

## THE IMPACT OF INSURER FINANCIAL HEALTH AND MARKET DISCIPLINE ON LIFE INSURANCE DEMAND: A CASE STUDY OF INDONESIA

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### Abstract:

**Background:** The life insurance industry in Indonesia has faced "crisis" involving negative profits, bankruptcies, and insolvencies in insurance companies that cost the people and the country more than IDR 16 trillion, along with a decrease in life insurance penetration over the last decade, from 1.28% in 2018 to 0.98% in 2022. The decrease even occurs when government support has increased and consumers experience the positive contributions of life insurance. The unhealthy industry is arguably causing the decrease in life insurance demand in Indonesia, but current studies on life insurance demand often focus on the consumer's side. Meanwhile, studies on a company's financial soundness and its impact on consumers' decisions to purchase life insurance are still lacking.

**Purpose:** The purpose of this study is to analyze the effect of insurers' financial health on life insurance purchases in Indonesia and the existence of market discipline in the life insurance industry in Indonesia

**Design/methodology/approach:** This study analyzes the effect of insurers' financial health, based on POJK number 71/POJK.05/2016, and consumer responses through market discipline on life insurance demand in Indonesia, using data from twenty-five selected life insurance companies from 2007 to 2022. We use Generalized Method of Moment (GMM) to estimate panel data.

**Findings/Result:** This study finds that financial health of insurance company has significantly affect consumers purchase on life insurance and consumers implementing market discipline. Solvency is the best predictor of life insurance demand, as an increase of indicator raises the number of policies, while a decrease of indicator in precedence year prompts consumers to respond by decreasing the premium. Consumers also implement market discipline regarding reserves and equity, as a decrease in both factors in the prior year has a significant negative effect on premium per policy and premium.

**Conclusion:** Unhealthy finances of insurance companies have contributed to low life insurance purchases in Indonesia. Therefore, significant efforts to improve financial soundness in life insurance companies in Indonesia should be supported, such as the improvement of investment management and the enhancement of capital equity adequacy through business consolidation. Regulators should also support market discipline by issuing regulations to improve data transparency and in supervising market conduct and micro prudential aspects of companies, while companies have role in clarifying insurance policies and information that is disseminated through their marketing teams.

**Originality/value (State of the art):** This study is the first to examine the effect of financial health of insurers, using indicators from POJK number 71/POJK.05/2016, on consumers' decisions in purchasing life insurance. This study is also the first to show evidence of market discipline behavior in life insurance industry in Indonesia.

**Keywords:** corporate finance, financial health, life insurance demand, market discipline, insurance company

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## INTRODUCTION

Life insurance promises benefits in helping households facing premature death, and developing the capital market makes its adoption essential (UNCTAD, 1982). In Indonesia, the life insurance industry shows significant benefits for economic and social sectors (AAJI, 2022). The industry has also become the biggest industry in non-bank financial institutions (IKNB), with assets IDR 582 trillion in 2022. However, the industry experienced “crisis” in 2018, led by downturn of Jiwasraya and AJB Bumiputera, resulting in negative profits (Figure 1). The industry also faced various insolvencies and bankruptcies events of insurers that caused consumer losses of over IDR 16 trillion (BPK 2021). These problems were followed by a decrease in life insurance penetration, from 1.28% (2018) to 0.98% (2022) (Rapi et al. 2025b).

Meanwhile, the government has supported the financial health of insurers by issuing the Financial Services Authority Regulation (POJK) Number 71/POJK.05/2016. The regulation helps identify some significant indicators and guidelines that help insurance companies ensure their financial soundness during global economic turbulence in that time. Government support is also shown in the strong economic growth of Indonesia at 5.02% in the same period, even though the global economy was still recovering from the slowdown (OJK, 2016). Furthermore, the life insurance

industry in Indonesia has shown positive contributions, providing financial protection of more than IDR 4,000 trillion with more than 30 million participants in 2022, and consumers’ incomes have continued to rise, increasing 26% from 2017 to 2022 to IDR 70.3 million, yet its penetration has continued to decline (Rapi et al. 2025b). Despite the increase in government support and positive contributions to consumers, industry still experiencing decrease in life insurance penetration. Thus, is an unhealthy industry the cause of this life insurance demand decline?

Previous studies often used the theory of life insurance demand (Yaari, 1965), which focuses on consumers’ bequest motives as main driver for consumers purchase life insurance, which is why the determinants studied mainly focus on the consumer side (Outreville, 2013). Bhatia et al. (2021) show that demand analysis from the insurer’s side has been studied, such as technology (Ranjan et al. 2020), trust (Panigrahi et al. 2018), and brand (Dominique-Ferreira et al. 2016), but how financial soundness affects consumers’ decisions still receive limited attention. Studies on financial management of insurance companies have been conducted with focus on performance (Samina 2024; Seog and Hong, 2019), which shows the ability to achieve more efficient performance leads to better profit (Morara and Sibindi, 2021). Meanwhile, banking sector gains rich attention, that shows consumers participate in market discipline that affects their demand (Eling, 2012).

