



Analysis of the Duration Gap Between Investment Assets and Liabilities in Life Insurance Companies in Indonesia

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Abstract

Background: The life insurance industry faces interest rate risk arising from the mismatch between the duration of investment assets and long-term liabilities.

Objective: This study examines the duration gap profile of the life insurance industry in Indonesia and identifies the factors influencing this gap, with a particular focus on the impact of implementing investment asset reclassification regulations based on the Financial Services Authority Circular Letter Number 23/SEOJK.05/2024 concerning the Form and Composition of Periodic Reports of Insurance Companies and Reinsurance Companies (SEOJK 23/2024).

Methods: This study employs a quantitative approach with a panel data design to analyze the duration gap in the Indonesian life insurance industry.

Results: Using panel data from 42 Indonesian life insurance companies (2,352 observations; May 2021–December 2025), this study finds that the industry maintained a consistently positive duration gap, increasing from 2.6 to 3.9 years following SEOJK 23/2024 due to longer asset duration. Fixed-effects estimation shows that the regulation significantly widened the duration gap, while larger company size reduced it, indicating stronger asset–liability management. Solvency and market share were also significant, whereas product mix and macroeconomic variables were not.

Conclusion: This study provides the first empirical evidence that the Indonesian life insurance industry has consistently maintained a positive duration gap, indicating structural interest rate risk. SEOJK 23/2024 significantly widened the duration gap, while company size reduced it, underscoring the need for firm-specific asset–liability management and risk-based regulatory supervision.

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INTRODUCTION

Life insurance companies have unique characteristics in financial risk management, namely by collecting premiums from policyholders and investing these funds to meet long-term obligations in the future. This characteristic creates inherent exposure to interest rate risk; when interest rates change, the values of assets and liabilities fluctuate, but not always by the same magnitude, depending on the difference in their respective time horizons. This misalignment is measured using the concept of the duration gap (Anthony Saunders & Cornett, 2018). A positive duration gap directly threatens solvency ratios and profitability when interest rates rise because the decline in asset values exceeds the reduction in liability values, thereby weakening overall asset-liability management performance and increasing the potential for capital shortfalls.

Interest rate risk in the life insurance industry has become a global concern. Domanski et al. (2017) found that life insurance companies in Europe systematically seek long-term

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instruments (a phenomenon referred to as the “hunt for duration”) in response to prolonged periods of declining interest rates. Möhlmann (2021) found that the duration gap among life insurance companies in Germany varies widely and does not always reflect an optimal duration alignment strategy. Berends et al. (2013) demonstrated that the sensitivity of the equity value of life insurance companies in the United States to changes in interest rates differs significantly depending on company size. Collectively, these international studies establish that: (1) life insurers structurally carry positive duration gaps; (2) firm size is a critical moderator of interest rate risk exposure; and (3) regulatory regimes shape asset-liability management (ALM) behavior. These patterns are relevant to the Indonesian context, which shares the fundamental structural characteristics of life insurance markets, including long-duration liabilities and asset-return guarantees, but faces unique institutional conditions (including a less developed capital market, evolving regulatory frameworks, and limited access to hedging instruments) that may produce different duration gap dynamics compared with those observed in European and American markets.

In Indonesia, attention to the management of life insurance industry assets has increased significantly following the implementation of SEOJK 23/2024, which changes the classification of investment assets based on remaining maturity starting in January 2025. This policy fundamentally changes the way life insurers report their portfolio duration profiles. However, to date, no empirical study has quantitatively measured the impact of this regulation on the duration gap profile of the Indonesian life insurance industry. Specifically, SEOJK 23/2024 requires insurers to reclassify investment assets based on remaining maturity into five tenor bands, which alters the calculation of asset duration and may incentivize portfolio restructuring toward longer-duration instruments. This reclassification mechanism can directly affect asset allocation decisions, shift portfolio duration profiles, and alter the degree of asset-liability matching, ultimately changing the industry-wide duration gap landscape.

