

An Empirical Study on Microeconomic Factors Affecting Stock Price: A Study on Insurance Companies Listed in Dhaka Stock Exchange

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Abstract

Purpose: *This study aims to reveal the financial factors responsible for the movement of the market stock price of insurance companies enlisted in the Dhaka Stock Exchange.*

Design/methodology/approach: *For this purpose, ten years of panel data covering from 2010 to 2019 of 15 insurance companies have been analyzed. Hypotheses have been developed and tested using econometric modeling techniques such as Pooled OLS regression and the Random-effect and Fixed-effect model. The independent variables for this study are Return on Assets (ROA), Book Value Per Share (BVPS), Earnings Per Share (EPS), Price-Earnings ratio (P/E), and Firm's Size (SZ).*

Findings: *The output of pooled OLS shows that ROA, BVPS, EPS, and P/E ratio have significant positive impacts on the market stock price. The Fixed-effect model shows that ROA and P/E ratio has significant positive impacts where firms' size negatively impacts the market stock price.*

Practical implications: *The findings of the study will be helpful for the shareholders investing in the insurance sector to monitor what factors are responsible for thriving stock prices. It will also be helpful for the regulators and other relevant stakeholders to monitor the stock market for ensuring sustainable growth of the capital market.*

Research limitations: *The study only covers fifteen insurance companies enlisted in the Dhaka Stock market for ten years.*

Originality/value: *This study is one of the earliest attempts to explore the insurance industry to identify what key factors are greatly responsible for the insurance companies' share prices in recent times in the Dhaka Stock Exchange.*

Keywords: Dhaka Stock Exchange, Market Stock Price, Return on Assets, Book Value Per Share, EPS, PE Ratio, Size of Firm, Fixed-effect Model, Random effect.

Introduction

The insurance industry has been a vital part of a country's financial system. For every country, the significance of the insurance industry is undeniable since it has been a crucial aspect regarding the

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lives of mass people and the related aspects those are concerned about. Interestingly, other industries are dependent on the insurance industry to operate freely; there is always a risk related to the industry. The market stock prices are varied and influenced are believed to occur for different financial and economic reasons. The stock market is one of the largest sources of capital for any country. A country's economy heavily depends upon the money circulation in the stock market. Different institutions come here to deploy and invest their money for further profit. Public organizations can come and invest their money for further expansion. A company in need of public funding for capital is required to start from Initial Public Offering (IPO) process. The stock market establishes a bridge between the investors and market players for any institution operating in the stock market. Thus, capital keeps mobilizing, and economic growth is driven by how the market goes. Thus, economic growth is achievable through proper utilization of the stock market. For continuous development of the industrial sector, the stock market plays a significant role by helping develop the commercial and industrial factors (Sen and Ray, 2013). Demand and supply are the two most important factors. Purchasing and selling are related to demand and supply, which eventually propels the flow of stock trade in the market. When people purchase a stock more frequently, the stock price increases, and on the other hand, when they sell it, the stock price eventually drops. However, many other factors affect the price; for example, the organization's performance, new rules, and regulations of the Government, etc.

As the complementary sector influencing the production, service, and financial sectors, the insurance industry works like a shield of protection. To help elevate economic activities, the insurance system has become an essential element. Insurance normally helps decrease the damage caused by bearing the loss, protecting them from major risk (Rejda and McNamara, 2014). At both micro and macroeconomic level, the insurance sector plays its role as a safeguard against common uncertainties. Accordingly, poor performers in this sector negatively affect the risk potential of the sectors dependent upon it. The study's objective is to analyze the financial factors that influence the share price of insurance companies traded in DSE.

In this study, we have attempted to show the financial indicators that influence the market stock price movement of insurance companies enlisted in the Dhaka Stock Exchange. To measure this, we have shown the investors' sentiment to purchase or sell the stock of insurance companies, portray the trend of specific financial factors of the sample insurance companies over the last decade, observing the pattern of participation of various parties in the ownership composition of

the selected insurance companies. This paper covers the financial factors of the fifteen insurance companies out of 48 insurance companies enlisted in the Dhaka Stock Exchange. The panel dataset is spread across a period of ten years. The explanatory and dependent variables are observed for the given period, making the study an empirical analysis. An econometric model has been employed specifically for the study. An effort has been made to keep the paper as intelligible as possible for further use by intending researchers. Overall, this paper is expected to provide basic apprehension for anyone interested in the stock price determinants of insurance companies in Bangladesh.

