DOI.ORG/10.38156/IMKA.V6I1.737

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Macroeconomic drivers of islamic bank stability: Evidence from Indonesia and Saudi Arabia with regulatory quality as a moderator

Abstract

Banking is among the sectors most vulnerable to economic crises due to its role as a monetary policy transmission mechanism and as a financial intermediary between surplus and deficit units. Consequently, maintaining bank resilience is crucial for sustaining monetary and economic stability. This study aims to examine the effects of economic growth, inflation, interest rates, and exchange rates on bank resilience, measured by Return on Assets (ROA), with regulatory quality employed as a moderating variable. This research adopts a quantitative approach using secondary data from five Islamic commercial banks operating in Indonesia and Saudi Arabia over the period 2019–2023. Panel regression analysis is applied using EViews 12 to capture the relationship between macroeconomic variables and bank resilience across countries and over time. The empirical results indicate that economic growth has a significant negative effect on bank resilience, while interest rates have a positive and significant effect. In contrast, inflation and exchange rates do not show a significant impact on bank resilience. Furthermore, regulatory quality is found to strengthen the influence of economic growth, interest rates, and exchange rates on bank resilience, but it does not moderate the relationship between inflation and bank resilience. These findings highlight the importance of strong regulatory frameworks in enhancing the resilience of Islamic banks. The study provides practical implications for Islamic banking institutions in improving risk management strategies, particularly in responding to global economic uncertainty and macroeconomic volatility.
Keywords: Economic Growth, Inflation, Interest Rate, Exchange Rate, Bank Resilience, Regulatory Quality.

Abstrak

Perbankan termasuk di antara sektor yang paling rentan terhadap krisis ekonomi karena perannya sebagai mekanisme transmisi kebijakan moneter dan sebagai perantara keuangan antara unit surplus dan defisit. Akibatnya, menjaga ketahanan bank sangat penting untuk mempertahankan stabilitas moneter dan ekonomi. Studi ini bertujuan untuk menguji pengaruh pertumbuhan ekonomi, inflasi, suku bunga, dan nilai tukar terhadap ketahanan bank, yang diukur dengan Return on Assets (ROA), dengan kualitas regulasi digunakan sebagai variabel moderasi. Penelitian ini mengadopsi pendekatan kuantitatif menggunakan data sekunder dari lima bank komersial syariah yang beroperasi di Indonesia dan Arab Saudi selama periode 2019–2023. Analisis regresi panel diterapkan menggunakan EViews 12 untuk menangkap hubungan antara variabel makroekonomi dan ketahanan bank di berbagai negara dan dari waktu ke waktu. Hasil empiris menunjukkan bahwa pertumbuhan ekonomi memiliki pengaruh negatif yang signifikan terhadap ketahanan bank, sedangkan suku bunga memiliki pengaruh positif dan signifikan. Sebaliknya, inflasi dan nilai

Implementasi IMKA Manajemen & Kewirausahaan
E-ISSN 2776 – 8554

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tukar tidak menunjukkan dampak yang signifikan terhadap ketahanan bank. Lebih lanjut, kualitas regulasi ditemukan memperkuat pengaruh pertumbuhan ekonomi, suku bunga, dan nilai tukar terhadap ketahanan bank, tetapi tidak memoderasi hubungan antara inflasi dan ketahanan bank. Temuan ini menyoroti pentingnya kerangka regulasi yang kuat dalam meningkatkan ketahanan bank syariah. Studi ini memberikan implikasi praktis bagi lembaga perbankan syariah dalam meningkatkan strategi manajemen risiko, khususnya dalam menanggapi ketidakpastian ekonomi global dan volatilitas makroekonomi.

Kata Kunci: Pertumbuhan Ekonomi, Inflasi, Suku Bunga, Nilai Tukar, Ketahanan Bank, Kualitas Regulasi

1. Introduction

The strategic role of banks in the economy makes the stability of banking resilience a critical aspect that must be continuously monitored. Banks function not only as financial intermediaries but also as key channels for monetary policy transmission and liquidity provision within the economic system. When banking resilience weakens, it can disrupt financial intermediation, reduce credit distribution, and ultimately undermine macroeconomic stability and economic growth (Ahamed & Mallick, 2017). A fragile banking sector may amplify economic shocks and increase systemic risk, leading to broader financial instability. Previous studies emphasize that resilient banks are better equipped to absorb external shocks arising from macroeconomic fluctuations, global financial crises, and domestic economic disturbances (Demirgüç-Kunt, A., & Martinez Peria, 2015). In the context of developing and emerging economies, banking resilience becomes even more crucial due to higher exposure to volatility in economic growth, inflation, interest rates, and exchange rates. Moreover, strong regulatory and institutional frameworks play a vital role in enhancing bank resilience by ensuring prudent risk management, effective supervision, and financial soundness (Barth & Caprio, 2013).

