Determinants Of Conventional Bank Profitability: Is Covid-19 Matter?

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Abstract: This study delves into the determinants of profitability in conventional banks. This study uses a quantitative method to analyze the factors influencing bank profitability. This study uses balanced panel data using the fixed-effects model from 18 conventional banks from 2009 to 2021 in Indonesia. The results suggest that COVID-19 has a negative impact on profitability. Nevertheless, bank specifics such as capital and bank size positively influenced profitability, while efficiency significantly negatively influenced profitability. Moreover, this study delves into macroeconomic indicators, revealing their pronounced significance. Economic growth and interest rates emerged as substantial drivers, positively shaping bank profitability. Conversely, the exchange rate exerted a noteworthy negative influence on profitability. Bank stakeholders are expected to improve performance by increasing the bank's capital and assets. A bank should be able to increase its size through its total assets. Monetary policies, such as controlling interest and exchange rates, are found to be an important factor in determining banking profitability.

Keywords: Bank Specifics; COVID-19; Macroeconomic; Profitability; Conventional Banking; Panel Regression.

Abstrak: **P**enelitian ini menyelidiki faktor-faktor penentu profitabilitas bank konvensional. Penelitian ini menggunakan metode kuantitatif untuk menganalisis determinan profitaibilitas bank. Penelitian ini menggunakan data panel berimbang dengan model fixed-effect dari 18 bank konvensional dari tahun 2009 hingga 2021 di Indonesia. Hasilnya menunjukkan bahwa COVID-19 berdampak negatif pada profitabilitas. Namun demikian, faktor spesifik bank seperti permodalan dan ukuran bank berdampak positif pada profitabilitas, sedangkan efisiensi berpengaruh negatif secara signifikan terhadap profitabilitas. Selain itu, indikator ekonomi makro seperti pertumbuhan ekonomi dan suku bunga berpengaruh positif dan signifikan terhadap profitabilitas bank sedangkan nilai tukar secara negatif dan signifikan berpengaruh terhadap profitabilitas. Pemangku kepentingan bank diharapkan dapat meningkatkan kinerja dengan meningkatkan permodalan dan aset bank. Bank harus dapat meningkatkan ukuran perusahaannya melalui total asetnya. Kebijakan moneter seperti pengendalian suku bunga dan nilai tukar ditemukan menjadi faktor penting dalam menentukan profitabilitas perbankan.

Keywords: Faktor Spesifik Bank; Covid-19; Makroekonomi; Profitabilitas; Bank Konvensional; Regresi Panel.

INTRODUCTION

The COVID-19 pandemic has had a profound and far-reaching economic impact (Katusiime, 2021). Specific sectors, such as tourism and hospitality, were particularly hard hit due to mandatory restrictions (Esquivias et al., 2021). This significant economic upheaval also extended its effects to the banking industry, which witnessed a notable decline in financial performance (Yao et al., 2018). One aspect of this decline was the substantial increase in non-performing loans (NPL) due to the pandemic (Wahyuni et al.,

2021). It's important to note that this decline in financial performance is not unique to Indonesia; it's a global phenomenon. (Katusiime, 2021) has provided insights into how the financial performance of banks in Uganda has similarly suffered due to the COVID-19 pandemic.

The financial performance of banks is a crucial indicator within the banking sector, providing valuable insights into a bank's overall health and well-being. Banking financial performance is often associated with banking profitability. Banking profitability in Indonesia during COVID-19 has decreased (Wahyuni et al., 2021). Notably, (Ghosh and Saima, 2021) have demonstrated that banks characterized by low capital, limited liquidity ratios, weak performance, and a high prevalence of non-performing loans are more susceptible to the economic shocks induced by the pandemic, based on OJK data (2021), banking profitability, as measured by return on assets, decreased from 2.550 per cent in 2018 to 1.590 per cent in 2020. This indicates a decline in financial performance during the pandemic. However, banking profitability slightly increased to 1.850 per cent in December 2021. This is suspected due to the government's policy controlling the pandemic, which is quite good.

Government policies aimed at controlling the pandemic are closely intertwined with macroeconomic indicators, including economic growth, inflation, exchange rates, and interest rates. Economic growth tends to slow during a pandemic (Abidillah et al., 2022). This is due to the government's policy regarding economic restrictions according to the location of each area and the Covid mortality rate. The higher the Covid mortality rate, the higher the government's restrictions on economic activity. Interest rates were suppressed during the COVID-19 pandemic. In addition, the government also makes it easy for customers with jobs affected by the pandemic to get discounts on bank debt payments.

Regarding inflation, so that prices do not rise drastically, the government conducts market operations to control prices in the market. The rupiah exchange rate also weakened due to the pandemic. Therefore, the government prioritizes export activities to positively influence the trade balance.

Besides macroeconomic indicators, internal banking factors (bank specifics) can impact bank profitability. Capital ratio positively affects profitability (Alshatti, 2016). However, (Ha, 2020) found that bank capital negatively impacts profitability. Liquidity positively impacts profitability (Yüksel et al., 2018; Ha, 2020), whereas study (Derbali, 2021) liquidity negatively impacts profitability. In another study by (Rahman et al., 2020), liquidity does not affect profitability.

In addition, efficiency can be measured by the traditional and stochastic frontier approaches. In the stochastic frontier approach, cost efficiency was likely to incline from 2002 to 2010 (Anwar, 2019). (Khalifaturofi'ah, 2018) and (Ozili and Uadiale, 2017) demonstrate that cost efficiency harms profitability. The macroeconomic indicator, Growth Domestic Product (GDP), negatively affect profitability, whereas (Katusiime, 2021) shows that GDP growth positively impacts profitability. Inflation negatively affects profitability (Rahman et al., 2020; Abidillah et al., 2022). Nevertheless, (Tan, 2016) argues that inflation positively affects profitability.

Given these differing perspectives, it becomes essential to investigate the factors influencing banking profitability in Indonesia. Indonesia, one of the most populous countries in Southeast Asia, with a population exceeding 273 million (according to data from the United Nations Food and Agriculture Organization for 2020), warrants a comprehensive examination of these factors. Most of the population in Indonesia uses

banks for various economic activities. Moreover, with the pandemic, the need for banks has become even greater due to limitations in carrying out activities directly. Activities that are usually carried out with banks include transfers, purchases, payments, investments, and online shopping. If a bank experiences a decline in its performance, it can lead to a decrease in the banking sector's profitability (Al-Homaidi et al., 2018; Menicucci and Paolucci, 2016). A decline in profitability can have significant implications for a bank's overall health. An unhealthy bank implies that the institution is not in optimal condition, either internally or externally. Such banks can give rise to public distrust, which, in turn, can lead to undesirable systemic risks, potentially culminating in bank failures. Banks can have a cascading effect when they collapse, impacting other interconnected banks as well.