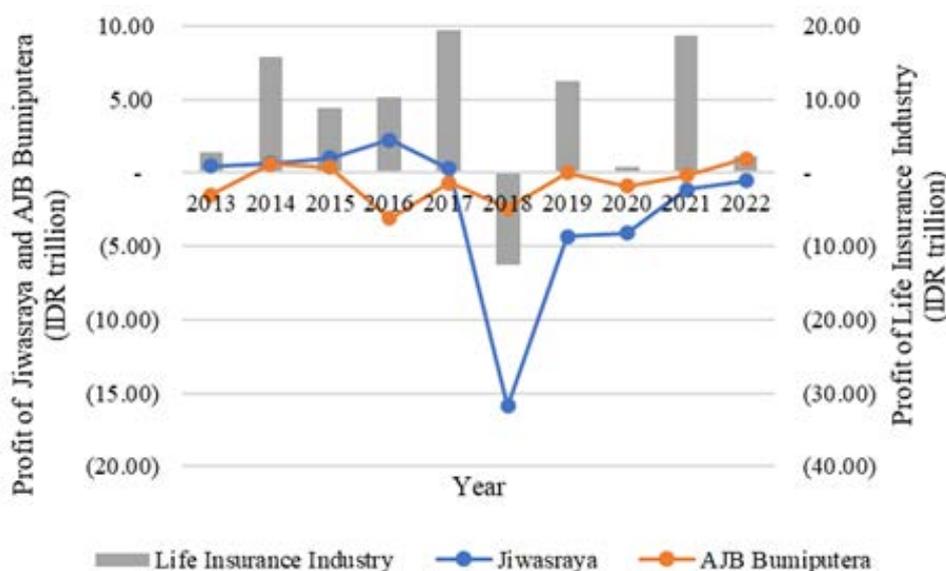


Figure 1. Profit of Jiwasraya, AJB Bumiputera, and life insurance industry (2013 – 2022)

Kunreuther et al. (2013) argue that insurers have the purpose of maximizing their profits. Liabilities are leveraged to acquire assets, and companies aim for a positive difference between premiums from assets and expenses for liabilities (DeWeert, 2015). However, capital, as an integral part of insurance business model, makes it more sensitive to risk, exposing insurance companies to insolvency risk (Cummins and Danzon, 1997). Dhaene et al. (2017) argue that the unique business model of insurance, where consumers pay premiums in advance with the assurance of compensation if an event occurs, causes consumers to hold two roles: policyholders and financiers. As financiers, consumers expect to receive the promised benefits, and insurer becomes indebted to the policyholders. Consumers will prefer insurers that demonstrate good financial conditions, while insurers should fulfill their promises to consumers by maintaining their financial health. Thus, the insurer's financial condition affects consumer decisions to purchase life insurance.

Dhaene et al. (2017) also argue that implementation of corporate finance theory supports the management of insurance company capital and reduces the risk of insolvency. The importance of capital management prompts the government to issue regulations of insurer's solvency (Srbinsky 2022; Gaganis et al. 2020). International Association of Insurance Supervisor (IAIS) also argue the financial soundness as significant factor that should manage by insurance company to monitor main risk that could affect profitability and solvability in the future (IAIS, 2023). One of the regulations used as a global standard is the Basel III Agreement. The third pillar of this regulation is market discipline that refers to the ability of consumers to monitor, evaluate, and influence the behavior of financial institutions (Flannery, 2001).

In Indonesia, the Financial Services Authority (OJK) is the government agency that regulates and supervises the financial industry, including life insurance. The OJK governs the financial health of insurers by issuing POJK number 71/POJK.05/2016. The POJK has been updated twice and also followed by new regulation on capital equity requirement in POJK number 23 of 2023, that shows the attention of financial health issues has increased. Thus, there is a gap in the analysis of financial health on life insurance demand in Indonesia. Nevertheless, the understanding of financial health affects consumers' decisions in demand will provide significant incentives for companies' efforts in financial

soundness, besides profit and stability (Tsvetkova, 2023), which consumers appreciate with the increase in their purchases (Chiang and Niehaus, 2021). Moreover, the understanding of market discipline will highlight the significant need for public information disclosure and financial soundness in the life insurance industry. Therefore, filling this gap could potentially make significant contribution to life insurance industry and also help regulators establish policy.

This study estimates the effect of financial health on life insurance purchasing behavior using quantitative approach with secondary data. We use Generalized Method of Moments (GMM) (Arellano and Bond, 1991) based on Firdaus (2020). GMM has been used to address the endogeneity problem that leads to biased and inconsistent estimates for panel data (Ullah et al. 2018). We use secondary data from Indonesia Insurance Statistics OJK with annual period. We modified the model from Chen (2021) by analyzed the data from previous year that affects life insurance purchasing behavior in the following year.

This study is an effort to fill the research gap and support the increase of life insurance demand in Indonesia. The purpose of this study is to analyze the effect of insurers' financial health on life insurance purchases in Indonesia and the existence of market discipline in the life insurance industry in Indonesia. The research questions of this study are: How does the health of insurers' finances affect life insurance purchases in Indonesia? And how do consumers respond to changes in insurers' financial health? Thus, the hypotheses of this study are that financial health has a significant effect on life insurance demand and there is a response from consumers to the decline in financial health.

## METHODS

This research is a quantitative study that uses secondary data. The data from Indonesian Insurance Statistics (SPI) OJK from 2006 to 2022 with an annual period. There are only a few companies in life insurance industry in Indonesia that have status as listed companies and there is no company that has fully published its financial data since 2006. Thus, the use of SPI OJK is suitable for the purpose of this study. The study was conducted from January to June 2025 for data collection, processing, and analysis.

The observation unit is life insurance companies that meet the following criteria: (1) Life insurance companies that are consistently listed in the OJK SPI from 2006 to 2022, (2) Companies that are consistent or have changed their names, undergone mergers, or been acquired, and (3) Companies that have complete data.

This research employs Cummins and Danzon (1997) approach to analyze the impact of financial health on life insurance demand and Baranoff and Segar (2007) approach to analyze market discipline's impact. Cummins and Danzon (1997) develop model, , where quantity of insurance sold, and is the insurer's financial quality. While Baranof and Segar (2007) approach assumes that consumers asses the insurer previous year's financial statements and make decisions so that affect number of policy when the indicator value is down. Chen (2021) also analyzed the effect of financial health, but not consider the effect of financial change from previous years. In fact, the annual report of SPI OJK is released in the following year because it must undergo an internal evaluation stage, so the response to the report in year will occur in year. Thus, this study will analyze the data from 2007 to 2022.

