Capital Structure and Banking Performance in Dual Banking System in Indonesia

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Abstract

Purpose: The study aims to investigate the impact of capital structure on the financial performance of Indonesia's dual banking system, encompassing Conventional Commercial Banks (BUK) and Sharia Commercial Banks (BUS).

Methodology/Approach: Utilizing panel data regression, the study examined 9 Conventional and 9 Sharia banks in Indonesia from 2013 to 2019. Key metrics included ROA, ROE, EAR, DER, company size, and economic growth.

Results/Findings: EAR, DER, and economic growth positively and significantly impacted the ROA and ROE of conventional banks. For Sharia banks, company size and economic growth had a positive impact, while EAR and DER negatively influenced ROA and ROE.

Conclusion: This research highlights the differing impacts of capital structure on financial performance between conventional and Sharia banks in Indonesia, demonstrating that while economic growth benefits both, the influence of capital structure varies, especially for Sharia banks.

Limitations: The study is limited by the number of banks sampled (9 BUKs and 9 BUSs) and the timeframe (2013-2019), which may affect the generalizability of the results.

Contribution: Offers critical insights for policymakers and bankers in optimizing capital structure strategies in Indonesia's dual banking system.

Keywords: *Capital Structure, Dual Banking System, Financial Performance, Panel Data Regression*

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1. Introduction

Banking, the non-bank financial industry, and capital markets comprise Indonesia's financial services sector. Banking dominated this sector until 2018, with a market share of 74.08 percent. Since 1998, Indonesia has had a dual banking system comprising conventional and Sharia banking systems. In contrast to conventional banking, Sharia uses a profit-sharing structure and agreed margins based on Sharia-compliant contracts rather than an interest system. Conventional banking and Sharia banking, on the other hand, serve as financial intermediaries between those with funds and those in need of funds.

According to the Financial Services Authority (OJK) statistics, Sharia banking had a market share of only 5.96 percent in 2018. However, when it comes to its intermediation function, Sharia banking can work well with a Financing to Deposits Ratio (FDR) of 78-100 percent. This range of statistics implies that Sharia banks dispersed 78-100 percent of the total TPF collected to the general populace.
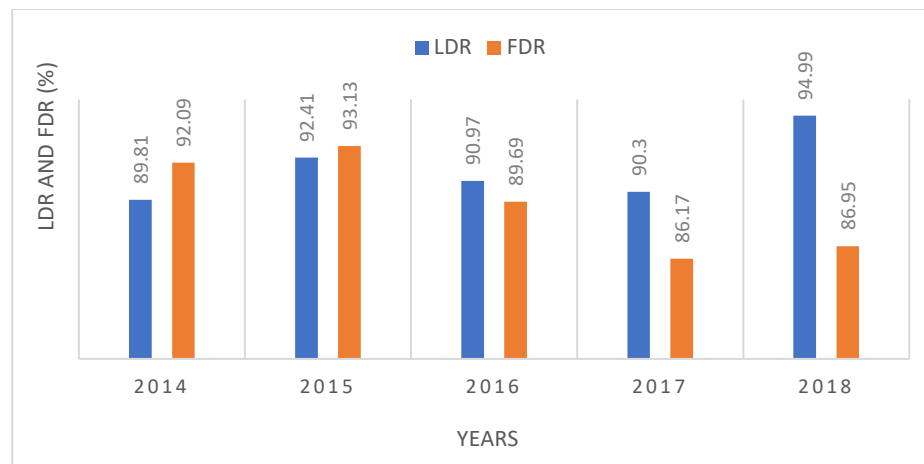
Figure 1. Comparison of Loan to Deposit Ratio (LDR) of conventional banks and Financing to Deposit Ratio (FDR) of sharia banks in 2014-2018

Source: Indonesian Banking Statistics and Sharia Banking Statistics (processed)

According to the statistics in Figure 1, the average FDR of Islamic banks was 89.6 percent from 2014 to 2018, while the average LDR of conventional banks was 91.7 percent. These results remain within the Bank Indonesia (BI) normal FDR and LDR ranges, namely 78-100 percent for Islamic bank FDR and 78-92 percent for conventional bank LDR. This condition demonstrates that, despite Sharia banking having a lower market share than conventional banking, the intermediation functions of the two banking systems are equally capable of functioning well.

As a financial intermediation organization, banking requires public trust so that people feel secure and are willing to utilize its services. Under these conditions, the performance of conventional and Shariah banking is critical to monitor because it represents the bank's ability to carry out its business activities. Financial performance is one method of evaluating bank performance because it describes the bank's financial state as well as the good and poor aspects of its performance over a specified period.Capital is one factor that might affect a bank's financial success. Capital is a source of financing for any company, including banks, that is used to sustain business continuity. If a bank's capital is minimal, it will be unable to offset the losses it confronts.

As a result, this condition may affect a bank's capacity to sustain its operational performance. Bank performance also deteriorates, resulting in decreased public trust (Pinasti & Mustikawati, 2018). Capital is classified into two types: domestic and international. Paid-in capital, share premiums, retained earnings, and current-year profits are all examples of own capital or equity. Loans and revenues from the sale of securities on the capital market can both be sources of foreign capital (Pham, Hoang, & Pham, 2022). The capital structure is formed based on the balance between these two types of capital.

Capital structure is a combination of own capital and long-term debt utilized by a corporate entity to fund its business operating activities (Ferriswara et al., 2022), and capital structure management or decisions are critical to pay attention to. Because capital structure is closely tied to risk and rate of return, this capital structure selection will have a substantial impact on financial performance (Melinda, Wiliasih, Irfany, Haq, & Camara, 2024). Therefore, examining the relationship between capital structure and financial performance is critical. An appropriate capital structure is envisaged to boost financial performance.

