

EMPIRICAL ANALYSIS OF THE FACTORS DETERMINING THE PROFITABILITY OF INSURANCE COMPANIES IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The aim of this paper is to identify and assess industry-specific and macroeconomic variables that determine the profitability of insurance companies in the Republic of North Macedonia through panel data for fourteen, life and non-life insurance companies. In the model specification, ROA was chosen as a measure of profitability and is set to be a dependent variable while GDP, inflation rate, underwriting risk, growth, financial investment growth rate, combined ratio, market share and leverage are set to be explanatory variables. Results from the use of dynamic panel analysis show that growth, leverage, combined ratio, underwriting risk, lagged return on assets and inflation rate have a negative and statistically significant impact on firm performance. On the other side, market share and financial investments have statistically positive relationship with the profitability. Based on the results, policy recommendations are provided for improving the profitability of insurance companies.

Keywords: insurance companies, financial performance, GMM model, Republic of North Macedonia, profitability.

JEL Classification: C23, G22, L25

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1. Introduction

Profitability is an essential tool for measuring the financial performance of companies. Over the years various financial performance ratios were developed such as ROA, ROE, ROCE etc. These indicators allow policyholders to gain an understanding of the profitability structure, track faulty segments in the business activity that can be further a subject for enhancement, give an overview of the financial state of the company or serve as a forecasting tool for profitability to investors of insurance companies. In a developing industry such as Macedonian insurance industry, an increasing need for finding ways to better management policies, develop long term strategies to gain competitive advantage and increase overall profitability of the company, has appealed. Macedonian insurance industry counts five life and fourteen non-life insurance companies. It is from paramount importance for the Macedonian insurance industry to determine which company-specific factors such as liquidity, assets growth rate, company size, tangibility and macroeconomic determinants have significant impact on the profitability of companies and gain a thoughtful insight of the possibilities that lead to improved financial performance. Theoretical and empirical evidence from various studies has been summarized in the segment of literature overview to help us form the hypothesis of the study; detect significant linking between ROA as dependent variable and other explanatory variables. Once the data has been extracted from annual financial statements of fourteen Macedonian insurance companies and necessary calculations have been conducted, a proper model specification and hypothesis foundation is presented. Generally, firm-specific and macroeconomic factors that influence profitability vary across studies. Hence, it is mandatory to identify which these factors are, how they affect profitability and, in that manner, propose segments that underlie improvements in the financial performance, give recommendations for developing long term strategies and possibly offer ways to increase the profitability of insurance companies in Republic of North Macedonia.

2. Literature overview

Over the past years, determinants of insurance companies' profitability have gained increased recognition amongst researchers and have been considered as one of the most discussed subjects in the insurance. It is important for companies to acquire knowledge and

profound understanding of the factors that affect profitability in order to obtain competitive advantage and survival of the business.

Firm specific factors that explain profitability of insurance companies vary across conducted studies. For instance, Doğan (2013) investigates the age, size, loss ratio, leverage and liquidity of insurance companies in Turkey over the period of 2005-2011 as company-specific factors that influence profitability using multiple regression analysis. The results show negative relationship between age, loss ratio, current ratio, leverage ratio and positive and statistically significant relationship between the size and profitability. Similarly, positive correlation between size and profitability is found in numerous studies (Athanasoglou et al., 2005; Swiss Re, 2008; Malik, 2011) due to the fact that large companies have greater capacity to form coping mechanisms for the occurring market risks and most likely, surpass smaller insurers.

Regardless, Yuqi (2007) states that it is possible for companies with higher growth in assets than the optimal ratio to have negative effects on profitability, caused by increased bureaucracy. Consequently, it is possible for this relationship to appear non-linear.

Results from the research conducted by Malik (2011) who examines profitability of insurance companies in Pakistan over the period of 2005 to 2009, show inverse relationship between loss ratio, leverage ratio and profitability and significant and positively related relationship between volume of capital and size with profitability.

Doumplos et al. (2012) use equity to assets ratio as a general indicator of an insurer's capital strength (in our research abbreviated as CA or capital adequacy - the higher the equity to asset ratio the higher is insurer's capital) alongside with other variable's and macroeconomic indicators. They find that GDP growth, inflation, and income inequality have statistically significant impact on firm performance. On the contrary, the results from the research exhibit insignificant relationship between other indicators of the banking and capital market development, the institutional development and the overall freedom in the financial services industry on the firm performance.

