Chapter 1

An Analysis of Factors Affecting Profitability in the Insurance Sector: Evidence from Turkish Insurance Companies

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Abstract

Achieving sustainable development in emerging economies is contingent upon the effective and efficient operation of all sectors. The financial sector plays a critical role in supporting individuals and institutions within an economy by ensuring resource allocation and promoting investments. Alongside banking activities, the insurance sector has taken on a significant role in Türkiye's financial landscape, contributing to the nation's economic development through its recent growth and profitability. This study analyzes the factors influencing the return on assets (ROA) of firms operating in the Turkish insurance sector. Quarterly data from 28 insurance firms for the period between the first quarter of 2014 and the second quarter of 2024 were analyzed using panel data analysis. The results indicate that premium size, leverage ratio, and BIST variables have a significant impact on the return on assets of insurance companies, while liquidity ratio and conservation ratio do not exhibit significant effects.

Introduction

The insurance sector, one of the key players in the financial industry, fulfills vital roles for global economies by managing and mitigating risks faced by both individuals and businesses. As a cornerstone of modern economies, this sector supports economic stability and contributes to the sustainability of the financial system by distributing risk across individuals and institutions (Haiss & Sümegi, 2008:406; Lee, 2014:681). Insurance companies not only manage the risks of individuals and institutions through

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their products and services but also engage in activities that safeguard the overall health of the economy.

The economic significance of the insurance sector emerges particularly through risk redistribution and management. By collecting premiums from policyholders, insurance companies allocate these funds to cover future damages and losses. Insurance facilitates the sharing and broad distribution of risks, preventing significant financial losses at the individual and institutional levels (Mehari & Aemiro, 2013:246). The critical activities performed by the insurance sector help to mitigate sudden and large financial fluctuations in economies.

The functions of the insurance sector extend beyond risk management alone (Oscar Akotey et al., 2013:286). Insurance companies also contribute significantly to investment and capital markets (Ahmed et al., 2010). By investing the collected premiums in various financial instruments, they support economic growth and employment. These funds also serve as a source of financing for governments, enabling long-term investments. Thus, insurance companies act not only as economic agents for individuals and firms but also for states, especially in countries facing resource constraints, where they help reintegrate idle funds into the economy and protect resources.

The insurance sector assumes a crucial role in ensuring sustainable development in modern economies. In recent years, unexpected events such as natural disasters, accidents, and pandemics have underscored the sector's importance in increasing societal resilience and accelerating recovery processes, thereby supporting stable economic growth (Lim & Rokhim, 2021:982). Additionally, by raising awareness of risk perception and management, the insurance sector fosters more informed decision-making processes (Camino-Mogro & Bermúdez-Barrezueta, 2019:831).

As the insurance sector continues to strengthen its position in economies, it demonstrates resilience and adaptability in response to major risks such as global financial crises, natural disasters, and pandemics. The performance of insurance companies during such challenging periods plays a decisive role in the overall health of the economy. Therefore, examining the factors affecting profitability in the insurance sector is not only crucial for the financial success of these companies but also for maintaining economic stability and growth.

This research aims to identify the factors influencing the profitability of insurance companies and analyze their broader economic implications. The study will explore the financial performance of insurance companies and

evaluate the impact of these factors on the sector's profitability. By doing so, the research seeks to contribute to the development of financial strategies for insurance companies and the shaping of economic policies.

To achieve this, quarterly data from 28 firms operating in the Turkish insurance sector, covering the period from Q1 2014 to Q2 2024, were compiled to analyze the factors affecting insurance companies' profitability. The data, obtained from the Turkish Insurance Association, were analyzed using panel data analysis techniques. The results of the study are particularly significant as they include the pandemic period, which had a direct impact on the insurance sector, and provide insights for future investments in the insurance industry.

1. Literature Review

Academic studies on the factors affecting the profitability of insurance companies provide valuable insights into both the key determinants of financial performance and the long-term impacts of these factors on the insurance sector. The literature has examined profitability factors from various perspectives, revealing how macroeconomic conditions, market structure, internal dynamics, and regulatory frameworks shape the financial performance of insurance companies. In this context, the studies have compared the profitability dynamics of insurance companies in both developed and developing countries, analyzing how the sector responds to different economic conditions and which strategies prove successful.

The literature review not only deepens the existing knowledge on the profitability of the insurance sector but also establishes a crucial foundation for future research in this field. This study aims to identify gaps in the literature and develop a more comprehensive and up-to-date understanding of the financial performance of the insurance sector. Some of the studies on this topic in the literature are summarized in Table 1.

