



FINANCIAL TECHNOLOGY AND ITS IMPACT ON FINANCIAL INSTITUTIONS IN EMERGING MARKETS

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Abstract

The growth of financial technology (FinTech) companies over the past decade highlights the significant evolution in digital innovation. Recently, FinTech ideas have begun to gain acceptance among traditional financial sector players, including financial institutions. Despite recent acquisitions of FinTech companies by banks, the majority of FinTech enterprises remain self-funded and open to partnerships with outside banks. FinTech companies have the potential to take over many crucial functions currently performed by traditional banks, particularly because many banks—apart from the well-known large ones—continue to offer outdated, expensive, and bureaucratic financial services. It is anticipated that FinTech companies will have a substitution effect, leading banks to abandon certain economic activities. In response to FinTech advancements, banks' incentives to take risks and improve their efficiency and profitability may have shifted. This underscores how FinTech developments will impact bank risk, efficiency, and profitability, presenting a viable alternative to traditional banks as a source of credit. This study aims to investigate these challenges from a global perspective.

INTRODUCTION

Globally, financial technology (hereinafter referred to as "FinTech") is growing as a result of the quick advancement of technologies like big data, cloud computing, blockchain, and artificial intelligence. FinTech is an umbrella word covering technologically enabled financial innovations that could lead to new business models, applications, processes, and products with significant ramifications for financial markets, financial institutions, and the supply of financial services (Financial Stability Board, 2017). FinTech advancements

are taking place across a number of financial industries, including equity capital raising, investment management, insurance, wholesale payments, and retail financing. These advancements assist the modernisation and innovation of existing financial services while simultaneously competing with them (An & Rau, 2021; Di et al., 2021; Gai et al., 2018; Gomber et al., 2017; Milian et al., 2019; Panos & Wilson, 2020; Zvolokina et al., 2016). Although financial innovations have developed in the financial industry, the



consequences of FinTech on the financial system are less evident (Li et al., 2017; Phan et al., 2020).

Banks, which are a vital component of financial organisations, play a significant role in allocating scarce financial resources among borrowers and lenders. It is believed that the banking industry is stable.

In the last ten years, digital innovation has flourished, notably in financial technologies (FinTech). Financial institutions, long-standing participants in the financial sector, have just recently started to embrace new technological advancements (Brandl & Hornuf, 2020). The bulk of FinTech startups are independent of banks and open to investment options, despite recent bank acquisitions of FinTech companies. Because many banks, except the well-known big banks, still offer antiquated, pricey, and unpleasant financial services, FinTech companies have the potential to assume various crucial roles that traditional banks currently perform (Brandl & Hornuf, 2020; Li et al., 2017). Or to put it another way, it is anticipated that FinTech companies would have a substitution effect, causing banks to cede some business activities. An empirical question is how FinTech companies will affect banks and how much of what banks currently govern will be taken over by FinTech companies.

Problem Statement

Fintech may present traditional commercial banks with both opportunities and challenges. When their overall competitiveness rises, it might enhance conventional business models, reduce operational expenses, boost service effectiveness, strengthen risk management capabilities, and directly create more client-friendly company models. We suggest analysing how fintech impacts bank efficiency, profitability, and risk.

Fintech innovations may have a range of effects on bank efficiency. It encourages financial innovation, which is crucial in determining how banks operate (from either an innovation-growth or an innovation-fragility perspective). Fintech is altering the way banks conduct business, and it is anticipated that using new technologies will

eventually result in cheaper bank costs. Technical innovation fueled by fintech changes how financial services are delivered, increases competition, and affects banking operations in unpredictable ways. Similar to this, technological developments drive the creation of novel and advanced financial products. The FSB claims that fintech is also low cost and high efficiency since it enhances resource allocation disintermediation in addition to increasing the availability of financial resources and improving the symmetry of transaction information (Financial Stability Board, 2017). Fintech uses information technology to increase the overall efficiency of the financial sector, expand the traditional financial limits, and change consumer spending patterns. Fintech, as opposed to the traditional business model of commercial banks, can provide more individualised financial services to individual consumers in a more simple and effective way, meeting their varied financial needs.

The advantages of time-space, differentiation, and high efficiency in fintech are undermining the banking sector's business model for paying and collecting interest. The industrial chain of conventional financial technology is being overturned by this kind of shock and chain reaction. Overall, thanks to big data, cloud computing, artificial intelligence (AI), and other cutting-edge technologies, fintech is forcing the banking sector to undergo significant developments. It is important to further explore whether and how fintech has affected banks.