Several gaps have been identified in the related literature. First, studies on the duration gap in life insurance remain dominated by the context of developed countries, such as Germany Möhlmann (2021) and the United States (Berends et al., 2013). Empirical evidence from developing countries remains very limited. Second, existing duration measurement approaches generally require actual cash flow data that are not publicly available; therefore, methodological adaptations are needed for emerging market contexts with limited data availability. Third, no previous study has explicitly examined the impact of changes in reporting regulations on the duration gap profile of the life insurance industry. Recent studies continue to highlight these gaps: Suwanmalai & Zaby (2025) document persistent ALM challenges among Thai life insurers operating under low-interest rate environments, reinforcing the limited evidence base from Southeast Asian emerging markets. Noordheek (2024) identifies liquidity and duration mismatches as growing systemic risks in the global insurance sector; however, empirical evidence from Indonesia remains absent from the literature.

This research addresses these gaps through two main contributions. First, it maps the duration gap profile of the Indonesian life insurance industry during the period from May 2021 to December 2025 using a weighted aggregate approach based on regulatory reporting data. Second, it identifies the factors affecting the duration gap at the company level through panel data regression analysis. The findings of this study are expected to provide empirical contributions to the development of an interest rate risk-based supervisory framework for the Indonesian life insurance industry. Methodologically, the weighted aggregate duration approach employed in this study differs from prior literature Berends et al. (2013), which relies on proprietary cash flow data. By utilizing publicly available regulatory reporting data classified by tenor groups, this study offers a replicable and scalable methodology applicable to emerging markets with limited disclosure requirements, representing a meaningful methodological contribution beyond the substantive empirical findings.

The urgency of this research has increased following the enactment of SEOJK Number 23/SEOJK.05/2024, which changes the classification of investment assets based on remaining maturity starting in January 2025. This regulation has the potential to alter the investment behavior of life insurance companies because it promotes greater reporting transparency and improved alignment between assets and liabilities. The regulatory change is expected to affect not only the structure of company investment portfolios but also the overall level of industry interest

rate risk exposure. To date, empirical evidence remains insufficient regarding how these regulatory changes influence the duration gap of life insurance companies in Indonesia.

This information is essential for regulators in formulating risk-based supervisory policies and for insurance companies in developing more effective asset-liability management strategies. Evidence from comparable regulatory reforms supports the anticipated impact: Möhlmann (2021) documents significant duration gap changes following the implementation of Solvency II in Europe, while Herold (2015) demonstrate that regulatory transparency requirements under Solvency II resulted in substantial changes in German insurer portfolio composition. These international precedents suggest that SEOJK 23/2024, as Indonesia's first mandatory maturity-based investment classification framework, is likely to have significant effects on industry ALM behavior.

Based on this background, this study aims to examine the duration gap profile of the life insurance industry in Indonesia during the period from May 2021 to December 2025 and identify the factors affecting the duration gap at the company level. Specifically, this study also aims to evaluate the effect of implementing SEOJK Number 23/SEOJK.05/2024 on changes in the duration gap of the Indonesian life insurance industry. By applying a panel data approach involving 42 life insurance companies, this study is expected to provide a comprehensive empirical understanding of interest rate risk management in the Indonesian insurance sector. This study is guided by three research questions: (1) What is the duration gap profile of the Indonesian life insurance industry during the period from May 2021 to December 2025, and how does it evolve across pre- and post-regulatory phases. (2) What firm-level and macroeconomic factors significantly determine the duration gap of individual life insurance companies. (3) What is the impact of SEOJK 23/2024 implementation on the duration gap of the Indonesian life insurance industry.

METHOD

This study employed a quantitative approach with a panel data design to analyze the duration gap in the Indonesian life insurance industry. The research population consisted of all conventional life insurance companies registered and actively reporting financial data to the Financial Services Authority (OJK). The sample was determined using the purposive sampling method with the criteria of companies that consistently submitted complete periodic financial statements throughout the observation period and underwent the outlier handling process, resulting in 42 companies observed from May 2021 to December 2025.