Based on the background and the identified research gap, this study investigates the factors influencing a bank's profitability. Firstly, it explores the impact of COVID-19 on banking profitability. Secondly, in addition to COVID-19, it examines the effects of bank-specific and macroeconomic indicators on bank profitability. Thirdly, this study employs a static panel data method and robustness testing.

This research benefits various stakeholders, including banks, the community, and the government. This research will likely yield valuable insights into how the government can enhance banking profitability. The banking sector is often considered the cornerstone of the economic system, and a healthy banking sector is integral to a thriving economy. The banking sector's health depends on various factors, and among these factors, the study seeks to provide policymakers with actionable recommendations.

This study builds upon prior research on banking profitability conducted by the author. However, there are notable distinctions between the current study and previous work. The novelty of this research lies in its inclusion of the pandemic's impact on conventional banks, particularly those adhering to Basel 3 and 4 regulations. The COVID-19 pandemic is quantified using a dummy variable, differentiating it from earlier studies. This research is structured into five parts: the introduction, literature review, research methodology, results and discussion, and finally, the conclusion and recommendations.

THEORETICAL REVIEW

This study categorizes the literature into three distinct sections. The initial segment encompasses literature that addresses the impact of COVID-19 on profitability. The second section concentrates on bank-specific factors and their influence on profitability. The third section centres on the effects of macroeconomic indicators on profitability. Each of these sections also incorporates corresponding research hypotheses.

Relationship between COVID-19 and profitability. The effect of the pandemic is greater in countries that focus their economic activities on the tourism sector and industries that serve consumers directly (Kozak, 2021). Various literatures have examined the effect of the pandemic on banking performance (Afkar and Fauziyah 2021; Karim et al., 2021; Katusiime 2021; Miklaszewska et al., 2021; Nguyen and Hoang Dinh 2021; Sohibien et al., 2022; Wahyuni et al., 2021; Ghosh and Saima, 2021). The effect of the COVID-19 pandemic in each country is different (Karim et al., 2021; Nguyen and Hoang Dinh, 2021). Pandemics have a worse impact on developing countries than on developed countries (Nguyen et al., 2021). In developing countries such as Indonesia, for example, a pandemic causes bank profitability to decline (Sohibien et al., 2022). Although it is also falling in developed countries (Farkasdi et al., 2021), the decline is much greater in developing

countries (Kozak, 2021; Kozak and Wierzbowska, 2022). Financial performance, as reflected in the liquidity and financial health of developing countries such as Bangladesh during the pandemic, declined (Karim et al., 2021). The impact of this pandemic, in addition to reducing profitability, also reduces banking and financial stability (Karim et al., 2021; Katusiime, 2021).

The impact of COVID-19 can be understood temporally. Several prior studies (Karim et al., 2021; Nguyen and Hoang Dinh, 2021) have investigated the consequences of the COVID-19 pandemic by examining variables within the pandemic period. Additionally, using dummy variables has been proposed as an approach (Sohibien et al., 2022). (Sohibien et al., 2022) employed VARX (Vector Autoregressive with Exogenous Variable) and found that profitability, measured by ROA, positively correlated with financing. In other words, when profitability increased, financing also increased, and vice versa. Furthermore, the pandemic was found to exert a negative impact on bank profitability. A pandemic led to a decline in profitability (Katusiime, 2021).

(Wahyuni et al., 2021) also explored the pandemic's effects on the banking sector in Indonesia. Using the paired sample t-test, (Wahyuni et al., 2021) demonstrated significant differences in non-performing loans at conventional banks before and after the pandemic. Conversely, there was no significant difference in Islamic banks before and after the pandemic. This discrepancy can be attributed to the greater resilience of Islamic banks in the face of various crises, thanks to their profit-sharing system (Salsabilla et al., 2021). Therefore, the research hypothesis regarding the impact of the COVID-19 pandemic on profitability is as follows:

H1: The COVID-19 pandemic negatively affects banking profitability in Indonesia.

Relationship between Bank Specifics and Profitability. The relationship between bank-specific factors and profitability is examined based on internal conditions within the banking sector. To represent these bank-specific variables, various factors are considered, drawn from various banking ratios. These ratios encompass liquidity, solvency, asset quality, and efficiency.

Liquidity, the first of these factors, reflects a bank's ability to meet short-term obligations. Studies have shown that higher bank liquidity positively correlates with profitability. A greater liquidity position enables a bank to efficiently channel credit into the community, ultimately increasing profitability (Yüksel et al., 2018).

The solvency ratio measures a bank's ability to meet long-term obligations. Like liquidity, solvency also has a positive influence on profitability. A higher capital adequacy ratio (CAR) signifies a bank's capability to meet short-term obligations, consequently leading to increased profitability (Yüksel et al., 2018). However, some research findings have contradicted this relationship (Al-Harbi, 2019; Derbali, 2021).

Asset quality, the third factor, is assessed through the non-performing loan (NPL) ratio. This ratio reflects the proportion of non-performing loans relative to total loans provided by the bank. NPL, an indicator of credit risk, typically negatively affects profitability. A higher credit risk associated with greater NPLs diminishes a bank's ability to generate income through lending, consequently reducing profitability (Khalifaturofi'ah, 2021; Majumder and Li, 2018).

Efficiency, the fourth internal factor, is measured by various ratios like the cost-income ratio (CIR). The relationship between efficiency and profitability is complex.

While some studies indicate that greater efficiency, represented by good asset management, can increase profitability (Ozili and Uadiale, 2017), others suggest that cost efficiency may negatively impact profitability (Khalifaturofi'ah, 2018; Ozili and Uadiale, 2017).

Overall, these internal banking factors significantly influence profitability. In particular, the quality of assets and efficiency in managing them can significantly impact a bank's profitability.

H2: Banking internal factors have a significant effect on profitability.

Relationship between Macroeconomic Indicators and Profitability. This study incorporates macroeconomic indicators as influential factors in banking profitability, including economic growth, inflation, interest, and exchange rates.

Economic growth, represented by Gross Domestic Product (GDP), can significantly affect banking profitability. Higher economic growth usually leads to increased economic activity, potentially driving up demand for bank loans. This surge in lending can, in turn, bolster banking profitability (Le and Ngo, 2020). However, research findings vary. Some studies report a negative relationship between GDP and profitability (Al-Homaidi et al., 2018), while others find a positive correlation (Le and Ngo, 2020; Yüksel et al., 2018). In contrast, some studies suggest no significant effect (Derbali, 2021).

Inflation, characterized by continuous price increases, can erode consumer purchasing power, potentially reducing demand for bank credit and, subsequently, banking profitability (Al-Homaidi et al., 2018). Nevertheless, research results also diverge. Some studies show a negative relationship between inflation and profitability (Al-Homaidi et al., 2018), while others report a positive effect (Derbali, 2021).

