ORIGINAL ARTICLE

Analysing the Determinants of Profitability of Domestic and Foreign Non-Life Insurers in Turkey

Özcan IŞIK

Abstract

The main goal of this study is to empirically analyze the insurance-specific, industry-specific and macroeconomic factors affecting the profitability of foreign and domestic-owned non-life insurers operating in the Turkish insurance sector over the period of 2014-2019. For this purpose, a balanced panel data of 27 non-life insurers is used in the study.

Results from the random effects model demonstrate that debt ratio, premium retention ratio, listed status, and growth of total assets are significant factors that determine the profitability of domestic-owned companies. However, the factors affecting the profitability of foreign-owned insurers are company size, debt ratio, underwriting risk, premium retention ratio, listed status, and company age, respectively. Meanwhile, the variables such as GDP growth, inflation rate, and market concentration have a significant effect on the profitability of neither foreign nor domestic owned non-life insurers.

Keywords
Profitability, Insurance, Panel data, Turkey.

JEL Classification
G22, C23

Authors Notes:
Sivas Cumhuriyet University,
ORCID: 0000-0003-2230-8738,
ozcan@live.com

1. INTRODUCTION

Today, in both developed and developing economies, insurers are becoming increasingly important because of the added value they provide to the national economies and their increasing share in the financial system. Actually, insurers are one of the important institutions of the financial service industry. Thanks to their premium income, insurers contribute significantly to both the development and deepening of capital markets and the steady growth of the economy (Haiss and Sümegi, 2008; Akotey et al., 2013; Camino-Mogro and Bermúdez-Barrezueta, 2019). Also, insurers are one of the basic risk management tools that individuals, companies and countries use to transfer the possible risks they may face. Today, the risk absorption task undertaken by the insurance sector plays an active role in achieving economic stability by minimizing the fragility arising from the financial system (Vadlamannati, 2008, Işık, 2019; Harrison and Ng, 2019).

In recent years, both the increased public awareness of insurance and the increase in the share of insurers in the financial system have led to an increase in competition in the sector. However, any problem that can occur in the insurance market may negatively affect the performance of all companies operating in the sector, which directly influences all stakeholders related to the insurance sector and economic activities. Therefore, regularly analyzing the profitability performance of companies operating in the insurance market can help to establish stability in the sector by increasing the efficiency of insurance activities. Moreover, higher profitability not only enables insurers to gain a competitive advantage in the market but is also important for their existence and growth. In this context, it is crucial to know what drives insurers' profitability.

Considering that profitability is an important performance criterion, the aim of this study is to empirically analyze insurance-specific, industry-specific and macroeconomic factors that affect the profitability of non-life insurers in Turkey, a developing economy. Our article contributes to the existing empirical literature in three ways. Firstly, our article extends the literature on profitability determinants by comparing the performance of foreign- and domestic-owned insurers in the context of the Turkish insurance industry. Secondly, the sample selected for analysis covers a current period of 2014-2019. Lastly, on a methodological basis, the factors determining profitability are modelled separately in the analysis of non-life insurers' profitability using the panel random-effect estimation model.

The remainder of the paper is organized as follows. General indicators regarding the Turkish Insurance Sector are briefly evaluated in Section 2. Section 3 reviews previous studies in the literature that investigate factors affecting insurers' profitability. Section 4 defines the data set and the methodology. Section 5 explains empirical findings of our study and Section 6 concludes.

2. TURKISH INSURANCE SECTOR INDICATORS

As of 2019, according to the insurance and private pension report published by the Ministry of Treasury and Finance, the number of companies operating in insurance industry is 63. There are a total of 38 insurance companies in non-life insurance branches. On the other hand, 5 life insurance companies, 17 pension companies and 3 reinsurance companies operate in the sector. When the capital structure of these companies is examined, it can be said that foreign-owned insurers are predominant in the sector. As shown in the Table 1 international capital share in capital for all sector is %62.18. These data show that foreign capital owners are interested in the Turkish Insurance Sector. Finally, when the employment capacity of the sector is considered, it can be said that 90,801 personnel work in the sector.

