LITERATURE REVIEW ON THE DETERMINANTS OF INSURERS' FINANCIAL PERFORMANCE

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Abstract

The main objective of our paper is to analyze the profitability of insurance companies and to determine the factors that influence it. In this regard, we have analyzed and compared fifteen articles from the literature on the performance of insurance companies. The first step in our research was to go through each of the scientific articles. Then, following certain aspects, we created a database with the information of interest for each of the fifteen articles analyzed. The information gathered helped us to make a comparison between them. Most articles focus on determining the factors that influence the profitability of general insurance. Ten of the fifteen articles have as a dependent variable of multiple regression the return on assets. As far as independent variables are concerned, company size and financial leverage are the most used and the most significant from a statistical point of view. In general, the most appropriate model of multiple regression is the fixed effects model. The main sources of data used by the authors in their research are the annual reports of the insurance companies, that include financial statements such as the balance sheet and the profit or loss account, annual reports or databases of insurance regulatory and supervisory authorities, National Banks or company websites.

Keywords: *profitability , determinants, insurance, analysis*

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1. Introduction

One of the major goals of a company's management is maximizing profits. The companies survival and continued activity depend on the repetition of profit. The same purpose have the companies that offer financial products and services such as insurance companies.

The profit of an insurance company may have three sources: operating activity (underwriting of insurance contracts), investment activity and extraordinary activity and many uses, including placement in investments, coverage of financial losses from previous years, distribution to legal reserves, distribution of dividends, etc.

Our objective, through this paper, is to review the literature on the profit of insurance companies. Thus, we researched and compared fifteen scientific articles aimed at investigating the factors that influence the financial performance of insurance companies.

2. Literature review on financial performance of insurers

As part of the literature review on identifying the determinants of the profitability of insurance companies, we analyzed and compared the following 15 scientific articles:

Table no. 1 **The list of the analyzed scientific articles**

The title of the article	*The authors of the article*	*The year of publication*	*The publication jounal*
The determinants of financial performance in general	Mirie Mwangi, Jane Wanjugu	2015	European Scientific Journal

insurance			
companies in Kenya	Murigu		
Determinants of Financial Performance of General Insurance Underwriters in Kenya	Mirie Mwangi, Cyrus Iraya	2014	International Journal of Business and Social Science
Determinants of business performance of non-life insurance companies in Serbia	Jelena Kočović, Blagoje Paunović, Marija Jovović	2014	Ekonomika Preduzeća
On the Determinants of Profitability of Indian Life Insurers – An Empirical Study	B. Charumathi	2012	Proceedings of the World Congress on Engineering
The Determinants of Financial Performance in the Romanian Insurance Market	Ana-Maria Burca, Ghiorghe Batrînca	2014	International Journal of Academic Research in Accounting, Finance and Management Sciences
Determinants of insurance companies profitability: An analysis of insurance sector of Pakistan	Hifza Malik	2011	Academic Research International
Efficiency determinants and capacity issues in Angolan insurance companies	Carlos Pestana Barros, Silvestre Dumbo, Peter Wanke	2014	South African Journal of Economics
Determinants of financial performance of the insurance companies: A case of Albania	Anila Çekrezi	2015	International Journal of Economics, Commerce and Management
Factors Influencing the Financial Performance of Non-Life Insurance Companies of Pakistan	Umair Saeed, Nouman Khurram	2015	International Journal of Empirical Finance
The financial performance of life insurance companies in Ghana	Joseph Oscar Akotey, Frank G. Sackey, Lordina Amoah, Richard Frimpong Manso	2013	The Journal of Risk Finance
Performance of the Dutsch non-life insurance industry: competition, efficiency and focus	Jacob Bikker, Janko Gorter	2008	DNB Working Paper
How Well Insurance Companies in Macedonia Perform?	Maja Pervan, Klime Poposki, Marijana Ćurak	2014	Recent Researches in Applied Economics and Management 1
Determinants of profitability panel data evidence from insurance sector of Pakistan	Bilal Javaria Khan Sumaira, Tufail Sidra Amjad	2013	Finance Management
A study on the performance of insurance companies in Ethiopia	Yuvaraj Sambasivam, Abate	2013	International Journal of Marketing, Financial

	Gashaw Ayele		Services & Management Research
Determinants of United Kingdom General Insurance Company Performance	Y. Shiu	2004	British Actuarial Journal

Source: author's processing

Of the 15 scientific articles 6 focus on determining the factors that influence the profitability of non-life insurance, and in 2 articles it is studied the profitability of insurers who practice life insurance. Four of the fifteen articles analyze the financial performance of both non-life insurers and life insurers. In 3 articles the branch of research is not directly specified, but it is assumed from the context that both branches are included: general insurance and life insurance.

