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### RELATIONSHIP BETWEEN FINANCIAL RATIOS AND MARKET PRICE OF STOCK (AN EMPIRICAL STUDY FROM THE PHARMACEUTICAL SECTOR AT DHAKA STOCK EXCHANGE)

### RAUFUN RAHIM CHOWDHURY APURBOO STUDENT EASTERN UNIVERSITY AZIMPUR, BANGLADESH

### ABSTRACT

This empirical investigation aims to examine the stock market's dependence on financial book value of pharmaceutical companies in Dhaka Stock Exchange. All of data were collected from the website of Dhaka Stock Exchange. There are many pharmaceutical companies listed on Dhaka Stock Exchange some of which are subsidiaries. Major players in this industry with higher revenues and stock prices were selected as sample to investigate the fact. And not all financial ratios were put together in this study. After close examination and critical past reviews few of the ratios were selected to conduct the test. The result suggested that there is a strong correlation between financial ratios and stock prices. Five ratios were selected: Earnings per Share, Return on Assets, Return on Equity, Financial Leverage, and Price - Earnings Ratio. Only Return on Equity showed negative relations with stock where the four other variables showed positive relationships. The paper adds value to pre-existing literature concerning the alleged existence of a significant link between market price of stock and financial ratio. Additionally, the research discovers a powerful connection between investors of pharmaceutical stock and the company's book value. The research is helpful for investors in this sector and also for pharmaceutical companies which are already listed on stock exchange or look forward to be being listed.

### **KEYWORDS**

Dhaka stock exchange, stock price, pharmaceutical companies.

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### INTRODUCTION

harmaceutical Industry is a major player in the stock exchanges. IMS Health (2010) stated that world pharmaceutical market was valued at US\$ 875 billion with a growth rate of 4.1% over the previous year at the constant exchange rate. The volume of pharmaceutical industry has surged from USD 647 billion in 2005 to USD 875 billion in 2010, corresponding to an increase of 35.2%. In Dhaka Stock Exchange this sector plays an important role. There is a higher degree of variations in stock prices of companies. The stock prices change continuously. There are certain factors for which stock price changes during the trading period. The stock price depends on various factors which will be discussed in this paper.

Pech, Noguera, and White (2015) provide evidence that the estimates of financial ratios are the most favored used as a part of practices by equity analysts which have predictive power on one year future stock returns while no evidence of predictive power on two years stock returns. Wang and Lee (2010) use profitability, leverage, turnover, and solvency ratios in Taiwan to generate a matrix that offer an estimate of the strength of a company within the shipping industry. Lewellen (2004) argue that financial ratios are used as a tool of predicting for market stock returns. Bower and Bower (1969), Lewellen (2004), Shafana, Fathima, and Inunjariya (2013), Kheradyar, Ibrahim, and Mat Nor (2011), and Zahir (1992) also argue that financial ratios consider as an effective tool in predicting stock returns with the lowest level of risks as compared to historical returns, observations, movements, and other alternative variables. Chen and Shen (2009), Lewellen (2004) and Shafna et al.'s (2013) state that the most three effective and useful financial ratios in predicting the ability of stock returns are dividend yield ratio, book to market value ratio, and earning yield ratio among the most respected ratios. Jais, Jakpar, Doris, and Shaikh (2012) reveal that historical accounting signs can anticipate stock returns.

There is no research has been conducted on the factors from financial ratios that affect the stock price of DSE listed companies in this industry although few researches have been done to examine the stock price of enlisted companies in Bangladesh.

These findings have interesting theoretical and practical implications for companies in pharmaceutical industry who are listed or have potential to be listed in Dhaka Stock Exchange and for shareholders of companies in this industry. In particular, it is important to understand the market price movements of pharmaceutical industry in Bangladesh. Therefore, an understanding of factors that influence the market price ought to be useful for investors and shareholders of this industry.

The study tries to identify if there any relationship between financial ratios and stock price and also identify those ratios/factors which affect the share price of companies in pharmaceutical sector in Bangladesh. Information will be collected through financial statements and websites and the technique of regression analysis will be applied to find out the factors which affect the stock price of pharmaceutical companies.

Rest of this paper includes a literature where different dimensions affecting stock price was discussed. Then it is focused on methodology where the data collection and processing technique was explained. On the part of findings and analysis, multiple linear regressions were used to test the hypothesis. Finally, the paper concludes with overall view and limitation with the study.

