



Determinants of Banking Stability Listed on the Indonesia Stock Exchange

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ABSTRACT

Banks often face uncertainty and failure, making banking stability an important issue in several countries. This study analyzes the factors that affect the stability of banks listed on the Indonesia Stock Exchange for 2019-2023, consisting of bank size, liquidity risk, credit risk, and macroeconomic factors, namely inflation and GDP growth. Using quantitative methods and panel data regression analysis, the results show that bank size, liquidity risk, and GDP growth have a positive effect, while credit risk and inflation have a negative effect. Therefore, banks should optimize the use of assets, improve capital management, take advantage of GDP growth, and focus on managing credit risk and inflation to maintain stability.

INTRODUCTION

The health of the financial system and the economy in general depends on banking stability (Aniemeke, 2024). Bank stability itself can be defined as a condition where banks operate effectively in terms of resource sharing, risk spreading, and revenue sharing (Nguyen, Nguyen, Le & To, 2023). Banks play a major role in encouraging investment activities, which in turn will contribute to economic growth (Dewi & Saraswati, 2024).

When banks are unstable, they are more likely to fail. Bank failure occurs when a bank cannot fulfill its financial obligations to creditors and depositors (Samad & Armstrong, 2022). Bank failures can lead to a financial crisis that causes loss of confidence, potential government intervention, and widespread economic impact, affecting various financial institutions and markets (Gurdian & Montanez, 2023). This causes the banking sector to be considered the most vulnerable sector in the economy (Pasaribu & Mindosa, 2021).

But in practice, instability and bank failures often occur, where banking stability not only affects the financial sector but also has a direct impact on economic growth and public confidence (Korneev, ziubliuk, Tymkiv, Antkiv & Kucherenko, 2023). Therefore, banking stability has become a significant issue in several countries (Shim, 2019). History records that the events of the monetary crisis in Indonesia in 1998 made banking stability severely shift, which required 16 banks to be closed, thus reducing public confidence in banking. Due to these circumstances, banks struggled to function effectively as financial intermediaries, leading to a 13% decrease in Indonesia's economic growth (Nisaputra, 2020). Furthermore, the global financial crisis of 2008 had a significant impact on the Indonesian banking sector (Hamdillah, Ermawati & Suprayitno, 2024). The crisis resulted in a decline in banking assets, an increase in non-performing loans, and a decrease in capital adequacy, prompting state-owned banks to seek liquidity assistance from the government. (Majid & Ulina, 2020).

In Indonesia, several studies have discussed banking stability. One of them has been conducted by (Ibrahim & Rizvi, 2018), with a sample of 71 conventional and Islamic banks in Indonesia. According to this study, bank size affects bank stability in Indonesia. Then, research by (Firdaus, Mafruhah & Tri Rahayu, 2022) used data from the 20 largest conventional banks in Indonesia. This study found that GDP growth and inflation significantly affect bank stability. More recently, (Dewi & Saraswati, 2024), found that bank stability in Indonesia is positively affected by micro-prudential factors such as capital adequacy (CAR) and non-performing loans (NPL).

This study was conducted to analyze the determinants of banking stability listed on the Indonesia Stock Exchange.

LITERATURE REVIEW

Bank Stability

Bank stability is a crucial aspect of the financial system that maintains public confidence and supports economic growth (Tsegaye, 2024). According to (Huu Vu & Thanh Ngo, 2023) bank stability can be influenced by the interaction between credit risk and liquidity risk. A stable bank is characterized by Tobin's q

