



A STUDY ON THE DETERMINANTS OF STOCK MARKET PRICES - AN EMPIRICAL STUDY OF TOP 5 INDIAN INFRASTRUCTURE COMPANIES

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ABSTRACT

Stock market is considered to be one of the most vital source for economic development in every country, but there are various factors that affect the performance of stock market directly or indirectly. The security prices reflect the performance of a company. Both economic and non-economic factors invariably affect stock return behavior. The behavior of stock market is an important determinant for investor's decision. This study aims to evaluate the impact of stock market behavior on Indian Infrastructure companies. For this purpose, data of top five Indian Infrastructure companies listed in BSE have been collected on the basis of highest market capitalization rate. For the said study, data have been collected for a period of 10 years from 2010-2019. Data so collected have been analyzed using Excel and E-Views Software. The results of correlation depicted a very strong and positive correlation between Market Price Per Share (MPS) and Earning Per Share (EPS) and a very weak but positive relation with Price- Earning (P.E) Ratio. For the purpose of measuring the impact we have used panel data regression analysis. MPS has been used as the dependent variable and EPS, P.E Ratio and Dividend Yield have been used as the independent variables. As the Time period ($T = 10$ years) is greater than the cross-sectional unit ($I = 5$ companies), that is we have a long panel so Fixed Effects Model (FEM) should be appropriate but the results of Hausman test finalized Random Effects Model (REM) to be the best fitted model for the said study.

Keywords: Stock market, economic development, Infrastructure companies, market capitalization, REM, FEM.

I. INTRODUCTION

In the present scenario, market analysis is considered to be an important factor for determining market behavior. Several theories in the regime of economics and finance have come into existence which provide with market analysis theories. Stock price behavior is considered as one of such theory that is considered to be an essential element in determining market operations. Stock price behavior may be defined as a phenomena where the present information prevailing in the

market scenario affects the price of share. Therefore it could be essentially said that the impact of stock price behavior or stock market's movements can affect companies in a variety of ways. The rise and fall of share price affects a company's market value through its capitalization. The higher the price of the share, the higher is its capitalization and vice versa. So, it is a matter of immense interest to determine the stock price behavior of a company for understanding its contribution over the economy. The factors which affects stock price behavior are demand and supply of share in the market, interest rates, investor's behavior, dividend yields, economic conditions preventing etc. On the sequence of discussion, it is to be noted that Indian economy comprises of various forms of companies, and everyone has its own contribution. Among those various combinations, infrastructure sector plays a key drives role towards Indian economy. This sector is highly responsive in propelling India's over all development and thereby enjoys intense focus from Government for initiating policies that would ensure time-bound creation over development. In 2018, India's ranking was 44th out of 167 countries in the World Bank's Logistics Performance Index (LPI). So it is considered valuable to determine market behavior for Indian Infrastructure Companies. This paper attempts to evaluate the behavioral aspect of Indian infrastructural companies through stock market price behavior. Thereby, impact of stock price is judged. Companies from Indian infrastructure group are analyzed for determining the impact, top ten companies yielding high market capitalization are considered and various notions are analyzed over the data. On the part of conclusion, the influence of Indian Infrastructure Companies over share price are observed.

II. REVIEW OF LITERATURE

Some of the earlier literature on the determinants of stock prices at the International level as well as Indian level are listed below:

Karthikeyan and Kumar (2016) in their paper aimed to find out the share price behavior analysis for selected company under construction sector which is listed in NSE using simple statistical analysis like Simple moving average and Trend analysis. For the purpose of the study, the monthly closing prices of five construction industry listed in National Stock Exchange were taken. The study suggested even though the results of moving average gave buying signal to most of the company's stock, the company which showed maximum return with the help of trend analysis should be chosen for investment.

