Robustness of EPS in Determining Share Price: An Empirical Evidence from PSX

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Abstract - The stock market is considered as the major indicator of the success of any country. The various dynamics operating therein are of enormous interest for a financial analyst, policymakers, stakeholders or more or less the majority of the people across the globe. Within the stock market, the most interested and controversial topic is a determination of valuation mechanics by which share prices fluctuations can be understood and a model fit for investment criteria could be established. Boundless factors have discovered and some are still in the process of discovery to get a hang of share prices fluctuations mechanism. So keeping this in mind this research is targeted to explore a linkage between earning per share (EPS) and share prices, taking a sample of five fertilizer Sector Company for a period of 12 years making the aggregative amount of data up to 60 observations. Data is collected from the company fundamentals released in annual reports of the company. In order to explore the causal mechanism between the two variables, a regression test is employed. Pearson correlation is also used as an extension to the analysis. The results of the study approved the previous literary contributions in this area by highlighting the highly statistically significant positive relationship between share prices and EPS since F(1,58)=191.205, p<0.05.

Keywords: EPS, PSX, share prices, fertilizer sector, investment criteria.

I. INTRODUCTION

Amongst the most important means to gauge the material success of any organization includes its ratio analysis. The intrinsic practicalities of the corporation may be spotlighted by analysis of its ratios [1]. Functional including financial outcomes can be tracked by them. Stakeholder majorly investors concentrates on the stock’s market worth and directional analysis of its ratios [2]. Amongst these ratios price to earnings ratio, dividend payout ratio, dividend yield ratio, and dividend per share and earning per share are frequently used [3].

Warren Buffet a renowned investor having ranked in one of the top 10 richest men in the world has made his investment criteria. Within his successful investment criteria, he will be delighted to invest in the organization reporting positive corporate earning consistency or consistent rise in EPS at least for ten years of their recent history but with some conditions applied [4].

Earning per unit of average common stockholder predominates as a predictor of stock prices and as an element in the computation of price earning analysis [5].

A. Background of the Study:

While exploring characteristics of Pakistan’s stock exchange it has been explored that Pakistani market is featured to be a weak market and investing criteria can be made keeping in mind the usual sequel of corporate accounting information leading towards the path of higher returns [6]. By keeping this in mind, different analysts have developed their conceptual framework of regressing corporate stock values by its fundamental data. [7]. This research also tracks stock price relation with earning per share.
B. Significance & Objective of the Research:

Analyst usually considers an investment in stocks securities as of having a high liquidity. Therefore they have regarded it as of having prime importance and grounded various theories on it. They have worked on boundless variables so that any insight can be drawn and highly profitable portfolio could be constructed. Eventually, a number of variables are found to emerge as a result of these findings which are earning per unit of the average shareholder, dividend per unit of average shareholder etc.

This analysis is designed to unveil the linkage between EPS and market prices of shares by taking five companies listed in sector seven of Pakistan stock exchange. The names of the companies taken for analysis are listed in the methodology section.

C. Scope of the Study:

The scope of the study is limited to five companies of sector seven that is fertilizers sector, listed on Pakistan stock exchange. The data also composed of 12 years starting from 2004 and ending up at 2015. Within this time frame, EPS and market value of the stock of each individual company are taken out for analysis.

D. Statement of the Problem:

The developed markets are often used in the analysis for testing a number of stock market assumptions such as the markets of UK and USA. The results of the test in these markets indicated and pointed out the relevance of the “efficient market hypothesis” and “information content hypothesis”. With respect to emerging markets, the researchers, in general, having aware of its complexities found it challenging to spot impact of various variables since emerging markets constitute a significant amount of inexperienced and uninformed investors, declining levels of liquidity, shaky legal, political, economic and institutional and operational structure [8]. There exist numerous studies to engage the stock value fluctuations within the context of developed countries but only limited studies were conducted to test such fluctuations within emerging markets especially south Asia [7].

Although the analysis of numerous studies has ended up with the strong and positive relationship between EPS and share prices but a study conducted by [9] on pharma and chemical organizations of Pakistan stock exchange revealed a different result. This research will again test this relationship by taking fertilizers companies within Pakistan stock exchange.

II. LITERATURE REVIEW

Within the domain of financial literature, the most widely explored topic is the forecasting and estimation of stock prices. Critical evaluation of varied components within the stock market has been done to determine the rapid ups and downs in the stock of various companies or the overall market. Different theories emerged as a result of this investigation with varying results such as Keynesians work of “animal spirit”, Fama's proposition of the efficient market hypothesis [10].

Although there exist various methods for the evaluation and forecasting of stock prices analyst majorly follows two approaches namely fundamental and technical analysis [11]. Fundamental analysis relies on the corporate generated information such as the company’s financial reports, horizontal, vertical and ratio analysis [12]. Share prices are sensitive to the corporate fundamental as a pretested rule. It is believed that if an organization is reporting high earning consistently its stocks would appreciate [13]. Looking at the other side of the coin technical analysis base its focus on historical trends or fluctuations in prices. Historical Price graphs, charts, and data are studied to make predictions about the future [14]. Usually, the Fundamental analysis is expected to outperform in the long run as compared to technical analysis. It is considered to be a long run indicator of the intrinsic worth of stock [15] [16] [17].