Interest rates, particularly Bank Indonesia interest rates, can significantly impact profitability. Higher interest rates can attract more investors to deposit funds in banks, increasing bank capital from third-party sources. This, in turn, facilitates greater lending to the community, potentially boosting profitability (Mongid and Muazaroh, 2017). Yet, the findings could be more consistent. Some studies indicate a negative impact of interest rates on profitability (Al-Homaidi et al., 2018), while others report a positive effect (Derbali, 2021; Yahya et al., 2017).

Exchange rates, reflecting a country's strength in international trade, can also affect banking profitability. A study by (Al-Homaidi et al., 2018) suggests that exchange rates harm profitability. Overall, these macroeconomic indicators can significantly influence banking profitability.

H3: Macroeconomic indicators have a significant effect on profitability.

Table 1 is the summary of the explanation hypothesis. Several studies have found that the presence of Covid-19 reduces bank profitability. Most bank-specific and macroeconomic variables can negatively and positively affect bank profitability. Here's a summary.

Table 1. Overview of the Impact of Independent Variables on Profitability

Variable	Profitability	Citation
COV-19		
Dummy Covid-19	-	(Sohibien et al., 2022); (Katusiime, 2021)
Bank specific		
Liquidity (LDR)	+/-	(Al Homaidi et al., 2018); (Derbali, 2021)
Capital Adequacy (CAR)	+/-	(Majumder and Li, 2017);
Credit risk (NPL)	+/-	(Majumder and Li, 2017)
Efficiency (CIR)	-	(Khalifaturofi'ah, 2021)
Asset quality (LAR)	+/-	(Majumder and Li, 2017)
Bank Size (BS)	+/-	(Yao et al., 2018); (Yahya et al., 2017)
Macroeconomic indicator		
GDP	+/-	(Al Homaidi et al.,2018); (Yuksel et al., 2018); (Le and Ngo, 2020)
Inflation	+/-	(Tan, 2016); (Derbali, 2021)
Interest rate	+/-	(Al Homaidi et al., 2018)
Exchange rate	+/-	(Al Homaidi et al., 2018)

Source: Processed data, 2021

METHODS

This study focuses on a sample of 18 commercial banks operating in Indonesia. The selection of these banks is based on their accessibility in terms of annual reports spanning from 2009 to 2021 and the availability of financial information. The chosen banks must also adhere to BASEL 3 and BASEL 4 regulations. Yearly reports have been sourced from the Financial Service Authority's website and the bank scope database (Majumder and Li, 2018). The research methodology also incorporates data obtained through documentation studies, including journals, books, working papers, and data banks.

The primary objective of this study is to assess the influence of various factors, including the COVID-19 pandemic, bank-specific characteristics, and macroeconomic indicators, on the profitability of conventional banks operating in Indonesia. To measure the dependent and bank-specific variables, this research utilizes data from the Financial Service Authority's website. This data encompasses critical financial indicators such as profitability, current ratio, asset quality, credit risk, bank size, and capital.

Furthermore, macroeconomic indicators used in this study are sourced from Bank Indonesia and the Central Bureau of Statistics. The research adopts a modelling approach consistent with prior studies conducted by (Al-Homaidi et al., 2018), (Derbali, 2021), and (Khalifaturofi'ah, 2023).

$$ROA_{it} = \beta_0 + \beta_1 COV_{it} + \beta_2 LDR_{it} + \beta_3 CAR_{it} + \beta_4 NPL_{it} + \beta_5 CIR_{it} + \beta_6 LAR_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \beta_9 SBI_{it} + \beta_{10} ER_{it} + \varepsilon_{it} \dots \dots (1)$$

In this model, 'i' represents the cross-sectional or individual bank, 't' denotes the period, and 'εit' encompasses the error term, encompassing the effects and unobserved errors specific to each bank. The model is designed to investigate the impact of various factors on profitability, measured by 'ROAit,' which signifies the return on assets for each

bank over a specific period. 'βo' signifies the constant or intercept in the model, while 'β1' to 'β10' represent regression coefficients associated with various independent variables. The 'COV' variable serves as a dummy variable for the COVID-19 pandemic, taking a value of 1 for the years 2020 and 2021 and 0 for the years 2009 to 2019 (Katusiime, 2021; Sohibien et al., 2022; Wahyuni et al., 2021). Other independent variables in this model include 'LDR' (loan-to-deposit ratio), 'CAR' (capital adequacy ratio), 'NPL' (non-performing loans), 'CIR' (cost/income ratio), 'LAR' (loan-to-asset ratio), 'GDP' (Gross Domestic Product), 'INF' (inflation), 'SBI' (interest rate), and 'ER' (exchange rate). Detailed definitions of these variables are provided in **Table 2** for reference.

Table 2. Description of the variables used in the study

Variable	Symbol	Definition	Reference
Dependent Variable	ROA	Return On Asset	(Derbali, 2021); (Ha, 2020); (Al Homaidi et al., 2018); (Khalifaturofi'ah, 2021)
Independent Variable	Covid-19	Covid-19	(Katusiime, 2021); (Sohibien et al., 2022); (Wahyuni et al., 2021).
	Liquidity	Loan to Deposit Ratio	(Khalifaturofi'ah, 2021); (Hunjra et al., 2020)
	Capital Adequacy	Capital Adequacy Ratio	
	Credit Risk	Non-Performing Loan	(Majumder and Li, 2017);
	Efficiency	Cost to Income Ratio	(Alshatti, 2016)
	Asset Quality	Loan-to-asset ratio	(Ha, 2020); (Hunjra et al., 2020)
	Economic growth	GDP	(Al Harbi, 2019)
	Inflation	Annual inflation rate	(Yao et al., 2018)
	Interest rate	SBI interest rate/BI 7 days repo rate	(Al Homaidi et al., 2018) (Al Homaidi et al., 2018)
	Exchange rate	Middle rate	

Source: Processed data, 2022

This study employs the panel data regression method to conduct its analysis. Two primary types are considered within panel data regression: static panel data regression and dynamic panel data regression. Fixed panel data regression involves a general panel data structure. It necessitates the selection of the most suitable static model from among three alternatives: the common effect model (CEM), the fixed-effect model (FEM), and the random effect model (REM).

The Common Effect Model (CEM) employs the Ordinary Least Squares (OLS) technique, while the Fixed-Effect Model (FEM) utilizes the Least Square Dummy Variable (LSDV) technique. On the other hand, the Random Effect Model (REM) applies the Generalized Least Squares (GLS) technique. The selection of the most appropriate model is determined through a series of tests, including the Chow test (F-test), the Hausman test, and the Lagrange Multiplier test.

