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| RESEARCH ARTICLE

Digital Lending and Bank Profitability in Selected Asian Countries

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| ABSTRACT

Digital lending is considered vital for innovation and economic growth. Many countries have experienced digital lending as alternative to formal financing channels. The growth in digital lending may have implications for banks. In this research we estimate the impact of digital lending on bank profitability in three south Asian countries. We collect banking and macro data from 2012-2023 and run panel model regression. Our results are that digital lending reduces bank profitability in our sample of banks. Our results imply that banks should adopt digital lending so they may compete with digital platforms.

| KEYWORDS

Digital lending, bank, ROA, NIM

| ARTICLE INFORMATION

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1. Introduction

New business models have emerged because of the digital revolution of the last few years. In particular, the introduction of new technology advances (such as big data, machine learning, and artificial intelligence) is boosting the variety of products available, cutting prices, and opening up new avenues for accessing the financial markets. Historically, banks, credit unions, and other financial institutions have provided loans to consumers and companies. However, giant internet corporations like Amazon, Google, and Microsoft (collectively, "Big Tech") and the emerging financial technology (fintech) industry have recently given rise to alternate kinds of credit. Consumers see both kinds of businesses as a fresh alternative to bank credit. The effect of these alternate forms of credit lending on incumbent banks is a topic that has not been expanded much in bank literature.

FinTech are businesses that offer financial services to clients primarily through technology and cloud services, with less emphasis on physical facilities.[1] There is no general consensus over the definition of Big tech but these companies are usually huge technology corporations with broad client bases and main operations in a variety of industries, such as e-commerce, social media, and internet search (Bains et al., 2022). With $3.8 trillion in outstanding credit in 2018, the consumer credit market is one of the major industries fintech startups have targeted. According to another study, the combined value of fintech and big tech credit, reached $795 billion worldwide in 2019. Asia (China, Japan, Korea, and Southeast Asia) and several African and Latin American nations have seen very fast growth in the big tech sector, which is valued at $572 billion. (Cornelli et al., 2020) Large fintech start-ups that grow significantly, have frequently been bought by BigTech companies, which have allowed them to carry on providing cutting-edge financial services via BigTech platforms. BigTech's entry into the financial services industry adds more layers of

[1] (What Is Fintech?, 2024) McKinsey & Company. https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-fintech

complexity given its features, even though the rise of fintech has already posed problems for the regulatory and supervisory community in ensuring the safety and soundness of the financial system (Bains et al., 2022).

Banks are essential to the financial system and economy; however, they are also vulnerable to risks. They have short-term and on-demand obligations that their owners can quickly transfer to other banks, creating liquidity problems (Rehman et al., 2022). Banks are strictly regulated due to their inherent fragility and the possible systemic danger of bank failures. Bank regulation is costly, limits institutions, and prevents new entrants and quick expansion. Fintech companies can compete with banks without a bank charter by providing superior and more affordable financial services (Allen et al., 2021).

Most previous studies that highlight and study this relationship focus only on one type of lending i.e. fintech as Bigtech is a relatively recent phenomenon. Our paper adds to the existing literature by examining the effect of big tech and fintech lending on bank performance across 3 South Asian countries as the region has a long history of microlending (Sinha et al., 2006), and the move to digital lending is essential to comprehending how technology might alter the environment for personal and small- to medium-sized business (SME) lending. As far as we know, a study of this nature has not been conducted in this region. Also, as part of more extensive national policies on financial inclusion and digitisation, nations like India are pushing for digital financial services, providing a unique setting for researching the relationship between policy and technology. (Begum, 2018; Liu et al., 2024)

2. Literature Review

COVID-19 was a period of crisis, and times of crisis offer chances to ponder on values and weigh options. Following the pandemic, domestic credit to the private sector increased, indicating the government's support of the private sector through financial institutions to protect economic activity throughout the crisis. Globally, the increase in domestic lending to the private sector was a typical occurrence. From 2017 to 2020, there was a noticeable shift in the patterns of economic growth, investment, and financing of economic activity. The hard facts demonstrate the shifts in global and regional economic growth, commerce in products and services, and wealth of shareholders before and after the COVID-19 pandemic, as well as the changes in the financing sources.[2] Fu and Mishra (2021) talk about how the financial sector's digital transformation has intensified at the onset of COVID-19. According to their calculation, the relative rate of daily downloads of finance-related mobile applications has increased by 21% to 26% because of the pandemic's spread.