According to the data in the Table 1, a total of 67.8 billion Turkish Lira gross premiums were generated in 2019 in the Turkish Insurance Sector. 57.4 billion Turkish Liras of this amount was produced within the scope of non-life insurances. The remaining 11.4 billion Turkish Liras was generated in life insurances. Considering that premium production shows the size of the sector, it can be stated that non-life insurances have great importance in the sector. When this situation is analyzed proportionally, the gross premium amount generated by non-life insurances constitutes 84.6% of the whole sector. When the amount of incurred loss realized in 2019 is considered, it is observed that this amount is 39.1 billion Turkish Liras. 35.5 billion Turkish Liras of this amount occurred in non-life branches, while the remaining was realized in life insurances. Based on these data from Table 1, it can be stated that the premium amount meets the incurred loss amounts both at the branch level and within the scope of the whole sector.

Table 1. General Indicators of the Turkish Insurance Sector (2019)

General Figures	Values
Number of Active Company	63
Active Non-Life Insurance Companies	38
Active Life Insurance Companies	5
Active Pension Companies	17
Active Reinsurance Companies	3
International Capital Share In Capital for Non-Life Companies	%64
International Capital Share In Capital for Life Companies	%57,65
International Capital Share In Capital for All Sector	%62,18
Capacity of Employment	90.801
Non-Life Gross Premium Volume[a]	57.4
Life Gross Premium Volume[a]	11.4
Total Gross Premium Volume[a]	67.8
Non-Life Incurred Loss[a]	35.5
Life Incurred Loss[a]	3.6
Total Incurred Loss[a]	39.1

Source: https://www.hmb.gov.tr/sigortacilik-ve-ozel-emeklilik-raporlari, (09.04.2021)
[a] denotes billion Turkish Liras (TL)

3. LITERATURE REVIEW

For a sample covering a five-year period between 1993 and 1997, the factors affecting the operational performance of 47 Bermudan insurance/reinsurance companies have been investigated by Adams and Buckle (2003). Empirical findings from panel data analysis demonstrate that variables such as firm type dummy variable, leverage, liquidity and loss ratio have statistically significant effects on ROA (Return on Assets).

Based on a panel data of 211 general insurers from the UK over the period 1986 to 1999, Shiu (2004) has examined important factors influencing the financial performance. The results from panel data estimations reveal that interest rate, underwriting profits, unexpected inflation, and liquidity are significant factors influencing the financial performance.

In the Bosnia and Herzegovina, Pervan et al. (2012) have determined the factors affecting return on equity of insurance companies by employing the data from 2005 to 2010. Results of dynamic panel data analysis show that age, past profitability, and market share are positively correlated with profitability, whereas claims ratio is inversely associated with profitability.

Öner Kaya (2015) has empirically investigated the factors affecting the level of profitability for a data set covering 24 non-life insurers in Turkey during the period between 2006 and 2013. Based on the fixed effects panel data analysis results, it has been concluded that variables such as size, current ratio, age, loss ratio, leverage, growth in premium are the main determinants in explaining the change in profitability.

The macroeconomic and insurance-specific determinants of financial performance of eight largest non-life insurers in Poland during the years 2006-2013 is studied by Ortyński (2016). Using regression analysis, the author reports that the size in terms of gross written premium and total investment exerts positive and significant influence on profitability, whereas net claims ratio and net operating expenses ratio are positively related to the profitability.

Ullah et al. (2016) have examined how the profitability of general insurance companies in Bangladesh is affected by insurance-specific internal factors during the period 2005-2014. The results obtained from the regression analysis show that all selected internal factors have significant effects on the profitability performance (ROA).

Based on a panel data of 137 insurance companies from four CEE (Central and Eastern European) countries (i.e., Croatia, Slovenia, Hungary and Poland) from 2010 to 2014, Kramaric et al. (2017) have investigated important factors influencing profitability performance. The results from random effects estimation reveal that ROA and ROE (Return on Equity) are positively affected by the variables like age and gross domestic product (GDP) growth.

Hasan et al. (2018) have analyzed the link between firm-specific and macroeconomic factors with profitability performance (ROA and ROE) for 32 listed non-life insurers in Bangladesh for the period 2009–2015. The findings from panel data regression methodology reveal that profitability indicators are significantly affected by firm-specific factors rather than macroeconomic factors.

Employing the data of Serbian non-life insurers in the 2010-2015 period, Pjanić et al. (2018) have explored the variables that influence the financial performance measured by ROA. The results show that ROA is significantly affected by the variables such as profit growth, equity ratio, operating costs, premium growth, underwriting risk, and size.