By lowering revenue or increasing operating costs, fintech is predicted to reduce bank profit. The market share of banks has typically decreased due to advancements in Fintech organisations. Banks will launch new products that increase the cost of banking operations in order to compete with Fintech firms. Banks might try to use Fintech to automate their procedures in an effort to compete with Fintech businesses. Also, due of the expansion of the financial services ecosystem and the general rise in access to credit, existing banks may see an increase in demand for their services, giving them an advantage over



newcomers. These elements might support banks in increasing their profitability. Consequently, it is an empirical subject that requires further study to determine whether fintech has a good or negative link with bank profitability.

FinTech services are both an alternative to and an improvement of traditional banking, regardless of whether banks participate in the development of FinTech or face competition from other bank-like companies outside of FinTech. It can eventually assist in stabilising the entire financial industry (PwC, 2019). By utilising its own historical customer data and actively participating in business innovation through research and development into FinTech technologies, a commercial bank can increase operational efficiency and bank stability. According to the "Technology Spillover Theory," commercial banks will upgrade technology, innovate their businesses, and optimise their services as a result of the FinTech innovation effect, competition reversal effect, and talent turnover effect. This will increase productivity and profits and lessen the incentive to take risks.

Objectives

This review study's analyze that how fintech innovations impact the productivity, profitability, and risk-taking of financial institutions.

Overview

In a situation that is highly uncertain, banks carry out their duties while focusing heavily on managing and taking risks. Two different sorts of factors—internal or bank-level factors and external factors—affect bank risk-taking at the same time. The extensive bank defaults in Europe and the Financial Crisis of 2007-2009 have raised concerns about the weaknesses of banking research. Researchers have reexamined the factors that influence bank risk taking in order to fill in the research gaps and pinpoint the reasons for these frequent defaults. Research is currently being done on both bank-level and country-level factors as predictors of bank risk.

Data from 117 financial institutions in 15 different European countries were utilised by (Haq & Heaney, 2012) to identify the factors that influence bank risk at the bank level. They find that bank risk and charter value have conflicting relationships, and that bank capital and risk have a U-shaped connection. They also discover positive relationships between off-balance sheet activities and bank risk as well as negative relationships between dividend payout ratio and bank risk. In this regard, other research make use of elements like CEO and managerial salary as well as shareholder behaviour. By using several bank samples, (Laeven & Levine, 2009a; Shehzad et al., 2010) demonstrate that concentration of ownership in banking organisations promotes higher degree of bank risk taking. Share-based pay for CEOs is found to encourage higher levels of bank risk (Bai & Elyasiani, 2013; Deyoung et al., 2010).

Existing research on banking laws at the national level looks at how activity constraints, explicit deposit insurance, and minimum capital requirements affect banks' willingness to take risks. There is agreement that bank owners should have higher capital levels as a percentage of total assets in banks to maintain banking sector stability in the post-global financial crisis (2007-2009) situation. Several research have found empirical support for this theory that higher capital standards at the national level increase individual bank stability (Hoque et al., 2015; Laeven & Levine, 2009b). According to the majority of the material now in existence on explicit deposit protection, having such a programme in place enhances bank risk-taking. For instance, (Demirgüç & Kane, 2002) contend that explicit deposit insurance weakens depositor control over banks and exacerbates moral hazard issues inside those institutions. They discover empirical data showing that banks are at higher risk in nations with explicit deposit insurance programmes. Subsequent studies also broadly acknowledge the impact of deposit insurance in raising bank risk (Ashraf et al., 2020). Yet, research results on activity limitations are inconsistent (Barth et al.,



2004a; Klomp & Haan, 2012; Laeven & Levine, 2009c). For instance, activity limits and bank stability are found to be negatively correlated (Barth et al., 2004b). They contend that looser limits on banking activities that let banks diversify their income streams improve stability. However, (Laeven & Levine, 2009c) find that depending on the influence of the largest bank shareholder, the marginal effect of increased activity limitations on bank risk-taking changes from negative to positive. While higher activity limitations for the banking sector as a whole reduce individual bank liquidity and market risks, particularly for high risk banks, (Klomp & Haan, 2012) find the opposite to be true. Despite the data above, several recent studies claim that Basel-based bank restrictions, such as those, do not significantly affect banks' willingness to take risks (Demirgüç-Kunt & Detragiache, 2021).

The literature on law and finance at large acknowledges that legal institutions like common legal origin, improved creditor rights, and information sharing among creditors about debtors' creditworthiness encourage lenders to increase lending by enforcing their rights in the event that borrowers default. According to several studies, these institutions influence bank risk-taking on a micro level. For instance, banks in common law nations allocate a notably higher proportion of their assets to hazardous loans than banks in civil law nations, according to Cole and Turk's (2013) research. Houston et al. (2010) found in another study that banks in nations with superior creditor rights take on more risk, whereas banks in nations with explicit information sharing mechanisms take on less risk (Ashraf et al., 2016).

