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Published by:
Universitas Negeri Surabaya
Cooperation with:
Majelis Sarjana Ekonomi Islam (MASEI)

About the Journal

Journal Title	al-Uqud : Journal of Islamic Economics
ISSN/E-ISSN	2549-0850/2548-3544
DOI Prefix	http://dx.doi.org/10.26740/al-uqud
Editor in Chief	Ahmad Ajib Ridlwan
Publisher	Universitas Negeri Surabaya
Frequency	January & July
Citation Analysis	SINTA Google Scholar DOAJ

Al-Uqud: Journal of Islamic Economics publishes quality and in-depth analyses of current issues to investigate Economics, Management and Business topics in an Islamic perspective, in theory and practice, across Muslim in the world.

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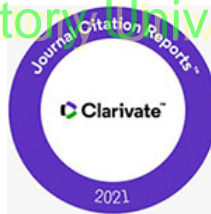
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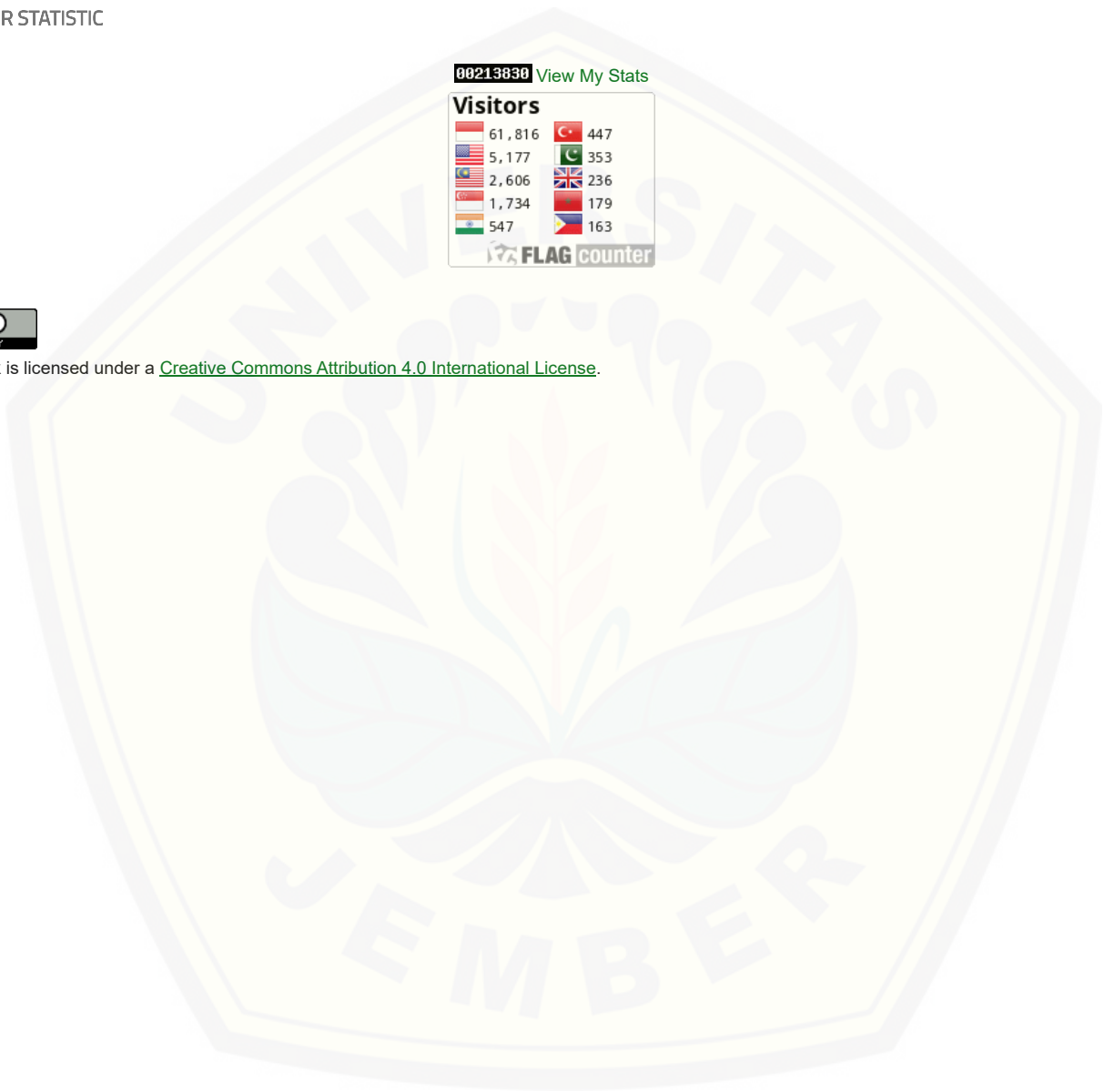
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Factors Affecting Solvability Analysis of Indonesian Sharia Life Insurance Companies

