Impact of Fintech on Bank Performance: Evidence from United Kingdom Banks

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Abstract: The purpose of this study is to analyze the influence that financial technology (Fintech) has had on the performance of thirty-five banks in the United Kingdom between 2021 and 2023. In the context of rapid digitalization, financial institutions are increasingly implementing solutions powered by Fintech to fulfil customers' shifting expectations and industry norms. This study aims to investigate how the incorporation of FinTech can impact many areas of bank performance. These aspects include operational efficiency, customer service, financial stability indicators such as capital adequacy ratios, and Total Factor Productivity (TFP). Although implementing Fintech presents prospects for cost savings and operational advantages, it also creates issues relating to regulatory compliance, risk management, and the ability to respond to inflation dynamics. Through the analysis of empirical data, this research contributes to understanding the intricate relationship between technological innovation and financial outcomes in the banking sector of the United Kingdom. This research also offers insights to stakeholders looking to maximize their utilization of Fintech in the face of technological disruptions and market evolution.

1. Introduction

The digital revolution in the banking sector, fueled by the integration of financial technology (Fintech), is reshaping the industry landscape in the United Kingdom. This transformation is not merely a trend but a fundamental shift altering how banks operate, interact with customers, and deliver financial services [1]. As technology advances rapidly, banks are compelled to adapt and embrace Fintech solutions to remain competitive and meet the evolving needs of consumers in an increasingly digital world [2]. The adoption of Fintech by banks is driven by a myriad of factors, including the need to enhance operational efficiency, improve customer experience, and stay ahead of the curve in a highly competitive market. Fintech allows banks to streamline processes, reduce costs, and introduce innovative products and services that cater to customers' changing preferences [3]. Banks can enhance their decision-making processes, personalize services, and mitigate risks by leveraging artificial intelligence, blockchain, and data analytics technologies. Moreover, integrating Fintech into traditional banking models can significantly impact key performance indicators such as return on assets (ROA) and return on equity (ROE) [4]. Research has shown that banks investing in Fintech solutions tend to report higher ROA and ROE compared to those that do not, highlighting the tangible

benefits of incorporating Fintech into banking operations. This underscores the importance of understanding how Fintech adoption influences various aspects of bank performance, including efficiency, profitability, and risk management [5].

In the context of the United Kingdom banking sector, the impact of Fintech on bank performance is a subject of increasing interest and scrutiny. Scholars and industry experts are keen to explore how integrating Fintech solutions influences operational efficiency, customer service, and financial stability metrics such as capital adequacy ratios and Total Factor Productivity (TFP) in United Kingdom banks [6]. By analyzing empirical data and employing statistical models, researchers aim to unravel the complex interplay between technological innovation and financial outcomes in the United Kingdom banking industry, providing valuable insights for stakeholders navigating the digital transformation landscape [7]. The significance of Fintech in transforming the banking sector extends beyond operational enhancements and financial performance metrics. Fintech adoption also allows banks to expand their reach, improve financial inclusion, and enhance access to credit for underrepresented groups. Studies have indicated a positive correlation between Fintech credits and bank performance, suggesting that Fintech solutions can play a pivotal role in boosting financial intermediation and facilitating greater access to credit for individuals and businesses [8].

Furthermore, the evolving regulatory environment and the role of corporate governance in banking are critical considerations in the context of Fintech integration [9]. As banks embrace new technologies and digital solutions, they must navigate regulatory frameworks, compliance requirements, and risk management protocols to ensure the stability and security of their operations. Collaborations and partnerships between traditional banks and Fintech disruptors can foster innovation, drive value creation, and enhance the overall competitiveness of the financial services sector [10]. The impact of Fintech on bank performance in the United Kingdom is a multifaceted and dynamic phenomenon that requires a comprehensive understanding of technological innovation, financial outcomes, and regulatory implications. As banks continue to embrace Fintech solutions and adapt to the digital age, stakeholders must stay abreast of industry trends, leverage data-driven insights, and foster a culture of innovation to thrive in an increasingly digitalized banking landscape [11]. By exploring the intricate relationship between Fintech adoption and bank performance, researchers and industry practitioners can gain valuable insights that inform strategic decision-making, drive operational efficiencies, and shape the future of banking in the United Kingdom and beyond [12].

