Comparing Three Models to Evaluate Financial Soundness of Life Insurance Companies in Indonesia

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Keywords: CARAMELS, Financial Soundness, Financial Strength Rating, Life Insurance Companies, Risk-Based Capital.

Abstract: This research aims to compare three models to evaluate the financial soundness of life insurance companies in Indonesia. The three models are RBC (risk-based capital) as regulatory assessment from Indonesia Financial Services Authority (Otoritas Jasa Keuangan); CARAMELS (capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability, liquidity, sensitivity to market risk) from The International Monetary Fund; and FSR (Financial Strength Rating) from Standard and Poor's. The theory used in this research is financial performance theory as elaborated by Bertoneche & Knight (2001); Steffan (2008); Needles, Frigo & Powers (2004); Beaver (1966); and Outreville (1998). This case study research uses mixed-method and secondary data. The result concludes that life insurers have healthy financial condition using three models. Although an insurer has the best result on RBC, it doesn't necessarily show the best results on CARAMELS and FSR model. Therefore, the synthesis of three models is needed to measure financial soundness comprehensively using both quantitative and qualitative indicators.

1 INTRODUCTION

The insurance industry is growing as it has a gross premium increase every year. In 2016, gross premium recorded IDR 362 trillion, then in 2017 it became IDR 408 trillion, or there is a 12.7% increase (Indonesia Financial Services Authority, 2018a). Moreover, Indonesia Financial Services Authority (2018a) also stated that the increase is particularly reached by life insurance which has the biggest portion of gross premium (47.7%), then followed by agencies administering of social insurance (32%), non-life and reinsurance (17.3%), and companies administering of mandatory insurance (3%).

On the other hand, the insurance industry generally encounters risks, for instance underwriting, investment, management, business, and legal risk (Smajla, 2014). In Indonesia, this industry particularly has to overcome liquidity and solvency risk. As being stated by Dewi (2018), there were few cases that the insurance companies' business licenses were terminated due to liquidity and solvency problems, as indicated on this table below.

Tabel 1: Termination Case of Business License of Indonesian Insurance Companies.

Insurance Companies Name	Termination Year
PT Asuransi Jiwa Bumi Asih Jaya	2013
PT Asuransi Jiwa Nusantara	2013
PT Asuransi Karyamas Sentralindo	2013
PT MAA General Assurance	2015
PT Asuransi Jiwa Bakrie	2016
PT Asuransi Raya	2017

Source: Indonesia Financial Services Authority, 2018b.

Regarding this issue, Indonesia Financial Services Authority has regulated risk-based capital (RBC) in minimum level 120% as stipulated on Regulation No. 71/POJK.05/2016. The RBC purpose is to determine insurance companies' capital needs based on risk level they need to settle (Simandjuntak, 2004). In other words, as long as they meet the requirements, they are considered in a good state.

Moreover, Handayani (2015) stated that the higher RBC ratio they achieve, the better financial health they have. Nevertheless, PT Asuransi Jiwasraya is still able to face liquidity problem although it reached RBC 123% in 2017.

Researchers have attempted to evaluate the financial health of insurance companies, mostly using the RBC model. Even so, there is one research, written by Kartono (2003), indicated that the evaluation of financial health should consider both RBC ratio as quantitative aspect and others qualitative aspects as well. Besides, international research by Holzmüller (2009), comparing RBC in the United States, Solvency II in Europe, and Swiss Solvency Test in Switzerland, showed that RBC has some flaws, as ever stated by Cummins, Harrington & Niehaus (1995), so reformation of RBC is needed.

Beside RBC, researchers also evaluate financial health using other models. Ansari & Fola (2014) evaluate the financial health of life insurance in India using CARAMELS model (capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability, liquidity, sensitivity to market risk). The result showed that this model could comprehensively capture quantitative aspects. On the other hand, evaluation of rating can also be used to gain complete evaluation of financial soundness, as pointed out by Ambrose & Seward, 1988; Ambrose & Carroll, 1994; and Yakob et al., 2012.