Thapa (2019) tried to explore the influencing factors of stock price in Nepal (with reference to Nepalese commercial banks) listed on the Nepal Stock Exchange Ltd. over the period of 2008 to 2018. Data collected from questionnaire and financial statements were analyzed using simple linear regression model. The study concluded that EPS, DPS, effective rules and regulations, market whims and rumors, company profiles and success depend upon luck have the significant positive association with share price while interest rate and price to earnings ratio, showed the significant inverse association with share price.

Shivaraju and Rakesh (2014) analyzed the equity share prices of different companies of different sectors. Stock returns for 5 companies listed in five different indices on National Stock Exchange (NSE) i.e. Indian Capital Market have been considered. The data for five years have been collected from 1st January 2009 to 31st the December 2013 and were analyzed with the help of moving averages. The study suggested that the investors can invest in the shares that shows a definitive signal of buy or sell decisions.

Malhotra and Tandon (2013) attempted to determine the factors that influence stock prices in the context of National Stock Exchange (NSE) 100 companies. For the purpose of the study, the researchers selected a sample of 95 companies for a period of 2007-12. Data so collected has been analyzed using linear regression model. The results indicated that firms' book value, earning per share and price-earnings ratio had a significant positive association with firm's stock price while dividend yield had a significant inverse association with the market price of the firm's stock.

Geetha and Swaminathan (2015) analyzed the influencing factors which affects the movement of stock price either upward or down trend. A sample of four automobile and IT industries listed in BSE and NSE have been chosen for the period of five years. The study concluded that among the variables chosen, book value, earnings per share and price earnings ratio showed a significant effect. However, dividend per share does not have positive or negative effect towards the market price.

Chougala and Srivatsa aimed to analyze Correlation between Bombay stock exchange indices with other selected International stock markets indices. Closing prices of selected indices have been collected from the studied stock exchanges from January 2011 to February 2016. The study concluded that there is a high positive correlation between BSE Sensex and S&P 500 of New York, NASDAQ Composite, FTSE of London Stock Exchange, Nikkei of Japan Stock Exchange and SSE Composite of China.

Jain and Bajaj (2017) attempted to find whether the Earnings per Share and market price of the share are related or not, whether EPS has any effect on the market price of the share. Secondary data were collected from 5 companies from different sectors for the period of 2008-2017 for the study. The data so collected was exploratory in nature which was measured through simple Correlation analysis and regression analysis. The analysis shows that share price of most of the companies is affected by the independent variable i.e. EPS.

Pani (2008) in this paper tried to explore the possible links between dividend policy and stock price behavior in Indian corporate sector. A sample of 500 listed companies from BSE are examined for the years 1996-2006. The present paper features a panel data approach to analyze the relationship between dividend-retention ratio and stock-price behavior while controlling the variables like size and long-term debt-equity ratio of the firm. Results of the fixed-effect models indicate that dividend-retention ratio along with size and debt-equity ratio plays a significant role in explaining variations in stock returns.

Balakrishnan (2016) investigated whether the Earnings per Share, Dividend per Share and Price Earnings Ratio can be used as a significant explanatory variable for predicting share Market prices. Data were collected from 5 companies of 1 sector for the period 2010-2015. The collected data were exploratory in nature which was measured through Simple Correlation analysis and Multiple regression analysis. The analysis showed that share price of various companies are not affected by the independent variables and only few industries are affected.

Ruhani, Islam and Ahmad (2018) aimed to review the existing literature of the theories explaining stock price behavior. To review the literature, this study presented the theories in two different eras. First era is the pre modern era in financial theory and the second one is the theories in modern financial economics with technological development. In this study, some basic theories are mentioned that are relevant to explaining stock price behavior and evidences showed that there has been a remarkable interaction between theory and practice.

III. OBJECTIVES OF THE STUDY

The objective of this empirical study is to analyze the impact of Stock market price behavior on the Indian Infrastructure companies.