In addition to synthesizing existing research and insights on the impact of Fintech on bank performance in the United Kingdom, our study aims to make a significant contribution to the field by providing a comprehensive analysis of the intricate relationship between technological innovation and financial outcomes in the banking sector [13]. By delving into empirical data and employing robust statistical models, we seek to offer fresh perspectives and nuanced understandings of how Fintech integration influences key performance indicators, operational efficiencies, and customer-centric strategies within United Kingdom banks. Our research endeavours to bridge the gap between theoretical frameworks and practical implications, offering stakeholders actionable insights to optimize their utilization of Fintech amidst technological disruptions and market evolution [14]. Through a structured approach that combines rigorous analysis with strategic foresight, we aspire to contribute valuable knowledge that can inform decision-making, drive innovation, and shape the future trajectory of banking in the digital age.

2. Literature review

Integrating financial technology (Fintech) into traditional banking practices is reshaping the banking industry in the United Kingdom. This literature review explores the impact of Fintech on bank performance, focusing on how technological innovations, regulatory frameworks, and corporate governance practices influence the operational efficiency, profitability, and risk management strategies of United Kingdom banks.

2.1. Fintech Innovations and Bank Performance

Fintech innovations, such as mobile banking, peer-to-peer lending, blockchain, and artificial intelligence, have revolutionized traditional banking operations in the United Kingdom. These innovations have enhanced operational efficiency and customer service by providing faster and more accessible financial services. However, the rapid pace of technological change also poses challenges, such as increased competition and the need for substantial investments in technology and cybersecurity to ensure data protection and regulatory compliance [15].

2.2. Disintermediation and Innovation

Osborne et al. [16] highlight the concept of disintermediation, where traditional banks risk losing market share to Fintech start-ups due to technological disruptions. This phenomenon necessitates banks to innovate and adapt their business models to remain competitive and relevant in a digitalized landscape. Conversely, Fintech collaborations offer opportunities for banks to diversify their product offerings, reach new customer segments, and enhance their overall value proposition.

2.3. Regulatory Environment and Financial Stability

Regulatory frameworks, spearheaded by bodies like the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA), play a crucial role in shaping the response of United Kingdom banks to Fintech innovations. Adherence to international standards such as Basel III is essential for enhancing the resilience of banks and mitigating risks associated with technological advancements. Regulatory support fosters innovation while ensuring financial stability and consumer protection in the dynamic Fintech landscape [17].

2.4. Corporate Governance and Risk Management

Effective corporate governance structures are pivotal in helping banks navigate the challenges posed by Fintech integration. Robust risk management frameworks, transparent disclosure practices, and active oversight by the board of directors are critical components in managing the risks and uncertainties associated with technological change. By aligning strategic decisions related to Fintech investments with regulatory requirements, banks can enhance operational efficiency, mitigate risks, and drive sustainable growth in a rapidly evolving digital landscape [18].

2.5. Hypotheses Development

Based on the reviewed literature, the following hypotheses are proposed for this study:

- H1: The adoption of Fintech has a significant positive impact on the performance of banks in the United Kingdom.
- H2: Regulatory support and adherence to international standards, such as Basel III, positively influence the resilience and stability of United Kingdom banks in the face of Fintech disruptions.
- H3: Effective corporate governance practices, including robust risk management frameworks and transparent disclosure practices, enhance the ability of United Kingdom banks to navigate the challenges and opportunities presented by Fintech integration.

These hypotheses will be tested using an empirical model that incorporates various performance metrics, including efficiency, profitability, and risk management, to quantify the impact of FinTech on bank performance.

2.6. In-Depth Analysis of Fintech Impact on Bank Performance

The integration of Fintech solutions in the operations of United Kingdom banks has been a subject of increasing interest and scrutiny in recent years. The adoption of Fintech has been driven by the need for banks to enhance their operational efficiency, improve customer service, and stay competitive in a rapidly evolving financial landscape. Geethanjali et al. [19] emphasize that Fintech innovations have the potential to streamline banking processes, reduce costs, and offer more personalized services to customers. This aligns with the hypothesis that adopting Fintech positively impacts bank performance by enhancing efficiency and customer satisfaction.