In Indonesia, mostly the researches are conducted about RBC, and it is rare to find other models to assess insurers' financial soundness. Based on this research gap, this study aims to compare three models to assess the financial soundness of life insurance in Indonesia. Those three models are *risk-based capital* (RBC) by Indonesia Financial Services Authority; capital adequacy, asset quality, reinsurance and actuarial Issues, management soundness, earnings and profitability, liquidity, sensitivity to market risk (CARAMELS) by The International Monetary Fund; and Financial Strength Rating (FSR) by Standard and Poor's.

This research hopefully can be input for a regulator to evaluate regulations and model to assess insurers' financial health. Besides, it can be used as precautious indicators by insurers to detect if there are problems in their financial conditions.

2 LITERATURE REVIEW

2.1 Financial Performance of Insurers

Financial performance of a company can be reflected from its financial statements that show how great a company manage and run its business (Neddles, Frigo & Powers, 2004). Moreover, a company can also analyze business valuation through financial statements (Bartoneche & Knight, 2001). This financial assessment can also be used as a decision-making basis (Nurfadila, Hidayat & Sulasmiyati, 2015).

Ratios have been used since a long time ago as a simple device to analyze financial statements, and at present state, it becomes useful to compare financial statements among firms and over time periods (Horrigan, 1968). As stated by Bartoneche & Knight (2001) that financial ratios become tools to do business valuations and assess financial soundness. In addition, ratios can also be used as a predictive tool to measure solvency and determine the credit-worthiness of financial institutions' borrowers (Beaver, 1966).

Some of the ratios that can be computed are profitability, efficiency, financial, and liquidity ratios (Bartoneche & Knight, 2001). Moreover, to use these ratios, a company must consider consistent data and methodology in order to compare ratios over periods (Steffan, 2008).

In particular, insurance companies also conduct ratio analyzes derive from financial statements to assess their financial health. There are a few important ratios that can be used, such as loss, expense, and combined ratio (Outreville, 1998). Besides, Record of Society of Actuaries (1986) stated that the evaluation of financial health considers both quantitative and qualitative areas as used by rating agency A.M. Best.

Quantitative areas consist of profitability, leverage, and liquidity. Meanwhile, qualitative areas include reinsurance ability, reserves adequacy, and management performance (Record of Society of Actuaries, 1986).

2.2 Three Models to Evaluate Insurers' Financial Soundness

In spite of financial ratios explained above, there are few models applied globally to evaluate financial soundness.

2.2.1 Risk-Based Capital (RBC)

Deborah & Deborah (2015) stated that risk-based capital (RBC) is a tool to measure minimum capital required by insurers to support their business operations. The bigger risk an insurer has, the larger amount of capital needed to settle the risk (Deborah & Deborah, 2015). The RBC equation is stated below:

Equation 1: Risk-Based Capital.

$$\frac{\text{solvency level}}{\text{minimum capital based on risks}}$$

Based on Circular Letter Indonesia Financial Services Authority No. 24/SEOJK.05/2017, solvency level is admitted to assets minus liabilities. Then, admitted assets consist of deposits, stocks, bonds, medium term notes, real estate investments, repurchase agreements, land and buildings, gold, and policy loans. Finally, minimum capital based on risks consider credit, liquidity, market, insurance, and operational risks.

2.2.2 Capital Adequacy, Asset Quality, Reinsurance and Actuarial Issues, Management Soundness, Earnings and Profitability, Liquidity, and Sensitivity to Market Risk (CARAMELS)

Das, Davies & Podpiera (2003) explained CARAMELS as a model to assess the financial soundness of insurers. The International Monetary Fund then developed this model to assess the insurance industry aggregately across the globe. The indicators used in this model are shown below (Das, Davies & Podpiera, 2003).

First, capital adequacy is a ratio to indicate insurers' ability to accept the loss. It also considers capital as the main indicator to measures financial health (Das, Davies & Podpiera, 2003).

Second, asset quality is needed to evaluate the degree of exposure of capital risk (Das, Davies & Podpiera, 2003).

Third, reinsurance and actuarial issues can be measured through risk retention ratio. It is a management policy to transfer a certain portion of risk to reinsurance companies (Das, Davies & Podpiera, 2003).

