The impact of ERM on financial performance of non-life insurance companies in Albania

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Abstract:
Enterprise Risk Management (ERM) has emerged a significant change starting from the way firms manage their complex portfolio of risks. ERM and capital allocation have gained more attention recently, especially in insurance industry since insurers intend to manage capital costs through risk management. Previous studies have shown that ERM has helped insurers in improving the firm's value through better risk-based decision making and capital allocation.

The study aims to examine whether the implementation of ERM influenced firm value in non-life insurance companies in Albania. The sample of this study is the population itself including all the non-life insurance companies which have implemented ERM. The methodology in this paper includes quantitative methods, using secondary data of ten years, where indicators that measure firm's value were calculated to detect if they have been impacted from the usage of ERM, taking the year 2015 as the year where these companies implemented ERM in their risk management practices.

The study does not prove that ERM has yet increased the firm's value, which can be interpreted from the short time horizon, only five years from its implementation, since is proved that the effects of ERM on firm values are detectable in long term.

Keywords: ERM, non-life insurance companies, risk management, firm value, capital allocation

I. INTRODUCTION

An effectively designed integrated risk management permits the firm to cut costs and increase revenues, and improves the ability of a company to create, protect and sustain the market capitalization of the company. Lenders can be effortlessly convinced to help well-managed firms who also indicate strict risk management guidelines and protocols (Nocco and Stulz, 2006). An effective internal control system helps the companies to monitor their entire risk portfolio. The advantages and disadvantages of implementing a holistic approach to risk management differs from a company to another, and Enterprise Risk Management (ERM) benefits tend to be unforeseen upon specific contextualized settings (Beasley et al., 2008).

Several studies have implied the fact that strict adherence to ERM can enhance and boost firms' financial value and performance. Nevertheless, there are certain determinants that may have effects on ERM implementation but that cannot be deducted in quantitative terms, like for example their international diversification or sophistication. According to Standard & Poor's (2005), companies that are more sophisticated are more probable to gain more from investing in a formalized integrated risk management program. ERM protocol relates to the long-term viability of companies (Hoyt and Liebenberg, 2011). Also, according to Segal (2011), an integrated value-based risk management program is implemented to ensure the creation, protection and sustenance of shareholder value. Abdullah et al., (2017) contend that stability in earnings and profitability is the primary objective of a company. This implies that better performing companies generate more revenue than costs. Financial analysts and

investment bankers prefer profitable companies to loss making ones, since they have more potential for success and less probability for bankruptcy. Empirical evidence reported that there is a direct association between ROA and Tobin's Q, in line with the findings of the studies of Hoyt & Liebenberg, 2011; Tahir & Razali 2011; Kommunuri et al., 2016; Abdullah et al., 2017.

Liebenberg and Hoyt (2003) argue that companies which demonstrate hazy characteristics tend to have effective risk management programs. A lot of researchers have concluded that an appropriate approach to risk management enables companies to perform better, decrease costs, increase revenues, and to achieve superior returns compared to non-ERM users (Beasley, Clune and Hermanson, 2005a; Segal, 2011; Gatzert and Martin, 2015; Grace et al., 2015). In a report from Deloitte (2011), was noted that only 52% of the financial companies had an integrated risk management.

The main reason for implementing ERM might be the pressure to meet the requirements of ORSA, which was discussed in the chapter above. The impact and relationship between ERM and firm value are determined by using multivariate regression models in order to identify the nature and pattern of relationships between the variables. If the data represents any trend, that is analyzed by the time series analysis. The nature of relationships between the variables are explained below from the correlation analysis. The data is elaborated after that with STATA software to generate results for interpretation. The last section of this study discusses the findings of the study.

II. MODEL AND DATA

The data for this study was obtained mainly from the AFSA's (Albanian Financial Supervision Authority) database, from NBC (National Business Center) of Albania and the annual reports of the companies. All of them in function of explaining the relationship between Enterprise Risk Management (ERM) and company financial performance (and value) indicators.