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Article Info

Paper type:

Research paper

Keywords:

Solvability, Sharia life insurance companies, Solvency

Article history:

Received: 04 April 2023

Revised: 30 Juny 2023

Accepted: 27 July 2023

Available online: 30 July 2023

Abstract

Examining and analyzing the impact of premiums, claims, investment returns, reinsurance, and underwriting on the solvency of Islamic life insurance firms in Indonesia is the goal of this study, with firm size as the control variable. In this study, the entire population serves as the total sample. The sampling method is saturation sampling of 15 companies, and the research range is from 2016 to 2020, with a total of 75 observations. The analytical method uses multiple linear regression analyses: premiums, investment returns, and underwriting impact solvency and support resource-based theory. However, regarding the impact of Claims, Reinsurance, and control variables, namely, The level of solvency is not significantly impacted by the size of the company; it is contrary to Resource Based Theory. This is rationally found in the Islamic insurance business model, which is different from the conventional insurance business model so that the solvency of Islamic insurance is not affected by claims, reinsurance, and company size.

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Please cite this article in APA style as:

Puspitasari, N., Hidayat, S. E., Nurhayati, N., & Hasanah, S. (2023). Factors Affecting Solvability Analysis of Indonesian Sharia Life Insurance Companies. *Al-Uqud: Journal of Islamic Economics*, 7(2), 172–185. <https://doi.org/10.26740/aluqud.v7n2.p172-185>

Introduction

The Islamic financial industry has good prospects in Indonesia, including Sharia insurance (Waluyo, 2020). This is based on the condition of the population in Indonesia, namely in June 2021, as many as 236.65 million people, or 86.88% of the majority of Indonesia's population, are Muslims (Anggraini et al., 2022). The increase in halal awareness and the occurrence of disasters that hit Indonesia also contributed to the Indonesian people's growing understanding of the value of insurance, which also increased protection services (Rindrasih, 2019).

Islamic insurance has developed quite well in recent years, which can be seen from the increase in the positive performance of Islamic insurance since 2021. This is seen in Table 1. It

provides information that in Islamic insurance, in the first quarter of 2021, businesses saw an improvement, reflected in asset growth, gross contribution, investment, and gross claims.

Table 1. Performance of Sharia Insurance in Indonesia

Account Name	Quarter 1 2020	Quarter 1 2021	Growth
Assets	41.124	44.136	7,32%
Gross Contribution	4.014	5.828	45,20%
Investment	35.131	36.287	3,29%
Gross Claim	3.213	4.88	56,28%

Source: [Data Asosiasi Asuransi Syariah Indonesia, 2021](#).

The Sharia life insurance industry dominates the most significant portion. This demonstrates the positive perception of the sharia life insurance market. In great demand by the public, Sharia life insurance companies need to maintain the trust of their customers by providing good performance. [Zhang et al. \(2021\)](#) explained in the Resources Based Theory (RBT) concept that an advantage firms claim that having professional resources that other companies do not have will provide them a competitive advantage.

Insurance services said to be in good condition are companies with solvency above the minimum threshold and fulfilling claims from insurance participants ([Svetlana et al., 2020](#)). Companies must maintain their solvency value to avoid the inability to pay debts on time or the amount of liabilities exceeding assets ([Brunnermeier & Krishnamurthy, 2020](#)). This has been regulated in The Republic of Indonesia's Financial Services Authority has a regulation that states that the goal level of solvency for Tabarru's funds is stated in No. [72/POJK.05/2016v](#), with company funds set at a minimum of 120 percent (120%) of each of the Danger Minimal Tabarru' Investments (DTMBR) and Minimum Risk-Based Capital (MMBR). The company must meet the solvency level of Tabarru funds and company funds of 100% of DTMBR and MMBR.

