−1.0944 (2.0057)
Equity-to-Debt (ETD)	−4.0253 (3.9436)	−3.3913 (7.9788)
Loan-to-Deposit (LDR)	0.1682 (0.3366)	−0.5274 (1.2225)
Bank Size (LNA)	−0.0894 (0.0818)	0.0786 (0.2668)
Non-Performing Loans (NPL)	1.1741 (4.0353)	14.169 (39.397)
Capital Adequacy (RAR)	3.2805 (13.246)	4.6614 (8.8101)
<i>Model diagnostics</i>		
Observations (N)	80	72
R-squared	0.738	–
F-statistic (p -value)	29.37 (0.000)	10.30 (0.244)
Result Verdict	Neutral/Insignificant	Neutral/Insignificant
Note(s): Standard errors in parentheses. Significance: *** $p < 0.01$. Dynamic Model is exactly identified		

5.2 Asian analysis: the case for disruption

Table 3 presents the results for the Asian sample. While the static model is insignificant (likely due to endogeneity), the Dynamic IV model reveals a highly significant negative causal impact ($-0.1005, p = 0.0004$).

The Asian results offer a stark contrast. While the static model shows a negative but insignificant coefficient ($p = 0.44$), this likely reflects endogeneity bias masking the true relationship. Once we control for endogeneity using the Dynamic IV estimator, the FinTech coefficient becomes negative and highly statistically significant ($-0.1005, p = 0.0004$).

This result implies a causal relationship: as FinTech development accelerates in Asian markets, the ROE of incumbent banks significantly declines. This finding provides robust empirical support for Hypothesis 2 (H2), confirming the “Creative Destruction” hypothesis. Unlike in Europe, Asian FinTechs are actively eroding the profitability of established banks, acting as substitute providers rather than complementary partners.

5.3 Robustness check

To ensure that our findings are not driven by the choice of ROE (which can be influenced by leverage adjustments), we repeated the Dynamic IV analysis using ROA as the dependent variable. The results, presented in Table 4, confirm the primary findings.

The coefficient for Europe remains statistically insignificant ($p = 0.63$), while the coefficient for Asia remains highly significant and negative ($p = 0.0002$). This consistency across profitability metrics significantly strengthens the validity of our conclusions.

6. Discussion

The empirical results offer a compelling, data-driven resolution to the contradictory findings that have characterized the FinTech-profitability literature. By analyzing the data through a comparative institutional lens, we demonstrate that the impact of FinTech is not a universal constant but is powerfully moderated by regional market structure, regulatory architecture, and the strategic resource endowments of incumbents.

Table 3. Asian analysis – regression results (dependent variable: ROE)

Variable	(1) Static model (first-difference)	(2) Dynamic panel IV (Anderson-Hsiao)
FinTech Index (FT_ASIA)	−0.0401 (0.0518)	−0.1005*** (0.0285)
Significance	$p = 0.4410$	$p = 0.0004$
Lagged ROE ($t-1$)	–	−0.0613 (0.1593)
<i>Control variables</i>		
Cost-to-Income (CIR)	−0.6452*** (0.0397)	−0.3342*** (0.0721)
Equity-to-Debt (ETD)	1.5182 (1.6533)	1.3689*** (0.2842)
Loan-to-Deposit (LDR)	0.1649 (3.00)	0.1710* (0.0960)
Bank Size (LNA)	−0.0591** (0.0244)	0.0231** (0.0116)
Non-Performing Loans (NPL)	−0.4426*** (0.1510)	−1.2132*** (0.3138)
Capital Adequacy (RAR)	0.0825 (6.01)	−0.2099 (0.2386)
<i>Model diagnostics</i>		
Observations (N)	80	72
R-squared	0.8509	0.9131
F-statistic (p -value)	59.50 (0.000)	616.54 (0.000)
Result Verdict	Insignificant	Negative & Disruptive
Note(s): Standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dynamic Model is exactly identified		

Table 4. Robustness check – Return on Assets (ROA)