The explanatory variable that was taken as a measure of the firm value is **ROA.** Previous studies have suggested that ROA can be used as a proxy for the firm profitability (Qiuving et al. 2014). The sample is composed as a set of non-financial enterprises operating in the non-life insurance market. Empirical studies (Florio & Leoni, 2017; Hoyt & Liebenberg, 2011; McShane, Nair, & Gbekov, 2011) strongly support the use of these two indicators for firm's performance: Tobin's Q and ROA. Since the first one is based on stock market values, which is absent for these companies, therefore ROA was used as the indicator of firm value. ROA is calculated as the percentage for the annual return on assets.

The independent variables to be used in the multiple regression are explained below:

1. **ERM** is the first independent variable used in the model as a dummy variable, taking the value of 1 if the company instituted an integrated approach to risk management (from a specific year onwards) and zero, if no ERM program was adapted. The leap year in which companies started to implement ERM in their work was 2015, as regulated by AFSA to meet the requirements of ORSA.

2. Gatzert and Martin (2015) confirm the effect of the **size** of a company on the implementation of Enterprise Risk Management. Larger companies have necessities for risk management systems that can deal with the nature of risk management sophistication and other complications related with their risk portfolios. The company's size affects the firm's performance and risks profoundly, given that large companies have more investment options than small ones. A greater size enhances the firm's performance by generating more profits and strengthening the risk scope of the enterprise. Florio and Leoni (2017) stated that a bigger risk exposure will minimize resources dedicated to ERM, aiming that companies which have small resources tend to focus more on enhancing their investments rather than developing an ERM system.

3. Another variable taken as explanatory variable were the annual **sales** growth of these companies. As Myers (1977) stated, the sales variable is one of the most important variables that has effects on the value of the company. Abnormal sales growth rates by financial firms, especially in the banking sector (including the US subprime mortgage crisis of 2007), during the financial crisis was perceived as a significant failure of the essential notions of risk management.

4. It is suggested from previous studies that firms which are highly leveraged may not necessarily translate to firms with better financial performance under the ERM implementation regime. Some authors like: Hoyt and Liebenberg (2003) and Golshan and Rasid (2012) reported financial leverage to be directly correlated to integrated risk management. According to Hoyt and Liebenberg (2011), if ERM is implemented correctly, a low leverage factor may be a factor for the company to undertake more risks in the long-term horizon. Pagach and Warr (2010) concluded themselves that the results of the impact of **financial slack** on ERM aren't unanimous. Some companies though have implemented an ERM system should carry more cash in order to reduce limited levels of liquidity or working capital.

5. Pottier and Sommer (2006) state that higher **levels of asset opacity** make the valuation of companies difficult for prospective shareholders and the general investment community, enhancing risk disclosures and consequently impacting on the firm value. The variable of asset opacity was taken in consideration in the model since companies that have high amounts of intangible assets in proportion to the total asset base tend to be endangered in especially in the cases of bankruptcy, where shareholders could lose because the business might be devaluated in case of selling. Opacity is related to the transparency. Theory suggests that the opacity of bank assets is the source of bank opacity. Studies by Campbell and Kracaw (1980), Berlin and Loeys (1988), and Diamond (1991) all lead to the conclusion that bank loans are opaque. Zhang, Cox, and Van Ness (2009) found that insurers underwriting more opaque lines of business tend to minimize their selection costs.

6. The last variable to be integrated in the model is the company **earnings before interest and taxes – EBIT**. Previous studies have noted that effective ERM substantially results in stable earnings capacity sustained over long periods of time. Similarly, the implementation of a holistic approach to the management of enterprise risks may minimize unusual variations in share price movements or behavior and could indicate a favorable picture to prospective shareholders (Pagach and Warr, 2010).

