

The effect of enterprise risk management on firm value: Evidence from Vietnam industry listed enterprises

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ABSTRACT

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This study considers 77 Vietnam industry listed enterprises from 2012 to 2018 as research samples to establish indicators for evaluating the relationship between Enterprise risk management (ERM) and firm value among industry enterprises in Vietnam. International economic integration not only opens up many business opportunities for businesses but also brings many challenges for Vietnamese businesses. One of the challenges is that the financial risks to businesses are increasingly diverse in type and sophistication. Our results show that the implementation of ERM in the previous year has strong positive relationship with firm value. These findings support the recent pressure on businesses to adopt more comprehensive risk management systems.

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1. Introduction

The importance of Enterprise risk management (ERM) has increased significantly over the years in Vietnam. The Ministry of Finance has recognized the need to manage financial risks for businesses and issued Circular 210/2009 / BTC stipulating the strengthening of financial risk management in listed enterprises. This Circular requires enterprises to report their financial risks in the notes to financial statements, including market risk (exchange rate risk, interest rate risk, risk of price fluctuation), credit risk and liquidity risk. There are many studies all over the world that have determined the impact of financial risk management on corporate value. These studies have both theoretical and practical meaning. From a theoretical perspective, according to the theorem unrelated to finance of Modigliani and Miller (1958), a company will not engage in hedging activities, since these activities do not bring any benefit to the company. From the 1980s, the role of risk management was reviewed and many theoretical studies argued that, with the imperfect capital market, ERM is a method to increase shareholder value. These important theoretical contributions are made by Smith and Stulz (1985), Bessembinder (1991), Nance et al. (1993), Froot and Stein (1998), Nocco and Stulz (2006) and Aretz et al. (2007). From a practical perspective, according to Nocco and Stulz (2006), ERM is a process of identifying, assessing and managing individual risks (for example: currency risk, interest rate risk, reputation risk and legal risks) within the framework of strategy and coordination. Research by Bromiley et al., 2015 suggests

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that ERM takes a portfolio look at all the risks that a company faces, whether they are risks related to corporate governance or the chain supply, distribution system, IT or human resources. The goal of ERM is to gain a systematic understanding of interdependence and the correlation between risks (McShane et al., 2011). Hoyt and Liebenberg summarized ways ERM helps increase the value of companies, namely by reducing the volatility of their earnings and stock prices, reducing external capital costs, increasing efficiency capital and create synergies between the various risk management activities of these companies. Over the past 10 years, industrial enterprises have begun to approach ERM. However, few enterprises are concerned about the impact of implementing enterprises risk management on corporate value. The objective of this study is to assess the impact of implementing ERM on corporate value. This study uses a sample of 77 industry enterprises listed on Vietnam's stock market. The paper includes 4 main contents: (1) Overview of research on the impact of ERM on corporate value, (2) Scientific hypotheses and research methods, (3) Actual results on the impact of ERM on the enterprise value of Vietnamese industry enterprises listed on the stock market, (4) Some recommendations.

2. Research overview

2.1 Impact of enterprise risk management on firm value

Many articles have studied the impact of enterprise risk management (ERM) by derivative financial instruments on firm value. Allayannis and Weston (2001), Nelson et al. (2005), Carter et al. (2006), Bartram et al. (2011) and Panaretou (2014) have found a positive relationship between risk management by derivative financial instruments and value. However, Guay and Kothari (2003), Jin and Jorion (2006), Grace et al. (2015), Fauver and Naranjo (2010), Allayannis et al. (2012) and Belghitar et al. (2013) have found no relationship or only a conditional positive or negative relationship between the use of derivatives and corporate value. Other studies (Beasley et al., 2008; Gordon et al., 2009; Pagach & Warr 2010; McShane et al., 2011; Milos Sprcic et al., 2016) found no support for value creation of ERM or the positive effects of an ERM framework depends on firm-specific factors

2.2 Impact of others factor on firm value

SIZE: Colquitt, Hoyt, and Lee (1999), Hoyt and Liebenberg (2003), Beasley, Clune, and Hermanson (2005) showed that large enterprises often apply risk management process more than small businesses. Lang and Stulz (1994) and Allayannis and Weston (2001) have shown an inverse relationship between firm size and firm value. Moreover, Gordon, Loeb and Tseng (2009) also conclude that the impact of ERM on corporate values has many different empirical results that may be due to firm size and operational complexity activities.