Daare (2016) finds positive relationship between size, liquidity, age, loss ratio, GDP and ROA, whereas capital adequacy, premium growth and inflation show negative impact on ROA. In regards with the exogenous factors, Feyen et al. (2011) and Beck and Webb (2003) determine positive relationship between GDP, income per capita and

insurance penetration, but negative impact of inflation. Positive and statistically significant relationship between capital volume and profitability is found in the insurance companies in Albania (Kripa and Ajasllari 2016). Santomero and Babbel (1997) claim that investment income is an essential part of describing profitability due to the fact that great extent of insurance companies' income hail from investments.

Accurate analysis and interpretation of investments portfolio is from critical importance for insurers' financial solidity. Kim et al. (1995) and Kramer (1996) discover that negative correlation exists between investment performance and insolvency rate.

There is, also, empirical evidence that instantaneous growth of premium volume is one of the causal factors in insurers' insolvency and consequently, leads to self-sabotaging effect (Kim et al. 1995; Chen and Wong 2004). Kramaric et al. (2017) conduct a study of the impact of company-specific and macroeconomic indicators on the profitability of insurance companies over the period of 2010 to 2014 in Central and Eastern European countries. The results show that there is significant and positive relationship between age and financial performance of insurance companies in both ROA and ROE models. Similarly, they found positive and significant impact of real GDP per capita growth on profitability in the ROE model.

Multiple research studies reveal that there is a negative effect of the loss ratio and expense ratio on the profitability of companies (Pervan and Kramaric 2010; Malik, 2011; Kaya, 2015). Researchers argue that variables such as liabilities and liquidities have a negative effect on the profitability (Chen and Wong, 2004; Onaolapo and Kajola, 2010; Burca and Batrinca, 2014). Liu et al. (2016) advise that companies should consider less liquid assets whose purchase less reinsurance because of its negative impact on underwriting risk as well as liquidity risk, which consequently, increased insolvency risk of the company. Furthermore, underwriting risk and size show a negative relationship with ROA, out of which underwriting risk has a moderately significant impact (Ullah et al. 2016).

By using the least square regression model and two-panel data model, Shiu (2004) reports that interest rate, ROE, liquidity, and solvency margin positively affect the financial performance of companies.

Similarly, a positive effect of leverage ratio, liquidity, size, and management competence on the financial performance of insurance

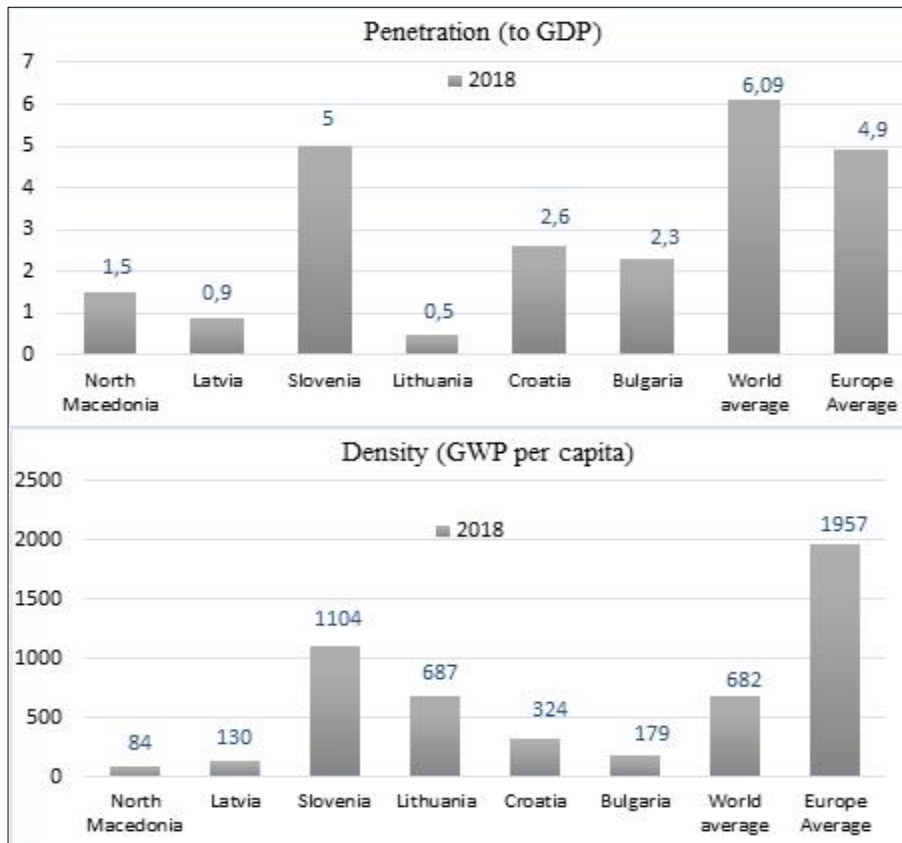
companies in Jordan was found in the research conducted by Amal et al. (2012).