IV. HYPOTHESES OF THE STUDY

Based on the above stated objective the following hypotheses are formulated:

H₀₁: There is no significant relationship between MPS and EPS

H₀₂: There is no significant relationship between MPS and DPS

H₀₃: There is no significant relationship between MPS and P.E. Ratio

H₀₄: There is no significant relationship between MPS and Dividend Yield

V. RESEARCH METHODOLOGY

Sample Selection: For this empirical study, we have selected Infrastructure Companies as this sector is highly responsive in propelling India's over all development and thereby enjoys intense focus from Government for initiating policies that would ensure time-bound creation over development. Out of the total number of infrastructure companies listed in BSE, we have selected top five companies yielding the highest market capitalization as on 5th Feb, 2020.

Study Period: The present study has been carried out for the period of 10 years from the financial year 2009-2010 to 2018-2019 for the 5 sample companies. This gives a data set of 50 firm- year observations in our study.

Variable selection: In order to analyze the impact of stock price behavior, we have collected secondary data of the selected companies. We have considered Earning Per Share (EPS) as the dependent variable and Market Price Per Share (MPS), P.E. Ratio (Price-Earnings Ratio) and Dividend Yield as the independent variables.

Model selection and specification: For the purpose of the study, panel data of 5 select infrastructure companies have been collected based on its market capitalization as on 5th February, 2020 for the last 10 years from Money Control. So, we have obtained a long panel data of 50 firm-year observations. In order to arrive at the best suited model, Econometrical Fixed and Random Effects Model have been conducted. By applying the Hausman Test, the P- value being insignificant,

we rejected the alternative hypothesis. That is we selected the Random Effects Model to be the appropriate model for our study.

Considering the variables of the study, that is MPS as dependent variable and EPS, P.E Ratio, Dividend Yield as independent variables, the following Random Effects Econometric Model have been formed.

$$\text{MPS}_{it} = B1_i + B2*\text{EPS}_{it} + B3*\text{PE.Ratio}_{it} + B4 *\text{Dividend Yield}_{it} + \varepsilon_{it}$$

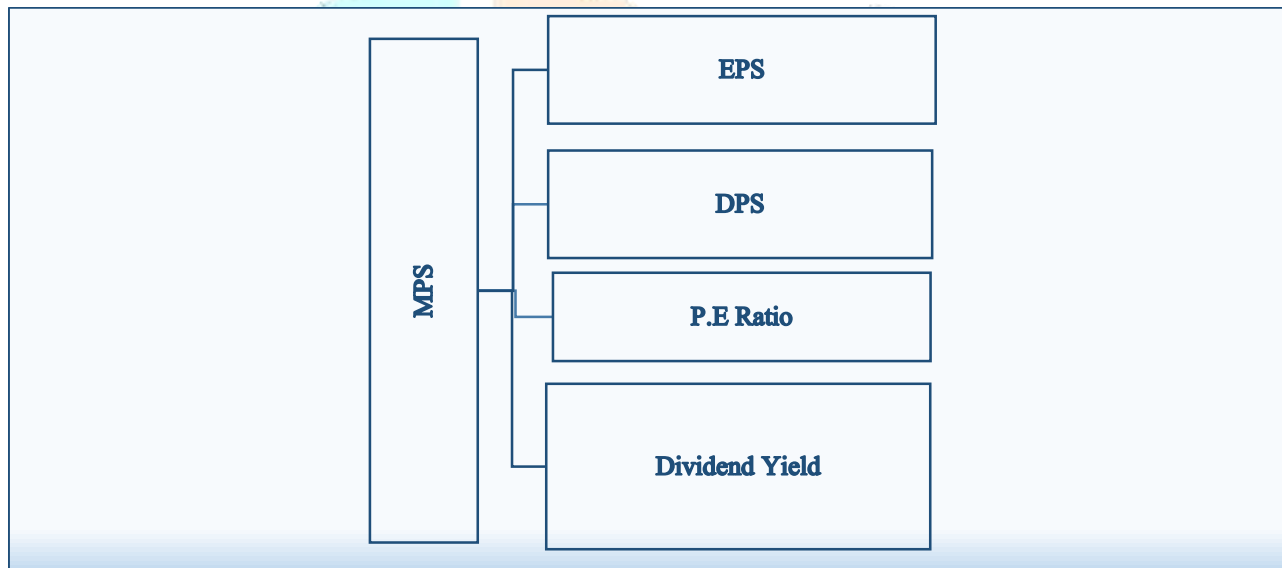
Where,

ε_{it} = combined time series and cross section random error component.

