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Does Macroeconomic Moderate the Effect of Risk and Diversification on Financial Stability?

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Abstract

The financial stability of Islamic banking can enhance efficiency and resilience to withstand shocks arising from both internal and external factors. This study analyzes the impact of risk, diversification, and inflation on the financial stability of Islamic banking. This study utilizes monthly time series data from 2018 to 2022 and employs Multiple Linear Regression and Moderated Regression Analysis (MRA) with the Eviews 10 Version application as the method for data analysis. The results show that the credit risk variable (NPF) has a significant negative relationship to financial stability (Z-Score). Along with the liquidity risk (FDR) variable, financing diversification has a significant positive effect on the financial stability of Islamic banking (Z-Score). Macroeconomic variables (inflation) can strengthen the effect of financing diversification and weaken the effect of liquidity risk (FDR), but inflation cannot moderate the effect of credit risk (NPF) on the financial stability of Islamic banking (Z-Score). This study introduces a new theoretical approach to the conceptual relationship between variables. The findings can also serve as a reference for monetary authorities when considering the impact of inflation on establishing financial stability policies.

Keywords: Z-Score; Financing Diversification; NPF; FDR; Inflation.

INTRODUCTION

The Islamic banking industry is the spearhead of developing the Islamic economy in Indonesia (Ayusaleha & Laila, 2022; Effendy et al., 2023; Setiawan & Mugiyati, 2023). The growth of the banking sector is driven by financial stability,

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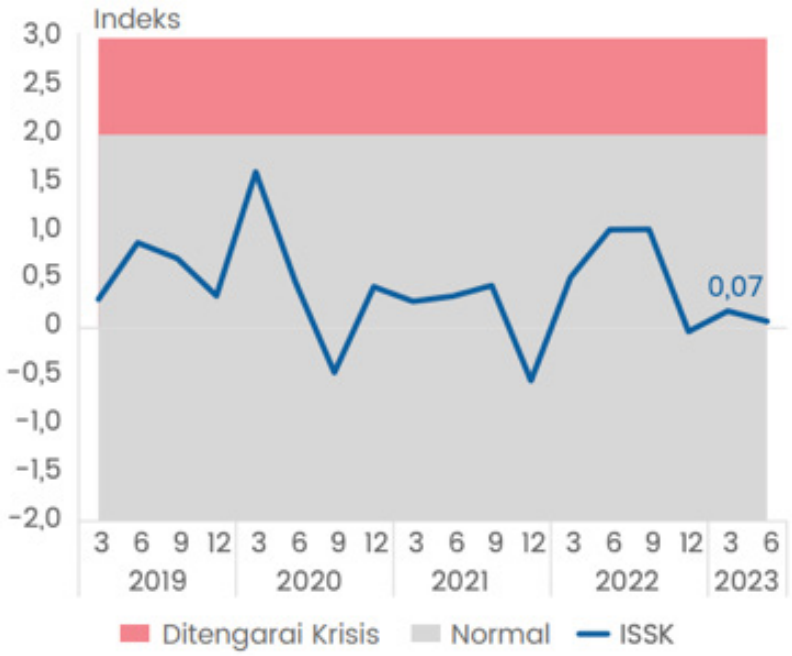
which can improve the health of the financial system in all countries (Athari et al., 2023). Islamic banking in Indonesia is vital in supporting the national economy and improving people's welfare. The growth and development of the Islamic financial industry need to be encouraged with various efforts, including maintaining the performance of Islamic banks to remain healthy and efficient (Syahputri & Pimada, 2023). A healthy banking condition can undoubtedly attract investor interest. Additionally, it enhances economic growth in a country (Andriani & Abarahan, 2023). The development of the Financial System Stability Index (FSIS) was maintained in the normal zone at a level of 0.99 at the end of June 2022. At the end of Semester I 2022, the liquidity ratio was 29.99%, or above the pre-pandemic average of 17.31% in 2019. The resilience of the financial system is strengthened by the resilience of the banking sector, which is reinforced by a high level of banking capital adequacy as well as a maintained non-performing loan ratio and ample liquidity (OJK, 2022).



Graphic 1.1 Financial System Stability Index (FSIS)

Source: Bank Indonesia, data processed

The increasing role of the Islamic industry globally and nationally has encouraged researchers to examine the industry's financial stability, including Islamic banking (Heniwati, 2019). Moreover, Hassan et al. (2021) noted that Islamic banks are more stable than conventional banks. Financial stability is still a controversial topic and an important issue among policymakers. The risk and stability of the banking system affect the long-term health of corporate finances. Financial institutions are at risk of bankruptcy, which poses a significant threat to them. The primary strategy that banks adopt to mitigate risk is to pursue diversification.

Several factors can affect the level of financial stability of banks, including risk management, which consists of credit risk and liquidity risk (Putri & Syafruddin, 2023). Implemented risk management helps maintain bank health. Its practice in Islamic banking remains based on Islamic principles and is always under the supervision of the Sharia Supervisory Board (Paramarta & Meiranto, 2022). In addition, Indonesian Islamic banking has begun to diversify its services to increase sources of income in addition to its primary activities (Maulana et al., 2023). With its various derivative products, the financial sector become an essential medium for supporting society's rapidly growing economic and social activities (Parsaulian, 2022).

The Pecking Order Theory is a theory relevant to the relationship between unsystematic financial risk and financial stability. The Pecking Order Theory was first proposed by Myers (1984) and suggests that firms follow a particular order when financing their operations, with internal financing being preferred over external sources. According to this theory, firms will only take on unsystematic financial risk if they have exhausted all other sources of financing (Ismail & Ahmed, 2023). In addition, the theory related to diversification is the portfolio theory, which proposes that optimal investment diversification can minimize risk and contribute to higher returns (Adem, 2022).

