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DETERMINANTS OF SOLVENCY IN SHARIA LIFE INSURANCE: THE ROLE OF LIQUIDITY, INVESTMENT, CLAIMS EXPENSES, AND LEVERAGE

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ABSTRACT

This study aims to analyse the effects of liquidity, investment returns, claim expenses, and leverage on the solvency of Sharia life insurance companies during the 2019–2023 period, both partially and simultaneously. Risk-Based Capital (RBC) is used as an indicator of the financial health of insurance companies, while liquidity, investment returns, claim expenses, and leverage serve as the independent variables tested. This study adopts a quantitative approach using panel data regression with the Random Effects Model (REM) to examine the relationships among variables. The results show that, partially, liquidity has a significant positive effect on solvency, while leverage has a significant negative effect. Meanwhile, investment returns show an insignificant negative effect, and claim expenses show an insignificant positive effect on the solvency of Sharia life insurance companies. Simultaneously, liquidity, investment returns, claim expenses, and leverage have a significant effect on solvency. The findings imply that both Sharia life insurers and regulators need to strengthen risk-based supervision, particularly in managing current assets and controlling debt usage, to ensure long-term financial stability.

INTRODUCTION

The insurance industry is an important sector in the economy, especially amid increasing global uncertainty. In today's financial ecosystem, the industry plays an active role as a key driver that strengthens and facilitates the growth of other industrial sectors. In this modern era, the role of the insurance industry as a catalyst that supports economic stability and encourages progress across various sectors, including banking, property, and manufacturing, is becoming increasingly vital in facing complex and dynamic economic challenges. Alongside rising public awareness of the importance of financial concepts that comply with sharia principles, the Sharia insurance industry in Indonesia continues to show a positive growth trend.

Table 1
Financial Growth of Sharia Insurance in Indonesia

Indicator	2019	2020	2021	2022	2023
Assets	35.310	32.268	35.868	45.540	45.723
Contribution	4.160	4.314	6.706	8.853	8.241
Claims	2.852	3.466	6.013	5.859	6.724
Investment	32.655	29.457	31.050	37.173	36.550
Penetration	0.100%	0.099%	0.150%	0,139%	0,130%

Source: OJK Sharia IKNB Statistics for the 2019–2023 period

Insurance companies act as entities that function as risk mitigators and provide protection for their customers. Therefore, for the insurance industry, including Sharia insurance, maintaining the financial health of insurance companies is crucial to ensuring long-term operational sustainability and maintaining customer and policyholder trust. According to the Minister of Finance Regulation No. 53/PMK.010/2012, the measurement of the financial health of Sharia insurance companies can be assessed through the solvency ratio using the Risk-Based Capital (RBC) method. The solvency level reflects the financial strength of an insurance company, where a higher ratio indicates a stronger ability to meet long-term obligations. Although the minimum RBC limit has been set at 120% according to PJOK No.71/PJOK.05/2016, issues related to claim defaults and even bankruptcies in insurance entities still persist.

According to CNBC, during the period 2009–2019, OJK revoked the business licenses of 39 insurance entities, consisting of 25 general insurance companies, 13 life insurance companies, and one reinsurance company. These revocations occurred because their financial health did not meet the minimum RBC ratio required by the regulator (Wareza, 2020). In 2022, there were still seven insurance companies with RBC levels below the regulatory threshold of 120%. The placement of these companies under special supervision by OJK indicates that the financial condition of several insurance firms in Indonesia remains inadequate.