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Sales growth	96	-42.2300	265.29	15.005	34.5959	1196.87
EBIT	88	-.46181	.150876	.00679	.07955	.006
ROA	88	-.46181	.116944	.000266	.0788	.006
Size	88	0	23.061	19.0641	5.0116	25.160
Leverage	88	0	.46596	.032347	.0583	.003
Asset Opacity	88	0	.28225	.01873	.0378	.001
ERM	88	0	1	.45	.501	.251
Valid N (listwise)	88					

Following the studies that have investigated quantitatively the effects of integrated risk management on firm value (Hoyt and Liebenberg, 2011; Grace et al. 2015; Kommunuri et al. 2016, Abdullah et al. 2017), the multivariate regression model is presented as below:

$ROA=\alpha+\beta_1 SALES + \beta_2 SIZE+ \beta_3 LEV+ \beta_4 ASSET+ \beta_5 ERM+ \beta_6 EBIT$

Below, are explained the variables that will be used in the regression model:

Table 1. An overview of descriptive statistics

- SIZE - the logarithm of the book value of total assets.
- LEV - the financial leverage factor, the ratio of the sum of cash, cash equivalents and financial assets kept for trading, divided by the company's total asset base.
- SALES - the sales growth from one year to another expressed in percentages.
- ASSET OPACITY- intangible assets to total assets
- ROA = return on assets (the ratio of net income with total assets)
- ERM - is used as a dummy variable. It is indicated as 1 (one) when a company has adopted the ERM and 0 (zero) if it hasn't yet.
- EBIT - earnings before interest and taxes.

According to some authors like Baum, Schaffer and Stillman (2003), the Generalized Method of Moments is the favorite technique to be used to correct the issues of endogeneity and lagged variables and is more adaptable to be used for the companies that operate in the financial, healthcare or mining sector. Even though that GMM methods provides consistent and efficient assessment for dynamic panel models, its estimators are not efficient in small samples, like in my case because they are biased. Having this mind, we will rely on static panel in our further analysis.

The objective of this paper was to detect whether during the period taken under study ERM had an impact on the financial performance of non-life insurance companies in Albania, so the main hypothesizes might be formulated as below:

H0: Enterprise Risk Management has no significant effect on the financial performance of non-life insurance companies in Albania.

H1: Enterprise Risk Management has a significant effect on the financial performance of non-life insurance companies in Albania.

III. DESCRIPTIVE STATISTICS

Various methods were used to decode the correlations between the dependent and independent variables. These include descriptive statistics, time-series overview, correlation analysis, and multivariate regression analysis. This study is based on panel data since it includes data from observations (eight companies) with different cross sections during time (a period of 10 years).

Table 4 presents a summary of descriptive statistics for the companies which implemented an integrated risk management, showing the results for the dependent and independent variables. The determinants of firm performance and value that in my study include financial leverage, assets opacity, return on assets and growth in sales, company size which may not always be coherent or affected by the implementation of ERM.

The average financial performance indicated by ROA is 0.0002661555. If ROA higher than 0.05, it indicates to the market that the company is employing its investments and resources in a productive and profitable manner (Kommunuri et al., 2016). The maximum value of ROA is 0.116944 and the minimum value is -0.46181033 indicating that many firms are loss-making firms. Studying the empirical results, we confirm that most firms are concentrated in the levels between (- 0.007853495) and 0.78827725 of the range. The loss may not be attributed to the adoption or non-adoption of an ERM system, since it may come from various reasons such as lack of financial resources that are necessary for the implementation of an ERM program or many other problems with different origins.

The average size of a company can be computed as a natural logarithm of a company's total asset base and for these eight companies in ten years was estimated to be 19.064112. The average size of a company ranged from 0 (which is not considerable from the fact that in these cases is seen only as a lack of data) to 23.06077.

The mean value of leverage in the population of companies is calculated to be 0.03234679. The mean value of asset opacity in the study was calculated to be. 01872943 with a maximum value of 0.2822524.