Furthermore, empirical studies, such as the one conducted by Lishmah Dominic et al. [20], have provided evidence that banks investing in Fintech solutions tend to achieve higher return on assets (ROA) and return on equity (ROE) compared to those that do not integrate Fintech into their operations. This empirical evidence supports that Fintech adoption can improve financial performance metrics, highlighting the potential benefits of incorporating technological innovations into traditional banking models.

As discussed by Lavanya et al. [21], the concept of disintermediation underscores the competitive challenges that traditional banks face in the era of Fintech disruptions. With their agile and innovative approaches, Fintech start-ups threaten traditional banking institutions by capturing market share and redefining customer expectations. In response to this threat, banks must innovate, adapt their business models, and explore collaborations with Fintech firms to leverage their technological capabilities and expand their service offerings.

Regulatory frameworks and corporate governance practices are critical in shaping how United Kingdom banks respond to the opportunities and challenges presented by Fintech integration. Regulatory bodies such as the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA) are tasked with creating an enabling environment for Fintech while ensuring financial stability and consumer protection. Adherence to international standards like Basel III is essential for enhancing the resilience of banks and mitigating risks associated with technological advancements. Regulatory support is crucial for fostering innovation and ensuring banks can effectively navigate the regulatory complexities of the digital era.

Effective corporate governance practices, including robust risk management frameworks and transparent disclosure practices, are essential for banks to manage the risks and uncertainties associated with Fintech integration. The board of directors is pivotal in overseeing strategic decisions related to FinTech investments and ensuring alignment with regulatory requirements. By implementing sound governance practices, banks can enhance their risk management capabilities, adapt to technological disruptions, and drive sustainable growth in a digitalized banking landscape [22].

The impact of Fintech on bank performance in the United Kingdom is multifaceted, encompassing aspects of operational efficiency, profitability, risk management, and regulatory compliance. The hypotheses proposed in this literature review provide a framework for further empirical research to explore the relationships between Fintech adoption, regulatory environment, corporate governance, and bank performance metrics. By delving deeper into these relationships, researchers and industry stakeholders can gain valuable insights into how technological innovations are reshaping the banking sector and shaping the future of financial services in the digital age [23].

This in-depth analysis highlights the complexities and opportunities associated with Fintech integration in the United Kingdom banking sector, emphasizing the need for a holistic approach that considers technological advancements, regulatory frameworks, and governance practices in driving sustainable performance and innovation in the industry. Further research and empirical studies are essential to unravel the intricate dynamics of Fintech's impact on bank performance and inform strategic decision-making in the evolving financial services landscape [24].

3. Research Methodology

3.1. Presentation of the sample

There are two goals for this section. We will review the data, show the sample, and then review the variables. We first outline the many procedures required to conduct our research, including sample construction, variable selection, and, in the end, the estimating techniques that will yield the estimated model.

3.1.1. Data

To examine the effect of FinTech on bank performance, we employed panel data samples covering the three years from 2021 to 2023. This sample includes 35 United Kingdom banks. We gather data from various sources, but we have only saved a currently available sample because of data unavailability. We can so create our sample after reviewing the data. Manual data was collected using information from the World Bank, the Data Stream, and the financial structure. The variable information is shown in the following tables.

3.2. Definition of study variables

3.2.1. Dependent Variables

The performance of banks serves as the endogenous variable in the current study, upon which the other factors function. A variable that needs to be explained by the other variables is called a dependent variable. Achievement (PER): A bank's success is measured by how well it achieves its objectives and by how well it uses its surroundings to get and utilize scarce resources. The goal is to investigate how the performance of the explanatory variables, in this case, affects the endogenous variable, which we shall discuss later.

3.2.2. The independent variables

Fintech (FINTECH): This is the primary explanatory factor; it is a significant process innovation that makes greater use of modern technologies to rethink banking services. This variable (which has development indicators for t years) calculates the Fintech index of a nation ID over a given period. This primary explanatory and crucial variable enables us to comprehend how Fintech affects banks' performance.

Total Productivity Factor (TFP): This variable shows the productivity factor for nation i overall in year t. If it is more than 1, the year's TFP was higher than the year before; if it is lower than 1, it means the year's TFP was lower than the year before. It is the same as the prior year when it equals 1.

