Jurnal Aplikasi Bisnis dan Manajemen (JABM), Vol. 11 No.1, January 2025
Permalink/DOI: http://dx.doi.org/10.17358/jabm.11.1.317

Available online
http://journal.ipb.ac.id/index.php/jabm

DETERMINANTS OF SOLVENCY AND PERFORMANCE IN INSURANCE: ROLE OF RISK-BASED CAPITAL IN STABILITY

Kevin Rafif[*)1], Noer Azam Achsani[*)], Laily Dwi Arsyanti[**)], Abylay Syzdykov[***)]

[*)]School of Business IPB University
Jl. Padjajaran, Bogor 16151, Indonesia
[**)]Department of Islamic Economics, Faculty of Economics and Management, IPB University
Jl. Agatis, Campus of IPB Dramaga, Bogor 16680, West Java, Indonesia
[***)]University of Glasgow
Glasgow G12 8QQ, United Kingdom

Article history:
Received
26 August 2024

Revised
28 September 2024

Accepted
12 November 2024

Available online
22 January 2025

This is an open access article under the CC BY license (https://creativecommons.org/licenses/by/4.0/)

Abstract:

Background: The insurance sector's solvency and performance are critical for financial stability, particularly under the influence of Risk-Based Capital (RBC) regulations. These regulations enhance industry resilience, mitigating financial instability risks.
Purpose: This study aims to identify the determinants of solvency and performance within the insurance industry, emphasizing the role of RBC regulations.
Methodology: A systematic literature review of 20 empirical studies, published from 2018 to 2024, was conducted. Studies were selected based on relevance to solvency and performance and analyzed for regional and economic trends.
Findings: Profitability, company size, and leverage were identified as significant internal factors influencing solvency. Specifically, profitability positively impacts solvency, while high leverage heightens vulnerability during economic downturns. RBC regulations contribute to industry stability but may restrict insurers' capacity for higher-yield investments, thereby affecting profitability.
Conclusion: Effective solvency management requires balanced regulatory strategies. RBC regulations support financial stability but must be crafted to allow growth, enabling insurers to manage risks while pursuing profitability.
State of the art: This research provides insights into RBC regulation effects on the insurance sector's financial health, offering policy recommendations to promote stability and growth.

Keywords: solvency, risk-based capital, insurance sector, profitability, regulatory frameworks

How to Cite:
Rafif K., Achsani N. A., Arsyanti L. D., & Syzdykov A. (2025). Determinants of Solvency and Performance in Insurance: Role of Risk-Based Capital in Stability. Jurnal Aplikasi Bisnis Dan Manajemen (JABM), 11(1), 317. https://doi.org/10.17358/jabm.11.1.317

[1] Corresponding author:
Email: manangkakevin@apps.ipb.ac.id

INTRODUCTION

The insurance sector is a key component of global financial systems, providing financial protection against various risks such as natural disasters, accidents, and economic crises. The stability of this sector hinges on insurers' ability to maintain solvency, a measure of financial health that reflects an insurer's capacity to meet long-term obligations to policyholders. Solvency not only indicates financial strength but also reflects an insurer's ability to withstand economic shocks without defaulting.

The 2008 global financial crisis underscored the importance of solvency, prompting stricter regulatory scrutiny and the adoption of more stringent solvency standards, particularly through Risk-Based Capital (RBC) requirements. RBC frameworks align capital requirements with an insurer's risk profile, enhancing the industry's resilience to financial shocks. However, the sector faces challenges like economic recessions, changing regulations, and evolving market dynamics, which emphasize the need for robust risk management practices and effective oversight. Besides solvency, metrics such as profitability, Return on Assets (ROA), and Earnings Per Share (EPS) provide additional insights into an insurer's operational efficiency and viability. The interaction between these financial metrics and external factors such as economic conditions and regulatory environments creates a complex landscape that insurers must navigate to ensure stability and success.

Despite extensive research on the factors influencing solvency and performance in the insurance sector, there is a need for a comprehensive synthesis of the existing literature. The complex interplay between internal financial metrics, external economic conditions, and regulatory frameworks calls for a systematic review that integrates diverse geographical and methodological perspectives. This systematic literature review (SLR) addresses this gap by analyzing empirical studies from 2018 to 2024, examining solvency and performance determinants across regions.

By synthesizing recent findings, this review aims to enhance understanding of how various factors impact insurance companies' solvency and performance. The insights provided are expected to contribute to the broader literature and offer valuable guidance for policymakers, regulators, and industry practitioners. Additionally, the review identifies gaps in existing research, such as the long-term effects of RBC regulations and the influence of macroeconomic factors on solvency and performance.