The Chow test is employed to discern the optimal model between FEM and CEM. The Hausman test, meanwhile, assists in identifying the superior model between FEM and REM. Lastly, the Lagrange Multiplier test plays a role in selecting the best model between REM and CEM. These tests collectively aid in determining the most suitable analytical approach for this study's panel data regression.

In addition, in this study, a robustness test was also performed. A robustness test is testing the certainty of a model or the validity of a model. Robust is used to analyze the robustness of the model. Outliers influence data to obtain a robust model or resistance to outliers. Powerful processes to account for data errors, eliminate the identification of outliers and also automate exception handling. The robustness of a model can be seen by (1) Adding a control variable, (2) Putting it under certain conditions, and (3) Dividing the data. If the results are the same as those found initially, then the data or model is specific. Therefore, a robustness test should be performed in this study.

RESULTS

Table 3 provides a comprehensive overview of the variables utilized in this study, presenting descriptive statistics that encompass the mean, maximum, minimum, and standard deviation values for both dependent and explanatory variables. These statistics offer insights into the profitability trend, as measured by the ROA ratio, spanning 2009 to 2021. The data for bank-specifics and macroeconomic indicators are also elucidated within this same timeframe.

Examining the results, it's noteworthy that BRI achieved the highest ROA in 2012, reaching an impressive 5.150 per cent. This substantial increase in BRI's profit can be attributed to robust credit quality growth, augmented fee-based income, and the maintenance of operational efficiency. BRI is a state-owned bank that diligently upholds credit quality while significantly emphasizing financing Micro, Small, and Medium Enterprises (MSMEs). By the end of 2011, the cumulative recipients of People's Business Loans (KUR) had reached an impressive 5.300 million individuals, with a total loan value of Rp. 39.500 trillion. Remarkably, the outstanding loans surged by a staggering 73.950 per cent during that year.

On the contrary, Bank Bukopin experienced a substantial loss of -4.930 per cent, the largest among all banks, in 2021. This loss was primarily attributed to the inevitable business slowdown resulting from the adverse impacts of the COVID-19 pandemic. Bukopin's net interest income plummeted by 68.780 per cent year-on-year (yoy), dwindling to IDR 182.010 billion in March 2021 compared to IDR 582.950 billion during the same period the previous year.

Table 3. Descriptive Statistic

	Mean	Maximum	Minimum	Std. Dev.
ROA	1.930	5.150	-4.930	1.380
LDR	86.700	171.320	45.540	15.800
CAR	18.660	35.680	10.250	4.650
NPL	1.310	6.370	0.000	1.020
CIR	79.320	340.040	36.240	26.270
LAR	64.120	91.720	40.100	8.580
BS	18.760	21.180	15.200	1.090
GDP	4.650	6.220	-2.070	2.050
INF	4.150	8.380	1.680	2.190
SBI	5.750	7.750	3.500	1.370

KURS	12,253.310	14,481.000	8,991.000	2,165.330
DC	0.150	1.000	0.000	0.360

The maximum LDR ratio of 171.320 was recorded by BTPN in 2019, while the minimum LDR ratio achieved by HSBC in 2009 was 45.540 per cent. The high liquidity reflects that banks have higher loan ratios than their deposits. BTPN's intermediation ratio is the highest among all banks. About a third of the loans disbursed by BTPN use loan funds and not third-party funds. This was recorded in BPTN's financial reports for semester I- 2019. The total loans received by BTPN individually reached IDR 41.220 trillion in semester I-2019. The loan has increased almost five times in the last six months.

Meanwhile, BTPN's third-party funds were recorded at only IDR 88.660 trillion, which was dominated by high-priced deposits with a portion of 71.220 per cent. Meanwhile, BTPN's total loans in the same period reached Rp 134.81 trillion. As a result, individual net profit was IDR 830.950 billion in the first half of 2019. BTPN recorded a return on assets (ROA) and return on equity (ROE) of 1.370 per cent and 7.760 per cent. HSBC was the bank with the lowest level of liquidity in 2009. This was due to HSBC's lack of credit penetration.

Based on Bank Indonesia regulation Number 10/15/PBI/2008, the minimum CAR value is 8 per cent. A bank that is considered healthy is a bank that has a Capital Adequacy Ratio (CAR) above 8 per cent, so the higher the CAR, the better the soundness of the bank. The average CAR of the research sample is 18.660 per cent, indicating that all banks are classified as healthy during the study period. Bank Permata had a maximum CAR of 35.680 per cent in 2020, while a minimum CAR of 10.250 per cent was held by Bank Maya in 2014. Permata Bank's average capital is far above the banking industry average of 18.660 per cent. Given the strong enough capital of Permata Bank, Permata Bank does not plan to increase capital for the next five years. Capital strengthening can be done with a dividend payment policy. If the profits earned are not shared, they can be reinvested to strengthen the business. Bank Maya can do this because, in 2014, its capital was the lowest among all banks. Apart from increasing capital through retained funds, the strategy is that banks can raise capital with pre-emptive rights (HMETD)/rights issued to the company's shareholders.

The maximum NPL ratio of 6.370 per cent was held by Bank Bukopin in 2017. Bank Danamon had the minimum NPL ratio in 2009 and 2010. Non-Performing Loan is a loan condition in which the debtor fails to make scheduled payments for a certain period. The high percentage of NPLs in a bank is one of the causes of banks experiencing difficulties in extending credit. According to Bank Indonesia regulations, banks still have to keep the NPL percentage below 5 per cent. Bank Bukopin's NPL of 6.370 per cent is above the provisions of Bank Indonesia. As a result of these conditions, Bukopin's profit in 2017 decreased by 54.860 per cent from 2016.

The maximum CIR is 340.040 per cent by Bukopin Bank in 2021, while the minimum CIR is 36.240 per cent held by ICBC in 2021. The cost to Income Ratio is an efficiency indicator besides BOPO (Operating Costs and Operating Income). For the banking community, using CIR is considered more accurate than BOPO, especially if a comparison is to be made with other countries. The increase in CIR at Bank Bukopin in 2021 is inseparable from credit restructuring due to the COVID-19 pandemic. The low Cost to Income Ratio at ICBC shows that ICBC bank can reduce costs to be more efficient.

The Loan Asset Ratio (LAR) is a crucial metric for assessing a bank's capacity to fulfil credit demands while utilizing its total assets. Notably, BTPN held the highest LAR in 2020, reaching an impressive 91.720, signifying robust credit quality within its total assets. In contrast, HSBC had the lowest LAR in 2009, at 40.100. The LAR ratio functions such that higher values suggest a superior credit quality of total assets, whereas lower values indicate a reduced amount of credit disbursed relative to total assets.