According to the Financial Services Authority (OJK), Sharia banking in Indonesia continues to face capital-related challenges. According to the Indonesian Sharia Financial Development Report, until the end of 2018, the core capital category of 1-5 trillion rupiah (BUKU 2) with a composition of nine BUS dominated the classification of Commercial Banks with Business Activities (BUKU) and Sharia Commercial Banks (BUS). There were four BUS with core capital of less than one trillion rupiah (BUKU 1) and only one BUS with a core capital of 5-30 trillion rupiah (BUKU 3). Aside from that,

when it comes to achieving capital adequacy as measured by the Capital Adequacy Ratio (CAR), the BUS CAR is still lower than the CAR of Conventional Commercial Banks (BUK).
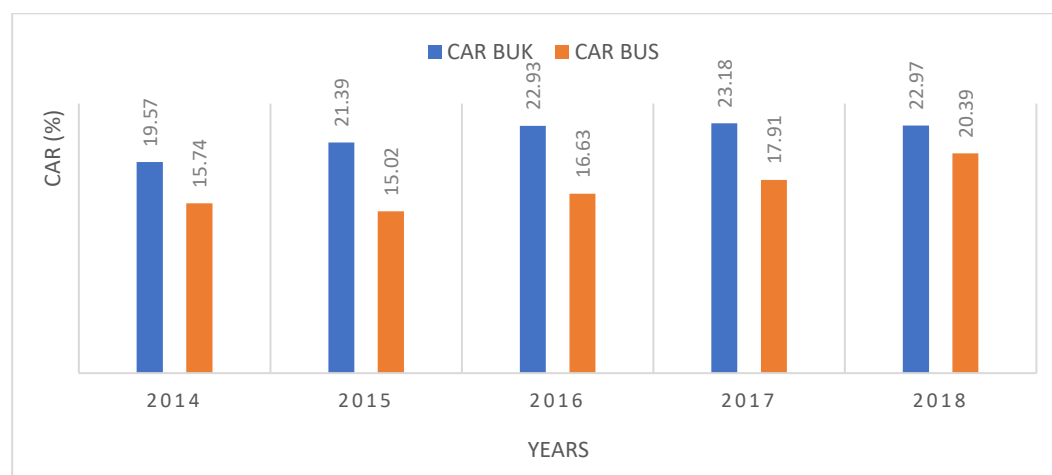

Figure 2. Comparison of BUK CAR and BUS CAR 2014-2018
Source: Indonesian Banking Statistics and Sharia Banking Statistics (processed)

Based on Figure 2, BUS's Capital Adequacy Ratio (CAR) increased from to 2015-2018 but remains lower than BUK's CAR. CAR measures a bank's capital adequacy in supporting risk-generating assets (Raharjo, Setiaji, & Syamsudin, 2014). A lower CAR indicates a reduced risk-handling capacity. Financial risk, which can lead to bankruptcy, concerns businesses, including banks (Nenu, Vintilă, & Gherghina, 2018). This risk is influenced by capital structure decisions that balance debt and equity. Poor choices can increase the cost of capital and affect financial performance (Utami, 2017). A higher debt composition elevates risk and impacts returns (Nenu et al., 2018).

Based on the background and problem formulation described previously, the objectives of this study are as follows:
1. Analyze the capital structure and financial performance in Indonesia's dual banking system (BUK and BUS).
2. The impact of capital structure on financial performance in this system was examined.
   This study focuses on the effects of capital structure on financial performance within Indonesia's dual banking system.

2. Literature Review
2.1 Dual Banking System in Indonesia
According to Indonesian Law No. 10 of 1998, banking encompasses various activities related to financial institutions, business operations, methods, and processes. Indonesia has had a dual banking system has been in place since 1992. This system combines conventional and Islamic banking, with each contributing to the broader financial landscape. Both systems synergistically mobilize public funds to finance various sectors of the national economy (Undang-Undang RI Nomor 10 Tahun 1998).

2.2 Conventional Banking
In conventional banking, banks operate based on an interest system. Under the same law, there are two main types of banks: Commercial Banks (BUK) and People's Credit Banks (BPR). BUKs provide comprehensive services, including payment and credit services, whereas BPRs focus more narrowly on providing credit without offering payment services (Undang-Undang RI Nomor 10 Tahun 1998).

2.3 Islamic Banking
Islamic banks are regulated by Law No. 21 of 2008 and operate on Shariah principles. Unlike conventional banks, Islamic banks do not employ an interest-based system. Instead, they operate under a profit-sharing model. The Islamic banking system comprises three main types: Islamic Commercial

Banks (BUS), people's Islamic Credit Banks (BPRS), and Shariah Business Units (UUS), which are part of conventional Commercial Banks (Undang-Undang Nomor 21 Tahun 2008).

2.4 Financial Performance

Financial performance is assessed using various metrics that provide insights into a company's financial health. Bui, Nguyen, and Pham (2023) stated that financial performance reflects operational outcomes from numerical financial data. The primary methods to analyze this are profitability ratios such as return on assets (ROA) and Return on Equity (ROE). ROA measures a company's ability to generate income from its assets (Fadillah, Nadiyah, Rohmah, Haryadi, & Wahyudi, 2024).

$$ROA = \frac{Net\ Income}{Total\ Asset}$$

A higher ROA indicates better asset utilization and efficiency. ROE measures the returns generated on equity investments (Fadillah et al., 2024).

$$ROE = \frac{Net\ Income\ after\ Tax}{Shareholder's\ Equity}$$

2.5 Capital Structure

Capital structure, as described by Bui et al. (2023), is the composition of long-term debt and equity of a firm. The choice of capital structure is a trade-off between risk and return (Ferriswara et al., 2022). It directly impacts the company's financial performance and can influence risks and returns (Melinda et al., 2024). The structure includes long-term liabilities, such as bonds and mortgages, and equity components, such as preferred shares, common shares, and retained earnings (Pham et al., 2022). Key ratios used to assess the capital structure include the Equity to Total Asset Ratio (EAR) and the Debt to Equity Ratio (DER).

$$EAR = \frac{Total\ Equity}{Total\ Asset}$$

EAR measures the proportion of equity to total assets, and DER shows the ratio of long-term debt to equity (Nenu et al., 2018).

$$DER = \frac{Total\ Liability}{Total\ Equity}$$

2.6 Firm Size

A company's size can indicate its scale and influence in the market. One way to measure this is through the calculation of total assets (Melinda et al., 2024), expressed as

$$Firm\ Size = Ln\ Total\ Aset$$

Larger companies tend to be more resilient to bankruptcy and are better equipped to handle market competition. This size advantage fosters greater public trust and contributes to a more secure financial position.