The selection of this period was based on the availability of asset and liability classification data according to maturity groups consistently reported in the OJK reporting system and covered periods before and after the implementation of SEOJK 23/2024. To address potential extreme values that could distort the estimation results, all research variables are winsorized at the 1st and 99th percentiles. A comprehensive winsorizing approach is adopted to avoid inconsistency that may arise from selective winsorizing, following standard procedures in the empirical finance literature (Mohrschladt & Nolte, 2018).

The data were sourced from periodic financial statements submitted to the OJK, including the classification of investment assets and liabilities based on five tenor groups: less than one year, 1–3 years, 3–5 years, 5–10 years, and more than 10 years. Macroeconomic data, including inflation rates and 10-year government bond yields, were obtained from Bank Indonesia and the Central Statistics Agency.

The combined dataset formed a balanced panel consisting of 2,352 observations ($n = 42$, $T = 56$). It was acknowledged that the use of aggregated tenor-group classifications as proxies for actual asset and liability maturities introduced potential measurement errors. The five tenor buckets represented broad categories that might have masked internal heterogeneity within each group. For example, assets with remaining maturities of one year and 2.9 years were both classified within the 1–3-year bucket but were assigned the same midpoint proxy of two years, which might slightly underestimate actual duration dispersion. This limitation was inherent in the use of regulatory disclosure data and was addressed through robustness analyses using alternative proxy specifications.

The dependent variable was the leverage-adjusted duration gap, calculated using the formula $DG = DA - (k \times DL)$, where DA represented asset duration, DL represented liability duration, and $k = L/A$ represented the leverage ratio. Asset and liability durations were calculated

as weighted averages using the midpoint of each tenor group as a proxy for duration, assuming the following values: 0.5 years (<1 year), 2 years (1–3 years), 4 years (3–5 years), 7.5 years (5–10 years), and 12.5 years (>10 years). This approach referred to Shah et al. (2021), who documented a similar methodology. The independent variables included regulatory indicators (REG), company size (SIZE), market share (MS), solvency level (RBC), product mix (PM), inflation rate, and 10-year government bond yield.

Data analysis was conducted in two stages. The first stage calculated the duration gap profile using a weighted aggregate approach based on the sample companies' portfolios for each monthly period. The second stage estimated the panel data regression model to identify the determinants of duration gaps. The panel model used a one-way fixed effects specification, which was selected after passing a series of tests, including the Chow Test, Hausman Test, and Time Effect Significance Test. After the panel model was determined, the Classical Assumption Tests were performed by examining the assumptions of non-multicollinearity and homoskedasticity. Specifically, the Chow Test was used to select between the Pooled OLS and Fixed Effects models ($p < 0.05$ indicating that the Fixed Effects model was preferred); the Hausman Test was conducted to determine whether Fixed Effects or Random Effects was more appropriate ($p < 0.05$ indicating that Fixed Effects was consistent); and the Time Effect Significance Test confirmed that time-fixed effects were not jointly significant, supporting the use of a one-way (individual) fixed effects specification. Heteroskedasticity was detected using the Breusch–Pagan test ($p < 0.05$), which motivated the use of robust standard errors (HC1).

All estimates were subjected to robustness checks through three alternative specifications: robust standard errors (HC1), estimation using a two-way fixed effects model, and estimation after outlier handling through winsorization at the 1st and 99th percentiles. The 1st and 99th percentile thresholds were selected following standard practices in financial institution panel studies to remove extreme observations while preserving sample size (Liu et al., 2020). All main findings remained directionally and statistically consistent across the three robustness specifications. The estimation results were subsequently evaluated through t-tests and F-tests.

RESULTS AND DISCUSSION

Results

Duration gap profile of the life insurance industry in Indonesia

Table 1 presents the annual average of the asset duration (DA), liability duration (DL) and duration gap (DG) of the Indonesian life insurance industry during the observation period calculated using a weighted aggregate approach based on the total portfolio of all sample companies.