Several studies have explored factors influencing solvency and performance across regions and economic contexts. For example, research conducted by Moreno et al. (2020) in the Spanish insurance sector highlights a significant positive relationship between profitability and solvency margins. This finding is supported by Jawad & Ayyash (2019) in Palestine, who concluded that profitability directly enhances solvency ratios. Both studies underscore the critical role of profitability in maintaining solvency, particularly during periods of economic uncertainty.

However, other research suggests that the impact of factors like leverage and company size can vary. Horvey et al. (2024) found that larger insurance companies in South Africa tend to exhibit higher solvency, benefiting from economies of scale. However, they also noted that larger firms are more exposed to systemic risks. On the other hand, Grishunin et al. (2022) showed that higher leverage in Russian insurance companies increases the risk of insolvency, emphasizing the need for prudent leverage management, especially in volatile economic conditions.

Studies on the impact of Risk-Based Capital (RBC) regulations also provide mixed results. Sunday (2018), in a study on Nigerian insurers, found that RBC regulations significantly improve financial performance indicators such as Return on Assets (ROA) and Earnings Per Share (EPS), suggesting that these regulations promote financial stability. However, Chen et al. (2019) noted that in the U.S. property and casualty insurance sector, the costs associated with RBC implementation could restrict insurers from pursuing higher-risk investments, potentially limiting profitability.

This study builds upon these discussions by offering a more comprehensive analysis of the determinants of solvency and performance in the insurance sector. It identifies gaps in previous research, such as the long-term effects of RBC regulations and the influence of macroeconomic factors on solvency, which this review seeks to address.

While the literature provides valuable insights into the determinants of solvency and performance, several gaps remain. There is a need for more empirical studies on the long-term impacts of RBC regulations, especially in evolving market contexts. Additionally, further exploration of the role of macroeconomic factors, such as inflation and interest rates, in shaping solvency outcomes is warranted. Future research could also investigate the impact of digital transformation on solvency and performance and compare conventional and Sharia-compliant insurers to understand how different regulatory and cultural contexts influence these outcomes.

This review is guided by three primary research questions:

1. What are the key determinants of solvency in the insurance sector?
2. How do Risk-Based Capital (RBC) regulations impact the performance of insurance companies?
3. What factors influence the profitability of life insurance companies?

The SLR covers studies published between 2018 and 2024 across various regions, including Europe, Africa, Asia, and North America, utilizing methodologies like dynamic panel data analysis, regression models, and machine learning techniques. By reviewing these studies, this review provides a comprehensive synthesis of the current knowledge, offering insights for policymakers, regulators, and industry practitioners. It also identifies gaps in the literature, particularly regarding the long-term effects of RBC regulations and macroeconomic factors on financial outcomes, and highlights areas for future research to deepen understanding of solvency and performance dynamics.

METHODS

Data for this review were sourced from several academic databases, including Google Scholar, Web of Science, Scopus, JSTOR, and ScienceDirect. These databases were chosen for their extensive collections of peer-reviewed journals, conference proceedings, and other scholarly publications relevant to insurance, finance, and risk management.

The search strategy involved using targeted keywords and search terms related to solvency and performance in the insurance sector, such as “Insurance Solvency”, “Insurance Company Performance”, “Risk-Based Capital”, “Insurance Profitability”, ”Determinants of Solvency”, ”Dynamic Panel Data in Insurance”, and ”Risk Management in Insurance”. Boolean operators (AND, OR) were employed to refine searches, ensuring comprehensive coverage of relevant studies. The search focused on studies published between 2018 and 2024.
The inclusion criteria specified peer-reviewed articles and conference papers published within the chosen timeframe, with topics covering solvency, performance, and risk-based capital in the insurance sector, and employing quantitative methods (e.g., regression analysis, dynamic panel data models, machine learning techniques). Exclusions were made for non-peer-reviewed articles, editorials, opinion pieces, book reviews, studies unrelated to the insurance sector, or lacking empirical data.

This study adopts a systematic literature review (SLR) methodology to synthesize the existing research on the determinants of solvency and performance in the insurance sector. The SLR approach is particularly suited for this study as it provides a structured and comprehensive means of identifying, evaluating, and integrating findings from multiple studies across various contexts. The methodology ensures that the review is both rigorous and replicable, offering a clear and unbiased synthesis of the current state of knowledge.