Economic growth is another critical factor affecting banks' internal and external financial performance (Bui et al., 2023). High economic growth, often reflected by an increase in the Gross Domestic Product (GDP), usually results in a ripple effect on individual incomes. This, in turn, triggers an increase in spending across various sectors, positively affecting banking revenue. Therefore, the economic cycle has a substantial impact on a bank's financial well-being (Melinda et al., 2024).

Finally, the capital structure of a company, specifically a bank, is sensitive to economic fluctuations (Pham et al., 2022). Favorable economic conditions can positively impact capital structure, thus benefiting financial performance. Conversely, a downturn in economic growth can be detrimental to a

bank's capital structure, consequently negatively affecting its financial stability and performance (Melinda et al., 2024).

Several studies have explored the impact of capital structure on the financial performance of banks, including Islamic banks. For instance, Pinto, Hawaldar, Quadras, and Joseph (2020) found a significant relationship between capital structure and financial metrics like Net Profit Ratio and Return on Capital Employed in Indian banks. Melinda et al. (2024) analyzed 85 Islamic banks in 19 countries. They found that Capital Ratio, Consumer and Short-Term Funds to Total Assets, and company size were significant factors in enhancing financial performance. Sheikh and Qureshi (2017) focused on Pakistani banks and discovered varying influences of profitability, company size, and asset tangibility on capital structure between conventional and Islamic banks.

Studies by Larasati and Adityawarman (2016) and Olokoyo (2013) underscore the complexities in the relationship between capital structure and financial performance, emphasizing the role of other variables such as overhead and long-term debt-to-asset ratios. Syarif, Maulana, Salsabila, and Maulana (2023) found that economic growth significantly and positively impacts profitability indicators, such as return on assets (ROA) and Return on Equity (ROE), in Indonesian Islamic banks.

Finally, Rionita and Abundanti (2018) and Safitri and Wahyudi (2025) examined Indonesian banks listed on the stock exchange. They found positive and negative relationships between debt ratios and profitability metrics, such as ROE, depending on the type of bank. These findings indicate the nuanced and context-specific impact of capital structure on banks' financial performance.

3. Research Methodology

3.1 Data

This quantitative study focuses on Indonesia's dual banking system, covering Commercial Banks (BUK) and Islamic Banks (BUS) from Q1 2013 to Q3 2019. Financial metrics such as ROA, ROE, EAR, DER, and SIZE were obtained from the banks' official websites, while GDPG data were sourced from Bank Indonesia. The study specifically targets BUK and BUS registered with Indonesia's Financial Services Authority (OJK) in 2019, chosen for their significant market share of 70.06% for BUK and 64.67% for BUS as of 2018.

Sample selection was based on rigorous criteria, including OJK registration, consistent business form from 2013-2019 to, and the availability of complete quarterly financial reports. As a result, nine BUS and nine BUK were chosen as the study samples. The selected banks were analyzed using two main methodologies: descriptive and panel data regression analyses.

Microsoft Excel 2013 and Eviews 10 software were used for data analysis. This study aims to evaluate the influence of factors such as capital structure, company size, and economic growth on the financial performance of the chosen banks. Panel data regression is employed for its capability to offer more informative data, tackle collinearity issues, and capture variations across time and individual entities.

3.2 Panel Data Regression

Estimation in panel data regression models can be carried out using three approaches (Ceesay and Moussa, 2022):

a) *Pooled Least Square* (PLS)

Pooled Least Square (PLS) is a model that combines all data (pooled) so that there are N x T observations. N is the number of cross-sectional units, and T is the number of time series. The following is the PLS equation model:

$$Y_{it} = \alpha_i + \beta X_{it} + u_{it}$$

Information :

Y_{it} : dependent variable value

X_{it} : independent variable value

α_i : constant intercept for each observation

β : slope
u_{it} : error

b) *Fixed Effect Model* (FEM)

The Fixed Effect Model (FEM) includes elements of dummy variables that are different for each individual so that the intercept has variations between individuals (cross sections) and between units of time (time series). In FEM, the individual effect (ε_{it}) and the independent variable (X_{it}) can correlate (not random). The following is the FEM equation model:

$$Y_{it} = \Sigma\ \alpha_i\ D_i + \beta X_{it} + \varepsilon_{it}$$

Information :

Y_{it} : dependent variable value
X_{it} : independent variable value
α_i : model intercepts that change (individually) between cross-section units
β : slope
D   : variable dummy
ε_{it} : error

c) *Random Effect Model* (REM)

In contrast to FEM, in the Random Effect Model (REM), individual effects (ε_{it}) and independent variables (X_{it}) cannot be correlated (are random). This assumption makes the error components of the individual effect and time included in the errors. The following is the REM model equation:

$$Yit = \alpha_0 + \beta Xit + \varepsilon it$$
$$\varepsilon it = uit + vit + wit$$

Information :

$uit \sim N\ (0,\ \delta U)2$: error component each observation (cross section)
$vit \sim N\ (0,\ \delta V)2$: error component each period (time series)
$wit \sim N\ (0,\ \delta W)2$: error component combinations

3.3 Research Model

This study examines the impact of capital structure on financial performance in Indonesia's dual banking system, focusing on both BUK and BUS. The independent variables are the Equity to Asset Ratio (EAR) and Debt to Equity Ratio (DER), while the dependent variables are Return on Assets (ROA) and Return on Equity (ROE). Company size (SIZE) and economic growth (GDPG) are included as the control variables. Four models were used to analyze the data.