While discussing company specific-factors, corporate earnings are primarily regarded as an influential factor in determining the worth of any organization or values of its shares as traded in the market. The primary function of any
organization is to produce and sell goods and services hence benefiting its customers and earning an amount above it cost so that its reserve would appreciate and its cost could be covered. Once the company has passed its introductory stages and starts to contribute towards its reserve development, it would definitely plan to increase the size of its operational processes and hence ultimately contributing to its inflows. When the organization have developed enough customer bases and gathered a lump sum amount, the demand for equity shares of that organization would boost so as its market values. Earnings when deducted from all the operational expenses, governmental taxes, and interest and accounting depreciation are a stake of its shareholders [18].

One of the byproducts of organizational earnings is its earnings per unit of the average common shareholder (EPS). EPS is a detachment of corporate earning representable to each holder of common stock. This detachment of aggregate income comes from the exclusion of preferred shareholders share and government share in the form of its taxes [5].

Ground works have been done to reveal the linkage of EPS and market share value. A study on the insight of successful 50 organizations of Indian market disclosed powerful linkage between EPS and stock value in the market [19], similar findings were found in [20]. Whereby he addressed and concluded the worth of EPS for the investment criteria. Authors in [21] establish this connection by widening its research scope and taking into account five variables and twenty-year data of eight major players within the cement sector of India, ending up with the same findings. Malhotra in 1987 has done a cross-sectional examination with a panel data of four sectors and four years [22].

Researchers in [23] studies have taken three measurements for assessing share market values. Among this three Measurement, the measure of EPS was found to have a sound positive effect on share prices. The earning per unit of common stockholder affected the stock market values for an extended period.

Studies conducted by [21] highlighted that earning per unit of the average shareholder is linked with share prices significantly. The time period for which data is analyzed ranged from 1968-1988 or twenty-year data. The cases constitute approximately eight cement sector firms whose shares are publicly traded. Earning per unit of the average stockholder was not the only variable that is taken in this research rather there were five variables in total, which were dividend per unit of the average shareholder, earnings per unit of the average shareholder, proceeds of sales values, share prices on which they are traded in the market and retained earnings.

Another research conducted by [24], taking four years cross-sectional data staring from 1989-93 for one hundred and five firms revealed that earning per unit of the average common stockholder ineffective measure for the share price.

Studies in [22] conducted in cross-industrial settings taking into account four industries which were cotton textile, general engineering, paper and food-related products also depicted similar findings with data ranging from 1982-1985. The same relationship in [25] used the statistical power of linear regression in addition to correlation.

Despite various analyst have Unisom conclusion regarding positive and strength of the relationship between EPS and value of stocks but some have reported inverse scores. An analysis of twenty-two Bangladesh banks revealed the opposite finding and the same research concluded the rationality for such findings [26].

III. HYPOTHESIS

The theoretical framework comprises two variables; therefore, the hypothesis is as follows:

\[ H_0 : \text{EPS doesn’t have statistically significant influence market price of stocks} \]

III. METHODOLOGY

A regressive mechanism is been establish by taking EPS as an independent variable and market prices of stocks depending on it.
A. **Data and Variables:**

Data of EPS and Stock prices are collected from annual reports of the companies and company website from the period of 2004 to 2015. Basic EPS and closing prices of shares are taken for analysis.

B. **Sample and Frequency:**

A sample of five Pakistan stock exchange listed companies namely Arif Habib Corporation Limited (AHCL), Dawood Hercules limited (DAWH), Engro corporation limited (ENGRO), Fauji fertilizers company (FFC) and Fauji fertilizers bin Qasim Limited (FFBL). So the sample constitutes an aggregate of 60 observations. Only annual data is taken by ignoring the fluctuations of figures within the year.

C. **Model:**

Since a causal mechanism is explored between earnings per average common shareholder and share prices in the secondary market, therefore, simple linear regression is applied. Before applying linear regression Pearson correlation test is also applied. The model of the regression can be classified as follows:

\[ MPS = \alpha + \beta \times EPS \]

Where: MPS stand for the market price of stock & EPS stand for basic earnings per share

III. **RESULTS AND DISCUSSION**

Interpretation of the result is as follows:

A. **Graphical Analysis:**

The graph also shows the relationship between EPS and the prices of stocks. The movement of EPS and share prices are in a similar direction initially but in the end, this relationship seems to weaken out as earning per share seems quite stable without many fluctuations but share prices are still fluctuating.