The data extraction process involved systematically reviewing and recording information from each selected study. The information extracted from each study included the authors and year of publication, the title of the study, the country or region of focus, the data sources and time period covered, the research methodology used (such as regression analysis or dynamic panel data), key findings related to solvency, performance, and risk-based capital, and recommendations and implications for future research. The extracted data were then organized into a matrix to facilitate comparison across studies and to identify common themes and trends.

The analysis of the extracted data was conducted using both qualitative and quantitative methods. For the qualitative analysis, thematic coding was employed to categorize key findings from each study, allowing for the identification of recurring themes related to the determinants of solvency and performance. Studies were then grouped based on their focus areas, such as the

impact of RBC regulations, the role of risk management practices, and the influence of macroeconomic factors.

In the quantitative analysis, results from empirical studies employing similar methodologies were compared and contrasted. This comparison included studies that utilized dynamic panel data analysis, regression models, and other statistical techniques. Contextual factors like geographic location, regulatory environment, and economic conditions were also considered.

Figure 1 represents the process of conducting a systematic literature review (SLR), starting with the Research Question Formulation, where clear and focused questions are defined. Next, in the Data Search and Collection phase, relevant literature is gathered from various sources. The Screening and Eligibility step involves filtering studies based on predefined inclusion and exclusion criteria. Data Extraction and Categorization is where key information is pulled from the selected studies and organized. Then, in Synthesis and Analysis, the data is interpreted and combined to provide meaningful insights. Finally, the Results and Discussion phase involves discussing findings, drawing conclusions, and identifying gaps or implications for future research.

This study hypothesizes that:
1. Profitability positively influences solvency, as higher profits allow insurers to build capital reserves essential for financial stability.
2. Company size contributes positively to solvency through economies of scale, although larger firms may also face increased exposure to systemic risks.
3. Leverage increases the risk of insolvency, especially during economic downturns, making prudent leverage management essential.
4. RBC regulations, while generally enhancing financial stability, may restrict profitability by limiting insurers' ability to pursue higher-risk, higher-yield investments.

The methodology used in this review, while rigorous and systematic, has some limitations that should be considered. One notable limitation is publication bias, where studies with significant or positive findings are more likely to be published, potentially skewing the results of the review. Another limitation is language bias, as the review only includes English-language studies, which may exclude relevant research published in other languages, thus limiting the comprehensiveness of the review. Additionally, the review is constrained by time, focusing only on studies published between 2018 and 2024. This time constraint may result in the exclusion of earlier research that could still be relevant to the topic. Despite these limitations, the methodology employed in this review ensures a thorough and unbiased synthesis of the current literature on the determinants of solvency and performance in the insurance sector.

RESULTS

Overview of Solvency and Performance in the Insurance Sector

Solvency is essential for evaluating the financial health of insurance companies, indicating their capacity to meet long-term obligations. The 2008 financial crisis highlighted the need for solvency standards, leading to Risk-Based Capital (RBC) frameworks that align capital reserves with risk exposure. These frameworks bolster sector resilience but interact complexly with performance metrics like ROA and ROE.

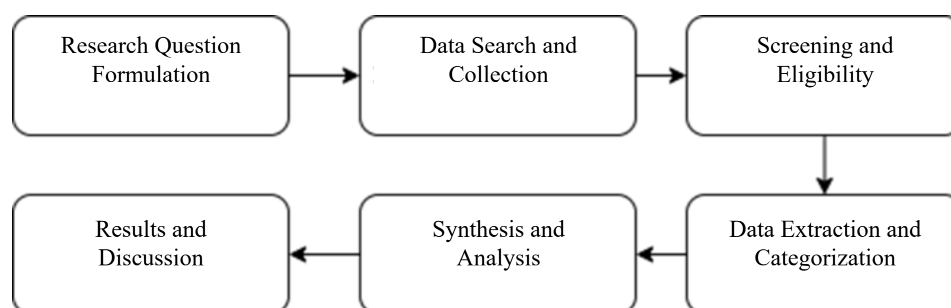

Figure 1. Systematic literature review process for determinants of solvency in the insurance sector

Internal Determinants of Solvency

Profitability and Solvency

Profitability is a key determinant of solvency, allowing insurers to build capital reserves necessary for financial stability. Studies across different regions confirm this relationship. For instance, (Moreno et al. 2020) found that higher profitability positively correlates with increased solvency margins in the Spanish insurance sector, while Jawad and Ayyash (2019) concluded that profitability strengthens solvency among Palestinian insurers. These findings reinforce that profitable insurers are better equipped to maintain stability, particularly in uncertain economic periods.