In 2016, PT. Mubarakah Sharia Life Insurance was declared bankrupt by the Financial Services Authority because its solvency value was less than the applicable provisions ([Dewi, 2019](#)). Therefore, the level of solvency is significant for insurance companies. The level of solvency is also a measure of public trust in insurance companies ([Durán Santomil & Otero González, 2020](#)). The level of solvency can be seen through Risk-Based Capital ([Park & Shin, 2022](#)). Companies that have a low level of Risk-Based Capital (RBC) will be more vulnerable to bankruptcy than companies that have a high value of Risk-Based Capital (RBC) ([Renaldo et al., 2021](#)). RBC is a calculation method that assesses the degree of insurance firms' solvency ([Manurung et al., 2022](#)).

Research related to the discussion regarding the Indonesian insurance industry's solvency level has been widely studied before. Previous research generally analyzed the determinants of solvency with the variables of premiums, claims, investment returns, underwriting, reinsurance, and company size. However, the results of these studies still need to be consistent. Research conducted by [Suyatna \(2021\)](#) concluded that Premiums and Claims significantly impact how solvent the company is; this study by [Euphasio Junior et al. \(2021\)](#) concluded that Premiums and Claims have no significant effect on solvency. Meanwhile, research by [Primayanti et al. \(2016\)](#) states that investment returns substantially impact stability, but firm size has little or no impact. The company size affects the level of solvency, and investment returns do not affect solvency's rank.

The research by [Morara et al. \(2021\)](#) shows that underwriting has an impact on solvency, while insurance has no impact on solvency. However, it differs from the research by [Adams et](#)

al. (2019), which shows some outcomes show if Underwriting with Reinsurance has some substantial impact on the level of solvency. Meanwhile, Born (2019) concluded that underwriting does not affect solvency.

Inconsistent results in several previous studies indicate a gap that can be an opportunity for further research by bringing up novelty research. The novelty of this research is that this study uses independent variables that are more complex than previous research, including Premiums, Claims, Investment Returns, Reinsurance, and Underwriting with a more recent research period, namely 2016-2020, and involving company size as a control variable. Sharma et al. (2021) explained that company size is very suitable as a control variable in analysis because research samples have various sizes so that research can provide more accurate results.

Based on the description in the previous paragraph, we do this research because we want to test and evaluate the impact of the factors that affect rates, claims, investment returns, reinsurance, and underwriting in this Indonesian Islamic insurers industry's financial stability with company size as the control variable. This study contributes both theoretically and practically. The theoretical contribution is the development of knowledge in Islamic finance, particularly when it comes to Islamic lifetime insurance business banking or the issue of corporate solvency. One practical contribution is that the findings of such a study can guide policy decisions for companies in meeting the Sharia insurance firms' solvability.

Literature Review

The insurance business in Indonesia focuses on sales or volume (Aqmala et al., 2019). The risk included is given with the understanding that the insurance premium is sufficient to cover possible future losses (Thunström et al., 2020). Of course, in times of intense competition in the insurance industry in Indonesia, the insurance market will become a battleground known as the Red Ocean. Many companies will jump into the battle with a pricing strategy primarily based on legislation or lowering prices to deficient levels—the risk of excessive claims in the future (Sugiono et al., 2021).

The insurance price in the form of a premium must also be proportional to the degree of risk the health insurer is taking. Therefore, it becomes secondary to gaining market share, so it is believed that only a certain percentage of the premium will be profitable because there are other costs beyond the risks the insurance company bears, such as insurance marketing and operational costs (Supian et al., 2022). The acquisition of significant insurance premiums allows insurance companies to invest money to generate returns (Oppong et al., 2019). However, the premium earned is also offset by the level of risk borne by the insurance company (Wahyono et al., 2021). Tarigan & Mahfud (2015) found that retakaful negatively affected the solvability of Islamic Insurance. Based on the literature study from the results of previous research, we develop the following hypothesis.

H1: Premiums affect the solvency of insurance companies.