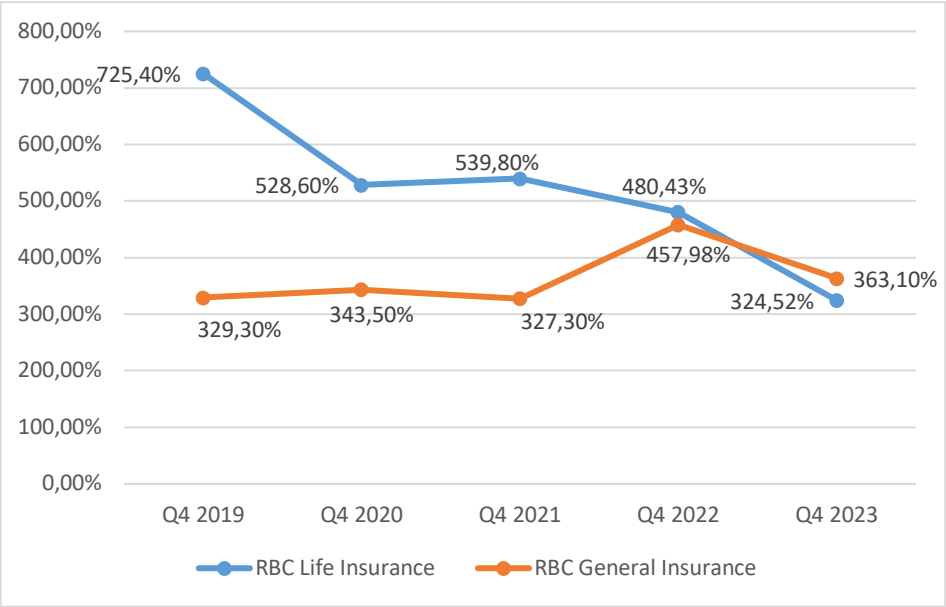

Figure 1. Trend of Insurance Risk-Based Capital in Indonesia (2019–2023)
Source: Financial Services Authority, Processed Data by the Author

According to the Financial Services Authority (OJK) performance report, the insurance industry's Risk-Based Capital (RBC) in Indonesia has experienced fluctuations over the past five years. Based on the graph, the RBC of life insurance tends to decline annually, whereas the RBC of general insurance shows an upward trend in certain years. Nevertheless, both sectors remain above the minimum threshold of 120% as stipulated by regulation. The Indonesian Life Insurance Association (AAJI) notes that the declining trend in life insurance RBC may be attributed to financial market challenges in Indonesia, which are influenced by global economic uncertainty.

A pressing issue for Sharia insurance is the stagnant penetration rate of around 0.13% during 2019–2023, indicating that despite positive growth in the number of companies and financial performance, its market share contribution to GDP remains very small. According to Sukmaningrum et al. (2022), one factor contributing to the relatively low market penetration of the Sharia insurance industry in Indonesia is the lack of public trust in Sharia insurance products. Indonesian society tends to hold a sceptical view of these products, perceiving them as not fully reflecting Islamic law principles.

Previous research has produced varying conclusions regarding the determinants of insurance company solvency. Jawad & Ayyash (2019) found that liquidity and investment returns were negatively related but not statistically significant, while the claims ratio showed a positive relationship with solvency in Palestinian insurers. In contrast, Abduh & Zein Isma (2017) reported that leverage significantly influenced solvency, whereas liquidity showed no effect in the context of Sharia life insurance companies in Malaysia. Similarly, Yakob et al. (2012) highlighted the significant role of investment returns,

premium-to-surplus ratio, liquidity, and financial leverage in explaining solvency among insurers and Takaful operators in Malaysia.

Based on the phenomena observed in Indonesia and the varying results of previous studies regarding financial factors that may affect the solvency of insurance companies in other countries, this study focuses on examining financial factors, particularly liquidity, investment return, claim expenses, and leverage, that may influence the solvency level of insurance companies in Indonesia, especially Sharia life insurance. The selection of Sharia life insurance as the research object is based on the RBC trend, which shows a downward movement throughout the 2019–2023 period. According to performance reports published by the Financial Services Authority (OJK), the RBC value of Sharia life insurance companies has declined almost every year, while the RBC of Sharia general insurance tends to increase in certain years, resulting in a relatively more stable capital position. The Indonesian Life Insurance Association (AAJI) attributes the declining RBC trend in the life insurance industry to challenges in the domestic financial market associated with global economic uncertainty. These conditions affect companies' ability to maintain their capital resilience.

Therefore, the declining RBC phenomenon becomes the primary reason for selecting Sharia life insurance as the focus of this research. This study offers a distinct contribution compared with prior research by using more diverse independent variables and a broader sample that includes Sharia life insurance companies in Indonesia. In addition, the research period covers the condition of Sharia life insurance companies before and after the Covid-19 pandemic, providing more comprehensive results.

Conducting this study contributes benefits to several stakeholders. For Sharia life insurance companies in Indonesia, the findings provide insights to strengthen financial risk management by considering the specific characteristics of each firm. Meanwhile, for policymakers, the results offer valuable input for developing appropriate policy strategies to supervise the performance and financial soundness of insurance companies.

LITERATURE REVIEW

Risk-Based Capital Theory

Risk-Based Capital (RBC) is a solvency measurement tool used by regulators to detect insurance and Sharia insurance companies that face financial problems. Solvency evaluates the company's capability to fulfil its long-term and short-term liabilities by comparing its assets with its obligations (Morara & Sibindi, 2021). When the solvency level of an insurance company declines, it indicates a reduced ability to meet obligations to policyholders, meaning the company's assets may no longer be sufficient to cover future obligations or potential risks (Nguyen & Vo, 2020). RBC provides information regarding the reserve funds available to insurance companies to settle all obligations, including claim liabilities to policyholders.

