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Financial Variables Having Significant Impact on Market Price of Shares

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Abstract
The purpose of investment by investors in the capital market is to seek profit either in the form of dividend or capital gain and increase wealth. Therefore, before making an investment, it is imperative to the investors to familiarize with the company's fundamental status and performance variables that guide their maximum economic welfare. But on which variable(s) the investors should rely on? Taking this matter into account, the study attempts to identify the variables that have significant influence on shares price in the capital market, to guide investors in selecting the right option to invest, by taking Reneta Pharmaceuticals Limited (RPL), Bangladesh as a case, for the periods 2004 to 2011. Using correlation coefficient, coefficient of determination and testing the formulated hypotheses through student's 't' test, the study reveals that cash flow per share, price-earnings ratio and return on assets have significant impact on price of shares and are the best metrics to explain price movements in capital market and suggest investors to use these in predicting future changes and taking investment decision thereafter.
Keywords: share price, return on assets, price-earnings ratio, cash flow per share, capital market.

1. Introduction

The goal of financial management is to maximize investors' economic welfare as reflected by the market price of shares. However, the determination of share price is a paradoxical task and the determinants are often a matter of debate. In an efficient market, share price is determined by company's fundamental internal variables like return on assets (ROA), book value per share (BVPS), cash flow per share (CFPS), firm's size, dividend payout ratio (DPR), price-earnings (P/E) ratio, earning per share (EPS), cash dividend per share (CDPS), return on equity (ROE) etc. A company producing and selling goods and services and earning revenue after covering the cost of production adds to its reserve, once it starts building up reserves it will look for expanding its scale of production and therefore increase its total earnings. Once a company starts earnings an attractive sum, the equity shares will have more and more demand results in increase in market value. As share price is a variable that is highly volatile and sensitive, finding the variables that have significant impact on it is imperative to the investors in making the right call to invest and get higher return. Therefore, an investigation has been made in this study to examine the share price relationship with RPL's internal characteristics that include ROA, P/E ratio, DPR, EPS, BVPS, CDPS, ROE and CFPS.

1.1 Literature review

For investing in shares, it is crucial for the investors to be sure of the reasonable share price in the determined date and predicting the future changes. In this regard, literatures have produced some internal and external factors that affect share price volatility in the capital market. Fundamental variables regarding company's performance are the internal factors whereas external factors include political stability, economic situation, industrial condition etc. Malik (2011) tested the statistical relationship of nine fundamentals with stock price and claims that EPS has most significant relation to stock price in food sector companies of Karachi stock exchange, which defines 49.2% variations. Kadri et al. (2009) used the Ohlson (1995) traditional linear model for share price determination in Malaysia and found a significant positive relationship of stock price with earnings and book value. Callao et al. (2007) and Gaston et al. (2010) commented that both earnings and book value of equity are best to check the share price among fundamentals. O'Hara et al. (2000) has proven that share price is directly related to the earnings of the firm as well as to the dividends declared by the firm. Balakrishnan (1984) analyzed the impact of dividend per share, earning per share, book value and yield on share price of general engineering and cotton textile industries in India. He found book value per share and dividend per share turned out to be the most significant determinants of market price in both the industries. Malhotra and Prakash (2001) examined the

market price determinants of 'A' group and 'B' group shares of Indian stock market during 1989-90 to 1998-99, and concluded that the price behavior of 'B' group share is determined mainly by book value per share, earning per share, dividend per share, P/E ratio and market price to book value ratio. Al-Deehani (2005) examined the determinants of share price for companies listed on the Kuwait stock exchange. The empirical findings showed that variables previous earnings per share, cash dividends per share, previous cash dividends per share, return on equity, price to book value ratio, previous cash flow per share and cash flow per share are all highly correlated with the share price. Sharma and Singh (2006) used data from 160 Indian firms between 2001 and 2005 and found that earnings per share, price-earnings ratio, dividend per share, dividend coverage, dividend payout, book value per share, and firm size are the determinants of share prices. Somoye et al. (2009) examined the factors influencing equity prices in the Nigerian stock market for the period 2005-2007. The empirical results showed the variable dividend per share, earning per share and GDP exerts a positive correlation to stock prices. Sharma (2011) examined the empirical relationship between equity share prices of different industry groups and explanatory variables such as book value per share, dividend per share, earning per share, price earnings ratio, dividend yield, dividend payout, size in terms of sale and net worth for the period 1993-2008. The results revealed that earning per share, dividend per share and book value per share has significant impact on the equity price of different industry groups in India. Besides, Sen and Ray (2003) examined the key determinants of stock price in India. The empirical study revealed dividend payout was an important factor affecting stock prices. Further, they found earning per share has a very weak impact on the share prices. Hartono (2004) examined the impact of dividend and earnings on stock prices and found significant positive impact on equity prices if positive earnings information occurs after negative dividend information. Also, a significantly negative impact occurs in equity pricing if positive dividend information is followed by negative earning information. All the literatures studied proved that share price determination is very much diverse and conflicting area of finance influenced by a lot of factors and variables. Hence, the present study aims at finding the best variables that have significant impact on price of shares in the capital market by taking RPL as a case.