Risk means the possibility that certain events will occur that will cause operations to fail to achieve the specified objectives or deviate from predetermined risks, but the effect can be positive or negative; it can be seen that risk is related to uncertainty. It is impossible to predict what will happen when uncertainty affects operating ability (Chen et al., 2020). If the actual performance deviates from the goals or objectives, it will only be considered a high risk because it deviates greatly from the target. However, the risk is considered negligible if there is a slight possibility of deviating from the target (Shoven et al., 2021). However, deviations can be positive and negative, impacting operations. Generally, a positive effect is to cause an opportunity (Opportunity). The negative impact will cause the business to lose or be damaged (Loss) (Di Micco et al., 2021). These risks can arise from organizational factors, such as

operational processes or work systems that are not quite right (Saarikko et al., 2020). This can affect the organization or not be able to accomplish the set objectives. Therefore, it is necessary to manage risk effectively to ensure that risks can be controlled at an acceptable level (Can (Saglam et al., 2021).

The insurance company's business, in general, is to bear other parties with compensation in the form of premiums and risks that are borne depending on the number of claims an insured person submits to the insured party, such that the number of claims the covered party submits affects the insuring industry's stability (Puławska, 2021). According to the literature review, we developed the following hypothesis:

H2: Claims affect the solvency list of insurer firms.

Some life insurance methods mostly average the risk of an accident or death (Mohammed et al., 2019). However, Sharia economics has Sharia principles in business (Puspitasari et al., 2022). The life insurance company acts as an intermediary to collect money from the average risk, making participants responsible for compensation arising from accidents or death in a group of people participating in the average risk (Kaffash et al., 2020). An essential part of the nation's growth in both its economy and society is played by insurance firms, both in terms of basic security for families and in mobilizing long-term savings from the public in the form of insurance premiums (Babuna et al., 2020).

The insurance premium received by any payment made by the healthcare client to the health insurer on behalf of the insured, which the company and other benefits will protect according to the conditions agreed on in the insurance policy. This is not considered company income but a receipt of advance payments (Clemente et al., 2020). The premiums collected are reserves to pay back, like in the event of a crash, then to the policyholder that results in disability, or the insurance policy has terminated the coverage or is paid to the heirs when the insured lives or dies. If not used to pay according to obligations or conditions, this reserve for life insurance will eventually become company income (Duval et al., 2019). However, Reserves held by insurance companies can be invested for profit or receive sufficient returns to pay the insured according to the agreed policy or contract (Levmore, 2020). Returns on insurance company investments can increase the solvency of insurance companies (Jugu et al., 2020). Investment is one way to increase profits in the future (Widarni et al., 2021). Ambarwati and Hasib (2018) and Lestari and Mukhibad (2020) found that investment results affected the solvability of Islamic Insurance in Indonesia. According to the literature review, this is our hypothesis:

H3: Investment results in the ability of insurance firms to remain solvent.

The insurance business, in terms of a business model, is buying and selling risks where there are parties who bear the risk and there are parties who bear the risk (Nazarov et al., 2019). In managing risk, insurance companies can reinsure other parties for their consumers (Upreti et al., 2022). The ability of the party receiving reinsurance determines the insurance company's solvency (Wong, 2022). According to our literature, this is our hypothesis:

H4: Reinsurance affects the solvency of insurance companies.

Insurance companies with knowledge and understanding of Underwriters will understand the underwriting principles of each type of insurance policy according to the standards set by your insurance provider to offer sales and select qualified applicants (Akkor et al., 2020). Insurance is obtained as a quality case (customer), which has a favorable effect on whether insurance coverage exists. (Sreedharan et al., 2021). The underwriting process, which is the process of identifying and selecting risks owned by prospective insurance customers, is an important thing that must be done in terms of determining premiums (Eling et al., 2021). The

Underwriting process has a significant impact on Solvency. Based on the literature research, we create the following assertion:

H5: Underwriting affects the solvency of insurance companies

Methodology

Explanatory qualitative studies are the kind of research that was conducted. Quantitative methods aim to put a hypothesis or idea to the test in order to support or, indeed, refute current theories. The analytical methods used are the descriptive statistics method, multiple linear regression analysis, its predictor variable, the normality test check, and the traditional premise check. This researcher uses secondary data sourced from Sharia's annual financial reports. This OJK recorded life insurance firms between 2016 and 2020, with a population of 15 companies in this study. The sampling method is saturated sampling, meaning that the research sample is all companies that are the population in the study, namely 15 companies with a research span of 5 years, which is a total of 75 observations. Table 2 shows the definitions of each variable, measurements, and measurement scales of this study.

