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Does the growth of Fintech Start-ups influence the Bank's Financial Performance in ASEAN-5 countries?

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Abstract

The ASEAN (Association of South-East Asian Nations), established in 1967, comprises ten member countries, including Indonesia, Malaysia, the Philippines, Singapore, and Thailand (ASEAN-5), which represent 66% of the region's population. The banking sector, a crucial element in economic growth, has been significantly influenced by the rise of Fintech start-ups, which offer new technologies and business models such as digital payments and peer-to-peer lending. This study examines the impact of Fintech on the financial performance of banks in the ASEAN-5 countries from 2019 to 2022, considering factors such as government regulations, technological advancements, and the COVID-19 pandemic. The research explores how Fintech growth has affected key financial performance indicators, including Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). It highlights the fluctuations in ROE across ASEAN-5 countries and discusses the mixed impacts of Fintech on bank performance, with some studies indicating negative effects due to disruptive innovation and others showing positive impacts through financial inclusion and automation. The study also investigates internal factors like company size and capital ratio, which influence bank performance. Company size, measured by total assets, and the capital ratio, reflecting equity to assets, are analyzed to understand their effects on financial performance. Additionally, external factors such as GDP and inflation are considered as control variables to isolate their impact on bank performance. By evaluating these variables, the research aims to provide insights into how banks in ASEAN-5 can adapt to the evolving financial landscape shaped by Fintech innovations and external economic conditions.

1 Introduction

ASEAN (Association of South-East Asian Nations) is an association of nations in Southeast Asia which currently includes 10 (ten) countries which was formed on August 8, 1967 in Bangkok, Thailand by the five founding countries called ASEAN-5, namely Indonesia, Malaysia, the Philippines, Singapore, and Thailand, which was marked by the signing of the Bangkok Declaration. As much as 66% of the total ASEAN population in 2022 is in the ASEAN-5 countries. In addition, the ASEAN-5 countries also have relatively uniform economic

development (Wiranata Kusuma et al. 2013).

Banking is one of the financial sectors that is very important in the economic growth of a country. According to Law No. 10 of 1998 concerning Amendments to Law Number 7 of 1992 concerning Banking (1998) banking is defined as everything related to banks, including organizational structures, business activities, and methods and processes used in carrying out their activities. In general, banks function as financial intermediaries that collect funds from the public and provide them again for needs or as facilitators in financial activities. Banks not only facilitate various domestic financial transactions, but also enable transactions between countries more easily, quickly, and more widely thanks to globalization in the economic sector.

The growth of fintech start-ups has brought significant changes to the financial industry (Yudaruddin, 2023). The increase in technology in the financial sector has a significant impact on the conventional financial sector, especially banks, because the existence of Fintech Start-up services uses new, more efficient technology and business models, such as digital payments, peer-to-peer lending, and automatic investment (Phan et al., 2020).

Fintech Start-up growth in ASEAN-5 fluctuated from 2019 to 2022, influenced by government regulations, market demand, technological advancements, and the COVID-19 pandemic. The government plays an important role, such as in Malaysia which encourages the growth of Sharia-based Fintech (Ilyas et al., 2020), while countries with advanced technological infrastructure such as Singapore experienced high Fintech adoption (Huong et al., 2021). The pandemic accelerated digital transformation but also created economic uncertainty that impacted consumer spending and Fintech investment (Hersugondo et al., 2022). Fintech introduced new, more efficient business models, forcing banks to adapt and collaborate to remain competitive (Phan et al., 2020). Digital transactions continued to increase even after the pandemic subsided, demonstrating the importance of technological innovation for banks in the future (Alnsour, 2023).

The average Return on Equity (ROE) of banks in ASEAN-5 has fluctuated from 2019 to 2022, except in the Philippines. This fluctuation is closely related to the growth of Fintech Start-ups and several factors such as competition, regulation, and the impact of the COVID-19 pandemic. Banks in countries with strict regulations face innovation and cost challenges, which have an impact on declining profitability (Ab-Rahim et al., 2020), while countries with more supportive regulations, such as the Philippines, show stable ROE (Kando et al., 2022). Although there are studies that show the negative impact of Fintech on banks due to consumer preferences and disruptive innovation (Litimi et al., 2023; Phan et al., 2020), several other studies mention the positive impact of Fintech on bank financial performance through financial inclusion and automation (Kaddumi et al., 2023; Baker et al., 2023).