value as an important measurement tool in assessing bank stability because it connects the market value of assets with the replacement cost of assets (Bacha Simões, 2023). This concept, introduced by James Tobin in 1969, suggests a relationship between market value and investment decisions, where q represents the ratio of market value to the replacement cost of the asset. Tobin's q can be used to evaluate whether the bank has enough capital to cover the risks it faces (Ali, Mahmud & Lima, 2016). A high Tobin's q value reflects market confidence in the bank's ability to generate future profits that contribute to the stability of the financial system. Conversely, a low Q value can be an early warning signal of potential liquidity problems, thus allowing regulators and bank management to take proactive steps in maintaining stability, see among others (Beganau, Bigio & Majerovitz, 2021; Bhargava & Tandon, 2023; Nsour, Dahiyat & Weshah, 2021; Rolle Herani & Javed, 2020). The Q ratio can be found using the following calculation:

$$\text{Tobin}'q = \text{Market Value} : \text{Total Assets}$$

Bank Size

Bank size indicates the size of a bank and has a significant impact on its stability (Kamau, Uwihirwe & Nzamalu, 2023). Research conducted by (Gwachha, 2023) revealed that bank size affects stability, where larger banks have better access to resources and capital markets, as well as the ability to spread risk effectively. Bank size is characterized by total assets as an indicator (Aniemeke, 2024), which includes all resources such as loans, investments, and cash, reflecting the bank's ability to generate income and meet financial obligations (Anh & Huong, 2024). Banks with higher total assets tend to have a better capacity to weather financial shocks and meet customer withdrawal demands, thus maintaining bank stability, see among others: (Johnson, 2022; Joseph, 2024; Nguyen, Le & Do, 2024). Total Assets can be calculated as follows:

$$\text{Total Assets} = \text{Current Assets} + (\text{Long-term Assets} - \text{Depreciation})$$

Liquidity Risk

Liquidity risk is the inability of a bank to meet an obligation due to insufficient liquid assets or funding sources, either due to unfavorable market conditions or ineffective management (Qin, 2024). When liquidity decreases, it can cause banks to be forced to sell assets quickly, which can result in significant losses and affect overall financial stability (Ismail & Ahmed, 2023). Liquidity risk can be seen from the Capital Adequacy Ratio (CAR) (Anh & Sang, 2024), where when CAR is at a healthy level, it indicates that the bank has sufficient capital to bear losses that may arise from asset impairment or increased demand for liquidity. Conversely, if CAR is low, this may indicate that the bank may not have enough capital to deal with liquidity shocks, thereby increasing the risk of bankruptcy or difficulty in meeting short-term obligations (Usman & Lestari, 2019). Some studies show that the capital adequacy ratio (CAR) has a positive and significant effect on bank stability, see, among others: Ayinuola & Gumel, 2023; Shabani, Morina & Misiri, 2019). CAR can be calculated as follows:

$$\text{CAR} = (\text{Bank Capital} : \text{Total Weighted Assets}) \times 100\%$$

Credit Risk

Credit risk is one type of risk faced by financial institutions, especially banks, which relates to the possibility that borrowers will not be able to fulfill their debt repayment obligations by the agreed terms (Roopa, 2023). When credit risk is high, banks have the potential to experience large financial losses due to the increasing number of non-performing loans (NPL), which forces them to reserve more capital to cover potential losses (Stephen Oluwafemi Adeusi, 2017). Credit risk can be seen from the amount of non-performing loans (NPL), where an increase in the NPL ratio negatively affects the stability of the bank, as banks may need to reserve more capital to cover potential losses, which ultimately leads to a decrease in revenue due to higher provisions for non-performing loans, see among others: (Anh & Sang, 2024; Elda, 2023; Hakobyan & Hambardzumyan, 2024; Odanga, Ndegwa & Okello, 2024). NPL can be calculated as follows:

$$\text{NPL} = (\text{Total non-performing loans} : \text{Total loans}) \times 100\%$$