1.2 Objective of the study

The specific objective of this research is:

- To find out the financial variables that have significant impact on price behavior of shares in the capital market to guide current and prospective investors in predicting future trends and making profitable investments.

2. Methodology

The study used ROA, P/E ratio, DPR, EPS, BVPS, CDPS, ROE and CFPS as the predictor of share price and only secondary data that were collected from published annual reports of RPL. To analyze the data, statistical tools and techniques that had been used were regression model, correlation coefficient (r), coefficient of determination (r^2), student's 't' test at 5% level of significance and Durbin-Watson (DW) d statistic autocorrelation test. We have considered the closing share price of RPL for each respective year that was collected from the Dhaka stock exchange (DSE) limited. Share price was taken as the dependent variable (Y) and ROA, P/E ratio, DPR, EPS, BVPS, CDPS, ROE and CFPS as the independent variable (X) and value relevance to these were separately tested. The data used for the study were relating to RPL for the period of 08 years (2004 to 2011). For the selected variables, the following models had been used:

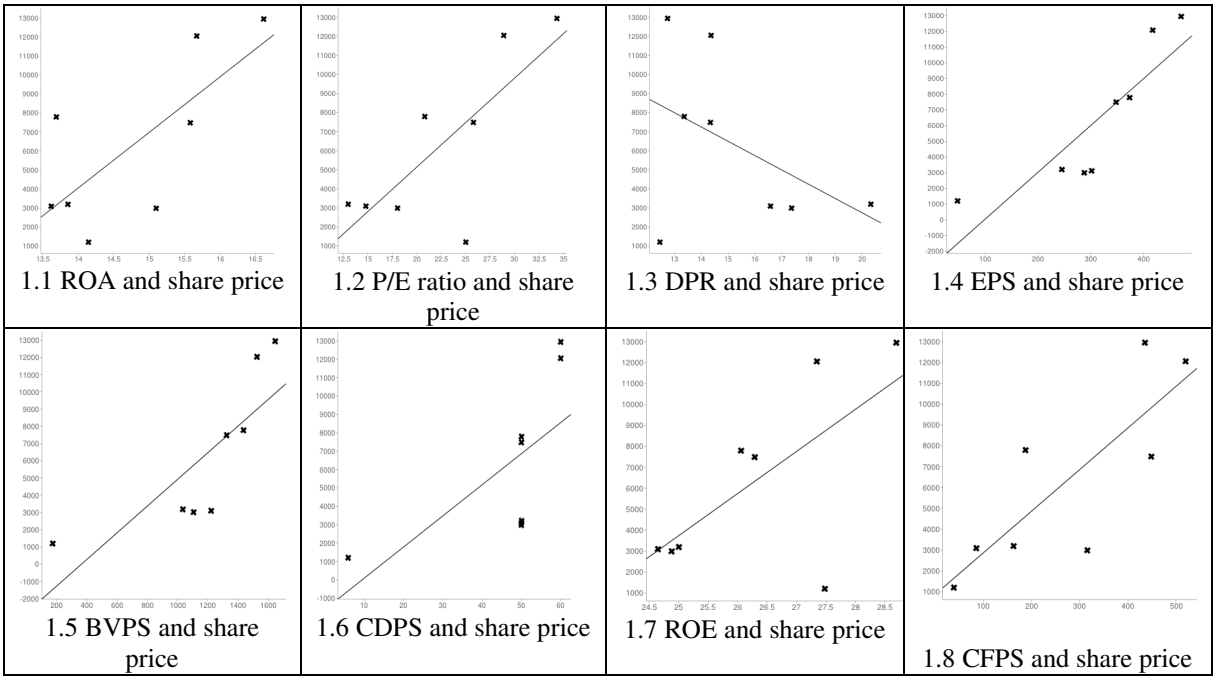
Model No.	Model Description
1	Share price = B_{10} + B_{11} x ROA + Error
2	Share price = B_{20} + B_{21} x P/E ratio + Error
3	Share price = B_{30} + B_{31} x DPR + Error
4	Share price = B_{40} + B_{41} x EPS + Error
5	Share price = B_{50} + B_{51} x BVPS + Error
6	Share price = B_{60} + B_{61} x CDPS + Error
7	Share price = B_{70} + B_{71} x ROE + Error
8	Share price = B_{80} + B_{81} x CFPS + Error