LEVERAGE: The objective of Liebenberg and Hoyt (2011) is to measure the extent to which specific firms have implemented ERM programs and, then, to assess the value implications of these programs. They focus our attention in this study on US insurers in order to control for differences that might arise from regulatory and market differences across industries. Liebenberg and Hoyt (2011) showed that the relationship between financial leverage and firm value is positively positive, however, when the tax shield is lower than the cost of financial exhaustion, the value enterprise reduction.

ROA: Bertinetti et al. (2013) researched about effect of the ERM implementation on the Firm Value of European Companies. Research results of Liebenberg and Hoyt (2011), Bertinetti et al. (2013) show that the expected relationship between ROA and firm value is positively positive.

SALEGROWTH: Research by Allayannis and Weston (2001), Zou (2010), Jin and Jorion (2006), and Carter et al. (2006), Hoyt and Liebenberg (2011) have demonstrated that revenue growth has a positive impact on firm value.

Thus, from the review of the research work shows that studies on the impact of ERM on corporate value are carried out in countries with long-standing market economy. Research on ERM in companies listed on the stock market in Vietnam has only started in recent years and the number of researches is still very small. Therefore, more research on this issue is needed for companies listed on the stock market in Vietnam to add empirical evidence on the impact of ERM on these corporates value.

3. Methodology

3.1. Data and Sample

Our initial sample included the listed industry enterprises from the Vietnam stock market over the period between 2012 and 2018. A sample within the same industry can ensure that the external environment faced by the sample is consistent, which can more accurately measure the internal factors on company strategic decision-making. A total of 77 observations were finally

obtained after removing the outliers and missing values. The established indicators of initiative risk management come from the websites, corporate annual reports and related firm reports.

A lag often exists between ERM activities and their impact on firm value, so the main effect of ERM on firm value was evaluated using Tobin's Q for the year in which ERM activities were implemented. Research data is extracted from the audited financial statements of these companies.

3.2. Research Models

Based on the variable and proposed relationships articulate previous section, the relationship of ERM and firm value is shown in the following models:

$$\text{Tobin's Q} = \beta_0 + \beta_1 \text{ERM} + \beta_2 \text{SIZE} + \beta_3 \text{LEVERAGE} + \beta_4 \text{ROA} + \beta_5 \text{DIVIENDS} + \beta_6 \text{GR} + \varepsilon$$

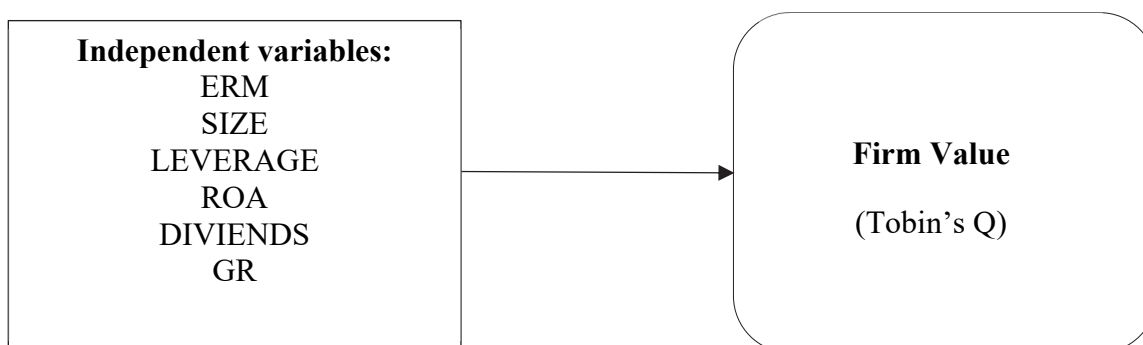


Fig. 1. Research Model (Source: Compiled by the authors)

Dependent Variable

Tobin's Q is commonly used as the proxy for firm value accounting for companies' market-based financial performance. Consistent with other empirical risk management studies, we use Tobin's Q as a measure of firm's value (Hoyt & Liebenberg, 2011; McShane et al., 2011; Baxter et al, 2013). Tobin's Q is a ratio that calculated by adopting the market value of equity added to total liability and subtracting deferred tax expense, then dividing by total assets.

Independent Variable

In this study, we consider six independent variables such as the implementing enterprise risk management (ERM), the size of the firm, the return on asset, the financial leverage, the dividends and the sale growth. The detail is shown in table 1.