Table 2. Concept and Variables Measure

Variable Type	Variable	Interpretation	Measuring system	Scale	Reference Source
Dependent Variable	Solvability	The capability of the Company, in the event of a Liquidation, to satisfy all of its Financial Obligations	$RBC = \frac{\text{Solvency Level}}{\text{Minimum Solvency Level Limit}} \times 100\%$	Ratio	Azzam, Hofmann, Martell, Mourgoglou, & Tolsa (2020)
Independent Variable	Premium	The insured party's commitment to make a financial payment (insurance participant) to insurance (insurance company) in return for services for transferring risk.	$\text{Premium}_{it} = \text{Total Gross Contribution}$	Ratio	Benyoussef & Hemrit, (2019)
	Claim	Claims submitted by insurance participants to insurance companies to fulfill the rights of policyholders (insurance participants) by the existing agreement.	$\text{Claim}_{it} = \frac{\text{Claim}}{\text{gross contribution.}}$	Ratio	Allen, Gordon, Lee, Bhanja, & Sommers, (2021)

Variable Type	Variable	Interpretation	Measuring system	Scale	Reference Source
	Investment Returns	Losses or profits derived from the value of the investment.	$INV_{it} = \frac{\text{net investment income}}{\text{contribution}} \times 100\%$	Ratio	Daugaard (2020)
	Reinsurance	The activity of reinsuring assets owned by insurance companies to other insurance companies to minimize risk exposure that may occur	$\text{Reinsurance} = \frac{\text{Reinsurance premium paid}}{\text{gross contribution}}$	Ratio	Cai & Chi (2020).
	Underwriting	The process of identifying and selecting risks owned by prospective insurance customers.	$\text{Underwriting} = \frac{\text{underwriting results}}{\text{premium income}} \times 100\%$	Ratio	Owadally, Zhou, Otunba, Lin, & Wright (2019)
Control Variables	Company Size	Determination of the size of a company is one of the benefits to insurance companies taking it in danger.	$SIZE_{it} = \text{Total Assets}$	Ratio	Batool & Sahi (2019).

Results and Discussion

Descriptive statistics

Some data analysis results begin using qualitative data, which are informed in Table 3. Table 3 shows some value by N or the number of observations 75. The research variable is Solvency (RBC) as the Dependent variable. Premiums (PR), Claims (KL), Investment Returns (INV), Reinsurance (RE), and Underwriting (UND) as independent variables. Company Size (SIZE) as a control variable.

Table 3. Results of Descriptive Statistics

	N	Mean	Std. Deviation
PR (Rp)	75	309,39	571,88
KL (%)	75	0,40	0,28
INV (%)	75	0,14	0,19
RE (%)	75	0,16	0,15
UND (%)	75	0,04	0,11
SIZE (Rp)	75	1732,43	2818,55
RBC (%)	75	25,61	23,20
Valid N (listwise)	75		

Source: Data processed, 2022

RBC has some confidence interval as well as an approximate amount of 25.61. of 23.20, such that its average value exceeds the confidence interval, we can see if the RBC data distribution level is even. This shows that the difference between one data and another is low. PR has an average value of 309.39 billion of the total premiums Islamic life insurance companies receive. KL has an average value of 40% meaning that 100 claim expenses owned by an Islamic term life provider of 0.40 by composition from premium income received by the company. INV has an average value of 14%, meaning that 100 net investment income owned by a firm providing halal life insurance of 0.14 is a composition of gross contribution received by the company. RE has an average value of 16%, meaning that 100% of the reinsurance premium owned by a Sharia life insurance company of 0.16 is the composition of gross contribution received by the company. UND has an average value of 4%, meaning that 100% of the underwriting results owned, like Sharia company, having 0.04, are the composition of the additional revenue the business has gotten.

Furthermore, some results of actual result evaluation discuss some study types that are carried out using multiple regression. However, before discussing the research model, this research ensures that the model is free from classical assumptions, which include data normality, multicollinearity, autocorrelation, and heteroscedasticity. The test results are shown in Table 4 with classical assumptions based on this research data.