There is a scarcity of research that addresses the connection between inflation, risk, and diversification in order to attain financial stability. Similar to the research conducted by Setianti and Haryono (2023), risk management is one of the tools to measure the health of Islamic banking. Research shows that financing risk can negatively affect the stability of Islamic banks in Indonesia. In line with research by Paramita (2020), the effect of credit risk has a negative impact on financial stability. Meanwhile, Anggraini et al. (2023) state that credit

risk (NPF) as a proxy for credit risk has no effect on the stability of Islamic banks. Then, FDR has a positive effect on financial stability. However, in the study of Ismail and Ahmed (2023), liquidity risk has no direct impact on financial stability. According to Ayusaleha and Laila (2022), both financing diversification and financing risk have a significant negative impact on banking stability. Another finding by Mahendra (2023) shows that the diversification of the financing portfolio carried out by Islamic banks affects the overall financial stability of Islamic banks in Indonesia. Likewise, the study conducted by Shabir et al. (2024) offers valuable insights into the relationship between diversification and the stability of banks. Diversification can be a valuable tool to enhance bank stability, but banks must carefully balance the benefits and risks of diversification. Excessive diversification into risky activities may jeopardize bank stability. From the explanation of previous research, there has been no discussion of the relationship of macroeconomic variables to risk, diversification, and financial stability. Thus, researchers make macroeconomic variables, namely inflation, as a moderator, a novelty in this study.

High inflation will inevitably lead to a decline in individuals' actual revenues, resulting in a corresponding decrease in their living standards. The aforementioned factor can negatively impact the overall performance of the economy, encompassing both the real sector and the financial sector (Fatoni & Sidiq, 2019). Inflation, as one of the macroeconomic variables, can negatively affect bank stability, according to studies conducted by Syatiri and Hamdaini (2017), Wiku and Ayuningtyas (2021), and Fatoni and Sidiq (2019). Inflation can affect the financing performance of Islamic banks. High inflation can increase the number of non-performing loans and weaken the internal conditions of banks, which then have an impact on bank stability. Then, when inflation occurs, the real sector faces difficulties in terms of production and demand. In Islamic banking, inflation encourages banks to optimize funding diversification. Then, financing diversification can be a credit risk and liquidity risk management strategy for Islamic banks. Meanwhile, in the study of Safina (2022), the inflation factor does not have a close relationship with Islamic banks.

The use of inflation as a moderating variable has been done in previous studies, such as Fauziah et al. (2023) and Harnida (2021), with ROA, DER, FDR, and PER as independent variables. Then, the variables ROA and TOBINS Q

are the dependent variables. From these two studies, it is proven that inflation can moderate profitability on firm value. Then, in the research by Liadi et al. (2022), the independent variable used DER, EPS, and firm size. On the other hand, the stock price as the dependent variable produces findings that inflation can moderate the effect of firm size on stock prices. The research conducted by Antang et al. (2023) and Wahyuni and Azmi (2019) examines the relationship between financing contracts, efficiency (BOPO), BI Rate, and capital (CAR) as independent variables and NPF and NPL as dependent variables. The result is that inflation can moderate the financing contract on NPF and strengthen LDR on NPL. Based on previous research, inflation as moderation provides new findings; thus, this study chooses inflation as a moderator by providing a breakthrough for independent variables, namely risk, diversification, and financial stability of Islamic commercial banks as the dependent variable.

The inconsistency of the results of the above research shows that the financial stability of Islamic banking still needs to be discussed by adding other factors that influence it. This study aims to examine the role of macroeconomics (inflation) in moderating the effect of NPF, FDR, financing diversification, and inflation on the financial stability of Islamic banking. The dependent variable, financial stability, use Z-Score as its measurement indicator (Alfiyan et al., 2023; Fatoni & Sidiq, 2019). This work differs from previous research by incorporating macroeconomics (inflation) as a moderating variable using the multiple linear regression method followed by the MRA method. In addition, there are control variables, namely CAR and BOPO, so that the results obtained are in accordance with the hypothesis formulated.

LITERATURE REVIEW

Pecking Order Theory

The Pecking Order Theory posits that companies prefer internal to external financing and debt to equity if the company issues securities (Myers, 1984). Essentially, this thesis posits that organizations lack a clearly defined target ratio of debt to value (Ismail & Ahmed, 2023). The relationship between this theory and risk is that a high level of risk increases the likelihood of overcoming financial difficulties. The lower the risk, the better the financial condition or it can be said that financial stability improves as the level of risk decreases.

Portfolio Theory

The investment portfolio theory, as introduced by Markowitz in 1952, emphasizes the importance of diversification in investment strategies. This theory, also known as "don't put all your eggs in one basket," is particularly relevant for organizations that serve as both investment managers and investors (Ahyar, 2021)—primarily concerned with diversity as a means of mitigating or limiting the risk associated with the entire portfolio. The diversity of contract products in Islamic banking will provide various results that can increase the financial stability of Islamic banking. In addition, the variable factor of inflation as one of the macroeconomic indicators must be considered in the investment decision-making process to maintain the stability and performance of the investment portfolio (Jufri & Sakinah, 2022).

Financial Stability

Financial system stability is a condition in which economic mechanisms to determine prices, allocate funds, and manage risks function properly and support economic growth. Good financial system stability will be able to provide benefits and protection from negative shocks and help stabilize and strengthen the financial system (Dewi et al., 2023; Nuridah et al., 2023; Sintabela & Badjuri, 2023). Healthy and profitable companies will tend to fund their operational activities with internal funds from retained earnings and use debt as a last resort after seeking internal funding. Financial stability will improve as profitability increases (Waluyani & Muflih, 2022).

Almost the same as explained by Bank Indonesia, financial system stability is a condition that allows the national financial system to function effectively and efficiently, allocate funds and financing in a targeted manner, and protect the economy from internal and external factors. The objective is to achieve national economic growth and stability, resulting in a favorable increase (Adem, 2022), as indicated by the Z-Score measurement of financial stability. A higher Z-score indicates strong stability and low bankruptcy rates (Vuong et al., 2024; Widarjono & Misanam, 2023).

