

Comparative Analysis of Leverage, Risk-Based Capital and Its Effect on Insurance Profitability

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ABSTRACT

This study aims to determine the effect of Leverage and Risk-Based Capital (RBC) on the Profitability with Firm Size and Firm Age as control variables of insurance companies in Indonesia, Malaysia, Singapore, and Philippines for the 2016–2020 period and compare the results with those four countries. The study population consisted of 143 insurance companies in Indonesia, 37 insurance companies in Malaysia, 118 insurance companies in Singapore, and 79 insurance companies in Philippines listed on each respective regulator. Purposive sampling method used in this study in order to obtain a sample of 38 insurance companies in Indonesia and each 25 insurance companies in Malaysia, Singapore, and Philippines. The data analysis technique applied is a panel data regression test assisted by Stata 16. The results revealed that leverage has a significant negative effect on the profitability of insurance companies in the four countries. Furthermore, the study shows that RBC has not impacted the profitability of insurance company in Malaysia and Singapore. On the other hand, it found that RBC had a negative significant impact on the profitability of insurance company in Indonesia and positive significant effect on profitability of insurance companies in Philippines.

Keywords: Leverage, risk-based capital, firm size, firm age, profitability, insurance.

INTRODUCTION

The development of the Indonesian insurance industry has played a very important role in creating economic stability through risk management aspects. According to the 2020 Non-Bank Financial Institutions Annual Report published on the Financial Services Authority's website, the growth rate of the assets of Indonesian insurance industry in 2020 reached 6.87% (yoy), with total assets of US\$ 99.4 billion or equivalent IDR 1,450.32 trillion (exchange rate of US\$ 1 = IDR 14,580). This figure shows that the potential for the Indonesian insurance market is still very large with an annual average asset growth rate of 7.66% over the last five years from 2016-2020. According to data from the Indonesian Life Insurance Association for 2020 published on the AAJI website, in Q4 2020 only 6.5% of Indonesians had insurance. That means, there is about 90% market potential that has not been exploited.

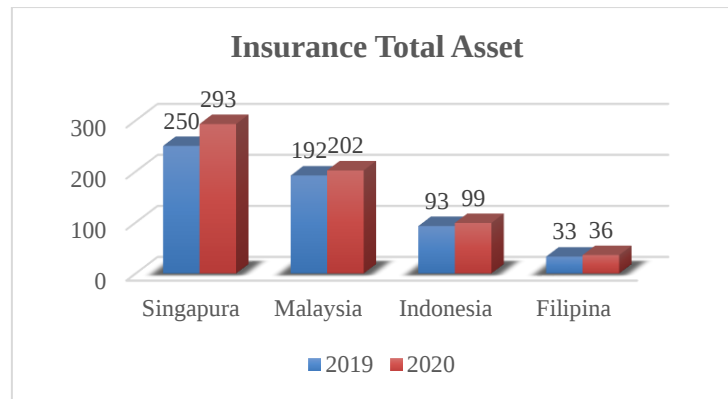


Figure 1. Insurance Total Asset

Source: OJK, BNM, MAS, IC (2020)

Therefore, the Indonesian insurance industry must take advantage of this positive signal to increase customer trust. One of the way is improve company performance. In general, several determinants that become the characteristics of the company can be used to see the effect on profitability. These determinants include leverage and risk-based capital. According to Subrahmanyam et al. (2021), leverage is a double-edged sword depending on skills, if properly managed leverage can have a positive impact on company profitability. On the other hand, if leverage is not used properly, the company risks difficulty paying the loan amount and certain interest charges. In addition, this can also devalue the company and reduce the profitability of insurance companies (Datu, 2016). These results are consistent with research conducted by (Ahmeti & Iseni, 2022); (Ben Dhiab, 2021); (Al Ali et al., 2019); (Djamaluddin et al., 2019). (Azmi et al., 2020) found other results showing that leverage has a positive effect on the profitability of insurance companies. On the other hand, studies by (Noviandita, 2020) and (Sayekti & Santoso, 2020) show that there is no correlation between leverage and the profitability of insurance companies.