Empirical evidence from Indonesia also supports the argument that banking stability is closely linked to regulatory quality and macroeconomic conditions. Studies published in nationally accredited journals indicate that sound regulation and effective supervision significantly contribute to strengthening bank performance and resilience, particularly during periods of economic uncertainty (Kasri & Azzahra, 2020; Yudha & Nuraini, 2025). Therefore, maintaining banking resilience is not only essential for safeguarding the financial sector but also for ensuring sustainable economic development.

The global financial crisis triggered by the Subprime Mortgage collapse in 2008 provides clear evidence of the interdependence between the banking sector, monetary policy, and economic stability. During this period, central banks played a pivotal role by injecting liquidity into financial markets, stabilizing the banking system, and reducing policy interest rates to restore confidence and prevent a deeper economic downturn. These expansionary monetary policy measures were

instrumental in mitigating systemic risk and accelerating economic recovery across many countries. Without decisive intervention from central banks, the crisis would likely have resulted in more severe and prolonged economic contraction (Gorton et al., 2010; Pratama & Rizal, 2019).

Empirical studies further highlight that effective monetary policy responses and strong institutional frameworks are key determinants of banking resilience during periods of financial stress (Nugroho et al., 2020). Hence, the role of banks as monetary policy transmitters underscores the importance of maintaining banking stability to safeguard the broader economic system.

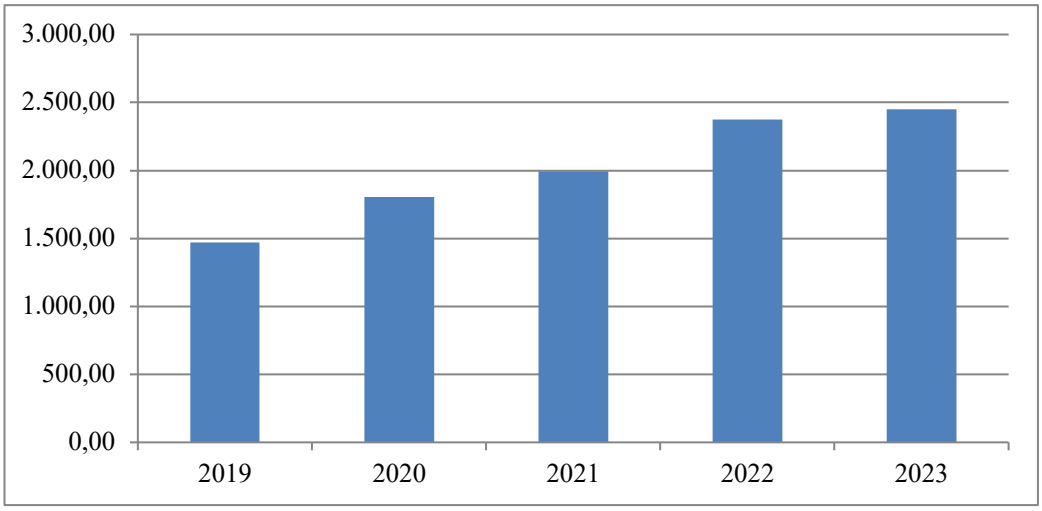

Figure 1. Bank Syariah 2019-2023
Source: Otoritas Jasa Keuangan, 2024

Based on Figure 1.1 above, it illustrates how Islamic bank assets in Indonesia developed from 2019 to 2023. It can be seen that the trend in the total assets of Islamic banks continues to experience a positive increase from year to year. In 2019, Islamic bank assets amounted to IDR 1,468.07, then rose to IDR 1,802.82 in 2020, rose again to IDR 1,993.41 in 2021, and rose again to IDR 2,375.84 in 2022. In 2023, the total assets of Islamic banks amounted to IDR 2,450.50, a positive increase from year to year. The latest Global Islamic Finance Report (GIFR) 2020 states that the growth of the global Islamic finance industry has increased by 13.9% where the total asset value reached $2.88 trillion, higher than in 2019 which only reached $2.52 trillion. The Islamic Finance Country Index (IFCI) places Malaysia and Indonesia at the top of the leading countries in the global Islamic finance industry. Among the top 10 countries with Islamic finance industries, Malaysia and Saudi Arabia are indeed the fastest growing countries.