Using a sample of selected life insurance companies in 8 Asian countries between the years 2008-2014, Zainudin et al. (2018) investigate the factors influencing profitability measured by the ratio of net profit to total assets. Their results from random effect panel estimator indicate that the firm-level variables such as size, underwriting risk, and the ratio of equity capital to total assets are found to be significant in the ROA model.

Camino-Mogro and Bermúdez-Barrezueta (2019) evaluated the micro and macro determinants that influence the non-life and life companies' profitability in Ecuador during 2001–2017. Their results from PCSE models reveal that micro and macro factors are significant determinants in explaining the change in profitability in both life and non-life insurance sectors.

Focusing on 30 non-life insurance companies in Turkey and using static panel data regression analysis, Karadağ Erdemir (2019) has reported that profitability (ROA) is significantly associated with ROE, capital ratio, premium production ratio, current ratio, expense revenue ratio, and leverage ratio in the period of 2010-2014.

The impact of internal and external determinants on the profitability of 24 insurance companies operating in the US and the UK are examined empirically by Batool and Sahi (2019) with panel data techniques. According to the results obtained from the study covering the 2007-2016 period, the internal and external determinants that influence the profitability of the companies in the insurance sector of both countries are mostly similar.

In the Canadian life insurance sectors, Killins (2020) has conducted a study that aims at exploring the factors influencing profitability for 37 companies within the period 1996:Q1-2018:Q2 employing static and dynamic panel data estimators. Based on the findings obtained from the study, the variables such as size, liquidity, capital ratio, industry concentration (HHI), equity market returns, and GDP growth are the major determinants of profitability indicators measured by ROA and ROE.

insurance-specific variables affecting insurance companies' performance in Serbia during the period of 2008 to 2016 is explored by Vojinović et al. (2020) employing panel regression analysis. Estimation results for 19 insurance companies suggest that the statistically significant determinants of the variable of profitability measured with three alternative indicators (ROA, ROE, and the ratio of net profit to total premium) are liquidity, market penetration ratio, risk exposure, and size, respectively. Another important result of the study is that life insurers have higher profitability compared to non-life insurers.

In insurance sector of UAE, Sasıdharan et al. (2020) explored the determinants of profitability of 18 companies from 2010 to 2018 by using regression analysis. The results demonstrate that profitability of insurers is significantly related to the internal factors (i.e., size, capital adequacy ratio, and loss ratio).

In another study on the Turkish insurance industry, Özen and Çankal (2020), using panel data of 21 non-life insurers for the period 2006-2017, concluded that the profitability variable was significantly affected by both internal and external factors.

Tsvetkova et al. (2021) have utilized a sample of 45 insurers from Russian Federation to examine the relation between profitability and its determinants during the years 2012 to 2018. They find that only ROE variable has significant influence on ROA model.

Based on a sample of 14 Indian life micro-insurance companies over the period from 2009 to 2019, Banerjee and Savitha (2021) have examined market and firm-level concentration on ROE by using panel data techniques. Empirical findings demonstrate that the effect of firm-level concentration on the profitability measure is positive, whereas the effect of market share on the profitability measure is negative.

4. METHODOLOGY

4.1. Data

We use an annual data set of a balanced panel of 27 non-life insurers in Turkey during the period 2014–2019. Insurance-level data are compiled employing the insurance reports of the Turkish Ministry of Treasury and Finance (https://en.hmb.gov.tr/insurance-reports), while the data on macroeconomic variables are obtained from the Central Bank of the Republic of Turkey.

4.2. Model Specification and Variables

The following ROA model is estimated to analyze the determinants of profitability of insurers:

$$ROA_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 TL_{it} + \beta_3 RISK_{it} + \beta_4 PRR_{it} + \beta_5 LIST_i + \beta_6 AGE_{it} + \beta_7 GRO_{it} \\ + \beta_8 HHI_t + \beta_9 GDP_t + \beta_{10} INF_t + time\ dummies + \mu_i + \epsilon_{it}$$

In this specification, i and t stand for non-life insurer and time, respectively. α refers to the intercept; μ_i represents unobserved time-invariant firm effects and ϵ_{it} is a random error term. Eq. (1) is first estimated for all insurers in the sample, and then for two sub-samples created based on the ownership structure of the insurers. The first sub-sample covers domestic insurers and the second sub-sample consists of foreign insurers. Within the scope of the study, an insurer is defined as a foreign (domestic) insurer when more than 50% of its share capital belongs to foreign (domestic) investors. Explanations for the insurance-specific variables and the external (industry and macroeconomic) variables included in the ROA model specified as in Eq. (1) are provided in Table 2.