Tablo 1. Literature Review

Author(s)	**Study Periods**	**Methods**	**Results**
Elitaş et al. (2012)	2010-2011	Grey relational analysis	The results demonstrate a significant relationship between the liquidity ratios of insurance companies and their financial performance.
Boadi et al. (2013)	2005-2010	Panel regression analysis	The study results show that leverage and liquidity are effective factors influencing profitability.
Doğan (2013)	2005-2011	Panel regression analysis	The results obtained from the study reveal that while the loss ratio, leverage ratio, and liquid asset variables negatively affect profitability, asset size positively influences profitability.
Alhassan et al. (2015)	2007-2011	Data envelopment analysis	The results obtained from the study indicate that leverage ratio and inflation are factors that affect profitability.
Kripa and Ajasllari (2016)	2008-2013	Panel regression analysis	The results indicate that the growth rate is positively related to profitability, whereas liabilities, liquidity, and fixed assets are negatively related.
Ullah et al. (2016)	2004-2014	Ordinary least squares	The study has revealed a significant relationship between insurance risk and profitability.
Berhe and Kaur (2017)	2005-2014	Panel regression analysis	The study results indicate that the capital adequacy ratio, liquidity ratio, and GDP growth rate have significant effects on the profitability of insurance companies.
Kramaric et al. (2017)	2010-2014	Panel regression analysis	The study results show that GDP and age variables have significant effects on the profitability of insurance companies.
Camino-Mogro and Bermúdez-Barrezueta (2019)	2001-2017	Panel regression analysis	The obtained results indicate that capital adequacy and liquidity ratios have significant impacts on profitability.
Eling and Jia (2019)	2003-2013	Stochastic Frontier Analysis and Data Envelopment Analysis	The results demonstrate that efficiency is a significant variable affecting profitability in the insurance sector.

Abdeljawad et al. (2020)	2006-2018	Panel regression analysis	The study results reveal that firm size, growth rate, and liquidity variables have significant effects on profitability.
Azmi et al. (2020)	2013-2017	Panel regression analysis	The results indicate that firm size, liquidity ratio, equity growth rate, economic growth, and interest rates have significant effects on profitability.
Bhattarai (2020)	2012-2018	Panel regression analysis	The study results show that financial leverage and firm size are factors that influence profitability.
Ben Dhiab (2021)	2009-2017	System GMM	The results indicate that the ratio of tangible fixed assets and the rate of premium increase have significant effects on profitability.
Ahmeti and Iseni (2022)	2015-2022	Panel regression analysis	The results have demonstrated that firm size and firm age significantly influence profitability.

2. Data and Methodology

In this study, quarterly data from 28 firms operating in the Turkish insurance sector, covering the period from the first quarter of 2014 to the second quarter of 2024 (a total of 42 quarters), were obtained from the official statistics of the Insurance Association of Türkiye. Information regarding the insurance companies included in the study is presented in Table 2.

Table 2. Insurance Companies Examined in the Study

Firm's Title			
Ak Sigorta AŞ	BNP Paribas Cardif Sigorta	Gulf Sigorta	Orient Sigorta
Allianz Sigorta AŞ	Coface Sigorta AŞ	Türkiye Sigorta	Quick Sigorta
AgeSA Hayat ve Emeklilik	Doğa Sigorta	HDI Sigorta	Ray Sigorta
Anadolu Anonim Türk Sigorta	Ethica Sigorta	Koru Sigorta	Sompo Sigorta
Anadolu Hayat Emeklilik	Eureko Sigorta	Magdeburger Sigorta	Şeker Sigorta
Axa Sigorta	Generali Sigorta	Mapfre Sigorta	Unico Sigorta
Bereket Sigorta	Groupama Sigorta	Neova Sigorta	Zurich Sigorta

The regression model used in the study is presented in Equation 1, and information regarding the variables is provided in Table 3.

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 LIQ_{it} + \beta_3 CON_{it} + \beta_4 LEV_{it} + \beta_5 BIST_i + \varepsilon_{it} \quad (1)$$

In the above Model 1, the dependent variable ROA represents the return on assets of the insurance companies, β_0 is the constant term, SIZE represents the premium production of the insurance companies, LIQ denotes the liquidity ratio of the companies, CON refers to the conservation ratio, LEV stands for the leverage ratio, BIST is a dummy variable indicating whether the firms are publicly traded, and ε represents the error term of the model. Additionally, *i* indicates the insurance companies, while *t* represents the time period of the study. The basic information regarding the variables used in Model 1 is provided in Table 3.