Risk-Based Capital serves as a parameter that reflects the ability and financial health of insurance companies in bearing potential risks arising from asset and liability management. In Indonesia, the RBC ratio is used by regulators for supervision and protection of insurance policyholders. The purpose of this supervision is to detect financial problems at an early stage so that insolvency can be prevented, allowing regulators to take action before the gap between the assets and liabilities of insolvent companies becomes too large and difficult to control.

Definition and Concept of Sharia Insurance

According to Fatwa DSN MUI No. 21/DSN-MUI/IV/2001, Sharia insurance (Tamin, Takaful, or Tadhamun) is a system based on the concept of mutual protection and assistance among participants. This principle is implemented using joint funds in the form of assets and/or tabarru' funds, where participants who experience certain risks will receive compensation through contracts in accordance with Sharia principles. The basic contracts commonly used in Sharia insurance are tabarru' and tijarah contracts. The tabarru' contract is a non-commercial agreement (assistance-based), in which policyholders grant funds to be provided to beneficiaries if the participant dies before the insurance period ends (Rahman & Binti Aziz, 2025). Meanwhile, the tijarah contract is a fund management agreement for investment activities with commercial objectives (Sholikah et al., 2024).

The types of Sharia insurance in Indonesia are grouped into three categories: Sharia general insurance, Sharia life insurance, and Sharia reinsurance. The main distinction between these types lies in the object of protection and the nature of the benefits provided. Sharia life insurance provides life protection based on Sharia principles, with the objective of assisting participants by offering benefits in the form of several payments to policyholders while still alive or to their heirs or other entitled recipients if the participant dies.

Previous Study and Hypothesis Development

Several studies have examined factors influencing the solvency of insurance companies measured through Risk-Based Capital (RBC). Previous research has investigated various determinants of solvency using different company characteristics, analytical aspects, and research periods (Fares et al., 2024; Sukmaningrum et al., 2023; Suyatna, 2022; Renaldo et al., 2021). Jawad & Ayyash (2019) investigated insurance companies in Palestine and highlighted the roles of liquidity, investment, leverage, and claims ratio in determining solvency, although liquidity and investment showed negative and insignificant effects.

In Malaysia, Abduh & Zein Isma (2017) emphasized the significance of company size, contribution growth, and leverage in explaining solvency within Family Takaful operators. Yakob et al. (2012) found that investment returns, premium-to-surplus ratio, liquidity, and financial leverage significantly influenced solvency for both conventional insurers and Takaful operators. These findings indicate variations across contexts, industries, and time periods, reflecting the complexity of solvency determinants. The following sub-chapters explain how the hypotheses were developed based on theoretical foundations and previous empirical findings.

The Effect of Liquidity on the Solvency of Sharia Life Insurance

Liquidity reflects a company's ability to meet short-term obligations when due, including claim and surrender payments (Fares et al., 2024). Insurance companies that have a high liquidity ratio relative to their short-term liabilities will have a higher solvency margin. The findings of previous studies such as Berhanu Abera & Debas Yirsaw (2020) and Grishunin et al. (2021) also indicate a positive and significant relationship between liquidity and solvency levels. A company's ability to pay policyholder claims or fulfil financial obligations can be observed by comparing its current assets to current liabilities. The greater the current assets relative to current liabilities, the healthier or more solvent the insurance company is, as higher liquidity indicates a lower risk of bankruptcy.

H_1: Liquidity has a significant effect on the solvency of Sharia life insurance companies in Indonesia for the 2019-2023 period.

The Effect of Investment Returns on the Solvency of Sharia Life Insurance

Investment returns represent income earned by companies from managing funds through placements in various financial instruments or projects, with the objective of generating profits (Jawad & Ayyash, 2019). Effective and efficient investment decisions can be reflected in strong investment performance. Insurance companies that are able to manage their investments well and generate optimal investment income will have sufficient reserves to fulfil their financial obligations to policyholders. Yakob et al. (2012) stated that good investment performance can reduce the risk of bankruptcy in insurance companies. Previous studies, including Fares et al. (2024), Abduh & Zein Isma (2017), and Yakob et al. (2012), consistently demonstrated a positive relationship between investment returns and insurance company solvency.

H_2: Investment returns have a significant effect on the solvency of Sharia life insurance companies in Indonesia for the 2019-2023 period.