Table 1

Definition of model variables

Variable name	Code	Measurement	Hypothesized sign
Firm Value	Q	Tobin's Q value = (market value of asset + book value of net liabilities)/ book value of assets	
Enterprise risk management	ERM	Equals 1 if the firm implements an ERM system and 0 otherwise	+
Firm size	SIZE	Firm size measured by log of total assets	+
Financial leverage	LEVERAGE	Total liabilities over total equity	+
Profitability	ROA	ROA = Net Income Before Taxes/ Average total assets	+
Dividends	DIVIDENDS	The dividend dummy will take value 1 if the firm paid a dividend in the current year and 0 otherwise. Obtained from annual reports	+
Sales Growth	GR	(Current period net sales – previous period net sales)/ previous period net sales	+

(Source: Compiled by the authors)

3.3 Research hypotheses

The research hypotheses are as follows:

H₁: There is a positive relationship between ERM and firm value.

H₂: There is a positive relationship between firm size and firm value.

H₃: There is a positive relationship between leverage and firm value.

H₄: There is a positive relationship between profitability and firm value.

H₅: There is a positive relationship between dividends and firm value.

H₆: There is a positive relationship between sales growth and firm value.

3.4 Data Analysis

To determine the impact and relationship between ERM and firm value, multivariate regression models are used to examine the nature and pattern of relationships between the variables. Time series analysis was used to analyse trends and underlying patterns in the data. Correlation analysis was used to examine the nature of relationships between the variables. A fixed-effects panel regression analysis has been carried out in order to control for unobservable firm characteristics that may influence firm value. Because company specific effects are likely to be correlated with the variables in our model, we rely on the FE approach for inference and hypotheses testing, but also provide a formal test of whether FE or RE approach is more appropriate to support our choice (Hausman test). All the estimations are made by econometric software EViews. In choosing the appropriate estimation model for panel data, Hausman (1978) test is employed in most cases. It basically tests whether individual effect is related to explanatory variables. The null hypothesis is that the effect is unrelated to explanatory variable. If the test is significant at, at least 0.05, fixed effect model is a better fit to the data compared to random effect model.

4. Results

4.1. Descriptive Statistic

Table 2

Descriptive statistical analysis of sample

Variables	Obs	Mean	Median	Maximum	Minimum	Std. Dev.
Q	539	1.0728	0.9653	5.3601	0.3793	0.4784
ERM	539	0.7903	1.0000	1.0000	0.0000	0.4074
SIZE	539	26.7372	26.5147	30.3718	23.4795	1.2333
LEVERAGE	539	1.5994	0.9594	22.4296	0.0421	2.3088
ROA	539	0.0657	0.0556	0.3983	-0.2212	0.0676
GR	539	0.3752	0.0819	127.4579	-0.9486	5.5724
DIVIDENDS	539	0.7847	1.000	1.0000	0.0000	0.4113

(Source: Results of data processing of the authors)

Table 4 presents the descriptive statistics that contain the values of mean, median, maximum, minimum and standard deviations of each variable. Firm value as measured by Tobin's Q is the dependent variable and ERM, SIZE, LEVERAGE, ROA, GR and DIVIDENDS are explanatory variables. The average firm value (Q) among industry firms is at 1.0728 with a median of 0.9653. However, the dispersion of firm value across the sample is relatively low as shown by standard deviation of 0.4784. ERM has a mean score of 0.7903, median of 1.0000 and standard deviation of 0.4074. The mean value of return on assets (ROA) was 0.0657 of which the highest ROA was 0.3983 and the lowest ROA was -0.2212: the maximum of size is 30.3718 while the minimum is 23.4795, and the standard deviation reached 1.2333. The average growth rate (GR) of annual sales of the firms is 0.3752. The mean value of dividends is approximately 0.7, which implied that most of the industry companies paid a dividend in the current year.

4.2 Correlation analysis

Table 3

Correlation coefficient

Variables	Q	ERM	SIZE	LEVERAGE	GR	ROA	DIVIDENDS
Q	1						
ERM	-0.0867	1					
SIZE	0.0208	-0.1415	1				
LEVERAGE	-0.0373	-0.1697	0.2610	1			
GR	-0.00159	-0.0775	0.0676	0.3293	1		
ROA	0.3639	0.0307	0.06505	-0.3321	-0.0217	1	
DIVIDENDS	0.1703	0.0408	0.0310	-0.1074	-0.0862	0.365	1

(Source: Results of data processing)

According to the statistics obtained from the regression analysis as shown in Table 3, Q has a positive relationship with SIZE, ROA and DIVIDENDS, and the opposite relationship with ERM, LEVERAGE, and GR. The results show that the correlation coefficient between any pair independent variables in the model is no less than 0.8 and therefore multicollinearity is unlikely to occur.