B. **Description Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRICE</td>
<td>134.1732</td>
<td>127.04023</td>
<td>60</td>
</tr>
<tr>
<td>EPS</td>
<td>19.4748</td>
<td>37.10855</td>
<td>60</td>
</tr>
</tbody>
</table>
From the descriptive statistics result we can conclude that mean of the market value of a share is 134.17 and unit earning per average common holder’s mean is 19.48. Sample size or total observations are 60, 12-year observation for 5 companies.

B. Inferential Analysis:

For inferential statistics two models results that are applied are as follows:

**TABLE II**
CORRELATIONS

<table>
<thead>
<tr>
<th></th>
<th>PRICE</th>
<th>EPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRICE</td>
<td>1.000</td>
<td>.876</td>
</tr>
<tr>
<td>EPS</td>
<td>.876</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRICE</td>
<td>.</td>
<td>.000</td>
</tr>
<tr>
<td>EPS</td>
<td>.000</td>
<td>.</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

According to the results of person correlation test unit earning per common stockholder is statistically significantly correlated with the market price of the share (r=0.876, N=60, p<.005).

**TABLE III**
MODEL SUMMARY

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.876</td>
<td>.767</td>
<td>.763</td>
<td>61.81424</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), EPS

From the above table, we can conclude that the simple correlation between EPS and share price is .876 whereas EPS can bring 76.7% variation in share prices. These figures are indicating a strong relationship between both the variables.

**TABLE IV**
ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1</td>
<td>730596.023</td>
<td>191.205</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>58</td>
<td>3821.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>952214.023</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: PRICE
b. Predictors: (Constant), EPS

ANOVA table signifies the importance of regression model in estimating the independent variable’s influence on the dependent variable. P-value smaller than 0.05 indicates that prediction is statistically significant.
From the above table the regression equation came out to be:

\[ \text{Price} = 75.773 + 2.999(\text{EPS}) \]

Thus based on our results and analysis, the null hypothesis is rejected since there exists a significant influence of predictor on the criterion variable.

C. Discussion:

Although results given by linear regression are very strong to prove the existence of a causal relationship between EPS and share prices but still the groundwork of previous research studies can help us to add weight to our research.

Researcher in [27] studies into Columbian secondary market revealed the same positive linkage between share prices and dollar earnings per average common stockholder. According to this study, EPS is highly linked to share prices and fluctuations in it can bring fluctuations in a later variable.

Authors unveiled in [28] the comparable findings of positive and strong linkage within the context of Pakistan’s secondary market. According to this study, volatility in share prices may come because of changes in EPS.

Authors in [29] find fact within Iran’s secondary market and also gave the parallel results that there exists a causal relationship between EPS and stocks market value.

Authors in [30] study based on its analysis on almost 50 corporations whose stock are offered to the general public as a token for ownership within Philippine’s stock market, also found that EPS and share’s value in the market depicts a convincing association. A reverse and ineffective linkage were also debarred between ROA and market value of shares. The study has employed spare rank correlation together with linear multiple regression for disclosing these relationships.

Authors in [18] exploration into the association between earning per unit of the average common stockholder and MVS within the context of Pakistan’s stock exchange taking into account 13 companies registered in cement sector are also consistent with our findings of the positive relationship between the two variables.

Researchers in [31] studies of Chinese secondary markets has also concluded the same results as that of our study since it concluded a strong and positive relationship between the two variables.

IV. CONCLUSION, LIMITATION AND RECOMMENDATION

A. Conclusion:

Based on our results and previous research findings, we can conclude that investors must take care of unit earnings per average stockholder (EPS) since it is having the power to bring fluctuations in share prices. For stock investors, financial market analyst, academician and other stakeholders it is highly suggested that they should consider EPS within their investment criteria together with other economic, country-specific or industry-specific variables. A composition of these may be constructed to derive model fit for determining share market value. Despite this, it is also highly suggested that qualitative factors can also bring a potential change in stock market variables hence they should also be considered.
B. Limitation & Recommendation:

This may not be generalized to other industries (except fertilizers) or in other stock exchanges despite Pakistan’s stock exchange. The time frame is also limited to 12 years.

Following recommendations are listed for conducting future research in this area:

1. The research studies in the future comprising of the same topic might use a considerable amount of data that needs to be structured to analyze through fixed effects or random effects in accordance with panel statistics. The respondent or cases that constitute part of the analysis can involve similar or different operational dynamics. For example, different conventional banks that are part of listed stock exchanges are similar cases whereas if data related to banks and manufacturing companies are analyzed than it would be a part of dissimilar cases. Heterogeneous data can be incorporated into the analysis if we categorize data in Pakistan stock exchange in accordance with firms reporting consistently top earnings, net profit or any other categorization in which a researcher is interested. Dependent variable can also be changed in the research and instead of it, stock returns can become part of the analysis [32]. Conducting the analysis with such consideration might demonstrate to be useful.

2. If we were to use some qualitative variables in our research then dummy variable may be incorporated so that the factors that could not be quantified their maximum effect could be captured.

3. Different financial data’s should be analyzed using Gretl or eviews since they are powerful soft wares used especially for financial data analysis.

REFERENCES