Impact of Fundamental Factors on Stock Price: A Case Based Approach on Pharmaceutical Companies Listed with Dhaka Stock Exchange

SaminaHaque[1], Murtaza Faruquee[2]

[1](*BRAC Business School, BRAC University, 66 Mohakhali C/A, Dhaka-1212, Bangladesh*)
[2](*BRAC Business School, BRAC University, 66 Mohakhali C/A, Dhaka-1212, Bangladesh*)

ABSTRACT: *This paper aims at identifying the influence of various fundamental factors in determining the market price of shares in Dhaka Stock Exchange (DSE). For this study 14 listed pharmaceutical companies have been considered which comprises of 70% (14 companies out of 20) of the total listed companies under pharmaceuticals and chemical industry (PCI) in Dhaka Stock Exchange (DSE). Time frame of the research is seven years slot (2005 to 2011). The analysis is done in two stages. The first segment of the paper attempts to find out the co-relation between market price of the stocks and companies' performance, which includes earning per share (EPS), dividend per share (DPS), return on equity (ROE), return on assets (ROA), and the ratio of fixed asset to total asset (FA/TA). In the second segment, the market price of stocks under sample has been compared to fundamental or intrinsic price. This paper considers Net Asset Value (NAV) as ideal value of stock. The study depicts that the market price is very insensitive toward fundamentals of companies and current market price is highly overvalued compared to the ideal value of stocks, which reinforces that fact that the impact of unauthorized information has a greater influence in determining the price of stocks in pharmaceuticals and chemical industry in DSE.*

KEYWORDS: Dhaka Stock Exchange, Fundamental factors, Ideal Price of Stock, Net Asset Value, Stock Price.

I. INTRODUCTION

Dhaka Stock Exchange (DSE) is not matured enough to be considered it as an ideal stock market. The inception of DSE took place more than sixty years ago. The necessity of establishing a stock exchange in the then East Pakistan was first felt by the government, in early 1952, when former Indian government prohibited Calcutta Stock Exchange from transacting in Pakistani shares and securities.

In Bangladesh, the driving force of financial sector was historically the commercial banks. Capital market had fewer roles to play. This was due to the fact that the general people of Bangladesh are mostly conservative and they have a mixed perception about the risk pattern in capital market, as a result fewer investments were made by them in the early years of DSE. But in the mid 90's capital market started to gear up which made people interested about stock exchange. As people started to pour their money in the heated market it created a big bubble and obviously it had to burst. Benchmark index came down to 700 points in November 1997 from its highest 3600 points in November 1996. It again made people reluctant to invest in capital market as they had to bear huge losses due to the burst.

It took one decade for people of Bangladesh to regain their faith in capital market and forget the history of collapse. After the burst of 1997, regulators took many steps to stabilize the market. As a result the market started to gear up for the second time. This time the majority of investors were new and young with little knowledge about the fundamentals or risk of the market. They again started to invest their money, sometimes borrowed money to invest in the capital market. As a result again the demand pushed the market to bubble up but with a much faster burst that the previous one. This time the bench mark index came down to 3616 point in early February 2012 from its highest point 8918 in December 2010.

Many discussions had been made afterwards, committees had been formed for the investigation, and many sporadic steps had been taken by the regulators. But till now the market has not been stabilized. The bores miserably failed to regain the faith of investors, which is clear from the frequent fluctuation in the index at present.

It is obvious that the market is now in the process of correction, which was long overdue. But it is important right now to know whether there is still space for further correction. In this context, this paper aims to help investors and other stakeholders to make informed decision by identifying the factors that actually influence the

stock price. Moreover, the paper attempts to determine whether the market has already been corrected or is there still scope for further drop in the index.

II. PHARMACEUTICAL AND CHEMICAL INDUSTRY COMPOSITION

A short overview of Bangladeshi Pharmaceutical and Chemical Industry (PCI) is presented here for the better understanding of the uniqueness that this industry possesses. This overview will help in understanding the research findings as the sample is based only on selected PCI companies in Bangladesh.

In Bangladesh pharmaceutical industry has developed over a very short period of time. This industry consists of only 20 listed companies with Dhaka Stock Exchange. Generally PCI invests a huge fund in research and development and then come production, but in Bangladesh just few firms have considerable amount invested in research, most of the small firms' operations are based on the method of 'Me-too drugs' (drugs that are not invented by the company but copied from others).