Risk

Credit Risk

Credit risk is an important component of banking operations. By implementing appropriate credit risk management strategies, banks can maintain financial stability and minimize potential losses due to loan defaults (Hoque et al., 2024). Credit risk may arise from loans provided by banks to their customers, where loans can affect the bank's operations. The bank bears credit risk if the customer fails to pay the debt or credit received on the due date. Credit risk can be measured using non-performing financing (NPF) in Islamic commercial banking (Safitri et al., 2023).

NPF, which indicates financing risk, is the ratio of non-performing financing to total financing. This NPF shows the amount of financing risk (Widarjono & Misanam, 2023). The higher the NPF, the higher the unpaid financing. Conversely, a low NPF ratio indicates high credit quality due to the low amount of problematic loans it faces (Sufyati et al., 2022). As a result, the high NPF disrupts Islamic banks' financial stability due to the high financing risk. However, Fatoni (2022) found a significant positive effect between NPF and financial stability. Due to inconsistencies in the research, the hypothesis is formulated as follows:

H1: Credit risk has a negative effect on the financial stability of Islamic banking

Liquidity Risk

Liquidity risk refers to the potential for a bank to be unable to fulfill its financial commitments by the specified deadline (Ismail & Ahmed, 2023). Skoglund and Chen (2015) mentioned that the risk caused by market or bank-specific events is known as liquidity risk. As a measurement, FDR (Financing Deposit Ratio) is used. This ratio aims to ensure that the bank has the necessary resources to fulfill its obligations to investors who have invested their money using financing provided by debtors. Liquidity is higher when the ratio is higher; thus, the increase in the ratio will result in more stable banking finances (Agustina et al., 2023).

According to Amara and Mabrouki (2019), liquidity risk has no significant impact on banking stability. Meanwhile, Anggraini et al. (2023) stated that

liquidity risk (FDR) has a positive effect on financial stability. Thus, the hypothesis is as follows:

H2: Liquidity risk has a positive effect on the financial stability of Islamic banking

Financing Diversification

Diversification is a form of business development that expands the number of business and geographic segments, expands existing market shares, or develops a variety of products (Subara & Fauzie, 2023). Portfolio diversification is the division of assets into several instruments or sectors in order to maximize profits and minimize risk (Mahendra, 2023).

Diversification can be seen in funding, financing, or credit products and services (Nguyen, 2018). The diversification used in this study is the diversification of financing based on contracts with Islamic banks. *Akad* is the main basis for every *muamalah* activity. In Islamic banks, the contracts used for financing are classified into four categories: transactions based on sale and purchase (murabahah and istishna), profit sharing (mudharabah and musyarakah), rent (ijarah and ijarah muntahiya bittamlik), and *qardh* (Ayusaleha & Laila, 2022).

Based on portfolio theory, financing diversification can minimize the risk of bad debts faced by Islamic banks, thus increasing the financial stability of Islamic banking. According to the research of Hunjra et al. (2020), banks with more diversified assets have higher sustainable profit efficiency, while banks with more diversified funding have higher profit efficiency. This increases bank stability at some point. Meanwhile, in the research of Shahriar et al. (2023), they concluded that funding diversification had a negative impact on bank stability during the 2007-2008 crisis.

H3: Financing diversification has a positive effect on the financial stability of Islamic banking

Inflation

Inflation has severe consequences for economic stability and public welfare. Therefore, controlling inflation is essential to a country's monetary policy (Wulandari et al., 2023). Inflation can disrupt the work function of money,

causing people to be reluctant to save or withdraw their funds in banks and other disturbances that ultimately have an impact on the bank's financial resilience system (Heniwati, 2019). The impact of high inflation can reduce people's real income because the price of goods is increasing, resulting in negative economic processes (Alfiyan et al., 2023). The studies conducted by Syatiri and Hamdaini (2017), Wiku and Ayuningtyas (2021), and Fatoni and Sidiq (2019) demonstrate that inflation has a detrimental impact on bank stability. However, Safina (2022) found that the inflation component does not have a significant correlation with Islamic banks. The hypothesis is formulated as follows:

H4: Inflation can strengthen the influence of credit risk on the financial stability of Islamic banking

H5: Inflation can strengthen the influence of liquidity risk on the financial stability of Islamic banking

H6: Inflation can strengthen the influence of financing diversification on the financial stability of Islamic banking

Based on the background, theoretical basis, and hypotheses that have been compiled. The dotted line indicates the control variable to neutralize the research results. The following will describe the theoretical framework of this research:

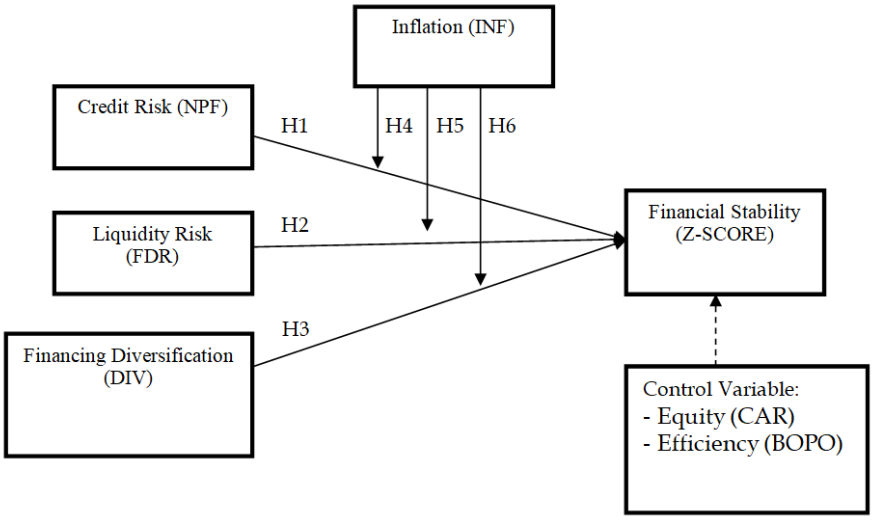


Figure 2.1. Framework
Source: data processed by researchers, 2023

RESEARCH METHOD

The quantitative approach used in this research is explanatory. The data used is monthly time series data from 2018 to 2022. Data sources from NPF, FDR, financing diversification, and Z-Score variables were obtained from the Sharia Banking Statistics (SPS, *Statistik Perbankan Syariah*) of the Indonesian Financial Services Authority (OJK, *Otoritas Jasa Keuangan*), while inflation variables were obtained from Bank Indonesia. The data collection method employed in this study involves the utilization of documentation techniques. Specifically, researchers gather evidence pertaining to direct reporting data by accessing the necessary websites, including OJK and Bank Indonesia websites, from 2018 to 2022.