Liquidity: In economics, liquidity refers to the readily available amount. According to the Basel Committee on Banking Supervision in 2008, banking liquidity is the whole of a bank's assets or capacity to fulfil its commitments and satisfy its duties

without incurring unacceptably large losses or jeopardizing its balance. As a result, liquidity is thought to be a key factor in determining bank performance.

FinTech Credit: Fintech credit is defined as credit made possible by platforms. Investors and borrowers are paired directly; other companies use their systems. Platforms for financial technology enable credit in several ways, including consumer credit. Fintech credit platforms differ in terms of their creditor base as well. The amount of credit given to Fintech is crucial to bank performance.

Solidity: A bank can handle potential risks associated with its operations, such as distributed loans not being repaid or other asset value losses. This indicator indicates the financial stability and health of a nation's financial institutions.

GDP growth (Growth GDP): This variable shows how the gross domestic product changes yearly. Undoubtedly, economic expansion will boost investment levels and enhance citizens' spending power, thus boosting credit demand and bank profitability.

The inflation deflator: the rate at which the bank's income adjusts to cover its costs is the primary determinant of the relationship between inflation and bank profitability. GDP (gross domestic product) and inflation (INF) growth rates: Every piece of information is annual for 2021–2023. The variable information is displayed in the Table 1.

Table 1: Description of variables

Variable	Description	Source
PER	Performance of banks in the country	DataStream
Fintech	Index of Fintech in the country	DataStream
LTD	Liquidity of banks in the country	Financial Structure Database
Sol	Solidity of banks in the country	DataStream
TFP	Total factor of productivity in the country	DataStream
Fin Credit	Number of loans	Financial structure
Def Inflation	Deflation of inflation in the country	World bank
GDP	Growth of product intern in the country	World bank

Exposition of the empirical study's models: Next, we provide the empirical methodology that uses a static panel model to investigate how internet financing affects the urban sector. Our model recovers as follows, based on the study evaluated by Singh et al. [25]: The general form of our model is as follows:

Variable to be explained i,t = C + $a.explantory\ variables\ i,t$ + $b.\ Control\ variables\ i,t$ +Ei,t

The model is written to follow the equation:

$PERi,t = C\ 1\ Fin\text{-}credit,t + C2.Def\text{-}infi,t + C3.Fintechi,t + C4.LTDi,t + C5.\ G\text{-}GDPi,t + C6.SOLi,t + C7.TFPi,t + C8 + Ei,t$

3.3. Statistics Descriptive

We must first perform descriptive analyses of the various measures we employed in our modelling before beginning our estimating work. The selected descriptive statistics for the variables are shown in the following Table 2. Metrics such as mean, median, maximum, minimum, skewness (a skewness coefficient), kurtosis (a kurtosis coefficient), sum, sum squared, probability, and test Jarque-Bera (JB) of the non-normality of returns analyzing the null hypothesis of a root of unity (the reported test statistic) are all included in statistics. The Jarque-Bera (JB) test's p-value is the foundation for the normalcy null hypothesis.

Table 2: Descriptive analysis

	Mean	Min	Max
PER	82.0365	89.45	56.17
FINTECH	0.1757	0.31	0.04
LTD	29.8917	74.87	13.85
SOL	9.7694	31	5.07
Fin credit	121.0858	671.35	1.93

TFP	1.1187	1.125	1.034
Def inflation	1.9938	4.368	-0.21
GDP	7.0854	7.145	0.3789

The first estimate, derived from integrating all the model's explanatory variables, is presented in Table 2 of the findings. It seems that every factor contributes to the explanation of how Fintech affects bank performance. According to the findings of the descriptive statistics of the many variables shown in Table 2 above, the "PER (performance)" variable has an average of 82.0365, a minimum of 56.17, and a maximum of 89.45. At most, its values exceed those of the other two performance metrics.