a) Model 1 (ROAK)
b) $ROAKit = a_0 + a_1EARKit + a_2DERKit + a_3LN\_SIZEKit + a_4GDPGit + \varepsilon_{it}$
c) Model 2 (ROEK)
d) $ROEKit = a_0 + a_1EARKit + a_2DERKit + a_3LN\_SIZEKit + a_4GDPGit + \varepsilon_{it}$
e) Model 3 (ROAS)
f) $ROASit = a_0 + a_1EARSit + a_2DERSit + a_3LN\_SIZESit + a_4GDPGit + \varepsilon_{it}$
g) Model 4 (ROES)
h) $ROESit = a_0 + a_1EARSit + a_2DERSit + a_3LN\_SIZESit + a_4GDPGit + \varepsilon_{it}$

Information :

ROAK   = Return on Asset of BUK (%)
ROAS   = Return on Asset of BUS (%)
ROEK   = Return on Equity of BUK (%)
ROES   = Return on Equity of BUS (%)
EARK   = Equity to Total Asset Ratio of BUK (%)
EARS   = Equity to Total Asset Ratio of BUS (%)
DERK   = Debt to Equity Ratio of BUK (%)
DERS   = Debt to Equity Ratio of BUS (%)
LN_SIZEK   = Firm Size of BUK (Trillion rupiah)

LN_SIZES	= Firm Sizeof BUS (Trillion rupiah)
GDPG	= GDP Growth or Economic Growth (%)
$a0, b0$	= Intercept
$a1,…,n, b1,…,n$	= Slope
εit	= *Error term*
I	= individual-i
T	= Time period-t

4. Results and Discussions

The data used in this research were from nine BUK and nine BUS. The BUK in this study are BPD North Sumatra (North Sumatra), Bank Maspion Indonesia, Bank ICBC Indonesia, BPD South Kalimantan (Kalsel), Bank Mayapada Internasional, Bank UOB Indonesia, Bank Mestika Dharma, BPD Bali, and Bank Sinarmas. At the same time, BUS consists of Bank Muamalat Indonesia, Bank Victoria Syariah, BRI Syariah, BNI Syariah, Bank Syariah Mandiri, Bank Mega Syariah, Bank Panin Dubai Syariah, Bank Syariah Bukopin, and BCA Syariah. The following is the development of the nine BUK and nine BUS assets used in this research during the 2013-2019 period.
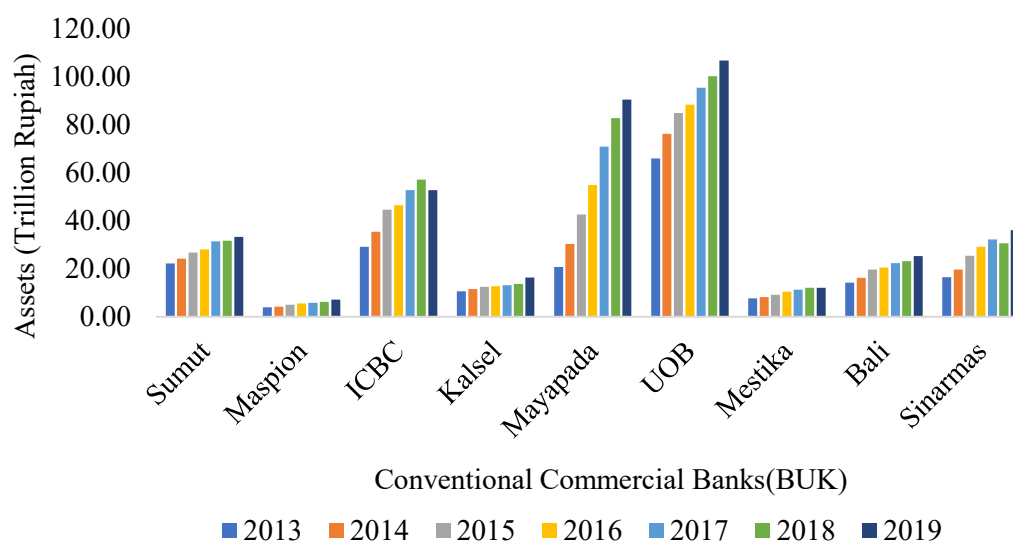

Figure 3. Average BUK assets in 203-2019
Source: Financial Report of Each BUK that is the Research Sample (processed)

Based on Figure 3, the average assets of the nine BUKs during 2013-2019 continue to increase, except for ICBC Bank, which is still fluctuating. The largest average asset of the nine BUKs during this period was UOB Bank in 2019, which reached 106.63 trillion rupiahs, while the lowest average asset was that of Maspion Bank in 2013, with 3.87 trillion rupiahs. For BUS, the highest average asset of the nine BUS during the 2013-2019 period was BSM in 2019, with 100.78 trillion rupiah, and the lowest average asset was BVS, with 1.06 trillion rupiah, in 2013. This is shown in Figure 4
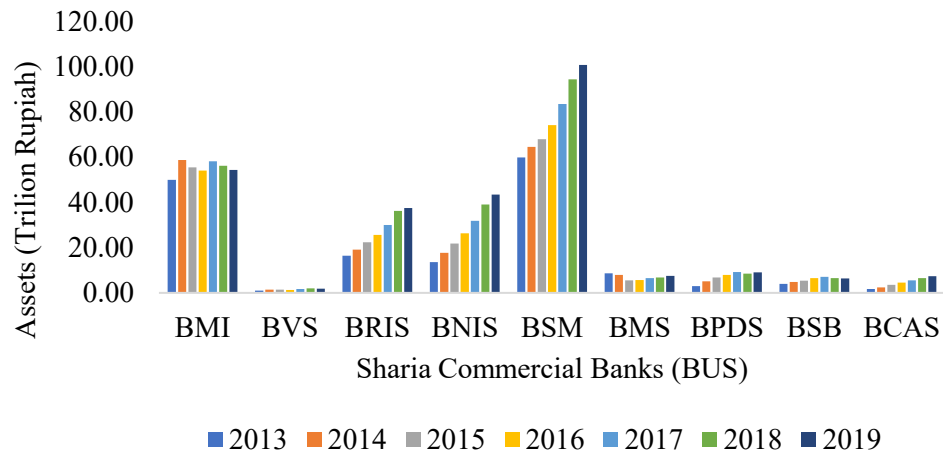
Figure 4. Average BUS assets in 2013-2019
Source: Financial Report of Each BUS that is the Research Sample (processed)