We adapt the model based on Indonesia context, that is using data based on OJK report. The dependent variables are premium per policy, premium, and number of policies. The indicator of insurer's financial quality based on POJK number 71/POJK.05/2016, namely solvency, reserves, investments, equity, guarantee funds, and other factors. Indicator measurement is based on SEOJK number 1/SEOJK.05/2021. To analyze the implementation of market discipline, we analyzed the effect of a decline in these financial health indicators in the previous year.

Solvency is a condition in which assets exceed liabilities, allowing insurer to fulfill all its obligations. Technical reserves are funds established by insurers to meet obligations to policyholders. Investment adequacy involves assets permitted in both investment and non-investment forms, including cash and bank deposits, ensuring the ability to meet obligations. Equity represents the owner's share of the company's rights, specifically the difference between assets and liabilities. Guarantee funds are the assets of the insurance company that serve as the final safeguard to protect the interests of policyholders. However, due to the limitation of data, guarantee funds will not be

analyzed in this study. Thus, the independent variables in this study are solvency, reserves, investments, and equity.

This study using the GMM to estimate panel data, supported by Eviews version 10. GMM in this study is based on Firdaus (2020), who argues that GMM produces unbiased, consistent, and valid estimators. Firdaus (2020) explained that GMM has addressed the potential bias, that is often found in panel data analysis, by using the criteria of the coefficient between the estimated coefficient from the fixed effects model (FEM) and pooled least squares (PLS). The GMM method is also used in previous insurance demand studies that use panel data (Rapi et al. 2025c; Trinh et al. 2020) and demonstrates solving the problem of endogeneity for panel data in another study (Khatib, 2025).

Yaari (1965) argues that risk-averse consumers facing uncertain lifetimes will purchase life insurance premiums to gain certain benefits. Thus, the quality of insurers' finances matters because insurance with high risk of insolvency or unhealthy financial performance prevents consumers from receiving the promised benefits (DeWeert, 2015). Financial health serves as signal that company is managing funds effectively and positively affects the insurance company's profitability (Morara and Sibindi, 2021; Bieta, 2015). The separation between the timing of premium receipts and claims payouts necessitates the company's expertise in managing capital, while the status of consumers as financiers makes them sensitive to the solvency risk of insurers (Dhaene et al. 2017). Thus, consumers, as financiers, will prefer to buy life insurance from companies with better financial health. Empirical studies by Suryanto et al. (2020) and Chen (2021) show that insurers' financial health is significantly related to life insurance demand. Better performance leads to more efficiency, reduces price, and affects the choice of distribution channels, which then influences service quality, corporate image, and consumers' trust. Thus, it is expected that financial health positively affects consumers' decisions to purchase life insurance.

H1: The insurer's financial health has a positive effect on life insurance purchase.

Cummins and Danzon (1997) also argue that consumer has monitoring the observable ratio and react accordingly. Eling and Kiesenbauer (2012)

argue this mechanism known as market discipline and significantly effect life insurance demand in Germany. Empirical study in Japan from Park and Tokutsune (2013) also find consumers implement market discipline by not purchasing or renewing insurance policies from life insurance companies with unhealthy financial performance in prior year. Chiang and Niehaus (2024) also shows market discipline behavior in United States. Thus, consumers expected implement market discipline if financial health indicator declines from the previous year.

H2: The decline in insurer's financial health in the previous year has a negative impact on life insurance purchase.

Models 1 to 3 were estimate to support hypothesis 1. Financial health is denoted as H, with  $H = H1 + H2 + H3 + H4$ , where to represent solvency, technical reserves, investment, and equity, respectively.

$$\ln(P_{i,t}/T_{i,t}) = \alpha_0 \ln(P_{i,t-1}/T_{i,t-1}) + \alpha_1 H_{i,t-1} + \mu_i + \tau_{t-1} + \varepsilon$$

$$\ln(P_{i,t}) = \beta_0 \ln(P_{i,t-1}) + \beta_1 H_{i,t-1} + \mu_i + \tau_{t-1} + \varepsilon$$

$$\ln(T_{i,t}) = \gamma_0 \ln(T_{i,t-1}) + \gamma_1 H_{i,t-1} + \mu_i + \tau_{t-1} + \varepsilon$$

With i is the i -th selected life insurance company based on Table 2 (i = 1, ..., 25) and t is the t -th year (t = 2007, ..., 2022).  $P_{i,t}/T_{i,t}$  is the premium per policy of company i in the t -th year,  $P_{i,t}$  is the premium of company in

the t -th year,  $T_{i,t}$  is the sum of policy of company in the t -th year,  $H_{i,t}$  is the financial health indicators of company i in the t -th year,  $\mu_i$  is the specific effect of company i,  $\tau_t$  is the specific effect of the t -th year, and  $\varepsilon$  is the error.

Models 4 to 6 are estimate to test the second hypothesis. The decline of financial health is a dummy variable, denoted by D with  $D = D1 + D2 + D3 + D4$ , where D1 to D4 are dummies of solvency, technical reserves, investment, and equity indicators, 1 if financial health indicators are reduce from previous year and 0 others.

$$\ln(P_{i,t}/T_{i,t}) = \delta_0 \ln(P_{i,t}/T_{i,t}) + \delta_1 D_{i,t} + \mu_i + \tau_t + \varepsilon$$

$$\ln(P_{i,t}) = \theta_0 \ln(P_{i,t}) + \theta_1 D_{i,t} + \mu_i + \tau_t + \varepsilon$$

$$\ln(T_{i,t}) = \mu_0 \ln(T_{i,t}) + \mu_1 D_{i,t} + \mu_i + \tau_t + \varepsilon$$

With i is the i -th selected life insurance company based on Table 2 (i = 1, ..., 25) and t is the t -th year ( t = 2007, ..., 2022).  $P_{i,t}/T_{i,t}$  is the premium per policy of company i in the t -th year,  $P_{i,t}$  is the premium of company i in the t -th year,  $T_{i,t}$  is the sum of policy of company i in the t -th year,  $D_{i,t}$  is dummy, 1 if financial health indicators of company i in the t -th year is decrease from the previous year and 0 others,  $\mu_i$  is the specific effect of company i,  $\tau_t$  is the specific effect of the t -th year, and  $\varepsilon$  is the error.