Company Size and Leverage

Company size influences solvency, with larger insurers benefiting from economies of scale. Horvey et al. (2024) found that larger South African insurers exhibit higher solvency due to scale advantages, though they may face systemic risks. Leverage also impacts solvency; while it can enhance returns, it raises insolvency risk in volatile markets. Grishunin et al. (2022) observed that higher leverage increases insolvency risk in Russian insurers, highlighting the importance of prudent leverage management. Djayadi et al. (2018) analyzed RBC models in Indonesian insurance companies and found that effective leverage management, supported by RBC frameworks, is crucial for maintaining solvency, especially in volatile economic environments. These findings underscore the importance of prudent leverage management, particularly in markets where economic conditions are less stable.

External Determinants of Solvency

Economic Conditions

Economic factors, including interest rates and inflation, significantly impact solvency. Nguyen and Vo (2020) noted that during economic downturns, even well-capitalized European insurers face solvency challenges due to increased claims and lower returns. In Indonesia, Tumbelaka et al. (2021) found that poor investment strategies during downturns increase insolvency risk, underscoring the role of stable economic conditions in maintaining insurer solvency.

Regulatory Frameworks

Regulatory frameworks, particularly RBC regulations, play a critical role in ensuring the solvency of insurance companies. RBC frameworks require insurers to hold capital reserves that are proportional to their risk exposures, thereby reducing the likelihood of insolvency. However, the effectiveness of these regulations can vary depending on the broader economic context. Morara and Sibindi (2021) explored the impact of RBC regulations on the financial performance of Kenyan insurers and found that while these regulations generally enhance solvency, their effectiveness is contingent on the economic environment. The study suggested that in less stable economic conditions, RBC regulations might need to be adjusted to better support insurers' solvency.

Siopi et al. (2023) examined the role of regulatory frameworks in the solvency of European insurers, focusing on the Solvency II directive. Their findings indicated that while Solvency II has been effective in enhancing the financial stability of insurers, its impact on solvency varies depending on the economic conditions in which it is implemented. This suggests that while stringent capital requirements are essential for maintaining solvency, they must be balanced with the economic realities of the market to avoid placing undue strain on insurers.

Impact of Risk-Based Capital (RBC) Regulations on Performance

RBC regulations align capital requirements with underwriting risks, enhancing financial stability but potentially limiting profitability. (Sunday 2018) found that RBC frameworks improved ROA and EPS among Nigerian insurers, encouraging more conservative risk management. Similarly, Lee et al. (2019) observed that RBC regulations increased efficiency and competitiveness in Malaysian Takaful companies. However, Chen et al. (2019) noted that higher RBC costs in the U.S. restrict insurers from engaging in riskier, high-return investments, presenting a trade-off between stability and profitability. Table 1 summarizes the main findings across different studies, showcasing the regional and contextual impacts of various solvency determinants.

Table 1. Key determinants of solvency in the insurance sector

Determinant	Effect on Solvency	Regional Insights	Source
Profitability	Positive relationship with solvency	Enhanced solvency margins in Spanish insurers	Moreno et al. (2020)
Company Size	Positive due to economies of scale	Larger firms in South Africa benefit but face systemic risks	Horvey et al. (2024)
Leverage	Increases insolvency risk	High leverage in Russia raises risk of insolvency	Grishunin et al. (2022)
RBC Regulations	Enhances stability but limits profitability	U.S. insurers face limited risk-taking capacity	Chen et al. (2019)

Factors Influencing Profitability in Life Insurance Companies

Profitability in life insurance companies is influenced by a variety of factors, including investment income, company size, leverage, and macroeconomic conditions. Investment income, in particular, emerges as a primary driver of profitability. Horvey et al. (2024) found that in South Africa, investment income significantly boosts profitability, particularly for firms with diversified portfolios. This finding aligns with the broader literature, which suggests that life insurers with strong investment strategies are better positioned to achieve higher profitability, even in challenging economic environments.

Sukmaningrum et al. (2023) examined the productivity of Sharia life insurance companies in Indonesia and identified several factors that influence profitability, including solvency, interest rates, inflation, and exchange rates. Their study concluded that the underperformance of Sharia life insurers in Indonesia could be attributed to a lack of technological advancements and the significant influence of macroeconomic variables on productivity. These findings suggest that life insurers need to adopt robust and diversified investment strategies to enhance profitability in the face of evolving market conditions.