The Effect of Claim Expenses on the Solvency of Sharia Life Insurance

Claims expenses or loss ratio measure the amount of coverage paid by insurance companies to policyholders. Claims refer to the submission of liability or loss requests by policyholders in accordance with contractual rights (Fares et al., 2024). High claim payments may indicate that a company has sufficient current assets to settle its obligations to insurance participants. However, excessively high claim expenses relative to contribution income may signal financial pressure, which, if prolonged, could increase the risk of default. This aligns with the findings of Primayanti and Denny Arfianto (2016), who reported a significant negative relationship between claim expenses ratio and the solvency of Islamic life insurance companies in Indonesia as measured by RBC. Meanwhile, other studies such as Caporale et al. (2017), Jawad & Ayyash (2019), Fares et al. (2024) found a positive relationship between claim expenses and solvency in insurance companies.

H_3: Claims Expenses has a significant effect on the solvency of Sharia life insurance companies in Indonesia for the 2019-2023 period.

The Effect of Leverage on the Solvency of Sharia Life Insurance

An increase in financial leverage can benefit insurance companies to a certain point, but beyond that, it increases risk exposure and makes meeting capital needs more costly (Sukmaningrum et al., 2023). Insurance companies with high leverage values also tend to have more vulnerable capital structures when facing changes in economic conditions. Sudden economic shifts may worsen financial positions and lead to difficulties in fulfilling financial obligations. Several previous studies conducted by Nguyen & Vo (2020) and Fares et al. (2024) also showed a positive relationship between leverage and solvency in insurance companies.

H_4: Leverage has a significant effect on the solvency of Sharia life insurance companies in Indonesia for the 2019-2023 period.

The Effect of Covid-19 on the Solvency of Sharia Life Insurance

The Covid-19 pandemic is an outbreak that comprehensively transformed the world order, affecting social, economic, and cultural systems. According to Ali et al. (2020), the Covid-19 pandemic was a form of global crisis that began as a global health problem and evolved into an economic crisis, triggering global financial issues and causing the worst economic recession since 1930. Furthermore, the Covid-19 pandemic sent shockwaves through the global economy, including the insurance industry. Suyatna (2022) highlighted that the pandemic also impacted the Sharia life insurance sector, resulting in a large number of policyholders filing claims for insurance coverage. This situation placed

Sharia life insurance companies in a vulnerable position due to sharply increased claim burdens. However, existing literature has not sufficiently explored the specific impact of liquidity, investments, claims, and leverage on the solvency of Sharia life insurance in Indonesia during the Covid-19 pandemic. This gap in the literature serves as the foundation for the present study.

H_5: The Covid-19 pandemic has a significant effect on the solvency of Sharia life insurance companies in Indonesia for the 2019-2023 period.

RESEARCH METHODS

This quantitative research employed panel data regression techniques. The panel data regression method used in this study aimed to obtain a more accurate and efficient analysis. Panel data allowed for the combination of information across companies and over time, thereby capturing solvency dynamics more comprehensively (Jia et al., 2025). Therefore, this method was suitable for answering questions related to the effects of liquidity, investment returns, claim expenses, and leverage on the solvency of Sharia life insurance companies in Indonesia.

The data used in this study were secondary data obtained from the annual financial statements of Sharia life insurance companies in Indonesia during 2019–2023. A purposive sampling technique was applied. The sample criteria consisted of Sharia life insurance companies that had complete data for all variables used between 2019 and 2023. A total of fifteen Sharia life insurance companies in Indonesia were included in this study.

Table 2
Sample Criteria

No	*Selection Criteria*	*Number of Companies*
1.	All sharia life insurance companies officially registered with the Financial Services Authority (OJK) during 2019–2023	30
2.	Sharia life insurance companies that were newly licensed in 2019	(8)
3.	Sharia life insurance companies that did not publish and did not provide complete annual financial reports on their official company websites during 2019–2023	(7)
	Sample Size	15

Source: Author

This study aims to analyse financial factors that may affect the solvency level of Sharia life insurance companies in Indonesia. To examine the relationships among variables, panel data regression was employed, combining cross-sectional and time-series data using EViews 12 software. The use of panel data regression was considered appropriate because the dataset covered more than two samples over a specified period, thereby providing a more accurate and efficient analysis in addressing the research questions.

In conducting the panel data regression analysis, three tests were performed to determine the most suitable estimation model, namely the Chow test, Hausman test, and Lagrange Multiplier (LM) test. Furthermore, to ensure that the regression model met the assumptions for further analysis, traditional assumption tests were conducted, including normality and multicollinearity tests. For clarity and consistency, the operational definitions of all variables used in this study are presented in Table 3.