Table 1. Operational variable of financial health, market discipline, and LID

Variable	Code	Measure	Source
<b>Dependent Variable</b>			
Premiums per policies	Y1	P/T= Premium/Policy	Secondary data
Premium	Y2	P= Premium	Premium: OJK
Policy	Y3	T=Policy	Policy: OJK
<b>Independent Variable</b>			
Solvency	X1	H1=Asset/Liability	Secondary data:
Reserve	X2	H2=Reserve/Premium	Asset: OJK
Investment	X3	H3= Investment/Reserve	Liability: OJK
Equity	X4	H4=(Net premium)/Equity	Reserve: OJK
Dummy solvency, reserve, investment, and equity, respectively	X5	D = 1, if financial health indicator decrease from the precedence year, and 0, others	Premium: OJK
	X6		Net premium: OJK
	X7		Investment: OJK
	X8		Equity: OJK

The study supports hypothesis one, where the independent variables positively and significantly affect life insurance demand. The study supports hypothesis two, where the downturn of indicators in the preceding year has a negative and significant effect on life insurance demand. Table 1 presents the operational variables. Figure 2 outlines the research framework, where financial health and market discipline, measured by solvency, reserves, investment, and equity, affect life insurance demand in Indonesia, measured by premium per policy, premium, and policy.

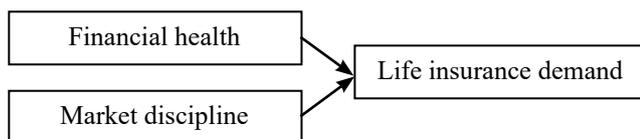


Figure 2. Research framework of the impact of financial health and market discipline on LID in Indonesia

Given the significant insolvency event and penetration decline in the industry, this study aims to analyze the effect of insurers' financial health and the existence of market discipline in the life insurance industry in Indonesia. To fulfill this aim, we analyzed the effect of financial health indicators on life insurance purchases from selected life insurance companies from 2007 to 2022 using secondary data from SPI OJK for the annual period. The results of the study will show significant incentives for consumers to consider companies' financial health by preferring to purchase life insurance with better financial health. The results also show a significant need for information disclosure and other regulations that support the financial soundness of life insurance companies in Indonesia.

## RESULTS

This section begin with the explanation of descriptive statistics, correlation tests, and results from GMM. We also compare descriptive statistics before and after the introduction of financial health regulation. We analyzed the results and identified factors that affect life insurance purchases and the existence of market discipline. Then, we discuss the results and their relation to previous studies. The end of section will synthesize the analysis with some implications for companies, regulators, and consumers.

There are twenty-five life insurance companies that meet the criteria (Table 2). The selected companies comprised 8 national companies and 17 joint venture companies. The total equity in 2022 was IDR 109 trillion, representing 91% of the total industry. The revenue of the selected companies amounted to IDR 141.13 trillion, which is 75% of the total industry, while the policies numbered 26.8 million, equating to 88% of industry. These number shows, this study represents more than 70% of the data in the industry. The data from the insurance companies in this study consists of nine companies with equity below IDR 1 trillion and sixteen companies with equity above IDR 1 trillion. Life insurance companies with equity below IDR 1 trillion have a total equity of IDR 4.71 trillion, while companies with equity above IDR 1 trillion have a total equity of IDR 109.69 trillion, which accounts for 97% of the total equity of the companies in this study.

Table 3 presents the descriptive statistics. The average premium per policy, total premium, and number of policies for the twenty-five companies from 2007 to 2022 are IDR 11.7 million, IDR 4.09 trillion, and 1.07 million policies, respectively. The average solvency, reserves, investment, and equity were 1.43, 2.49, 1.71, and 2.16, respectively. Solvency and reserves show low data variation. Equity demonstrated the highest average decline (0.53), followed by solvency (0.50), investment (0.49), and reserves (0.42), which shows company experiencing a dynamic decrease in financial health. Equity has lowest minimum value, at -221.51, while investment has highest maximum value, at 43.88. The company with the largest assets and revenues in 2022 is PT Prudential Life, with assets of IDR 61 trillion and revenues of IDR 21 trillion. The largest equity and the highest premium per policy is owned by PT Indolife Pensiortama, with IDR 18.6 trillion and IDR 153.8 million. The largest number of policies is owned by PT Asuransi BRI Life, with a total of 13.7 million policies. The companies with the highest solvency, reserves, investments, and equity values are PT Panin Dai-ichi Life (210%), PT Asuransi Jiwa Sequis Financial (549%), PT Panin Dai-ichi Life (208%), and PT Asuransi Simas Jiwa (1,171%).

Table 4 presents descriptive statistics that compare operational variables based on data before and after POJK number 71/POJK.05/2016 was issued. From the first period to the second period, the average premium variable per policy, premium, and policy increased, namely from IDR 9.63 million per policy to IDR 16.21

million per policy, from IDR 3.3 trillion to IDR 5.92 trillion, and from 1.01 million policies to 1.24 million policies. The average solvency decreased from 145% to 140%, and the average investment adequacy decreased from 197% to 135%, while the average reserves increased from 237% to 265%, and the average equity increased from 203% to 238%. The average decrease in solvency and investment from the previous year increased, namely from 47% to 53% and from 45% to 56%, while the average decrease in technical reserve and equity indicators from previous year decreased, namely from 44% to 40% and from 54% to 48%. Meanwhile, Table 5 presents the correlation test data for all variables in the operational variables. It is found that there is no correlation problem or no correlation coefficient value exceeds 0.95. Thus, all variables can be used for further analysis.