The next determining factor is risk-based capital, RBC must be able to provide information about the ability of insurance companies to fulfill their obligations to policyholders. In other words, RBC is designed to ensure the level of security that can be provided by insurance companies to policyholders, so that public trust in insurance companies can increase (Utami & Werastuti, 2020). This increase in trust is expected to increase the number of people who insure their wealth, which in turn also increases the profitability of insurance companies. This is in accordance with research conducted by (D. A. Hidayat & Yusniar, 2021); (Soniaty et al., 2020); (Utami & Werastuti, 2020); (Nurrosi & Rahayu, 2020); (Purnawati, 2019); (Agustiranda et al., 2019); (Pujiharjo, 2019); (Pratiwi & Azib, 2018); (Ahmad & Prasetyo, 2018); (Fadila & Novianti, 2018); and (Sastri et al., 2017) where there is a positive and significant influence on the profitability of insurance companies. (Sayekti & Santoso, 2020); (Sugiharto et al., 2019); and (Putra, 2017) found different results, where RBC had a negative effect on profitability. On the other hand (Setyaningsih et al., 2021); (Marsanto et al., 2021); (N. I. A. Hidayat et al., 2021); (Nadia, 2019); (Hasanah & Siswanto, 2019); (Fadrul & Simorangkir, 2019); (Rahayu & Mubarak, 2017); (Agustin et al., 2016) found that RBC had no effect on insurance company profitability.

Based on the background above, through previous research with mixed results, researchers are interested in examining the Effect of Leverage and Risk-Based Capital on the Profitability of insurance companies in Indonesia, Malaysia, Singapore and the Philippines for the 2016-

2020 period with company size and company age as variables control. Three other Southeast Asian countries are included as comparison material because they already have a well-established non-bank financial services market infrastructure, especially insurance. In addition, the RBC variable is also one of the considerations because the four countries are Southeast Asian countries which already have their own RBC framework without adopting it from other countries (Bonnet et al., 2020).

LITERATURE REVIEW

Trade-Off Theory

Jensen and Meckling (1976) put forward a trade-off theory, which is a theory states that the optimal capital structure can be determined by balancing the benefits and costs of using debt.

Pecking Order Theory

The pecking order theory was first put forward by Myers in 1984. This theory states that managers prefer internal funding over external funding.

Insurance

According to Article 246 of the Commercial Law Code (KUHD), insurance or coverage is a contract that binds the insurer to provide reimbursement to the insured for receiving premiums.

Profitability

According to Sari (2020), profitability is the ability of a company to generate profits from its sources, such as assets, capital, and company sales.

Leverage

According to Suciati (2015), leverage is a source of financing that comes from loans so that it can represent the relationship between a company's debt and assets or equity.

Risk-Based Capital

According to Sayekti & Santoso (2020), risk-based capital (RBC) is a measure of the soundness of an insurance company based on its solvency level. Based on the RBC Framework for each country, the RBC rate in Indonesia is 120%, Malaysia is 130%, Singapore is 120%, and the Philippines is 100%.

Conceptual framework

When leverage increases to the optimal point or above that point, profitability will decrease and the probability of bankruptcy will increase as leverage increases (Öner Kaya, 2015). Therefore, it can be said that leverage has a negative effect on company profitability. Furthermore, related to RBC, companies are competing to achieve high RBC values in order to gain the trust of potential customers. When the number of insurance company customers increases, the company's goal of generating more premiums can be achieved. With the increase in premium income, the insurance company's profit will also increase. From this, we can conclude that RBC has a positive influence on the profitability of insurance companies.

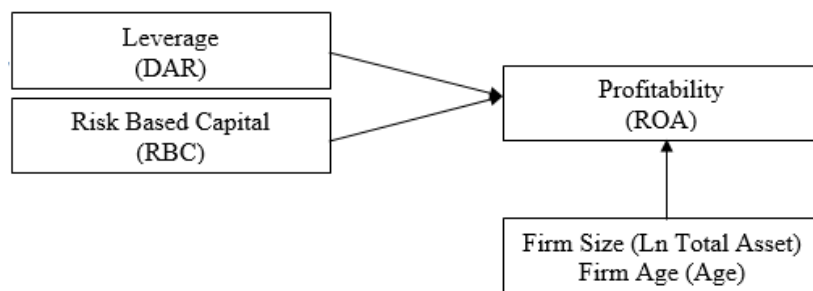


Figure 2. Conceptual Framework

Source: Data processed by author

Hypothesis Development

Effect of Leverage on Profitability

Leverage is the ratio of total debt to total assets because it provides a detailed picture of long-term debt in the policies of each organization (Ahmeti & Iseni, 2022). Leverage reflects the ability of an insurer to manage its exposure to unexpected losses. Several previous studies have been conducted to determine the relationship between leverage and profitability of insurance companies. Research conducted by (Ahmeti & Iseni, 2022); (Ben Dhiab, 2021); and (Djamaluddin et al., 2019) shows that leverage has a negative effect on the profitability of insurance companies. The same results were also found by (Al Ali et al., 2019) and (Datu, 2016) where leverage has a negative effect on the profitability of insurance companies. Based on the explanation above, the first research hypothesis can be formulated as follows:

H1: Leverage has a negative effect on profitability with firm size and firm age as control variables.