In addition to Fintech, bank financial performance is influenced by internal and external factors. Internal factors include company size and capital ratio. Company size, as measured by total assets, has a significant effect on bank performance, although several studies show mixed results; some mention a positive effect (Phan et al., 2020; Litimi et al., 2023; Theacini & Wisadha, 2014), while others find a negative effect (Wardani & Rudolfus, 2016). The capital ratio, as an indicator of equity to assets, also has a positive effect because it reflects the bank's ability to face losses and maintain stability (Phan et al., 2020). External factors such as Gross Domestic Product (GDP) and inflation also have an impact on bank performance. GDP that grows too fast can put pressure, while high inflation can reduce performance due to economic instability and increased credit risk (Demirgüç-Kunt & Huizinga, 1998; Litimi et al., 2023; Rafiuddin, 2019). These variables are used as controls to maintain independent influences in the study.

In carrying out its operational activities, the level of success of a company, especially a bank, is always measured based on its performance. This success is measured based on the financial reports that must be presented by each bank. From these financial reports, it can be seen how the bank's performance results were during a certain period. According to Tanor et al. (2015) financial performance is an evaluation to assess the extent to which a company operates in accordance with good and correct financial rules or principles. The financial performance of a bank is reflected in its financial reports in the balance sheet, income statement and cash flow reports as well as other matters in the financial reports that strengthen the assessment of the bank's performance.

One of the measuring tools used to measure bank financial performance is ratio analysis. Ratio analysis is a technique for analyzing quantitative data from financial reports by comparing various accounting data, so as to identify the company's strengths and weaknesses (Wijaya, 2017) . There are 4 financial ratios, namely, profitability, liquidity, solvency and activity ratios.

Based on Bank Indonesia Regulation no. 6/10/PBI/2004 Concerning the Commercial Bank Soundness Rating System (2004), there are several assessments of profitability factors or what is commonly referred to as

banking profitability that can be carried out through an approach that includes evaluation of elements such as achieving Return on Assets *(ROA),* Return on Equity *(ROE),* and Net Interest Margin *(NIM)* which are used to measure financial performance in this research.

Return on Assets *(ROA)* is a profitability ratio used to show the results of the total assets used by the company (Kasmir 2008). According to Hanafi (2009) *ROA* is a measurement of a company's ability to generate profits using the total assets owned by the company after adjustments have been made to the costs incurred for these assets. The higher the rate of return obtained, the higher the company's ability to utilize its assets to gain profits (Kristanti et al., 2023). The following is the formula for measuring *ROA*:

$$\text{ROA} = \frac{\text{Net Income After Tax}}{\text{Total Assets}} \text{ x } 100\%$$

Return on Equity or *ROE* is an additional financial ratio used to assess the income or profit obtained by a company in relation to the total equity or capital of the company's shareholders. According to Alghadi (2024), companies that have a high return on equity have a greater possibility of making a profit. The company that has higher profits, the higher its return on equity will be. The following is the formula used to calculate ROE:

$$\text{ROE} = \frac{\text{Net Income After Tax}}{\text{Total Equity}} \text{ x } 100\%$$

Net Interest Margin *(NIM)* is also an important indicator that can be used to measure how efficient a bank's financial performance is. In general, *NIM* reflects the ability of bank management to optimize the use of its productive assets to obtain net interest income (Pandia, 2012). The *NIM* is considered to be getting better when the value is higher, this shows an increase in net interest income relative to the productive assets used by the bank, so the possibility of the bank experiencing problems will be lower. In accordance with Bank Indonesia Regulation No.13/1/PBI/2011 concerning Assessment of the Soundness Level of Commercial Banks (2011), the NIM ratio can be formulated as follows:

$$\text{NIM} = \frac{\text{Interest Income - Interest Expense}}{\text{Average Earning Assets}} \text{x} 100\%$$