Objective of the Study

The primary objective of this study is to identify the financial factors that can be good indicators of predicting the stock price of insurance companies enlisted in the Dhaka Stock Exchange in recent times.

Significance of the Study:

This study covered the financial factors of the fifteen insurance companies out of 48 insurance companies enlisted in the Dhaka Stock Exchange. The panel dataset is spread across a period of ten years. The explanatory and dependent variables are observed for the given period, making the study an empirical analysis. An econometric model has been employed specifically for the study. An effort has been made to keep the paper as intelligible as possible for further use by intending researchers. Overall, this paper is expected to provide basic apprehension for anyone interested in the stock price determinants of insurance companies in Bangladesh. As far as our knowledge, no other study has been conducted recently based on the data available from 2010 to 2019 on the insurance industry to identify the factors responsible for the growth of stock prices.

Literature Review:

Famous researcher Collins (1957) conducted a research in the USA to explore the determinants of the stock price. He found out that, issues like book value, net profit, dividend, OE (operating earnings) etc. are crucial factors influencing share prices. Since there is an established body of empirical and theoretical literature, the outcome is well supported. Fisher (1961) conducted research to understand their situation even for the British market. He intended to identify a

relationship between the prices of shares and several quantitative aspects. He took data of 8 years from 1949-57 and represented how issues like profits, dividends, and size affect the share price. Brennan et al. (1998) showed that changing share prices are directly or indirectly associated with different kinds of accounting variables that are either mentioned above or relevant as per the issue. The probable correlation between firm performance (ROE, profit margin, EPS, ROA, changes in sales, and total assets turnover) and MSP of the companies with top-performing stocks enlisted in the SSE (Shanghai Stock Exchange) was studied by Dehuan and Zhenhu (2008). The analysis revealed that all the explanatory variables were significantly correlated with MSP in the year before the economic crisis. However, during the global financial catastrophe period, the performance indicators had no explanatory influence on market stock price movement. Menike and Prabath (2014) have researched that EPS, DPS, and BVPS have a major and positive effect on the market stock price of CSE (Colombo Stock Exchange). The unique feature of this was that it compared the developed and developing markets' results. The comparison showed that earnings per share show less impact on the market stock price in the CSE (Colombo Stock Exchange), whereas DPS and BVPS show a significant impact.

Pradhan (1993) found a favorable relationship between the return of stocks and the size of the company and dividends and stock prices. On the other hand, it showed an inverse correlation between equity returns and market-to-book valuation. Manandhar (1998) argued that dividend per share and returns on equity positively affect market capitalization. On the other hand, a negative effect has been seen on stock price by influencing issues like EPS, P/E ratio, and dividend yield, but EPS, size, profitability, etc. have a positive relationship with dividends (Shrestha, 2015). Bhattarai (2014) analyzed the influence of dividend policy and company-specific factors on the market price of shares of Nepalese commercial banks. The analysis demonstrated a positive relationship between DPS and share market price, which indicates that the firms continuously paying their investors with higher dividend payments will attract the investor attitude while choosing companies to invest. Thus, higher demand for the share and the share price are increased.

For the period between 1981 and 2000, Irfan and Nishat (2002) attempted to report the factors affecting market stock price in the KSE (Karachi Stock Exchange). The research applied cross-sectional least square weighted regression and evaluated the effect on share prices of six factors, i.e. dividend yield, dividend payout ratio, firm's size, asset growth, leverage, and earnings

volatility. Among them, from the aspect of KSE, Pakistan issues like leverage, ratios like payout and size, dividend, etc. were some of the demanding factors. This implies that a firm's internal factors significantly affect the market price of shares. Khan and Amanullah (2012) selected five quantitative determinants: dividend, the book to market ratio, P/E ratio, interest rate, and GDP to predict the trend and strength of the relationship with the stock price. The population was the companies from Pakistan's KSE (Karachi Stock Exchange) 100 index. Ten years dataset has been collected from a sample of thirty-four companies and has been randomly selected from thirty-four sectors of the Karachi Stock Exchange (KSE). The study concluded that all the selected factors positively correlate with MSP (market stock price) apart from book to market ratio and interest rate. Those two variables are negatively related to the market stock price.