Macroeconomic variables such as interest rates, inflation, and exchange rates also play a significant role in influencing profitability. Nasution et al. (2019) observed that these variables have a more pronounced effect in Malaysia than in Indonesia, indicating regional differences in the influence of macroeconomic conditions on insurance performance. The findings suggest that life insurers need to be particularly vigilant about macroeconomic trends and their potential impact on profitability. By tailoring their risk management and investment strategies to local economic conditions, insurers can mitigate adverse effects and enhance their financial performance.

Determinants of Solvency in the Insurance Sector

Profitability as a Key Determinant

Profitability emerges as a critical determinant of solvency, as highlighted by several studies in this review. (Moreno et al. 2020) demonstrate that in the Spanish insurance sector, higher profitability is positively associated with increased solvency margins. This relationship is corroborated by Jawad and Ayyash (2019), who find that profitability directly enhances solvency ratios among Palestinian insurers. These studies underscore the importance of maintaining robust profitability, which enables insurers to build capital reserves necessary to buffer against financial shocks and ensure long-term solvency.

Impact of Company Size and Leverage

The relationship between company size and solvency is complex and multifaceted. Horvey et al. (2024) note that larger insurers in South Africa generally exhibit higher solvency, though they also caution that this relationship is not always linear. Conversely, Grishunin et al. (2022) reveal that in the Russian insurance market, higher leverage increases the risk of insolvency, negatively impacting solvency. These findings suggest that while larger companies may benefit from economies of scale, excessive leverage can undermine financial stability. Insurers must, therefore, carefully manage their capital structures to optimize solvency outcomes, particularly in volatile economic environments.

Economic Conditions and Regulatory Frameworks

External factors such as economic conditions and regulatory frameworks play a crucial role in determining solvency. Nguyen and Vo (2020) emphasize that the effectiveness of Enterprise Risk Management (ERM) practices in European insurers is heavily dependent on the broader economic environment. During economic downturns, even well-capitalized insurers face solvency challenges due to increased claims and reduced investment returns. Similarly, Morara and Sibindi (2021) highlight the importance of regulatory frameworks, particularly Solvency II and its equivalents, in maintaining solvency in the Kenyan insurance market. However, Siopi et al. (2023) find that while stringent regulatory frameworks like solvency capital requirements (SCR) are essential for maintaining solvency, their effectiveness is contingent on the economic context. These findings underscore the necessity for flexible regulatory frameworks that can adapt to varying economic conditions, thereby ensuring the sustained solvency of insurers.

Impact of Risk-Based Capital (RBC) Regulations on Performance

RBC Regulations Enhancing Financial Stability

The evidence suggests that RBC regulations generally enhance financial stability by enforcing stricter capital requirements, compelling insurers to adopt more prudent risk management practices. For instance, Sunday (2018) shows that RBC regulations significantly improve Return on Assets (ROA) and Earnings Per Share (EPS) among Nigerian insurers, while Lee et al. (2019) observe increased efficiency and competitiveness in Malaysian Takaful companies following the implementation of RBC frameworks. Chache et al. (2021) explored the intervening effect of asset allocation on the relationship between RBC and investment returns in Kenyan insurance companies, revealing that RBC significantly influences asset allocation decisions, which in turn affect overall investment performance. Lim et al. (2021) explored the impact of RBC frameworks on the Malaysian insurance sector, noting that while these regulations enhanced efficiency and competitiveness, the response varied between conventional and Takaful insurers. These studies highlight the critical role of RBC regulations in fostering a stable insurance sector by aligning capital requirements with the risk profiles of insurers.

Additionally, Sugandi and Gantyowati (2024) found that during the COVID-19 era, key financial ratios such as the liquidity ratio, RBC, and investment adequacy ratio played a significant role in predicting financial distress in Indonesian life insurance firms. Their study highlights the importance of maintaining robust RBC levels to ensure financial resilience in times of economic uncertainty, emphasizing that RBC, along with other financial ratios, contributes significantly to safeguarding the stability of insurance firms. These findings further underscore the critical role of RBC regulations in fostering a stable insurance sector by aligning capital requirements with the risk profiles of insurers.

Trade-offs Between Stability and Profitability

While RBC regulations contribute to financial stability, they may also limit insurers' ability to pursue higher-risk, higher-return investments. Chen et al. (2019) find that U.S. property and casualty insurers with higher RBC costs tend to divest from risky assets during financial crises, which can constrain profitability. Mentari and Baskoro (2023) highlighted this challenge in the reinsurance sector, where RBC factors significantly influence business and profitability, particularly in Indonesia. This stability-profitability tension suggests RBC regulations should balance profitable investment flexibility with adequate capital buffers. Policymakers should consider revising RBC frameworks to accommodate the unique risk-taking needs of insurers without compromising overall financial stability.