### LITERATURE REVIEW

#### **Financial Ratios**

Most of the previous studies revealed that manufacturing companies measure financial performance to evaluate the company's annual success by using ratio analysis (Majumder and Rahman, 2011; Islam and Mili, 2012; Salauddin, 2001; Chowdhury 2013; Arulvel and Ajanthan, 2013; Ahmed and Ahmed, 2014; Delen, et al. 2013; Singh and Samuel, 2012; Memon and Tahir, 2012). Financial measures are typically focused on profitability, the market value of the firm, return on assets, investment and equity, liquidity, and various other ratios (Ankrahand Mensah, 2015) [2]. They link changes in stock price to firm specific factors [Ou and Penmann (1989), Holthausen and Larcke (1992), Lev and Thiagarajan (1993), Abarbanell and Bushee (1998), Beneish, Lee and Torpley (2001), Jain (2002), Kalaycı and Karata (2005)] [1].

### Earnings Per Share

This is perhaps the most important factor for deciding the health of any company and they influence the buying tendency in the market (Mondal and Imran, 2021). Mehr-un-nisa and Nishat (2012) has investigated the impact of financial fundamental and macroeconomic factor on the stock price and found that previous year's stock price, company size and previous year EPS have significant impact on current year's stock price. Islam, Khan, Choudhury, and Adnan (2014) has investigated how the EPS affects share price and firm's value. They revealed that as EPS increases the share price also increases but not that much. EPS is only one of the factors affecting share price Bhatt and Sumangala (2012) has investigated the impact of EPS on market value of equity share. By applying correlation coefficient, they found the positive relationship between EPS and market value of equity share and by applying regression analysis they found the significant impact of EPS on the market value of equity shares. Menike & Prabath (2014) investigated that there is a significant and positive impact of accounting variables – earning per share on the stock price of Colombo stock exchange. Geetha and Swaaminathan (2015), studied four automobile and IT industries (listed in BSE and NSE) for the period of five years as a sample and examine about the influence of earnings per share (EPS) towards the market price of the share. The paper is an attempt to analyze the

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influencing factors which affects the movement of stock price either upward or down trend. The research shows that EPS has a significant effect on market price. But the dividend per share does not have positive or negative effect towards the market price. Malakar and Gupta (2002) did a study by using the data of eight major companies of cement industry in India for the period 1968 to 1988 and discovered that earning per share has significant impact on market price of share (MPS).

#### H1: There is a significant relationship between EPS and Market Price of Stock in the pharmaceutical industry.

#### Price-Earnings Ratio

There are relatively few empirical investigations that analyze the impact of price earnings ratio on stock prices.

Many researchers suggested that PE indicates the future market return. Some studies find that there is no significant relationship between PE Ratio and stock return. Ahmed (2003) performed regression analyses between PE Ratio and yearly stock returns from S&P 500 index in periods 1992–2001 and 1983 –2001 to examine correlation between both variables. He found that PE Ratio does not have significant relationship with yearly return both before and after risk-adjusted scenarios. Asri (2002a, 2002b) scrutinized the existence of low PE Ratio effects in Indonesia stock market using 267 stocks listed in Jakarta Stock Exchange and selected the period of 1994 –2000 as the focus of analysis. He found that low PE effect does not exist in Indonesian market. Fisher and Statman (2000) investigated the relation between price earnings ratio and future returns in stock market and found that P/E ratio are not good indicators of future stock returns over the short period of time (one to two years), but P/E ratio has better forecasting power when used to estimate stock returns over the longer period of time, while in more extensive way Rapach and Wohar (2005) by using a data sample from 1872 to 1997, reported the presence of little evidence of correlation between P/E ratio and future stock price changes in the short term, but high correlation has found over longer time perspective. Tandon (2013) examined empirically the impact of price earnings ratio on market price of share of 95 select companies listed on NSE-100 and found that price earnings ratio impacts significantly on market price of shares. Jaffe, Keim, and Westerfield (1989) analyze the relation between stock returns and earnings-to-price ratio, for the periods 1951-1986, in the US. De Pena, Javier, and Gil-Alana (2003) find that there is a strong earnings-price ratio effect in the Spanish Stock Market and that beta is able to explain the cross-section of expected returns jointly with earnings-price ratio.