Generally, market price of any PCI firm's stock and investor's perception towards the firm is highly influenced by the new invention of the firm's upcoming drugs. But in Bangladesh most of the firms have very small production capacity and narrow product range; however there are few companies who develop medicine of international standard and export a considerable amount of their products. Some firm have big mother company to provide a large portion of cash flow. The entire pharmaceutical industry in Bangladesh is heterogeneous, as such; the investors' perception varies across industry which is evident from the diverse price range of stocks in this industry. Another common characteristic about PCI is that they generally have heavy fixed asset on their books like any other production oriented industry. But in Bangladesh, these investments are not similar across companies due to differences in their scales of operations.

Due to their different scales of operations it is very difficult to judge the PCI in Bangladesh based on the same rule of thumb. The characteristics of different firms of PCI are mutually exclusive and show very small similarity. Therefore choosing the PCI for investment and selecting any firm from that cannot suggest evaluation of same characteristics.

III. LITERATURE REVIEW

Different authors across the globe have investigated capital market valuation from different perspective. Glassman and Hassett (1999) analyzed why even at the verge of market crash the stock prices keep increasing. The study concluded that investors bid up the prices of stocks because of their over optimistic expectation of return on stock investment. The study was conducted on the Dow Jones Industrial Average and it was found that people get irrationally thrilled by any positive news and invest in the market without proper preparation.

Shiller (2000) summarized the evidence of exuberances of investors as a strong factor for market bubble against rationality of the market. The study identified forecast of future returns as the most commonly evidenced factor. Shiller also identified obvious pricing errors in the sample under study since actual stock prices were more volatile than the present discounted value of actual dividends.

The finding of a number of empirical study identified investor's over optimism as one of the main factors for stock price overvaluation. Chen, Hong, and Stein (2002) analyzed the overvaluation generated by beliefs. The study concluded that the market overvaluation was caused by the investors' overconfidence.

Even though a huge number of empirical studies have been undertaken on behavior of stock price in developed markets, the focus on developing and emerging markets has only begun in recent years.

Chowdhury & Chowdhury (2010) in their study analyzed the relationship between capital structure and firm value in Bangladesh. The study was based on secondary data of publicly listed companies in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). The study found a strong co-relation among current ratio, operating leverage, EPS, dividend payout ratio or share capital and stock price and concluded that by changing these parameters, a firm may increase its value in the market.

Chowudhury& Abdullah (2011) in their study identified that lack of market regulation, lack of supply of good shares, presence of syndicate, lack of financial knowledge helped the market index to jump over 8000 point during December 2011.

Abdullah et al. (2012) analyzed whether capital market of Bangladesh was overvalued. The study was based on17 actively traded companies in Dhaka Stock Exchange from 2006 to 2010. The study found that the Stock Market was overvalued and the companies under study were also inefficient in managing costs.

Saha (2012) investigated the reasons behind the stock market crash in Bangladesh in 2010-2011. The study also analyzed the role of the regulators and government since the crash took place. The study was done by questionnaire survey on 25 employees of broker houses. The study highlighted the following points as most strongly impacting the market crash, which were, over exposure of banks and other financial institutions, poor monitoring of regulators, corruption in regulatory organization, margin loan, direct listing, insider trading, book building method, lack of general investor's knowledge, imbalance of share and intervention of Bangladesh bank. Ahmed et al. (2012) justified the present conditions of Bangladesh capital market by sequential analysis of the history of stock market in Bangladesh. The study aimed at identifying the factors responsible for the recent upheaval and to measure the impact of recent fluctuation. The research also attempted to identify investor's expectations from the regulatory bodies. The study highlighted a number of recommendations and concluded that all stakeholders should act rationally to maintain the stability in the capital market for the greater interest of the country.

Alam (2012) attempted to identify and to link up the casual factors and regulatory failure of Bangladeshi stock market crash. The study identified a number of factors that caused the market crash, these were, faulty listing method, IPO overpricing, small number of new listing, revaluation of asset before company's listing, high premium on issuance of right share, stock split, stock price manipulation through block trading. The study highlighted that Investors' greed and irrational behavior played a big role. The study failed to find regulatory failure as the prime reason of the crash.