The study population comprises approximately 15 Islamic commercial banks operating from 2018 to 2022. The sample determination used a saturated sampling technique, where all members of the population were sampled. Therefore, it can be concluded that the sample of this study represents the entire population. The study started in 2018 because it can see changes over time in a trend of each variable, then research for at least five years can provide a more comprehensive understanding and more robust generalization of the phenomenon under study.

Table 3.1. Operational Definition of Variables

Variables		Measurement
Dependent Variable		
Banking Stability	Y	$Z - Score = \frac{ROA + CAR}{\sigma ROA}$
Independent Variable		
Credit Risk (NPF)	X1	$NPF = \frac{Total\ non - performing\ loan}{Total\ Financing}$
Liquidity Risk (FDR)	X2	$FDR = \frac{Total\ Financing}{Third\ Party\ Funds}$

Financing Diversification (DIV)	X3	DIV = 1- HHI $DIV = \frac{\left[\left(\frac{Murabahah}{Total\ Financing}\right)^2 + \left(\frac{Salam}{Total\ Financing}\right)^2 + \left(\frac{Istishna}{Total\ Financing}\right)^2 + \left(\frac{Mudharabah}{Total\ Financing}\right)^2 + \left(\frac{Musyarakah}{Total\ Financing}\right)^2 + \left(\frac{Ijarah}{Total\ Financing}\right)^2 + \left(\frac{Qardh}{Total\ Financing}\right)^2\right]}{\left[\left(\frac{Murabahah}{Total\ Financing}\right)^2 + \left(\frac{Salam}{Total\ Financing}\right)^2 + \left(\frac{Istishna}{Total\ Financing}\right)^2 + \left(\frac{Mudharabah}{Total\ Financing}\right)^2 + \left(\frac{Musyarakah}{Total\ Financing}\right)^2 + \left(\frac{Ijarah}{Total\ Financing}\right)^2 + \left(\frac{Qardh}{Total\ Financing}\right)^2\right]}$
Moderating Variable		
Inflation	X4	Inflation (month %)
Control Variables		
Efficiency (BOPO)	Z	$BOPO = \frac{Total\ operating\ costs}{Total\ operating\ income}$
Capital (CAR)	X5	$CAR = \frac{Total\ Capital}{Risk - Weighted\ assets}$

Source: data processed by researchers, 2023

Data Analysis

The analysis technique used is the Multiple Linear Regression Model. The classical assumption stages include conducting the normality test, heteroscedasticity test, multicollinearity test, and autocorrelation test. After the data passes the classical assumptions, hypothesis testing is carried out, including the F-test, T-test, and coefficient of determination test. Moderated Regression Analysis (MRA) is used when the study has a moderating variable. This analysis is carried out to test whether the moderating variable can strengthen or weaken the relationship between the independent variable and the dependent variable.

The Z-score is an indicator of bankruptcy that describes a bank's volatility, profitability, and leverage. The calculation is based on the ratio of deposits to total assets and the ratio of equity to total assets, then divided by the standard deviation

of the deposits-to-assets ratio. Current literature highlights the significance of examining these factors to assess the stability of banks, particularly when retail banks rely on consumer deposits as their primary source of funding (Ali et al., 2019). Multiple Linear Regression Model can be expressed in the form of the equation below:

$$Z\text{-}SCORE_t = \alpha + \beta_1 NPF_t + \beta_2 FDR_t + \beta_3 DIV_t + \beta_4 INF_t + e \ldots\ldots (1)$$

Meanwhile, the Moderated Regression Analysis (MRA) model can be expressed in the form of the equation below:

$$Z\text{-}SCORE_t = \alpha + \beta_1 NPF_t + \beta_2 FDR_t + \beta_3 DIV_t + \beta_4 INF_t + \beta_5 INF*NPF_t + \beta_6 INF*FDR_t + \beta_7 INF*DIV_t + e \ldots..(2)$$

Keterangan:

Z-SCORE : financial stability of Islamic banking

α : constant

$\beta_1 - \beta_7$: regression coefficient

NPF : credit risk

FDR : liquidity risk

DIV : level of financing diversification based on contract

INF : inflation

e : error

RESULTS AND DISCUSSION

Analysis Results

Research Data Development

Table 3.2. Results of Descriptive Statistical Analysis

	Z-SCORE	NPF	FDR	DIV	INF
Mean	65.52996	0.033422	0.770963	0.5571	0.028057
Median	62.97083	0.033000	0.777200	0.5464	0.028550

Maximum	79.50067	0.052100	0.820100	0.5936	0.059500
Minimum	51.92282	0.023500	0.689800	0.5283	0.013200
Std. Dev.	6.515741	0.006304	0.029145	0.0231	0.011593
Skewness	0.227279	1.126356	-0.826304	0.390818	0.837265
Kurtosis	2.140363	4.627976	3.278239	1.396051	3.442960
Jarque-Bera	2.364001	19.31254	7.021326	7.959020	7.500657
Probability	0.306665	0.000064	0.029877	0.018695	0.023510
Sum	3931.797	2.005300	46.25780	0.334231	1.683400
Sum Sq. Dev.	2504.838	0.002345	0.050116	3.15E-06	0.007930
Observations	60	60	60	60	60

Source: Data processed by researchers, 2023

Based on Table 4.1, the financial stability of Islamic banking, as interpreted by Z-SCORE, has a minimum value of 51.92282. The lowest Z-score value occurred in January 2008. Meanwhile, the maximum Z-SCORE value is 79.50067; this occurred in December 2022. The average value of Z-SCORE is 65.52996, with a standard deviation of 6.515741, meaning that there is a deviation from the average value of 6.515741.