Table no. 2 **The number of articles analyzed, based on the branch of insurance**

Branch of insurance	*Non-life insurance*	*Life insurance*	*Non-life and life insurance*	*Total*
Number of articles	6	2	7	15

Source: author's processing

The main sources of data used by authors in their research are the annual reports of insurance companies, that include financial statements such as the balance sheet and the profit or loss account, annual reports or databases of insurance regulatory and supervisory authorities, National Banks, Statistical Service, Ministry of Finance or company websites. As for the article on the United Kingdom sample, data measuring performance and company-specific variables were calculated using FDA/DTI returns from SynThesys Non-Life (Version 3.32), and data on economic variables were obtained from Datastream.

In three of the fifteen articles, the financial performance of the insurers in Pakistan is analyzed, and two of the articles have a case study conducted on a sample of Kenyan insurers. The table below contains the list of countries included in the case studies:

Table no. 3 **The list of the countries included in the samples**

Country sample	*Number of articles*
Great Britain	1
Ethiopia	1
Pakistan	3
Macedonia	1
Netherlands	1
Ghana	1
Albania	1
Angola	1
Romania	1
India	1
Serbia	1
Kenya	2

Source: author's processing

The article analyzing the performance of UK insurers contains a sample of a maximum of 211 insurers and covers a 14-year analysis period (1986-1999 - the farthest researched period). One

of the articles determining factors influencing the performance of Kenyan insurers covers a minimum period of 3 years of analysis.

The most recent year that is included in the research is 2013. Studies in the UK and the Netherlands cover analysis periods prior to 2000. In nine of the fifteen articles, the insurers' profitability after 2005 is analyzed. As for the number of companies included in the sample, the article on Albania includes a minimum of five insurers.

The table below contains the number of articles according to the number of years included in the research period:

Table no. 4 **The number of articles analyzed according to the number of years included in the research period**

Research period (years)	*14*	*11*	*10*	*9*	*8*	*6*	*5*	*4*	*3*
Number of articles	1	2	2	2	1	2	2	2	1

Source: author's processing

The article on determining the performance of insurers in the UK involves one of the most complex empirical analyses of the researched ones. In the study, three dependent variables are used (investment yield, percentage change in shareholders' funds, return on shareholders' funds) and three estimation models for each variable: ordinary least squares regression model, fixed effects model and random effects model. [14]

Tests of statistical significance on the relationship between performance and explanatory variables are performed. To determine the presence and severity of multicoliniiarity, the variance inflation factor, the VIF indicator, is calculated. For heteroscedasticity, the White test is performed. Models do not include an autocorrelated error structure. F-Tests are used for the overall statistical goodness-of-fit of the empirical models. To determine which of the three models is the most appropriate, Lagrange Multiplier and Hausman test are conducted. The results show that the best models for investment yield and return on shareholders' funds are fixed effects models, and the ordinary least squares model is more appropriate for the dependent variable percentage change in shareholders' funds. [14]

The regression models contain 15 independent variables that are divided into two categories: company-specific variables and economic variables. The table below contains all the variables included in the three models and the expected relationship between performance and independent variables. The variables marked with red are statistically significant at a level of 5% for at least two of the three models. [14]

Table no. 5 **The variables included in the UK case study**

Dependent variables	*Independent variables*	
	Company-specific variables	**Economic variables**
Investment yield	(+) Company size	(-) Unexpected inflation
	(-) Reinsurance dependence	
	Leverage – excessive (-)	Interest rate change
	(-) Affiliated investments	
Percentage change in shareholders' funds	(+) Solvency margin	(+) Interest rate level
	Stability of underwriting operation	
	(+) Liquidity	(+) Equity returns
	(+) Stability of asset structure	

Return on shareholders' funds	(+) Underwriting profits Insurer type	Underwriting cycle

Source: author's processing based on Y. Shiu, 2004

Reinsurance negatively affects the insurer's performance. Variable reinsurance dependence is significant at a level of 1% for half of the models. The solvency margin positively influences performance in all models and two of the coefficients are significant at a level of 5%. [14]

The 2013 survey of Pakistan insurers uses the net profit margin as a dependent variable. The article analyzing the performance of Ghana insurers uses three dependent variables: profitability of investment activities, underwriting profit and sales profitability.