Effect of Risk-Based Capital on Profitability

High Risk-Based Capital can indicate a company's ability to manage its assets and liabilities adequately. From this, we can conclude that if the company is well managed, the company's profitability will increase. Several studies have been conducted to determine the relationship between RBC and profitability. D. A. Hidayat & Yusniar (2020) found that RBC has a significant positive effect on the profitability of insurance companies. Similar research was also conducted by Soniati et. al. (2020) and the results show that RBC has a positive and significant influence on profitability. Based on the explanation above, the second research hypothesis can be formulated as follows:

H2: RBC has a positive effect on profitability with firm size and firm age as control variables.

RESEARCH METHODS

The method used in this research is associative research method. This method is used with the aim of knowing and explaining the causal relationship between the dependent variable (leverage and risk-based capital) and the independent variable (profitability) with firm size and firm age as control variables. The analysis technique used is quantitative analysis because the data used is data in numerical form. Panel data regression is used in this study because the observations cover several companies (cross-section) and over a period of several years (time series). Furthermore, the data obtained was processed and analyzed using the Stata-16 program.

Operational Variables

Operational variables are used to determine indicators of the variables used in this study, including:

Profitability (Y)

The profitability ratio is the ratio used to assess a company's ability to generate profits (Rahayu & Mubarak, 2017). According to, one way to measure the profitability ratios of insurance companies is to use Return on Assets (ROA) with the following formula;

$$ROA = \frac{\text{Earning Before Interest and Tax}}{\text{Total Asset}}$$

Leverage (X1)

According to Kamal (2016), the Debt to Asset Ratio (DAR) can be used as a calculation ratio or measure of a company's ability to use total assets as collateral for total liabilities with the following formula;

$$DAR = \frac{\text{Total Liabilities}}{\text{Total Asset}}$$

Risk-Based Capital (RBC) (X2)

Based on a predetermined minimum value, all insurance companies will automatically adjust their business portfolio to their capital capacity (Marsanto et al., 2021). According to the RBC/CAR ratio in each country, it can be calculated using the following formula;

Indonesia

$$RBC = \frac{\text{Tingkat Solvabilitas}}{\text{Batas Tingkat Solvabilitas Minimum}}$$

Malaysia

$$CAR = \frac{\text{Total Capital Available (TAC)}}{\text{Total Capital Required (TCR)}} \times 100\%$$

Singapura

$$CAR = \frac{\text{Financial Resources (FR) untuk operasi}}{\text{Total Risk Requirement (TRR) untuk operasi}}$$

Filipina

$$RBC = \frac{\text{Total Available Capital (TAC)}}{\text{RBC Requirement}}$$

Company Size (C1)

According to Lestari (2019), company size is the scale used to determine the size of a company which can be measured by the natural logarithm of the year-end book value of total assets. Company size can be measured using the following formula;

$$\text{Company Size} = \text{Ln (Total Asset)}$$

Company Age (C2)

Company age is the length of time a company exists and survives in existing competition (Novyanny and Turangan, 2018). Company age can be measured using the following formula;

$$\text{Company Age} = \text{Current Year} - \text{Financial Report Year Ended}$$

RESULTS AND DISCUSSION

Descriptive statistics

Table 1. Indonesian Descriptive Statistics Test Results

	Mean	Maximum	Minimum	Std. Dev.
ROA	0.031621	0.343908	-0.240200	0.051479
DAR	0.641005	0.922367	0.251302	0.153389
RBC	5.120368	36.96000	1.010000	4.605555
SIZE	28.37308	31.67896	25.866049	1.540189
AGE	44.65789	77.00000	2.000000	19.63324

Source: Data processed by researchers using state-16

The table above shows that ROA has a mean (average) value of 0.031621 and a standard deviation value of 0.051479. This indicates that on average from 2016-2020 insurance companies listed on the Indonesia Stock Exchange generate a profit of 3.1621% of their total assets. A standard deviation value that is greater than the average indicates that the variability of the data is relatively high. The lowest ROA value was owned by PT Tokio Marine Life Indonesia in 2016 with a value of -0.240200, which means that the company suffered a loss of 24.0200% of total assets. This is due to the company's low income in that year so it was unable to cover its operating expenses. Furthermore, the highest ROA value is owned by PT Asuransi Sumit Oto in 2020 with a value of 0.343908, which means that the company generates a profit of 34.3908% of total assets. This is because in that year the company experienced a sales increase of 19% from the previous year, thus increasing the total net profit.