Table 2. Variables and Expected Signs

Variables	Notation	Calculation	Expected sign
Dependent variable			
Return on assets	ROA	The ratio of net profit to total assets	
Explanatory Variables			
Firm-specific			
Size of company	SIZE	Logarithm of total assets	+
Leverage ratio	LR	Ratio of total liabilities to total assets	+/-
Underwriting risk	RISK	The ratio of total claim incurred to total net earned premiums	-
Premium retention ratio	PRR	the ratio of net premiums to gross premiums	+/-
Listed company	LIST	It is a dummy variable that equals one if the insurer is listed, otherwise zero.	+/-
Age of company	AGE	Logarithm of the number of years since the insurer's foundation	+/-
Growth in assets	GRO	The percentage change in assets compared to the previous year	+/-
Industry-specific			
Industry concentration	HHI	it is defined as the sum of the squares of the market shares of all the insurers within the sector.	+
Macroeconomic			
GDP growth	GDP	Annual real GDP growth rate	+
Inflation	INF	Annual percentage change in the consumer price index	+/-

4.3. Hypotheses

The theoretical discussions on the impact of each explanatory variable in explaining the change in profitability are presented in this section.

4.3.1. Size of Company: According to the traditional neoclassical hypothesis, larger firms can minimize their costs and increase their competitiveness in the market thanks to economies of scale. In addition, these firms have the resources and capabilities to cope with uncertain market fluctuations. Therefore, the firm size variable can be expected to receive a positive sign (Burca and Batrinca, 2014; Elango et al., 2008; Camino-Mogro and Bermúdez-Barrezueta, 2019).

4.3.2. Leverage Ratio: According to the free cash flow hypothesis developed by Jensen (1986), high financial leverage can force company management to generate cash flows to meet liabilities to lenders, which contributes to its profitability. However, high financial leverage may cause companies to have difficulty meeting

their underwriting obligations. Hence, increasing financial risk may decrease profitability performance (Isik and Tasgin, 2017). As a result, the effect of leverage on profitability is ambiguous.

4.3.3. Underwriting Risk: Underwriting risk or the loss ratio shows the efficiency of the underwriting activities of insurers. In theory, an increase in incurred claims compared to premiums earned in the insurance industry is expected to reduce profitability (Öner Kaya, 2015).

4.3.4. Premium Retention Ratio: Companies with a strong capital structure can have higher premium retention rates compared to other companies, which can positively affect their profitability performance. However, unexpected losses may increase the bankruptcy risk of companies that do not have a strong capital structure and have a high premium retention rate. Thus, the association between premium retention ratio and profitability may be expected to be positive or negative (Öner Kaya, 2015).

4.3.5. Listed Company: Listed companies are more visible than unlisted companies and can reach a wider range of investors, which can help them find capital more easily (Nguyen and Nguyen, 2021). However, the requirement for listed companies to disclose large amounts of information to capital market participants can bring additional costs to the listed company, which can adversely affect performance (Ozili, 2017). Therefore, the relationship between this variable and profitability is ambiguous.

4.3.6. Age of Company: Older companies could build up a good reputation in the market because of their long period of service. In addition to this, they are more experienced. Therefore, experience and reputation gained over a long period of time can contribute to their profitability. However, Older companies' lack of flexibility to adapt quickly to changing economic conditions can hurt their profitability (Majumdar, 1997).

4.3.7. Growth in Assets: Fast-growing companies can earn more profits by expanding their business. However, the profitability level achieved by fast-growing companies attracts the attention of rival companies and causes the number of participants in the sector to increase. This may reduce the positive impact of growth on profitability (Işık, 2017).

4.3.8. Industry Concentration: According to the structure-conduct-performance (SCP), it is expected that the profitability is likely to be high with the effect of monopoly profits in the sector where concentration is high (Smirlock, 1985).