The importance of bank efficiency as a motivating factor in literature's economic well-being is emphasised in a number of scholarly research. For instance, improving bank efficiency might have a favourable effect on economic growth, financial stability, and resource allocation (Berger & Humphrey, 1997). As a result, during the past few decades, numerous studies assessing banking efficiency have emerged. The goal of some of

these studies is to evaluate banks' levels of efficiency by using parametric and non-parametric techniques (Lang & Welzel, 1996; Miller & Noulas, 1996).

The majority of thorough research on banking efficiency has been centred on the Western world. The notable studies included (Aly et al., 1990; Andries et al., 2010; Bauer et al., 1998; Berger & Mester, 2003; Casu & Girardone, 2002). They made a substantial contribution in dealing with the banking firm's efficiency studies. Their research, however, concentrated on American and European banking institutions. Yet, the number of studies on bank efficiency in LDCs is quite small. (Kumar & Gulati, 2008) looked at the scale, technical, and technical efficiencies of the 27 public sector banks in India simply for 2004 and discovered that the inefficiency was 11.5 percent. They concluded that the public sector banks ran at 88.5 percent TE level. Technically, only seven banks were effective. According to the paper's regression analysis, off-balance operations had a favourable impact on the effectiveness of Indian banks. Using data envelopment analysis (DEA), El-gamal and Inanoglu (2004) calculated the comparative cost efficiency of Turkish banks for the years 1990 to 2000. They discovered that the asset-based financing used by Islamic banks made them more effective. (Samad, 2004) contrasted the profitability, liquidity, and capital management of Bahrain's Islamic banks with those of the country's traditional commercial banks. There were no differences in profitability and liquidity performance between Islamic and conventional banks over the years 1991 to 2001, according to a comparison of 11 financial parameters. (Majid & Sufian, 2007) looked into the relative effectiveness of Malaysia's domestic and foreign banks between 2001 and 2005. They discovered that throughout this time, scale inefficiency among banks outweighed pure technical efficiency. Also, they discovered that domestic banks were less technically efficient than overseas banks. The various efficiencies and the factors influencing these efficiencies of the Malaysian banks were estimated by (Sufian, 2009). According to his



research, efficiency was shown to be favourably correlated with loan intensity and adversely correlated with bank costs and the state of the economy. Both Rammohan and Roy (2004) and Sarkar et al. (1998) looked at the effectiveness of the Indian banking industry. In India, public sector banks are more effective than private sector banks, according to Rammohan and Roy. Another study, by Kumbhakar and Sarkar (2003), employed a cost-efficiency approach to measure bank efficiency and came to the same conclusion that private sector banks in that nation were more efficient than public sector banks. Saha and Ravi Shankar (2000), Bhattacharyya et al. (1997), and Sanjeev (2001) were among the Indian researchers who employed the DEA approach to gauge bank efficiency (2006). In their analysis, Bhattacharyya et al. (1997) found that during the late 1980s and early 1990s, public sector banks in India had the best performance. Using a stochastic frontier analysis (SFA) procedure, Shanmugam and Das (2004) assessed the technical efficacy of Indian commercial banks and discovered that a set of state banks performed better than a comparable group of international banks during the study period. Using both DEA and SFA analytic procedures, Andries and Cocris (2010) examined the comparative efficiency of banks in a number of southern European nations between the years of 2000 and 2006. They discovered that the technical efficiency of the banks in Hungary, the Czech Republic, and Romania was all but nonexistent. Using data from 2000, Samad (2009) assessed the effectiveness of Bangladeshi banks and discovered that their average effectiveness was 69.6. However, only the TE for the year 2000 was the subject of this investigation. Using a variety of financial parameters to compare the performance of domestic and international banks in Bangladesh, Samad (2007) found no differences in the profitability of domestic and foreign banks during the years 2000-2001. Samad (2010) analysed the Grameen Bank of Bangladesh's technical efficiency; the bank was founded by Nobel Laureate Dr. Muhammad Yunus; and

discovered that the average efficiency varied between 91% and 98%. Samad (2013) used the time-varying Stochastic Frontier function to examine the effectiveness of Islamic banks in 16 different nations. The difference between mean efficiencies before and after the global financial crisis was calculated to be 39 and 38 percent, respectively, and was not statistically significant.