The null hypotheses used were:

H1: ROA has no impact on market price of shares of RPL. i.e. B_{11}=0.
H2: P/E ratio has no impact on market price of shares of RPL. i.e. B_{21}=0.
H3: DPR has no impact on market price of shares of RPL. i.e. B_{31}=0.
H4: EPS has no impact on market price of shares of RPL. i.e. B_{41}=0.
H5: BVPS has no impact on market price of shares of RPL. i.e. B_{51}=0.
H6: CDPS has no impact on market price of shares of RPL. i.e. B_{61}=0.
H7: ROE has no impact on market price of shares of RPL. i.e. B_{71}=0.
H8: CFPS has no impact on market price of shares of RPL. i.e. B_{81}=0.

3. Findings and discussion

After plotting the relative value of independent variable on horizontal axis and dependent variable on vertical axis we get the scatter plots diagram as shown below:



1.1 ROA and share price | 1.2 P/E ratio and share price | 1.3 DPR and share price | 1.4 EPS and share price

1.5 BVPS and share price | 1.6 CDPS and share price | 1.7 ROE and share price | 1.8 CFPS and share price

Figure 1. Scatter plots diagram showing the relationship between independent variable and dependent variable.

The upwardly slope of the scatter plots diagram 1.1, 1.2, 1.4, 1.5, 1.6, 1.7 and 1.8 along with positive correlation coefficient shown in Table 1 reveal that there was positive linear correlation of ROA, P/E ratio, EPS, BVPS, CDPS, ROE and CFPS with market price of shares for RPL during the study periods. The result of adjusted r^2 showed that market price of shares of RPL is explained by 46%, 51%, 70%, 57%, 33%, 33% and 60% respectively by ROA, P/E ratio, EPS, BVPS, CDPS, ROE and CFPS. However, the downwardly slope of scatter plots diagram shown in Figure 1.3 and negative correlation coefficient shown in Table 1 reveals that there was a very weak negative correlation between DPR and market price of shares for RPL and is confirmed by the result of adjusted r^2 of 7%.

Table 1. Parameter Estimates with model fitting information's for selected models.

Model no.	Coefficients	B_{ij}	Std. Error	p value	r	r^2	Adj. r^2	t	d
1	Constant ROA	-36860.35 2922.89	16323.48 1101.50	0.06 0.03	0.73	0.54	0.46	2.62	1.52
2	Constant P/E ratio	-4186.90 466.55	3785.19 160.53	0.31 0.02	0.76	0.58	0.51	2.86	1.68
3	Constant DPR	17735.71 -749.66	9148.80 594.04	0.10 0.25	-0.45	0.21	0.07	-1.23	1.67
4	Constant EPS	-2934.83 29.76	2349.60 7.02	0.25 0.00	0.86	0.74	0.70	4.13	0.62
5	Constant BVPS	-2818.87 7.74	3008.97 2.39	0.38 0.01	0.79	0.63	0.57	3.16	0.54
6	Constant CDPS	-1605.72 169.21	3952.68 79.58	0.69 0.07	0.65	0.43	0.33	2.10	0.42
7	Constant ROE	-46480.68 2008.76	24838.32 943.21	0.11 0.07	0.65	0.43	0.33	2.10	1.21
8	Constant CFPS	864.95 19.96	1877.35 5.82	0.66 0.01	0.81	0.66	0.60	3.38	2.11

Student's t test reveals that the calculated t value is higher than the critical value for hypothesis 1, 2, 4, 5, 6, 7 and 8 that falls in the rejection region of null hypothesis. On the other hand, for hypothesis 3, calculated t value is within the critical value that falls in the acceptance region of null hypothesis.

As the study has been using time series data, before deciding to accept or reject the formulated hypothesis on the basis of t test result, we need to check whether there was any autocorrelation as if was then our calculated standard errors are smaller than the true values and coefficients that seems to be significant are insignificant. In this regard we have used DW d statistic and the result, shown in Table 1, clearly points out that the hypothesis of 1st order autocorrelation should be rejected at 5% level of significance for hypothesis 1, 2, 3 and 8 as the calculated d values are greater than d_U value of 1.33 with one explanatory variable.