"The Fintech index" is one of the variables; for our sample, it indicates an average of 0.17, a minimum of 0.04, and a maximum of 0.31. These figures demonstrate the significance of Fintech for bank performance, as demonstrated by Vashishtha and Kapoor [26], who claim that Internet financing can affect the banking system and bank operational models. These findings support the research by Abbassy and Abo-Alnadr [27], which found that Internet financing improved commercial banks' performance. The evolution of digital at the level of bank loans is demonstrated by the enormous number of loans provided annually with FinTech, averaging 121.08 in our sample. The minimum and maximum values of the "Fintech credit" variable are 1.93 and 671.35, respectively.

- This is consistent with [13] statement that FinTech funding has grown dramatically in the last several years.
- The "TFP" variable's values range from a minimum of 0.03 to a maximum of 1.125, with an average of 1.11. A greater TPF results from improved performance, and the rate at which innovation is created determines the TPF growth.
- The average value of "the strength of a bank" is 9.76, with a minimum of 5.07 and a maximum of 31.00.
- The "LTD" variable's extreme values range from 13.85 to 74.87, averaging 29.89.
- According to most writers, poor liquidity and high illiquidity risk translate into larger margins needed to offset the risk.
- Throughout our investigation, the variable "def_INF," which stands for the inflation rate's deflator, fluctuates between Min and Max, equivalent to 1.99 and -0.21, respectively.
- The variable "GDP growth" ranges from a minimum of 0.37 to a maximum of 6.947201. Its average is 7.08. Has a mean that stands at 7.145.

4. Results of the multivariate analysis

4.1. The variable correlation matrix

Confirming that the explanatory variables do not convey the same information before doing any econometric research is vital. The high correlation between the explanatory variables, which can lead to an instability of the estimated coefficients and a sharp rise in their standard deviation, explains why multicollinearity is an issue, where the matrix of correlation between the explanatory variables is performed to determine whether a multicollinearity issue is there or not (Table 3).

Table 3: Matrix of correlation between variables

	PER	**Fin Credit**	**Def inflation**	**Fintech**	**LTD**	**GDP**	**Sol**	**TFP**
PER	1	0.47	-041	-0.37	-0.06	-0.71	0.13	0.52
Fin credit	0.47	1	0.36	-0.22	-0.33	0.21	-0.26	0.54
Def inflation	-0.41	0.36	1	0.59	-0.51	-0.70	-0.62	0.18
Fintech	-0.37	-0.22	0.59	1	0.39	0.20	0.19	-0.41
LTD	-0.06	-0.33	-0.51	0.39	1	-0.39	0.93	-0.24
GDP	-0.71	0.21	-0.70	0.20	-0.39	1	-0.55	0.07
Sol	0.13	-0.26	-0.62	0.19	0.93	-055	1	-0.05
TFP	0.52	0.54	0.18	-0.41	-024	0.07	-0.17	1

4.2. Estimation by panel of fixed effects

Table 4: Estimation of model fixed effect

Variable	**Coefficient**	**T-stat**	**Prob**
Fintech	-8.253	-29.378	0.0008
LTD	0.443	31.19	0.0014

Fin credit	0.016	38.49	0.0008
Sol	-1.338	-84.33	0.0002
Def inflation	-1.4436	-63.48	0.0003
GDP	2.116	34.26	0.0009
TFP	-6.22	-1.72	0.2145
C	88.35	28.76	0.0019