Bank size, quantified by total assets (Ln), underscores the dimensions of a bank. In this study encompassing conventional banks in Indonesia under Basel 3 and 4 regulations, the average total assets amounted to Rp 140,399,150.640 million (in millions). **Table 3** reveals that the most significant bank size, valued at Rp 1,572,761,035 million, belonged to BRI Bank in 2021. Conversely, the smallest bank size was attributed to ICBC in 2009. As indicated by total assets, bank size reflects that larger banks boast greater asset volumes, encompassing paid-in capital, retained earnings, and external debt sourced from various parties, including suppliers, other financial institutions, shareholders, and additional debt sources.

Considering the macroeconomic indicators, GDP exhibited a minimum value of -2.070 in 2020 and a maximum value of 6.220 in 2010, with an average of 4.650. Conversely, inflation featured a minimum value of 1.680 in 2020 and a maximum value of 8.380 in 2013, averaging at 4.150. The interest rate, quantified by SBI (BI Certificate), witnessed a minimum value of 3.500 and a maximum value of 7.750, with an average rate of 5.750. Lastly, the exchange rate displayed a minimum value of Rp 8,991/$ and a maximum value of Rp 14,481/$, averaging Rp 12,253.31/$.

Table 4. Correlation of the variables

	ROA	DC	CAR	LDR	NPL	CIR	LAR	BS	GDP	INF	SBI	LNKURS
ROA	1.000											
DC	-0.250	1.000										
CAR	0.100	0.440	1.000									
LDR	-0.250	-0.130	0.020	1.000								
NPL	-0.530	0.040	-0.170	0.210	1.000							
CIR	-0.610	-0.160	-0.290	0.240	0.450	1.000						
LAR	-0.120	-0.120	-0.150	0.650	0.120	0.110	1.000					
BS	0.370	0.210	0.100	-0.040	-0.240	-0.340	-0.040	1.000				
GDP	0.260	-0.800	-0.380	0.010	-0.080	0.150	0.100	-0.190	1.000			
INF	0.210	-0.460	-0.400	-0.040	-0.150	0.040	0.090	-0.160	0.450	1.000		
SBI	0.220	-0.660	-0.450	0.010	-0.130	0.100	0.120	-0.240	0.510	0.730	1.000	
LNKURS	-0.250	0.410	0.385	0.260	0.210	-0.000	0.070	0.384	-0.500	-0.340	-0.386	1.000

Source: Processed data, 2022

The correlation analysis reveals several noteworthy findings. Firstly, there is a negative correlation between COVID-19 and ROA, signifying that the pandemic hurt bank profitability. Regarding bank specifics, LDR, NPL, CIR, and LAR exhibit negative correlations with ROA, suggesting that these factors are inversely related to bank profitability in Indonesia. Conversely, CAR and bank size positively correlates with ROA,

implying that higher capital adequacy and larger bank sizes are associated with improved profitability.

A positive correlation between GDP, inflation, and SBI (BI Certificate) with ROA is observed regarding macroeconomic indicators. This suggests that higher economic growth, inflation, and interest rates coincide with enhanced bank profitability. However, the exchange rate shows a negative correlation with ROA, indicating that a more robust local currency in terms of foreign exchange can potentially impact profitability negatively.

Table 5. Panel regression result

| Independent Variable	Common Coefficient	Prob.	Fixed Coefficient	Prob.	Random Coefficient	Prob.
C***	10.825	0.002	12.985	0.000	12.589	0.000
Covid-19						
DC***	-0.894	0.003	-0.773	0.002	-0.761	0.002
Bank Specifics						
CAR***	0.069	0.000	0.065	0.000	0.063	0.000
LDR	-0.008	0.098	-0.001	0.791	-0.002	0.735
NPL	-0.143	0.028	-0.029	0.659	-0.050	0.421
CIR***	-0.022	0.000	-0.023	0.000	-0.023	0.000
LAR	0.002	0.823	-0.007	0.364	-0.007	0.363
Macroeconomic Indicators						
GDP*	0.066	0.153	0.070	0.064	0.073	0.046
INF	0.031	0.398	0.031	0.284	0.032	0.265
SBI**	0.107	0.125	0.143	0.015	0.129	0.022
LNKURS***	-1.862	0.000	-2.528	0.000	-2.245	0.000
BS***	0.478	0.000	0.682	0.000	0.569	0.000
R-squared	0.680		0.819		0.627	
Adjusted R-squared	0.664		0.795		0.608	
F-statistic	42.835		33.198		33.872	
Prob(F-statistic)	0.000		0.000		0.000	

Notes: The best-selected model is fixed effect model
*: significant at 10 percent, **: significant at 5 percent, ***: significant at 1 percent
Source: Processed data, 2022

DISCUSSION

As measured by ROA, bank profitability tends to be stable at around 1 per cent. The following is a picture of the average ratio of banks in Indonesia during the study period.
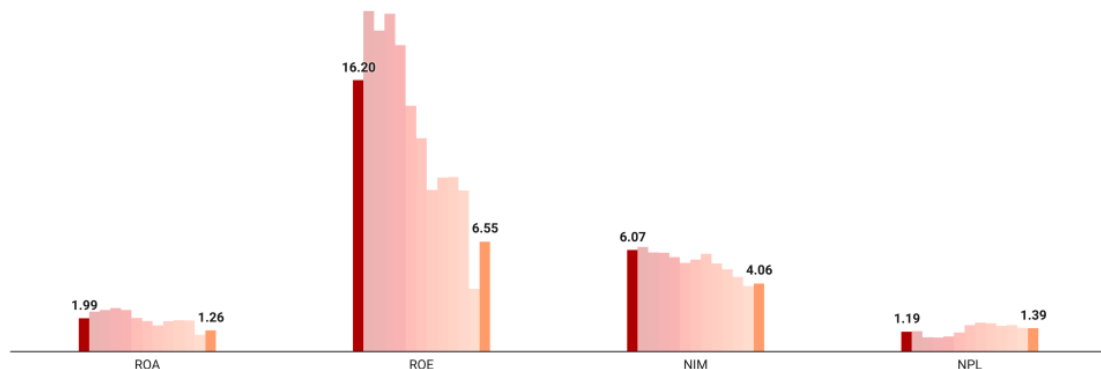
Figure 1. Bank Financial Ratios 2009 to 2021
Source: Processed data, 2022

Figure 1. Shows the ratio of bank profitability and bank NPL. Bank profitability ratios can be measured using ROA (Return On Assets), ROE (Return On Equity), and NIM (Net Interest Margin). Based on **Figure 1.** Bank profitability tends to decrease while NPL tends to increase. Bank ROA tends to fluctuate. During the pandemic, bank profitability was at its lowest. However, when viewed from the beginning of the period, the bank's ROA fell by 0.730 per cent. The most profound decline occurred in the ratio of ROE (return on assets). From 16.200 per cent in 2009, it decreased to 6.550 per cent in 2021. The bank's NIM decreased by 2.010 per cent, while the bank's NPL increased by 0.200 per cent.