Furthermore, DAR has a mean (average) value of 0.641031 and a standard deviation value of 0.153389. This indicates that the average insurance company listed on the Indonesia Stock Exchange has a debt of 64.1031% of its total assets. This means that these companies are classified as healthy because they have smaller debt compared to their total assets. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest DAR value was owned by PT Victoria Insurance in 2017 with a value of 0.251302, which means that the company has a debt of 25% of its total assets. This is because the company's high asset value and low company liabilities make the company's debt to asset ratio low. PT Sun Life Financial Indonesia has the highest DAR value in 2020, which is 0.922367, which means that the company has debt of 92% of its total assets. This is because the company continues to experience losses so the company borrows money to cover its operational costs.

Then, RBC has a mean (average) value of 5.12 and a standard deviation value of 4.60. This indicates that the average insurance company listed on the Indonesia Stock Exchange has a free asset value or assets remaining after the company fulfills its obligations of 512% of the risk value it faces. This means that these companies have a healthy financial condition because their RBC level is above the minimum limit set by the OJK, which is 120%. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest RBC value was owned

by PT Asuransi Jiwa Tugu Mandiri in 2019 with a value of 1.01 or 101%. This means that the company's financial condition is not healthy because of its low level of solvency. The highest RBC value was owned by PT Tokio Marine Life Indonesia in 2017, namely 36.96 or 3696%, which means that the company has a healthy financial condition.

Then, Firm Size has a logarithmic mean (average) value of total assets of 28.373093 which is equivalent to Rp. 6,775,925,088,490 and a standard deviation value of 1.540189. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest company size value is owned by PT Asuransi Bhakti Bhayangkara in 2018 with a value of 25.866049 or equivalent to a total asset of Rp. 171,191,550,000. The highest company size value is owned by PT Asuransi Jiwa Manulife Indonesia in 2020, which is 31,6789 or the equivalent of total assets of Rp. 57,279,397,000,000. Meanwhile, Firm Age has a mean (average) value of 44.6 and a standard deviation value of 19.6. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The oldest company is PT Asuransi Jiwa Tugu Mandiri, which is 77 years old in 2020. The youngest company is PT Asuransi Cakrawala Proteksi Indonesia, which is 2 years old in 2016.

Table 1. Malaysian Descriptive Statistics Test Results

	Mean	Maximum	Minimum	Std. Dev.
ROA	0.0330571	0.103774	-0.04515	0.0252116
DAR	0.7082396	0.953762	0.247711	0.1569222
RBC	3.8953600	10.50000	1.010000	2.4472380
SIZE	21.711860	24.42000	20.03630	0.9259293
AGE	48.120000	96.00000	7.000000	17.877990

Source: Data processed by researchers using state-16

The table above shows that ROA has a mean (average) value of 0.033057 and a standard deviation value of 0.025212. This indicates that on average from 2016-2020 insurance companies registered with Bank Negara Malaysia generate a profit of 3.3057% of their total assets. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest ROA value was owned by Gibraltar BSN Life Berhad in 2020 with a value of -0.045158, which means that the company suffered a loss of 4.5158% of total assets. This is due to the company's low income in that year so it was unable to cover its operating expenses. Furthermore, the highest ROA value was owned by AIG Malaysia Insurance in 2018 with a value of 0.103774, which means that the company made a profit of 10.3774% of total assets. This is because in that year the company experienced a sales increase of 504% from the previous year, thus increasing the total net profit.

Furthermore, DAR has a mean (average) value of 0.708240 and a standard deviation value of 0.156922. This indicates that the average insurance company registered with Bank Negara Malaysia has a debt of 70.8240% of its total assets. This means that these companies are classified as healthy because they have smaller debt compared to their total assets. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest DAR value was owned by Danajamin Nasional Berhad in 2016 with a value of 0.247711, which means that the company has a debt of 24% of its total assets. This is because the company's high asset value and low company liabilities make the company's debt to asset ratio low. The highest DAR value was owned by Prudential Assurance Malaysia Berhad in 2019, namely 0.953762, which means that the company has a debt of 95% of its total assets. This is because the company continues to experience losses so the company borrows money to cover its operational costs.