Academic literature regarding or what is often called Financial Technology (Fintech) has developed rapidly along with technological developments in the world. According to Schueffel (2016) in Baker et al. (2023) , the term Fintech refers to the integration between finance and technology. The banking and FinTech industries are highly dependent on automation processes and artificial intelligence (Santoso et al., 2020) The term originates from the Financial Services Technology Consortium founded by Citigroup in the early 1990s. According to Suryanto et al. (2022), in Indonesia the Fintech industry has a very important role in the financial services ecosystem, especially banks. The financial industry is now able to transform the current banking market by providing easy, effective and efficient services for transactions. Fintech formula used in this research is as follows:

$$\text{Fintech} = \text{Number Fintech Start-ups this year - Number Fintech Start-ups last year}$$

According to Dewi & Sudiartha (2017) company size is an indicator of the success of a company which is reflected in the total amount of assets it owns. According to research conducted by Aras et al. (2010) say that company size as a control variable has a positive influence on bank financial performance. When compared to small companies, large companies often use external funding sources, especially through debt, to support their business expansion efforts. This is because large companies have easier access to capital markets which gives them greater flexibility than small companies. Therefore, the larger the company size, the greater their need for additional capital, resulting in a high level of corporate debt to expand the company's business potential. The following is the formula used to calculate company size:

$$\text{Company Size} = \text{Ln x Total Assets}$$

According to Phan et al. (2020) , the capital ratio is a ratio used to show how much a bank's financial strength is measured using equity divided by total assets. Thus, the capital ratio shows the bank's ability to bear

losses and ensure its stability in the long term. Banks with high capital ratios tend to be more profitable because they require less external funding (Berger, 1995). This means banks can reduce funding costs and increase their profitability through the use of internal resources.

A high capital ratio can protect a bank from potential loan defaults, but it can also negatively affect profitability because a bank with a high equity to asset ratio will reduce the bank's profitability (Hendrawan and Salim, 2017). The following is the formula used to calculate the capital ratio:

$$\text{Capital Ratio} = \frac{\text{Equity}}{\text{Total Assets}} \text{x}100\%$$

Gross Domestic Product *(GDP)* is the market value of all final goods and services produced in a country in a certain time period (Mankiw 2010) . Meanwhile, according to Blanchard (2017), *GDP* is an aggregate measure of the total production of goods and services in a country that reflects economic activity and the health of the economy as a whole. Based on this understanding, it can be concluded that *GDP* is the total value of all final goods and services produced within the territorial boundaries of a country during a certain period. *GDP* is used as the main indicator to assess a country's economic performance, reflecting economic activity and the overall health of the economy. In this study, researchers did not carry out *GDP* calculations independently.

According to Frederic S. Mishkin (2006) Inflation is an increase in the prices of goods and services in a country's economy over a certain period of time which can reduce the purchasing power of money and affect consumer spending decisions and company investment. According to Mankiw (2010) , inflation is a general increase in the prices of goods and services in an economy over a certain period of time. Therefore, inflation reflects a decrease in the purchasing power of money and can be caused by various factors, including an increase in the money supply and changes in the demand for and supply of goods and services. In this study, researchers did not carry out inflation calculations independently.

Return on Assets *(ROA)* is a measure of a bank's financial effectiveness in generating profits from its assets. The growth of fintech start-ups is expected to have a significant impact on bank *ROA*. Based on research conducted by Phan et al. (2020) the growth of fintech start-ups has a significantly negative effect on *ROA*. This is because the adoption of financial technology by banks can increase operational efficiency and reduce transaction costs, thereby increasing ROA. However, if competition gets tougher with fintech start-ups, it could put pressure on bank profits and reduce *ROA*.

***H_1**: The growth of Fintech Start-ups influences bank financial performance as proxied using ROA*

Return on Equity *(ROE)* is a measure that assesses how effectively a bank uses capital from shareholders to generate profits. Fintech can influence *ROE* in various ways. One of them is that financial technology can help banks expand access to new markets and improve services to customers, which has the potential to increase revenue and profits. However, there is huge investment in new technology as well as stiff competition from fintech start-ups can also increase costs and risks, which will have a negative impact on the bank's *ROE*. This is supported by research conducted by Litimi et al. (2023) who say that the growth of fintech start-ups has a significant negative effect on bank *ROE*.