In contrast to BUK, Figure 5 shows that during the 2013-2019 period, the average assets of the nine BUS fluctuated, except for BRIS, BNIS, BSM, and BCAS, which continued to increase yearly. However, overall, the average BUS assets show a positive trend. This is shown in Figure 6.
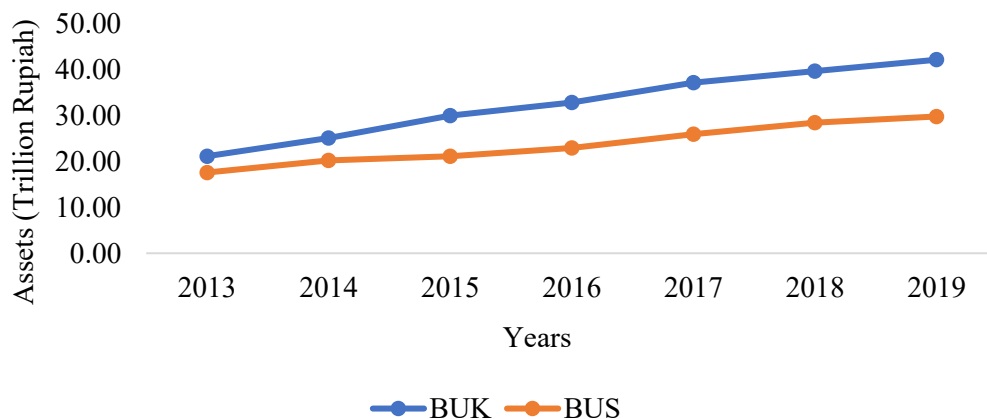

Figure 5. Average BUK and BUS assets in 2013-2019
Source: Financial Report of Each BUS that is the Research Sample (processed)

4.1 Development of DER and EAR BUK and BUS

In carrying out their business activities, BUK and BUS use internal funding sources or their capital and external funds or foreign capital for business financing. The balance between these two types of capital is related to the formation of the capital structure. The capital structure ratios in this study are the EAR and DER.
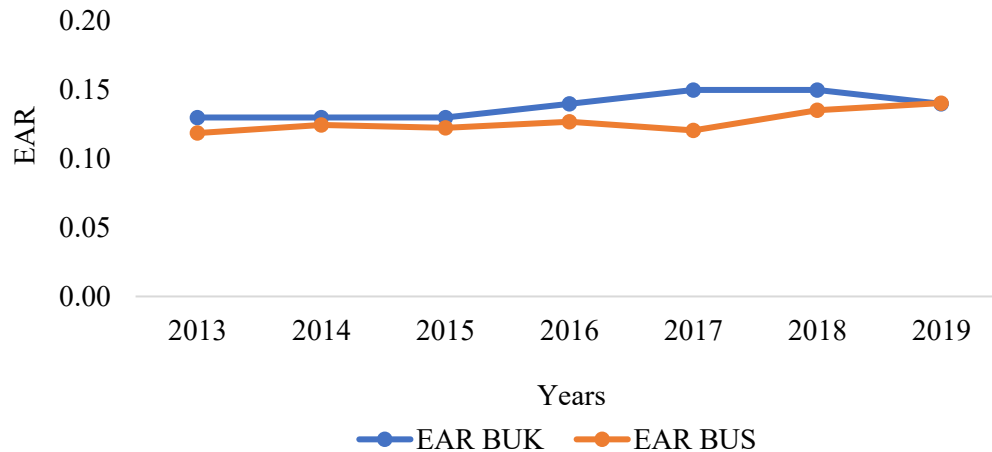
Figure 6. BUK's and BUS's Average EAR period 2013-2019
Source: Financial Report of Each BUS that is the Research Sample (processed)

Figure 6 shows the average development of EAR BUK and EAR BUS from to 2013-2019 period. Based on this data, the average EAR BUK and EAR BUS were classified as fluctuating and tended to increase. However, in–2018-2019, the average EAR BUK decreased from 0.15 to 0.14, and the average EAR BUS decreased in the 2016-2017 period from 0.13 to 0.12. The EAR value is the balance between own capital and total assets, which describes the amount of a business entity's capital, including banks, which are part of all assets. Based on Figure 6, the average EAR in BUK and BUS are close to 0. This shows the low level of capital included in the BUK and BUS assets.

For DER, the average DER BUK and BUS from to 2013-2019 were classified as fluctuating and tended to decrease. This is illustrated in Figure 7.
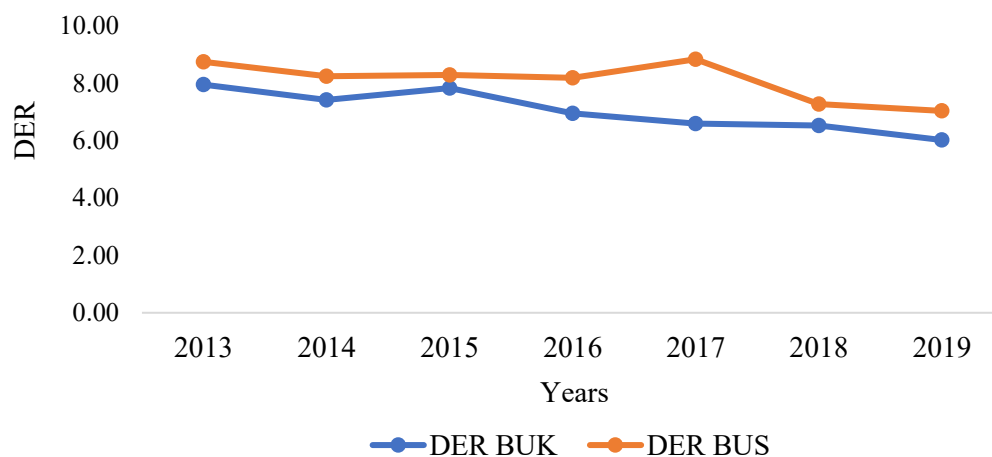