Table 1

Annual average of DA, DL, and DG of the Indonesian life insurance industry

Year	DA (year)	DL (year)	DG (year)	Phase
2021	4,68	5,65	2,94	Pre-regulation
2022	4,68	5,88	2,75	Pre-regulation
2023	4,73	6,10	2,52	Pre-regulation
2024	4,77	6,21	2,26	Pre-regulation
2025	6,70	6,35	3,90	Post-regulation

Over 56 observation periods, the industry duration gap (DG) remained consistently positive, ranging from 2.9 to 3.9 years. This positive duration gap indicates that the industry's duration of assets (DA) consistently exceeds the duration of liabilities (DL), suggesting that the industry is potentially exposed to a decline in the economic value of equity (EVE) if interest rates increase. Referring to (Anthony Saunders & Cornett, 2018), changes in the value of equity resulting from interest rate fluctuations can be estimated using Equation (1). The sharp increase in DA observed in 2025, from 4.77 years in 2024 to 6.70 years, was primarily attributable to the asset reclassification mandate under SEOJK 23/2024, which required companies to report investment assets based on their remaining maturity beginning in January 2025.

This reclassification resulted in a statistical shift in asset duration, as instruments previously categorized within shorter tenor buckets were reassigned to longer maturity

categories, thereby reflecting their actual remaining maturity. Additionally, some companies may have actively restructured their investment portfolios toward longer-duration assets to align with the revised reporting framework.

$$\Delta E = -\{DA - k \times DL\} \times A \times \frac{\Delta R}{1 + R}$$

Research data profile

Table 2 presents descriptive statistics of independent variables of the study from 2,352 observational panel data after winsorization.

Table 2

Descriptive statistics of research variables

Variable	Mean	SD	min	max
Regulation	0,21429	0,41041	0,00000	1,00000
Size	29,08645	1,69545	25,67371	31,77564
Market Share	0,02364	0,03086	0,00006	0,13368
RBC	7,24584	9,00411	1,39871	67,29581
Product Mix	0,30034	0,30346	0,00000	0,99973
Inflation	0,00246	0,00401	-0,00760	0,01650
Obligation10Y	0,06691	0,00344	0,06077	0,07541
GovtBond10Y	0,21429	0,41041	0,00000	1,00000

The Regulation variable is an important variable that captures the implementation of new regulatory provisions, which may lead to shifts in the allocation of investment assets. Other firm-specific variables, such as Size, Market Share, and RBC, are related to the tendency of larger companies, firms with greater market share, and companies with higher capital adequacy levels to have access to more diversified investment instruments and larger capital buffers, which may influence the duration gap. The Product Mix variable determines the characteristics of a company's liabilities, where firms that sell more long-term products tend to have longer-duration liabilities.

The RBC exhibits a mean of 724%, well above the minimum threshold mandated by OJK. Although the winsorized RBC distribution displays elevated skewness and kurtosis, this pattern reflects heterogeneity in solvency positions across the industry rather than data anomalies. Product Mix indicating substantial variation in the proportion of interest sensitive products across firms. The range from 0 to 1 reflects the coexistence of firms that offer no interest sensitive products and firms whose entire premium income derives from such products.

The selection of Inflation and Bonds10Y as macroeconomic indicators is justified because 10-year government bonds represent benchmark investment instruments for long-term liability valuation, while inflation affects the valuation of both assets and liabilities. Empirically, Size has been shown to have a negative relationship with interest rate risk exposure (Berends et al., 2013); Market Share serves as a proxy for competitive position and investment scale, which may affect ALM flexibility Möhlmann (2021); RBC reflects capital buffer capacity, enabling firms to tolerate larger duration gaps; Product Mix determines the liability duration profile (Tsai, 2009); and macroeconomic variables, including inflation and long-term bond yields, are commonly used as control variables in insurance ALM research (Liu et al., 2020).

Panel data regression results

Table 3 presents the results of the one-way fixed-effects model estimation before and after applying robust standard errors (RSE).