Although banks, credit unions, and other traditional lenders continue to be the primary source of finance for people and businesses in most economies (with capital markets playing a significant role in certain circumstances), the digitalization of finance has led to the emergence of new intermediaries. Kowalewski et al. (2022) explain that technology influences banking procedures and has the potential to increase their efficacy. However, large technology businesses that are now entering the financial intermediary industries and small fintech companies have put pressure on traditional banks' positions and may be regarded as undermining them. Incumbent banks have numerous rules imposed on them for conducting their credit lending operations. One example could be that they must take action to ensure that their clients are not utilising their services to launder money. FinTech companies are exempt from these rules. Furthermore, banks must maintain certain capital levels to comply with current requirements. Cornelli et al. (2021) Although essentially no capital is needed for many bank operations, laws require banks to maintain capital. Because FinTech companies are exempt from capital restrictions, they can operate like banks at a lower cost. These companies benefit from regulations intended to safeguard the financial system while banks suffer. (Stulz, 2019) Some researchers also suggest that the emergence of new communication channels combined with cutting-edge technologies is capturing traditional banks' credit market and causing their business models to collapse both vertically and horizontally (Cornelli et al., 2022)

Technological advancements have also lessened banks' competitive advantage in information creation, as information on commercial and retail loan clients is now more easily accessed, and borrower screening is now more straightforward, thanks to quantitative methodologies. (Bas et al., 2024) Data, computer, and interface are the three main components of fintech. Numerous BigTech and FinTech companies offer consumer and mobile-friendly goods. In this way, they democratize credit access, thereby increasing financial inclusion and enhancing the customer experience through quicker and more effective financial service delivery. (Campo, 2024) However, this rapid credit growth may lead to financial crises and recessions. Due to this development, traditional banks are pressured to innovate to keep their current clientele and be competitive in luring new ones. (Karim & Lucey, 2024)

To accelerate their digital transformation, traditional banks must improve their technological prowess and develop their own digital products. This often results in large expenditures on digital infrastructure and strategic alliances with tech-oriented businesses. (Le et al., 2024) The different forms of bank-fintech collaboration depend on the capacities of each organisation and the mutual gains from the partnership. The efficiency of bank costs and interest revenue is enhanced through collaboration with digital lending platforms. (Fang et al. 2022) However, conventional banks frequently handle FinTech and BigTech very disorganised and

[2] "Fintech and COVID-19: Impacts, Challenges, and Policy Priorities for Asia," 2022 Asian Development Bank Institute eBooks. https://doi.org/10.56506/yrng2198

inefficiently. Thus, the process of forming such a partnership is multifaceted and intricate. (Fang & Wen, 2024) All the same, these procedures and partnerships can emerge progressively. Meanwhile, analysing the effects of digital credit growth on the banking system's performance is pertinent.

Chen et al. (2023) highlight how the introduction of FinTech has increased banks' propensity to accept risks. Bank performance is determined by endogenous factors such as credit risk. Consequently, the management of credit risk affects banks' revenue generation. Banks that effectively manage credit risk will support not just the viability and profitability of their commercial operations but also the preservation of fiscal stability and the efficient flow of money throughout the economy. (Ekinci & Poyraz, 2019) Banks can lower risk by increasing their asset size by diversifying their activities across product lines, industries, and geographical areas. Reducing risk has the potential to increase profitability either directly by lowering losses or indirectly by encouraging liability holders to accept lower rates, which lowers bank funding costs. (Gržeta et al., 2023) Several other internal factors, such as capitalisation, efficiency, and the frequency of defective loans, can also impact bank performance.

The growth of the FinTech and BigTech industries over the past twenty years makes it necessary to investigate these companies' credit volume's impact on the efficiency of conventional banks. Whether or not the products offered by these alternative digital lenders are complimentary to or substitutes for those given by banks will determine how digital lending affects bank performance. This would support a borrower's potential switch from bank to FinTech financing. In the case of a substitute product, Cuadros-Solas et al., (2024) predict bank market strength to be undermined as FinTech lending expands since FinTech lenders may service the same base of borrowers as traditional banks and drive borrowers away from banks and towards them. Also, BigTech and FinTech businesses have a comparative advantage in processing hard data over incumbent banks. They use this data to make informed choices and minimise the possibility of unfavourable selection. (K. Ozili, 2023) Therefore, in order for banks to maintain their edge in loan granting, they ought to be better equipped to obtain soft knowledge through long-term lending relationships.