Rahman and Moazzam (2011) identified the casual relationship between the observed volatility in the Dhaka Stock Exchange and the regulatory decision taken by the Security and Exchange Commission (SEC). The study found a high significant relationship between decisions taken by the regulators and market volatility, although the direction of causality was found in the reverse direction. It was further depicted that the decisions taken by the authority were expected to have a long term impact; therefore the finding of the study was logical. From the above assessment of empirical studies it is clear that an extensive research has been conducted by various eminent scholars on Bangladeshi stock market. Though most of the studies undertaken in Bangladesh context are related to the recent stock market crash, but they are mostly focused on the reasons behind the crash and mostly analyze the activities before the crash.

The stock market crash had a huge impact on Bangladesh economy and its implication was enormous. From this point of view, the studies under taken were not enough and in most cases, the studies conducted could not come to a common conclusion. In this context, this paper attempts to fulfill the gap of explaining stock market dilemma and identify how far the market has been corrected.

IV. HYPOTHESES

For the purpose of this study the following null hypotheses have been designed
1. H_o: The price of stock is highly influenced by the fundamental factors not by any other immeasurable factors.
2. H_o: Current situation of market is very close to the ideal condition.

The key alternative hypotheses of this paper are,
1. H_a: The price of stocks is not influenced by the fundamental factors rather it is influenced by other immeasurable factors.
2. H_a: Current situation of market is not close to the ideal condition at all.

V. METHODOLOGY

This study is broadly designed to find out the influence of different fundamental information in determining the stock price. Moreover the paper attempts to compares the market price of shares with their ideal price to determine whether these stocks are currently overvalued or undervalued.

5.1 Sample

The study considers 14 pharmaceutical companies listed with DSE, which comprises 70% (14 out of 20) of the total listed companies with DSE under pharmaceutical and chemical industry. For the purpose of analysis secondary data have been considered from 2005 to 2011.It is worth mentioning here that the 6 companies were taken out of the sample for their extreme out lire effect.

5.2 Measurement

Statistical method of multiple regression analysis has been applied in this study. Time frame of this research is seven years slot (2005 to 2011). Every company has been analyzed with same parameter over these periods.

First segment of the study considers the fundamental information of companies' performance, which includes earning per share (EPS), dividend per share (DPS), return on equity (ROE), return on assets (ROA), and the ratio of fixed asset to total asset (FA/TA). For regression analysis significance value has been accepted up to 0.05 (as general statistical standard).

Second segment of the study compares the current market price for PCI companies to their ideal price. For this a randomly selected normal day's (not influenced by any extreme factor) market price has been compared with the theoretically calculated ideal price.

The effect of unauthorized information is highly qualitative and difficult to compare with numerical information, so this study assumed the difference of ideal price (based on fundamental) and market price is caused by those unauthorized information.

5.3 Procedure

This is a combination of qualitative and quantitative research. To make the analysis easier all measurement are done based on predefined parameters.

To prove the first hypothesis, multiple regression models have been applied to determine the impact of company fundamentals to market price. Five most relevant fundamental performance criterions have been considered as independent variables, where market price of stock has been considered as dependent variable.

Equation 1: $Y(Stock price) = \beta_1 + \beta_2 * (EPS) + \beta_3 * (DPS) + \beta_4 * (FAtoTA) + \beta_5 * (ROE) + \beta_6 * (ROA)$

The model in Equation 1 explains how dependent variable (market price of stock) is defined by these five independent variables (only if they show significant level of correlation), where all the independent variables are considered to have positive co-relation.

Earnings per share is the amount of profit after tax divided by the total number of shares outstanding. From the perspective of an investor, higher the EPS the better it is, as it indicates the future prospects of the company's business, potential growth opportunities and higher returns for the investors. Therefore price of stock is presumed to have positive relationship with EPS.

Dividend per share shows how much a company pays out in dividends each year relative to each of its share. In the absence of any capital gains, dividend is the return on investment for a stock. Therefore DPS and stock price is supposed to have a positive relationship.

Fixed asset to total assets actually indicates the stability of the company. When fixed asset cover the larger portion of the total asset it ensure that risk of losing investment is very low at the point of bankruptcy. Therefore, Fixed to total asset ratio has a positive relationship with stock price.

Return on equity (ROE) calculates how many dollars of profit a company generates with each dollar of shareholders' equity. ROE not only measures company's profit but also measures company's efficiency. A rising ROE suggests that a company is increasing its ability to generate profit without requiring much capital. In other words, higher ROE is better for investment. Therefore, ROE is presumed to have positive relation with stock price.