Saudi Arabia's banking sector, especially Islamic banking, has undergone major changes in recent decades. These changes are triggered by a competitive operating environment so that the efficiency aspect becomes one of the important things in the management of the Islamic banking sector. One of the real evidence is how the Islamic banking sector in Saudi Arabia has shown a significant role in dealing with the financial crisis generally faced by the largest oil-income

countries, including Saudi Arabia. This phenomenon makes Islamic banking in the spotlight of many parties who study the Islamic banking system (Javaid & Al Alawi, 2018).

National macroeconomic conditions can affect the performance of Islamic banking. According to research conducted by Musta'in and Fakhrunnas (2018), banking performance is strongly influenced by macroeconomic factors, which consist of interest rates, GDP increases, and inflation rates. Correlation between Economic Growth and Bank Resilience (Return on Asset) The development of banking, both Islamic and conventional, can be used as a tool to measure the economic progress of a country.

To encourage the optimization of the banking intermediation function, maintaining the stability of the financial system.The government issued banking regulations to provide economic stimulus.Banking regulations are generally considered necessary to maintain economic stability, especially in terms of managing and mitigating various negative impacts that arise during economic shocks (Anginer et al., 2024).The role of regulatory quality is considered to have a significant impact in moderating the relationship between financial development and economic growth.The Economist (June 2009) reported that the International Monetary Fund (IMF) attributed inadequate regulation, rather than global imbalances, as the main reason for the 2008 global financial crisis (Ullah et al., 2024).

2. Literature review

Banking resilience can be defined as the strength, ability, durability, and resilience of the banking system in facing challenges, threats, obstacles, and disturbances that come from outside or from within, which directly or indirectly endanger the banking system (Kbbi, 2024). Bank resilience is defined as the resilience of banks in the face of economic sector turmoil both in the short and long term. This ability includes whether the bank can immediately adapt to these unpredictable extraordinary events so that it can survive and conduct business as usual (Michel, 2007).

2.1 Economic growth and bank resilience

ROA as one of the indicators in looking at banking profitability, is an indicator of bank resilience. So if banking profitability can be strengthened by GDP, it means that when GDP has a positive influence on ROA, bank resilience can be increased by increasing profitability through the influence of GDP. This is in line with research conducted by Al-Harbi, (2019); Irsyad et al., (2014) in his research stated that GDP has a significant positive effect on banking ROA.

H1: Economic growth has a positive impact on a bank resilience

2.2 Inflation and bank resilience

The increase in the number of deposits received by the bank will cause an increase in the bank's interest costs, of course this will affect the profit that will be generated by Maharani et al. (2025). This is in line with research conducted by Khotimah, (2025) which states that inflation has a positive effect on profitability.
H2: Inflation has a positive impact on a bank resilience.

2.3 Interest rate and bank resilience

If saving all of his income in financial institutions then the person will benefit from interest but cannot make transactions to make consumption, it can be concluded that if interest rates increase then people's interest in holding cash will be less. They will prefer to save money in the bank. Because they will benefit from deposits in the bank in the form of interest given. This will affect bank profitability Fitriany & Nawawi, (2021).
H3: Interest rate has a positive impact on a bank resilience

2.4 Exchange rates and bank resilience

The effect of currency exchange rates on bank profitability identifies if the exchange rate experiences appreciation and depreciation, it will have an impact on the bank's foreign exchange liabilities at maturity. As a result, the bank's profitability will change if in that case neither headging, which means the rupiah exchange rate is the price of the rupiah against other currencies. Exchange rates are one of the factors that affect activity in the stock market and money market because investors tend to be very careful about making investments (Khotimah, 2025).
H4: Excange rates has a positive impact on a bank resilience