Factors Influencing Profitability in Life Insurance Companies

Investment Income as a Driver of Profitability

Investment income is consistently identified as a primary driver of profitability in life insurance companies. Horvey et al. (2024) find that in South Africa, investment income significantly boosts profitability, particularly for firms with diversified portfolios. Similarly, Sukmaningrum et al. (2023) highlight the importance of investment returns in driving the productivity and profitability of Sharia life insurers in Indonesia. Schlütter et al. (2022) emphasized the importance of responsible investment strategies in life insurers' portfolios under solvency constraints, demonstrating that while responsible investments can stabilize returns, they must be carefully managed

to avoid compromising profitability. These findings underscore the need for life insurers to adopt robust and diversified investment strategies to enhance profitability in the face of evolving market conditions.

Macroeconomic Variables and Market Conditions

Macroeconomic variables such as interest rates, inflation, and exchange rates play a significant role in influencing profitability. Nasution et al. (2019) observe that these variables have a more pronounced effect in Malaysia than in Indonesia, indicating regional differences in the influence of macroeconomic conditions on insurance performance. The findings suggest that life insurers need to be particularly vigilant about macroeconomic trends and their potential impact on profitability. By tailoring their risk management and investment strategies to local economic conditions, insurers can mitigate adverse effects and enhance their financial performance.

Emerging Themes and Future Research Directions

Long-term Impact of RBC Regulations

One gap in the literature is the long-term impact of RBC regulations on solvency and performance. While short-term benefits are evident, the sustainability of these impacts over extended periods remains underexplored. Future research should focus on longitudinal studies to assess the durability of RBC's benefits, particularly in the context of evolving market dynamics and technological advancements.

Digital Transformation and Risk Management

Another emerging theme is the impact of digital transformation on solvency and performance. As insurers increasingly adopt digital tools for risk management and investment, there is a need to explore how these technologies can be leveraged to enhance solvency and profitability. Future studies could investigate the role of artificial intelligence and machine learning in optimizing risk management practices.

Comparative Analysis of Conventional and Sharia Insurance

Alokla et al. (2023) provided evidence from the Takaful insurance industry, showing that factors such as company size and cost structures significantly affect solvency in Takaful operations compared to conventional insurers. Finally, the review highlights the need for comparative studies between conventional and Sharia-compliant insurers. Given the different regulatory and cultural contexts, understanding how these factors influence solvency and performance could provide valuable insights for both types of insurers.

Managerial Implications

This study provides actionable insights for insurance managers. Firstly, profitability is shown to be a key determinant of solvency, which underscores the importance of profit-driven strategies that enhance capital reserves and overall financial stability. Managers should prioritize efficient cost management and profitable investments, ensuring that profitability contributes directly to solvency enhancement.

Furthermore, the results suggest that company size can both benefit and challenge solvency due to economies of scale and systemic risk exposure, respectively. Managers of larger insurance firms should leverage their scale advantages while implementing robust risk management practices to mitigate systemic risks, especially in volatile markets.

Leverage management also emerges as a crucial factor, as high leverage can increase insolvency risks, particularly during economic downturns. Managers should aim for an optimal capital structure that balances growth and risk, with a strong emphasis on maintaining prudent leverage ratios in uncertain economic environments.

Risk-Based Capital (RBC) regulations, while essential for stability, may limit insurers' capacity to pursue higher-yield investments. Managers should therefore engage in strategic planning that aligns investment decisions with RBC requirements, balancing compliance with growth objectives. Additionally, they should advocate for flexible regulatory frameworks that allow for adaptive risk-taking without compromising solvency.

By integrating these insights into their decision-making processes, managers can strengthen their organizations' solvency, resilience, and profitability in a rapidly changing regulatory and economic landscape.

CONCLUSION AND RECOMMENDATIONS

Conclusions

This systematic literature review explored the determinants of solvency and performance in the insurance sector, with a focus on the impact of Risk-Based Capital (RBC) regulations and profitability factors in life insurance companies. By synthesizing findings from various empirical studies across regions, this review highlights the complex interactions among internal financial metrics, external economic conditions, and regulatory frameworks.