Batool and Sahi (2019) investigate factors that affect profitability of insurance companies in the USA and the UK during the global financial crisis using quarterly data for period of 2007 to 2016. It is shown that internal factors (size, leverage and asset turnover) are positively correlated with both ROA and ROE in the USA. Furthermore, positive and significant relationship is found between liquidity and profitability in both ROA and ROE models in the UK insurance industry. Pervan et al. (2012) dynamic panel analysis to determine the impact of various factors on the profitability of insurance companies in Bosnia and Herzegovina as of the period 2005 to 2010. A positive and significant relationship has been found between the age, market share, previous performance and current profitability, while claims ratio has shown negative effect on the profitability.

3. Main indicators of the Macedonian insurance industry

The insurance market in Republic of North Macedonia has been growing in recent years, however, it is a developing market and far from the level reached in insurance markets in developed economies. Penetration and density rates of the insurance industry in Republic of North Macedonia are analysed in the following section in order to get a better understanding of the current level of development of the insurance industry in Republic of Macedonia. The degree of penetration measures the contribution of gross written premiums (GWP) in the gross domestic product (GDP) of the country. The penetration rate in the Republic of North Macedonia is 1.5% in 2018 and it is lower compared to most of the countries analysed in Figure 1. Slovenia, Croatia and Bulgaria have higher penetration rates, while the penetration rate in Europe (4.9%) is more than 3 times higher in relation to North Macedonia.

Figure 1
Insurance penetration rates and density in selected countries
(2018)



Source: ISA (2018), Swiss Re (2020) and Insurance Europe, European insurance industry database, <https://www.insuranceeurope.eu/insurancedata>

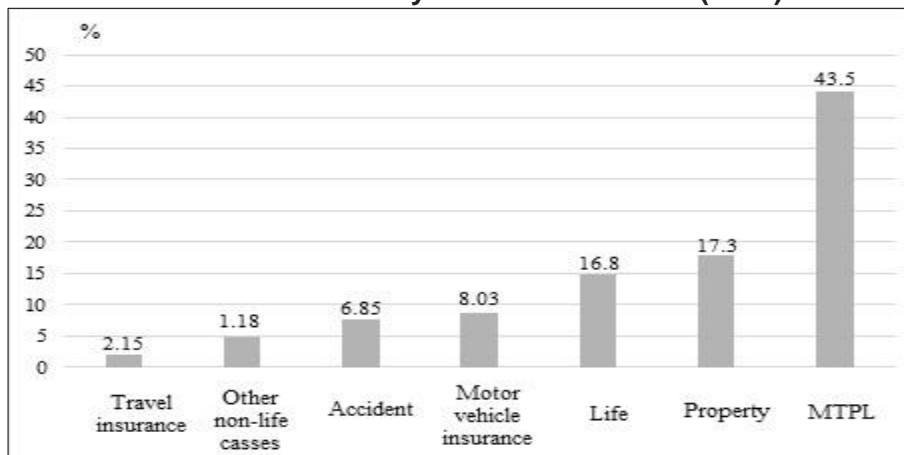
Density is calculated as a ratio between gross written premium (GWP) and the number of residents in the country, therefore this indicator shows gross written premium (GWP) per capita. Density ratio in the Republic of North Macedonia (\$84 in 2018) is significantly lower compared to the other countries included in the analysis (Slovenia - \$1104, Croatia - \$324, Bulgaria - \$179, Europe - \$1957). One of the reasons for the current phase of the Macedonian insurance market is insufficient awareness, low insurance culture and lack of information

among potential clients for the wide range of opportunities offered by insurance.