2.5 Economic growth, regulatory quality and bank resilience

The relationship between growth and bank resilience moderated by regulatory quality (Regulatory Quality), this can be explained through the role of the development side of the Islamic banking industry, it can be said that it has indeed increased, but on the other hand, there is also a growth aspect that has decreased, as happened during the Covid 19 pandemic. So this economic stimulus activity also involves the agency to succeed the program's National Economic Recovery program (Wicaksono & Maunah, 2021).
H5: Regulatory quality is able to strengthen the effect of economic growth on bank resilience

2.6 Inflation, regulatory quality and bank resilience

High inflation is often a challenge for banks, especially in maintaining financial stability. Weak regulation exacerbates this situation as it encourages banks,

especially non-state banks, to turn to shadow banking activities. These banks engage in risky financial products that are not listed on the main balance sheet as a way to maintain profitability when monetary policy is tightened to curb inflation (Setiandy, 2025).
H6: Regulatory quality is able to strengthen the effect of inflation on bank resilience

2.7 Interest rate, regulatory quality and bank resilience

Interest rates play an important role in banks' lending and investment decisions. When interest rates are low, banks tend to be more aggressive in lending to increase profitability. However, without proper regulation, this could lead to high risk-taking, which could be detrimental to the stability of the bank in the future. Good regulation can help strike a balance between monetary policy and bank risk-taking (Laeven & Levine, 2009).
H7: Regulatory quality is able to strengthen the effect of interest rate on bank resilience

2.8 Exchange rates, regulatory quality and bank resilience

High regulatory quality can create a stable environment for investment and economic growth. High regulatory quality can moderate the negative impact of exchange rate fluctuations on profitability. With effective regulation, financial institutions can better manage the risks associated with exchange rates and maintain healthy financial performance (Hadj Fraj et al., 2020).
H8: Regulatory quality is able to strengthen the effect of exhange rates on bank resilience

3. Methodology

This research uses quantitative methods which are a form of statistical analysis (inferential) that is procedural so that the research will produce data in the form of numbers that have certain meanings (Permata, 2025). The ultimate goal of this quantitative research is to show the influence between the independent variables, namely Macroenomics (economic growth, inflation,interest rates, exchange rates) ,the dependent variable of profitability with return on aset (ROA) moderated by regulatory. The regression equations used are as follows :
Model 1 : Direct Influence
$TQ = \alpha + \beta_1 X_1$ Economic Growth $+ \beta_2 X_2$ Inflation$+ \beta_3 X_3$interest rates$+ \beta_4 X_4$ Exchange rates $+ \mathcal{E}$
Model 2: The effect of quality regulatory

$$TQ = \alpha + \beta_1 X_{1\,it} + \beta_2 X_{2\,it} + \beta_3 X_{3\,it} + \beta_1 X_1 Z_{it} + \beta_2 X_2 Z_{it} + e$$

3.1 Variable operations and measurement profitability

The dependent variable is the variable that is influenced or the variable that is the result of another variable, namely the independent variable (X). This study uses return on asset (ROA) variable as a proxy for profitability. The formula used to calculate ROA:

$$ROA = \frac{\text{Net profit after tax x 100\%}}{\text{Aset Total}}$$

3.2 Economic growth

Economic growth is defined as an increase in a nation's long-term capacity to produce a variety of goods and services for its people. This capacity is based on advances in production technology. Conventionally, growth is measured by the increase in national income (GNP) per capita (Irigoyen et al., 1991). According to Todaro (1977), in macroeconomic analysis, namely:

$$Economic\ Growth = \frac{PDB\ X_1 - PBD\ X_0}{PBDX_0} \text{ x } 100$$

3.3 Inflation

The most common definition is according to Venieris and Sebold (Gunawan, 1995) who define inflation as "a sustained tendency for general prices." A one-time increase in general prices, according to this definition, cannot be said to be inflation. According to M. Natsir (2014:266), the formula used to calculate inflation is:

$$INFn = \frac{CPI\ n - CPI\ n\text{-}1}{CPI\ n\text{-}1} \text{ x } 100\%$$

Interest Rates
Changes in interest rates further influence the desire to invest, thus affecting GNP (Nopirin, 1992). Interest rates are a measure of the price of resources used by debtors that must be paid to creditors. Interest rates represent income earned by people who provide their excess money for temporary use by people in need and use the money to cover their shortfalls (Dornbusch, 1994).
Exchange Rates
The exchange rate used is the Rupiah exchange rate against the US Dollar and Saudi Riyal at Bank Indonesia and Bank Saudi Arabia on a monthly basis, processed from Bank Indonesia's annual report data.