### H2: There is a significant relationship between P/E ratio and stock price in pharmaceutical industry.

#### Return on Equity

Brigham and Houston (2007:115), The Return on Equity is the ratio of net income to common equity measures the rate of return on common stockholders' investment. Gitman (2002:65), Return on Equity measures the return earned on the common stockholders' investment in the firm. Generally, the higher this return, the better off is the owners. According to Syamsuddin Return On Equity (ROE) is the ratio used to measure the ability of its own capital to generate benefits for all shareholders, both common stock and preferred stock. In general, of course, the higher the return or income earned, the better the position of the owner of the company (Lukman Shamsuddin, 2002: 64). This ratio examines the extent to which a company uses its resources to be able to provide a return on equity (Fahmi, 2011).

Majed et al (2012) discovered that three ratios of ROA, ROE and ROI together showed a strong and positive relationship with share prices with 45.7% relationship. H3: There shows a positive relationship between ROE and stock price.

#### Return on Assets

ROA provides a better measure of the company's profitability because it shows the effectiveness of management in using assets to generate income (Kasmir, 2012). According to Syamsuddin ROA also be an indicator that a company can use its financial resources to generate value for shareholders. The greater the ROA of a company meal, the better the company's financial performance.

H4: There shows a positive relationship between ROA and stock price.

#### Financial Leverage

Barakat (2014) also studied the effect of financial arrangement, leverage and profitability bon manufacturing companies of Saudi Arabia. He found a positive association between independent variables, return on equity and capital structure, and the dependent variable, stock market price.

Aggarwal and Zhao (2007) presented evidence on how the growth of firm might affect the association amid capital structure and performance. Firms with high level of growth had inverse association between financial leverage and firm value, while firms with low growth level had positive relation with financial leverage. H5: There exists a relationship between financial leverage and market price of stock.

### METHODOLOGY

#### Secondary Research

First of all, no one has conducted research on this topic. Though few researchers worked on similar topic, they didn't work on the exactly same topic. In order to know depth knowledge about the stock price of companies' researchers had gone through different articles published in Asia to identify factors which influence the market price of company. Based on literature review, a conceptual framework was developed to conduct the research purposefully.

#### Sampling Method and Data Collection

The population of the research was all the listed companies in the pharmaceutical industry of Dhaka Stock Exchange. There are total 32 companies listed on Dhaka Stock Exchange in the pharmaceuticals and chemicals sector. Snowball sampling was used to collect the data. Due to time and resource constraints, 14 companies were selected to collect the data. Among fourteen companies, two companies were subsidiaries.

Data was collected from financial statements of sampling companies and website of Dhaka Stock Exchange. To calculate the financial ratio quarterly financial statement was used.

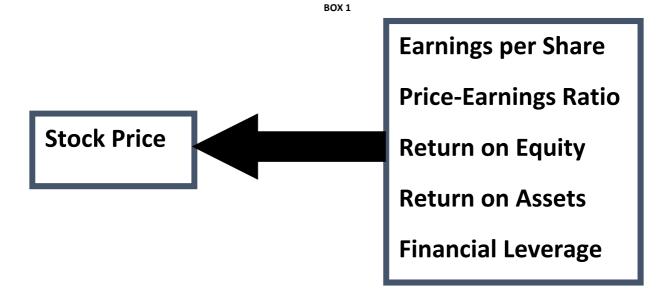
TABLE 1							
EPS	P/E Ratio	ROE	ROA	Debt-to-Equity	Market price		
28.38	9.76462297	0.095713	0.045961	1.082477154	277.12		
26.41	9.43619841	0.092131	0.036917	1.495654068	249.21		
11.01	17.0971844	0.0382	0.013204	1.892971655	188.24		
29.96	5.92890521	0.111464	0.038842	1.869723546	177.63		
6.61	17.2889561	0.082673	0.04681	0.76614426	114.28		
6.74	14.4020772	0.080848	0.043727	0.848919345	97.07		
6.81	11.0646109	0.078523	0.040098	0.958285559	75.35		
6.85	9.80729927	0.076165	0.036798	1.069832507	67.18		
3.69	8.65311653	0.142329	0.100243	0.419838372	31.93		
3.21	8.98753894	0.174247	0.125613	0.387180725	28.85		
2.79	8.68458781	0.133151	0.094477	0.409347273	24.23		
-0.23	-64.434783	-0.01068	-0.00693	0.542297118	14.82		
3.02	133.52649	0.119755	0.016065	6.45435888	403.25		
3.44	155.718023	0.134061	0.018617	6.200876518	535.67		
1.40	440.75	0.058243	0.008355	5.970993559	617.05		
1.52	296.532895	0.062868	0.008496	6.399710671	450.73		
0.45	49.6222222	0.035005	0.020507	0.706943188	22.33		
0.55	34.1272727	0.041638	0.025455	0.635731269	18.77		
0.50	47.72	0.039286	0.023425	0.677060143	23.86		
1.65	40.8060606	0.082114	0.052978	0.549971553	67.33		
5.49	19.0528233	0.088811	0.065329	0.359427006	104.6		
6.31	14.6561014	0.094412	0.060689	0.555652628	92.48		
7.48	10.0254011	0.102694	0.061741	0.663294735	74.99		
8.67	10.4163783	0.109029	0.07069	0.542346697	90.31		
9.665	21.7444387	0.238558	0.122329	0.950129953	210.16		
10.736	22.6331967	0.368429	0.185171	0.989667201	242.99		
11.83	21.4566513	0.22749	0.118897	0.913332037	253.8		
12.90	18.0335999	0.220844	0.114202	0.933799396	232.72		
6.78	27.2699115	0.100212	0.03007	2.332600454	184.89		
6.86	28.2813411	0.096299	0.027139	2.548295024	194.01		
3.01	130.827243	0.025841	0.021902	0.179844531	393.79		
4.35	69.0551724	0.035718	0.028888	0.236442334	300.39		
45.72	22.9875328	0.916203	0.385837	1.374582271	1050.99		
52.15	22.3493768	1.102098	0.36818	1.993363314	1165.52		
64.23	23.9755566	1.547111	0.440209	2.514494241	1539.95		
84.01	21.9028687	1.895227	0.525154	2.608897187	1840.06		