Table 5 presents the outcomes of panel regression estimations using the static panel method. Robustness testing was conducted by incorporating the bank size control variable. The static panel method encompasses three estimation models: pooled (OLS), fixed, and random. Across these models, the adjusted R-squared value for ROA varies, with the fixed model achieving the highest value at 0.795, followed by the pooled model at 0.664 and the random model at 0.608. These figures indicate that COVID-19, bank-specific factors, and macroeconomic indicators collectively account for 79 per cent, 66 per cent, and 60 per cent of the variability in profitability measured by ROA.

In the ROA model, as depicted in **Table 5**, the fixed effect model emerges as the most suitable choice (indicated by the Chow test result of 0.000, considering the presence of a dummy variable). When examining profitability, some results align with expectations; variables such as COVID-19, CIR, and exchange rates exhibit negative influences on profitability. Conversely, capital, bank size, GDP growth, and interest rates contribute positively to enhanced profitability. Notably, it's surprising that liquidity and inflation lack significance but positively impact profitability. Non-performing loans (NPLs) also negatively affect profitability, although the effect is not statistically significant.

Covid-19 has a negative and significant effect on profitability. Profitability is quite crucial and complicated during the Covid-19 pandemic. Many banks experience losses or financial difficulties. The COVID-19 pandemic has contributed to industries engaged in the health sector, but in other fields, the presence of a pandemic has reduced profitability (Wahyuni et al., 2021). Due to the pandemic, banking profitability declined, especially in 2020 (Abidillah et al., 2022; Farkasdi et al., 2021). This result is consistent with the results conducted by (Sohibien et al., 2022) and (Katusiime, 2021).

Variables other than COVID-19 are bank-specific variables. Bank-specific variables are bank internal factors that affect profitability. **Figure 2.** Shows the CAR, LDR, and CIR

ratios during the study period. CAR, LDR, and CIR ratios are in **Figure 2**. Show different results. CAR and LDR increased while CIR decreased. Banking CAR showed an increase from 18.340 per cent to 23.870 per cent. LDR slightly increases by 0.800 per cent while CIR decreases by 9.910 per cent. An increase in CAR shows that bank capital is getting stronger. Banks are increasingly able to meet capital adequacy. However, this differs from bank lending from third-party funds, which has increased slightly since 2009. However, from 2019 and 2020, banks' LDR tends to decline sharply.
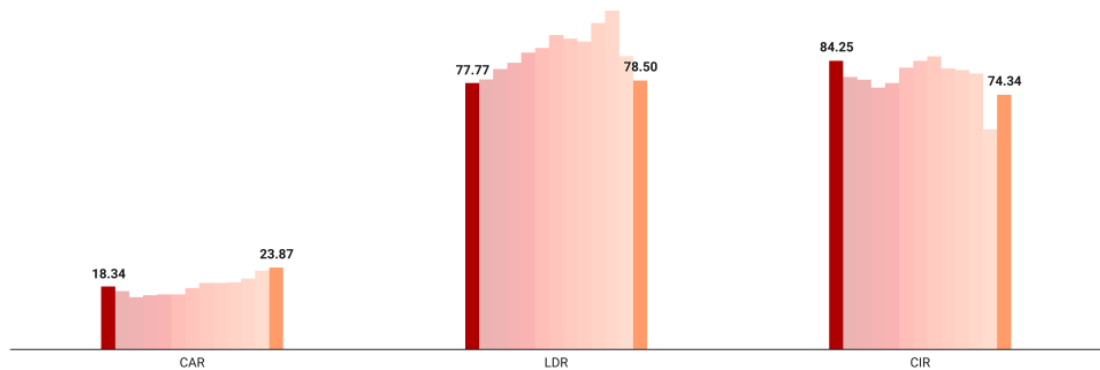
Figure 2. Ratios of CAR, LDR, and CIR 2009-2021
Source: Processed data, 2022

The capital adequacy ratio (CAR) positively affects the profitability of conventional banks in Indonesia. The higher the bank's capital, the greater the bank's profitability. The bank will be able to meet its short-term obligations and liquidity. The stronger the bank's capital, the easier it will be to earn profits. According to the data, Permata Bank is a bank with maximum capital, and from this condition, it is easier for Permata Bank to make a profit. This research is consistent with the study of (Rahman et al., 2020) and (Yüksel et al., 2018).

Efficiency is measured by the cost-to-income ratio (CIR). CIR negatively influenced profitability at the level of 1 per cent. The higher the CIR ratio, the lower the bank's profitability. Bank Bukopin's CIR value is the highest in 2021, causing Bukopin to experience a loss of -4.390 per cent. This result is in line with (Khalifaturofi'ah, 2021) and (Ozili and Uadiale, 2017) that higher operational costs could adversely affect bank ROA but decrease their overall profitability.

Bank liquidity (LDR), credit risk (NPL), and asset quality (LAR) have no significant effect on bank profitability. This shows that the bank's liquidity and credit risk do not affect the bank's profitability. Liquidity scale and bank assets, good and bad, in the period 2009 to 2021 did not significantly impact profitability. This is because the foundation of the banking system is Basel 3 and Basel 4 banks, which have good liquidity, good asset quality, and low credit risk. In the short run, NPL Indonesia is determined by money supply, while in the long run, it is determined by exchange rate and foreign interest rate (Purwono et al., 2020). These results are inconsistent with the study by (Banyen and Biekpe, 2021), which states that bank liquidity harms profitability. Liquidity also negatively and significantly impacts operational efficiency, showing that customers lend more and earn more. Still, at the same time, the bank must also be aware of the capacity of customers-and project selection. (Majumder and Li, 2018) find a significant negative relationship between off-balance sheet items and bank performance, so banks should pay attention to off-balance sheet items.

Estimating the impact of economic growth (GDP) reveals that higher economic growth is associated with increased bank profitability, as indicated by the positive sign of GDP in the analysis. This positive correlation is attributed to robust economic growth fostering various economic activities within a country, subsequently benefiting the banking sector. A thriving economy encourages banks to adopt innovative management techniques and technologies (Derbali, 2021). Furthermore, as the economy expands, intermediary institutions, including banks, become more prominent, leading to heightened bank profitability (Aliyu and Yusof, 2016).