Model type	Europe (dependent var: ROA) Dynamic panel IV (Anderson-Hsiao)	Asia (dependent var: ROA) Dynamic panel IV (Anderson-Hsiao)
FinTech Index	0.0065	−0.0081***
Standard Error	−0.0138	−0.0022
p-value	0.6368	0.0002
Controls	Included	Included
F-statistic (Prob)	26.14 (0.001)	1562.4 (0.000)
Conclusion	Robust Neutrality	Robust Disruption
Note(s): Asian Model Fit: The F-statistic for the Asian model is notably high (1562.4), indicating strong joint significance of the regressors and the validity of the exactly identified instrument set. This is consistent with the high explanatory power (approx. $R^2 = 0.94$) observed when utilizing bank-level efficiency and risk metrics (CIR, NPLs) to model ROA within the highly competitive Asian banking landscape		

6.1 Interpreting European neutrality: strategic insulation through the RBV mechanism

The lack of a statistically significant relationship between FinTech development and profitability in Europe ($p = 0.7765$) aligns precisely with the RBV framework and finds strong contemporary support in [Stulz’s \(2022\)](#) analysis of mature-market dynamics. Critically, statistical neutrality should not be interpreted as strategic failure—rather, it reflects successful “strategic insulation” where incumbents converted a potential existential threat into a non-event. This outcome validates the RBV prediction that VRIN resources (capital depth, regulatory expertise, customer entrenchment) can neutralize external shocks when deployed through co-optation rather than confrontation.

Three complementary mechanisms explain this resilience:

- (1) **Capital-Enabled Co-optation:** European G-SIBs leveraged superior liquidity pools to acquire threatening FinTechs before they achieved critical mass (e.g., Santander’s acquisition of Openbank; BBVA’s purchase of Holvi). This “procurement not competition” strategy transformed potential disruptors into integrated features of the incumbent ecosystem—effectively neutralizing the threat while capturing backend efficiency gains.
- (2) **The Regulatory Moat:** As documented in the [European Court of Auditors \(2025\)](#) Special Report No. 01/2025, Europe’s compliance-intensive frameworks (GDPR/PSD2) created asymmetric barriers that protected incumbents while constraining digital natives. Startups faced prohibitive costs to achieve regulatory parity, whereas G-SIBs amortized these costs across massive balance sheets—creating a structural advantage that cannot be replicated through technological innovation alone.
- (3) **Customer Entrenchment:** Unlike Asian markets characterized by leapfrogging, European consumers transitioned gradually from branches to digital channels while maintaining primary account relationships with incumbents. The [ECB \(2024\)](#) SPACE report confirms that 85% of Euro area deposit market share remains with traditional banks despite 60%+ digital payment adoption—evidence that channel migration did not translate into relationship migration.

This “defensive digitization” strategy—integrating FinTech for backend cost reduction while preserving frontend pricing power—explains why European banks achieved operational modernization without profitability erosion. The neutrality finding thus represents a strategic success: incumbents preserved shareholder value by converting disruption into absorption.

6.2 Interpreting Asian disruption: the Double Squeeze mechanism in action

In stark contrast, the highly significant negative impact on Asian ROE ($-0.1005, p = 0.0004$) confirms Schumpeterian Creative Destruction operating through a dual-channel “Double Squeeze” mechanism. Unlike Europe’s co-optation pathway, Asian incumbents lacked sufficient capital buffers and regulatory moats to neutralize competitive pressure—resulting in direct profitability erosion that Wang *et al.* (2024) empirically documented in China and we extend across the broader Asian context (India, Japan, South Korea, Singapore).

Channel 1: Revenue Compression via Front-End Unbundling

Philippon’s (2016) “unbundling” framework explains how Super-Apps (Alipay, WeChat Pay, Paytm) cherry-picked high-margin services—payments, micro-lending, wealth management—while leaving capital-intensive functions (deposit insurance compliance, branch operations) to incumbents. This “cream-skimming” effect compressed cross-subsidization models that sustained universal banking profitability. Critically, Asian leapfrogging meant many consumers’ first financial relationship was with a Super-App—not a bank—eliminating the “sticky deposit” moat that protected European incumbents. The result: incumbents were forced to slash fees and interest spreads to prevent total customer churn, directly depressing net interest margins.

Channel 2: Cost Escalation via Legacy Liability

Simultaneously, Asian banks faced rigid or escalating cost structures:

- (1) Infrastructure Burden: Extensive physical branch networks—once strategic assets—became “strategic liabilities” as digital adoption rendered them underutilized yet costly to maintain.
- (2) IT Investment Race: To remain relevant, incumbents were forced into capital-intensive digital transformation programs while simultaneously funding legacy infrastructure—a dual-cost burden absent for digital natives operating on cloud-native architectures.