4.3.9. GDP Growth: On the one hand, as financial markets gain momentum during cyclical upswings, the transaction volume in the capital market increases, which in turn increases the value of insurers' investment portfolios of capital market instruments. On the other hand, GDP growth also influences the demand for insurers' products and services. We thus expect a positive impact of GDP development on profitability (Alhassan et al., 2015; Killins, 2020).

4.3.10. Inflation Rate: Increasing interest rates due to high inflation may increase the returns on the investment portfolio of insurers. However, increasing inflation may also lead to a decrease in demand for insurance products. As a result, the effect of the inflation rate on the profitability of insurers is ambiguous (Alhassan et al., 2015).

4.4. Estimation Method

Before starting econometric analysis, it should be noted that the estimation of the model in Eq. (1) is constructed on a short-time dimension (t = 2014–2019) with 27 cross-sections (i = 27 insurers). According to Baltagi (2013), panels with a minimum of 2 cross-sections and a maximum period of 10-20 are called micro panels, whereas panels with a minimum of 7-20 cross-sections and a minimum of 20-60 periods are called macro panels (Baltagi, 2013:1). Hence, micro and macro panels require the application of different econometric steps. For example, the issues such as cross-sectional dependence and unit root are critical issues that need to be tackled in macro panels. However, these two issues, which are important for macro panels, lose their importance for micro panels due to the random sampling of cross-sections (Baltagi, 2013:1). As a result, since the micro panel is used in this study, cross-sectional dependence and unit root tests are not performed.

We have employed the Hausman test to choose the appropriate panel regression estimator in the estimation of the model in Eq. (1), The Hausman test results for all three samples (the whole sample and sub-samples) indicate that the parameters of the panel model in Eq. (1) need to be estimated by the random effects estimator.

4.5. Summary Statistics

Table 3 provides some summary statistics on profitability and its determinants (i.e., insurance-specific, industry-specific, and macroeconomic variables) for both entire sample and the sub-samples. The differences between two sub-groups (i.e., foreign- and domestic-owned insurers) are examined by utilizing t-test and Wilcoxon rank-sum test. When the data in Table 3 are examined, it is seen that foreign-owned insurers are significantly older than domestic-owned insurers. However, the mean (median) value of financial leverage for domestic-owned insurers is statistically higher than that for foreign-owned insurers. We observe that domestic-owned insurers have significantly higher growth rate in total assets than foreign-owned insurers. Except for these three variables, the differences between the other firm characteristics of the two sub-groups are not statistically significant.

Table 3. Summary Statistics for Entire Sample and Sub-Samples

	Mean	Median	Std. Dev.	Min.	Max.	N
All Insurers						
ROA	.006	.029	.123	-.992	.193	162
SIZE	20.252	20.533	1.605	15.932	23.016	162
LR	.761	.751	.128	.479	1.702	162
RISK	.762	.702	.501	.051	3.424	162
PRR	.611	.606	.224	.073	1	162
LIST	.185	0	.39	0	1	162
AGE	3.589	4.06	1.576	0	7.609	162
GRO	.086	.051	.262	-.285	2.405	162
HHI	777.935	773.8	32.626	743.38	838.75	162
GDP	.044	.034	.043	-.009	.122	162
INF	.116	.095	.051	.076	.224	162
Foreign-Owned Insurers						
ROA	.004	.028	.089	-.369	.154	90
SIZE	20.195	20.144	1.609	16.863	23.016	90
LR	.739	.744	.087	.56	1.062	90
RISK	.776	.696	.555	.051	3.424	90
PRR	.616	.603	.257	.073	1	90
AGE	3.708*	4.069*	1.225	1.386	5.425	90
GRO	.049	.033	.15	-.285	.72	90
Domestic-Owned Insurers						
ROA	.009	.034	.156	-.992	.193	72
SIZE	20.323	20.634	1.607	15.932	22.914	72
LR	.787**	.771**	.163	.479	1.702	72
RISK	.744	.718	.427	.125	2.729	72
PRR	.605	.621	.175	.082	1	72
AGE	3.441	4.052	1.927	0	7.609	72
GRO	.132**	.062***	.352	-.2	2.405	72

Note: ***, **, and * indicate statistically significant difference between the values of foreign- and domestic-owned insurers at 1%, 5%, and 10% significance levels, respectively.