***H_2**: The growth of Fintech Start-ups influences bank financial performance as proxied using ROE*

Net Interest Margin *(NIM)* measures the difference between the interest income earned by a bank from loans provided and the interest costs paid on funds borrowed against its productive assets. Based on previous research, financial technology that improves the lending process and risk management can help banks increase interest income. Competition with fintech start-ups that offer financial services at lower interest rates will put pressure on bank profit margins so that *NIM* will decrease, which will have a negative impact on bank financial performance. This is supported by previous research conducted by Phan et al. (2020) and Litimi et al. (2023) who say that the growth of fintech start-ups has a significant negative effect on bank *NIM*.

***H_3**: The growth of Fintech Start-ups influences bank financial performance as proxied using NIM*

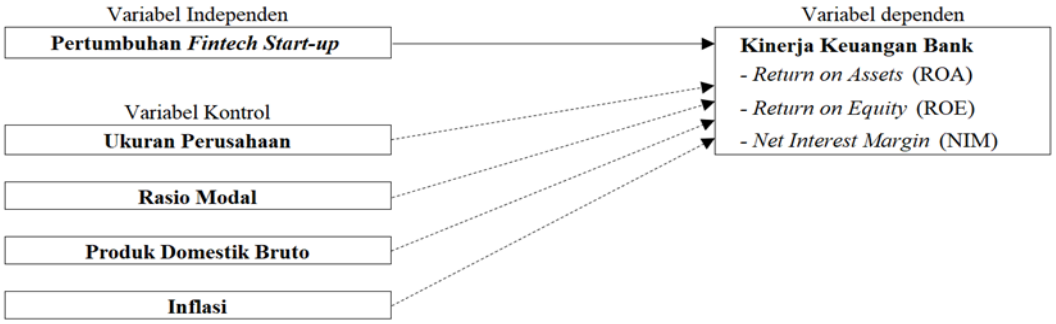
2 Materials and Methods

This research is quantitative research with descriptive statistical data analysis using panel data regression. Panel data regression analysis aims to measure how strong the relationship is between two or more variables and the relationship between the dependent variable and the independent variable (Sugiyono, 2022).

In this research, the population is banking on the stock exchanges of each ASEAN-5 country. In Indonesia

there are 46 banks, in Thailand there are 12 banks, in Singapore there are 7 banks, in the Philippines there are 15 banks, and in Malaysia there are 26 banks listed on the stock exchanges of each country. This research uses a purposive sampling technique to determine the sample with certain considerations. The sample selection criteria in this research are banks that are registered on the stock exchanges of each ASEAN-5 country and have complete data from 2019-2022.

The independent variable in this research is fintech start-up as X, and uses three ratios to describe the bank's financial performance, ROA as Y1 which shows the bank's ability to manage its assets to generate profits, ROE as Y2 which shows the bank's ability to generate profits by utilizing its share capital, and also NIM as Y3 which shows the bank's ability to optimize the use of its productive assets to obtain net interest income. Furthermore, this research also uses control variables to control the influence of the independent variable on the dependent so that it is not influenced by external factors that were not studied. The control variables in this research are company size as Z1, capital ratio as Z2, Gross Domestic Product (GDP) as Z3, inflation as Z4.



Based on the previous explanation, the panel data regression analysis model in this study for each dependent variable uses three separate regression equations as follows:

$$ROA1_{i,t} = \alpha_1 + \beta_1 FINT_t + \gamma_1 SIZE_{i,t} + \gamma_2 CAP_{i,t} + \gamma_3 PDB_t + \gamma_4 INF_t + \epsilon_{1,i,t} (1)$$

$$ROE1_{i,t} = \alpha_1 + \beta_1 FINT_t + \gamma_1 SIZE_{i,t} + \gamma_2 CAP_{i,t} + \gamma_3 PDB_t + \gamma_4 INF_t + \epsilon_{1,i,t} (2)$$

$$NIM1_{i,t} = \alpha_1 + \beta_1 FINT_t + \gamma_1 SIZE_{i,t} + \gamma_2 CAP_{i,t} + \gamma_3 PDB_t + \gamma_4 INF_t + \epsilon_{1,i,t} (3)$$