Table 6 presents the results of models 1 to 6 using GMM on all selected companies. Models 1 to 3

represent the relationship between financial health and life insurance demand, which is expected to show positive significant results. Meanwhile, models 4 to 6 represent the model for market discipline behavior, which is expected to show negative significant results. The results show that models 1, 2, and 6 are not the best models, because they do not meet the bias or validity criteria, while models 3, 4, and 5 are the best GMM models. Thus, the best models, namely models 3, 4, and 5, are used in further analysis. Model 3 indicates that the reserves and investment indicators from previous year have significant negative effect on the number of policies, the solvency indicator from previous year has significant positive effect on the number of policies, while equity doesn't have significant effect. Reserves have more substantial effect than investment indicators in reducing policy demand, while solvency has the most substantial positive effect compared to other indicators. Thus, the solvency indicator effect on policies supports hypothesis one.

Table 2. Selected life insurance company of the impact of financial health and market discipline on LID in Indonesia

i	Company	Equity (IDR billion)	Premium (IDR billion)	Policy
1	PT Asuransi Jiwa Central Asia Raya	3,078	2,587	413,594
2	PT Equity Life Indonesia	487	940	28,036
3	PT Indolife Pensiontama	18,590	15,542	101,056
4	PT Asuransi Simas Jiwa	1,184	15,604	316,909
5	PT MNC Life Assurance	114	280	32,715
6	PT Asuransi Jiwa Sequis Financial	196	71	4,466
7	PT Perta Life Insurance	422	793	171,116
8	PT Asuransi Jiwa Astra	684	5,902	424,703
9	PT Asuransi BRI Life	7,585	9,073	13,687,327
10	PT AIA Financial	8,230	11,948	935,624
11	PT Asuransi Allianz Life Indonesia	5,866	13,056	2,318,087
12	PT AXA Financial Indonesia	1,170	1,400	599,938
13	PT Asuransi Cigna	405	1,184	1,189,461
14	PT FWD Insurance Indonesia	5,196	2,551	681,600
15	PT Great Eastern Life Indonesia	424	3,964	41,098
16	PT Tokio Marine Life Insurance	691	825	19,145
17	PT Asuransi Jiwa Manulife	14,784	11,832	1,363,590
18	PT Prudential Life Assurance	5,699	20,934	1,801,965
19	PT Asuransi Jiwa Sinarmas MSIG	7,572	3,431	148,731
20	PT Sun Life Financial Indonesia	7,472	4,435	712,981
21	PT Zurich Topas Life	358	957	89,440
22	PT BNI Life Insurance	5,734	6,200	180,761
23	PT Asuransi Jiwa Sequis Life	7,085	3,564	268,564
24	PT Panin Dai-Chi Life	4,525	2,572	195,612
25	PT Avrist Assurance	1,922	1,492	63,857
	Total of selected companies	109,473	141,137	25,790,376
	Total of industry	120,360	191,729	28,570,323

Table 3. Descriptive statistics of operational variables of financial health, market discipline, and LID

Var	Mean	Med	Max	Min	Stedev	Skew	Kurt	N
Y1	12,102,965	3,954,648	175,000,000	45,864	25,350,582	3.76	17.69	400
Y2	4,295,068	1,892,590	35,586,651	77	5,705,903	2.20	8.50	400
Y3	1,096,513	478,045	15,719,172	1	1,827,784	4.13	24.94	400
X1	1.43	1.24	7.80	0.06	0.60	4.64	38.82	400
X2	2.47	2.14	11.66	0.09	1.65	1.56	6.74	400
X3	1.74	1.21	43.88	0.03	3.27	9.75	107.43	400
X4	2.16	1.67	37.84	-221.51	12.01	-16.04	302.36	400
X5	0.50	0.00	1.00	0.00	0.50	0.04	1.00	400
X6	0.42	0.00	1.00	0.00	0.50	0.29	1.09	400
X7	0.49	0.00	1.00	0.00	0.50	0.03	1.00	400
X8	0.53	1.00	1.00	0.00	0.50	-0.08	1.01	400

Note: Premium per policy (Y1); Premium (Y2); Policy (Y3); Solvency (X1); Reserve (X2); Investment (X3); Equity (X4); Solvency decrease in the previous year (X5); Reserve decrease in the previous year (X6); Investment decrease in the previous year (X7); Equity decrease in the previous year (X8).

Table 4. Descriptive statistics before and after financial health regulation

Var	2007 - 2016			2017 - 2022		
	Mean	Stddev	N	Mean	Stddev	N
Y1	9,636,862	21,772,996	250	16,213,136	30,024,815	150
Y2	3,319,109	4,715,136	250	5,921,665	6,765,230	150
Y3	1,007,420	1,528,686	250	1,245,002	2,237,272	150
X1	1.45	0.72	250	1.40	0.33	150
X2	2.37	1.72	250	2.65	1.52	150
X3	1.97	4.11	250	1.35	0.37	150
X4	2.03	14.87	250	2.38	4.08	150
X5	0.47	0.50	250	0.53	0.50	150
X6	0.44	0.50	250	0.40	0.49	150
X7	0.45	0.50	250	0.56	0.50	150
X8	0.54	0.50	250	0.48	0.50	150

Note: Premium per policy (Y1); Premium (Y2); Policy (Y3); Solvency (X1); Reserve (X2); Investment (X3); Equity (X4); Solvency decrease in the previous year (X5); Reserve decrease in the previous year (X6); Investment decrease in the previous year (X7); Equity decrease in the previous year (X8).