Return on assets (ROA) is a company's net earnings divided by its average of total assets. ROA indicates the capability of a company to utilize its assets to generate net profit. In an ideal market, a stock with higher ROA should have a higher price.

The second section of the study has been designed to compare the current market price with ideal value of stocks. To accomplish that, this paper considers Net Asset Value (up to date) as ideal value of stock and compares that with current market price.

Equation 2: $NAV\ per share = (Total Asset - Total liabilities) / number of share$outstanding

A number of eminent scholars in their study indicated that NAV (Net Asset Value) provides idea about the closest ideal value of a stock. This value indicates the amount on which a shareholder will have right at liquidation of the company. According to the fixed-price method, the issuers arrive at the fixed price, when they consider the reasonable value of their company plus any similar company traded in the market. Hypothetically, this price is equal to net asset value (NAV) of the firm and firm has to disclose all the quantitative and qualitative factors to justify this price (Chowdhury, 2009).Mostly NAV is applicable for IPO, but in this paper NAV has been taken as a basis for comparing the market price of existing stocks due to the misleading result of stock price under CAPM and Dividend discount model based on the available data of DSE. After the market

crash most of the stocks in Bangladesh have a negative market return, when such negative market returns are used under CAPM technique to arrive at required rate of return (RRR) and this RRR is put under dividend discount model to determine the ideal price of stocks, most of them shows a negative ideal price which cannot be so it the real situation. Therefore to avoid this misleading ideal price NAV has been taken as the proxy for ideal price.

The entire analysis of qualitative and quantities factors has been done by SPSS and MS Excel. The hypothesis has been tested based on the findings of these analyses.

VI.   ASSOCIATION AND SIGNIFICANCE

Significance (Sig.) value shows that how much this model fit in data. From Table 1 it is clear that some samples are showing very high value of significance, which means scale of unacceptability of the relationship, is very high. Only three samples are showing significance less than 0.05 (Table 1). But others' high values of significance reduce overall level of acceptability about their association.

Table 1: Regression of Market price to Fundamental

Analysis Summary	Model Summary		ANOVA
Company	R square	Adjusted R square	Sig.
ACI	0.975	0.849	0.266
AMBEE	0.678	-0.930	0.816
BXSYNTH	0.891	0.344	0.531
GLAXOSMITH	0.931	0.586	0.430
IBNSINA	0.971	0.836	0.285
KEYACOSMET	0.988	0.929	0.184
KOHINOOR	0.952	0.712	0.363
LIBRAINFU	0.793	-0.239	0.694
MARICO	1.000	1.000	0.000
ORIONINFU	0.795	-0.228	0.692
PHARMAID	0.958	0.749	0.340
RECKITTBEN	1.000	0.998	0.031
RENATA	1.000	1.000	0.015
SALVOCHEM	0.813	-0.120	0.667
Industry Avg.	0.910	0.463	0.380

R square clarifies that how much depended variable can be explained by the independent variable. Most of the samples reflect that more than 80% dependent variable can be explained by the independent variables (Table 1). But some of them are showing negative value in adjusted R square, which creates confusion about the strength of association (Table 1).

So based on the concern values it is expected that the model is representing weak relationship between depended variable and independent variables.

From the entire beta values one common factor can be found, that is all have value of more than zero. That means assets are moving at the same direction as of the market, and particularly some are showing value more than one (**Table 2**), certainly their growth is higher than the market.

Table 2: β value

Company	β value	Company	β value
ACI	0.78365	LIBRAINFU	0.54051
AMBEE	1.01683	MARICO	0.81038
BXSYNTH	0.98304	ORIONINFU	1.08237
GLAXOSMITH	0.73097	PHARMAID	0.75266
IBNSINA	0.62886	RECKITTBEN	0.52486
KEYACOSMET	1.02575	RENATA	0.32888
KOHINOOR	0.22816	SALVOCHEM	0.53845
Industry Avg.		**0.71253**	

Source: Stock Bangladesh, 2012

These beta values represent that the performance of PCI companies in Bangladesh is above average and they are in good condition to provide high return on investment.

Test of Hypothesis 1

All firms of PCI are not showing acceptable range of significance value. So even when the fitted model is providing scope of explaining the dependency of fundamentals there is no point to go through that model and explain the level of influence of different variables because of high unacceptability of relation.