Fourth, management soundness is an indicator of an efficient management system. Otherwise, management run inefficiently can be an indicator there is a potential problem in an insurance company.

Fifth, earnings and profitability show how much profit an insurer earned (Das, Davies & Podpiera, 2003).

Sixth, liquidity is a ratio to identify the loss probability of selling non liquid assets quickly (Das, Davies & Podpiera, 2003).

Seventh, sensitivity to market risk is a ratio to assess the risk of investment assets to overcome claims in the future and gain returns to shareholders (Das, Davies & Podpiera, 2003).

Ratios in CARAMELS model is useful both for life insurance and non-life insurance companies and each ratio will be properly used for each segment.

2.2.3 Financial Strength Rating (FSR)

Standard and Poor's (S&P) as an international rating agency has developed a Financial Strength Rating model for insurance companies that comes from insurance rating framework. This model uses both quantitative and qualitative criterions.

There are several steps on the insurance rating framework (Standard and Poor's, 2013). First, S&P evaluate business risk profile and financial risk profile of insurance companies. For business risk profile, S&P (2013) analyzes detail of industry and country risks and competitive position. Meanwhile for financial risk profile, S&P (2013) measures capital and earnings, risk position, and financial flexibility.

Second, S&P analyzes enterprise risk management, as well as management and governance.

Third, S&P (2013) concerns about the company's liquidity. Step one until three can give a credit-worthiness picture for insurance companies.

Finally, S&P (2013) also considers government support to the insurance industry then give ratings to the companies.

2.3 Prior Studies

There are a lot of researches about RBC. One of them is research written by Nurfadila, Hidayat and Sulasmiyati (2015) in PT Asei Reasuransi Indonesia from 2011-2013. This research used descriptive quantitative. The result showed that the RBC ratio is great on that company. Besides, there is also another research about RBC by Kirmizi and Agus (2009) that uses a quantitative approach. The result showed that RBC didn't specifically increase premium and profitability.

Moreover, Holzmüller (2009) conducted research comparing United States RBC, Europe Solvency Test and Swiss Solvency Test. The result showed that Solvency II and the Swiss Solvency Test had better scores than RBC.

In addition, Smajla (2014) had research about CARAMELS for insurance industry using secondary data in a year. The result indicated that the regulator has to give extra attention to capital adequacy, liquidity, and management soundness, as they give the biggest contribution to financial soundness.

Besides, researchers commonly use agency rating methodology to assess the solvency of insurance companies. This is conducted by Ambrose & Carroll (1994) using A.M. Best's Rating. The descriptive statistics in this research indicated that a company with rating A or A+ didn't necessarily have a high probability of insolvency, so the rating could provide insufficient warning of financial distress (Ambrose & Carroll, 1994).

Pottier (1998) also pointed out that using a combination of rating, rating changes and total assets is more efficient than using financial ratios alone. This study also concluded that rating changes combined with financial ratios could be significant insolvency prediction models.

3 RESEARCH METHODOLOGY

Yin (2003) stated that case study investigates the phenomenon in real life context, and Woodside (2010) added that it focuses on acquiring data from describing, understanding, predicting, or empirical inquiry on the individual. Moreover, Dul & Hak (2008) explained that a case study could be a single or small number of cases and analyzed in a qualitative manner.

The aim of case study research is to investigate and answer specific research questions, and find evidence to explain the phenomenon (Gillham, 2000). In addition, Dul & Hak (2008) distinguished case study types: a single case study which only acquires evidence from one instance, and comparative case study which needs data from more than one instances to achieve the research objective.

This research uses a single case study to give a better explanation of the phenomena of liquidity and solvency problem faced by insurers, although they have sufficient RBC ratios. The inquiry process of evidence is conducted in multiple unit analysis in five life insurance companies as stated below.

Tabel 2: Unit Analysis for Research.

No.	Insurance Companies	RBC 2017
1.	PT Prudential Life Assurance	677%
2.	PT Asuransi Jiwa Generali Indonesia	317%
3.	PT Asuransi Tugu Mandiri	170%
4.	PT Equity Life Indonesia	237%
5.	PT Indolife Pensiontama	233%

The criterions to choose those companies is because they have RBC more than 300% as stated by Riadi (2014) that the best RBC is at 300%. In addition, they are conventional life insurance companies that published financial statements year ended 2017 publicly.