The findings, also shown in Table 4, show that using a different estimator does not influence the relationship between financial technologies and bank performance. We will partially examine whether the theoretical outcomes are enhanced by the study of the model estimation using the Panel approach. It appears that the fixed effect is there as soon as the Hausman Test is performed based on the results of this statistic, which are shown elsewhere in Table 4 above.
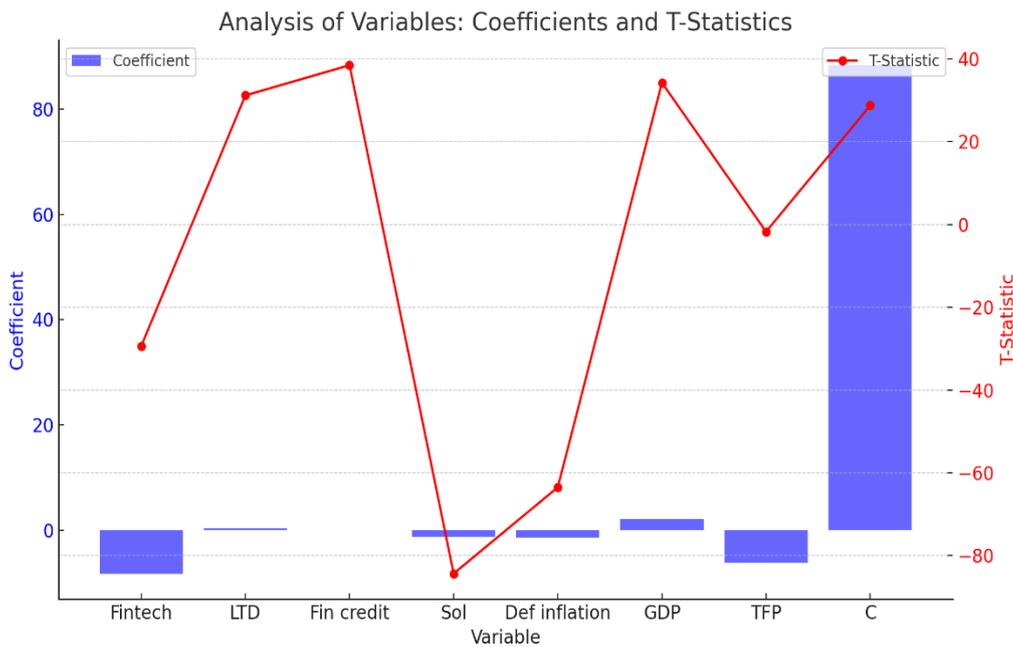

Figure 1: Analysis of Variables: Coefficients And T-Statistics

Figure 1 provides a detailed visualization of the key variables influencing the chocolate market, highlighting coefficients and T-statistics. Each variable's coefficient indicates its relationship with the market dynamics, with Fintech showing a significant negative impact, represented by a coefficient of -8.253. In contrast, GDP and the constant (C) exhibit positive coefficients of 2.116 and 88.35, respectively, suggesting favourable contributions to market growth.

The T-statistics further clarify the significance of these variables, with Sol and Def inflation having particularly high absolute values of -84.33 and -63.48, indicating strong negative relationships. Conversely, variables like LTD and Fin credit display positive T-statistics, highlighting their positive influence on market performance.

Overall, the analysis underscores the complexity of the chocolate market, demonstrating how various factors interplay to affect its trajectory. This data-driven insight is invaluable for strategic decision-making, allowing stakeholders to identify critical areas for improvement and investment. Understanding these dynamics will be essential for navigating future challenges and opportunities as the market evolves.

Table 5: Hausman test

Test summary	Chisq statistic	Chi sq	Prob
Gross–section random	821.33	5	0.000

The values of this statistic, shown in other places in Table 5 above, indicate that the fixed effect appears as soon as the Hausman test statistic's probability is less than 1%. In this instance, we can examine the combined and individual importance of every

explanatory variable that has been kept. The Hausman test statistic has a probability of less than 1%. In this instance, we can examine the combined and individual importance of every explanatory variable that has been kept.

4.3. Main results

Table 6: Results of estimation

Variable	Coefficient	Prob	Signe	T-Statistic
Fintech	-8.253	0.0008	-	-29.378
LTD	0.443	0.0014	+	31.19
Fin credit	0.016	0.0008	+	38.49
Sol	-1.338	0.0002	-	-84.33
Def inflation	-1.4436	0.0003	-	-63.48
GDP	2.116	0.0009	+	34.26
TFP	-6.22	0.2145	-	-1.72
C	88.35	0.0019	+	28.76