Information:

ROA : Return on Assets
ROE : Return on Equity
NIM : Net Interest Margin
FINT : The Growth of Fintech Start-ups
SIZE : Company size
CAP : Capital Ratio
GDP : Gross Domestic Product
INF : Inflation.
α : Constant
β : Regression coefficient for the independent variable.
γ : Regression coefficient for control variables.
ε : Error term (residual error).

3 Results and Discussion

Table 1. Panel data regression test results

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 08/11/24 Time: 06:50
Sample: 2019 2022
Periods included: 4
Cross-sections included: 54
Total panel (balanced) observations: 216
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.811570	1.275392	-0.636330	0.5253
FINT	-0.002243	0.001133	-1.979269	0.0491
SIZE	0.078845	0.052838	1.492204	0.1371
CAP	0.521871	1.684732	0.309765	0.7570
PDB	4.855309	1.497246	3.242826	0.0014
INF	-5.513973	3.705732	-1.487958	0.1383

Effects Specification	S.D.	Rho
Cross-section random	0.888160	0.7215
Idiosyncratic random	0.551785	0.2785

Weighted Statistics			
R-squared	0.064326	Mean dependent var	0.289303
Adjusted R-squared	0.042048	S.D. dependent var	0.565067
S.E. of regression	0.553059	Sum squared resid	64.23360
F-statistic	2.887431	Durbin-Watson stat	1.636717
Prob(F-statistic)	0.015224		

Unweighted Statistics			
R-squared	0.049096	Mean dependent var	0.975231
Sum squared resid	229.3834	Durbin-Watson stat	0.458325

Based on the results of the simultaneous test, a probability value (f-statistic) of 0.01 <0.05 was obtained so that the Growth of Fintech Start-ups with control variables such as Company Size, Capital Ratio, GDP, and Inflation simultaneously influenced the financial performance of banks proxied using ROA in ASEAN-5.

Based on the results of the partial YROA test, the following conclusions can be drawn:

1. The FINT probability value is 0.0491. This value indicates that 0.0491 <0.05 with a coefficient value of -0.002243. So it can be concluded that the growth of fintech start-ups partially has an influence on the financial performance of banks as proxied by ROA.
2. The SIZE probability value is 0.1371. This value indicates that 0.1371> 0.05 with a coefficient value of 0.078845. So it can be concluded that company size partially has no influence on the financial performance of banks as proxied by ROA.
3. The CAP probability value is 0.7570. This value indicates that 0.7570> 0.05 with a coefficient value of 0.521871. So it can be concluded that the capital ratio partially has no influence on the financial performance of banks as proxied by ROA.
4. The probability value of GDP is 0.0014. This value shows that 0.0014 < 0.05 with a coefficient value of 4.855309. So it can be concluded that GDP partially has an influence on the financial performance of banks as proxied by ROA.
5. The probability value of INF is 0.1383. This value shows that 0.1383 > 0.05 with a coefficient value of -5.5513973. So it can be concluded that inflation partially has no influence on the financial performance of banks as proxied by ROA.

Dependent Variable: ROE
Method: Panel EGLS (Cross-section random effects)
Date: 08/28/24 Time: 16:18
Sample: 2019 2022
Periods included: 4
Cross-sections included: 54
Total panel (balanced) observations: 216
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.563931	11.00080	-0.869385	0.3856
FINT	-0.011816	0.011514	-1.026209	0.3060
SIZE	0.801299	0.452520	1.770750	0.0781
CAP	-9.797643	16.56520	-0.591459	0.5548
PDB	39.11954	15.52856	2.519200	0.0125
INF	-41.98564	38.39554	-1.093503	0.2754

Effects Specification

	S.D.	Rho
Cross-section random	7.288732	0.6093
Idiosyncratic random	5.836035	0.3907