IV. CORRELATION ANALYSIS

It is evident that EBIT and ROA have a strong positive relationship (0.911) between them since as we know they are calculated on the same base, so their relationship is expected. On the other hand, we notice that ROA has a positive but weak relationship with the sales growth (0.047). The positive relationship between ROA and SIZE (0.232) and between ROA and LEVERAGE (0.209) signifies a weak but still significant impact of the size of the company on the financial performance of the firm. The other variables do not either show to have strong correlation between them. The variable ASSET OPACITY shows to have a positive correlation between with the sales growth (0.3) and LEVERAGE (0.34), meanwhile a negative relationship is notable with the

variable SIZE (-0.352). The coefficients calculated are generally at low levels of relationship between the variables, which implies that multi-collinearity has been managed correctly in this empirical study.

ERM is not presented in the correlation matrix since it is a dummy variable, it takes the value 1 in the years when is implemented (2015 and on) and it takes the value 0 for the years when still it wasn't implemented. Anyhow, as a variable it will be elaborated furtherly in the multi-variate regression model to provide evidence if the implementation of ERM is positively correlated to any of the financial performance indicators.

A. Diagnostics of the model

In this section before discussing the multiple regression model, the data went through some tests of diagnostics briefly to choose the right model and to overcome possible issues regarding the independence of observations, the homogeneity of variance and normality of data.

1.Fixed versus random effects test

Firstly, I used Breusch and Pagan Lagrangian multiplier to test for the presence of random effects versus pooled data model. The estimated result presented in Table 1C in the Appendix C section (Prob>chibar2=0.0029) suggests the use of random effects model.

Then, I have used the Hausman test to differentiate between using fixed effects model and random effects model in panel analysis. In this case, the hypothesis would be formulated as:

Ho: The difference in coefficients is not systematic.

H1: The difference in coefficients is systematic.

The results shown from the Hausman test in Table 2 C in the Appendix section, suggested that the coefficients from both models (FE and RE) are similar, but given the fact that the sample size is quite small (RE properties are asymptotic), it was better to use the model with fixed effect.

2. Test of serial correlation

The data was tested for serial correlation using the Wooldridge test for autocorrelation in panel data and the results of which suggested no serial correlation. The collinearity values for all the independent variables ranged from 1.018 to 1.176, that in other words implies that the values are within the acceptable limit of 10. This test shows that the explanatory variables aren't perfectly and strongly correlated, so the issue of multicollinearity should not be considered in the model (Lind, Marchal & Wathen, 2010; Argyrous, 2005).

3.Test for cross-sectional independence and group-wise heteroscedasticity

The data was tested for cross-sectional dependence using the Pesaran's test. The results suggest that we have cross-sectional dependence in the errors so to cope with it we will use time dummies. Also modified Wald test was used for groupwise heteroskedasticity in fixed effect regression model. The Chi value was estimated to be 299.46 suggesting

that we face problems concerning groupwise heteroskedasticity, and thus the standard error was adjusted for all the columns.

4. Test for normality in residuals

The data was tested for normality in residuals using cumulative distribution of the residuals against that of the theoretical normal distribution with a chi-square test. To determine whether there is a statistically significant difference. The null hypothesis is that there is no difference. When the probability is less than. 05, we must reject the null hypothesis and infer that the residuals are non-normally distributed. The test for normality of data suggested that we might have a problem with the anomality of the residuals given that the estimated p value is 0.0577, greater than 0.05 but at the borderline. Nevertheless, we could not do anything to modify it, since the sample is small. Thus, the model was estimated and interpreted as shown below in the multiple regression model.

V. INTERPRETATION OF THE MULTIPLE REGRESSION MODEL

We provided previously the correlation matrix in order to extract the variables that are strongly correlated. As we noticed the correlation of EBIT and ROA was very strong (more than 92%) as expected since they are calculated on the same base. So, as it was argued in the beginning, ROA seems to be the most adequate variable to measure the firm performance for non-public financial firms and therefore will be used as the dependent variable in the multiple regression, meanwhile EBIT was excluded since it would cause autocorrelation of data.