Table 4. Classic assumption test

No	Test Type	Detection	Status	Repair Method	Final Status
1	Data Normality	The observed data exceeds 30	Normal		Normal
2	Multicollinearity	FIF score of less than 10	Not Occur		Free
3	Autocorrelation	18,013 21,987	Autocorrelation occurs	Cochrane-Orcutt	Free
4	Heteroscedasticity	each variable is more significant than $\alpha = 0.05$	Not Occur		Free

Source: Data processed, 2022

The test results show the model is BLUE because it has been free from its standard hypothesis check. Table 5 lists the outcomes of both analyses of multiple linear regression.

Table 5. Evaluation of several linear regression Scores

Variable Name	Regression Coefficient	Variable Constants	Significance Level	Hypothesis Description
	22,777			
Premium		0,028	0,000*	Accepted
Claim		- 9,748	0,305	Rejected
Investment		24,598	0,026*	Accepted
Returns				
Reinsurance		- 16,038	0,361	Rejected
Underwriting		- 43,459	0,018*	Accepted
Size		- 0,001	0,586	Rejected
Regression Models	RBC = 22,777 + 0,028PR - 9,748KL + 24,598 INV - 16,038RE - 43,459UND - 0,001SIZE			
Coefficient of Determination	0,480			

Source: Processed data. Information: * significance 5%

Table 5 presents the results of the Adjusted R-Square regression model, which has a score of 0.480. This translates to stability as the predictor variables (RBC) could be accounted for by various factors variable PR, KL, INV, RE, UND, SIZE by 48%, while the remaining 52% could be accounted for by several additional factors not included in the multivariate regression. After processing some data and obtaining some outcome from the testing, multiple linear regression testing is carried out again with significant variables, namely PR, INV, and UND, to create a new regression model to determine the solvency model of Islamic life insurance companies. The second stage of multiple linear regression analysis uses only three independent variables that have a significant effect so that obtained multiple linear regression model of Islamic life insurance firms' viability as follows: $RBC = 15,05 + 0,028 PR_{it} + 23,735 INV_{it} - 37,972 UND_{it}$

The findings of evaluating the premium theory on solvency are acknowledged, meaning that some premiums partially impact some level of solvency. Thus, the higher the premium the corporation receives, the greater the company's ability to achieve its solvency level. Some outcomes study online, like [Suyatna's study \(2021\)](#), state that the contribution (premium) considerably impacts Indonesian Islamic term life firms' degree of stability. Some significant effect of the premium on solvency indicates that the higher the reward the business gets, the greater the industry's capacity to reach the level of solvency. One effect of premium on solvency is that the premium is one component in the assets owned by the company. However, other components support the company's assets. This study agrees with the Resource-based Theory, which states that a company will achieve a competitive advantage and good financial performance if it can utilize its assets properly. As mentioned, the premium is one of the components of the company's assets, so the company must ensure that the premium is paid regularly by insurance participants to keep its business's operations running well.

Claims partially impact some solvency of places providing halal life insurance, meaning that some hypotheses are rejected, and claims do not partially impact Indonesian Islamic insurance firms' degree of viability. Our study's results are connected to the research of [Nasution et al. \(2019\)](#), which states that claims do not affect this same Indonesian Islamic term life industry's soundness rating. According to the insurance company, some claims variables have no impact on the degree of solvency for using tabarru funds to pay customer claims. Some outcomes of that non-significant research are known if some more significant claims submitted by participants to the insurer will not affect the company's solvency achievement because the funds used to pay participant claims and the company's operational activities are in different accounts. This research does not support its Centrally Planned Hypothesis, according to which a business will get a strategic advantage when it can manage its assets properly. Because the premiums paid by the participants are allocated into different accounts, namely tabarru funds, tijarah funds, and company funds. Payment of claims made comes from tabarru funds, so it is possible that at any time, the company will experience insufficient tabarru funds to pay claims for insurance participants, which will not have an impact on achieving company solvency.

The partial test that can be seen in Table 4 shows that return on investment has a partial impact on the level of the solvency of insurance life Islamic companies in Indonesia, meaning that some hypothesis is accepted. The more solvent the Sharia life insurance company's funds are, the greater the company's investment returns. Some studies' findings concur with those of [Primayanti et al. \(2016\)](#), who found that investment returns significantly affect solvency. Significant influence on investment results implies that the more remarkable an investment's lambda function obtained by the company, the higher the level of solvency. One effect of investment returns on the company's solvency level is that if a Sharia life insurance company invests in various good and appropriate investments, the opportunity to get investment returns is more significant, so its solvency will also increase. According to the Centrally Planned Theory, the current research results support that a business will have an edge over its

competitors with good financial performance by utilizing some strategic company assets. Suppose some company can take advantage of the company's assets by placing or investing its assets in order to obtain returns (investments) in the future. In that case, it will provide insurance companies with a competitive advantage and added value.