Then, RBC has a mean (average) value of 3.90 and a standard deviation value of 2.45. This indicates that the average insurance company registered with Bank Negara Malaysia has a free asset value or assets remaining after the company fulfills its obligations of 390% of the risk value it faces. This means that these companies have a healthy financial condition because their RBC level is above the minimum limit set by BNM, which is 100%. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. Pacific and Orient Co. has the lowest RBC value. Insurance Berhad in 2017 with a value of 1.01 or 101%. However, the company's financial condition can still be said to be in good health because its solvency level is above the minimum threshold. The highest RBC value is owned by Danajamin Nasional Berhad in 2020, which is 10.50 or 1050%, which means that the company is in a healthy financial condition.

Then, Firm Size has a logarithmic mean (average) value of total assets of 21.711865 which is equivalent to RM 4,451,381,852 and a standard deviation (deviation) value of 0.925929. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest company size value is owned by Progressive Insurance Berhad in 2018 with a value of 20.03630 or equivalent to a total asset of RM 503,101,681. The highest company size value is owned by Prudential Assurance Malaysia Berhad in 2020, which is 24.42000 or equivalent to total assets of RM 40,315,232,000. Meanwhile, Firm Age has a mean (average) value of 48 and a standard deviation value of 18. An average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The oldest company is Prudential Assurance Malaysia Berhad which is 96 years old in 2020. The youngest company is Danajamin Nasional Berhad which is 7 years old in 2016.

Table 2. Singapore Descriptive Statistics Test Results

	Mean	Maximum	Minimum	Std. Dev.
ROA	-0.003535	0.566777	-0.588008	0.120138
DAR	0.630780	0.998943	0.015280	0.241110
RBC	7.094720	75.26000	1.590000	12.56182
SIZE	19.52477	24.99137	14.20037	2.421055
AGE	49.16000	66.00000	11.00000	10.49070

Source: Data processed by researchers using state-16

The table above shows that ROA has a mean (average) value of -0.003535 and a standard deviation value of 0.120138. This indicates that on average from 2016-2020 insurance companies registered with the Monetary Authority of Singapore experienced a loss of 0.03% of their total assets. A standard deviation value that is greater than the average indicates that the variability of the data is relatively high. The lowest ROA value is owned by HL Assurance Pte. Ltd. in 2016 with a value of -0.588008, which means the company suffered a loss of 58% of total assets. This is because the company continues to experience losses so it is unable to cover its operational expenses. Furthermore, the highest ROA value is owned by Reardon Pte. Ltd. in 2016 with a value of 0.566777 which means the company generates a profit of 56% of total assets. This is because in that year the company experienced a sales increase of 278% from the previous year thereby increasing the total net profit.

Furthermore, DAR has a mean (average) value of 0.630780 and a standard deviation value of 0.241110. This indicates that the average insurance company registered with the Monetary Authority of Singapore has a debt of 63% of its total assets. This means that these companies are classified as healthy because they have smaller debt compared to their total assets. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest DAR value was owned by Aetna Insurance in 2020 with a value of 0.01528, which means that the company has a debt of 0.15% of its total assets. This is because the company's high asset value

and low company liabilities make the company's debt to asset ratio low. The highest DAR value was owned by Swiss Life Singapore in 2017, which was 0.998943, which means that the company has a debt of 99% of its total assets. This is because the company continues to experience losses so the company borrows money to cover its operational costs.

Then, RBC has a mean (average) value of 7.09 and a standard deviation value of 12.56182. This indicates that the average insurance company registered with the Monetary Authority of Singapore has a free asset value or assets remaining after the company fulfills its obligations of 709% of the risk value it faces. This means that these companies have a healthy financial condition because their RBC level is above the minimum limit set by the MAS, which is 120%. The standard deviation value that is greater than the average indicates that the variability of the data is relatively high. HDI Global Singapore has the lowest RBC value in 2017 with a value of 1.59 or 159%. This means that the company's financial condition is still in good health because its solvency level is above the specified minimum limit. XL Bermuda has the highest RBC value in 2018, which is 75.26 or 7526%, which means that the company is in a healthy financial condition.