Baltagi (2008), Hoyt and Liebenberg (2011), and Marozva (2017) suggested to validate the model through regressing the dependent variable against the independent ones to compare them with the equations of the same period. In my case, the profitability measure (ROA) was used as the dependent variable as a company performance measure, like related empirical studies (Li et al., 2014; Kommunuri et al., 2016; Marozva, 2017). Gatzert and Martin (2015) postulated hypotheses for different independent variables that impact on firm performance, claiming that companies have more chances to institute integrated risk management when firm size, financial leverage, earnings, share price volatility, assets opacity, and growth are increasing.

A regression analysis (Figure 1) was carried out, where ROA is taken as dependent variable and all the other variables are considered independent. The hypothesis can be restated and discussed below:

Ho: $\beta 1 = \beta 2 = \beta 3 = \beta 4 = \beta 5$

H1: At least one β is not equal to 0.

As to economic implications, the evidence aims to detect if the ERM adoption has been a key tool to unlock or improve the firm value in the non-life insurance market, and therefore armors the firm from disadvantageous financial scenarios. A lower R^2 may also present the fact that the market's perception of the importance of the stated independent variables can be inadequate.

Figure 1. Pesaran's test of cross- sectional independence

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
salesg	-.0002699	.0001855	-1.46	0.150	-.0006401	.0001004
size	.0017054	.001467	1.16	0.249	-.0012235	.0046342
leverage	-.6765877	.1066277	-6.35	0.000	-.8894768	-.4636986
asset_capacity	-1.073649	.1838084	-5.84	0.000	-1.440634	-.7066637
erm	-.0474003	.0264872	-1.79	0.078	-.1002837	.0054831
yr2010	.0287036	.02528	1.14	0.260	-.0217694	.0791767
yr2011	-.0429835	.0259586	-1.66	0.103	-.0948116	.0088446
yr2012	.0013875	.0251684	0.06	0.956	-.0488628	.0516379
yr2013	-.0781923	.0253099	-3.09	0.003	-.1287251	-.0276594
yr2014	-.0010899	.0264256	-0.04	0.967	-.0538502	.0516705
yr2015	.0211601	.0274027	0.77	0.443	-.0335511	.0758713
yr2016	.0022801	.0281145	0.08	0.936	-.0538523	.0584126
yr2017	.0162951	.0251801	0.65	0.520	-.0339786	.0665688
yr2018	-.0012495	.0251719	-0.05	0.961	-.0515068	.0490079
yr2019	0	(omitted)				
_cons	.0401495	.0309114	1.30	0.199	-.0215671	.1018662
sigma_u	.02732344					
sigma_e	.05032079					
rho	.2276995	(fraction of variance due to u_i)				

F test that all u_i=0: F(7, 66) = 2.86 Prob > F = 0.0113

In this study, the degree of relationship between the independent and dependent variables is sufficiently good, since the explanatory variables have an estimated importance of 0,59 or that 59,12% (R^2) of the variance of ROA is explained by the independent variables.

Also, F statistics (14,73) =7.71, implies that the model is significant. The value of Prob(F)= 0.0000<0.05 proves that the null hypothesis for the full model is not true (i.e., that all the regression coefficients are not equal to zero).

The results of the coefficients of the multiple regression model are discussed below, which were extracted from Table 8C in the Appendix C section. Given this information, we may formulate the multi-variate model which be presented in the equation below:

ROA=-0.04-0.0002SALES*+0.0017SIZE-0.6766LEV*-1.0736ASSETOPACITY***-0.0474E RM*

* denotes statistically significant coefficient at 10%

*** denotes statistically significant coefficient at 1%

Thus, following the definitions given by Flannery et al. (2004) and Gatzert et al. (2013) asset opacity is calculated as ratio of intangible assets to total assets. In general, most of the variables are statistically insignificant at conventional level of significance of 5%. increases by one percentage point, that would cause a decrease of ROA of 1.07% percentage points (when all the other variables remain the same).