Table 5 shows that reinsurance if there is nothing partial impact on the rising solvency of Indonesian Islamic life insurance providers, means the research hypothesis is rejected. The increase in reinsurance is different from the increase in solvency. Reinsurance is the reinsuring part of the risk to another company so that the risk borne by the company is negligible. The findings of this study concur with those of [Zanotto and Clemente's investigation \(2022\)](#), which states that reinsurance has no discernible impact on liquidity.

Reinsurance's negligible impact on stability indicates that an increase does not follow Reinsurance insolvency. Reinsurance does not affect solvency because, by reinsurance, the insurance company no longer bears all of its risks, meaning that with reinsurance, the company will share some risks with the insurer. The findings of such an investigation are connected to a minimal impact of reinsurance on solvency, rejecting the Resource-Based Theory, which claims that businesses may enhance their financial performance and competitive edge by owning, managing, and exploiting essential strategic commodities. Reinsurance is an internal factor that can provide a competitive advantage and add value to an insurance company if managed properly to the firm's capacity to manage risk and company capital. Reinsurance will lower the need for capital and have some impact on minimal solvency.

Table 5 demonstrates the considerable impact of an entire insurance finding on the degree of stability, meaning that the research hypothesis is accepted. The findings of this study are consistent with that of [Oyetayo et al. \(2020\)](#), who state that underwriting significantly impacts solvency. Significant influence Underwriting indicates an increase or decrease in Underwriting, after which the degree of solvency either rises or falls. Some results of this study support that a corporation will gain a competitive edge, according to the asset theory, if it can utilize all the business's assets properly. Insurance companies are advised to further maximize the underwriting process by selecting underwriters who are competent in their fields in order to determine the target contribution that the company will receive. In addition, having the right and competent resources will also make the company excel.

Table 5. Hypothesis testing shows that firm dimension as a controlling factor does not significantly impact solvency, meaning that some research hypothesis is rejected. This study is consistent with previous studies by [Ayoush et al. \(2021\)](#) that claim that the firm's size did not affect the degree of solvency. According to the investigation, corporate size has little impact on solvency because company size, the scale of a giant firm, is too optional to produce a better level of solvency. The more assets a corporation has, the more complex the agency problems it faces. Firm size in this study is used as a control variable to avoid bias regarding how the predictor variables affect the response variable.

Conclusion

Premiums, Investment Returns, and Underwriting impact Solvency, so the results of this study related to Premiums, Investment Returns, and Underwriting for their impact on Solvency support Resource Based Theory. However, regarding the impact of Claims, Reinsurance, and control variables, Business size has little bearing on the degree of solvency, contrary to Resource Based Theory. This is rationally found in the Islamic insurance business model, which is different from the conventional insurance business model so that the solvency of Islamic insurance is not affected by claims, reinsurance, and company size.

This study has limitations on data that are not normally distributed. Hence, it uses the Central Limit Theorem (CLT) assumption, and autocorrelation occurs in the regression model.

Hence, it must be overcome using the Cochrane-Orcutt method to be free from autocorrelation symptoms.

The implication of this study is to objectively describe the Islamic insurance business model, which is different from the conventional insurance business model wherein the Islamic insurance business model tends to be more stable as evidenced by the Solvability of Islamic insurance companies' Claims, Reinsurance, and Company Size. Because the Islamic insurance business model is not buying and selling risk but cooperation in bearing the risk. This research suggests that sharia insurance services are safer and have better solvency during a crisis. Hence, the Islamic insurance business model is the recommended business model for protecting against risks.

Author Contribution

Novi Puspitasari	: Creating and designing analyses, Collecting data, Contributing data or analysis tools, and Writing paper.
Sutan Emir Hidayat	: Contributing data or analysis tools, and Writing paper.
Shofiatul Hasanah	: Creating and designing analyses, Contributing data or analysis tools, and Writing paper.
Nurhayati	: Collecting data and Perform analysis, and Writing paper

All authors have read and agreed to the published version of the manuscript

Declaration of Competing Interest

We declare that we have no conflict of interest.

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