$i= 1, 2.., 5$

$t=, 2, 3...15$

Conceptual Framework



Source: Author's compilation

VI. THEORETICAL BACKGROUND

❖ Market Price Per Share (MPS)

A market price per share of common stock is the amount of money investors are willing to pay for each share. The current market price or market value per share of common stock is always the last price at which shares were sold. The **market value per share formula** is the total market value of a business, divided by the number of shares outstanding.

❖ Earnings Per Share (EPS)

Earnings per share (EPS) is calculated as a company's profit divided by the outstanding shares of its common stock. The resulting number serves as an indicator of a company's profitability. The higher a company's EPS, the more profitable it is considered. The EPS can be calculated as the net income which is divided by the available shares. For calculating of

company's EPS, the balance sheet and income statement are used to find out number of common shares, dividend paid on preference stock and the net earnings.

❖ Price-to-Earnings Ratio – P/E Ratio

The price-to-earnings ratio (P/E ratio) is the ratio for valuing a company that measures its current share price relative to its per-share earnings (EPS). The price-to-earnings ratio is also sometimes known as the price multiple or the earnings multiple. To determine the P/E value, one simply must divide the current stock price by the earnings per share (EPS).

❖ Dividend Yield

The dividend yield is the ratio of a company's annual dividend compared to its share price. The dividend yield is the amount of money a company pays shareholders (over the course of a year) for owning a share of its stock divided by its current stock price displayed as a percentage.

VII. DATA ANALYSIS, FINDINGS AND DISCUSSION

Table 1: Descriptive Statistics

	<i>MPS</i>	<i>EPS</i>	<i>P.E. Ratio</i>	<i>Dividend Yield (%)</i>
Mean	99.013962	5.0498	16.4514652	0.514512093
Standard Error	19.331541	1.3326944	2.804233322	0.081751305
Median	45.166667	2.995	12.5	0.375422950
Mode	0	0	0	0
Standard Deviation	136.69464	9.4235724	19.82892398	0.578069024
Sample Variance	18685.424	88.803716	393.1862262	0.334163797
Kurtosis	9.0148771	21.998593	5.325707342	1.288070477
Skewness	2.6031146	4.1008869	1.597839358	1.265295992
Range	737.25	65.74	120	2.332979852
Minimum	0	-6.76	-20	0
Maximum	737.25	58.98	100	2.332979852
Sum	4950.6981	252.49	822.5732601	25.72560466
Count	50	50	50	50

Source: Authors Computation using Excel

Descriptive Statistics (**Table 1**) shows the average, standard deviation, kurtosis and skewness of the different variables of interest in the study. It also presents the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable can achieve.

The highest value of mean (99.013962) and standard deviation (136.69464) is of the MPS which implies wide variation in its value from its mean. The lowest standard deviation (0.5781) is found for Dividend Yield which implies that it is close to its mean value (0.5145) without having any wide variation.

Table 2: Correlation Matrix

	<i>MPS</i>	<i>EPS</i>	<i>P.E. Ratio</i>	<i>Dividend Yield (%)</i>
<i>MPS</i>	1			
<i>EPS</i>	0.908540468	1		
<i>P.E. Ratio</i>	0.259883096	0.087031283	1	
<i>Dividend Yield (%)</i>	0.453987269	0.545809265	0.057929892	1

Source: Authors Computation using Excel

Correlation is a measure of the strength of linear association between the dependent and the independent variables. Correlation will always lie between -1.0 and +1.0. If the correlation is positive, we have a positive relationship. If it is negative, the relationship is negative. It shows how much strong or weak the relationships between two variables are. The above results (**Table: 2**) show that there exists a strong and positive relationship between MPS and EPS. On the other hand there is very weak relationship between MPS and P.E Ratio and a weak and positive relationship with Dividend Yield. The pairs of independent variables among themselves also do not show strong relationship among themselves. So, we may conclude that there does not exist multicollinearity problem (apparently)

Hausman Test		
Random Vs. Fixed Effects Model		
Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
4.560003	3	0.2070

Table: 3 Summary of Hausman Test

Source: Authors Computation using EViews

Hausman test is conducted to select the best fitted model out of Fixed Effects and Random Effects Model. The test follows Chi square distribution with the following hypothesis.