The relationship between economic growth and bank profitability is exemplified in **Figure 3**, which depicts the trajectory of GDP. Notably, the data illustrates a significant dip in the economy in 2020 due to the Covid-19 pandemic. During the pandemic, the government implemented stringent economic restrictions, directly impacting individuals' economic situations. Consequently, reduced consumer purchasing power led to a substantial decline in GDP in 2020. However, a promising recovery is evident in 2021, signalling effective government measures in managing COVID-19 and steering the economy toward growth once again.
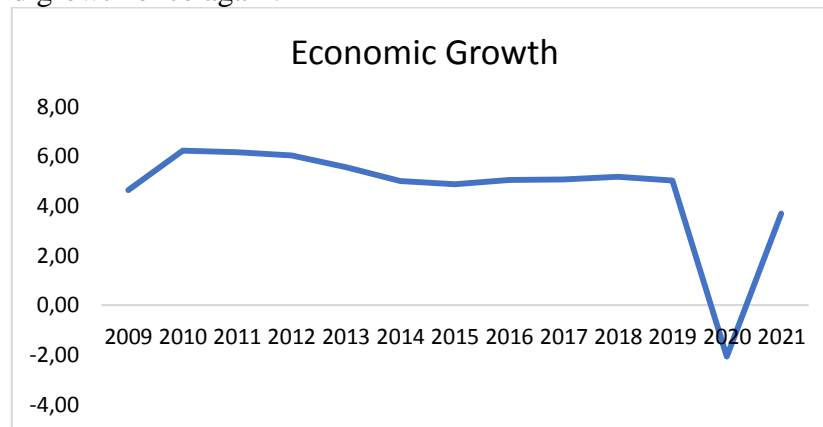
Figure 3. Growth of GDP
Source: Processed data, 2022

The analysis suggests that inflation does not significantly affect profitability, meaning that inflation rate fluctuations do not substantially impact bank profitability. This finding aligns with a study by (Katusiime, 2021), which also reported a lack of significant influence of inflation on profitability in the banking sector.

However, it's worth noting that this result contradicts the findings of (O'Connell, 2023), whose research indicated that inflation positively affects profitability. O'Connell suggests that banks operating under inflationary conditions may find it easier to increase profitability relative to their costs.

Figure 4 visualizes the inflation trends during the study period, visually representing the inflation fluctuations observed. These findings underscore the complexity of the relationship between inflation and bank profitability, revealing variations in results across different studies and contexts. Based on **Figure 4**. The movement of inflation starting in 2015 tended to slow down after fluctuating in 2010, 2013 and 2014. Inflation did not affect bank profitability because the government controlled the inflation rate, so the economy could have been more active in the last few years. The government's way of dealing with inflation is one of them by carrying out fiscal policy and monetary policy. The government can reduce subsidies or government spending, for example, by reducing fuel subsidies or

electricity subsidies. In addition, the government can increase the tax rate. On the other hand, the monetary policy that can be done is to raise interest rates. If interest rates rise, then the amount of money circulating in society will decrease because people are more interested in putting their money in banks.

Figure 4. The Growth of Inflation
Source: Processed data, 2022

SBI / interest rates positively affect the profitability of banks in Indonesia. If the government raises interest rates, bank interest rates will also increase, both deposit and loan rates. If bank deposit rates increase, bank profitability will increase. People will start to be interested in putting their money in the bank because the return on the bank is higher than on the money market or stock market. If the third-party funds collected by the bank are high, then the bank can extend larger loans and earn high profits. According to (O'Connell, 2023), banks with high-interest rates will find it easier to get high profits. Another explanation is that bank lending rates will also rise if the benchmark interest rate rises. This will encourage increased profit margins from banks due to increasing lending rates (Silalahi and Sihombing, 2021).

Figure 5. Shows the trend of interest rate in **Figure 5.** The growth of interest rates in Indonesia tends to fall. The interest rate policy in Indonesia began to change to the BI 7-day repo rate in 2016. The global crisis in 2018 made interest rates in Indonesia increase. After that, the existence of COVID-19 made the government implement policies to reduce interest rates below 4 per cent.
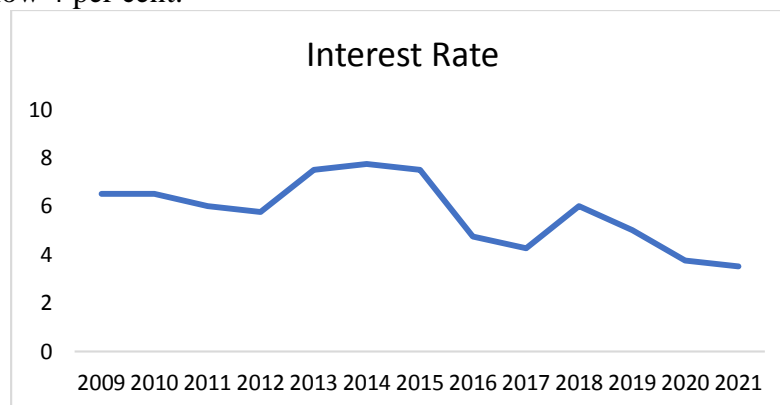
Figure 5. The Growth of Interest Rates
Source: Processed data, 2022

The exchange rate variable exhibits a negative influence on bank profitability. In this study, the exchange rate is measured using the Rp/$ exchange rate, and when this rate increases, it signifies a depreciation of the Rupiah. **Figure 6** visually illustrates the depreciation of the exchange rate over the years. A weakening Rupiah exchange rate has several adverse effects. Firstly, it impacts banks with foreign loans, as they will need to pay higher amounts in repayment, leading to decreased profitability. Secondly, it affects bank debtors, as disruptions in debt repayments can increase Non-Performing Loans (NPLs), further reducing bank profitability. These findings are consistent with previous research conducted by (Abidillah et al., 2022), (Aliyu and Yusof, 2016) and (Al-Homaidi et al., 2018), all of which identified a negative relationship between the exchange rate and bank profitability. The increase in foreign transaction costs due to a weakening exchange rate is cited as a key factor eroding bank profits.
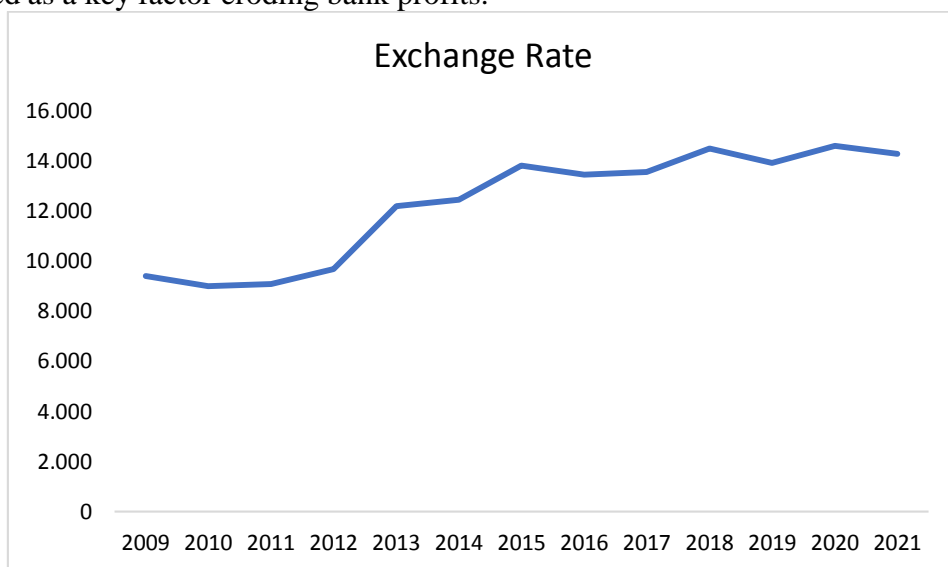
Figure 6. The Growth of Exchange Rate
Source: Processed data, 2022