For the Indian stock market, BSE was analyzed by Das and Pattanayak (2009) to see the movement, and they took thirty shares to account. The paper observed that higher earnings, ROI, growth opportunities, and favorable valuation positively influenced the stock price of the market, whereas higher risk and uncertainty had inverse effects. The stock price of India has also been analyzed by Nirmala, Sanju, and Ramachandran (2011) to determine the stock prices. OLS method has been used using different significant aspects by taking ten years data from 2000-09. As mentioned above, the variables mentioned above are significant aspects and affect the share prices. Sharma (2011) in his paper, argued the DPS (dividend per share) and EPS to be the strong influencers of market stock price. Share equity affecting the share price has been researched by Srinivasan (2012), and he found out that dividend being negatively associated with price whereas BVPS is positively associated.

Furthermore, he concluded that EPS, P/E ratio, and size are strong influencers of stock prices. Bhatt and Sumangala (2012) contributed to the discourse by collecting and analyzing EPS and equity share's market value of 2006–2007 to 2010–2011 for fifty companies. The authors argued that the market prices of equity securities are affected by EPS in the Indian capital market.

Malhotra and Tandon (2013) analyzed a hundred companies from NSE, and ninety-five were selected from sample selection from 2007 to 2012. The findings of linear model demonstrate a significant positive relationship between the P/E ratio, EPS, and firms' book value and the market stock price (MSP) of the company, while the dividend shows a significant negative relationship

with the market stock price. Geetha and Swaminathan (2015) suggested that the P/E ratio, book value of the firm, and EPS had a substantial positive relationship with the market stock price of the company. The previously mentioned variables were analyzed by Challa and Chalam (2015) too for BSE, and they found positive results with share price.

Uddin (2009) considered the following firm-specific variables of the bank, leasing, and insurance companies, i.e., NAVPS, dividend yield, and EPS, to analyze their relationship. Hasan et al., (2013) focused on reducing the effect of the dividend policy on Bangladesh's market stock price. They conducted the research using secondary data and descriptive statistics, correlation analysis, and multiple regression models. DPS and retained earnings per share have been taken for explanatory variables, and for the dependent variable, the market stock price has been chosen. The result found that DPS and retained earnings per share had a major and favorable effect on market stock Price. Moreover, the authors claimed that higher dividends paying industries demonstrate a higher market price per share than their lower dividend paying counterparts.

A study by Masum (2014) examines the market for all the companies listed under the banking sector in the DSE (Dhaka Stock Exchange) for 2007-2011. Panel data set has been used as input to investigate the effect of dividends on the market stock price. The explanatory variables such as ROE, EPS, and retention ratio had a favorable relationship with market stock price and significantly explain the variations in the market stock price, whereas the NPAT (net profit after tax) and dividend yield had a negative yet, insignificant relationship with the market stock price.

A study conducted on insurance companies listed in the Amman Stock exchange by Quaisi et al. (2016) found that ROA, Debt ratio, the Age of the company, and size of the company have a significant impact on the market stock price of the insurance company. However, they did not find any significant relationship between market stock price and ROE.

A study conducted on the Dhaka Stock Exchange based on forty-eight insurance companies listed in the market found turnover by value and volume have significant impact on stock price. However, the positive impact of the highest closing price per month, firm beta, and liquidity factors on stock returns are insignificant (Barua, 2020).

Price earnings ratio (PE ratio) and firm size positively influence market stock price of Nepalese non-life insurance companies. the study revealed that larger firms always have great impact in increasing share price as well as PE ratio. However the findings of the showed that macroeconomic variable inflation negatively related with the market stock price. The study also revealed that dividend per share and returns on assets (ROA) are negatively related to the market price of share (Gautam, 2019).