According to the law on Compulsory Traffic Insurance, motor vehicle owner and/or users are obligated to have motor third-party liability (MTPL) insurance for losses to third parties resulting in death, bodily injury, deteriorated health, or in property damage. Analyzing the structure of GWP by classes, compulsory MTPL is a mandatory type of insurance, and as a result, it is the most represented class in the total GWP in the Republic of North Macedonia (share of 43.5% in total GWP in 2018). Property insurance is the second most represented class in the Republic of North Macedonia with share of 17.3%, while the share of life insurance is 16.8% (Figure 2). This data suggests that there is low awareness of the insurance among the population, and it is often considered an expensive and unnecessary product, not an investment for a secure future. To overcome this obstacle, Macedonian insurance companies must focus on developing innovative approaches for distribution of optional classes of insurance to target consumers, introducing new products and better existing ones, and educating the population in order to increase awareness about the opportunities offered by the insurance itself.

Figure 2

Structure of GWP by class of insurance (2018)

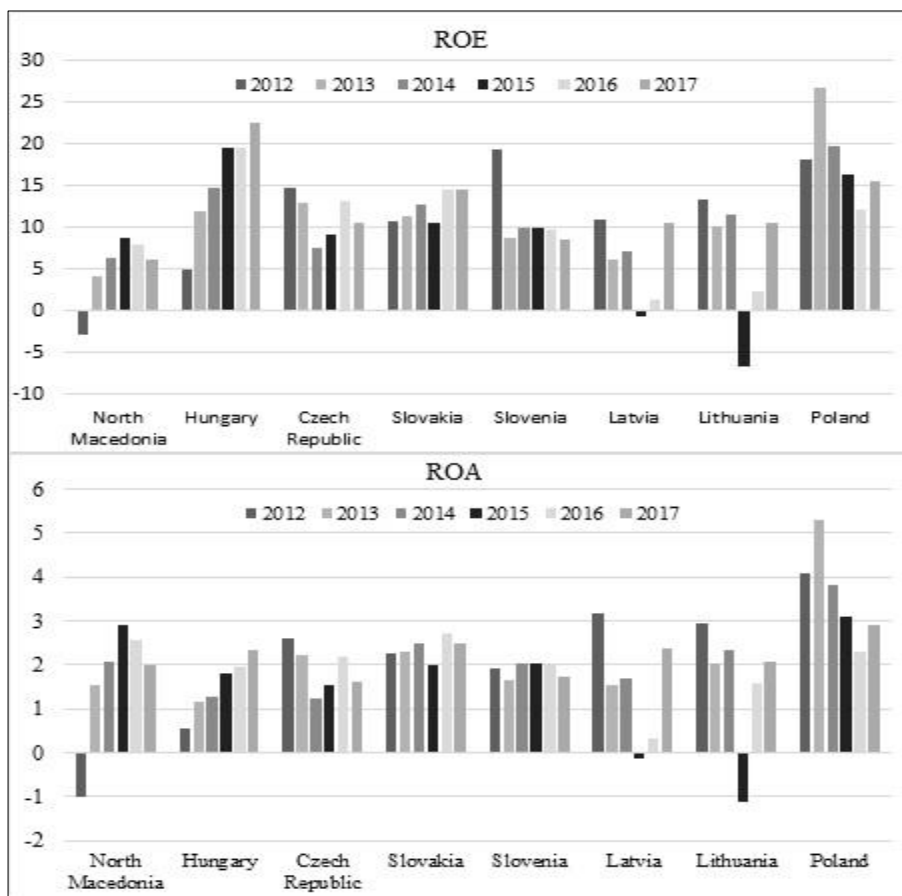


Source: ISA (2018)

Figure 3 shows the trend of profitability measured by ROE and ROA in selected countries from 2012 to 2017. ROE in the Macedonian

insurance industry in 2017 is 6.1%, which is significantly lower compared to Hungary (22.6%), Czech Republic (10.6%), Slovakia (14.5%), Slovenia (8.6%), Latvia (10.6%), Lithuania (10.5%) and Poland (15.6%). This can be explained by the relatively high capitalization of the Macedonian insurance companies in terms of poorly developed insurance market in the country.

Figure 3
ROE and ROA in selected countries (2012-2017)



Source: ISA (2018), RAEX (2018) calculations based on data from the IMF, OECD, Hungarian National Bank, Czech National Bank, The National Bank of Slovakia, Slovak Insurance Association, Slovenian Insurance Supervision Agency, Latvian Insurers Association, Statistics Estonia, Polish Insurance Association, National Bank of the Republic of Belarus and Ministry of Finance of the Republic of Belarus.