4. Result

4.1 Analysis descriptive

Descriptive statistical tests were conducted on all research variables, namely bank resilience projected by ROA (Return on Asset), Macroeconomics (economic

growth, inflation, interest rates and exchange rates) and Regulatory quality moderation variables.

Table 1. Analysis descriptive

	ROA (Y)	**PE (X1)**	**INF (X2)**	**SB (X3)**	**NT (X4)**	**RQ (Z)**
Mean	4,980	2,633	2,360	4,194	7314,3	59,762
Median	2,045	4,361	2,752	3,626	7075,7	59,716
Maximum	79,34	7,485	4,209	9,985	15236,8	65,094
Minimum	-6,720	-3,581	-2,093	-0,955	3,7500	49,523
Std. Dev.	11,577	3,555	1,688	3,460	73990	4,3856
Observasi	50	50	50	50	50	50

Source: Eviews 12, 2025

Based on the descriptive statistics table above, the number of research observations is 50. The results show the dependent variable (Y) or bank resilience (return on assets) which is carried out by measuring the profitability ratio contained in the bank's financial statements. The results of descriptive statistics obtained the minimum value of -6,720, the maximum value of 79.34 with a mean value of 4,980 and a standard deviation of 11,577.

4.2 Regression model

Based on the selection of panel data regression models consisting of three methods, namely fixed effect model (FEM), common effect model (CEM), and random effect model (REM). Regression selection can be done through several tests, namely, chow test, hausman test, and Lagrange Multiplier test. In table 4.2 which shows the test results with the chow test, the significance value is 0.9715> 0.05, meaning that a good regression model is the common effect model (CEM). Furthermore, the results of estimation testing with the Hausman test obtained a significance value of 0.6168> 0.05, meaning that a good regression model is the random effect model (REM). Then, the Lagrange Multiplier test strengthens the results of the hausman test which shows a significance value of 0.0432 <0.05, so the model used is the Random Effect Model (REM). So, it can be concluded that for the variable return on assets (ROA) the Random Effect Model (REM) is the best regression model in this study.

Table 1. Result Regression model

	Variabel	***Common***	***Fixed***	***Random***
Return on asset (ROA)	C	0,0000	0,5858	0,0000
		(9,0591)	**(**150,55)	**(**9,0591)
	PE	0,0277	0,1160	0,0405
		(-4,4012)	(-0,3174)	(-0,4012)
	INF	0,5544	0,5136	0,5836
		(0,3208)	(0,3953)	(0,3208)
	SB	0,0000	0,0000	0,0000
		(-1,0338)	(-0,9554)	(1,0338)

	NT	0,6418	0,6085	0,6663
		(0,2354)	(-59,785)	(0,2354)
	R-squared	0,7604	0,7769	0,7604
	Prob (F-statistic)	0,000	0,000	0,000
	Uji Chow		0,9715	
	Uji Hausman			0,6168
	Uji Lagrange Multiplier	0,0432		

Source: Eviews 12, 2025

4.3 Classical assumption test

Multicollinearity testing is conducted by examining the correlation matrix and verifying that the Variance Inflation Factor (VIF) is below 10, with a tolerance value of less than 1.Based on the obtained data, the VIF value is confirmed to be less than 10, indicating no signs of multicollinearity in the regression model used in this study.