Figure 7. BUK's and BUS's Average DER 2013-2019 period
Source: Financial Report of Each BUS that is the Research Sample (processed)

The DER compares total debt to owned capital. Figure 8 shows that the average values of DER BUK and DER BUS are greater than one. This indicates that BUK and BUS's debts are more significant than capital. According to Ferriswara et al. (2022), if a company's debt is high, the company's risk will be high, and returns will increase. When risk increases, share prices fall; if returns increase, share prices rise. Therefore, an optimal capital structure that balances risk and return is expected to streamline operational activities and improve financial performance.

4.2 Development of ROA and ROE BUK and BUS

ROA and ROE describe financial performance in this study. The following are the average ROA and ROE values for BUK and BUS.

Table 1. Average ROA and ROE of BUK and BUS 2013-2019 (in percent)

	BUK		BUS	
	ROA	ROE	ROA	ROE
2013	2.88	21.33	1.58	20.39
2014	2.42	16.82	0.62	6.93
2015	1.91	14.26	0.51	4.28
2016	2.21	15.62	0.46	1.75
2017	1.99	12.06	0.42	2.08
2018	1.64	9.97	0.67	4.34
2019	1.69	10.01	0.64	4.38

Source: Financial Report of Each BUS that is the Research Sample (processed)

Based on Table 1, during the 2013-2019 period for BUK and BUS, the average ROE value was always more significant than the average ROA value. This result shows that the financial performance of BUK and BUS has a greater return on benefits for investors than the return on assets for the company. Apart from that, the average BUK ROA and BUS ROA in the 2013-2019 period were classified as fluctuating and tending to decline. However, it can also be seen that the average ROA of BUK during the current period is always higher than the ROA of BUS. The average ROA of BUK is in the range of 1.64-2.88 percent, while the average ROA of BUS is in the range of 0.42-1.58 percent.

Similar to the average ROA, Table 1 shows that the average ROE of BUK and BUS during 2013-2019 fluctuated and tended to decline. Nevertheless, the fluctuating average ROE of BUK is still better than that of BUS. During the current period, the highest decline in the average ROE for BUS reached 13.46 percent in the 2013-2014 period, while the highest decline in the average ROE for BUK was only 4.51 percent in the 2013-2014 period. Apart from that, based on Table 1, it can be seen that the average ROE of BUK is always higher than the average ROE of BUS. During the current period, BUK's average ROE was 9.97-21.33 percent, while BUS' average was 1.75-20.39 percent.

4.3 Indonesian Economic Growth

In improving and maintaining financial performance, every business entity, including banks, is influenced by the economic conditions of its country. These economic conditions can affect banks operations and policymaking related to their financial performance. Positive economic growth is also expected to influence banks' financial performance. During the research period, from the first quarter of 2013 to the third quarter of 2019, Indonesia's economic growth fluctuated from 4.74 percent to 5.59 percent. The average economic growth during this period was 5.11 percent.
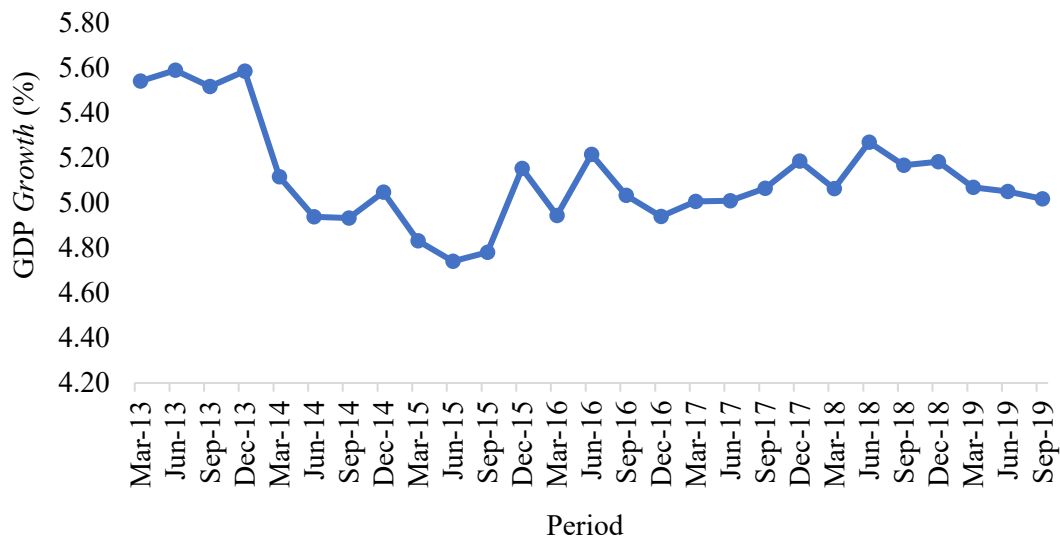
Figure 8. Indonesia's economic growth in the first quarter of 2013-third quarter of 2019
Source : Bank Indonesia (processed)

During the research period, it was also discovered that in Quarter IV 2018 to Quarter III 2019, Indonesia's economic growth declined from 5.18 percent to 5.02 percent. Based on data from the 2019 Indonesian economic report, the decline in economic growth is likely a result of the impact of uncertainty on global economic growth in 2018. World economic growth slowed from 3.8 percent in 2017 to 3.7 percent in 2018. The slowdown in world economic growth is due to the decreasing growth in world trade volume and global commodity prices.