For hypothesis 7, DW d statistic value lies between the upper and lower boundary of 1.33 and 0.76 respectively. Therefore the results of the test for this hypothesis are inconclusive for the given level of significance. We can neither support nor refute the claim that no statistically significant serial correlation exists within the regression residuals.

Again, for hypothesis 4, 5 and 6 the hypothesis of 1st order autocorrelation cannot be rejected, as the calculated d values are less than the d_L value of 0.76.

Therefore we can make safe infer for hypothesis 1, 2, 3 and 8. Hence, in accordance with the t test result, we accept the null hypothesis for hypothesis 3 and alternative hypothesis for hypothesis 1, 2 and 8. Since hypothesis 4, 5 and 6 are showing positive autocorrelation, the study reveals that the variables under study exhibit trends as the data underlying regression are time series data. Therefore we re-specified our previous model no. 4, 5 and 6 by adding time or trend, t, variable to get the actual relative impact of EPS, BVPS and CDPS on market price of shares, net of the trends in the two variables, as shown below:

Model No.	Model Description
4	Share price = $B_0 + B_1$ x EPS + B_2 x Time + Error
5	Share price = $B_0 + B_1$ x BVPS + B_2 x Time + Error
6	Share price = $B_0 + B_1$ x CDPS + B_2 x Time + Error

Table 2. Parameter estimates and model fitting information for corrected model 4.

Model 4	Coefficients		p value	95% Confidence Interval for B		r^2	Adj. r^2	d
	B	Std. Error		Lower Bound	Upper Bound			
Constant	-6556.09	1604.41	0.00	-10680.36	-2431.81			
Time	782.69	204.17	0.01	257.85	1307.53	0.93	0.91	2.25
EPS	30.08	3.88	0.00	20.11	40.05			

Table 2 shows that both EPS and time have significant impact on market price of shares. Over time, share price went up by Tk. 782.69 and after allowing this, by Tk. 30.08, on an average, due to increase/changes in EPS by Tk. 1. EPS and time variable, t, can explain 91% of the total variation in market price of shares for RPL during the study periods. Again, the new model suggests that there is no autocorrelation exist in the residuals at 5% level of significance as the estimated d value lies between d_U and 4 - d_U.

Table 3. Parameter estimates and model fitting information for corrected model 5.

Model 5	Coefficients		p value	95% Confidence Interval for B		r^2	Adj. r^2	d
	B	Std. Error		Lower Bound	Upper Bound			
Constant	-8168.40	1928.50	0.00	-13125.77	-3211.03			
Time	983.62	223.92	0.00	408.00	1559.23	0.92	0.89	2.26
BVPS	8.52	1.20	0.00	5.43	11.60			

Table 3 shows that both BVPS and time also have significant impact on market price of shares. Over time, share price went up by Tk. 983.62 and after allowing this, by Tk. 8.52, on an average, due to increase/changes in BVPS by Tk. 1. BVPS and time variable, t, can explain 89% of the total variation in market price of shares for RPL during the study periods. The new model suggests that there is no autocorrelation exist in the residuals.

Table 4. Parameter estimates and model fitting information for corrected model 6.

Model 6	Coefficients		p value	95% Confidence Interval for B		r^2	Adj. r^2	d
	B	Std. Error		Lower Bound	Upper Bound			
Constant	-11690.54	1813.80	0.00	-16353.09	-7028.00			
Time	1421.21	188.05	0.00	937.79	1904.62	0.95	0.93	2.36
CDPS	247.71	26.82	0.00	178.75	316.67			

Table 4 shows that both CDPS and time also have significant impact on market price of shares. Over time, share price went up by Tk. 1421.21 and after allowing this, by Tk. 247.71, on an average, due to increase/changes in CDPS by Tk. 1. CDPS and time variable, t, can explain 93% of the total variation in market price of shares for RPL during the study periods having no autocorrelation in the residuals.

4. Conclusion

This study investigated the variables that have significant impact on market price movement of shares. After time series data analysis, the study found that among the selected variables, ROA, P/E ratio and CFPS have significant impact on market price of shares without any time effect and among them CFPS has the highest significant impact and explanatory power in explaining share price movement in the capital market for the selected company namely RPL. Therefore, we recommend the investors to use CFPS as the first variable and P/E ratio and ROA after that in evaluating company's financial performance, predicting future trends in share price in the capital market and making productive investment decision.

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