Credit risk proxied by non-performing financing (NPF) has a minimum value of 0.023500, which means that the lowest NPF value is 2.35%. The lowest NPF value occurred in December 2022. Meanwhile, the maximum NPF value is 0.052100, which means that the highest NPF value in Islamic commercial banks is 5.21%. This occurred in January and February 2018. The average NPF value is 0.033422 with a standard deviation of 0.006304, which means that the NPF value at Islamic Commercial Banks has an average value of 3.34%, and there is a deviation from the average value of 0.006304.

Liquidity risk, interpreted as the Financing to Deposit Ratio (FDR), has a minimum value of 0.689800, which means that the lowest FDR value is 68.98%.

The lowest FDR value occurred in January 2022. Meanwhile, the maximum FDR value is 0.820100, which means that the highest FDR value in Islamic commercial banks is 82.01%. This happened in May 2019. The average FDR value is 0.770963 with a standard deviation of 0.029145, which means that the FDR value at Islamic Commercial Banks has an average value of 77%, and there is a deviation from the average value of 0.029145.

Furthermore, the financing diversification variable (DIV) has a minimum value of 0.5283, which means that the lowest DIV value is 52.83%. The lowest DIV value occurred in January 2018. Meanwhile, the maximum DIV value is 0.5936, which means that the highest DIV value in Islamic commercial banks is 59.36%. This occurred in January 2019. The average value of DIV is 0.5571 with a standard deviation of 0.0231, which means that the DIV value in Islamic Commercial Banks has an average value of 55.71%, and there is a deviation from the average value of 0.0231.

This study examines the role of macroeconomic variables, specifically inflation (INF), as a moderating factor. The minimum INF value described in the study period is 0.013200, which means that the lowest INF value is 1.32%. The lowest INF value occurred in August 2020. Meanwhile, the maximum INF value is 0.059500, which means that the highest INF value in Islamic commercial banks is 5.95%. This happened in September 2022. The average INF value is 0.028057 with a standard deviation of 0.011593, which means that the INF value at Islamic Commercial Banks has an average value of 2.8%, and there is a deviation from the average value of 0.011593.

Classic Assumption Test

Normality test

Table 3.3. Jarque-Bera Test. Normality Test Results

	Residual
N	60
Jarque-Bera Test	5.803192
Probability	0.054935

Source: Data processed by researchers, 2023

The results of the normality test, Table 3, with a sample of Islamic commercial bank data from 2018-2022 through the Jarque-Bera Test, show a probability value of 0.054935. This value is more than 0.05, which means the data is normally distributed.

Multi Collinearity Test

Table 3.4. Multicollinearity Test Results

	NPF	FDR	DIV
NPF	1.000000	0.558522	0.491753
FDR	0.558522	1.000000	-0.020290
DIV	0.491753	-0.020290	1.000000

Source: Data processed by researchers, 2023

Based on Table 4. the results of the multicollinearity test on the sample of Islamic banks above show the correlation coefficient value of all variables <0.80. Thus, it can be concluded that there is no multicollinearity between the independent variables.

Heteroscedasticity Test

Table 3.5. Heteroscedasticity Test Results–Metode Glejser

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	199.9848	58.22535	3.434669	0.0011
NPF	-131.9103	100.4731	-1.312891	0.1946
FDR	-146.1971	404.5618	-0.361371	0.7192
DIV	-14837.11	10506.69	-1.412158	0.1634

Source: Data processed by researchers, 2023

The heteroscedasticity test using the Glejser technique indicates that the regression findings between the absolute value of the residuals and all independent variables are not statistically significant, as indicated by the insignificant p-values. All independent variables have p-values greater than the significance level of 0.05. Therefore, it may be inferred that the model in this study does not exhibit heteroscedasticity. It successfully passes the heteroscedasticity test.

Autocorrelation Test

Table 3.6. Autocorrelation Test Results

	Residual
N	60
Durbin-Watson stat	0.612677
DL	1.4797
DU	1.6889

Source: Data processed by researchers, 2023

Table 3.6. shows the results of the autocorrelation test using Durbin-Watson. After calculating using the DL / DU table, the results are 0 < DW < DL, namely 0 < 0.612677 < 1.4797, meaning there is positive autocorrelation in the research model.

Multiple Linear Regression Analysis

Table 3.7. Multiple Linear Regression Analysis Results with Robustness Check

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	39.96816	11.71388	3.412035	0.0006
NPF	-21.16554	8.132144	-2.602701	0.0092
FDR	45.77933	17.85892	2.563387	0.0104

DIV	713.2662	401.4149	1.776880	0.0756
INF	-7.863794	6.555211	-1.199625	0.2303
CAR	290.2605	6.280393	46.21694	0.0000
BOPO	-25.36255	2.366776	-10.71608	0.0000

Source: Data processed by researchers, 2023

The results of the t-statistical test are in Table 3.7., starting with a robustness test to prove that the research model is robust, valid, and unbiased (Sepriani & Candy, 2022). The robustness test is also conducted to pass the classical assumption test; in other words, it can be stated that this test heals the symptoms of heteroscedasticity and autocorrelation. The results show that NPF (X1) has a significant negative effect on the financial stability of Islamic commercial banks. This is evidenced by the probability value of 0.0092 <0.05 (5% significance level) with a negative coefficient value, meaning H1 is accepted. Hypothesis (H2) states that FDR (X2) has a significant positive effect on the financial stability of Islamic commercial banks. The results of this study indicate a probability value of 0.0104<0.05 (5% significance level), which means H2 is accepted. Furthermore, the t-statistic test results found that financing diversification (DIV) (X3) has a significant positive effect on the financial stability of Islamic commercial banks. This is evidenced by the probability value of 0.0756 <0.1 (10% significance level), meaning H3 is accepted. Based on the results of the multiple regression analysis above, it is known that H1, H2, and H3 are accepted because the probability value is smaller than 5% and 10%.