Table 3
Operational Definition of Variables

Research Variables	*Indicator*	*Measurement Scale*	*Data Source*	*Operational Definition*	*Source*
Solvency (Risk Based Capital/RBC)	RBC = $\frac{\text{Level of Solvency}}{\text{DTMBR}}$ level of solvency/ *Risk-Based Minimum Tabarru' Fund and Tanahud Fund*	Ratio	Sharia Insurance Annual Report	Solvency reflects the ability of insurance companies to pay short-term and long-term liabilities. Solvency in this study was measured using the RBC ratio.	Sukmaningrum et al. (2023)
Liquidity	Liquidity = $\frac{\text{Current Assets}}{\text{Liabilities}}$	Ratio	Sharia Insurance Annual Report	Liquidity indicates the company's capacity to pay off short-term liabilities.	Ramadhani & Muazaroh (2023)
Investment Return	Investment Return = $\frac{\text{Investment Income}}{\text{Average Investment}}$	Ratio	Sharia Insurance Annual Report	Investment return refers to the income earned by the company from the management of invested funds.	Horvey et al. (2025)
Claim Expenses	Claim expenses = $\frac{\text{Claim Expenses Net}}{\text{Net Premium Income}}$	Ratio	Sharia Insurance Annual Report	Claim expenses represent the total amount of claims paid by the company to policyholders.	Fares et al. (2024)
Leverage	DAR =	Ratio	Sharia Insurance	Leverage reflects the insurance	Sukmaningrum et al. (2023)

Research Variables	*Indicator*	*Measurement Scale*	*Data Source*	*Operational Definition*	*Source*
	$\frac{\text{Total Debt}}{\text{Total Assets}}$		Annual Report	company's capacity to finance its assets through debt and was measured using the Debt to Asset Ratio (DAR).	
Covid Dummy	0 = period before the Covid-19 pandemic; 1 = period after the Covid-19 pandemic	Categorical		A dummy variable used to distinguish between the pre-Covid-19 and post-Covid-19 periods.	Salami et al. (2024)

Source: Author

By using panel data regression analysis, the regression equation applied in this study is expressed as follows:

$$\textbf{\textit{RBC}} = \alpha_{it} + \beta_1 LIQ_{it} + \beta_2 INV_{it} + \beta_3 CLAIM_{it} + \beta_4 LEV_{it} + \beta_5 DUMMY_{it} + e$$

where:

RBC : Solvency level
α : Constant
β : Coefficient Slope
LIQ_{it} : Liquidity
INV_{it} : Investment return
$CLAIM_{it}$: Claim expenses
LEV_{it} : Leverage
$DUMMY_{it}$: Covid-19 Dummy
e : standard error

RESULT

This study uses Sharia life insurance companies officially registered with the Financial Services Authority (OJK) during 2019–2023 as the population. The sample consists of 15 Sharia life insurance companies in Indonesia, including 5 full-fledged Sharia life insurance companies and 10 Sharia business unit (UUS) life insurance companies, with a research period spanning from 2019 to 2023.

Table 4
Research Sample

No.	*Company Name*	*Description*
1.	PT. Asuransi Allianz Life Syariah Indonesia	*Full Fledged*
2.	PT. Asuransi Jiwa Manulife Indonesia Syariah	*Full Fledged*
3.	PT. Capital Life Syariah	*Full Fledged*
4.	PT. Prudential Sharia Life Assurance	*Full Fledged*

5.	PT. Asuransi Takaful Keluarga	*Full Fledged*
6.	PT. AIA Financial	UUS
7.	PT. Avrist Assurance	UUS
8.	PT. Central Asia Raya	UUS
9.	PT. Chubb Life Insurance Indonesia	UUS
10.	PT. FWD Life Indonesia	UUS
11.	PT. Panin Dai-Ichi Life	UUS
12.	PT. PFI Mega Life	UUS
13.	PT. Asuransi Jiwa Sinarmas MSIG	UUS
14.	PT. Sunlife Syariah	UUS
15.	PT. Tokio Marine Life Insurance Indonesia	UUS

Source: Author

Descriptive Statistical Analysis

Based on the descriptive statistics in Table 5, all research variables show variation in their data distribution, reflecting the diverse conditions of the Sharia life insurance companies observed from 2019 to 2023. The solvency variable, proxied by LOG_RBC as the dependent variable, shows a mean value of 3.77, indicating that firms generally maintain adequate risk-based capital. The liquidity variable (LOG_LIQ) shows a mean value of 2.11, suggesting sufficient liquidity, although some firms recorded very low values. The investment return variable (INV) has a mean of 0.045, which indicates relatively low investment performance with some negative observations. The claim expense variable (CLAIM) has a mean of 0.98, reflecting high claims ratios and several extreme values among firms. Meanwhile, the leverage variable (LEV), with a mean of 0.20, indicates that most firms operate with moderate leverage levels. The Covid-19 dummy variable (mean 0.80) shows that most observations correspond to the pandemic period, allowing the model to capture its potential effect on solvency.