Table 3: Summary of regression coefficients

Analysis Summary	Fundamental to Market price						
	Coefficients						
	β 1	β2	β3	β4	β5	β6	Sig.
company		EPS	Dividend	FA to TA	ROE	ROA	
ACI	-714.4	8.9	4.4	1013.0	-190.7	1379.6	0.27
AMBEE	1891.4	274.6	49.5	-12336.9	-14124.8	20685.6	0.82
BXSYNTH	415.6	27.8	-53.8	345.3	-63414.5	146665.6	0.53
GLAXOSMITH	-30.0	-20.7	6.3	1065.5	17585.4	-25916.3	0.43
IBNSINA	-3552.4	43.8	-18.8	6336.7	408.2	-9415.8	0.29
KEYACOSMET	555.2	83.3	-2.4	-378.5	-3637.4	816.1	0.18
KOHINOOR	-198.6	3.6	-22.7	382.7	799.6	20796.3	0.36
LIBRAINFU	-1642.2	-32.7	66.1	2740.3	6595.0	12250.0	0.69
MARICO	529.0	-3.0	7.0	244.1	-3222.4	4023.2	0.00
ORIONINFU	2973.7	33.5	25.8	-4895.5	-306.5	-597.8	0.69
PHARMAID	-542.9	0.4	50.5	-799.7	425.4	-248.8	0.34
RECKITTBEN	-2450.6	18.9	-1.7	2915.3	3942.7	4479.5	0.03
RENATA	-14124.4	33.4	524.5	16609.8	-87831.0	-17441.8	0.02
SALVOCHEM	7792.2	-10.5	4.4	-3854.4	-20875.2	2469.3	0.67
Industry Avg.	-649.9	33.0	45.6	670.5	-11703.3	11424.6	0.38

Betas are not accepted in the model as high significance (Sig.) value shows no relation between variables. Even individual samples are not showing any common pattern in values (**Table 3**) or value range for different variable. Moreover under same beta some samples have very high positive value and some are showing negative values, and that does not follow any particular characteristics of the firms (sample). Therefore based on significance value of more than 0.05 the first null hypothesis ($1H_0$) is rejected.

So alternative hypothesis is accepted ($1H_a$), which means market is not significantly influenced by the fundamentals of the stocks for the PCI.

Test of Hypothesis 2

As every share under study has a face value of taka ten so their different market price is not influenced by face value. Only three samples are showing higher NAV per share than market price (**Table 4**). But all others samples are providing higher market value than NAV per share. So it can be surely said that industry has a trend of overvalued stock.

By considering the value of percentage of variance, a conclusion can be draw about hypothesis two. Eight samples are giving indication that market is more than 200% over valued (**Table 4**). Even some are showing extreme over valuation in market, which is not a proper representation of stable market. These over valuation will definitely bring extreme fall in the market and investors will be highly affected by that.

The research finding indicates that the PCI is still overvalued, but the investors are still interested to invest in PCI which indicates stock market inefficiency. Therefore the second null hypothesis ($2H_0$) must be rejected, so alternative hypothesis two ($2H_a$) is accepted. Market is not close to ideal condition yet and there is further scope for market correction.

Table 4: NAV per share to market price

Company	Current Price	Face value	NAV per Share	Percentage variance
ACI	137.7	10	206.72	-33%
AMBEE	225.1	10	24.4	823%
BXSYNTH	28.6	10	25.57	12%
GLAXOSMITH	518.8	10	114.65	353%
IBNSINA	81.7	10	16.59	392%
KEYACOSMET	29.6	10	22.87	29%
KOHINOOR	200	10	11.43	1650%
LIBRAINFU	208	10	1566.71	-87%
MARICO	378.1	10	69.69	443%
ORIONINFU	140.6	10	101.24	39%
PHARMAID	138.1	10	21.39	546%
RECKITTBEN	730	10	48.13	1417%
RENATA	718	10	1817.01	-60%
SALVOCHEM	168.5	10	43.07	291%
Industry Avg.	257.06	10	292.1	

Even after two years of market crash, the price of PCI is not showing correction trend which was very much expected. Though some over priced stocks are coming down towards real price, some are still rising (*http://www.dsebd.org/mkt_depth_3.php*). That provides indication about looking for some hidden parameter other than numerical and theoretical factors.