The review identified profitability, effective risk management practices, and company size as key internal determinants of solvency. Profitable companies are generally better positioned to maintain higher solvency margins, aligning with findings from Moreno et al. (2020) and Jawad and Ayyash (2019), who demonstrated positive relationships between profitability and solvency in diverse contexts. Effective risk management, particularly when integrated with governance structures, also plays a critical role in safeguarding financial stability. The influence of external factors, such as economic conditions and regulatory oversight, was underscored, with studies by Nguyen and Vo (2020) and Tumbelaka et al. (2021) showing that solvency is highly sensitive to economic downturns, even for well-capitalized insurers.

The impact of RBC regulations on insurance company performance was found to generally support financial stability, as evidenced in studies on Nigerian and Malaysian insurers (Sunday, 2018; Lee et al. 2019). However, the relationship with profitability is more nuanced. For example, Chen et al. (2019) found that higher RBC costs in the U.S. limit insurers' ability to pursue profitable, higher-risk investments, suggesting that while RBC regulations enhance stability, they may also restrict growth under certain conditions. This highlights the need for a balanced regulatory approach that promotes financial stability without stifling insurers' capacity to innovate and expand.

Profitability in life insurers is influenced by investment income, company size, leverage, and macroeconomic conditions. Larger insurers benefit from economies of scale, yet there are diminishing returns to size in highly competitive markets, which aligns with the findings of Horvey et al. (2024). The relationship between leverage and profitability was observed to be contingent on effective risk management practices, with high leverage posing significant risks in unstable economic environments, as supported by (Grishunin et al. 2022).

Recommendations

Policymakers should balance RBC regulations for financial stability with flexibility for profitable investments, especially in emerging markets. Economic indicators should be integrated into regulatory frameworks to help insurers navigate downturns effectively. Incentives, such as tax breaks, could promote innovation in risk management, supporting the adoption of advanced tools and technologies.

Regulators should strengthen oversight of risk management practices, conduct regular audits, and adjust RBC requirements to fit current market conditions. Enhanced financial transparency through detailed disclosures on solvency, investment strategies, and RBC impacts would also improve sector resilience. For industry practitioners, comprehensive risk management frameworks aligned with business strategies are essential. Diversifying investment portfolios can better manage risks and returns, while careful leverage management can protect solvency in uncertain conditions. Utilizing technologies like AI and machine learning can further improve risk assessments, strengthening both solvency and profitability.

Future Research Directions

The review also identifies several areas for future research that could further advance the understanding of solvency and performance in the insurance sector:

Longitudinal Studies on RBC Regulations

Future research should explore the long-term impacts of RBC regulations, particularly in the context of evolving market dynamics and technological advancements. Longitudinal studies could provide valuable insights into how these regulations influence solvency and performance over time.

Comparative Studies Across Different Markets

Comparative studies between developed and emerging markets could shed light on how different economic and regulatory environments influence the effectiveness of RBC regulations and risk management practices.

Impact of Digital Transformation

As the insurance sector undergoes digital transformation, future research could investigate how technological advancements affect solvency and performance. This includes exploring the role of digital tools in enhancing risk management and optimizing investment strategies.

Non-Linear Relationships Between Profitability and Its Determinants

Further research is needed to understand the non-linear and contingent relationships between profitability and its determinants, particularly in the context of emerging markets. This could involve the use of advanced econometric models to capture the complexities of these relationships.

By addressing these areas, future research can contribute to a more nuanced understanding of the factors that drive solvency and performance in the insurance sector, ultimately supporting the development of more effective regulatory frameworks and business practices.

FUNDING STATEMENT: This research did not receive any specific grant from public, commercial, or not-for-profit funding agencies.

CONFLICT OF INTEREST: The author declares no conflict of interest.

REFERENCES

Alokla, J., Daynes, A., Pagas, P., & Tzouvanas, P. (2023). Solvency determinants: Evidence from the Takaful insurance industry. Geneva Papers on Risk and Insurance: Issues and Practice, 48(4), 847–871. https://doi.org/10.1057/s41288-021-00263-1

Chache, W. O., Mwangi, C., Angima, K., & Nyamute, W. (2021). Risk-based capital and investment returns of insurance companies in Kenya-The intervening effect of asset allocation. African Development Finance Journal, 5(2), 65–80. Retrieved from http://journals.uonbi.ac.ke/index.php/adfj

Chen, T., Goh, J. R., Kamiya, S., & Lou, P. (2019). Marginal cost of risk-based capital and risk-taking. Journal of Banking & Finance, 103, 130–145. https://doi.org/10.1016/j.jbankfin.2019.03.011