Table 5
Descriptive Analysis

Variables	*Obs*	*Mean*	*Median*	*Maximum*	*Minimum*	*Std.Dev*
LOG_RBC	75	3.772567	3.7123.46	6.7994	1.650242	1.191825
LOG_LIQ	75	2.108533	2.070000	5.210000	0.160000	1.127267
INV	75	0.045038	0.049953	0.278893	-0.459476	0.070308
CLAIM	75	0.984782	0.845180	4.241276	-0.055556	0.720383
LEV	75	0.201218	0.159737	0.647673	0.015404	0.147951
DUMMY	75	0.800000	1.000000	1.000000	0.000000	0.402694

Source: Processed Data by the Author using EViews 12

To assess the feasibility of the regression model, classical assumption tests were conducted, including a normality test (Table 6) and a multicollinearity test (Table 7). Table 6 presents the results of the Jarque–Bera test, showing a probability value of 0.111555.

Since the probability exceeds the significance level of 0.05, the null hypothesis (H_o) is accepted, indicating that the residuals are normally distributed. Therefore, the regression model satisfies the normality assumption.

Table 6
Normality Test Result

	Value	*α*	*Remark*
Jarque-Bera	4.386472	0.05	
Probability	0.111555	0.05	H_0 is accepted

Source: Processed Data by the Author using EViews 12

Excessive multicollinearity among independent variables can inflate standard errors and bias coefficient estimates. Table 7 presents the correlation matrix of the independent variables, indicating that all correlation values are below the threshold of 0.80. According to Gujarati (2018), correlation values below 0.80 suggest no multicollinearity problems. Therefore, it can be concluded that the regression model does not exhibit serious multicollinearity issues.

Table 7
Multicollinearity Test Result

	LOG_LIQ	INV	CLAIM	LEV	COVID DUMMY
LOG LIQ	1.000000	0.109931	-0.212253	-0.326821	-0.049476
INV	0.109931	1.000000	0.021060	0.051756	-0.123496
CLAIM	-0.212253	0.0210060	1.000000	0.265676	0.007006
LEV	-0.326821	0.051756	0.265676	1.000000	0.077839
COVID DUMMY	-0.049476	-0.123496	0.007006	0.077839	1.000000

Source: Processed Data by the Author using EViews 12

Empirical Results

Panel data regression requires selecting the most appropriate estimation model. To identify the suitable model, the Chow test and Hausman test were performed (Table 8). The Chow test is used to determine whether the Fixed Effect Model (FEM) or the Common Effect Model (CEM) is more appropriate. The results show a Prob. Cross-section Chi-square value of 0.0000 < 0.05, indicating that the Fixed Effect Model (FEM) is preferred over the Common Effect Model (CEM). The subsequent Hausman test was conducted to determine whether the Fixed Effect Model (FEM) or Random Effect Model (REM) is more suitable. The test result shows a Prob. Cross-section Chi-square value of 1.0000 > 0.05, indicating that the Random Effect Model (REM) is the appropriate estimation model for this study.

Table 8
Model Estimation Selection

Model Test	Effect Test	Statistic	Prob.	Ket.
Chow Test	Cross-section F	16.208256	0.0000	H_0 is rejected
Hausman Test	Cross-section random	1.464535	1.0000	H_0 is rejected

Source: Processed Data by the Author using EViews 12

Table 9
Regression Analysis – Random Effect Model (REM)

Independent Variable	Dependent Variable: RBC			
	Coefficient	Std.Error	t-Statistic	Prob.
C	3.648540	0.412876	8.836895	0.0000
LOG_LIQ	0.274250	0.074329	3.689659	0.0004*
INV	-0.928547	0.824050	-1.126809	0.2637
CLAIM	0.022640	0.090024	0.251486	0.8022
LEV	-3.585601	1.057140	-3.391795	0.0012*
DUMMY	0.358468	0.129581	2.766355	0.0073*
R-Squared	0.400832		F-Stat	9.231952
Adj. R-Squared	0.357414		Prob. F	0.000001
Obs.	75			