Regarding the ROA, in 2017 the profitability of the Macedonian insurance industry is 2.0% and is slightly lower compared to Hungary (2.3%), Slovakia (2.5%), Latvia (2.4%), Lithuania (2.1%) and Poland (2.9%). A slight decline of ROA in Slovenia and Czech Republic in 2017 compared to 2016 can be observed on Figure 3, which result in lower profitability ratio in comparison with the Republic of North Macedonia.

4. Data and methodology

Data was collected and extracted from annual financial statements and the Insurance Supervisory Agency (ISA) and The National Bank of the Republic of North Macedonia (NBRNM). After conducting adjustments for incomplete data and due to information unavailability, our sample includes 14 out of 19 life and non-life insurance companies operating in Republic of North Macedonia, as over the period of 2012 to 2018. Required calculations for the purpose of this research were conducted and are based on the yearly financial statements of the insurance companies.

In recent years, the generalized methods of moments (GMM) panel estimator gains dominantly attention in the banking industry, remaining unexplored in the insurance sector. The mechanics of the GMM methodology allows us to make coalescence between the observed economic data and the information in population moment condition, resulting in estimates of the unknown parameters of the model (Zsohar, 2012), administering a unique approach to the econometrics. Due to the fact that the profitability of insurance companies is dependent on its past realizations, it is safe to conclude that the use of the GMM is more adequate for the research, prompting a scientific discourse of its future consideration. The system GMM estimator efficiently deals with the issues caused by serial correlation, heteroskedasticity and endogeneity of variables (Leitao, 2010), which is not the case with the static panel data models. This methodology was developed by Arellano and Bond (1991) and in later years Blundell and Bond (1998, 2000) refined it. The correlation matrix is used to determine if any issue regarding the multicollinearity of the variables in the model is present. Furthermore, the Hansen test allows us to examine the validity of the over-identifying restrictions. In order to prove the validity of the instruments, one ought to accept the null hypothesis. In direction of inspecting the first order ($m1$) and second order ($m2$) serial correlation in the residuals, a Arellano and Bond test

is carried out. If the null hypothesis is accepted, we can come to conclusion that the proposed model is consistent.

On Figure 4 the dependent variable and in total of eight independent variables alongside with their abbreviation, measurement and expected sign are presented. Return on assets (ROA) is defined to be dependent variable in the model as a proxy for profitability. Additionally, the market share, growth, leverage and financial investment growth rate are set to be firm-specific variables, while combined ratio and underwriting risk are industry-specific ratios. Lastly, the inflation rate and GDP belong to the group of macroeconomic factors.

Figure 4

Description of variables

Variables	Abbreviation	Measurement	Expected sign
Dependent variable			
Return on asset	ROA	The ratio of earnings after tax and interest to total assets	
Independent variables			
Market share	MS	The ratio between firm's revenue and industry earnings	+/-
Inflation rate	INF	Inflation rate	-
Gross domestic product	GDP	Nominal GDP growth rate	+
Leverage	Lev	The ratio between EBIT and EBT	+/-
Combined ratio	CR	Sum of loss ratio and expense ratio	-
Growth	GR	Yearly change in percentage of firm's total assets	+/-
Financial investments growth	FIGR	Financial investments growth rate	+/-
Underwriting risk	UR	Underwriting risk	-

Source: Authors calculation

The pairwise correlation matrix allows us to discover if any multicollinearity in the proposed model exist. Figure 5 reveals that the correlation coefficients have values lower than 0.7 (Gujarati, 1995), which implies the absence of multicollinearity issue between the variables.

Figure 5

Pairwise correlation matrix

	ROA	CR	FIGR	GR	LEV	UR	MS	GDP	INF
ROA	1.0000								
CR	-0.5685	1.0000							
FIGR	0.1746	-0.2114	1.0000						
GR	-0.2896	0.2048	0.1568	1.0000					
LEV	0.1385	-0.3758	0.1108	-0.0277	1.0000				
UR	0.2274	-0.3338	-0.0973	-0.2456	0.1466	1.0000			
MS	0.4477	-0.4492	0.0292	-0.2899	0.2112	0.5134	1.0000		
GDP	0.0710	-0.0650	0.0079	-0.1620	-0.0298	0.0660	0.0040	1.0000	
INF	-0.1725	0.0948	-0.1034	0.0937	0.0002	-0.0510	-0.0049	-0.4182	1.0000