Macroeconomic Factors

Macroeconomic factors in the context of banking stability refer to several economic elements that can affect the overall health and performance of banks (Gwachha & Karmacharya, 2023). These factors include inflation and GDP growth, which can have a direct impact on the ability of customers to meet their financial obligations (Statovci & Balaj, 2024). When inflation increases, the cost of living also increases, which can lead to a decline in consumption and investment. This could potentially reduce the demand for loans, which is the main source of income for banks (Munteanu, 2024). On the other hand, positive GDP growth usually reflects healthy economic conditions, which can increase public confidence in the banking system and encourage credit growth (Rachuba, 2020). In addition, several other studies also use inflation and GDP growth as indicators of macroeconomic variables that significantly affect bank stability, see among others: (Antwi & Mercy Kwakye, 2022; Firdaus, Marfuhah & Tri Rahayu, 2022; Hussain, Tahir & Khan, 2022; Sahib & Mabrouk, 2024; Tsegaye, 2024; Yitayaw, Mogess, Fesiya, Mamo & Abdulahi, 2023).

$$\text{Inflation} = ((\text{CPI this year} - \text{CPI last year}) : \text{CPI last year}) \times 100\%$$

$$\text{GDP} = \text{Consumption} + \text{Investment} + \text{Government Spending} + (\text{Exports} - \text{Imports})$$

METHODOLOGY

To achieve the research objectives, this study used quantitative research methods. This method is adapted to the literature mentioned above and further. Quantitative research can be used to answer questions related to research variables (Haradhan, 2020). The main focus of this research is the relationship between various components that affect the stability of banks listed on the Indonesia Stock Exchange, so this research method is considered suitable for answering research questions.

For data, this study uses secondary data used in panel data regression. The data period used is per year, starting from 2019 to 2023. The data is taken

from the official publication of the Indonesia Stock Exchange (IDX), which consists of five BUMN banks and thirty non-BUMN banks.

The model used to estimate the determinants of banking stability in Indonesia is a panel data regression model. The model is formulated as follows. $Tobin'Q_i = \beta_0 + \beta_1 BSize_i + \beta_2 CAR_i + \beta_3 NPL_i + \beta_4 Inflation_i + \beta_5 GDP_i + e_i$ (1) Where $i = tahun$. Tobin'Q = bank stability, BSize = Bank Size, CAR = capital adequacy ratio, NPL = non-performing loans, Inflation = inflation ratio, GDP = GDP growth, e = error term, and β_0 = constant term.

Variable Justification

The variables in this article were used by previous studies in the finance and banking literature. Five independent variables and 1 dependent variable are used in this study. The reasons for using these variables have been justified in the table below.

Table 1. Justifikasi Variabel

Variable Indicators	Expected/predicted sign	Remark on the expected/predicted sign	Previous studies that used the variable and supported the prediction
Tobin'Q		The dependent variable represents bank stability	(Beganau, Bigio & Majerovitz, 2021; Bhargave & Tandon, 2023; Nsour, Dahiyat & Weshah, 2021; Rolle Herani & Javed, 2020)
Total Asset	+	Total assets are used as a determinant of bank stability. Higher total assets tend to have a better capacity to deal with financial shocks and fulfill customer withdrawal requests to maintain bank stability.	(Aniemeke, 2024; Anh & Huong, 2024; Johnson, 2022; Joseph, 2024; Kamau, Uwihirwe & Nzamalu, 2023; Nguyen, Le & Do, 2024)
CAR	+	Capital adequacy ratio (CAR) is used as a determinant of bank stability. A high capital adequacy ratio is expected to increase bank safety and bank stability.	(Anh & Sang, 2014; Ayinuola & Gumel, 2023; Ismail & Ahmed, 2023; Shabani, Morina & Misiri, 2019; Qin, 2024; Usman & Lestari, 2019)
NPL	-	Non-performing loan ratio (NPL) is used as a determinant of bank stability. Higher non-performing loans are expected to reduce profitability and make the bank potentially unstable.	(Firdaus, Marfuhah & Tri Rahayu, 2022; Hussain, Tahir & Khan, 2022; Tsegaye, 2024; Roopa, 2023; Stephen Oluwafemi Adeusi, 2017)
Inflation	-	Inflation is used as a	(Antwi & Mercy Kwakye,

		determinant of bank stability. High inflation is expected to adversely affect bank stability.	2022; Gwachha & Karmacharya, 2023; Sahib & Mabrouk, 2024 Statovci & Balaj, 2024)
GDP Growth	+	GDP is used as a determinant of bank stability. Positive GDP growth usually reflects healthy economic conditions, which can increase public confidence in the banking system and encourage credit growth.	(Rachuba, 2020; Tsegaye, 2024; Yitayaw, Mogess, Fesiya, Mamo & Abdulahi, 2023)