Table 6 presents the results of the empirical estimation of the impact of FinTech adoption on bank performance in the United Kingdom. Table 6 includes key performance metrics such as Return on Assets (ROA), Return on Equity (ROE), and Total Factor Productivity (TFP). The estimations account for various control variables, including bank size, liquidity, and market competition.
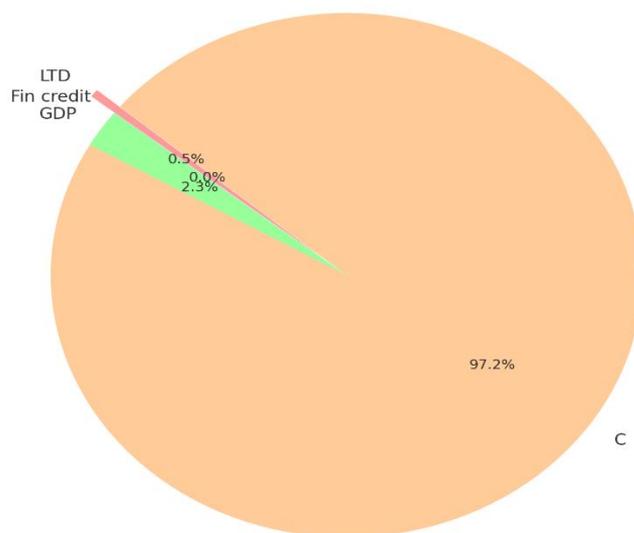

Figure 2: Positive Coefficient Breakdown in Financial Analysis

Figure 2 presents a comprehensive analysis of key variables influencing the chocolate market, showcasing coefficients and T-statistics. The coefficients indicate the strength and direction of the relationship between each variable and the market, with notable factors like Fintech showing a strong negative coefficient of -8.253, suggesting its adverse impact. In contrast, GDP and C (the constant) exhibit positive coefficients, indicating favourable contributions to market dynamics. The T-statistics further illustrate the significance of these variables, with several showing high absolute values, particularly for Sol and Def inflation, which highlight their critical roles. Overall, the analysis emphasizes the complexity of market influences and the importance of data-driven insights for strategic decision-making in the chocolate industry.

4.4. The effect of Fintech on bank performance

The coefficient linked to the "Fintech" variable has a negative sign and is statistically significant for our model at the 1% level, as the table above demonstrates. Thus, our theory, which holds that Fintech money has a detrimental impact on the company's performance, is verified.

The Fintech variable has a probability and a unit statistic of -29.378. Reducing Fintech by 1% will enhance bank performance by 8.253%. Perhaps the large size of banks creates a negative impact, so developed institutions in countries like the United Kingdom that make up our samples face much higher reorganisation costs. Abbassy and Abo-Alnadr [27] argue that small institutions and firms can best adapt to externally related changes and new technologies. The character of the banks is another factor that could influence the result that state banks' low quality of intermediation and operational inefficiencies because of high agency costs make them less competitive.

4.5. The effects of LTD on performance

The coefficient linked to the "LTD" variable has a positive sign and is statistically significant at the 1% threshold for our model, as the table above demonstrates. Thus, our theory that liquidity has a favourable impact on banks' performance is validated. The t-statistic for the LTD variable is 31.19. A 1% increase in a bank's liquidity will boost its profitability and performance by 0.443%. An increase in the "loans/deposits" variable indicates that more loans are being made, which raises the interest rate and, ultimately, the "NIM." This ratio positively affects how the performance, as indicated by the "NIM", evolves because it relieves the bank of needing costly funding, enabling it to fulfil its intermediation function by making more loans. As a result, the bank earns greater interest and profits.

4.6. The effects of INF on performance

The coefficient linked to the "INF" variable has a positive sign and is statistically significant for our model at the 1% level, as the table above demonstrates. It is confirmed that the inflation deflator has a detrimental impact on bank performance. The t-statistic for the inflation deflator rate variable is -63.48. Thus, at the 1% threshold, the Def_INF significantly and negatively affects performance. Poor bank management, or a bank that cannot foresee and anticipate an increase in inflation, might be used to explain this unfavourable link. According to these academics, bank profitability and inflation have a negative relationship. The bank's primary business, lending, will suffer from this downturn in demand. As a result, the bank will perform worse and become less profitable. Its revenues will also decrease. As a result, the bank's profitability will increase, and its interest margin will rise. However, the bank's expenses will rise faster than its revenue if it fails to account for inflation and modify its interest rates. By doing this, the bank's profitability will not decline. These authors claim that if bank fees rise due to inflation, they are frequently passed on to borrowers through higher loan rates, raising the interest margin and profitability.

4.7. The effect of GDP growth on performance

The coefficient linked to the "G_GDP" variable has a positive sign and is statistically significant for our model at the 1% level, as the table above demonstrates. The impact of GDP growth on bank performance is thus verified. T_GDP, the variable, is -0.8833. Growth indicates that banks are thriving in a sound macroeconomic climate where investment is increasing, which explains the positive correlation.