The ongoing trade war between China and the United States (US) and the impact of geopolitical conflicts, such as Britain's agreement to leave the European Union (Brexit), are also causes of global economic uncertainty. As a result of this situation, the strength of the currencies of various developing countries against the US dollar has weakened because global investors are competing to attract their investments. Macroeconomic and financial system stability in many developing countries, including Indonesia, has been disrupted. Indonesia's economic growth is shown in Figure 8.

4.4 The Influence of Capital Structure on the Financial Performance of BUK and BUS

In conducting panel data regression, the initial stage is to choose the best model for the analysis. Three models can be tested: pooled least squares (PLS) or Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The first test is the Chow test, which chooses between PLS and FEM to select the best model. Based on the results of the Chow test (Table 1) on the ROAK, ROEK, ROAS, and ROES models, the chi-square probability value was smaller than the significance level (0.05); therefore, the model chosen was FEM.

Table 2. Chow test result

Effect Test	Model ROAK		Model ROEK		Model ROAS		Model ROES	
	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
Cross-section F	61.479	0.000	72.199	0.000	5.045	0.000	3.024	0.000
Cross-section Chi Square	277.922	0.000	305.203	0.000	39.29	0.000	24.304	0.000

Source: Own Estimation

Next, a Hausman test was conducted to determine the best model between FEM and REM. The Hausman test results (Table 2) show that the probability values of the four models are more significant than the significance level (0.05). Therefore, the panel data regression model for ROAK, ROEK, ROAS, and ROES is the REM.

Table 3. Haussman Test result

Effect Test	Model ROAK		Model ROEK		Model ROAS		Model ROES	
	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
Cross-section random	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000

Source: Own Estimation

We then run classic assumption tests on the REM: normality and multicollinearity. Normality, assessed using the Jarque-Bera test, fails (Table 3) but can be resolved with large samples owing to the central limit theorem.

Table 4. Normality test result

Criteria	Model ROAK	Model ROEK	Model ROAS	Model ROES
Jarque-Berra	25.524	8.964	2526.039	590.399
Probability	0.000	0.011	0.000	0.000

Source: Own Estimation

Multicollinearity tests showed no issues (Table 4), confirming that our REM choice was sound for the study variables.

Table 5. Multicollinearity test result

BUK'S Model (ROAK and ROEK)				
	EARK	DERK	LN_SIZEK	GDPG
EARK	1.000000	-0.915311	-0.515181	-0.010791
DERK	-0.915311	1.000000	0.454297	0.033815
LN_SIZEK	-0.515181	0.454297	1.000000	-0.114156
GDPG	-0.010791	0.033815	-0.114156	1.000000
BUS'S Model (ROAS and ROES)				
	EARS	DERS	LN_SIZES	GDPG
EARS	1.000000	-0.897904	-0.671338	-0.033998
DERS	-0.897904	1.000000	0.692720	0.045423
LN_SIZES	-0.671338	0.692720	1.000000	-0.072806
GDPG	-0.033998	0.045423	-0.072806	1.000000

Source: Own Estimation

4.5 The influence of EAR, DER, SIZE, and GDPG on ROA BUK and BUS

Panel data regression analysis in this study uses two independent variables, EAR and DER, as well as company size (SIZE) and economic growth (GDPG) as control variables. The regression analysis was intended to determine the influence of the independent variable on the dependent variable. The following are the results of the panel data regression using the random effects model (REM) in a model with ROA as the dependent variable.

Table 6. Estimation results of the influence of capital structure on ROA of BUK and BUS

Variable	BUK		BUS	
	Coefficient	Probability	Coefficient	Probability
C	0.531313	0.7586	-4.141821	0.0224
EAR	0.104316	0.0389	-0.125367	0.0014
DER	0.001179	0.0954	-0.003885	0.0000
LN_SIZE	-1.089422	0.0000	0.527429	0.0000
GDPG	0.533750	0.0045	1.622270	0.0000

Source: Own estimation

The estimation results show that for BUK, EAR has a positive coefficient of 0.104 and a significance of 0.0389, indicating a positive influence on ROA (Mehmetaj & Hajdari, 2025); Indarwati & Anan, 2014). On the other hand, EAR on BUS has a negative effect with a coefficient of -0.125 and a significance of 0.0014 (Syarif et al., 2023). This means that an increase in the EAR in BUK increases ROA, whereas in BUS, it decreases. For DER in BUK, a positive coefficient of 0.001 and a probability of 0.0954 indicate a positive influence on ROA (Tomak, 2025). In BUS, a coefficient of -0.004 and a probability of 0.0000 indicate a negative influence (Efendi & Wibowo, 2017; Purwasih & Makrus, 2025). This shows that debt is relatively more profitable for BUK than for BUS. Company size also has a different impact on the results. In BUK, company size has a negative effect on ROA, with a coefficient of -1.089 and a probability of 0.0000 (Berliana, Simanjorang, Khasanah, Lestari, & Margaretha, 2025; Wufron, 2017). Meanwhile, the effect is positive in BUS, with a coefficient of 0.527 and a probability of 0.0000 (Prijanto and Veno, 2017).

Finally, economic growth (GDPG) positively affects both types of banks' profitability. In BUK, the coefficient is 0.534, and the probability is 0.0045 (Sorongan, 2017), and in BUS, the coefficient is 1.622, with a probability of 0.0000 (Sodiq, 2015). In the context of capital, both tend to have a debt equity ratio (DER) of more than 1, but the effect is the opposite on ROA. This study shows that the low capital of BUS in Indonesia (OJK, 2015) affects their ability to overcome risks and has a negative impact on ROA. This is to the Pecking Order and trade-off theories, which explain a company's choice of using funds.

4.6 The influence of EAR, DER, SIZE, and GDPG on ROE BUK and BUS
The regression analysis in this study uses two dependent variables: ROA and ROE. The following are the results of the panel data regression analysis using the REM in a model with ROE as the dependent variable.