4.6. Correlation matrix

The Pearson's pair-wise correlation matrix between the variables employed in our regression model is reported in Table 4. It can be seen that LR and RISK present the highest correlations with ROA. The correlation coefficients calculated between the pairs of variables are not very high, which shows us that the multi-collinearity is not an important issue for analysis.

Table 4. Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ROA	1.000										
(2) SIZE	0.235	1.000									
(3) LR	-0.333	0.041	1.000								
(4) RISK	-0.338	0.242	0.577	1.000							
(5) PRR	0.202	0.489	0.136	0.183	1.000						
(6) LIST	-0.104	0.349	0.125	0.208	0.028	1.000					
(7) AGE	-0.127	0.236	0.182	0.143	0.270	0.104	1.000				
(8) GRO	-0.025	0.050	0.084	0.050	0.131	0.187	0.030	1.000			
(9) HHI	0.016	0.143	-0.029	0.192	-0.041	0.000	0.053	-0.072	1.000		
(10) GDP	0.076	0.024	0.090	-0.154	0.042	0.000	0.010	0.065	-0.600	1.000	
(11) INF	0.231	0.164	-0.102	0.109	0.006	0.000	0.059	-0.125	0.486	-0.486	1.000

5. EMPIRICAL RESULTS

The empirical estimations of ROA model specified as in Eq. (1) are reported in Table 5. While the results of the main sample including all insurers are given in the first column of Table 5, the results for the subsamples of domestic- and foreign-owned insurers are reported in the second and third columns of Table 5, respectively.

We observe that the coefficient of the firm size is positive in all models. However, it is statistically significant only in column 3, which indicates that the ROA will increase as the firm grows for foreign-owned insurers. This result, which is consistent with the theory of economies of scale, supports the results of Pervan et al. (2012), Burca and Batrinca (2014), Kočović et al. (2014), Batool and Sahi,(2019) and Vojinović et al. (2020).

Regarding the leverage ratio (LR), we observe a negative and significant association for all models. The negative and significant results from all three models show that insurers acting as a risk transfer mechanism in financial markets will face lower profitability as they use higher debt to finance their total assets. The negative linkage between leverage ratio and ROA supports the findings of Hasan et al. (2018) and Camino-Mogro and Bermúdez-Barrezueta (2019).

As expected, the coefficients estimated for the underwriting risk variable are negative in all models. However, these coefficients are statistically significant only for the entire sample and sub-sample of foreign insurers. This finding indicates that insurers with a high level of underwriting risk have a lower profitability. The predicted negative results for this variable are parallel to some previous studies (e.g., Burca and Batrinca (2014) and Ullah et al. (2016).

The positive and significant coefficient of premium retention ratio in all models confirms our expectations and reveals that the profitability of insurers operating in the Turkish insurance sector is positively affected by the premium retention ratio. This result, similar to that of Burca and Batrinca (2014), can also be explained by the strong capital structures of insurers.

In terms of the listed insurer dummy variable, we have observed interesting findings regarding this variable. Although this variable is insignificant in the full sample, it is statistically significant in sub-samples of foreign- and domestic-owned insurers. However, the effect of this variable on ROA is different depending on the both sub-samples. In other words, our results show that listed insurers in the sub-sample of domestic (foreign) owned insurers have a lower (higher) ROA than unlisted insurers.

The effect of the age variable on ROA is significant only in the sub-sample of foreign-owned insurers. The fact that the estimated coefficient for this variable is negative means that as foreign-owned insurers get older, their profitability decreases. This result is consistent with that of Kočović et al. (2014).

Growth of total assets is negatively correlated with ROA in all samples, but the estimated negative impact is found to be statistically significant only in terms of full sample and sub-sample of domestic-owned insurers. This result indicates that fast-growing companies in the Turkish non-life insurance market tend to operate with low profitability.

As for the HHI variable, no statistically significant relationship is found between this variable and ROA, indicating that market concentration is not a significant determinant of the change in ROA. Our findings, similar to those reported by Camino-Mogro and Bermúdez-Barrezueta (2019) and Killins (2020), do not confirm the SCP hypothesis.

As expected, the ROA of insurers is positively and significantly affected by GDP growth. However, this effect is not valid for both sub-samples. The positive impact of GDP growth is consistent with previous studies (Kramaric et al., 2017; Batool and Sahi, 2019; Killins, 2020).