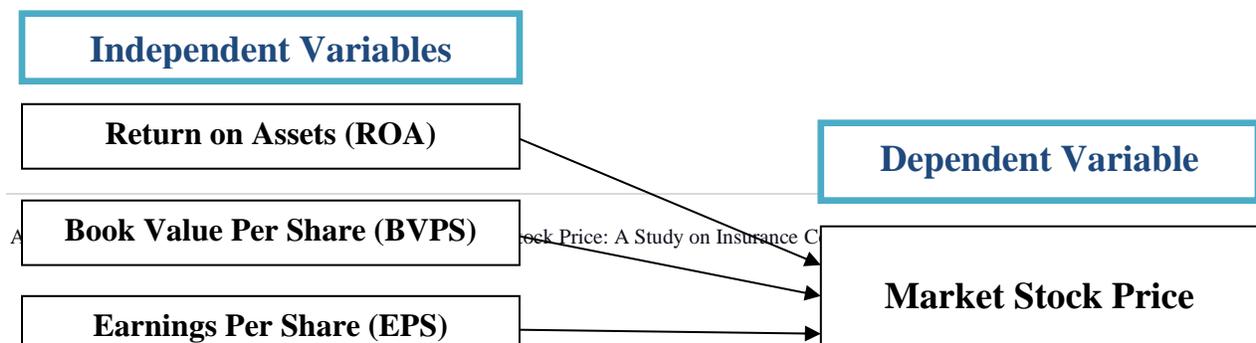
Ullah et al. (2016) found a negative relationship between underwriting risk and firm size with return on assets (ROA). They also found a significant positive relationship between expense ratio, solvency margin, and growth with the market share price.

Being an emergence issue, the outcomes were equivocal as per the relevant market. This can plausibly attribute to the geographical differences showcasing different cultures' financial literacy, market analysis capacity, and cognition. There has not been much research regarding the issue showcasing the impact on stock price in Bangladesh. As a result, this study will help reduce the gap in the relevant field based on the aforementioned financial variables determining their extent of dominance on the market stock price of insurance companies listed in DSE.

Conceptual Framework:

The conceptual framework has been structured based on the literature review discussed above. Thus, the dependent variable has been identified as market stock price. On the other hand, the independent variables include terms like ROA, BVPS, P/E ratio and EPS as well as size of the firm. So, the conceptual framework has been structured to form a blueprint regarding how the financial factors given in independent variables have impact on share price.

Figure 01: Conceptual Framework for the Research



H1

H2

H3

H4

H5

Source: Author's Self-contribution

Market Stock Price (MSP)

MSP is the price found from selling a stock at a specific period. It represents the company's value regarding the amount a company is willing to give to the firm. Since the stocks are bought and sold, the market price fluctuates. Depending on different significant factors, the price can either increase or decrease when more people are willing to purchase the stock, the price increases and when they choose to sell, the price decreases.

Return on Assets (ROA)

ROA is defined as the proportion of the total assets of a business covered by the annual net income during a financial year. It is an indicator of business efficiency and profitability (Zutter and Gitman, 2012). In other words, ROA reflects the number of cents earned by employing each dollar of assets. Therefore, higher values of ROA indicate that the project is profitable. Ratios like ROA are used for comparing companies from the same industry. The reason is that the concentration of costly equipment varies from industry to industry.

In contrast, some industries need expensive equipment and factories to generate income, while others do not. A rise in the ROA demonstrates that the productivity of the companies is growing. On the contrary, reduced ROA signals that profitability is deteriorating (Kabajeh et al., 2012).

Book Value Per Share (BVPS)

The BVPS ratio is calculated by considering total shareholders' equity against outstanding shares available for the respective year. BVPS expresses a per-share estimation of the minimum value of a company's equity. If the current market value per share is compared against BVPS, it will provide insight into the over or undervaluation of a firm's stock. A firm's stock is declared undervalued if the book value per share surpasses market value.

Earnings Per Share (EPS)

EPS is considered one of the main indicators of a firm's profitability. It refers to the value generated by dividing the company's earnings after tax for the financial year adjusted for payment of preference-share dividends by the number of outstanding shares. The claim of the equity shareholders on the net earnings of the corporation is preceded by the dividend to the preference shareholders. The investment-specific implication of this ratio reflects the fact that if EPS is high, the dividend is high, and retained earnings show a strong side of the company.

Price-Earnings Ratio (P/E)

By dividing the market share price by earnings per share, the P/E ratio is determined. It enables the investors to get an appropriate measurement of the time required to cover their investments in a company. The price-earnings ratio shows how related EPS and a share's market price. This shows the extent to which the share price is covered concerning earnings and whether the share price is fairly priced, overpriced, or underpriced. Generally, a high P/E ratio implies that the investors expect higher earnings growth in the future compared to their lower P/E competitors.