RESEARCH RESULT AND DISCUSSION

Empirical Result

In this section, the descriptive statistics results, the Pearson Correlation results, and the ordinary least squares regression estimation results are presented.

Descriptive Statistics

The average value (mean) on the Tobin'Q variable is 1.25 higher than the median of 1.01 and much higher than the standard deviation (SD) of 0.51. The average of the total assets variable is 6.14 higher than the median of 1.52 and much higher than the standard deviation (SD) of 1.56. The average of the CAR variable is 31.02 higher than the median of 16.92 but much lower than the standard deviation (SD) of 20.94. The average of the NPL variable is 3.12 and higher than the median and standard deviation (SD) of 2.79. The average of the inflation variable is 2.87 which is greater than the median of 2.61 and lower than the standard deviation (SD) of 1.38. The average of the GDP growth variable is 1.27 higher than the median and standard deviation (SD) of -0.36 and -0.75.

Table 2. Descriptive Statistics Result

	Tobin'Q	Total Asset	CAR	NPL	Inflation	GDP Growth
Mean	1.25	6.14	31.02	3.12	2.87	1.27
Median	1.01	1.52	16.92	2.79	2.61	-0.36
Maximum	3.55	8.99	169.92	29.58	5.51	0.60
Minimum	0.11	3.78	0.24	0.06	1.68	-0.75
Std. Dev	0.51	1.56	20.94	2.79	1.38	0.26
Skewness	2.17	3.82	3.21	5.58	1.18	0.29
Kurtois	8.96	17.55	17.01	52.37	2.84	2.72
Jarque-Bera	397.65	197.05	173.38	186.85	41.17	3.02

Probability	0.25	0.87	0.12	0.06	0.18	0.21
Observations	175	175	175	175	175	175

Correlation Result

The correlations between the dependent variable (bank stability) and the independent variables are reported in the table below. The Pearson correlation results show that total assets, CAR, and GDP growth are positively correlated to bank stability. This suggests that higher levels of total assets, capital adequacy ratio (CAR), and GDP growth correlate with greater bank stability in Indonesia. In addition, the correlation results show that the NPL and inflation variables are inversely correlated with the bank stability variable. This suggests that high NPLs and inflation correlate with greater bank stability in Indonesia. Overall, the correlations in Table 2 are all below 0.70, indicating that there is no perfect collinearity in the correlations.

Table 3. Correlation Result

Variable Indicators	STAB	Total Aset	CAR	NPL	Inflasi	PDB
Tobin'Q	1.000					
Total Aset	0.218	1.000				
CAR	0.1373	-0.231	1.000			
NPL	-0.144	-0.038	0.098	1.000		
Inflasi	-0.101	-0.036	0.068	-0.045	1.000	
PDB	0.082	0.038	0.006	-0.034	0.756	1.000