We are unable to forecast with certainty the nature of the relationship between alternative digital credit and bank performance based on the considerations put out above. Thus, the relationship between the expansion of digital credit and the performance of the banking sector is still empirical, the answer to which will vary based on the degree of economic and financial development of the nation and the regulatory environment surrounding the banking industry. (Giudici et al., 2022)

We chose three developing South Asian nations for our research: Bangladesh, India and Pakistan. Digital lending serves as a means of financial inclusion, which can serve the bigger purpose of poverty alleviation in these countries. (Yong, 2023) These countries have many financially excluded populations that are not being catered to by incumbent banks (Bokhari, 2022). Digital financing thus fills this void left by restricted bank lending to SMEs and MSMEs in developing nations. Furthermore, Bangladeshi and Indian governments place a significant priority on financial inclusion (Alexander et al., 2017). So, we will look at the effect of alternate credit forms on bank performance in developing countries where a large sector of the population is unbanked.

3. Data and Methodology

The sample consists of the dataset of 3 countries from 2012 to 2022. We use panel regression analysis with the country-fixed effects. The RBI and Bangladesh Bank databases have been used to gather information on macroeconomic indicators and features of the banking system. We also obtained the volume of alternative digital credit from the Bank for International Settlements (BIS) information on alternative lending. According to Prasad (2022), consumer loans through non-banking finance firms, or NBFCs, increased by 7% and 13% in India between March 2020 and March 2021 and March 2021 and March 2022.

The ability of the bank to produce long-term profit is termed as bank performance. Three conventional performance metrics were established by the European Central Bank (BCE): net interest margin (NIM), return on assets (ROA), and return on equity (ROE). (Ferrouhi, 2018) These are the most common metrics researchers use to assess banking performance in empirical research. In this research, we employ only the first two. NIM calculates the difference between the bank's income from borrowers and the interest it pays investors. (Interest income - Total interest expense / Total productive assets) x 100 is the formula for NIM (Net interest margins). ROA, calculated as (Net income / Total assets) x 100, is a ratio that assesses a bank's profitability concerning its assets and, consequently, its overall performance. Therefore, our equation formed is:

$$ROA_{it}(NIM_{it}) = \beta_0 + \beta_1 DC_{it} + {}^{5}\Sigma_{l=1}\, \delta_l BS_{it-1} + {}^{2}\Sigma_{h=1}\, \delta_h\, Macro_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Here, DC stands for digital credit, BS for banking system and i and t for "country" and "year. We use digital credit as the primary explanatory variable and regress our bank performance proxies against it. We calculate this variable as the total volume of credit given by BigTech and FinTech enterprises as a percentage of GDP in order to provide an accurate assessment of alternative digital credit. referring to earlier research on bank performance. A system of national bank controls is part of the banking system.

The variable BS measures at the country level, a set of bank controls. We account for size (as determined by the ratio of bank assets to GDP) and capitalisation (as determined by the ratio of regulatory capital to risk-weighted assets) in this regard. We also add bank control factors, such as the Lerner index as a measure of banking competition, because several research has highlighted the

potential impact that the level of market power in the banking industry may have on bank performance. The difference between the price (interest rate) and marginal cost, stated as a percentage of the price, is the Lerner index, which has been widely used in banking literature as a gauge of the level of market power, can be defined as the difference, given as a percentage of the price, between the price (interest rate) and the marginal cost. The index values 0 (perfect competition) and 1 (monopoly). To lessen possible endogeneity problems, all control variables discussed above are lagged by one period in the regressions. Moreover, our regressions incorporate a vector that considers macro-level performance determinants because of the established relationship between business cycle variations and the performance of the banking sector. Our model includes the annual growth in GDP per capita (ΔGDP) and the yearly inflation rate (Inflation). Table 1 presents the primary descriptive statistics. A collection of country-specific dummy variables called μ_i accounts for long-term features unique to each nation. The year dummy variables in λ_t represent time-dependent country-invariant heterogeneity. The error term is $\varepsilon_{i,t}$. Standard errors have been defined at the country level.

4. Results

The results of our model of how the advent of alternative digital credit affects bank performance are shown in Table 2. The findings for ROA and NIM may be found in columns 1 and 2, respectively. The coefficient of digital credit (β1) for both performance indicators is statistically significant and negative. These findings imply that new credit extended by digital companies, or digital credit, results in comparatively reduced intermediation margins and bank returns. Thus, the performance of the banking sector is adversely impacted by this kind of digital credit. These results are also economically significant since, on average, a one standard deviation rise in digital credit (equivalent to 0.45) would imply a fall in ROA of 18.40% (0.45 x 0.409) and a decrease in NIM of 23.71% (0.45 x 0.527).