Firm's Size (SZ)

There are many ways to determine a firm's size, e.g. implementing accounting terms like assets, capital, sales, turnover etc. In this study, total assets have been taken into consideration. Larger companies usually promise higher investment scope than smaller businesses. The companies on account of their elevated production capacity normally hold a leading position in the capital market. If the big-scale companies get enlisted in the stock exchange, their stocks are fluently traded in the stock exchange; since the marketability and liquidity is more diverse for investment. Thus, the appeal of the big firms' stock contributes to a rise in the selling price of their shares. Altogether, both the economies of scale and economies of scope achieved by bigger

companies seem to attract the investors. Moreover, there is also a general consensus that, bigger companies are resistant up to certain degree towards minor systemic shocks.

Research Methodology

With respect to the literature review and conceptual framework made above, the research methodology is structured. Data that has been used as well as process to data collection, sample size, sampling method, analyzing method, as well as empirical method for measurement of relevant model concerning dependent and independent variables are discussed here.

Research Design

The research design is structured with respect to the significance of the research and how and what direction the research is going to head. Depending on the nature of the research, it can be either qualitative or quantitative or even mixed method representing combination of both. In this study, quantitative method has been used. We deployed descriptive analysis, regression analysis, and diagnostic checks to interpret the results.

Target Population and Sample Size

Seventy-eight insurance companies are currently operating in Bangladesh right now among which forty-eight companies are listed in DSE. To conduct the study properly finding out expected research outcome, fifteen non-life insurance companies have been selected based on non-random convenience sampling, from 2010 to 2019.

Data and Data Sources

In this research study, secondary data has been used since that is more suitable. To do this, the data has been collected from the relevant websites like DSE, Langkabangla Financial Portal, and the respective insurance firm's website. Based on the companies listed in DSE, panel data of these fifteen companies have been used.

Research Variables

The variables those have been used in this research are given below:

Table01: Summary of Research Variables

Variables	Definition	Symbol
Dependent Variable		
Market Stock Price	Average of Closing Share Price as on 31st of Every Month for the Years Studied	MSP
Independent Variables		
Return on Assets	Net Income / Total Assets	ROA
Book Value Per Share	Total Shareholders' Equity / Number of Shares Outstanding	BVPS
Earnings Per Share	Net Income / Number of Shares Outstanding	EPS
Price-Earnings Ratio	Market Price of Stock / Earnings Per Share	P/E
Firm Size	Natural Logarithm of Firm's Total Assets	SZ

Source: Author's Self-contribution

Research Model

Here, the research model helps users understand the effect of financial factors on the market stock price of enlisted insurance companies in DSE. In line with prior studies like (Gautam and Bista, 2019), (Almajali, Alamro and Al-Soub, 2012), Quaisi et al. (2016) ,(Barua, 2020), (Pointer and Khoi, 2019),(WaliUllah, Faisal and Zuhra, 2016) and based on the dependent and independent variables discussed before the model can be structured as-

$$Y_{it} = a_{it} + \sum_{k=1}^5 \beta_{1it} X_{itk} + e_{it} \dots \dots \dots (1)$$

Y_{it} = Market Stock Price as dependent variable; a =Constant; $\beta_{1it} \sum X_{itk}$ = microeconomic variables; e_{it} = error term. Here t = time 1,2,3,4,,,,,n and i = insurance company1, insurance company2, insurance company 3,,,,,n. a is a constant term here. β is the coefficient for microeconomic variables. The term e_{it} represent the error term and the effects of extraneous variables.

The model can be broadly expressed by

$$MSP_{it} = a + \beta_1 (ROA)_{it} + \beta_2 (BVPS)_{it} + \beta_3 (EPS)_{it} + \beta_4 (P/E)_{it} + \beta_5 (SZ)_{it} + \epsilon_{it} \dots \dots \dots (2)$$

Where,

a = Constant Term

MSP = Market Stock Price

ROA = Return on Assets

BVPS = Book Value Per Share

EPS = Earnings Per Share

P/E = Price-Earnings Ratio

SZ = Firm Size

ε = Error Terms

β_1 to β_5 = Coefficients of Regression for Respective Variables

Data Analysis and Findings

Descriptive Statistics

In order to get an overview of all the variables, descriptive statistics have been used and it shows the values of mean, minimum, maximum, and standard deviations associated with the observations of fifteen sample insurance companies for the period 2010-2019.