Source: Authors calculation

5. Model specification

In order to examine the effects on profitability of insurance companies in Republic of North Macedonia, a two-step Generalized Methods of Moments (GMM) is applied as a method for analysis of dynamic panel data (Arellano and Bond, 1991; Blundell and Bond, 1998):

$$ROA_{it} = \alpha + \delta ROA_{i,t-1} + \sum_{f=1}^F \beta_f X_{it}^f + \sum_{i=1}^I \beta_i X_{it}^i + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = v_{it} + u_{it} \quad (2)$$

where ROA_{it} is the profitability of firm i at time t , with $i = 1, \dots, N$, and $t = 1, \dots, T$, α is a constant term, δ is the speed of adjustment to equilibrium, $ROA_{i,t-1}$ is the firm's lagged profitability for one-period, β_f , β_m represent vectors of coefficients to be estimated, X_{it}^f is a set of firm-specific variables, X_{it}^i is a set of industry-specific variables, X_{it}^m is a set of macroeconomic variables, ε_{it} is error term, v_i firm-specific time-invariant effect and u_{it} the idiosyncratic error.

6. Results and findings

The estimation results obtained from the generalized methods of moments (GMM) are demonstrated in Figure 6. The value of the Arellano-Bond test for AR(1) in first differences is 0.392, while the value of the Arellano-Bond test for AR(2) in first differences is 0.529, implying that that no second-order serial correlation in disturbances in the proposed model exist. In order to determine if the overidentifying restrictions in the model are valid, the p-value of the Hansen test ought to be greater than 5% (0.05). In our case, this value is 0.619 which prove the validity of the overidentifying restrictions in the model.

Figure 6

Dynamic panel data estimation results

Explanatory variables	Dependent variable: ROA	
	Coefficients	(Standard errors) ^a
Constant	.0638656**	(.0269487)
L.ROA	.0166708*	(.1505873)
CR	-.0712722***	(.0206775)
FIGR	.000914*	(.0004972)
GR	-.1085218***	(.0306596)
Lev	-.0020588	(.0023358)
UR	-.0007463	(.0022096)
MS	.3322189*	(.1479321)
GDP	.0010724	(.0028437)
INF	-.0031053**	(.0014741)
Number of observations	84	
Number of instruments	14	
Arellano-Bond test for AR (1) (p-value)	z = -0.86 Pr > z = 0.392	
Arellano-Bond test for AR (2) (p-value)	z = -0.63 Pr > z = 0.529	
Hansen test of overid. restrictions. chi2(4) = 2.64	Prob > chi2 = 0.619	

***statistically significant at 1% level, **statistically significant at 5% level, *statistically significant at 10% level.

The significant coefficient of the lagged profitability (L.ROA) at 10% significance level proves that the dynamic model specification is appropriate for the research. The obtained results exhibit statistically significant and positive effect of market share, financial investments growth rate on profitability, and significant and negative relationship between combined ratio, inflation, growth rate and the profitability of insurance companies.

7. Conclusion

The research contributes to the literature by expanding the understanding of which determinants have significant effect on the profitability of insurance companies in the Republic of North Macedonia. Results show that combined ratio as industry-specific variable has statistically significant (1% level) and negative impact on the profitability. This confirms the hypotheses developed from the empirical and theoretical findings that combined ratio negatively affect the profitability of insurers. It further demonstrates the increased need for operational efficiency in the Macedonian insurance companies. Next, the positive and statistically significant at 10% level effect of financial investments growth rate on profitability. Thus, it is highly recommended for financial managers to strengthen their capacity and to focus more on optimizing the investment portfolio in order to increase the investment performance of the companies. The statistically significant and negative impact of the growth rate on the profitability of insurers may be a result of the higher growth in assets than the optimal ratio. This can easily cause an increase in insurers' insolvency and can lead to self-sabotaging effect. The positive effect of market share on insurers' profitability is due to the generally accepted hypothesis. Said differently, as the firm's total sales increase in relation to the total industry revenues for certain period of time, the better competitive advantage the company has, which can manifest in an increased success in the market and demonstrate higher market power. Lastly, the results show that inflation rate is negatively correlated with the profitability. As the inflation rate increases the total costs of the company increase, leading to decrease in the profits. Hence, it is recommended for the management to develop mechanisms and strategies in the financial planning that will counter the negative effects of inflation, smooth the effect of increased inflation on the profitability and increase the total earnings at a higher rate than inflation.

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