Model 4 shows that a decrease in the value of reserves and equity from the previous year has a significant negative effect on the premium per consumer policy in the following year, while solvency and investment don't shows significant effect. The reduction of reserves has a more substantial effect than the reduction in equity. Thus, we find that market discipline exists in the life insurance industry in Indonesia, where consumers reduce their purchase of life insurance premiums per policy when the reserve and equity indicators decrease from the previous year. Model 5 shows that a decrease in solvency, reserves and equity from the previous year has a significant negative effect on the amount of

premium in the following year, but a decrease in the ratio of investment to reserve shows significant positive effect on the demand. The decrease in solvency has the most substantial positive effect than a decrease in other indicators. Therefore, the results show evidence that consumers apply market discipline in the life insurance industry in Indonesia by reducing premium purchases when solvency, reserve and equity indicators decrease from the previous year. Meanwhile, consumers responded to the decline of the investment-to-reserve ratio from the previous year by increasing the purchase of life insurance premiums.

Table 5. Correlation test of operational variables of the impact of financial health and market discipline on LID in Indonesia

Var	Y1	Y2	Y3	X1	X2	X3	X4	X5	X6	X7	X8
Y1	1.00										
Y2	0.33	1.00									
Y3	-0.19	0.25	1.00								
X1	-0.02	-0.19	-0.11	1.00							
X2	-0.06	-0.07	-0.16	-0.05	1.00						
X3	-0.04	-0.11	-0.09	0.49	-0.11	1.00					
X4	0.08	0.13	0.04	-0.05	-0.17	-0.03	1.00				
X5	0.03	-0.07	-0.06	0.12	0.03	0.10	-0.08	1.00			
X6	-0.03	-0.04	0.05	0.00	-0.01	-0.02	-0.08	0.03	1.00		
X7	0.02	-0.02	-0.03	0.08	0.06	0.08	-0.10	0.61	-0.05	1.00	
X8	0.01	0.06	0.00	-0.10	-0.02	-0.08	0.10	-0.58	-0.37	-0.47	1.00

Note: Premium per policy (Y1); Premium (Y2); Policy (Y3); Solvency (X1); Reserve (X2); Investment (X3); Equity (X4); Solvency decrease in the previous year (X5); Reserve decrease in the previous year (X6); Investment decrease in the previous year (X7); Equity decrease in the previous year (X8).

Table 6. Results for model 1 to 6 of the impact of financial health and market discipline on LID in Indonesia

Model	1	2	3	4	5	6
Variable						
ln(Y1(-1))	0.16***			0.49***		
ln(Y2(-1))		0.78***			0.78***	
ln(Y3(-1))			0.52***			0.34***
X1	0.06	0.32*	0.26***			
X2	0.47***	-0.08	-0.26***			
X3	-0.3***	-0.15	-0.09***			
X4	0.00	-0.01	-0.0053			
X5				-0.17	-0.54***	-0.09*
X6				-0.63***	-0.34***	-0.44***
X7				0.04	0.18**	0.09
X8				-0.17**	-0.31***	-0.49***
Prob(J-stat)	0.31	0.08	0.30	0.45	0.35	0.31
AR(1)	0.32	0.03	0.00	0.01	0.01	0.06
AR(2)	0.51	0.45	0.92	0.25	0.81	0.50
Y1(-1) FEM	0.41			0.38		
Y1(-1) PLS	0.78			0.76		
Y2(-1) FEM		0.74			0.79	
Y2(-1) PLS		0.91			0.93	
Y3(-1) FEM			0.46			0.47
Y3(-1) PLS			0.84			0.81

Note: Premium per policy (Y1); Premium (Y2); Policy (Y3); Solvency (X1); Reserve (X2); Investment (X3); Equity (X4); Solvency decrease in the previous year (X5); Reserve decrease in the previous year (X6); Investment decrease in the previous year (X7); Equity decrease in the previous year (X8). \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

The results shows that solvency has a significant positive effect on the number of policies and a decrease in solvency in the previous year has a significant negative effect on the decrease in premiums. This result is in line with initial expectations, that consumers pay attention to a company's ability to pay promised benefits, which is often represented by solvency. Thus, the solvency indicator supports hypotheses one and two of this study. Moreover, solvency has a substantial positive effect on policy and a substantial negative effect on premium when it decreases from the previous year compared to other indicators. An increase in reserves or the ratio of reserves to net premiums indicates that more funds coming in through premiums are managed for long term, which means that finances are healthier because they are in line with the character of life insurance products for long-term benefits. It was found that the value of reserves in the previous year had a significant negative effect on the number of policies and a decrease from previous year of this indicator resulted in a decrease in premiums per policy and premiums. Thus, reserves do not support hypothesis one, but do support hypothesis two.

An increase in investment adequacy, or the ratio of investment to technical reserves, indicates that the company is able to fulfill its obligations with managed investments, so the company's finances are getting healthier. Investment adequacy shows a significant negative effect on the number of insured individuals or policies. However, it was found that investment in the previous year actually reduced the number of policies, and a decrease in investment from previous year did not have significant effect on the purchase of life insurance. Thus, the investment indicator does not support hypothesis one and two. An increase in equity indicates that the capacity of capital to generate premiums is increasing. This view is in line with the results of the study, where a decrease in equity from the previous year resulted in a decrease in premiums per policy and premiums, but the previous year's equity value had no significant effect on life insurance purchases. Thus, equity indicator does not support hypothesis one, but supports hypothesis two of this study.