This research uses secondary data. Data is collected through their corporate websites, content analysis, and other forms of documentations. Then data is analyzed using content analysis, both for quantitative and qualitative data. Quantitative data analysis is done by computed ratios resulted in the numerical description, whereas qualitative data analysis is conducted descriptively (Neuman, 2011).

4 RESULT AND DISCUSSION

4.1 Financial Ratios

Financial ratios are measured to determine the financial performance of life insurance companies in Indonesia. The ratios used are shown below.

Table 3: Financial Performance Based on Measured Ratios.

Ratios	Good	Bad
Operational:		
- Operational expense	Low	High
- General expense/ reserves	Low	High
- ROA	High	Low
- investment results / reserves	High	Low
- premium & investment result adequacy/ claims payment & general expense	High	Low
- Insurance session	Low	High
Capital	High	Low
Liquidity	High	Low
Competitive position	High	Low

To make the assessment easier, the companies acquire the best ratio will get '1', the worst will get '-1', and neither good or bad will get '0'. Based on the that, PT Prudential Life Assurance gained total score 5, PT Asuransi Jiwa Generali Indonesia -6, PT Asuransi Jiwa Tugu Mandiri 0, PT Equity Life Indonesia -8, and PT Indolife Pensiontama 9. So, PT Indolife Pensiontama acquired the best result, whereas PT Equity Life Indonesia reached the lowest results. Overall, this shows that higher RBC doesn't reflect better financial performance measured by financial ratios.

4.2 Analyzing Three Models

Despite using ratios, financial soundness in this research is also measured based on these three models.

4.2.1 Risk-based Capital (RBC)

Based on financial statements published in each corporate websites, the result of RBC is shown as follow.

Tabel 4: Risk-Based Capital 2017.

Companies 2017 (in million IDR)	Solvency Level	Minimum Capital Based on Risks (MMBR)	RBC (%)
PT Prudential Life Assurance	2,654,994	392,060	677
PT Asuransi Jiwa Generali Indonesia	522,125	164,690	317
PT Asuransi Jiwa Tugu Mandiri	167,564	98,581	170
PT Equity Life Indonesia	395,758	167,090	237
PT Indolife Pensiontama	5,326,241	2,284,021	233

Source: Financial Statements 2017 Each Company

Information in Table 4 indicates that PT Prudential Life Assurance achieved the highest RBC. On the other hand, the lowest RBC is given to PT Asuransi Jiwa Tugu Mandiri.

Moreover, although PT Prudential Life Assurance has the highest RBC, PT Indolife Pensiontama gained the highest both on solvency level and minimum capital based on risks. The higher solvency level showed that PT Indolife Pensiontama has bigger admitted assets than the liabilities among other companies. Meanwhile minimum capital based on risks showed that the company had its money to anticipate some risks. Particularly in this case is market risk, as the company has many assets that can be affected by market condition. For instance, stocks, bonds, mutual funds, and government securities.

PT Prudential Life Assurance has only IDR 392,060 million as minimum capital on risks. It means the company an only spare small amount of money to anticipate risks, despite the fact that this company invests mostly on stocks and mutual funds. Meanwhile PT Asuransi Jiwa Tugu Mandiri has the smallest amount of solvency level and minimum

capital based on risks. The biggest portion of minimum capital risks is for market risk, since the company invests mostly on mutual funds and stocks.

4.2.2 Capital Adequacy, Asset Quality, Reinsurance and Actuarial Issues, Management Soundness, Earnings and Profitability, Liquidity, and Sensitivity to Market Risk (CARAMELS)

To assess financial soundness through CARAMELS model, there are some ratios used as elaborated below.