Then, Firm Size has a logarithmic mean (average) value of total assets of 19.52477 which is equivalent to an SD of 4,259,346,810 and a standard deviation (deviation) value of 2.4210. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest company size value is owned by Reardon Pte. Ltd. in 2017 with a value of 14.20037 or equivalent to a total asset of SD 1,469,408. The highest company size value is owned by The Great Eastern Life Assurance in 2020, which is 24,9913 or equivalent to total assets of SD 71,385,908,243. Meanwhile, Firm Age has a mean (average) value of 49 and a standard deviation value of 10.4907. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The oldest company is Prudential Manulife Singapore which turns 66 years old in 2020. The youngest company is Transamerica Life (Bermuda) Ltd. 11 year old Singapore Branch in 2016.

Table 3. Philippines Descriptive Statistics Test Results

	Mean	Maximum	Minimum	Std. Dev.
ROA	0.030461	0.175440	-0.108774	0.038821
DAR	0.678461	0.981157	0.088002	0.217044
RBC	3.531360	28.37000	-0.130000	3.188418
SIZE	22.95129	26.70173	18.43933	1.902824
AGE	53.46400	101.0000	9.000000	19.92144

Source: Data processed by researchers using state-16

The table above shows that ROA has a mean (average) value of 0.030461 and a standard deviation value of 0.038821. This indicates that on average from 2016-2020 insurance companies registered with the Insurance Commission made a profit of 3.04% of their total assets. A standard deviation value that is greater than the average indicates that the variability of the data is relatively high. The lowest ROA value was owned by Charter Ping An Insurance Corporation in 2016 of -0.108774, which means that the company suffered a loss of 10% of total assets. This is because the company continues to experience losses so it is unable to cover its operational expenses. Furthermore, the highest ROA value was owned by the FWD Life Insurance Company in 2016 of 0.17544, which means that the company generated a profit of 17% of total assets. This is because that year was recorded as the year with the highest sales achievement in the last five years.

Furthermore, DAR has a mean (average) value of 0.678461 and a standard deviation value of 0.217044. This indicates that the average insurance company registered with the Insurance Commission has a debt of 67% of its total assets. This means that these companies are classified as healthy because they have smaller debt compared to their total assets. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The

lowest DAR value was owned by Bethegel General Insurance and Surety Corp in 2017 of 0.088002, which means that the company has a debt of 0.8% of its total assets. This is because the company's high asset value and low company liabilities make the company's debt to asset ratio low. The highest DAR value was owned by Manulife China Bank Life Corporation in 2017 of 0.9811, which means that the company has a debt of 98% of its total assets. This is because the company continues to experience losses so the company borrows money to cover its operational costs.

Then, RBC has a mean (average) value of 3.53 and a standard deviation value of 3.18. This indicates that the average insurance company registered with the Insurance Commission has a free asset value or assets remaining after the company has fulfilled its obligations of 353% of the value of the risks it faces. This means that these companies have a healthy financial condition because their RBC level is above the minimum limit set by IC, which is 120%. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest RBC value is owned by FPG Insurance Co., Inc. in 2019 of -0.13 or -13%. This means that the company's financial condition is very unhealthy because its solvency level is far below the minimum limit set and even reaches a minus number. The highest RBC value was owned by the FWD Life Insurance Company in 2016 of 28.37 or 2837%, which means that the company has a healthy financial condition.

Then, Firm Size has a logarithmic mean (average) value of total assets of 22.9519 which is equivalent to P 44,459,273,396 and a standard deviation value of 1.9028. The average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The lowest company size value is owned by BPI-AIA Life Insurance Corporation in 2018 of 18.43 or the equivalent of total assets of P 101,882,866. The highest company size value is owned by Petrogen Insurance Corporation in 2019 of 26.70 or equivalent to total assets of P 394,835,000,000. Meanwhile, Firm Age has a mean (average) value of 53 and a standard deviation value of 19. An average value that is greater than the standard deviation indicates that the variability of the data is relatively low. The oldest company is BPI-AIA Life Insurance Corporation which is 101 years old in 2020. The youngest company is Etika Life and General Assurance Phills. Inc which turns 9 years old in 2016.

Multicollinearity Test

Tables 5, 6, 7 and 8 show that the value of the correlation matrix for each independent variable is < 0.80. This indicates that there is no multicollinearity between independent variables in the research regression model for each country.