Table 3.8. Results of the Coefficient of Determination Analysis

R-squared	Adjusted R Square
0.805709	0.783714

Source: Data processed by researchers, 2023

Based on the results of data analysis of Islamic commercial banks, the adjusted R2 coefficient of determination is 0.783714. This shows that variations in the financial stability of Islamic commercial banks can be explained by credit

risk, liquidity risk, and financing diversification by 78.3714%, while the remaining 21.6286% is explained by other variables outside this research model.

Interaction Test (Moderated Regression Analysis)

Table 3.9 Moderated Regression Analysis (MRA) Test Results

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	59.02001	5.717944	10.32189	0.0000
NPF	-9.022007	4.433504	-2.034961	0.0419
FDR	285.0611	44.19658	6.449847	0.0000
DIV	-6462.749	765.5172	-8.442330	0.0000
INF	-1044.302	129.4218	-8.068981	0.0000
NPF*INF	**88.24800**	**149.2332**	**0.591343**	**0.5543**
FDR*INF	**-8404.167**	**1397.287**	**-6.014632**	**0.0000**
DIV*INF	**222333.1**	**23524.86**	**9.450988**	**0.0000**
CAR	270.8967	3.905902	69.35573	0.0000
BOPO	-21.46313	1.328683	-16.15368	0.0000

Source: Data processed by researchers, 2023

The results of the MRA test conducted with a sample of Islamic commercial banks show that inflation cannot moderate the effect of non-performing financing (NPF) on the financial stability of Islamic commercial banks (Z-SCORE). This is evidenced by the probability value of 0.5543>0.05 (5% significance level), which means that H4 is rejected. Hypothesis (H5) states that inflation can significantly weaken the effect of FDR on Z-SCORE. The resulting probability value of 0.0000 <0.05 (5% significance level) with a negative coefficient value means that hypothesis (H5) is rejected. The last MRA test result found that inflation can significantly strengthen the effect of financing diversification (DIV) on Z-SCORE. This is evidenced by the probability value of 0.0000<0.05 (5% significance level), meaning H6 is accepted.

Discussion

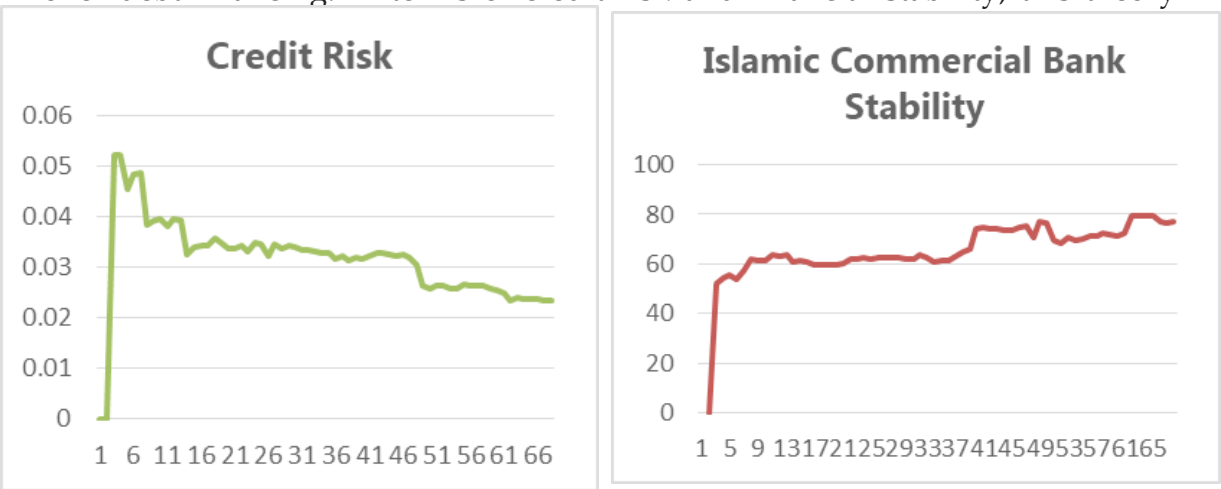
Hypothesis 1: Credit Risk influences Financial Stability

The results of credit risk research have a significant negative effect on the financial stability of Islamic commercial banks, thus showing that H1 is accepted. The higher the credit risk ratio, the more it allows the bank to bear losses or delays in income that should have been received from the loan (Synatrya & Pramono, 2023). The higher the credit risk, the greater the banking failure. With increasing credit risk, the stability of the bank will decrease.

Graphic 1.2 Islamic Commercial Bank Stability and Credit Risk

Source: Data processed by researchers, 2023

The Pecking Order Theory states that internal financing should be prioritized over debt financing. In terms of credit risk and financial stability, this theory