Capital Adequacy

Equation 2: Capital to Total Assets Ratio.

$$\frac{capital \; x100}{total \; assets}$$

This ratio is used to assess capital portion to total assets owned by a company. In 2017, each company had the capital to total assets ratio of less than 20%. PT Equity Life Indonesia earned the biggest ratio: 17.7% capital is from total assets. Meanwhile, the lowest ratio is acquired by PT Indolife Pensiontama: 3.4% of capital is from total assets. The bigger ratio the company has, then the bigger portion of liabilities it has. For instance, PT Equity Life has the capital to total asset ratio of 17.7%, then its liabilities is 82.93% (100%-17.7%).

Asset Quality

Equation 3: Asset Quality Ratio.

$$\frac{receivables}{(gross \; premium + reinsurance \; recoveries)}$$

The use of this ratio is to know management control in giving loan to debtors. The biggest ratio earned by PT Equity Life Indonesia (0.54%). On the other hand, there are two companies, PT Asuransi Jiwa Generali Indonesia and PT Asuransi Jiwa Tugu Mandiri, that don't have receivables, so this ratio can't be computed.

Reinsurance and Actuarial Issues

Equation 4: Risk Retention Ratio.

$$\frac{net \; premium \; x \; 100}{gross \; premium}$$

This ratio becomes an indicator to know a company's policy in facing risks. Based on the assessment, almost all of the gross premiums earned by researched companies are from net premium. The ratio is ranging from 91.64% (owned by PT Equity Life Indonesia) to 99.99% (owned by PT Indolife Pensiontama). This means that those companies have good risk retention.

Management Soundness

Equation 5: Management Soundness Ratio.

$$\frac{\text{operating expenses} \times 100}{\text{gross premium}}$$

This ratio shows the efficiency of management in reducing expenses to earned gross premium. Through the assessment, the most efficient company is PT Indolife Pensiontama which has the lowest ratio (only 3%). On the other hand, PT Equity Life Indonesia acquired the highest ratio (29.86%).

Earnings and Profitability

Equation 6: Return on Equity (ROE) Ratio.

$$\frac{\text{profit after interest, tax and dividend} \times 100}{\text{share capital}}$$

This ratio is useful to assess the company's profitability based on returns earned from shareholders equity. The highest ROE is earned by PT Prudential Life Assurance (5.75%), whereas the lowest ROE is acquired by PT Equity Life Indonesia (5.75%).

Liquidity

Equation 7: Liquid Ratio.

$$\frac{\text{liquid assets} \times 100}{\text{total assets}}$$

The ratio above is useful to assess the company's liquidity or its ability to fulfill its obligations. Among five companies, PT Prudential Life Assurance gained the highest ratio (94.17%), meanwhile PT Indolife Pensiontama acquired the lowest ratio (75.32%).

Sensitivity to Market Risk

From financial statements of five companies, the investment assets on those companies are mostly stocks, bonds, real estate, land and buildings, and gold. These assets can easily get affected by market condition. Based on the portion of investment assets,

PT Prudential Life Assurance has the biggest portion of assets that can get affected by market condition (83.72% of total assets). On the other hand, PT Asuransi Jiwa Generali Indonesia has the lowest portion of assets (64.57%) that can get affected by market condition.

4.2.3 Financial Strength Rating (FSR)

Standard and Poor's assesses financial soundness through insurance rating framework to give ratings for insurance companies. The indicators then are implemented in this research.

Business Risk Profile (BRP)

This indicator is used to assess the inherent risk of insurance companies. The ratio used to assess business risk profile is reinsurance utilization ratio.

Equation 8: Reinsurance Utilization Ratio.

$$\frac{\text{reinsurance}}{\text{gross premium}}$$

Based on the assessment, five companies have reinsurance utilization ratios of less than 20%. It means those companies are scored '1' (extremely strong).

Even so, business risk profile also considers the insurance industry and country risk assessment (IICRA) and competitive position. IICRA shows inherent risk faced by a company to run its business (both for insurance and non-insurance companies). The competitive position shows operational performance, brand reputation, market position, distribution channel control, and diversification.

The BRP indicates that five insurance companies have 'neutral' assessment. The insurance industry overall is regulated strictly by the Indonesia Financial Services Authority (Otoritas Jasa Keuangan/OJK). But, the regulations are not significantly increase insurance market penetration in Indonesia.