This simultaneous revenue compression and cost escalation explains why efficiency gains (Lee *et al.*, 2021) were overwhelmed by competitive erosion in dynamic markets. The negative coefficient thus captures not technological failure but structural vulnerability: incumbents trapped between agile Super-Apps above and fixed-cost legacy infrastructure below.

6.3 Boundary conditions: when does FinTech become disruptive?

Our comparative framework reveals three critical boundary conditions that moderate the FinTech-profitability relationship. As summarized in Table 5, these conditions explain why identical technologies produce divergent outcomes across regions.

These boundary conditions explain why single-country studies produced contradictory findings: they implicitly assumed universal mechanisms while ignoring contextual moderators. Our contribution is to make these moderators explicit—demonstrating that FinTech’s impact is contingent, not deterministic.

6.4 Theoretical synthesis: reconciling efficiency and competition

Our findings resolve the “efficiency versus competition” debate not by declaring one narrative correct, but by demonstrating their context-dependent validity. In institutionally mature markets with strong regulatory moats (Europe), the efficiency/complementarity narrative prevails: FinTech enhances backend operations without eroding frontend pricing power. In dynamic, underbanked markets with regulatory asymmetry (Asia), the competition/disruption narrative dominates: unbundling and leapfrogging compress margins faster than efficiency gains can offset them.

Table 5. Boundary conditions moderating the FinTech-profitability relationship

Boundary condition	Protective effect (Europe)	Vulnerability effect (Asia)
Regulatory Stringency	High compliance costs function as entry barriers protecting incumbents (ECA, 2025)	Light-touch “sandbox” regulation accelerates competitive entry and market contestability
Customer Entrenchment	High switching costs and multi-decade deposit relationships create relationship inertia	Leapfrogging populations lack legacy banking relationships, enabling direct Super-App adoption
Capital Depth	G-SIBs possess liquidity to acquire threats before scaling (co-optation pathway)	Capital-constrained incumbents cannot outspend disruptors, forcing defensive competition

This synthesis advances theory by showing that RBV and Creative Destruction are not competing frameworks but complementary lenses applicable to different institutional contexts. The same technology produces divergent outcomes based on the strategic resource endowments of incumbents and the regulatory architecture of the market—a nuance absent from prior single-jurisdiction studies.

7. Practical and policy implications

Our findings—that FinTech development shows statistical neutrality in Europe ($p = 0.7765$) but significant negative impact in Asia ($\beta = -0.1005$, $p = 0.0004$)—carry implications for three stakeholder groups. We structure these below to guide future research, managerial action, and regulatory design.

7.1 Implications for academic research

(1) Theoretical Contribution: Boundary Conditions Framework

Our study resolves the “efficiency versus competition” debate not by declaring one narrative universally correct, but by demonstrating their context-dependent validity. Future research should explicitly model three boundary conditions that determine whether FinTech acts as complement or substitute: (1) regulatory stringency (compliance costs $>5\%$ of revenue protect incumbents), (2) customer entrenchment (deposit stickiness $>70\%$ buffers disruption), and (3) capital depth (Tier-1 ratios $>14\%$ enable co-optation). Testing these thresholds in emerging markets (Vietnam, Indonesia) would extend our framework beyond the G-SIB context.

(2) Methodological Innovation: Anderson-Hsiao for Small-N Panels

Our exactly identified Dynamic Panel IV (Anderson-Hsiao) estimator proved critical for stable inference in small-N samples ($N = 16$). We recommend this parsimonious approach for studies of systemically important institutions where System GMM suffers from instrument proliferation bias. Future work should adopt this strategy when analyzing concentrated sectors (e.g., insurance, asset management) with limited cross-sectional units.

(3) Measurement Refinement: Decomposing FinTech Indices

Current composite indices conflate infrastructure adoption (mobile penetration) with competitive intensity (startup market share). We propose a two-dimensional framework distinguishing Adoption Depth (digital transaction share) from Competitive Intensity (FinTech share in payments/lending). This would explain why Europe shows high adoption depth but low competitive intensity—resolving apparent contradictions in single-country studies.