Life insurance adoption should be supported, but, the experience shows many insolvency event of life insurance company and a decent decrease of life insurance demand in Indonesia. We hypothesized that financial health indicators significantly affect life insurance demand in Indonesia and that there is market

discipline behavior, as evidenced by a decline in life insurance demand when financial health indicators have decreased from the previous year. After carefully selecting companies and financial health indicators, then estimating the effect on life insurance demand, we found that the previous year's solvency value had significant positive effect on the number of life insurance policies, a decrease in reserves and equity from the previous year decreased premiums per policy the following year, and decrease in solvency, reserves, and equity from the previous year decreased premiums in the following year. We find there is significant effect of financial health on life insurance demand, and there is evidence that market discipline exists in the industry, with the solvency indicator serves as the best predictor of life insurance purchase in Indonesia. Therefore, the unhealthy finances of insurance companies have been shown to contribute to low life insurance purchases in Indonesia.

The implementation of financial health and market discipline has perennial attention but is primarily focused on banking (Eling, 2012), while the banking and insurance sectors have significant differences in capital management (De Weert, 2015). Chen (2021) shows that insurers' enterprise risk has significant effect on life insurance demand in Taiwan, but focuses on distribution channel contributions, such as salesperson and bancassurance. Chiang and Niehaus (2021) analyzed the market discipline in the life insurance industry in the United States, but focused on policy loans. Deng et al. (2025) have analyzed market discipline and its effect, but focus on the non-life insurance industry and guaranteed funds indicators, finding negative effect of these indicators on the sensitivity of premium growth to changes in financial strength ratings.

The study of life insurance industry in the Indonesian context is still rare compared to other advanced countries, while there are different behaviors in life insurance purchases between high and non-high-income countries (Rapi et al. 2025b). Previous studies in the Indonesian context also did not address the focus of this study. Astuti et al. (2024) have shown the effect of financial performance in life and non-life insurance companies in Indonesia, but regarding financial well-being, which indicates that poor investment, premium growth, and leverage are more likely to lead to insolvency. Sambodo et al. (2023) have studied insurance demand but focus on the effect of the capitation scheme on the use of BPJS Kesehatan. Suryanto et al. (2020) also analyzed premium income determinants but focus on the effect

of liberalization on innovation, such as the Herfindahl-Hirschman index and the ratio of premium to operational cost. Meanwhile, market discipline analysis has been studied by Wardhani et al. (2025), but in the banking sector, showing the significant effect of different regulatory regimes. Previous studies also shown significant effect of financial health and the existence of market discipline, but not in the context of life insurance industry in Indonesia, which has unique financial health indicators based on POJK number 71/POJK.05/2016, and on its effect on life insurance purchase behavior. Therefore, this research contributes to demonstrating the relationship between financial health and life insurance demand, and provides evidence of market discipline behavior in the life insurance industry in Indonesia. To the best of the author's knowledge, this study is the first research that covers that topic.

It can be said that the life insurance industry in Indonesia has entered a new era of financial health. Indonesia's government attention to financial health has risen in recent years, especially after the issuance of Law Number 4 of 2023 on Financial Sector Development and Strengthening (UU P2SK). Financial health regulation, POJK Number 71/POJK.05/2016, is also updated in 2023 to become POJK Number 5 of 2023, and enhance by the issuance of POJK number 22 of 2023 regarding consumer protection and POJK Number 23 of 2023 that rising the capital equity adequacy requirement for insurance companies to IDR 250 billion. The issuance of these regulations demonstrates the government's commitment to protecting consumers and helping to raise consumer confidence to allocate their funds in insurance industry. These dynamics show the significant need for companies to heighten their efforts to achieve financial health.

The results of this study support the implementation of these regulations in the life insurance industry because we have shown the significant benefits that companies gain through financial health by increasing their purchases. Previous studies also show that better financial performance leads to higher profitability (Morara and Sibindi, 2021). Therefore, financial health will give significant benefits for life insurance companies because it helps companies gain more profit and enhances their sales. Moreover, this study shows the outcome involves market discipline mechanism, which means consumers appreciate company efforts and punish irresponsible actions that are observed in their financial performance. Market discipline often

viewed as complement of regulation (Flannery and Bliss, 2019), but, market discipline also has limitations due to problem of information asymmetry, where consumers require additional information and analysis regarding the company before making a decision. Not all consumers have access to or understanding of the company's finances.

Information asymmetry also lead to another problem in insurance industry called selection problem (Einav et al. 2023). Some consumers have higher risks than others, but insurers do not know the consumers' conditions, as they keep their information private. This private information can lead to market failure and distort the market. OJK's data shows the equity of the life insurance industry in Indonesia has risen from IDR 4.92 trillion (2003) to IDR 120.36 trillion (2022) or grow 24,463% from the last two decades. Table 4 shows that the average of equity has increased after the POJK number 71/POJK.05/2016 established and Table 6 shows the decrease of equity from precedence year also decrease. But, the life insurance industry in Indonesia has shown an increase in the ratio of claims to premiums as equity grows (Figure 3). This phenomenon show that insurers still face greater growth in claims despite equity has increased. Whereas, the new regulation that mandates an increase in minimum equity will begin at the end of 2026. This suggests that selection problem, arguably, exists in life insurance industry in Indonesia. Therefore, the insurance industry should concerned not only with improving their sales, but also with to whom they sell their products. This topic is not analyzed in this research, but could be a subject for further study in the future.