4.3. Empirical results

The value of the Breusch-Pagan LM test statistic, 5329.324 is well into the upper tail of a Chi-Square of 2926, and we strongly reject the null of no correlation at conventional significance levels.

Both the Pesaran scaled Breusch-Pagan LM, and the Baltagi *et al.* bias-adjusted LM tests are asymptotically standard normal, and the test statistic results of 31.80 and 25.39 respectively, strongly reject the null at conventional levels. While the test statistic value of 10.9 is significantly below that of the scaled LM tests, the Pesaran CD test still rejects the null at conventional significance levels.

Table 4

Cross-section dependence tests

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	5359.324	2926	0.0000
Pesaran scaled LM	31.80883		0.0000
Bias-corrected scaled LM	25.39216		0.0000
Pesaran CD	10.99579		0.0000

Hausman test in Table 5 is significant at 0.01; and therefore, random effect model is rejected in favor of fixed effect model.

Table 5

Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	17.888091	6	0.0065

(Source: Data processing results of authors)

According to Hausman's contrast, it is determined that the Fixed effects model would be the best option. The empirical results of the study are shown in Table 6, respectively. R-square value was found to be 0.6326. This implies that approximately 63.26% of the observed variation can be explained by the model's inputs while the remaining 36.74% was due to the other variables not captured in this study. The results of test show that $F=8.8063$, $P=0.000$, adjusted R^2 is 0.5608. In the case of large samples ($n=77$), the fitness (R^2) of the model is good enough. Durbin-Watson tests for autocorrelation in residuals from a regression analysis. The test statistic ranges in between 0 to 4. A value of 1.2852 indicates that there is no autocorrelation. From the regression results, we find that the sig. of ERM and return of assets were 0.00, which indicates that the two variables had a significant linear relation with firm value, $p \leq 0.01$, the sig. of leverage, sale growth and dividends is less than 0.1, and these factors, to some extent, have impact on firm value. The sig. of size rate is not significant, so the impact on firm value is not obvious.

Table 6

Regression Results

Variable	Q	t-Statistic
C	0.7454*	0.6672
ERM	0.1436***	2.8874
SIZE	0.0044	0.1052
LEVERAGE	0.0211*	1.4629
GR	-0.0030*	-0.985
ROA	1.4254***	3.8865
DIVIDENDS	-0.0395*	-0.8252
R-squared	0.6326	F-statistic
Adjusted R-squared	0.5608	Prob(F-statistic)
Durbin-Watson stat	1.2852	

***, **, and * indicates statistically significant levels of 1%, 5% and 10%, respectively

(Source: Data processing results of authors)

4. Discussion

The study has used a sample of 77 industry enterprises listed on the stock market over the period 2012-2018 to assess the impact of financial risk management on corporate value. In correlation with previous studies both domestically and internationally, the study contributes to the empirical evidence on the impact of financial risk management on corporate value in listed industry companies listed on Vietnam's stock market. The research results show that only ERM and ROA are thought to have positive effects on Tobin's Q at significance level $< 1\%$. First, ERM has a positive relationship with Tobin's Q (accepts H_1). When businesses conduct risk management, the value of the business will increase by 0.14 times compared to not conducting financial risk management. This result is consistent with previous studies of Hoyt and Liebenberg (2011), Bertinetti *et al.* (2013), Baxter

et al. (2013), Eckles et al. (2014), and Farrell and Gallagher (2015). If businesses conduct financial risk management, it will contribute to good control of financial risk. This has a positive impact on the performance of the business and its value.