Table 4. Indonesian Multicollinearity Test Results

	ROA	DAR	RBC	SIZE	USIA
ROA	1.00000				
DAR	-0.0610	1.00000			
RBC	-0.3965	-0.3112	1.00000		
SIZE	-0.1034	0.3653	0.1776	1.00000	
USIA	-0.1107	0.1609	-0.0852	0.2115	1.00000

Source: Data processed by researchers using state-16

Table 5. Malaysian Multicollinearity Test Results

	ROA	DAR	RBC	SIZE	USIA
ROA	1.00000				
DAR	-0.4579	1.00000			
RBC	0.14150	-0.3129	1.00000		
SIZE	-0.2134	0.25700	0.04070	1.00000	

USIA | -0.2429 0.50980 -0.0154 0.44960 1.00000
Source: Data processed by researchers using state-16

Table 7. Singapore Multicollinearity Test Results

	ROA	DAR	RBC	SIZE	USIA
ROA	1.00000				
DAR	-0.1739	1.00000			
RBC	-0.0013	-0.1397	1.00000		
SIZE	0.1473	0.6721	-0.1858	1.00000	
USIA	0.0490	0.0378	-0.0696	-0.0200	1.00000

Source: Data processed by researchers using state-16

Table 6. Philippines Multicollinearity Test Results

	ROA	DAR	RBC	SIZE	USIA
ROA	1.00000				
DAR	-0.3565	1.00000			
RBC	0.3790	-0.0921	1.00000		
SIZE	-0.1619	0.5305	-0.0081	1.00000	
USIA	-0.0448	0.0303	0.0712	-0.2088	1.00000

Source: Data processed by researchers using state-16

Hypothesis Test and Statistical Test t (Partial)

Indonesia

Based on the calculations that have been done statistically, the regression equation that is formed is:

$$ROA = -0.882334 - 0.243963DAR - 0.002825RBC + 0.039424SIZE - 0.000756USIA + e$$

Based on the tcount and ttable values, the leverage and RBC variables are proven to have an effect on the profitability variable, with tcount > ttable and a significance value <0.05.

Malaysia

Based on the calculations that have been done statistically, the regression equation that is formed is:

$$ROA = -0.680623 - 0.254583DAR + 0.001170RBC + 0.053845SIZE - 0.005811USIA + e$$

Based on the tcount and ttable values, the leverage variable is proven to have an effect on the profitability variable, with tcount > ttable and a significance value <0.05. While the RBC variable has no effect on profitability.

Singapore

Based on the calculations that have been done statistically, the regression equation that is formed is:

$$ROA = -0.310413 - 0.232708DAR - 0.000046RBC + 0.021342SIZE + 0.000758USIA + e$$

Based on the tcount and ttable values, the leverage variable is proven to have an effect on the profitability variable, with tcount > ttable and a significance value <0.05. While the RBC variable has no effect on profitability.

Philippines

Based on the calculations that have been done statistically, the regression equation that is formed is:

$$ROA = 0.150535 - 0.095596DAR + 0.003700RBC - 0.003757SIZE + 0.0000335USIA + e$$

Based on the tcount and ttable values, the leverage and RBC variables are proven to have an effect on the profitability variable, with tcount > ttable and a significance value <0.05.

Table 7. DAR and RBC Regression Results on ROA

Variables	(1) ROA Indonesia	(2) ROA Malaysia	(3) ROA Singapore	(4) ROA Filipina
C	-0.882334 0.040000	-0.68062 0.0620*	-0.310413 0.0220**	0.1505 0.5280
DAR	-0.243963 0.000***	-0.25458 0.00***	-0.232708 0.000***	-0.0955 0.02**
RBC	-0.002825 0.0130**	0.00117 0.0730*	-0.000046 0.963000	0.0037 0.0***
SIZE	0.039424 0.0310**	0.05384 0.00***	0.021342 0.002***	-0.0037 0.7760
AGE	-0.000756 0.699000	-0.00581 0.00***	0.000758 0.578000	0.0003 0.8880
Adjusted R-Squared	0.099200	0.27240	0.060700	0.2222
F-Statistics	4.080000	8.980000	14.95000	6.86000
Prob (F-Statistics)	0.003700	0.000000	0.00480	0.00001
Sample	38	25	25	25
Periods	5	5	5	5
Observation	190	125	125	125
Model	FEM	FEM	REM	REM

Source: Data processed by researchers using state-16

***p<0.01, **p<0.05, *p<0.1 indicate statistical significance at 1%, 5% and 10% levels, respectively

Determination Coefficient Test

Based on table 9, the Adjusted R-Square value for Indonesia is 0.0992. This means that 10% variation in the profitability of insurance companies in Indonesia can be explained by the variable leverage, RBC, company size, and company age. Furthermore, the table also shows the Adjusted R-Square value for Malaysia of 0.2724. This means that 27% of the variation in the profitability of insurance companies in Malaysia can be explained by the variable leverage, RBC, company size, and company age. Then, in Singapore, the Adjusted R-Square is 0.0607. This means that 6% variation in the profitability of insurance companies in Singapore can be explained by the variable leverage, RBC, company size, and company age. Meanwhile, in the Philippines, the Adjusted R-Square value was 0.2222. This means that 22% of the variation in the profitability of insurance companies in the Philippines can be explained by the variable leverage, RBC, company size, and company age.