Table 3

Estimated results of one-way fixed effects

Variable	Before RSE		After RSE	
	Coefficients	p-value	Coefficients	p-value
Regulation	1,45694	< 2.2 × 10 ⁻¹⁶ ***	1,45694	9.25 × 10 ⁻⁰⁵ ***

Size	-1,71694	$< 2.2 \times 10^{-16}***$	-1,71694	$3.2 \times 10^{-05}***$
Market Share	18,45098	$1.81 \times 10^{-05}***$	18,45098	0,01878*
RBC	0,00004	0,87160	0,00004	0,84775
Product Mix	1,13247	$4.78 \times 10^{-08}***$	1,13247	0,10015
Inflation	7,75768	0,25950	7,75768	0,17076
Obligation10Y	-4,67481	0,56580	-4,67481	0,62626
R2	0,19			
Adj. R2	0,18			
F-statistic	78,42			
p-value	2.2×10^{-16}			

Description: *** $p < 0.001$; * $p < 0.05$; . $p < 0.1$

The model explains approximately 18% of the variation in DG among life insurers in Indonesia, while the remaining variation is explained by factors outside the model. Nevertheless, the model is statistically significant overall. In terms of economic significance, the Regulation coefficient of 1.457 indicates that the implementation of SEOJK 23/2024 increased the average duration gap by approximately 1.46 years, which is substantial relative to the pre-regulation mean DG of 2.6 years (a ~56% increase). The Size coefficient of -1.717 implies that companies in the large-size category have a duration gap approximately 1.72 years shorter than their small-company counterparts, reflecting meaningful differences in asset-liability management (ALM) capacity.

The Market Share coefficient of 18.45, although statistically significant, reflects the logarithmic transformation applied to the variable and therefore translates into a smaller marginal effect in absolute terms. The relatively low adjusted R^2 of 18% is acknowledged as a limitation of this model. Potential omitted variables include macroeconomic regime changes, investment mandate restrictions imposed by shareholders, product repricing strategies, and reinsurance arrangements, factors that are not publicly observable in regulatory reporting data. Future research incorporating proprietary company-level data may improve the model's explanatory power.

Table 3 shows significant changes in the results before and after the application of robust standard errors (RSE). This change occurred because RSE addressed heteroskedasticity in the model, thereby improving the accuracy of the estimated standard errors. The Breusch–Pagan test confirmed the presence of heteroskedasticity in the residuals (BP statistic = 47.23, $p < 0.001$), validating the use of HC1 heteroskedasticity-consistent standard errors. The White test further corroborated this finding. As shown in Table 3, the application of RSE adjusted the standard errors of several variables (particularly Market Share and Product Mix), while the coefficient estimates remained unchanged, as expected under heteroskedasticity correction.

Furthermore, Table 4 presents the estimation results from additional robustness checks, namely the two-way fixed-effects (HC1) and one-way fixed-effects (HC1) models after winsorization. In the two-way fixed-effects specification, the Regulation variable and macroeconomic variables (Inflation and GovtBond10Y) are collinear with the time fixed effects and therefore cannot be separately identified. This limitation is inherent in two-way panel models when time dummy variables absorb temporal variation.

The emergence of RBC as a significant determinant after winsorization ($p = 0.00164**$) suggests that extreme observations had previously obscured its effect. This finding indicates that, after excluding extreme solvency observations, better-capitalized firms exhibit a meaningfully smaller duration gap, consistent with the risk-bearing capacity hypothesis (Möhlmann, 2021). Overall, the direction and significance of the core variables (Regulation, Size, and Market Share) remain consistent across all specifications, providing strong evidence of model robustness.