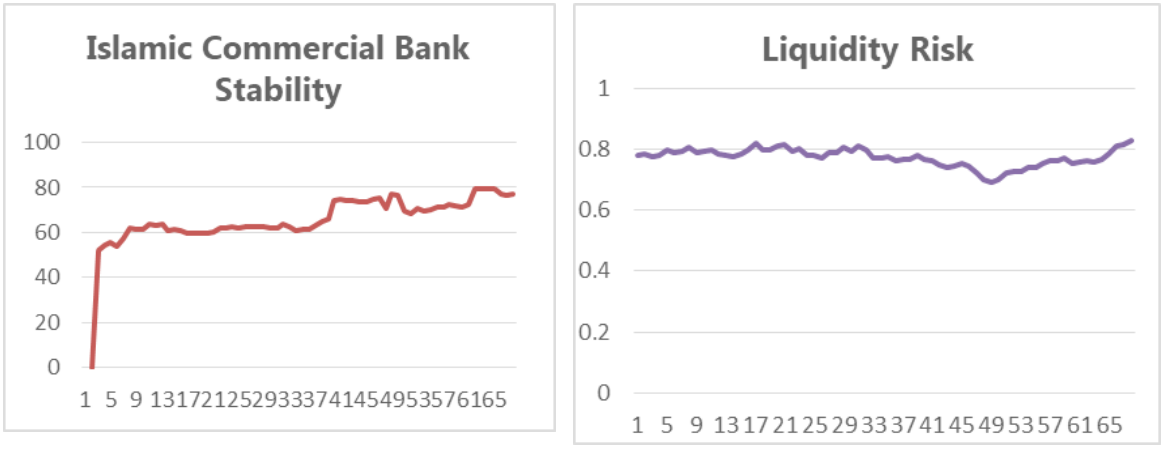


suggests that firms with higher credit risk prefer to rely on internal financing rather than external financing, potentially improving their financial stability. In line with research by Ali et al. (2019), Ghenimi et al. (2017), and Ismail and Ahmed (2023), credit risk has a significant negative impact on financial stability. Then, Ahmed et al. (2022) and Ekinci and Poyraz (2019) also found that credit risk is one of the most significant elements that negatively affect the financial performance of banks and impact financial stability. However, the results of this study are not in line with research by Anggraini et al. (2023).

Hypothesis 2: Liquidity Risk influences Financial Stability

Liquidity risk is how much third-party funds (DPK) from Islamic banks are channeled for financing (Somantri & Sukmana, 2019). The results show that liquidity risk has a significant positive effect on the financial stability of Islamic commercial banks; thus, H2 is accepted. Liquidity risk has a positive influence on the stability of Islamic commercial banks. This is because high liquidity can increase the bank's ability to fulfill its obligations to creditors. With this ability, Islamic banks can strengthen their reputation and stability (Fitri et al., 2023).

Specifically, Islamic banks must ensure that the funds collected are channeled based on the analysis conducted by the team. Good liquidity will ensure that every transaction and information is well maintained. Therefore, low liquidity risk will contribute to the stability of Islamic banks (Putra & Saparuddin, 2023). Although liquidity risk does not directly affect the stability of Islamic banks, high liquidity can have a positive impact on the bank's ability to fulfill its obligations. This ability will ultimately strengthen the stability and reputation of the bank.



Graphic 1.3 Islamic Commercial Bank Stability dan Liquidity Risk

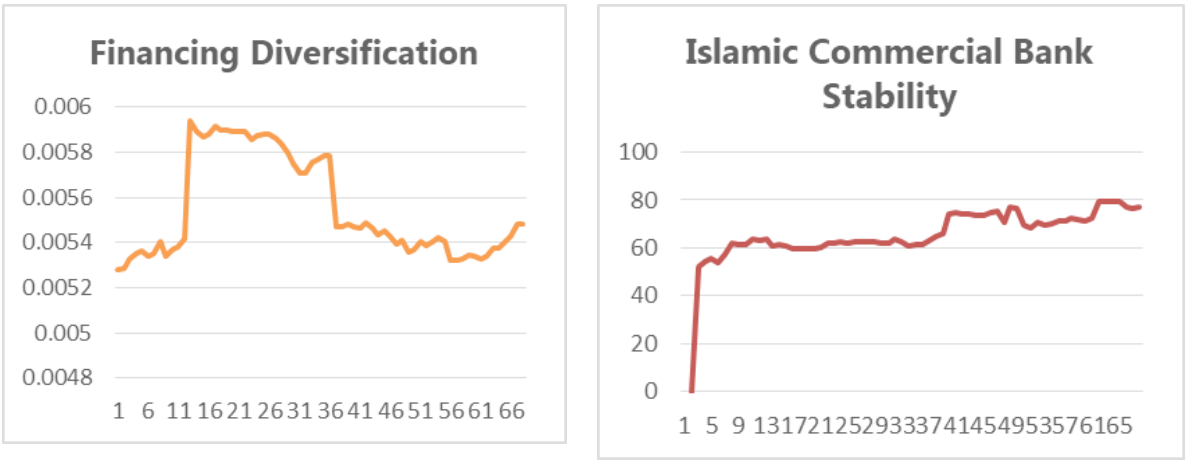
Source: Data processed by researchers, 2023

This does not align with the Pecking Order Theory, as this theory is only applicable under specific circumstances, such as when enterprises have access to more affordable external financing alternatives (Ismail & Ahmed, 2023). However, it can be adopted from the trade-off theory, which states that companies choose

one financing method to make a better decision and choose the right funding source. This is in line with research by Anggraini et al. (2023), Ali et al. (2019), and Jedidia and Salah (2022), which state that liquidity risk can have a significant positive effect on the financial stability of Islamic banking. However, this result is not in line with Djebali and Zaghdoudi (2020), Nabhan and Nugraheni (2022), and Hassan et al. (2019), which states that increasing liquidity risk will result in a decrease in bank stability.

Hypothesis 3: Financing Diversification influences Financial Stability

The results show that financing diversification can have a significant positive effect on the financial stability of Islamic commercial banks; thus, H3 is accepted. Diversification of financing in Islamic commercial banks impacts reducing the risk of default, thereby improving the quality of banking health and performance (Ahyar, 2021; Mahendra, 2023). Diversification of financing contracts can also help Islamic banks reduce credit risk and liquidity risk. Credit risk can be reduced because banks depend less on one particular economic sector or customer segment. Liquidity risk can be reduced because banks have a diverse financing portfolio, making it easier to meet liquidity needs. With reduced credit risk and liquidity risk, bank stability can increase. This is because banks can better fulfill their obligations to creditors and customers (Masruroh, 2018; Yaman & Holle, 2022).