Discussion

Based on the results of research that has been done, leverage has a significant negative effect on the profitability of insurance companies listed on the Indonesia Stock Exchange, Bank Negara Malaysia, the Monetary Authority of Singapore, and the Insurance Commission for

the 2016-2020 period. That is, the higher the leverage, the lower the level of company profitability. This negative effect indicates that companies with low levels of leverage tend to have better operational performance than companies with high levels of leverage. This is in accordance with the trade-off theory, which suggests that the use of debt can increase profitability to a certain extent. However, beyond that point, the use of debt can reduce profitability, because the higher a company's debt level, the greater the risk that the company faces because it has to pay large fixed interest rates to lenders. The results of this study support the results of research from (Ahmeti & Iseni, 2022); (Al Ali et al., 2019); (Djamaluddin et al., 2019); (Datu, 2016); (Dahmash, 2015); (Öner Rich, 2015); (Kigen, 2014); (Burca & Batrinca, 2014) and (Charumathi, 2012).

Furthermore, RBC has a significant negative effect on the profitability of insurance companies listed on the Indonesia Stock Exchange for the 2016-2020 period. That is, the higher the RBC, the lower the company's profitability. This is presumably because if the company allocates large amounts of capital reserves to maintain its solvency, the funds that can be used for investment activities will decrease, causing a decrease in company profitability. The results of this study support the results (Sayekti & Santoso, 2020); (Sugiharto et al., 2019); and (Putra, 2017). Different results are shown for insurance companies in the Philippines, where RBC has a significant positive effect on the profitability of insurance companies registered with the Insurance Commission for the 2016-2020 period. This positive result indicates that a company with high solvency can be caused by a low level of debt or a high proportion of own capital. In addition, capital, which is one of the indicators for calculating RBC, can be reinvested effectively, resulting in higher returns and increasing the profitability of the company. The results of this study support research that has been conducted by (Alamsyah & Lutfi, 2021); (D. A. Hidayat & Yusniar, 2021); (Maharani & Ferli, 2020); (Soniaty et al., 2020); (Utami & Werastuti, 2020); (Nurrosi & Rahayu, 2020); (Purnawati, 2019); (Agustiranda et al., 2019); (Nasution et al., 2019); (Pujiharjo, 2019); (Ahmad & Prasetyo, 2018); (Fadila & Novianti, 2018); (Sastri et al., 2017); and (Diyuni, 2017).

On the other hand, RBC has no effect on the profitability of insurance companies registered with Bank Negara Malaysia and the Monetary Authority of Singapore for the 2016-2020 period. That's because RBC is the minimum solvency that must be achieved by insurance companies to cover the risk of possible losses. However, an increase or decrease in the capital adequacy ratio does not necessarily lead to an increase or decrease in company profits. Even if a company has large capital, if it cannot manage it properly and effectively to generate profits, even large capital will not affect the company's profitability. This shows that the company's ability to meet the RBC does not affect the profitability of the insurance company. The results of this study support research that has been conducted by (Setyaningsih et al., 2021); (Marsanto et al., 2021); (Phasti, 2020); (Nadia, 2019); (Hasanah & Siswanto, 2019); (Pramestika, 2019); (Fadrul & Simorangkir, 2019); (Rahayu & Mubarak, 2017); and (Agustin et al., 2016).

CONCLUSIONS AND RECOMMENDATIONS

Based on the research results, it can be concluded that leverage has a significant negative effect on insurance companies in Indonesia, Malaysia, Singapore and the Philippines. Furthermore, RBC has no effect on the profitability of insurance companies in Malaysia and Singapore. On the other hand, RBC has a negative effect on the profitability of insurance

companies in Indonesia and RBC has a positive effect on the profitability of insurance companies in the Philippines. Based on the research conducted, managers are encouraged to consider the funding sources used by the company. In addition, related to RBC managers can maximize their RBC level to increase company profitability.

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