Table 4

Estimation of two-way fixed effects and one-way fixed effects (HC1) winsorizing

Variable	Two-Way FEM		One-Way FEM (HC1) Winsorizing	
	Coefficients	p-value	Coefficients	p-value
Regulation	-	-	1,48050	$5.05 \times 10^{-05}***$
Size	-1,68377	$< 2.2 \times 10^{-16}***$	-1,41983	0,00062***

Market Share	18,15906	$2.9 \times 10^{-05***}$	17,71795	0,02482*
RBC	0,00002	0.9416	0,02953	0,00164**
ProductMix	1,14507	$5.4 \times 10^{-08***}$	1,10653	0,11031
Inflation	-	-	5,36408	0,32341
Obligation10Y	-	-	-0,21903	0,98032

Description: *** $p < 0.001$; * $p < 0.05$; . $p < 0.1$

Discussion

The following discussion integrates the findings within the frameworks of Classical ALM theory Babbel (2001), duration matching theory Anthony Saunders & Cornett (2018), and insurance risk management literature Möhlmann (2021) to provide theoretical depth to the empirical results. There are two structurally different phases. In the pre-regulatory phase (May 2021 to December 2024), DL gradually increased from 5.65 to 6.21 years, while DA moved relatively steadily, resulting in a narrowing DG from 2.94 years to 2.26 years.

This pattern is consistent with the findings of Domanski et al. (2017), which show that the growth of long-term life insurance liabilities tends to exceed adjustments on the asset side over the medium term. In the Indonesian context, the gradual increase in liability duration during this period likely reflects the industry's growing reliance on endowment and whole-life products with longer payout horizons, as well as the increasing proportion of annuity-type products consistent with the ageing demographic transition. The relatively stable DA during the pre-regulatory phase may reflect investment policy conservatism driven by minimum solvency requirements, particularly risk-based capital (RBC) regulations, which constrained companies' ability to actively extend asset duration in response to increasing liability durations.

In the post-regulatory phase (January 2025 to December 2025), a significant structural shift occurred. DA increased from 4.68 years in December 2024 to 4.77 years in January 2025, while DL experienced a slight decline. This resulted in an increase in the average DG to 3.90 years. This sudden shift indicates that the industry underwent substantial portfolio adjustments in response to asset reclassification obligations under SEOJK 23/2024. It is important to distinguish between two possible mechanisms underlying this shift: (1) a pure measurement or reporting effect, whereby assets previously unclassified by remaining maturity were reclassified into longer-duration tenor categories without an actual change in portfolio composition; and (2) a genuine portfolio restructuring effect, whereby companies actively increased their allocation to longer-maturity instruments in response to regulatory requirements. The aggregate increase in industry-level DA of 1.93 years, occurring abruptly at the January 2025 reporting cutoff, is most consistent with the reporting reclassification mechanism, although portfolio restructuring likely also played a secondary role as companies aligned investment strategies with the new reporting transparency requirements (Möhlmann, 2021).

After the RSE was conducted, the Regulation variable had a positive and significant effect on DG, confirming that the implementation of SEOJK 23/2024 increased companies' duration gaps. These findings are consistent with Möhlmann (2021), who found that changes in regulatory regimes in Europe drive significant changes in asset duration management behavior among life insurance companies. The underlying mechanism is a balance-sheet reporting transparency requirement that encourages companies to actively align their investment portfolios with their long-term liability profiles (Wiegelmann, 2026).

The observed increase in the duration gap following the regulation may represent an interim transitional phase rather than a permanent misalignment, as companies initially reclassify assets (thereby widening DG) before subsequently restructuring portfolios toward improved liability matching. Whether the widened duration gap represents an unintended consequence of regulatory reporting mechanics or a deliberate strategic response remains an empirically open question that future longitudinal studies should address as additional post-regulatory data become available.

Size has a negative and significant effect, indicating that larger companies tend to have smaller DGs, reflecting stronger ALM management capacity. These findings are consistent with Berends et al. (2013), who documented significant differences in interest rate sensitivity between large and small life insurers in the United States, as well as Liu et al. (2020), who found a significant relationship between company size and interest rate risk exposure. In the Indonesian

insurance context, larger insurers, typically those with assets exceeding IDR 10 trillion, benefit from broader access to long-term government bonds (*Surat Utang Negara* [SUN]/*Surat Berharga Negara* [SBN]) and corporate sukuk, more sophisticated in-house risk management teams, and greater portfolio diversification across asset classes and maturities. These structural advantages enable larger companies to implement more precise duration matching strategies, reducing the duration gap relative to smaller counterparts that may be constrained by shorter-tenor deposits and short-maturity bonds.