Second, there is no indirect effect of firm size on the firm value of industry firms, so the hypothesis H_2 is rejected. A big asset value of a firm does not guarantee that investor's impression towards the firm will increase. Investors do not think of firm size as a base of investment decision. The study done by Nwamaka and Ezeabasili (2017) showed that the firms with big assets do not always share profit to the shareholder. Firm which retains the profit rather than share it as dividend might affect the stock price and its firm value. The results of this study are in line with the finding of Setiadharna and Machali (2017), but in contrast to the study result of Liebenberg and Hoyt (2003), and Allayannis and Weston (2001). Third, there is no correlation between debt and firm value (H_3 is not acceptable). This result is inconsistent with previous studies. Liebenberg and Hoyt (2011) showed that the relationship between financial leverage and firm value is positive, however, when the tax shield is lower than the cost of financial exhaustion, the firm value reduction. This can be explained by the structure of debt of industrial enterprises in the state of imbalance, current debt is mainly short-term debt, long-term debt ratio is still very low. Fourth, ROA has a positive relationship with Tobin's Q (accepting H_4). When the ROA is increased by one unit, firm value increases by 1.42 times under the condition of other factors unchanged. This result is consistent with the studies of Bertinetti et al. (2013). Good business profitability is an important factor that positively influences firm value. Fifth, this analysis shows that leverage mostly does not have any significant relationship with examined variables (H_5 is not acceptable). The result is in agreement with Tas and Ede (2018) and Modigliani and Miller (1958) findings that leverage is unrelated to firm value; and Millers (1977) hypothesis which states that the capital structure of a firm does not impact on its market value. For further study, we need to compare leverage of our industry firms and global peers. Also, we may extend our data since it is limited with only 7 years in this study. Sixth, there is no correlation between sale growth and firm value (H_6 is rejected). Jang and Pack (2011) implied that profit creates growth but growth impedes profitability. This conclusion is consistent with the results of Anton (2018), Jang and Pack (2011), but in contrast to the study result of Allayannis and Weston (2001), Zou (2010), Jin and Jorion (2006), and Carter et al. (2006).

5. Conclusion

This study has attempted to examine the impact of ERM implementation on firm value, measured by the Tobin's Q. The study has employed fixed effect dynamic panel data to examine the valuation effect of ERM. Our findings have supported our prediction that ERM implementation is likely to affect firm performance adversely. The result can help industry businesses explain the impact of financial risk management on corporate value, thereby helping corporate executives to make financial decisions, production and business projects accordingly to maximize the value of the business. Industry enterprises need to pay special attention to the management of financial risks in enterprises. Industrial enterprises listed on the stock market of Vietnam performing financial risk management are still heavy in formality in the financial statements, but have not really paid attention to the effectiveness of financial management, results of financial risk management in the enterprise. Therefore, the impact of financial risk management on corporate value is not high.

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References

- Allayannis, G., & Weston, J. P. (2001). The use of foreign currency derivatives and firm value. *The Review of Financial Studies*, 14, 243–276.
- Allayannis, G., Lel, U., & Miller, D. P. (2012). The use of foreign currency derivatives, corporate governance, and firm value around the world. *Journal of International Economics*, 87(1), 65–79.
- Anton, S. G. (2018). The impact of enterprise risk management on firm value: Empirical evidence from romanian non-financial firms. *Inzinerine Ekonomika-Engineering Economics*, 29(2), 151-157.
- Aretz, K., Bartram, S. M., & Dufey, G. (2007). Why hedge? Rationales for corporate hedging and value implications. *Journal of Risk Finance*, 8(5), 434–449.
- Bartram, S. M., Brown, G. W., & Conrad, J. (2011). The effects of derivatives on firm risk and value. *Journal of Financial and Quantitative Analysis*, 46(4), 967–999.
- Baxter, R., Bedard, J. C., Hoitash, R., & Yezegel, A. (2013). Enterprise risk management program quality: Determinants, value relevance, and the financial crisis. *Contemporary Accounting Research*, 30, 1264–1295.
- Beasley, M. S., Pagach, D., & Warr, R. (2008). Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes. *Journal of Accounting, Auditing and Finance*, 23(3), 311–332.
- Belghitar, Y., Clark, E., & Salma, M. (2013). Foreign currency derivative use and shareholder value. *International Review of Financial Analysis*, 29, 283–293.
- Bertinetti, G. S., Cavezzali, E., & Gardenal, G. (2013). The Effect of the Enterprise Risk Management Implementation on the