The control variable, bank size, demonstrates a positive impact on profitability. A larger bank, typically indicated by greater total assets, tends to capitalize more efficiently on its assets. Larger banks can attract more deposits and disburse more loans, often having a more extensive branch network in various regions, facilitating fund absorption from the public. The ability to extend credit is a key driver of profitability in the banking sector, and higher credit volumes contribute to greater bank profitability.

This finding aligns with the research conducted by (Yahya et al., 2017), which concluded that larger bank size correlates with higher profitability. However, it contradicts the findings of (O'Connell, 2023), who argued that larger bank size is associated with lower profitability. O'Connell suggests that smaller banks might be more effective and profitable.

Regarding the macroeconomic indicators' impact on profitability, **Table 5** indicates that interest and exchange rates significantly affect profitability, measured by ROA. Higher SBI interest rates are positively associated with greater banking profitability. This result is consistent with (Al-Homaidi et al., 2018), who found that interest rates negatively and significantly impacted profitability. Conversely, exchange rates exhibit a negative and significant influence on banking profitability. This suggests that a higher exchange rate

value, signifying a weaker local currency, is associated with lower bank profitability, in line with (Al-Homaidi et al., 2018) findings.

From the explanation above, bank profitability is inseparable from several influencing factors. First, if conditions in Indonesia are COVID-19, it will reduce the profitability of conventional banks. For example, Bank Bukopin lost up to IDR 182.01 billion in March 2021. Second is bank capital, namely the capital adequacy ratio. The banks in the study sample are in good health because the CAR ratio is above 8 per cent. Banks with higher CARs, such as Bank Permata, are better positioned to enhance their profitability. The capital a bank possesses serves as a buffer against potential losses and enables the bank to seize opportunities for profit generation (Rahman et al., 2020; Yüksel et al., 2018).

Third, efficiency. Efficiency is measured using the cost-to-income ratio. If the burden borne by the bank is greater, it will reduce the profit it earns. Therefore, the greater the CIR ratio, the lower the bank's efficiency. A high CIR ratio such as that experienced by Bank Bukopin in 2021 will cause Bank Bukopin to suffer losses. This loss is caused by the expenses incurred by the bank, which are greater than the income received—fourth, economic growth. Good economic growth will also boost consumer purchasing power. As a result, credit extended by banks will be captured by debtors who use capital for both productive and consumptive activities.

Fifth, interest rates. If the benchmark interest rate from the central bank rises, then bank lending rates will also rise. As a result, the bank's income from credit will also increase. This will increase profitability. Sixth, the exchange rate. The exchange rate will affect bank profitability, especially on the foreign exchange side. If the exchange rate depreciates, debtors who have businesses related to foreign exchange will experience an increase in production costs, which will affect debt repayments at the bank. If a bank has many debtors like this, its NPL will increase, so its profitability will decrease. Seventh, bank size. BRI, for example. BRI is a bank whose core business is MSME. BRI is a well-known bank with the largest total assets. This condition allows BRI banks to make profits more easily. Banks with large assets will find it easier to obtain third-party funds and faster loan disbursements.

Finally, we perform a robustness test by adding control variables to ensure our key results are context-independent. We alternatively measure bank size as a control variable by total assets instead. We estimate our model using a fixed-effects panel estimator. The results of the fixed effects estimates confirm our previous main conclusions. It can be concluded that the profitability of the tested model is robust.

CONCLUSION

This study examined the effects of COVID-19, bank specifics, and macroeconomic factors on profitability. COVID-19 has significantly and negatively impacted the profitability of traditional banks. Bank characteristics like capital and size positively affect profitability and negatively impact efficiency, as determined by the cost-income ratio. Macroeconomic variables like interest rates and economic growth have a positive and considerable impact on traditional banks' profitability. The exchange rate has a very detrimental effect on profitability. The profitability of Indonesia's conventional banks was not significantly impacted by liquidity, credit risk, asset quality, or inflation.

Overall, some conclusions may be drawn, including the fact that COVID-19 has a detrimental impact on the financial health of Indonesia's conventional banks. Bank profits have declined as a result of COVID. Due to the government's stance on economic restraint, some participating players found it challenging to grow their enterprises. Furthermore, the profitability of conventional banks is typically unaffected by liquidity, credit risk, asset quality, and inflation. The sample's finances are in reasonable shape because Basel 3 and 4 provide a baseline. Because the role of intermediaries expands along with economic expansion, this favours bank profitability in Indonesia. In addition, when foreign transaction costs rise due to the decreasing rupiah exchange rate, banks' profitability will be negatively impacted.

The limitations of this study are that it only takes conventional banks during the 2009-2021 period and only banks with Basel 3 and Basel 4. For further research, it is necessary to add to the sample of banks, especially by taking representatives of Sharia commercial banks or regional development banks. For variable capital, consider using equity as a percentage of total assets. Because it uses a dummy, the best model selection is limited to the fixed-effect model. For further research, it may be considered to conduct research during a pandemic over a quarterly period, not annually.

The findings of this research hold several valuable implications for the banking industry and government policymakers. Firstly, in light of the impact of the COVID-19 pandemic and macroeconomic shocks, banks need to develop robust early warning strategies to navigate through turbulent economic conditions. These strategies should focus on maintaining adequate capital levels, managing bank size effectively, and being resilient to external shocks. This approach will ensure that economic fluctuations do not disrupt banking operations and profitability. Secondly, financial services authorities can utilize the research findings to enhance their supervision and regulation of the banking sector. Strengthening oversight can involve optimizing bank capital and size, ensuring banks are better equipped to weather economic uncertainties and contribute to overall financial stability.

For bankers, the research highlights the significance of factors like bank capital and size in driving profitability. Banks should pay close attention to these factors, as they directly impact a bank's ability to generate profits. Larger total assets and strong capital adequacy are associated with higher profitability. However, it's essential to acknowledge the research's limitations, such as the liquidity mismatch between assets and liabilities. Addressing this issue further enhances the stability and profitability of banks in Indonesia.

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