* 5% significance level

Source: Processed Data by the Author using EViews 12

The panel data regression results can be expressed in a mathematical equation as follows:

*LOG_RBC = 3.64854001811 + 0.274249686334*LOG_LIQ - 0.928546873184*INV + 0.0226396548232*CLAIM - 3.58560094329*LEV + 0.358468200579*DUMMY + e*

Based on the regression results presented in Table 9, liquidity (LOG_LIQ) has a positive and statistically significant effect on RBC (prob = 0.004 < 0.05), indicating that higher liquidity contributes to stronger solvency positions. In contrast, leverage (LEV) shows a negative and significant effect on RBC (prob = 0.0012 < 0.05), suggesting that higher leverage decreases capital adequacy. The COVID-19 dummy variable (DUMMY) also exhibits a positive and significant effect (prob = 0.0073 < 0.05), implying that RBC levels were relatively higher during the pandemic period, potentially due to regulatory adjustments or strengthened financial strategies. Conversely, investment (INV) (prob = 0.2637 > 0.05) and claims (CLAIM) (prob = 0.8022 > 0.05) are statistically insignificant, indicating that these factors do not have a meaningful direct effect on RBC in the observed sample. The model demonstrates an R-squared value of 0.40, indicating that approximately 40% of the variation in RBC is explained by the independent variables. Additionally, the F-statistic (9.23, p < 0.01) confirms the overall significance of the model.

DISCUSSION

The Effect of Liquidity on the Solvency of Sharia Life Insurance

This study finds that liquidity has a significant positive effect on the solvency (RBC) of Sharia life insurance companies in Indonesia. This supports the financial distress risk theory, which suggests that lower liquidity ratios may indicate potential difficulties in fulfilling short-term obligations and sustaining operational activities (Santosa et al., 2020). Accordingly, for insurance companies, liquidity reflects the ability to meet short-term obligations, including customer claims and operating costs, in a timely manner. High liquidity indicates that insurance companies possess liquid assets that can be quickly converted into cash. This enables them to fulfil urgent obligations without disposing of assets or investments under unfavourable conditions. Maintaining financial stability and operational sustainability is crucial to preserving policyholders' trust and confidence. These results align with the findings of Ramadhani & Muazaroh (2023), Berhanu Abera & Debas Yirsaw (2020), Grishunin et al. (2021), and Caporale et al. (2017), who also reported a significant positive relationship between liquidity and insurance company solvency. Therefore, liquidity plays an essential role in maintaining solvency and is often regarded by regulators as an early warning indicator for insurance companies potentially experiencing financial difficulties.

The Effect of Investment Return on the Solvency of Sharia Life Insurance

The results indicate that investment return has no significant effect on the solvency (RBC) of Sharia life insurance companies in Indonesia. Although responsible investment strategy management is important for maintaining financial stability and mitigating solvency pressures, its direct influence on RBC appears limited within the observed period. Schlütter et al. (2022) stated that greater funds allocated to investment can potentially increase returns, thereby improve income and supporting financial health. However, this expected impact does not emerge significantly in the present study. This result is also consistent with Jawad & Ayyash (2019), who found that the investment return ratio does not significantly influence the solvency level of insurance companies. The absence of a significant effect may be due to investment decision-making that has not been optimized, resulting in relatively low returns that do not make a substantial contribution to strengthening solvency. Thus, investment activities in Sharia life insurance companies have yet to serve as a major determinant of solvency performance.

The Effect of Claim Expenses on the Solvency of Sharia Life Insurance

Based on the regression test results, the ratio of claim expenses and solvency proxied by RBC shows a positive relationship but no statistically significant effect. Although statistically the data indicate no strong influence between these two variables, the positive coefficient can be interpreted as follows: the greater the paid claims relative to

equity, the stronger the liquidity and the company's capacity to meet its obligations. This aligns with loss ratio theory, which suggests that well-managed claim costs reflect operational soundness. From the perspective of financial distress theory, fluctuations in claim expenses may influence solvency because excessive and uncontrolled claims can increase financial pressure, whereas stable claim patterns indicate effective risk management (Ritho, 2023).

Theoretically, claim expenses contribute to fluctuations in the solvency ratio of insurance companies because they reflect the company's capacity to fulfil its responsibilities. Thus, solvency may appear stable and healthy, indicating strong financial performance. However, previous studies also found that claim expenses did not have a significant effect on solvency measured using RBC in Sharia insurance companies, as the claim expense ratio does not provide sufficiently comprehensive information to describe the overall solvency level. Therefore, assessing whether a company is financially healthy requires a more in-depth evaluation of other relevant factors alongside claim expenses.