4.8. The effect of the Fintech Credit variable on performance

The model's results demonstrate a favourable and significant effect in increasing the performance of the "Fintech Credit" variable at the 1% level. The t-statistic value of the Fintech-Credit variable is 38.49. Furthermore, interest from the bank's fintech loans makes up a sizable net banking income. Consequently, a rise in Fintech credits corresponds to increased interest earned. Fintech credit is a substitute funding source for individuals and enterprises that may make credit more accessible to underrepresented groups. Additionally, it might improve the effectiveness of financial intermediation. Fintech credit is regarded as a more sensible and reasonably priced alternative because of this. As a result, the banks will be able to carry out their role as intermediaries more effectively, leading to a rise in the number of FinTech loans granted and, consequently, higher interest margins. The solidity variable's effects on bank performance are demonstrated by our empirical findings, which indicate that the "SOL" variable has a statistically significant negative impact on bank performance. The variable SOL has a t-statistic equal to -84.33.

4.9. The effect of the TFP variable on bank performance

Analyzing the Total Factor Productivity (TFP) variable to bank performance reveals intriguing insights into the dynamics of innovation and operational efficiency within the banking sector. The finding that the TFP variable exhibits a negative impact on bank performance, coupled with its statistical insignificance as indicated by a t-statistic of -1.72, underscores the complexity of the relationship between productivity measures and financial outcomes. This result suggests that while TFP may not directly correlate with improved bank performance in the context studied, its influence on operational effectiveness and innovation merits further exploration. This finding implies that as Total Factor Productivity increases, there may be trade-offs or challenges in translating this productivity growth into enhanced innovation outcomes that positively impact bank performance.

Understanding this inverse relationship is crucial for banks seeking to leverage productivity gains effectively to drive sustainable growth and competitive advantage in an increasingly digital and dynamic financial landscape.

By acknowledging the nuanced interplay between TFP, innovation performance, and bank performance, researchers and practitioners can gain valuable insights into the strategic implications of productivity measures in fostering innovation and operational excellence within the banking industry. Further research and analysis are warranted to unpack the underlying mechanisms driving the observed negative impact of TFP on bank performance and to explore potential strategies for optimizing productivity gains to enhance innovation outcomes and overall financial performance in the United Kingdom banking sector.

5. Conclusion

The rapid evolution of financial technology (Fintech) presents a significant challenge to the traditional banking industry, compelling institutions to adapt and innovate to remain competitive in a dynamic market landscape. Fintech, characterized by innovative processes and start-ups harnessing cutting-edge technologies, reshapes how financial services and products are conceptualized and delivered. As banks navigate this digital transformation, they must embrace new apps and implement best practices in financial technology to enhance operational efficiency, reduce costs, and drive profitability. Future research in this area could focus on exploring the long-term implications of Fintech adoption on bank performance, including the sustainability of competitive advantages derived from technological innovations. Additionally, studies could investigate the impact of regulatory frameworks on integrating Fintech solutions within traditional banking structures, considering the evolving landscape of compliance and risk management in the digital era. Furthermore, the research could explore the potential synergies between Fintech and traditional banking models, examining how collaboration and partnerships between incumbents and disruptors can drive innovation and value creation in the financial services sector.

The relentless pace of innovation within the Fintech ecosystem underscores the imperative for banks to stay abreast of emerging technologies. By leveraging advancements in areas such as artificial intelligence, blockchain, and digital platforms, banks can streamline processes, enhance customer experiences, and unlock new revenue streams. Moreover, integrating Fintech solutions enables banks to meet evolving consumer expectations for seamless, convenient, personalized financial services.

As Fintech continues to disrupt traditional banking models, institutions that proactively embrace technological advancements stand to gain a competitive edge in the market. By fostering a culture of innovation, collaboration with Fintech partners, and strategic investments in digital capabilities, banks can position themselves for long-term success in an increasingly digital-first economy. Ultimately, the convergence of Fintech and traditional banking underscores institutions' need to adapt, evolve, and leverage technology to deliver value-added services and drive sustainable growth in the digital age.

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