Table 2 Multicolinearity test

	Coefficient Variance	**Uncentered VIF**	**Centered VIF**
PE	0,0362	2,7497	2,4410
INF	0,3376	3,4719	1,1593
SB	0,0374	3,3019	2,4927
NT	0,2942	3,1953	1,1655

Source: Eviews 12, 2025

4.4 Regression Analysis

Tabel 4. Analysis Regresi

Variabel	**Coefficient**	**t-Statistik**	**Prob.**
C	9,0591	4,9621	0,000
PE	-0,4012	-2,1089	0,0405
INF	0,3208	0,5520	0,5836
SB	1,0336	-5,3442	0,0000
NT	0,2354	0,4340	0,6663
R-squared	0,760		
F-statistic	35,722		
Prob(F-statistic)	0,000		

Source: Eviews 12, 2025

4.5 Moderated regression analysis

Tabel 3. *Moderated Regression Analysis-MRA*

Variabel	**Coefficient**	**t-Statistik**	**Prob.**
C	10,569	15,5916	0,0000
PE	-0,0139	-0,1049	0,9169
INF	1,5701	1,7396	0,0896
SB	-1,6754	-12,603	0,0000
NT	0,8763	1,7337	0,0907
RQ	-0,1338	-12,356	0,0000
PEZ	0,0134	6,3788	0,0000
INFZ	-0,0207	-1,2995	0,2012
SBZ	0,0336	15,0189	0,0000
NTZ	-8,9306	-4,6332	0,0000
R-squared	0,999		
F-statistic	25552,2		
Prob(F-statistic)	0,000		

Source: Eviews 12, 2025

4.6 Testing hypotheses

Koefisien Determinasi (R^2)

Table 4 Koefisien Determinasi (R2)

	Probability
R-squared	0,760
R-squared (Z)	0,999

Source: Eviews 12, 2025

Based on the results from Table 6, the R-square value is 0.760 or 76%, which means that the resilience of the bank can be explained by economic growth, inflation, interest rates, and exchange rates by 76%, and the remaining 24% is explained by other variables.And the R-square value for the moderation variable is 0.999 or 99%, which means that bank resilience can be explained by economic growth, inflation, interest rates, and exchange rates, regulatory quality at 99%, and the remaining 1% is explained by other variables.

Table 7 Significant test

Keterangan	Probabilitas	Result
$P<\alpha$	0.000	Signifikan

Based on the F-test results in table 7, a probability value of 0.000 was obtained, which is less than the 5% significance level.This means that economic growth, inflation, interest rates, and exchange rates collectively have an influence on the resilience of banks (ROA).

Table 8 T test

Variable	Coefficient	Probability	Result
PE	-0,4012	0,0405	Rejected
INF	0,3208	0,5836	Rejected
SB	1,0338	0,0000	Accepted
NT	0,2354	0,6663	Rejected
PE (Z)	0,0134	0,000	Accepted
INF (Z)	-0,0207	0,2012	Rejected
SB (Z)	0,0336	0,0000	Accepted
NT (Z)	-8,9306	0,0000	Accepted

5. Discussion

5.1 Economic growth and bank resilience

Based on the empirical test results, H1 is rejected, indicating that economic growth has a statistically significant effect on bank resilience, with a coefficient value of −0.4012 and a probability value of 0.0405, which is lower than the 5 percent significance level. This finding confirms that economic growth exerts a negative influence on bank resilience in Saudi Arabia. The negative coefficient implies that an increase in economic growth is associated with a decline in the resilience of the banking sector.

This result suggests that higher economic growth does not necessarily strengthen banking stability, particularly in economies that are highly dependent on specific sectors. In the case of Saudi Arabia, economic growth is predominantly driven by the oil and commodity sectors, which makes the macroeconomic environment highly sensitive to fluctuations in global commodity prices. Previous studies emphasize that commodity-dependent economies tend to experience greater macroeconomic volatility, which is transmitted to the financial sector, especially the banking system (Kinda & Mlachila, 2016).

During periods of economic expansion driven by rising commodity prices, banks often respond by expanding credit aggressively to households and firms operating in related sectors. This expansion is frequently accompanied by relaxed lending standards and increased risk-taking, as optimistic expectations about future economic conditions reduce banks' perception of credit risk. Such behavior reflects the procyclical nature of banking activities, where credit growth amplifies

economic booms but also increases vulnerability during downturns (Ariccia et al., 2014).

This procyclical lending behavior can significantly increase banks' exposure to credit risk. When commodity prices decline or external shocks occur, borrowers' income and repayment capacity deteriorate, leading to rising non-performing loans and weakening banks' capital buffers. As a result, bank resilience declines despite previous periods of strong economic growth. This finding is consistent with Anginer et al., (2024) and Laeven & Valencia, (2018) who argue that rapid economic growth may mask underlying financial fragilities and delay corrective regulatory actions until a shock materializes.