However, other studies go farther and analyse the causes of apparent efficiency disparities; these analyses usually make a distinction between external impacts and internal factors that could affect performance. The review of the literature has identified a wide range of environmental factors, such as capital ownership (Lin & Zhang, 2009), the country of origin of investors (Havrylchuk, 2006), banking regulations (Barth et al., 2013), size (Bonin et al., 2005), or ownership structure, that affect banking efficiency (Beck et al., 2013).

In general, academic literature views both internal and external causes as influences on bank profitability. The internal determinants are small, bank-specific factors that result from bank business operations and are influenced by management at the bank level. such as risk management, size, asset quality, cost effectiveness, liquidity ratio, and capital sufficiency. The external determinants, on the other hand, are products of the social, economic, and legal environments that have an impact on the operation and performance of the banking industry but are not directly related to bank management activities. Industry-specific variables include those that can be connected to the banking industry, such as Ownership and Concentration (Athanasoglou, Brissimis and Delis, 2005). macroeconomic elements, however, are not specific to the sector. This includes market interest rates, economic growth, and inflation. Several pieces of literature have looked at the factors that affect banks' profitability in various nations around the world. Haslem (1968), Short (1979), Berger, Hanweck and Humphrey (1987), and Bourke presented the initial set of studies (1989). There are two types of empirical studies on the factors that affect bank profitability:



those that concentrate on a single, particular country and those that use a panel of nations. The USA banking industry was used in Berger, Hanweck, and Hunphrey's (1987) investigation of the connection between size and profitability. They contend that growing a financial firm's size will only result in marginal cost savings. Hence, size increase won't considerably lower the cost of running a bank. Berger (1995) studied the relationship between the profit structure and the banking firm in the USA.

No matter who they are, new competitors in the market increase competition. FinTech companies employ new technology to carry out tasks that were previously only performed by banks, such as lending, payments, and investment (Brandl & Hornuf, 2020; Chishti & Barberis, 2016; Puschmann, 2017). A variety of services, including (but not limited to) contactless and instant payments, asset management services, investment and financial service advice, and information and data management/storage, have recently benefited from the development of useful applications by fintech firms (Villeroy de Galhau, 2016). In this document, (Jagtiani & Lemieux, 2018) suggest that non-bank lenders may obtain soft information about creditworthiness. Both individuals and small businesses, especially those with a bad credit background, might benefit from this service. On the other hand, banks are known to be reluctant to adopt new technologies and to use an obsolete information technology system (Brandl & Hornuf, 2020; Hannan & McDowell, 1984; Laven & Bruggink, 2016). The main finding is that FinTech companies will eventually be able to displace traditional banks by offering services that are more affordable and effective. As a result, we believe that the spread of FinTech will have a harmful influence on bank performance.

Despite the growth of digital innovation and its anticipated effects on the financial sector, little is known, with a few notable exceptions, concerning the effects of FinTech development and digital innovation on the financial system. For instance, (Cumming & Schwienbacher, 2018) use a global sample of

companies to look into the pattern of venture capital investment in the FinTech sector. Similar to this, (Haddad & Hornuf, 2019) examine the factors that influence the worldwide FinTech market. Moreover, (Brandl & Hornuf, 2020) chart the evolution of the financial sector following digitalization. In analysing the impact of fintech on bank stock prices, (Li et al., 2017) found a positive correlation between the expansion of fintech funds or transactions and bank stock returns. According to research by (Phan et al., 2020), the expansion of Indian FinTech companies had a negative impact on bank profitability, with the effect being more pronounced in state-owned banks. Because of the benefits that FinTech companies offer, (Acar & Itak, 2019) think that traditional financial banks and financial technology companies should collaborate more closely.

Despite the expansion of Fintech companies, banks are still interested in and working to incorporate FinTech (Acar & Itak, 2019). For instance, commercial banks are speeding up the usage of digital tools while boosting their investment in FinTech research (Ky et al., 2019). On the other side, they establish FinTech companies in which they own all or a portion.

They are concentrating on technology-driven business solutions while aiming to expand into new markets by exporting their financial innovations to other financial institutions. FinTech has, nonetheless, seen significant overall investment, particularly in its early stages. Also, the development and layout cycle for financial technology is drawn out, which will soon limit the rate of investment conversion. These elements might quickly increase operational costs for banks and reduce profits, endangering their stability. In order to acquire cutting-edge technology, banks may collaborate with technological companies (Bömer & Maxin, 2018; Meinert, 2017). Such collaborative agreements, however, typically take a long time to complete. The issues such as data access and data confidentiality further complicate the collaboration efforts and make the negotiating process lengthy and time



demanding. These factors are likely to create uncertainty in bank operations.

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