The Effect of Leverage on the Solvency of Sharia Life Insurance

The findings show that leverage proxied by the Debt to Asset Ratio (DAR) has a negative and significant effect on the solvency of Sharia life insurance companies, which is measured using RBC. This indicates that an increase in leverage reduces the company's ability to maintain financial stability. When leverage is high, the company's liability burden increases, potentially exposing the insurer to greater financial vulnerability, especially under unfavourable economic conditions. These findings are consistent with previous studies conducted by Fares et al. (2024), Caporale et al. (2017), and Yakob et al. (2012), which demonstrated that leverage significantly influences the solvency of insurance companies. High leverage increases the risk of default, particularly during economic downturns, thereby making leverage a critical factor in evaluating the resilience of insurance companies. From an Islamic economic perspective, excessive and disproportionate use of leverage contradicts the Sharia principle of *hifz al-mal* (protection of wealth). Poorly managed financial obligations may endanger participants' funds and weaken long-term financial stability. Therefore, Sharia life insurance companies must maintain a prudent balance between capital and liabilities to ensure financial sustainability and protect the interests of participants.

The Effect of Covid-19 on the Solvency of Sharia Life Insurance

The regression results show that the Covid-19 pandemic has a positive and significant effect on the solvency of Sharia life insurance companies. These findings indicate that during the pandemic, many insurers successfully navigated economic

challenges by implementing effective financial strategies. The increased solvency position aligns with theoretical perspectives from previous literature, which emphasize that solvency performance is closely related to a company's ability to manage risk exposures. Athira et al. (2024) highlighted that high loss ratios and unmanaged claim pressures can trigger financial distress, indicating that external shocks such as Covid-19 may threaten financial stability if not supported by adequate risk mitigation measures.

From a regulatory standpoint, the Financial Services Authority (OJK) encouraged insurance companies to strengthen financial resilience by increasing reserves and capital to anticipate economic uncertainty and potential claim surges. This initiative contributed directly to stronger capital positions and improved RBC ratios. In addition, many companies adjusted their investment portfolios by reallocating funds to safer assets to mitigate market volatility, thereby improving asset quality and solvency outcomes. Companies also adopted a more conservative approach to spending and profit distribution to maintain financial stability throughout the crisis. These findings reinforce the importance of maintaining proactive financial management and innovation in response to emerging risks. Strengthening critical financial indicators enables Sharia life insurance companies to enhance resilience and ensure long-term sustainability when facing future crises.

CONCLUSION

This study aims to investigate the factors influencing the solvency level of Sharia life insurance companies in Indonesia, particularly focusing on liquidity, investment return, claim expenses, and leverage. Maintaining financial health and protecting policyholder interests is essential; therefore, each country enforces solvency regulations in accordance with applicable laws to detect early signs of financial distress and prevent insolvency. The results indicate that liquidity plays a crucial role in maintaining the company's ability to fulfil its obligations, including claim payments to policyholders. Thus, Sharia life insurance companies are encouraged to enhance the effectiveness of managing current assets. This study also highlights the importance of monitoring leverage, as excessive debt can weaken capital structure and increase the risk of financial instability.

From a regulatory perspective, these findings provide practical insights for the Financial Services Authority (OJK). Routine supervision of financial statements is necessary to ensure sufficient reserves and liquidity for claim settlements. The OJK may also strengthen its risk-based supervisory framework by enforcing minimum liquidity requirements and debt usage limits, thereby mitigating the risk of default. Furthermore, these findings contribute to strengthening the application of risk-based capital concepts in the Islamic insurance sector. Despite its contributions, this study has limitations. The observation period covers only five years (2019-2023) and includes 15 Sharia life insurance companies out of a total population of 30. Moreover, solvency is measured using only four

independent variables, liquidity, investment returns, claim expenses, and leverage, thus not capturing all potential determinants. Future studies are expected to expand the observation period, involve a wider sample, and incorporate additional factors such as macroeconomic conditions or conduct cross-country analyses to provide more comprehensive insights into solvency dynamics in Islamic life insurance companies.

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AUTHOR CONTRIBUTIONS

Salwa Tasya Aqilah	: Research conceptualization, data collection, analysis, and writing
Siti Zulaikha	: Methodology, data analysis, and discussion development
Syed Othman Alhabshi	: Literature review and data management

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