Table 2: Output of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MSP	150	31.1551	17.39389	9.011667	104.9442
ROA	150	5.8394	2.71226	.6843764	14.99966
BVPS	150	30.49963	19.19809	11.27	115.49
EPS	150	2.510007	1.588006	.16	12.31
PE	150	16.36531	21.37747	4.758247	245.425
SZ	150	7.446215	.7563757	5.746235	9.314675

Source: Stata Output

From table 2, it can be seen that the sample insurance companies listed in DSE had a positive mean of the market stock price (MSP) of BDT 31.156 with a standard deviation of 17.39% for 2010-19. Moreover, there is a noticeable variation in the values (minimum= BDT 9.01 and maximum= BDT 104.94) of MSP. Among the explanatory variables, ROA, EPS, and SZ have a minimum standard deviation which indicates the variation of these variables within a close range around their mean value. The other explanatory variables, such as BVPS and P/E have a standard deviation of around 20%, indicating a broader range of variation from their respective means. It is worth mentioning that a wide range of P/E is observed from the data set with the minimum and maximum values of 4.758 and 245.425, respectively. This suggests that the investors' sentiment and confidence towards firms' prospects vary broadly.

Correlation Analysis

To understand the relation between two different variables and strength correlation analysis is conducted. The correlation coefficient uses the value within a range of -1 to +1. The closer it is to +1 or -1, the stronger its implication is expressed regarding the relationship. On the contrary, a value closer to 0 indicates weaker relation in either direction. However, when the value is absolute zero, no relation between the given variables is assumed. If there is a negative sign, the relationship indicates inverse relation, and when there is a positive sign, the relationship is direct. It is not a must, though this implies a cause-and-effect relationship (Gujarati, 2004).

Authors like Ejigu (2016) identified a correlation of above 0.90 between two variables as multicollinearity. The following correlation analysis table depicts the highest correlation between BVPS and firm size with a value of 0.8494, indicating no multicollinearity exists in the dataset.

Table 3: Output of Correlation Analysis

	MSP	ROA	BVPS	EPS	PE	SZ
MSP	1.0000					
ROA	0.1432	1.0000				
BVPS	0.5652	-0.1977	1.0000			
EPS	0.5750	0.4761	0.6482	1.0000		
PE	0.1564	-0.3187	-0.1260	-0.2942	1.0000	
SZ	0.3998	-0.2876	0.8494	0.5036	-0.1278	1.0000

Source: Authors' Own Calculation

All the explanatory variables in the table show a positive correlation with the explained variable. Among them, EPS has the highest positive correlation with MSP. The most negative correlation coefficient value is found between P/E and ROA, which is -0.3187. The most positive correlation coefficient value is shown between SZ and BVPS.

VIF Test

Variance Inflation Factors (VIF) test is employed to diagnose multicollinearity between the explanatory variables. For the same purpose, a VIF test has been conducted in this study.

Table 4: Output of VIF Test

Variable	VIF	1/VIF
BVPS	6.00	0.166666
EPS	5.08	0.196724
SZ	3.92	0.254872
ROA	3.40	0.293755
PE	1.18	0.845317
Mean VIF	3.92	

Source: Authors' Own Calculation

Marquardt (1970) and Robert (2007), considered a mean VIF value not less than ten or the tolerance value (1/VIF) not greater than 0.1 as an indication of multicollinearity among the explanatory variables. The output of the VIF test shows a mean VIF of 3.92 and all the tolerance values above 0.1. This suggests no multicollinearity among the variables. Therefore, all of the variables are allowed to be retained in the regression model of this paper.

Pooled OLS Regression Output

In the regression model, the market stock price (MSP) is considered as dependent or explained variable. The ROA, BVPS, EPS, P/E, and SZ are the independent or explanatory variables.