Table 3. Variables Used in the Study

Variable Type	Variable	Calculation	Symbol	Expected Impact	Source
Dependent Variable	Return on Asset	Net Profit / Total Assets	ROA		Insurance Association of Türkiye
Independent Variables	Premium Size	Natural Logarithm of Gross Premiums	SIZE	+	
	Liquidity Ratio	Current Assets / Short-Term Liabilities	LIQ	+/-	
	Conservation Ratio	Collected Premiums (Net) / Collected Premiums (Gross)	CON	+	
	Leverage Ratio	Total Liabilities / Total Assets	LEV	-	
	BIST	Dummy variable that takes the value "1" if the insurance company is traded on the stock exchange, otherwise "0".	BIST	+	

In the study, the quarterly data spanning 42 periods from 2014 to 2024 were analyzed using panel data analysis methods. The analyses were conducted using the Stata 15 software. The summary statistics of the data are presented in Table 4.

Tablo 4. Summary Statistics

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
ROA	1,096	0.015	0.055	-0.432	0.255
SIZE	1,096	8.634	1.031	4.847	10.774
LIQ	1,096	1.610	1.675	0.679	20.767
CON	1,096	0.729	0.691	-0.073	17.704
LEV	1,096	0.783	1.135	0.056	1.254
BIST	1,096	0.229	0.420	0	1

Upon examining the results in Table 4, the following observations can be made:

ROA (Return on Assets): With an average value of 1.58%, the return on assets of the companies is relatively low, and some firms even exhibit negative values (down to -43%), indicating that some companies are not utilizing their assets effectively.

SIZE (Premium Size): The average premium size for insurance companies is 8.63. Since the standard deviation is low, premium sizes are generally similar across companies, suggesting a homogeneous distribution.

LIQ (Liquidity Ratio): The average liquidity ratio is 1.61, with some companies displaying significantly higher liquidity ratios (up to 20.76). This indicates that there are notable differences in liquidity management among insurance companies.

CON (Conservation Ratio): The average conservation ratio is 0.73, meaning that approximately 73% of insurance companies retain their existing policies. With low variance, this ratio is consistent across companies in the sector.

LEV (Leverage Ratio): The average leverage ratio is 0.78, indicating that the companies generally maintain reasonable debt levels, although some companies may have higher leverage ratios.

These data suggest that there are significant differences in the financial structures of insurance companies, reflecting diverse strategic approaches for each ratio. The correlation relationships between the variables are presented in Table 5.

Table 5. Correlation Table

	ROA	SIZE	LIQ	CON	LEV	BIST
ROA	1.000					
SIZE	0.2303	1.000				
LIQ	0.0690	-0.4389	1.000			
CON	-0.0726	-0.1553	0.0844	1.000		
LEV	-0.3580	0.0825	-0.5722	-0.0323	1.000	
BIST	-0.0019	-0.1087	-0.0083	-0.0689	0.2407	1.000

According to the correlation results presented in Table 5, there is a positive relationship (0.2303) between ROA and SIZE, and a negative relationship (-0.3580) between ROA and LEV. A strong negative correlation is observed between SIZ and LIQ (-0.4389). The strong negative relationship between LIQ and LEV (-0.5722) is noteworthy. Additionally, a positive relationship (0.2407) exists between LEV and BIST. These relationships suggest that return on assets, leverage, liquidity, and premium size may have significant impacts on financial performance.

3. Analysis Results

According to the unit root test results, it was found that the ROA variable is not stationary at the level, but it becomes stationary when its first difference is taken. On the other hand, the other variables are stationary at their levels. These results indicate that the first difference of the ROA variable should be used in the model, while the other variables can be included directly at their levels. This approach ensures stationarity in the model, reducing the risk of bias or misleading results in the econometric analysis.

To select the appropriate panel data model for the analyses, several tests must be conducted. These include the F-test (Moulton & Randolph, 1989) for choosing between the Pooled Ordinary Least Squares and Fixed Effects models, the Breusch-Pagan LM test (1980) for selecting between the Pooled Ordinary Least Squares and Random Effects models, and finally, the Hausman test (1978) to choose between the Fixed Effects and Random Effects models. The results of these tests are presented in Table 6.

Table 6. Appropriate Model Selection Results

Test	Results	Effect/Result
Unit Effect (F Test)	27.63 (0.0000)	Exist
Time Effect (Breusch and Pagan LM Test)	5.44 (0.0000)	Exist
Hausman Test	20.94 (0.0003)	Fixed Effects

Based on the performed test results, the fixed effects model was identified as the most appropriate model. Following this determination, assumption deviation tests need to be conducted. The results of these assumption tests are presented in Table 7.