As for the inflation rate, another important macroeconomic indicator included in the ROA equation, the influence of this variable on ROA is also positive in both full sample and sub-samples but is statistically significant only in the full sample. Our statistically significant and positive finding is in line with the finding reported for the UK by Batool and Sahi (2019).

Table 5. Random Effects Regression Results

	All insurers in the sample (1)	Domestic-owned insurers (2)	Foreign-owned insurers (3)
SIZE	0.0109	0.0148	0.0127[**]
	(0.0082)	(0.0111)	(0.0058)
LR	-0.5890[***]	-0.6600[***]	-0.4730[***]
	(0.1300)	(0.2060)	(0.1150)
RISK	-0.0436[***]	-0.0240	-0.0497[***]
	(0.0138)	(0.0407)	(0.0137)
PRR	0.1390[**]	0.167[*]	0.0987[***]
	(0.0644)	(0.101)	(0.0291)
LIST	0.0061	-0.0604[*]	0.0594[***]
	(0.0211)	(0.0360)	(0.0137)
AGE	-0.0071	0.0005	-0.0209[**]
	(0.0094)	(0.0128)	(0.0092)
GRO	-0.0692[**]	-0.0728[*]	-0.0526
	(0.0336)	(0.0440)	(0.0373)
HHI	0.0003	0.0004	0.0003
	(0.0003)	(0.0003)	(0.0004)
GDP	0.0074[*]	0.0115	0.0061
	(0.0040)	(0.0080)	(0.0055)
INF	0.0057[**]	0.0077	0.0050
	(0.0032)	(0.0047)	(0.0038)
_cons	-0.1360	-0.2790	-0.1840
	(0.1960)	(0.2420)	(0.3380)
Hausman test	6.38	8.95	5.73
Wald test	403.71[***]	174.01[***]	278.90[***]
	0.7428	0.7392	0.8268
Number of groups	27	15	12
Number of obs.	162	90	72

Note: We run random-effects GLS regressions with robust standard errors clustered at the insurer level to estimate the all models. Robust standard errors in parentheses. We include year dummies to account for the common shocks in the market but their coefficients are not reported. $^{*} p < 0.1$, $^{**} p < 0.05$, $^{***} p < 0.01$.

6. CONCLUSIONS

Important steps have been taken for the liberalization of financial services industry since the 1980s in Turkey. However, the liberalization process of the insurance industry started a little later compared to the banking industry. In this context, various regulations have been made to strengthen the infrastructure in the Turkish insurance sector, which has contributed to establishing stability in the sector. Regular analysis and evaluation of the performance of the insurance sector, which has an extremely important position in the Turkish financial system, is of great importance at both micro and macro levels.

The objective of this study is to empirically investigate the factors that influence the profitability of 27 non-

life insurers operating in Turkey. We utilize random effect panel regression analysis to estimate the relationship between profitability and its determinants for foreign- and domestic-owned non-life insurers.

Our findings demonstrate that the factors influencing the profitability performance of foreign and domestic non-life insurers are different except for leverage and premium retention ratio. To put it more clearly, the profitability of domestic-owned insurers is positively affected by premium retention ratio but negatively affected by leverage ratio, listed status, and growth in total assets. However, the profitability of foreign-owned insurers is positively affected by company size, listed status, and premium retention ratio but negatively affected by leverage ratio, underwriting risk, and company age.

The insurance market in Turkey has gained significant momentum in the last decade. The profitability of insurers is an important factor in strengthening the financial structure of the sector and ensuring stability in the sector. Therefore, our empirical results for both foreign- and domestic-owned insurers provide important information to regulatory authorities in terms of promoting competition as well as ensuring stability in the sector. In addition, our results regarding the determinants of the profitability of insurers can facilitate strategic decisions by foreign investors, who have invested significant amounts in the Turkish insurance industry in recent years. Finally, knowing what drives the profitability of insurers can make it easier for managers to make decisions about ensuring sustainable profitability, increasing service quality, and managing risks better.

The fact that the data set used in this study covers six years between 2014-2019 can be considered as a limitation. In future studies, the research subject can be deepened by using a data set covering a longer period and different performance measures. In addition, examining life insurers in future studies within the scope of analysis may contribute to a better understanding of the determinants of profitability in the insurance industry.

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