Djayadi, H., Adrianto, H. J., & Arifian, D. (2018). The model of insurance companies risk-based capital. International Journal of Economics and Financial Issues, 8(6), 61–64. https://doi.org/10.32479/ijefi.7164

Grishunin, S., Bukreeva, A., & Astakhova, A. (2022). Analysing the determinants of insolvency and developing the rating system for Russian insurance companies. Procedia Computer Science, 199, 190–197. https://doi.org/10.1016/j.procs.2022.01.024

Horvey, S. S., Odei-Mensah, J., & Mushai, A. (2024). The determinants of life insurance companies profitability in South Africa: New evidence from a dynamic panel threshold estimation technique. International Journal of Emerging Markets. Forthcoming.

Jawad, Y. A. L. A., & Ayyash, I. (2019). Determinants of the solvency of insurance companies in Palestine. International Journal of Financial Research, 10(6), 188–195. https://doi.org/10.5430/ijfr.v10n6p188

Lee, H. S., Cheng, F. F., Nassir, A. M., & Razak, N. H. A. (2019). Impacts of risk-based capital regulation in Malaysian Islamic insurers (Takaful). Asian Academy of Management Journal of Accounting and Finance, 15(1), 27–59. https://doi.org/10.21315/aamjaf2019.15.1.2

Lim, Q. M., Lee, H. S., & Har, W. M. (2021). Efficiency, productivity and competitiveness of the Malaysian insurance sector: An analysis of risk-based capital regulation. Geneva Papers on Risk and Insurance: Issues and Practice, 46(1), 146–172. https://doi.org/10.1057/s41288-020-00173-8

Mentari, I. P. P., & Baskoro, R. A. (2023). Risk-based capital factors' impact for reinsurance's business and profitability. Eduvest - Journal of Universal Studies, 3. Retrieved from http://eduvest.greenvest.co.id

Morara, K., & Sibindi, A. B. (2021). Determinants of financial performance of insurance companies: Empirical evidence using Kenyan data. Journal

of Risk and Financial Management, 14(12), 566. https://doi.org/10.3390/jrfm14120566

Moreno, I., Parrado-Martínez, P., & Trujillo-Ponce, A. (2020). Economic crisis and determinants of solvency in the insurance sector: New evidence from Spain. Accounting & Finance, 60(3), 2965–2994. https://doi.org/10.1111/acfi.12422

Nasution, Z., Adiba, E. M., & Abdulrahim, M. O. (2019). Comparison analysis of risk-based capital (RBC) performance and its effect on Islamic insurance profitability in Indonesia and Malaysia. al-Uqud: Journal of Islamic Economics, 3(2), 149–160. https://doi.org/10.26740/al-uqud.v3n2.p149-160

Nguyen, D. K., & Vo, D.-T. (2020). Enterprise risk management and solvency: The case of the listed EU insurers. Journal of Business Research, 113, 360–369. https://doi.org/10.1016/j.jbusres.2019.09.034

Schlütter, S., Fianu, E. S., & Gründl, H. (2022). Responsible investments in life insurers' optimal portfolios under solvency constraints (Report No. 45). Mainz. Retrieved from https://ssrn.com/abstract=4152663

Siopi, E., Poufinas, T., Chen, J. M., & Agiropoulos, C. (2023). Can regulation affect the solvency of insurers? New evidence from European insurers. International Advances in Economic Research, 29(1–2), 15–30. https://doi.org/10.1007/s11294-023-09867-w

Sugandi, D. S., & Gantyowati, E. (2024). Enhancing financial resilience: A study of financial ratios to predict financial distress in Indonesian life insurance firms during COVID-19 era. Jurnal Aplikasi Bisnis dan Manajemen, 10(1). https://doi.org/10.17358/jabm.10.1.22

Sukmaningrum, P. S., Hendratmi, A., Shukor, S. binti A., Putri, M. R., & Gusti, R. P. (2023). Determinants of Sharia life insurance productivity in Indonesia. Heliyon, 9(6), e16605. https://doi.org/10.1016/j.heliyon.2023.e16605

Sunday, A. S. (2018). Risk and non-risk based capitalization effect on performance of listed insurers in Nigeria (Doctoral dissertation). Universiti Putra Malaysia, Selangor.

Tumbelaka, I., Dimasqy, D., Yusgiantoro, I. B., & Mardiyyah, M. M. (2021). Does investment portfolio affect insurance failure? Evidence from Indonesia. Jakarta: Otoritas Jasa Keuangan.