VII. RESEARCH FINDINGS

From the above analysis it can be concluded that market price is very insensitive toward fundamentals of companies' and current market is performing far behind than ideal condition. There is very small scope to apply the theoretical models in investment decision.
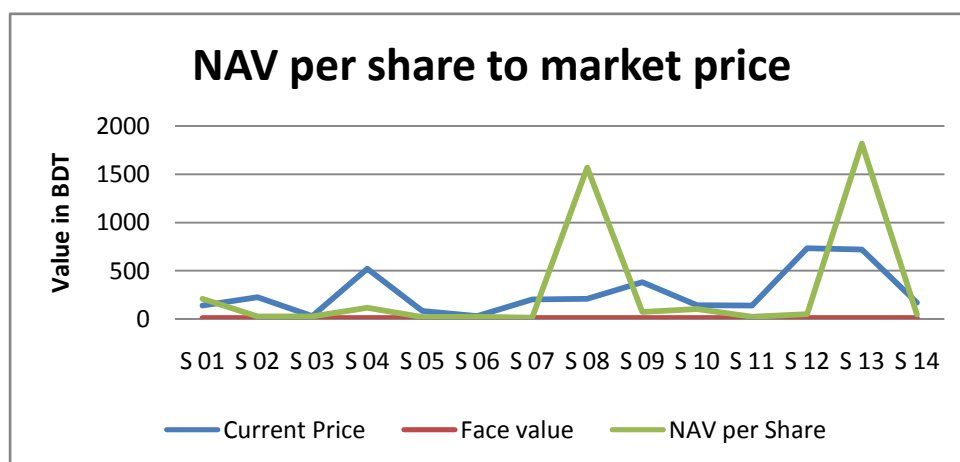

Figure 1: Comparison of Net Asset Value per share and Market Price

Markets like DSE do perform based on many factors and all of them are not explainable by the theoretical models of fundamentals. There are many general factors about different stocks and those play very active role in impacting market price of stocks.

The difference between market price and ideal value (proximate), presented in the figure above is caused by the qualitative information and market rumors. As the market is performing at a level higher than standard condition so the impact of those unauthorized information must be higher than the fundamentals of stocks.

VIII.   CONCLUSION

From the above analysis it is clear that the price of share in DSE has no significant relationship with company fundamentals. The study considered five performance criterions (EPS, DPS, FA/TA, ROA, and ROE) to determine the correlation with stock price. But it was found that there is no significant co-relation between stock price and these variables. So the study concludes that the price of stock at DSE is influenced more by factors other than company fundamentals. And it re-enforces the fact that either the price is controlled by big market manipulators or by market rumors, which is possible due to the profile of retail investors of DSE, majority being either uneducated or little educated with no clue about the market fundamentals or company fundamentals what so ever.

The study further depicts that DSE is still in the process of market correction. The study considered NAV as the proxy for ideal price. It was found from the study that the price of majority of stocks is still overvalued. But the overpriced stocks in the market, right now, are not because of investors' optimism. After the recent durst, the investors have become very skeptical about the stock market itself and they are yet to regain their faith in this market, which definitely will take a little while. Till now, a huge number of investors are stuck in the market as they are still in big losses and these investors have no intension to sell off their existing share and realize the loss. If these investors were ready to sell off their share the market would have reached the desired correction of price by now. Therefore, the study advises the prospective investors to wait a little more before they again pour their money in the market, as a further fall in the index is forecasted. The market is still very fragile and might take some more time to stabilize. And this is very natural after any stock market crash.

It is important for both the investors and the regulators to understand their respective faults and work on it. Rather than putting the blame on each other. For this reason a few recommendations have been provided in the paper. Which are:

- The easy interpretation of fundamental factors for investment need to be taught from higher secondary level. Moreover, government initiated trainings can help to motivate current micro investors' to focus more on fundamentals.
- The depth and breadth of Bangladesh stock market need to be broadened to reduce the gap between demand and supply.
- DSE and SEC need to take strong and coordinated actions against false rumors in the market. Their strong steps will reduce the chance of increasing price illogically.
- Institutional investors, investment bankers and brokerage firms need to provide extensive advisory service to the micro investors as to how to construct a ideal portfolio of stocks and how to analyze and interpret company information to take proper investment decisions.

The paper has its limitations, firstly the study was done only on pharmaceutical and chemical industry in DSE, and therefore the result cannot be generalized. Moreover the stock price has been taken from 2012 so that it can be compared with available NAV figure. But the paper will definitely pave the way for future researches to work in depth on the topic.

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