Table 1
Descriptive Stats

	No. of obs.	Mean	Standard Dev.	Min	Max
Country-level data					
DC	33	0.13	0.45	0.00	4.37
ΔGDP	33	2.03	2.42	-6.64	23.99
Inflation	33	3.54	4.32	-3.74	40.28
Bank-level data					
ROA	532	0.80	1.66	-25.60	5.34
NIM	532	2.72	3.62	-19.85	14.42
Size	532	13.99	1.77	7.12	19.18
Capital	532	0.15	0.06	0.01	0.67
Lerner	532	0.54	0.13	0.02	.91

These findings align with the theory that investors and borrowers may switch from traditional banks to digital lenders. It is, therefore, conceivable that the offerings of digital lenders could, at least partially, replace those of banks. At a greater financial cost, a borrower without collateral might be able to get finance from a regular bank instead of an alternative lender. The borrower may be encouraged to raise money through FinTech and BigTech platforms by this increased cost. Similarly, the ability for investors to select which projects to fund via a platform would support this movement as well.

The positive and statistically significant coefficients of capitalisation, size, and Lerner in column (1) with respect to the control variables show that a banking system is more profitable if its constituent businesses have strong market power and if the system is large and stable. In column (2), the cost-to-income variable has a statistically significant negative coefficient. According to this coefficient, Lower intermediation margins indicate less effective banking systems. Lastly, the correlation between business cycle variations and the performance of the banking sector is supported by the positive and significant coefficient of GDP per capita growth in column (1).

Table 2
Result of model

Dependent	ROA	NIM
Variable	(1)	(2)
DC	-0.409**	-0.527***
	-0.02	-0.06
Size	0.013**	0.004**
	-0.13	-0.48
Capital	0.109*	0.041
	-0.09	-0.35
Lerner	2.025*	0.269*
	-0.07	-0.63
ΔGDP	0.068*	0.007
	-0.09	-0.83
Inflation	0.007	0.018
	-0.77	-0.38
Year and country fixed effects	Yes	Yes
Standard errors	Country level	Country level
Observations	33	33
No. of countries	3	3
p-value	0.01	0.04
R- Squared	0.38	0.47

Significance is indicated at the 1%, 5%, and 10% levels, respectively, by ***, **, and *.

5. Conclusion

New digital rivals have aggressively joined the finance sector within the past ten years. By lending money to individuals and companies, BigTech and FinTech companies have increased the range of financial services they offer. The expansion of digital lending could impact the business models of traditional banks and, consequently, the banking industry's profitability, as these technological enterprises might be extending loans to clients who were previously dependent on banks. In a sample of 3 developing nations, this study looked at the relationship between BigTech and FinTech lending and the performance of the banking sector. The findings indicate that the performance of established banking businesses is negatively correlated with high volumes of digital credit. We have demonstrated a negative correlation between the performance of the banking sector and alternative digital lending through a national-level analysis. That is, the growing amount of credit provided by digital lenders like FinTech and BigTech companies appears to have negatively impacted the returns and margins of the traditional banking industry.

It is challenging to predict how big fintech and big tech credit will grow in the future. Due to accommodating factors in some economies, fintech and big tech credit are expanding to sizes that may be crucial to financial stability. Fintech and big tech lending have substantial market shares in certain markets, such as small company lending in China and the UK and consumer credit in Kenya. Some major tech companies may have attained a systemic significance.

While these new lending options involve risks for the macroeconomy and financial system, they also have the same potential to spur economic growth as current credit options. For instance, if credit grows rapidly, there's a chance that individual borrowers would become too indebted, and in past cases, there have even been risks to financial stability. It might not be possible to tell until after a downturn whether this expansion is the result of an organic spread of a promising new type of intermediation or a credit bubble. The current global policy framework does not adequately address the unique features of massive digital business models and the risks that go along with them (Erhentraud and Cristano, 2021).

Fintech operations continue to take place in an environment with lax regulations. Regulators frequently struggle to keep up with the advancements and innovations in fintech activities because they lack the necessary regulatory experience. Furthermore, regulators typically concentrate on mitigating hazards like "too big to fail" banks or enacting anti-monopoly laws in the primary industry of big tech. As a result, they ignore (i) conceptually different dangers linked to alternate, less crowded fintech marketplaces and (ii) complex, multifaceted concerns associated with big tech lending. In light of this, it is vital to comprehend the fundamentals of these two tech-based credit suppliers. Knowing the factors that influence these occurrences from an economic, social, and cultural standpoint in addition to a technological one can help us prepare for potential challenges in the future

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