Lane (1993) argues that effective market discipline requires openness of information, guarantee funds, and consumers responding to signals. The first requirement has been supported by POJK number 71/OJK.05/2016, while the second requirement will be implemented in Indonesia in 2028 in the form of a policy guarantee program by the Deposit Insurance Corporation (LPS). Meanwhile, third requirement, insurance literacy and inclusion in Indonesia are still at 31.72% and 16.63%, respectively. Therefore, market discipline practices in the life insurance industry in Indonesia still need improvement. The limitations of market discipline practices highlight the great need for laws and regulations from government. Besanko et al. (2010) argue that the existence of laws and regulations, along with clarifying insurance policies, supports the achievement of efficient markets and reduces the ambiguity of understanding for

consumers and insurance companies. Greater ambiguity decreases the demand for insurance, but the existence of regulations reduces it (Peter and Ying, 2020). The other limitation of market discipline involved a reputational failure, as consumers provide biased and less reliable feedback (Arbel, 2019). Thus, there is a danger in relying on the market mechanism alone and a greater need for proper regulation to improve the quality of information.

Life insurance demand has been a topic of study for over fifty years (Zietz, 2003), but, to the best of the author's knowledge, the topic presented in this study is still lacking. However, this study has limitations that require improvement. Previous studies have used credit ratings to analyze market discipline (Deng et al. 2025). The advantage of rating agencies is that they provide standards for evaluating company finances and reducing information asymmetry. The use of standardized rating values, reports from third parties, and financial advisors presents an opportunity for further research. The absence of a guarantee fund, as one of the financial health indicators, also becomes a limitation. Moreover, the use of risk-based capital could be a more representative financial health measurement and is generally used by insurance companies (Rafif et al. 2024). Thus, life insurance purchase analysis from the company perspective is still open to study.

### Managerial Implications

This study supports that financial health has a positive and significant effect on life insurance demand, and market discipline exists in the life insurance industry

in Indonesia. This finding shows the importance of insurers maintaining financial health, such as improving the implementation of capital management (Morina et al. 2024) and asset-liability management (Chen et al. 2023). The finding also demonstrates the significant need for information disclosure, as shown by Hanika (2024), who noted that publicly reported financial data affects the risk-taking behavior of insurers. The results of this study show the significant need to implement regulations on financial health in company operations. For example, minimum risk requirements and the placement of investments or the fulfillment of capital equity requirements through company consolidation, such as mergers, acquisitions, and Insurance Company Business Groups (KUPA).

Government and companies have significant role in increasing literacy and inclusion of life insurance to address the asymmetric information problem. The OJK plays role in issuing regulations to support data transparency and in supervising market conduct and micro prudential aspects of companies, while companies have role in clarifying insurance policies and information that is disseminated through their marketing teams. Consumers should enhance their efforts to gain reliable information and provide proper feedback, so that the risk of reputational failure decreases. Moreover, insurance company also should focus to whom the sell, not only how much they sell (Einav et al. 2023). Therefore, further analysis on risk behavior is needed, such as identify the risk preference of consumers (Rapi et al. 2025a) or the factor that significantly increase claim severity (Deng et al. 2024).

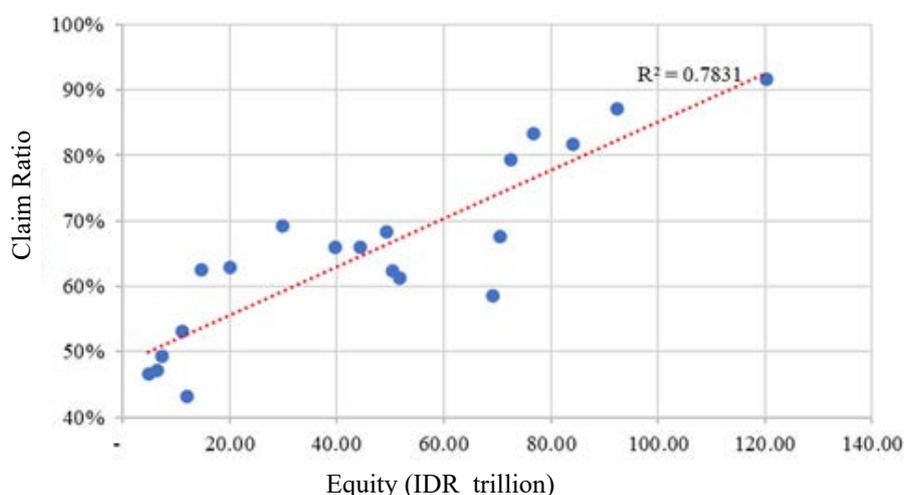


Figure 3. Relationship between Equity and claim ratio of life insurance industry in Indonesia

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

This study presents evidence that a company's financial health affects life insurance demand in Indonesia and that consumers implement market discipline. Solvency is the best predictor of the demand for life insurance in Indonesia, as an increase in this indicator raises policies purchase, while a decrease prompts consumers to respond with a reduction in the premium. This study also finds that the decline in reserve and equity in precedence year has reduces premium per policy and premium. Thus, the unhealthy finances of insurance companies have been shown to contribute to low life insurance purchases in Indonesia. The companies' efforts on financial health will lead to better sales of their products.

### Recommendations

Life insurance companies must pay attention to financial health because it affects consumers' purchasing behavior regarding life insurance. Implementing the regulations will support the achievement of financial health in life insurance companies, such as compliance with minimum risk limit requirements and placement of investments or the fulfillment of capital equity requirements through business consolidations. Moreover, improving the quality of policies, increasing literacy, and ensuring information transparency help enhance the market discipline mechanism and resolve asymmetric information problems, which lead to enhanced consumer confidence in purchasing life insurance. In other hand, consumers also has significant contribution by gain reliable information and provide proper feedback. The life insurance industry in Indonesia has experienced promising growth. However, as premiums continue to rise, insurers should improve the management of financial health and risk selection. Regulators should enhance consumer protection while maintaining the sustainability of the life insurance industry, while companies enhance compliance with the regulations that lead to higher product sales, as shown in this study. Contributions from each side will help achieve a stronger and more sustainable life insurance industry in Indonesia.

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