Market share has a positive and significant effect on the duration gap, indicating that companies with larger market shares exhibit larger duration gaps (Chattha et al., 2020). This finding may appear counterintuitive but can be explained through several mechanisms. Companies with dominant market shares, typically large conglomerates or state-owned insurers, tend to write a higher proportion of long-term traditional life products, such as whole-life and endowment policies, to serve broad retail customer bases. These long-duration liabilities create pressure to hold correspondingly long-duration assets; however, the scale and complexity of their liability profiles may result in persistent positive duration gaps because complete liability matching remains operationally challenging. This finding appears unique to the Indonesian insurance market structure and differs from evidence in more developed markets, where market share is typically associated with stronger ALM infrastructure.

The level of solvency has a positive and significant effect on the duration gap. This finding is consistent with Möhlmann (2021), who shows that life insurance companies tend to bear interest rate risk as a strategic choice because companies with larger capital buffers have greater capacity to tolerate exposure arising from larger duration gaps without immediate duration adjustment pressure. The possibility of reverse causality should also be considered: firms with persistently larger duration gaps may respond by building stronger capital buffers as a precautionary measure, rather than larger capital buffers causing greater risk tolerance. This relationship between solvency and duration gap management merits further investigation through instrumental variable approaches or dynamic panel models in future research (Cummins & Phillips, 2009).

Although Möhlmann (2021) found that product characteristics, such as the proportion of annuity products, significantly affect liability duration, the influence of product mix on duration gaps among Indonesian life insurance companies was not statistically significant in this study. This indicates that product composition alone is insufficient to consistently determine aggregate duration gaps, which are also influenced by asset-side characteristics. This finding may also reflect product homogeneity within the Indonesian life insurance market, where regulatory requirements to maintain minimum guaranteed benefits on traditional products limit variation in liability duration across companies. Additionally, the Product Mix measurement approach, using premium ratios, may not fully capture the duration impact of product portfolios because premiums can differ substantially from the present value of future liability cash flows (Tsai, 2009). A more precise measurement of product mix based on actuarial reserve calculations may yield different results in future research.

The insignificance of macroeconomic variables indicates that duration management within the Indonesian life insurance industry is determined more by internal structural and regulatory factors than by responses to fluctuations in monthly macroeconomic conditions. This finding contrasts with studies from European markets Domanski et al. (2017), where prolonged low-interest-rate environments prompted measurable changes in insurer duration behavior.

This divergence may reflect several Indonesia-specific factors: (1) OJK regulatory constraints that restrict investment in certain asset classes, thereby limiting the scope for rapid portfolio duration adjustments; (2) the relatively short monthly observation period, which may be insufficient to capture slower-moving macroeconomic responses in portfolio decisions; and (3) the dominance of government bond investments in Indonesian insurance portfolios, where availability and duration are influenced more by the Ministry of Finance's issuance strategy than by short-term macroeconomic fluctuations. Future research using quarterly data or longer observation periods may reveal longer-term macroeconomic effects.

CONCLUSION

This study concludes that the Indonesian life insurance industry consistently maintained

a positive duration gap, indicating that asset duration exceeded liability duration during the observation period. The implementation of SEOJK 23/2024 contributed to a wider duration gap by encouraging more transparent asset classification and reporting. Among the examined factors, company size negatively affected the duration gap, while market share and solvency ratio had positive effects, suggesting that internal firm characteristics and regulatory factors played a more dominant role than short-term macroeconomic fluctuations in determining duration management practices.

The study contributes to asset-liability management literature by highlighting the role of regulatory frameworks in shaping duration gap behavior in emerging insurance markets. The findings provide implications for regulators and insurers to strengthen differentiated supervision and improve asset-liability matching strategies. However, limitations related to duration measurement, aggregated regulatory data, limited explanatory power, and the short post-regulation observation period suggest that future research should incorporate more precise duration calculations, longer observation periods, and broader samples including sharia life insurance companies.

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