Table 7. Assumption Deviation Tests

Test Types	Probability	Problems
Modified Wald	0.0000	Exist
Bhargava etc. DW	0.4651	Exist
Baltagi-Whu LBI	0.9037	Exist
Pesaran	0.0000	Exist
Friedman's	0.0000	Exist

Upon reviewing the results presented in Table 7, it is evident that the model encounters issues related to heteroskedasticity, autocorrelation, and cross-sectional dependence. To address these issues, Panel-Corrected Standard Errors (PCSE) estimators (Beck & Katz, 1995), known for their robustness in such cases, were employed. The PCSE estimation results are presented in Table 8.

Table 8. PCSE Robust Estimator Analysis Results

ROA	Coef.	Panel-Corrected Std. Err.	z	P>|z|	[95% Conf. Interval]	
SIZE	0.0211	0.0036	5.82	0.0000	0.0140	0.0283
LIQ	-0.0038	0.0033	-1.13	0.2570	-0.0104	0.0028
CON	0.0004	0.0020	0.21	0.8300	-0.0035	0.0044
LEV	-0.0305	0.0277	-11.01	0.0000	-0.3599	-0.2511
BIST	0.0297	0.0044	6.62	0.0000	0.0209	0.0385
_cons	0.0706	0.0428	1.65	0.0990	-0.0133	0.1546

The analysis results of the variables affecting the return on assets (**ROA**) of insurance companies reveal several important findings. First, a strong and positive relationship was identified between premium size (**SIZE**) and ROA. This indicates that as insurance companies collect more premiums, their ROA increases. An increase in premium size emerges as a key factor that strengthens revenue streams and enhances return on assets for insurance firms.

On the other hand, the leverage ratio (**LEV**) has a negative effect on ROA. A higher leverage ratio indicates increased financial risk, which negatively impacts ROA. This finding suggests that excessive borrowing

leads to a decrease in ROA for insurance companies. Therefore, firms with lower leverage ratios may achieve more stable and sustainable ROA.

The variable representing whether a company is publicly traded (**BIST**) also has a positive effect on ROA. Insurance companies that are publicly listed tend to have higher ROA compared to those that are not. This suggests that being publicly traded may provide companies with better financial performance.

However, variables such as liquidity (**LIQ**) and conservation ratio (**CON**) do not have a significant impact on ROA. This indicates that changes in liquidity and conservation ratios do not directly affect the ROA of insurance companies.

4. Conclusion and Evaluation

Analyzing the asset structure of the insurance sector is critically important for understanding the financial health and sustainability of the industry. Effective management of the assets and liabilities of insurance companies is a fundamental factor in minimizing risks and enhancing company performance. In particular, a thorough understanding of liquidity, profitability, and risk management in the insurance sector contributes to greater resilience in times of economic uncertainty and crises.

According to the results of this study, significant relationships were found between the profitability of insurance companies and the variables of premium size, leverage ratio, and being publicly traded. In light of these results, various incentives could be introduced to increase premium size and improve profitability. Specifically, tax breaks or financial support could be provided for research and development (R&D) activities and product innovations aimed at expanding insurance coverage and developing new insurance products.

Public policies could be developed to increase the insurance penetration rate, thereby boosting premium volume in the insurance sector. In this context, expanding mandatory insurance types and launching awareness campaigns to enhance insurance literacy among individuals could increase the number of policyholders. More insured individuals would, in turn, increase premium income and support the profitability of insurance companies.

To prevent excessive risk-taking through over-leveraging, an upper limit on leverage ratios should be imposed. This would help preserve the financial soundness of companies and prevent borrowing costs from negatively affecting profitability.

Companies should be encouraged to increase their equity capital. Tax incentives for capital increases or financing opportunities provided through public funds could help insurance companies grow through equity rather than debt, thereby reducing leverage ratios.

The fact that being publicly traded offers insurance companies advantages in terms of transparency, corporate governance, and access to capital should be acknowledged. Therefore, initial public offerings (IPOs) within the insurance sector should be encouraged. Simplifications in regulatory processes and tax advantages could be provided to facilitate the IPO process.

The adoption of corporate governance standards by publicly traded companies can enhance investor confidence and financial transparency, thereby positively impacting profitability. In this regard, incentives should be provided to publicly traded insurance companies to adopt and implement corporate governance principles. Good corporate governance practices can enhance a company's long-term profitability.

Educational and awareness campaigns should be organized to help companies in the insurance sector better understand the positive impact that being publicly traded has on profitability. These campaigns could highlight how public trading facilitates access to capital markets, provides liquidity, and increases growth opportunities.

Future research could focus on more comprehensive studies examining the impact of various variables on the asset structure of insurance companies. Particularly, studies focusing on the effects of technology and digitalization would be beneficial for future research. Additionally, case studies exploring how insurance companies manage their asset structures during crisis periods could help develop practical strategies to enhance the sector's resilience against crises.

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