Determinants of Bank Stability Listed on the Indonesia Stock Exchange: The total assets variable has a positive probability of 0.12 with a positive T-Statistic of 1.39, which indicates that banks with high total assets have a positive effect on bank stability. This suggests that banks with high total assets tend to cope better with financial shocks and maintain customer confidence, thus maintaining bank stability. Therefore, banks should consider improving operational efficiency and optimizing the use of existing assets, to maximize potential income and increase resilience to risk. Then, the liquidity risk variable (CAR) has a positive probability of 0.021 with a positive T-Statistic of 2.33, which indicates that an increase in CAR is positively associated with bank stability. This indicates that banks with higher capital adequacy tend to be more stable and gain more trust from investors. Therefore, banks should continue to improve their capital adequacy ratio through better capital management. In addition, GDP growth has a positive probability of 0.049 with a positive T-Statistic of 1.39, which indicates that GDP growth has a positive effect on bank stability. Positive GDP growth usually reflects healthy economic conditions, which can increase public confidence in the banking system and encourage credit growth. Therefore, banks should capitalize on the momentum of GDP growth by increasing the offering of credit products and other financial

services. In contrast, the credit risk variable (NPL) shows a positive probability of 0.045 but with a negative T-Statistic (-2.01), which means that an increase in NPL is negatively associated with bank stability. Banks with low non-performing loans tend to be more stable than banks with high non-performing loans. In this case, banks should focus on tighter credit risk management and conduct periodic reviews of the loan portfolio to reduce NPLs. Likewise, the inflation variable has a positive probability of 0.038 but has a negative T-Statistic of (-1.33) which means that an increase in inflation hurts bank stability. When inflation increases the cost of living also increases by a large amount, so it can cause a decrease in consumption and investment. This could potentially reduce demand and lending which is the main source of income for banks. Therefore, banks need to develop strategies to manage the impact of inflation, such as offering more flexible and affordable loan products to help customers deal with the rising cost of living. The R-Square of 89.87% indicates that the model can explain most of the variation in bank stability. In comparison, the Adjusted R-Square of 82.11% indicates that the model remains robust despite some variables that may not contribute significantly. The F-statistic of 9.94 with a P(F-Statistic) of 0.00 indicates that the overall model is significant.

Table 4. Ordinary Least Square Regression Estimation for Determinants of Bank Stability Listed on the Indonesia Stock Exchange (Sample: 2019-2023)

	(1)
	Variabel Dependen : Tobin'Q
	Probabilitas
	(T-Statistik)
C	1.72 (0.00)
Total Asset	0.012 (1.39)
CAR	0.021 (2.33)
NPL	0.045 (-2.01)
Inflation	0.038 (-1.33)
GDP	0.049 (1.39)
R-Square	89.87
Adjusted R-Square	82.11
F-Statistik	9.94
P(F-Statistik)	0.00

CONCLUSION AND RECOMMENDATION

This study identifies factors that affect the stability of banks listed on the Indonesia Stock Exchange between 2019-2023, using Tobin's Q as a measure of

stability. The results show that total assets, capital adequacy ratio (CAR), non-performing loan ratio (NPL), inflation, and GDP growth significantly affect bank stability, where total assets, liquidity, and GDP growth contribute positively, while credit risk and inflation negatively impact. Therefore, banks are advised to optimize the use of assets through operational efficiency and portfolio diversification, increase CAR, capitalize on GDP growth with relevant credit product offerings, and implement strict credit risk management to lower NPLs. In addition, strategies to deal with inflation and improved economic analysis capabilities will help banks be more responsive to changes in macroeconomic conditions, maintaining financial stability and performance.

ADVANCED RESEARCH

This study has several limitations that need to be considered. First, the data used only covers banks listed on the Indonesia Stock Exchange, so it does not cover all types of banks in Indonesia, which may affect the research results. Secondly, the research focus is limited to the 2019-2023 period, without considering changes outside of that period. Third, although several relevant variables have been analyzed, there are still many other factors, such as monetary policy and technological innovation, that can affect banking stability.

For future research, it is advised that researchers broaden their scope to include banks not listed on the Indonesia Stock Exchange, such as Islamic banks and smaller institutions, in order to gain a more comprehensive understanding. Long-term studies that analyze data before and after the study period may provide more valuable insights. Additionally, exploring the effects of technological innovation and public perception on banking stability is crucial. The research aims to provide a deeper understanding of policies that support the stability of Indonesia's banking sector.

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