- Firm Value of European Companies. Working Paper No. 10, Università Ca' Foscari Venezia, Italy.
- Bessembinder, H. (1991). Forward contracts and firm value: investment incentive and contracting effects. *Journal of Financial and Quantitative Analysis*, 26, 519–532.
- Bromiley, P., McShane, M., Nair, A., & Rustambekov, E. (2015). Enterprise risk management: Review, critique, and research directions. *Long Range Planning*, 48(4), 265–276.
- Carter, D. A., Rogers, D. A., & Simkins, B. J. (2006). Does hedging affect firm value? Evidence from the US airline industry. *Financial Management*, 35, 53–86.
- Colquitt, L. L., Hoyt, R. E., & Lee, R. B. (1999). Integrated risk management and the role of the risk manager. *Risk Management and Insurance Review*, 2(3), 43–61.
- Eckles, D. I., Hoyt, R. E., & Miller, S. M. (2014). The impact of enterprise risk management on the marginal cost of reducing risk: Evidence from the insurance industry. *Journal of Banking and Finance*, 43, 247–261.
- Farrell, M., & Gallagher, R. (2015). The Valuation Implications of Enterprise Risk Management Maturity. *Journal Risk and Insurance*, 82(3), 625–657.
- Fauver, L., & Naranjo, A. (2010). Derivative usage and firm value: The influence of agency costs and monitoring problems. *Journal of Corporate Finance*, 16(5), 719–735.
- Gordon, L. A., Loeb, M. P., & Tseng, C. Y. (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301–327.
- Grace, M. F., Leverty, J. T., Phillips, R. D., & Shimpfi, P. (2015). The value of investing in enterprise risk management. *The Journal of Risk and Insurance*, 82(2), 289–316.
- Guay, W., & Kothari, S. P. (2003). How much do firms hedge with derivatives?. *Journal of Financial Economics*, 80, 423–461.
- Hoyt, R., & Liebenberg, A. (2011). The value of enterprise risk management. *Journal of Risk and Insurance*, 78(4), 795–822.
- Hoyt, R., & Liebenberg, A. (2015). Evidence of the value of enterprise risk management. *Journal of Applied Corporate Finance*, 27(1), 41–47.
- Jang, S. S., & Park, K. (2011). Inter-relationship between firm growth and profitability. *International Journal of Hospitality Management*, 30(4), 1027–1035.
- Jin, Y., & Jorion, P. (2006). Firm value and hedging: Evidence from U.S. oil and gas producers. *The Journal of Finance*, 61, 893–919.
- Lang, L. H., & Stulz, R. M. (1994). Tobin's q, corporate diversification, and firm performance. *Journal of Political Economy*, 102(6), 1248–1280.
- McShane, M., Nair, A., & Rustambekov, E. (2011). Does enterprise risk management increase firm value?. *Journal of Accounting, Auditing and Finance*, 26(4), 641–658.
- Milos Sprcic, D., Mesin Zagar, M., Sevic, Z., & Marc, M. (2016). Does enterprise risk management influence market value— A long-term perspective. *Risk Management*, 18(2/3), 18–65.
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48(3), 261–297.
- Nance, D. R., Smith Jr., C. W., & Smithson, C. W. (1993). On the determinants of corporate hedging. *Journal of Finance*, 48, 267–284.
- Nelson, J., Moffitt, J. S., & Affleck-Graves, J. (2005). The impact of hedging on the market value of equity. *Journal of Corporate Finance*, 11, 851–881.
- Nocco, B., & Stulz, R. (2006). Enterprise risk management: Theory and practice. *Journal of Applied Corporate Finance*, 18(4), 8–20.
- Nwamaka, O. C., & Ezeabasili, V. (2017). Effect of dividend policies on firm value: Evidence from quoted firms in Nigeria. *International Journal of Management Excellence*, 8(2), 956–967.
- Panaretou, A. (2014). Corporate Risk Management and Firm Value: Evidence from the UK Market. *The European Journal of Finance*, 20(12), 1161–1186.
- Pagach, D. P., & Warr, R. S. (2010). The effects of enterprise risk management on firm performance. Working Paper, Social Science Research Network. Available at SSRN.
- Setiadharna, S., & Machali, M. (2017). The effect of asset structure and firm size on firm value with capital structure as intervening variable. *Journal of Business & Financial Affairs*, 6(4), 1–5.
- Smith, C. W., & Stulz, R. (1985). The determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis*, 20(14), 391–405.
- Tas, O., & Ede, S. (2018). The effect of capital structure on the value of firm. A study of Turkey non-metal product index. *PressAcademia Procedia*, 8(1), 34–37.
- Zou, H. (2010). Hedging affecting firm value via financing and investment: evidence from property insurance use. *Financial Management*, 39(3), 965–996.



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