H₀: Random Effects Model is the best

H₁: Fixed Effects Model is the best

The result outcome of the above test witnessed the P value of χ^2 as 0.2070 and the result is statistically insignificant at 1% level. Hence, the Null hypothesis is accepted, and the Alternative hypothesis is rejected with 99% confidence level. As a result, the Fixed Effects Model is considered as the best fitted model for the said study.

Table: 4 Summary of findings of the Random Effects Model

Dependent Variable		MPS
Method		Panel Least Squares
Variable	Coefficient	Prob.
C	48.68295	0.1368
EPS	11.78358	0.0000*
P.E RATIO	1.364603	0.0001*
DIVIDEND YIELD	-61.46296	0.0162**
R-squared		0.854424
F – Statistic		89.99503
Probability of F - stats.		0.0000*
Durbin-Watson Stat		1.588091

Source: Authors Computation using EViews

[* significant at 1% level]

[** significant at 5% level]

The R - squared value which is referred to as the coefficient of determination, is a statistical measure of how well the regression line approximates the real data points. In our regression model, the value of R^2 is 0.854424 which represents 85.44% of variation in the dependent variable (MPS) due to the influence of the independent variables and 14.56% of the variation remains unexplained. As we know that, Durbin-Watson Stat (D-W Stat) can vary from 0 to 4. Value close to 2 meaning there is no autocorrelation in the residuals. From the above (**Table: 4**), the observed D-W Stat is 1.588091 which is close to 2. So it can be stated that adjacent residual/ error term (for first order only) are not correlated.

By observing the individual co-efficient with their respective probabilities (**Table: 4**), the result shows that EPS and P.E Ratio is statistically significant at 1% level. Whereas, DPS and Dividend Yield are statistically significant at 5% level. The co-efficient of EPS is **11.78358**, which implies that other factors remaining constant, a 1% increase in EPS would bring about **11.78358%** increase in the Market price of the share and it is statistically significant at even 1% level. The co-efficient of PE. Ratio is **1.364603** which implies that 1% increase in P.E Ratio would result in **1.364603 %** increase in the MPS and it is highly statistically significant at 1% level. But since the co-efficient of Dividend Yield is **-61.46296**, an increase in Dividend Yield by 1% would result in the change in MPS in the opposite direction by **-61.46296%**, and the result is statistically significant even at 5% level.

The F statistic and the probability of F statistic show whether the overall predictability of the model is statistically significant or not, which is a proof of the validity of the estimated model. Here, the probability of the F- Statistic is highly statistically significant as the P value of F- Statistic (0.0000) is less than 0.01. It depicts that the model is significant even at less than 1 % level of significance. That is, they strongly determine the behavior of the market movement of stock prices.

VIII. CONCLUSSION AND RECOMMENDATION

The present empirical study examined the impact of EPS, DPS, P.E. Ratio and Dividend Yield on the MPS of top ten infrastructure companies listed in BSE and yielding the highest market capitalization as on 5th Feb, 2020. The findings of the study revealed the following: The correlation analysis posits that there exists very strong and positive correlation between MPS (dependent), EPS (independent) and very weak correlation between MPS and P.E. Ratio. Regression analysis showed a significant positive association of DPS and P.E. Ratio with MPS while there is a significant inverse association with Dividend Yield. The findings of the said study would be helpful for the investors to gain some knowledge about the stock market price behavior and accordingly forecast/predict the future stock prices.

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