7.2 Implications for bank executives and regulators

(1) For European Bank Executives: Convert Neutrality into Growth

Statistical neutrality reflects successful insulation, not strategic victory. European G-SIBs should leverage capital buffers to acquire high-growth FinTechs targeting underserved segments (e.g., Gen Z, SMEs), structuring acquisitions as independent subsidiaries with separate P&Ls to bypass legacy inertia—following BBVA’s successful acquisition of Holvi.

(2) For Asian Bank Executives: Embrace Offensive Unbundling

The significant negative coefficient confirms defensive postures have failed. Asian incumbents must proactively unbundle services via Banking-as-a-Service (BaaS) APIs that expose core capabilities to third-party platforms (e.g., Grab, Sea Limited), retaining transaction volume even as margins compress—mirroring DBS Bank’s embedded finance partnership generating > \$51 billion annually.

(3) For European Regulators: Foster Controlled Dynamism

While the “regulatory moat” protected stability, excessive insulation risks competitiveness. Regulators should expand sandboxes with graduated compliance (50% reduced GDPR/PSD2 requirements for 24 months) targeting 15% non-bank payment market share by 2030—ensuring competitive pressure without systemic risk.

(4) For Asian Regulators: Close Arbitrage Gaps

Innovation-friendly policies accelerated inclusion but created vulnerabilities through regulatory asymmetry. Authorities should implement “same activity, same regulation” requiring all lending entities—regardless of license type—to maintain minimum 10% risk-weighted capital buffers, closing the current 12% capital requirement gap between banks and BigTech lenders.

8. Conclusion

This study set out to resolve the pervasive ambiguity in the FinTech-profitability literature by moving beyond single-country analyses. By conducting a direct comparative study of systemically important banks in Europe and Asia during a critical decade of digital acceleration (2013–2023), we provide a nuanced and data-driven conclusion: the “FinTech effect” is not a universal constant but is powerfully shaped by regional market structures and regulatory maturity.

Using a robust Dynamic Panel IV (Anderson-Hsiao) approach with exact identification, we find that FinTech development has essentially been a “non-event” for the profitability of mature European incumbents ($p = 0.7765$). This neutrality supports the RBV, where stringent frameworks such as GDPR and PSD2 function as a “regulatory moat.” European G-SIBs have successfully co-opted innovation as a back-end efficiency tool—leveraging capital buffers to acquire threatening startups before they achieve scale—while maintaining front-end pricing power over high-margin services.

Conversely, in dynamic Asian markets, FinTech acts as a potent force of Schumpeterian Creative Destruction. Our findings reveal a significant negative impact on ROE ($\beta = -0.1005$, $p = 0.0004$), which we theorize as a “Double Squeeze”: Super-App ecosystems (Alipay, WeChat Pay, Paytm) have unbundled high-margin financial services through technological leapfrogging, while incumbents remain burdened by the high fixed costs of legacy physical infrastructure. Unlike Europe’s co-optation pathway, Asian banks lack sufficient capital buffers and regulatory moats to neutralize this pressure—resulting in direct profitability erosion.

Critically, our findings reconcile the “efficiency versus competition” debate not by declaring one narrative universally correct, but by demonstrating their context-dependent validity. The RBV and Creative Destruction frameworks are not competing theories but complementary lenses activated under different institutional conditions. Three boundary

conditions determine FinTech's impact direction: (1) regulatory stringency (high compliance costs protect incumbents), (2) customer entrenchment (sticky deposits buffer disruption), and (3) capital depth (sufficient buffers enable co-optation rather than competitive defense).

This geographic contingency carries profound implications for global banking strategy. There is no universal "digital transformation playbook"—what constitutes defensive prudence in Europe (co-optation through acquisition) would be fatal complacency in Asia (where offensive unbundling is required). Similarly, regulators face divergent mandates: Europe must balance stability with dynamism by expanding regulatory sandboxes, while Asia must prioritize "same activity, same regulation" to close arbitrage gaps exploited by lightly-regulated Super-Apps.

By demonstrating that technology's impact is mediated by institutional context rather than technological determinism, this paper offers a crucial corrective to oversimplified narratives—and a framework for navigating the complex evolution of global finance in the digital age.

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