Ten of the fifteen articles have as a dependent variable of the multiple regression model the return on assets. For three out of ten articles, the most appropriate model of multiple regression is the fixed effects model. The random effects model is the appropriate one for the case study on the insurers in Ethiopia. Most articles use the VIF indicator and the Pearson correlation coefficient matrix for multicollinearity, the White and Chi Square tests for heteroscedasticity and the Hausman test to choose the most appropriate regression model. For general model testing, some analyses use the ANOVA test.

The table below lists the dependent variables used in the articles analyzed, depending on the countries included in the sample.

Table no. 6 **The list of dependent variables included in the articles analyzed**

Dependent variable	*Sample*
Investment yield **Percentage change in shareholders' funds** **Return on shareholders' funds**	United Kingdom
Profitability of investment activities **Underwriting profit** **Sales profitability**	Ghana
Net profit margin	Pakistan
Return on assets	Ethiopia, Macedonia, Pakistan (2), Albania, Romania, India, Serbia, Kenya (2)

Source: author's processing

Regarding independent variables, the UK case study uses 15 independent variables, followed by the one on Romania with 13 explanatory variables. The minimum number of independent variables included in the regression models is 5 and it is found in the researches conducted on Macedonia, Albania and Pakistan (2011).

Company size and financial leverage are the most commonly used independent variables. These are statistically significant in 8 and 9 of the 15 articles analyzed. On the other hand, in 4 articles there was no significant relationship between the insurer's performance and the size of the company.

Other frequently used and statistically significant explanatory variables are the claim ratio (5 articles), the percentage change in gross premiums or gross written premiums (4 articles), equity or percentage change in equity (4 articles). The age of the company appears as an independent variable in 7 case studies, but it is statistically significant in 2 articles. Reinsurance appears as an explanatory variable in the form of retention rate or reinsurance dependence in 6 articles, but it is statistically significant in 2 articles.

Table no. 7 **The list of explanatory variables included in the articles analyzed**

Explanatory variables	Sample
Leverage	Ethiopia, Pakistan (2), Ghana, Albania, Romania, India, Serbia, Kenya
Company size	Etiopia, Pakistan (2), Ghana, Romania, India, Serbia, Kenya
Claim ratio or claims paid	Macedonia, Ghana, Pakistan (2), Kenya
Percentage change in gross premiums or gross written premiums	Ghana, Romania, India, Serbia
Equity or percentage change in equity	Ethiopia, Pakistan, India, Kenya

Source: author's processing

The article that studies Dutch insurers' performance differs from the other articles by investigating scale economies, competition and X-efficiency.

Scale economies are measured by a simple cost function, the dependent variable being total costs, including operating, distribution and acquisition costs. As measures of output they alternate between insurance premiums and claims paid. The model also includes control variables that can help explain costs by improving coefficient estimates: the ratio of claims incurred and gross premiums, the ratio of reinsurance ceded and gross premiums, the percentage of distribution costs in total costs, the degree of specialization (HHI), and the group affiliation. [2]

Cost differences between insurers can be interpreted as inefficiencies of the firm due to company-specific conditions. Differences in cost levels are measured by adding a dummy variable to the cost equation for each insurance company. The authors use a "thick frontier" method to produce an X-inefficiency for the entire sample. It compares the median cost level of insurers at the lowest and highest cost quartiles, and the lowest cost quartile is assumed to be "thick frontier," thus excluding extreme values. [2]

Another paper that has a different approach to the other articles is the one that determines the efficiency of insurance companies in Angola. This paper describes a variety of approaches used to evaluate the efficiency of a sample of insurance companies using the bootstrapping technique. Thus, several DEA (data envelopment analysis) estimates have been generated to test significant differences between efficiency levels and input-decreasing/output-increasing potentials. [1]

The authors investigate the use of neural networks combined with DEA results as part of an attempt to produce a model for the performance of insurance companies with an effective predictive capacity. [1]

3. Conclusions

One of the major goals of a company's management is maximizing profits. The same purpose applies for companies that offer financial products and services such as insurance companies.

Our objective is to review the literature on the profits of insurance companies. Thus, we researched and compared fifteen scientific articles aimed at investigating the factors that influence the financial performance of insurance companies.

Most articles focus on determining the factors that influence the profitability of general insurance. The main sources of data used by authors in their research are the annual reports of the insurance companies that include financial statements such as the balance sheet and the profit or loss account, annual reports or databases of insurance regulatory and supervisory authorities, National Banks or company websites.

The most used dependent variable of the regression models is return on assets and the most used and statistically significant independent variables are company size and leverage.

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