Financial Risk Profile (FRP)

The financial risk profile is to assess insurance companies in particular through some indicators: capital and earnings, risk position and financial flexibility.

Capital and earnings can be measured through capital adequacy. In Indonesia, insurance companies must have capital at 120%. Besides, the government has a significant intervention on insurance industry through business permits, so financial risk profile is considered at 'significant risk'.

Risk position is assessed through diversification of investment portfolio. Insurance companies mostly have stocks (23%), government securities (23%), mutual funds (22.8%), deposits (13.8%), bonds (13.5%), investment property (1.4%), and other investments. Based on this, 'positive' assessment can be given as investment portfolio is diversified.

Financial flexibility is to assess the accessibility of external capital. Based on the information traced to five companies researched, it is most likely that the companies get capital from their shareholders since they are not publicly listed companies. Besides, it is also possible to get capital from other sources, for instance Banks. Since there is no solid evidence, so the assessment is considered as 'neutral'.

Enterprise Risk Management

Enterprise risk management evaluates some factors: risk management culture, risk control, and emerging risk management.

Risk management culture assesses risk mitigation conducted by companies. Then, risk control is about risk management policy done by companies. Finally, emerging risk management is needed to understand threats that possibly happen in the future, for example the existence of insurtech (insurance technology).

Overall the enterprise risk management of five insurance companies is 'neutral' as they conduct risk management, even though the details are publicly limited.

Liquidity

One indicator to assess the company's liquidity is through liquidity ratio assessment. As stated from the previous part, the liquidity ratio shows that PT Prudential Life Assurance earned the highest result. This means PT Prudential Life Assurance is very liquid and able to fulfill its obligations.

4.3 Comparing Three Models

Analysis of the three models above shows that those life insurance companies have the healthy financial condition. Every company has an RBC level more than the required level by the regulator. The indicator of CARAMELS also shows that those companies have good financial performances. Besides, indicators in FSR also indicate that the companies have the quite good financial condition.

Although PT Prudential Life Assurance has the highest RBC (677%), it does not necessarily mean that the company also has the best results on other indicators in CARAMELS and FSR. Based on

CARAMELS indicator, this company is at its best on earnings and profitability (ROE), and liquidity indicators. On FSR, this company has the best assessment on competitive position indicator.

On the other hand, PT Indolife Pensiontama indicates the best assessment for almost all indicators in CARAMELS. Those indicators are reinsurance and actuarial issues, management soundness, earnings and profitability, and sensitivity to market risk. In addition, FSR indicators show that this company has a 'neutral' assessment. This good assessment happens even though the company has RBC less than 300% (233%).

4.4 Synthesis of Three Models

Based on the elaboration above, the synthesis of three models can be used to gain a better assessment of insurance companies' financial soundness. There are some other ratios as quantitative aspects that can be implemented as follow.

a. The expense ratio, to assess a company's efficiency to earn a premium.
b. Capital to technical reserves, to identify the portion of capital to reserves.
c. Receivables to gross premium plus reinsurance recoveries, to indicate receivables portion to gross premium and reinsurance that a company has.
d. Risk retention ratio, to show company' retention to overcome risks without reinsurance.
e. Liquidity ratio, to indicate a company's ability to pay short-term obligations.
f. ROE, to assess the profitability of equity owned by a company.
g. ROA, to assess investment returns gained by a company.

On the other hand, there are some qualitative aspects that can be assessed as follow.

a. Management and governance, to understand that the company conducts corporate governance, discloses information transparently and accountably through its corporate website.
b. Risk management, to analyze the company's effort to mitigate risks.
c. Competitive position, to assess the company's strategy in facing competition.

5 CONCLUSION

This research indicates that five insurance companies have the healthy financial condition by assessing through RBC, CARAMELS, or FSR. Comparison of

three models shows that CARAMELS and FSR assess financial health more comprehensively than RBC. Therefore, the synthesis of three models can be used to gain a better assessment of insurance financial soundness.

However, this research is only conducted on five life insurance companies in Indonesia. Besides, this research only used financial statements year-ended 2017. Hopefully in the future there is research conducted aggregately for insurance industry using data over periods.

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