Graphic 1.4 Islamic Commercial Bank Stability dan Financing Diversification

Source: Data processed by researchers by researchers, 2023

By portfolio theory, financing diversification can minimize the risk of bad debts faced by Islamic banks; financing diversification also positively reduces the level of default risk (NPF) (Ahyar, 2021; Christianti, 2011). Then, the risk of bankruptcy can also be overcome by financing diversification because it can benefit banks that generate high returns (Aiyubbi et al., 2022), and it can increase the financial stability of Islamic banking. Furthermore, this result is consistent with the research of Nguyen (2018) and Adem (2022) but not in line with the research of Šeho et al. (2023), Meutia and Chalid (2021), and Shahriar et al. (2023).

Hypothesis 4: Inflation moderates the effect of Credit Risk on Financial Stability

Macroeconomic variables proxied by inflation cannot moderate the effect of credit risk on the financial stability of Islamic commercial banks; H4 is rejected. In several studies (Fatoni & Sidiq, 2019; Syatiri & Hamdaini, 2017; Wiku & Ayuningtyas, 2021), inflation has a negative influence on the stability of Islamic commercial banks. High inflation can result in increased credit risk, which can be caused by rising inflation. These results do not align with Safina (2022), which states that credit risk does not affect banking stability. Then, macroeconomic variables, namely inflation, can significantly affect non-performing financing or credit risk in the long run (Aiyubbi et al., 2022). This hypothesis does not align with the Pecking Order Theory, which explains the relationship between inflation, credit risk (NPF), and financial stability.

Although inflation influences Islamic banking stability, inflation itself cannot support the influence of credit risk on Islamic banking stability. This is due to various other factors that affect the stability of Islamic banks, such as liquidity risk, consumption, monetary policy, and income stability (Saekhu, 2015).

Hypothesis 5: Inflation moderates the effect of Liquidity Risk on Financial Stability

The results found that inflation can weaken the effect of liquidity risk on the financial stability of Islamic commercial banks, so H5 is accepted. With an increase in inflation, people will prefer to save their funds rather than use them; the impact is that third-party funds increase (Khotimah & Yanti, 2022). High inflation results in people preferring to save or save their funds at the bank

rather than having to borrow money at the bank because of high interest rates. People who are more return-oriented will be more sensitive to changes in interest rates (Syatiri & Hamdaini, 2018). This is based on the Pecking Order Theory; the increasing inflation will increase internal funding, which will cause FDR to improve and financial stability to grow.

Inflation can decrease the value of bank assets because it can increase the price of goods and services. A reduction in the value of bank assets can prevent banks from fulfilling their obligations to creditors. Inflation can also increase bank operating costs. Increased bank operating costs can cause banks to have trouble maintaining liquidity. Inflation can make it difficult for banks to fulfill their obligations to creditors and customers. This can weaken the effect of liquidity risk on the stability of Islamic banking.

This research is related to (Prastyo, 2021; Saekhu, 2015; Siregar, 2021), inflation has a positive effect on liquidity risk, which means that the higher the inflation, the higher the liquidity risk, which has an impact on financial instability of Islamic commercial banks. The existence of increased liquidity risk does not always represent banking stability. It is precisely with the bank's obligation to distribute its funds increasing or decreasing drastically that Islamic banks experience unstable financial conditions.

Therefore, Islamic banks must properly manage inflation risk to maintain stability (Nabella et al., 2020; Nabhan & Nugraheni, 2022). Islamic banks can do this in various ways, namely diversifying assets so that they are not too dependent on one type of asset, hedging in multiple ways, such as using derivative instruments or forward contracts, and managing operating costs carefully to avoid uncontrolled increases in operating expenses.

Hypothesis 6: Inflation moderates the effect of Financing Diversification on Financial Stability

The last finding in this study, the presence of inflation, can strengthen the effect of financing diversification on the financial stability of Islamic commercial banks, H6 is accepted. High inflation can reduce the quality of the environment, while inflation can also affect the financing channeled to Islamic banks (Maulidiyah et al., 2023). The existence of inflation as a moderation of financing diversification

provides new findings. Starting from inflation can reduce the amount of funds banks can raise, inflation can increase the risk of default, increasing NPF, and inflation can reduce people's real income. Therefore, Islamic banks will respond to inflation by optimizing financing diversification. By diversifying financing, Islamic banks can reduce dependence on one funding source and reduce the risk of default.

This result is supported by research (Indrajaya et al., 2022), which shows that the inflation rate positively affects the investment diversification of banking companies in Indonesia. Also, according to research by Nguyen (2018), banks with more diversified assets have higher sustainable earnings efficiency, while banks with more diversified funding have higher earnings efficiency. Profit efficiency will impact improving financial stability.

CONCLUSION

The results of the study show several findings: 1) Credit risk has a negative and significant effect. The Pecking Order Theory is proven from the results of credit risk having a negative influence on financial stability. Companies with higher credit risk prefer to rely on internal financing rather than external financing, which potentially increases their financial stability; 2) Liquidity risk and financing diversification have a significant positive effect on the stability of Islamic commercial banks. A high financing-to-deposit ratio (FDR) can provide greater flexibility to banks in the face of liquidity pressures so they can meet financial obligations. Furthermore, diversifying financing contracts in Islamic commercial banks has the potential to minimize the risks that the company will bear, and the distribution of the right source of funds will also have a good impact on financial stability. This is evident from the portfolio theory that suggests putting or channeling diverse financing; 3) With inflation as moderation, the result is that inflation can strengthen the effect of credit risk and financing diversification. In contrast, inflation can weaken liquidity risk's impact on Islamic commercial banks' financial stability. The existence of inflation as a moderation of financing diversification provides new findings. Islamic banks will respond to inflation by optimizing financing diversification. Islamic banks can mitigate the risk of default by diversifying their financing, thereby reducing their reliance on a single funding source. However, inflation weakens the effect of liquidity

risk on financial stability. Then, it cannot moderate the impact of credit risk on financial stability.

The limitation of this study is that the diversification variables used are still limited; it is hoped that further research will use other diversification indicators, such as income diversification. Then, the risk indicators used are also incomplete; future researchers can add operational risk to find out more about its impact on financial stability. The moderation variable can also be modified by adding other macroeconomic indicators such as interest rates, currency exchange rates, and economic growth.

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