Table 5: Output of Pooled OLS Regression

Variables	Pooled OLS			
	Coefficient	Standard Error	t-value	P-value
MSP				
ROA	1.408854**	0.6830906	2.06	0.041
BVPS	0.5395152***	0.1281211	4.21	0.000
EPS	2.76845*	1.425677	1.94	0.054
P/E	0.2929119***	0.05109	5.73	0.000
SZ	-2.85228	2.629684	-1.08	0.280
Constant	15.96949	18.58615	0.86	0.392
F statistics			31.21	
Prob> F			0.0000	
R-square			0.5201	
Adjusted R-square			0.5034	

Source: STATA Output .Note: *, **, *** indicate level of significance at 10%, 5% and 1% respectively

The R-square value of the regression is 0.5201, which indicates 52.01% of the variability of the dependent variable is explained by the ROA, BVPS, EPS, P/E and SZ. However, the adjusted R-square is only slightly lower. The F-statistics value of 31.21 and the Prob> F (0.0000) value, which is significant, shows that the model is a “good fit” in explaining the market stock price of the sample insurance companies listed in DSE. BVPS and P/E are found to have significant impact under 1% significance level. ROA and EPS are also significant but at 5% and 10% significance level, respectively. SZ or firm size had no significant effect on the dependent variable.

Fixed-effect and Random-effect Model

In the Fixed-effect model, the parameters are held to be of non-random property. In Random-effect model of panel data analysis all or some of the parameters are random variables.

Table 6: Output of Fixed-effect and Random-effect Model

Variables	Fixed Effect			Random Effect		
	Coef.	Std.Err.	P-value	Coef.	Std.Err.	P-value
MSP	2.25336**	0.85749	0.010	2.0899**	0.79964	0.009
ROA	-0.0219	0.16067	0.891	0.40317**	0.14279	0.005
BVPS	1.62456	1.49469	0.279	2.87039*	1.49904	0.056
P/E	0.23495***	0.04514	0.000	0.2851***	0.04746	0.000
SZ	-12.967***	3.69743	0.001	-2.868	2.91141	0.325
Cons	107.299	30.1336	0.001	16.1406	21.6287	0.456
	Number of Observations		150	Number of Observations		150
	F Statistics		22.59	Chi-Square		100.90
	Prob> F		0.0000	Prob> Chi-Square		0.0000
	R-square (within)		0.4649	R-square (within)		0.3708
	R-square (between)		0.5620	R-square (between)		0.6168
	R-square (overall)		0.0057	R-square (overall)		0.4816

Source: STATA Output. Note: *, **, *** indicate level of significance at 10%, 5% and 1% respectively

The R-square value of the Fixed-effect model and Random-effect model gives insight into the power of explanatory variables in explaining the variability of the dependent variable. In the Fixed-effect model, the within R-square means that 46.49% of the variability of dependent variables within entities (insurance companies) is explained by the independent variable, whereas the percentage is 56.20% for the variability of dependent variables between variables entities. However, for the Random-effect model, variation within and between entities is explained at 37.08% and 61.68%, respectively. The overall variability is better explained by the Random-effect model as suggested by the overall R-square value. Under the Fixed-effect model, the F-value of

22.59 and P-value of 0.0000 suggest the model is a good fit. Also, under the Random-effect model, Chi-square 100.90 and P-value 0.0000 suggest the same.

The PE and ROA have shown significant impact in both the models at 1% and 5% significance levels, respectively. In the Fixed-effect model, both BVPS and EPS were found insignificant where, in the Random-effect model, they were found significant at 5% and 10% significance levels, respectively. Firm size (SZ) was significant at 1% level under Fixed-effect though it was not significant under Random-effect model.

Hausman Test

A Hausman test is necessary to determine the appropriate model for the panel dataset between Fixed-effect and Random-effect model. In the following table, the output of the hausman test is given. The null hypothesis is that the Random-effect model is preferable to the Fixed-effect model.

Table 7: Output of Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
ROA	2.253365	2.0899	.1634641	.309626
BVPS	-.0219701	.4031723	-.4251424	.0736346
EPS	1.624567	2.870393	-1.245826	.
PE	.2349584	.2850598	-.0501015	.
SZ	-12.96702	-2.868	-10.09902	2.279192

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$chi2(5) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$
 = 22.32
 Prob>chi2 = 0.0005
 (V_b-V_B is not positive definite)

Source: Authors'Own Calculation

The Chi-square value of 22.32 and P-value of 0.0005 confirms that the null is rejected and the Fixed-effect model is preferable for analyzing the panel dataset.

Discussion on Output of Hypotheses Testing:

In the table below, the summary of the output has been given.