Overall, the literature supports the argument that economic growth driven by a narrow set of sectors such as oil and commodities may increase systemic risk in the banking sector, thereby weakening bank resilience rather than strengthening financial stability.

5.2 Inflation and bank resilience

Based on the empirical test results, H2 is rejected, indicating that inflation does not have a significant effect on bank resilience. This is evidenced by a coefficient value of −0.3208 and a probability value of 0.5836, which exceeds the 5 percent significance level. These results suggest that changes in inflation rates do not significantly influence the resilience of the banking sector in the observed countries, namely Indonesia and Saudi Arabia.

The insignificant relationship between inflation and bank resilience can be explained by the relatively low and stable inflation rates in both countries during the observation period. The literature suggests that inflation only poses a significant threat to banking stability when it is high and volatile, whereas low and predictable inflation has a limited impact on banks' risk exposure and resilience (Athanasoglou et al., 2008). Stable inflation therefore reflects effective macroeconomic management and the credibility of monetary policy frameworks implemented by central banks (Mishkin, F. S., & Schmidt-Hebbel, 2007).

The absence of a significant relationship between inflation and bank resilience can be attributed to the relatively low and stable inflation rates prevailing in both Indonesia and Saudi Arabia during the study period. In Indonesia, inflation remained well within the official target range of 2.5 ± 1 percent, reflecting strong anchoring of inflation expectations through consistent monetary policy actions, including benchmark interest rate decisions and liquidity operations by Bank Indonesia (PMK No. 31/2024; Bank Indonesia implementation data). In Indonesia, Bank Indonesia has consistently implemented an inflation-targeting framework, supported by proactive benchmark interest rate policies and open market operations, which has proven effective in anchoring inflation expectations and maintaining price stability (Bank Indonesia, 2022; Warjiyo, P., & Juhro, 2019). Similarly, the Saudi Central Bank (SAMA) has actively managed liquidity conditions and benchmark interest rates to ensure monetary stability in accordance with its exchange rate regime, thereby limiting

inflationary pressures and reducing potential risks to the banking sector (Ghosh, A. R., & Ramakrishnan, 2012).

5.3 Interest rates and bank resilience

Based on the empirical test results, H3 is accepted, indicating that interest rates have a significant effect on bank resilience. This relationship is evidenced by a coefficient value of 1.0338 and a probability value of 0.0000, which is well below the 5 percent significance level. The findings confirm that interest rates exert a positive influence on bank resilience, implying that an increase in interest rates is associated with an improvement in the resilience of the banking sector.

The argument that higher interest rate conditions improve bank performance and stability through wider profit margins is supported by the banking and monetary policy literature. Higher benchmark interest rates tend to increase banks' net interest margins and income-generating capacity, thereby strengthening profitability and capital positions (Borio & Zhu, 2012; Intermediation et al., 2017). Improved profitability enables banks to build stronger capital buffers, which enhances their overall resilience to shocks (Demirgüç-Kunt, A., & Martinez Peria, 2015).

In the context of Islamic banking, although interest is prohibited, benchmark interest rates continue to serve as a reference for pricing sharia-based financing instruments. Increases in policy rates are commonly followed by adjustments in mark-up rates and profit-sharing ratios applied to contracts such as *murabahah*, *mudharabah*, and *musyarakah*, which positively affect Islamic banks' profitability and stability (Chong & Liu, 2009). Empirical evidence from Indonesia further confirms that changes in benchmark interest rates significantly influence the margins, profitability, and resilience of Islamic banks through financing returns (Fakhrunnas et al., 2018).

5.4 Exchange rate against bank resilience

Based on the empirical results, H4 is rejected, indicating that the exchange rate does not have a significant effect on bank resilience. This is evidenced by an estimated coefficient of 0.2354 with a probability value of 0.6663, which exceeds the 5 percent significance level. These findings suggest that exchange rate movements do not materially influence banks' stability during the observation period.