Weighted Statistics

R-squared	0.047312	Mean dependent var	2.723362
Adjusted R-squared	0.024629	S.D. dependent var	5.888328
S.E. of regression	5.815363	Sum squared resid	7101.875
F-statistic	2.085802	Durbin-Watson stat	1.593396
Prob(F-statistic)	0.068440		

Unweighted Statistics

R-squared	0.057392	Mean dependent var	7.327407
Sum squared resid	17775.70	Durbin-Watson stat	0.636605

Based on the results of the simultaneous test, a probability value (f-statistic) of 0.06> 0.05 was obtained, so that the growth of Fintech Start-ups with control variables such as Company Size, Capital Ratio, GDP, and Inflation simultaneously did not affect the financial performance of banks proxied using ROE in ASEAN-5.

Based on the results of the partial YROE test, the following conclusions can be drawn:

1. The FINT probability value is 0.3060. This value indicates that 0.3060> 0.05 with a coefficient value of -0.011816. So it can be concluded that the growth of fintech start-ups partially has no effect on the bank's financial performance as proxied by ROE.
2. The SIZE probability value is 0.0781. This value indicates that 0.0781> 0.05 with a coefficient value of 0.801299. So it can be concluded that the size of the company partially has no effect on the bank's financial performance as proxied by ROE.
3. The CAP probability value is 0.5548. This value indicates that 0.5548> 0.05 with a coefficient value of -9.797643. So it can be concluded that the capital ratio partially has no effect on the bank's financial performance as proxied by ROE.
4. The probability value of GDP is 0.0125. This value shows that 0.0125 < 0.05 with a coefficient value of 39.11954. So it can be concluded that GDP partially has an influence on the financial performance of banks as proxied by ROE.
5. The probability value of INF is 0.2754. This value shows that 0.2754 > 0.05 with a coefficient value of -41.98564. So it can be concluded that inflation partially has no influence on the financial performance of banks as proxied by ROE.

Dependent Variable: NIM
Method: Panel Least Squares
Date: 08/29/24 Time: 00:50
Sample: 2019 2022
Periods included: 4
Cross-sections included: 54
Total panel (balanced) observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.416082	2.408155	-0.172780	0.8630
FINT	-4.29E-05	0.000331	-0.129808	0.8969
SIZE	0.029824	0.102768	0.290212	0.7720
CAP	1.541878	0.549522	2.805855	0.0057
PDB	-0.370576	0.418830	-0.884788	0.3776
INF	0.761761	1.044730	0.729146	0.4670

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.739668	Mean dependent var	0.480351
Adjusted R-squared	0.643494	S.D. dependent var	0.247286
S.E. of regression	0.147650	Akaike info criterion	-0.760687
Sum squared resid	3.422661	Schwarz criterion	0.161264
Log likelihood	141.1542	Hannan-Quinn criter.	-0.388216
F-statistic	7.690955	Durbin-Watson stat	2.067583
Prob(F-statistic)	0.000000		

Based on the results of the simultaneous test, a probability value (f-statistic) of 0.00 <0.05 was obtained so that the Growth of Fintech Start-ups with control variables such as Company Size, Capital Ratio, GDP, and Inflation simultaneously influenced the financial performance of banks proxied using NIM in ASEAN-5.

Based on the results of the partial YNIM test, the following conclusions can be drawn:

1. The FINT probability value is 0.8969. This value indicates that 0.8969 > 0.05 with a coefficient value of -4.29e-05. So it can be concluded that the growth of fintech start-ups partially has no effect on the bank's financial performance as proxied by NIM.
2. The SIZE probability value is 0.7720. This value indicates that 0.7720 > 0.05 with a coefficient value of 0.0298. So it can be concluded that the size of the company partially has no effect on the bank's financial performance as proxied by NIM.
3. The CAP probability value is 0.0057. This value indicates that 0.0057 < 0.05 with a coefficient value of 1.5418. So it can be concluded that the capital ratio partially has an effect on the bank's financial performance as proxied by NIM.
4. The probability value of GDP is 0.4670. This value shows that 0.4670 > 0.05 with a coefficient value of 0.7617. So it can be concluded that GDP partially has no effect on bank financial performance as proxied by NIM.
5. The probability value of INF is 0.3120. This value shows that 0.3120 > 0.05 with a coefficient value of 3.743863. So it can be concluded that inflation partially has no effect on bank financial performance as proxied by NIM.