Results of this study, present a significant and direct association between assets opacity and the value of the company. Our results prove the existence of a negative relationship, in contrary with the previous empirical evidence that claims that companies with significant levels of intangible assets in relation to the total asset base have achieved substantiable increase of value from using an integrated risk management program since the relationship is negative. Nevertheless, some authors such as Hoyt and Liebenberg (2011) argue that highly opaque companies may be evaluated incorrectly because it is difficult to evaluate intangible assets. This may cause that the shareholders of the company risk to decrease significantly the amount of money because non-physical assets may be incorrectly assessed or priced causing a lower valuation than normal (Pagach and Warr, 2010).

The other variables such as sales, financial leverage and ERM are statistically significant but only at 10%. The rest of the variables are statistically insignificant at any

conventional level of significance. In summary, all the tests that were presented before, serve to the one of the aims introduced in the objectives of the study, as mentioned in the beginning.

The evidence shows that in the short run, a company's involvement in ERM process does not appear to improve the firm's performance as measured by ROA. Initially, the risk management efforts and costs do not show to bring benefits at all for the non-life insurance companies, in the same line with the previous studies (Beasley et al., 2008; Tahir & Razali, 2011; Rochette 2009; Pagach & Warr 2010).

In the study of Lin et al., (2012) was reported that ERM had a corrosion effect of five percent on market value and four percent negative effect on the return on assets. The explanations that can be attributed for this negative impact could be the investment costs and a lack ERM precondition-fulfillments before its implementation. If ERM is deployed ineffectively, it can become a costly burden, rather than a benefit to companies (Fraser, Schoening-Thiessen and Simkins, 2008). These studies confirm that integrated risk management lacks to be well-developed and advanced in emerging economies and might be considered as an outrageous cost.

That's the reason why in the first years of its implementation, ERM may bring inverse correlation conclusions. In this study, we can conclude that the findings of the study support hypothesis one. Defensibly, in short-time period, the investment in compiling with all the requirements of ERM is still a cost that did not bring either positive or negative effects on firm performance yet.

VI. Conclusions

Albeit I used fixed effects as our main model, I checked he results from pooled data model and random affects model for robustness check. The results are similar (available upon request when comparing the result from the fixed effects model with those from the random effects model and the classical linear regression model. The main difference is related to the significance of the financial leverage which increases, and the coefficient is statistically significant at 1% level in the case of random effects model and pooled data model.

Financial slack is compounded as the ratio between sum of the magnitude of cash, cash equivalents, and financial assets held in relation to the total asset base. The findings confirm that ROA and the financial slack are correlated with each-other negatively, which means that a decrease of the financial slack has contributed in an increase of the financial performance. The findings support the findings of Pagach and Warr (2010), that used financial slack in their research to identify the determinants for the head of the ERM program. Their study noted that the ones that employ integrated risk management may require superior levels of financial slack, for the main reason for which CRO regularly brings key risk information to the directors or managers that helps them in reducing the risk of bankruptcy by diminishing information asymmetries. In many cases, the CRO may encourage the Chief Finance Officer (CFO) to keep very low levels of slack regarding the presence of competent risk transparency and diminish the agency and moral hazard formalities (Hoyt and Liebenberg, 2011).

The indicators do not prove a significant direct association between sales growth and the value of a company (ROA). Maury (2006), King (2008) indicated that growth opportunities as measured by sales growth has a direct correlation with the

performance of a company. However, though there are a considerable number of empirical studies that have claimed a direct link between sales growth and the company's value, the last variable is a complex factor which is affected by the expenses also, which in the insurance companies are more volatile.

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