Table 8: Summary of Hypotheses Testing

Variables	Hypotheses	Pooled OLS		Fixed-effect	
		Conclusion	Accept/ Reject H₀	Conclusion	Accept/ Reject H₀
ROA	No effect	Positively related	Rejected	Positively related	Rejected
BVPS	No effect	Positively related	Rejected	Negatively related	Failed to reject
EPS	No effect	Positively related	Rejected	Positively related	Failed to reject
PE	No effect	Positively related	Rejected	Positively related	Rejected
SZ	No effect	Negatively related	Failed to reject	Negatively related	Rejected

Source: Authors'Own Calculation

Hypothesis 1: Return on assets (ROA) does not affect the market stock price (MSP) of insurance companies listed in DSE.

Under the Pooled OLS and Fixed-effect model, the hypothesis on ROA has been tested, and it has a significantly positive impact on the MSP of insurance companies listed in DSE. Dehuan and Zhenhu (2008) found partially consistent results with the only exception that ROA has been a significant factor impacting the MSP until the financial crisis of 2008.

Hypothesis 2: Book value per share (BVPS) does not affect the market stock price (MSP) of insurance companies listed in DSE.

To affect the MSP of insurance companies listed in DSE, the BVPS was significant under the Pooled OLS method, but the null was failed to be rejected under the Fixed-effect model. The findings under the Pooled OLS model agree with that of Collins (1957), Al Shubiri (2010), Almunani (2014), Menike and Prabath (2014), Srinivasan (2012), and Malhotra and Tandon (2013).

Hypothesis 3: Earnings per share (EPS) does not affect market stock price (MSP) of insurance companies listed in DSE.

To affect the MSP of insurance companies listed in DSE, the EPS was significant under the Pooled OLS method, but the null was failed to be rejected under the Fixed-effect model. The findings under the Pooled OLS model agree with that of Al Tamimi et al. (2011), Ebrahimi and Chadegani (2011), Almumani (2014), Menike and Prabath (2014), Sharma (2011), and Srinivasan (2012). However, Sreshtha (2015) showed no significance of this variable to predict MSP.

Hypothesis 4: Price-earnings ratio (P/E) has no effect on market stock price (MSP) of insurance companies listed in DSE.

Under both the Pooled OLS and Fixed-effect model, the hypothesis on P/E has been tested, and it has been found to be of significantly positive effect on the MSP of insurance companies listed in DSE. It is consistent with the results found by Almumani (2014). The result, however, does not agree with the findings of Sreshtha (2015).

Hypothesis 5: Firm Size (SZ) has no effect on market stock price (MSP) of insurance companies listed in DSE.

To affect the MSP of insurance companies listed in DSE, the firm's size was negatively significant under the Fixed-effect model, but the null was failed to be rejected under the Pooled OLS method. Almumani's (2014) findings support the finding under Pooled OLS method. On the other hand, the findings by Fisher (1961), Pradhan (1993), Irfan and Nishat (2002), and Srinivasan (2012) agree with the output of the Fixed-effect model.

Conclusion

The quality of the companies is a critical component of a good equity market. Good governance, accountability, efficient bureaucracy followed by political stability, and non-interference can go a long way in improving the stock market as an international hub of investment. A falling ROA can indicate that the company is failing to generate revenues efficiently while employing its assets or even over-investing, which are not favorable for the investors' prospect. The average ROA of the sample insurance companies has been steadily falling since 2013. After the eventful turbulence during 2010 and 2011, the trend of the P/E ratio became steadier since the year 2015. The average P/E ratio has been consistently low and has shown fluctuation within a smaller range since 2015. Apart from being not attractive in the eyes of investors, lower P/E demonstrates an opportunity of

gaining return from comparatively less investment of money. The average P/E ratio of sample insurance companies is below 20 (except for 2011), indicating a favorable investment opportunity for small-scale investors. Under the Pooled OLS regression, ROA, BVPS, EPS, and PE have significantly and positively affected the share's market stock price. Under the Fixed-effect model, the ROA and PE have a significantly positive impact on MSP, whereas SZ has a significantly negative effect on MSP. The number of listed insurance companies in DSE is forty-eight; therefore study on only fifteen companies cannot provide many conclusive remarks. Thus, further research on this topic can include a larger sample size and a broader range of macroeconomic variables to test their influence on the market stock price. The inter-industry comparison regarding such factors can also provide valuable insights. Also, the comparison can go category-wise. This paper can be deemed as an experimental research work in this endeavor.

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