Discussion

***H_1**: The growth of Fintech Start-ups influences bank financial performance as proxied using ROA*

YROA = -0.8116 - 0.0022FINT + 0.0788SIZE + 0.5219CAP + 4.8553PDB - 5.5140INF + Ɛ

The results of the YROA simultaneous test state that the Prob value (F-statistic) is 0.0015224. This value is smaller than 0.05 which means that H1 is accepted. This means that the independent variables in this study, namely the growth of fintech start-ups, have a simultaneous or joint effect on company size, capital ratio, GDP, and inflation as control variables on the financial performance of banks proxied by ROA in this study. The Adjusted R-squared value of 0.042048 or 4.2% means that the variables of fintech start-up growth, company size, capital ratio, GDP, and inflation affect the financial performance of banks proxied by ROA by 4.2% and the

other 95.8% is influenced by other variables outside this study.

The results of the FINT partial test state that the growth of fintech start-ups has a coefficient value of -0.002243. It can be concluded that the growth of fintech start-ups partially has an influence on ROA which shows the bank's ability to manage its assets to generate profits. The growth of fintech start-ups has a probability value of 0.0491. This value is less than 0.05, which means that H1 is accepted and H0 is rejected, so that the growth of fintech start-ups has a significant negative effect on the financial performance of banks proxied using ROA in ASEAN-5 in 2019-2022.

According to Schueffel (2016) in Baker et al. (2023), the term Fintech refers to the integration between finance and technology. While Return on Assets (ROA) is a measure of the effectiveness of bank finances in generating profits from assets owned. Based on the results of this study, the growth of fintech start-ups has a significant negative impact on bank ROA. This is in line with research conducted by Litimi et al. (2023) Phan et al. (2020) who stated that the growth of fintech start-ups has a significant negative impact on banks' ability to earn profits by utilizing their assets because the adoption of financial technology by banks can increase operational efficiency and reduce transaction costs, thereby increasing ROA. However, if competition becomes tighter with fintech start-ups, it can reduce bank profits and reduce ROA.

Furthermore, the control variables for company size, capital ratio, and inflation partially do not have a significant effect on ROA. Meanwhile, the GDP control variable partially has a significant positive effect on financial performance as proxied by ROA. This is in line with research by Tan Lian Soei, et al. (2017) and Litimi, et al. (2023) which states that GDP has a positive effect on financial performance. GDP growth that is too fast can put additional pressure on the bank's financial performance. An increase in GDP reflects positive economic growth, which is usually associated with increased business and consumer activity. In a healthy economy, demand for banking services such as loans, credit, and investment tend to increase, which positively affects the bank's financial performance.

***H_2**: The growth of Fintech Start-ups influences bank financial performance as proxied using ROE*

$Y_{ROE} = -9.5639 - 0.0118FINT + 0.8013SIZE - 9.7976CAP + 39.1195PDB - 41.9856INF + Ɛ$

The results of the YROE simultaneous test state that the Prob value (F-statistic) is 0.068440. This value is greater than 0.05, which means that H1 is rejected. This means that the independent variables in this study, namely the growth of fintech start-ups, do not have a simultaneous effect on company size, capital ratio, GDP, and inflation as control variables on bank financial performance proxied by ROE in this study. The Adjusted R-squared value of 0.024629 or 2.5% means that the variables of fintech start-up growth, company size, capital ratio, GDP, and inflation affect bank financial performance proxied by ROE by 2.5% and the other 97.5% is influenced by other variables outside this study.