The insignificant relationship between the exchange rate and bank resilience can be attributed to the relatively stable exchange rate conditions in the sampled countries, which limit banks' exposure to foreign exchange risk (International Monetary Fund (IMF), 2019; Mishkin, 2008).Under stable exchange rate regimes, the transmission of exchange rate volatility to the banking sector tends to be weak, particularly when macroeconomic management and monetary policy credibility are well established. Moreover, when the majority of banks' income streams and liability structures are denominated in domestic currencies such as the rupiah in Indonesia and the Saudi riyal in Saudi Arabia exchange rate fluctuations against

foreign currencies do not directly affect banks' profitability, capital adequacy, or overall resilience due to the absence of significant currency mismatches (Allen, F., & Gale, 2007; Widarjono, 2020).

5.5 The Quality of regulations in moderating macroeconomy

The results of the Moderation Regression Analysis (MRA) indicate that regulatory quality significantly moderates the relationship between economic growth and bank resilience, as shown by a probability value of 0.000, which is below the 5 percent significance level. This finding suggests that higher regulatory quality strengthens the impact of economic growth on bank resilience by improving supervisory effectiveness, strengthening prudential regulation, and enhancing banks' risk management capacity(Barth et al., 2013; Kaufmann, 2010; Widarjono, 2018). In economies with strong regulatory institutions, economic expansion is more likely to be accompanied by sustainable credit growth and improved banking stability, rather than excessive risk-taking (Demirgüç-Kunt, A., & Martinez Peria, 2015).

In contrast, the MRA results show that regulatory quality does not significantly moderate the relationship between inflation and bank resilience, as indicated by a probability value of 0.2012, which exceeds the 5 percent significance level. This implies that regulatory quality weakens the role of inflation in influencing bank resilience, as inflationary pressures are primarily managed through monetary policy instruments rather than regulatory mechanisms (Mishkin, 2008; IMF, 2019). Under conditions of relatively stable inflation, the effectiveness of regulatory quality in altering the transmission of inflation shocks to the banking sector becomes limited (Nugroho, L., & Badawi, 2019).

The results of the Moderation Regression Analysis (MRA) indicate that regulatory quality significantly moderates the relationship between interest rates and bank resilience, as reflected by a probability value of 0.000, which is below the 5 percent significance level. This finding suggests that higher regulatory quality strengthens the positive effect of interest rates on bank resilience by enhancing supervisory effectiveness, improving risk-based pricing mechanisms, and ensuring prudent adjustments in banks' financing and lending activities (Barth et al., 2013; Demirgüç-Kunt, A., & Martinez Peria, 2015; Widarjono, 2018). Under a strong regulatory framework, changes in interest rates are more effectively transmitted to the banking sector in a manner that supports profitability, capital adequacy, and overall financial stability rather than encouraging excessive risk-taking.

Furthermore, the MRA results also reveal that regulatory quality significantly moderates the relationship between exchange rates and bank resilience, as indicated by a probability value of 0.000. This implies that regulatory quality strengthens bank resilience in the presence of exchange rate fluctuations by limiting foreign exchange exposure, enforcing prudential regulations on currency mismatches, and strengthening banks' risk management practices (Allen, F., & Gale, 2007; Nugroho, L., & Badawi, 2019). In well-regulated banking systems, effective supervision and sound regulatory institutions

help banks absorb exchange rate shocks, thereby mitigating their potential adverse effects on bank resilience.

6. Conclussion

Based on the results of data testing and the analysis discussion that has been conducted, it can be concluded that economic growth has a negative impact on bank resilience.This is due to its economic growth being dependent on certain sectors in Saudi Arabia, which can increase macroeconomic risk if the prices of those commodities plummet, reducing the ability of customers to repay their debts.Interest rates have a positive impact on the resilience of banks. Because during that period, interest rates were higher to increase profits from Sharia-based financing.Inflation and exchange rates do not affect the resilience of the bank.This is because inflation in Indonesia and Saudi Arabia is relatively low, and with the control of benchmark interest rates and interventions in the money market, the exchange rate is relatively stable, so banks are not significantly exposed to exchange rate risks.The quality of regulation can strengthen the influence of economic growth, interest rates, and exchange rates on the resilience of banks.This strict regulation ensures better credit risk management, so banks are not too aggressive in credit expansion during periods of economic growth and also encourages the operational efficiency of banks in facing changes in economic conditions.The quality of regulation cannot strengthen the influence of inflation on the resilience of banks.This is because the quality of regulation does not have a direct impact on the inflation rate, but plays a role in strengthening the capacity of financial institutions to respond to macroeconomic pressures.

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