Table 7. Estimated results of the influence of capital structure on ROE of BUK and BUS

Variable	BUK		BUS	
	Coefficient	Probability	Koefisien	Coefficient
C	-4.184472	0.7266	-87.59498	0.0000
EAR	0.752651	0.0315	-1.342830	0.0012
DER	0.023230	0.0000	-0.029009	0.0000
LN_SIZE	-8.451569	0.0000	5.889144	0.0000
GDPG	3.553917	0.0000	23.49207	0.0000

Source: Own estimation

Based on the REM estimations in Table 3, the ROE of BUK and BUS would be -4.184% and -87.595%, respectively, when all independent variables are zero. A unit increase in EAR leads to a statistically significant 0.753% increase in BUK's ROE, aligning with Aba (2018)'s findings. Conversely, a unit increase in EAR results in a significant 1.343% decrease in BUS's ROE, consistent with Syarif et al. (2023). Thus, EAR exerts a significant but opposite influence on the ROEs of BUK and BUS. The average EAR value of BUK and BUS in the sample in this study is always close to 0, meaning that the capital combined in BUK and BUS assets is low. This shows that the low level of own capital included in BUK's assets can increase ROA and BUK's ROE. In contrast to BUK, the low level of capital included in BUS assets can reduce ROA and BUS's ROE.

Until the end of 2018, Sharia Commercial Banks (BUS) were still dominated by the core capital category of 1-5 trillion rupiah (BUKU 2), with a composition of nine BUS. There were four BUS in the core capital category of less than 1 trillion rupiah (BUKU 1), one BUS with a core capital of 5-30 trillion rupiah (BUKU 3), and no BUS in the core capital category of more than 30 trillion rupiah (BOOK 4). Moreover, if we look at the ratio of meeting capital adequacy shown by the Capital Adequacy Ratio (CAR), the BUS CAR is still lower than the CAR of Conventional Commercial Banks (BUK). This shows that the capital condition of BUS is still lower than that of BUK. Therefore, there are differences in the research results for the BUK and BUS. The condition of the low composition of own capital in

BUS assets, which indicates the high composition of debt in BUS assets, can increase risks and burdens for BUS, thereby reducing ROA and ROE.

The coefficient for DER BUS is -0.029, indicating a statistically significant negative effect on BUS's ROE, in line with findings by Zeitun and Tian (2014), Adhitya (2025), Efendi and Wibowo (2017), and Ahmad, Bone, and Kusumawardani (2018). The study also reveals that both BUK and BUS have an average DER greater than one, implying that BUK benefits in terms of ROE from higher total debt, while BUS suffers a decrease in ROE. This reflects the risk assessment suggested by Nenu et al. (2018), who stated that higher debt levels increase risk and can adversely affect financial performance, which is evident in BUS's lowered ROE.

The coefficient for company size (SIZE) in BUK is -8.452, showing a statistically significant negative impact on BUK's ROE, as corroborated by Berliana et al. (2025). Conversely, in BUS, the SIZE coefficient is 5.889, indicating a statistically significant positive effect on BUS's ROE, which aligns with Giyarti (2015). In summary, an increase in company size results in an 8.452% decrease in BUK's ROE and a 5.889% increase in BUS's ROE. Economic growth (GDPG) has a positive and statistically significant influence on both BUK and BUS ROE. For BUK, a unit increase in economic growth results in a 3.554% ROE increase, which aligns with Sutjipto and Manurung (2025). In BUS, the same increase leads to a dramatic 23.492% ROE increase, corroborated by Syarif et al. (2023). Both findings were statistically significant, with p-values less than 0.05.

5. Conclusion

Based on the results of research on the dual banking system, namely 9 BUK and 9 BUS, in the period from the first quarter of 2013 to the third quarter of 2019, the following conclusions can be drawn:

1. In BUK and BUS, the average EAR during the 2013-2019 period is classified as fluctuating and tends to increase. However, the average EAR values for BUK and BUS were close to 0. This shows that the amount of capital combined in BUK and BUS assets is low. For the DER, the average DER BUK and BUS during the current period are classified as fluctuating, and their values tend to decrease. However, the average values of DER BUK and DER BUS are greater than one. This result indicates that BUK and BUS's debt is more significant than their capital. Meanwhile, the average ROE value is always greater than the average ROA value for BUK and BUS. This result shows that the financial performance of BUK and BUS has a greater return on benefits for investors than the return on assets for the company.
2. In BUK, the capital structure represented by EAR and DER and strengthened by the control variables company size and economic growth simultaneously has a significant effect on BUK's ROA and ROE. Partially, EAR and DER have positive and significant effects on BUK's ROA and ROE. As for company size and economic growth as control variables, company size partially has a negative and significant effect on BUK's ROA and ROE, while economic growth has a positive effect on BUK's ROA and ROE. In BUS, the capital structure represented by EAR and DER and strengthened by the control variables company size and economic growth simultaneously has a significant effect on BUS ROA and ROE. Partially, EAR and DER have negative and significant effects on ROA and ROE BUS. As for company size and economic growth as control variables, company size, and economic growth have a positive and significant effect on ROA and ROE BUS.

Based on the results of the analysis and research that has been carried out, the following suggestions are provided:

1. BUS should consider the optimal capital structure. In this case, BUS must maximize its wealth owned by BUS to make appropriate capital structure decisions.
2. BUS must combine two main factors in making capital structure decisions, namely risk and rate of return, to provide the best results in determining the composition of the capital structure. The BUS must consider the rate of return that must be obtained as compensation for the BUS and investors for the risks arising from the composition of the created capital structure. It is hoped that this will help determine optimal capital structure decisions for BUS so that the capital structure can positively influence BUS's financial performance.

3. Further research can be carried out on capital structure ratios and other financial performance measures, such as the long-term to debt asset ratio (LTDAR) and long-term to debt equity ratio (LTDER) for capital structure, as well as earnings per share (EPS) for financial performance. In addition, samples and periods can be added to the research to further strengthen the research results.

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