The results of the partial test The FINT probability value is 0.3060. This value shows that 0.3060> 0.05 with a coefficient value of -0.011816. This shows that H0 is accepted and H1 is rejected so that partially the growth of fintech start-ups does not have a significant effect on ROE which shows the bank's ability to generate profits by utilizing its share capital in ASEAN-5 banking in 2019-2022. This is because although the growth of Fintech Start-ups can increase bank operational efficiency, it does not generate a higher return on equity if banks simultaneously increase their capital reserves to reduce the risks associated with digital transformation (Kablay et al., 2021). In addition, competition with Fintech can put pressure on banking profit margins. This does not have a positive impact on ROE even though there is an increase in the utilization of banking assets (Malik et al., 2020).

The control variables of company size, capital ratio, and inflation do not have a simultaneous or partial effect on ROE. Meanwhile, the control variable GDP partially has a positive effect on bank financial performance which is proxied using ROE. This is in line with research conducted by Tan Lian Soei, et al. (2017) and Litimi, et al. (2023). A country's GDP reflects positive economic growth, which is usually associated with increased business and consumer activity. In uncertain economic conditions, an increase in GDP may occur at the same time as banks are unable to channel funds profitably, due to weak credit demand or a decline in credit quality. This can reduce revenues and profitability, leading to a decrease in ROE.

***H_3**: The growth of Fintech Start-ups influences bank financial performance as proxied using NIM*

$Y_{NIM} = -0.4161 - 4.293e\text{-}05FINT + 0.0298SIZE + 1.5419CAP - 0.3706PDB + 0.7618INF + Ɛ$

The results of the YNIM simultaneous test state that the Prob value (F-statistic) is 0.00000. This value is smaller than 0.05 which means that H1 is accepted. This means that the independent variables in this study, namely the growth of fintech start-ups, have a simultaneous or joint effect on company size, capital ratio, GDP,

and inflation as control variables on the financial performance of banks proxied by NIM in this study. The Adjusted R-squared value of 0.6434 or 64.3% means that the variables of fintech start-up growth, company size, capital ratio, GDP, and inflation affect the financial performance of banks proxied by ROE by 64.3% and the other 35.7% is influenced by other variables outside this study.

The results of the FINT partial test state that the growth of fintech start-ups has a coefficient value of -4.29e-05. The growth of fintech start-ups has a probability value of 0.8969. The value is greater than 0.05, which means that H0 is accepted and H1 is rejected, so that partially the growth of fintech start-ups has no effect on NIM, which shows the bank's ability to obtain net interest income from its operational activities, namely savings and loans in ASEAN-5 banking in 2019-2022. The finding that the growth of Fintech Start-ups does not significantly affect NIM can be attributed to the nature of the banking business model and the dynamics of competition in the financial sector. NIM reflects the difference between interest income generated and interest paid, and is influenced by interest rate policies and the competitive environment.

The emergence of Fintech Start-ups often leads to increased competition in lending rates, which can depress NIM for traditional banks (Tabash et al., 2023). However, according to Malik et al. (2020) if banks cannot effectively pass on the operational efficiency benefits gained through Fintech adoption to their customers in the form of lower interest rates, the impact on NIM may be negligible. This is consistent with findings showing that although Fintech improves service delivery, it does not increase interest margins for banks (Low et al., 2021). The control variables of company size, GDP, and inflation do not have a significant effect on bank financial performance as proxied using NIM.

Meanwhile, the control variable of capital ratio has a significant negative effect on the bank's ability to generate profits from its savings and loan operations. This is in contrast to research conducted by Phan et al. (2020), which states that the capital ratio has a positive effect on bank financial performance. Banks that have a high capital ratio have strong capital reserves. This not only increases stability and trust but also allows banks to bear more aggressive risks and expansion. Sufficient capital also allows banks to face market disruptions or unexpected losses without sacrificing profitability, thereby increasing NIM.

4 CONCLUSION

This study found that the growth of fintech start-ups has a significant negative effect on bank financial performance with ROA and NIM in ASEAN-5 countries. Gross Domestic Product (GDP) has a significant positive effect on bank financial performance using ROA and ROE, while the capital ratio has a significant negative effect on bank financial performance using NIM. Based on the results of this study, banks need to innovate to face competition from the growth of fintech start-ups which is increasing every year by improving technology and services and must implement a strong risk management strategy to overcome the impact of other internal and external factors.

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