### DATA ANALYSIS

To examine the question of research a multiple linear regression was conducted to determine if the independent variable predicts the dependent variable. Multiple linear regressions assess the relationships among a set of predictor variable on ratio variable. The independent variables include earnings per share, P/E ratio, return on assets, return on equity, and financial leverage. And market price of share is dependent variable. To analyze data the market prices were turned into logarithmic value. IBM SPSS software was used to run regression analysis. All of the logarithmic values of market prices were set as independent variable. The following regression equation was used:

Y=b1\*x1+b2\*x2+b3\*x3+c

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THEORETICAL FRAMEWORK
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#### FINDINGS

#### **TABLE 2: FINANCIAL PERFORMANCE**

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.864ª	.746	.704	.30102		
a. Predictors: (Constant), Leverage, ROA, PE, EPS, ROE						

The R value is seen.864 from the model summary. So, R value for overall factors: EPS, ROE, ROA, P/E, Financial Leverage suggested a strong effect of five independent variables on dependent variable. The value of R square stands for.746 which represents 74.6% variation of the dependent variable is the effect of independent variables.

TABLE 3							
ANOVAª							
Model		Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	7.993	5	1.599	17.643	.000 <sup>b</sup>	
	Residual	2.718	30	.091			
	Total	10.712	35				
a. Dependent Variable: Mp							
h Dradictors: (Constant) Lowerage DOA DE EDE DOE							

b. Predictors: (Constant), Leverage, ROA, PE, EPS, ROE

The significance level is.00 or less than 5% which means that the model was fit reasonably. There exists a significant association between the dimension of financial performance and market price of stock.

	TABLE 4								
Coefficients <sup>a</sup>									
	Unstandardized Coefficients Standardized Coefficients								
Μ	odel	В	Std. Error	Beta	t	Sig.			
1	(Constant)	1.554	.111		13.963	.000			
	EPS	.028	.007	.963	3.677	.001			
	PE	.002	.001	.324	2.163	.039			
	ROE	-1.267	.720	980	-1.760	.089			
	ROA	3.156	1.992	.733	1.584	.124			
	Leverage	.107	.050	.346	2.126	.042			
a. Dependent Variable: Market Price									

Unstandardized Coefficients is the indication of how much the dependent variable varies with independent variable remaining all other independent variables constant. The beta coefficients point out how and to what extent numerical variables such as EPS, P/E ratio impact on the stock price. The model of regression is:

Market Price =.028(Earnings per Share) +.002 (P/E Ratio) – 1.27(Return on Equity) + 3.1 (Return on Assets) +.11(Debt-to-Equity) +1.55

### CONCLUSION

There is a higher dependence of stock prices on financial ratios. The study focuses on a particular industry and five types of ratio. Market price of stock shows positive correlation with EPS, P/E ratio, ROA, and Debt-to-Equity. And it shows negative correlation with ROE. To gain good performance in the stock exchange a company in the pharmaceutical sector has to focus on these five ratios. The study could be broader with bringing more factors and then conducting factor analysis.

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