Impact of accounting ratios on stock price: Evidence from Pakistan

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ABSTRACT

Stock market investors always bear the risk. In order to counteract risk, some financial measures are carried out. In this context, the following study is conducted to examine the impact of financial ratios on the share price of the stocks. Various studies have been carried out in different countries to find out the variables that can affect the stock price, which may be external and internal. However, there are numerous unpredictable factors that stimulate share price across different sectors. In this paper, we are examining the effect of returns on assets, earning per share, and book value per share on stock prices to find the change in preferences of investors before and after the global recession crisis of 2008. For this purpose, a sample of 100 listed companies on the Pakistan Stock Exchange is selected. The sample entails two periods ranging from 2004-2007 and 2011-2014. In order to determine the underlying factors of share price, panel data regression is performed. The findings depict that the major determinants of share price for companies listed on the Pakistani Stock Exchange are earning per share, return on assets and book value per share. The book value per share and earning per share are found to be the most influencing factors before the crisis of 2008, but after the incident, the prediction attributes of the variables changed. After the year 2008, returns on asset and book value per share became the key variables to affect the share price.

Keywords:
Financial Ratios, Share Price, Pakistan Stock Exchange, Financial Crisis, Panel Regression

INTRODUCTION

Prices of companies in the stock market fluctuate daily which directly affects the investors. The study facilitates the investors to their investment decisions. There is much work done by researchers on financial information to forecast the future. In this context, financial ratios play a significant role to forecast the stock price. In this paper, we examine the impact of three financial ratios on the stock price of the companies listed in Pakistan stock exchange. The financial ratios are returns on assets, earning per share, and book value per share. This relationship is tested through three hypotheses. A regression model is run to measure the strength of these relationships. In many developed countries, the impact of financial information has been tested like in USA and UK since the investors lack enough knowledge; hence, it is difficult to test the market reactions. The unstable political situation and economic conditions further aggravate the situation to counter the risk associated with the stock market.

As compared to the developed countries stock exchange, the Pakistan stock exchange is still a small and emergent market. On September 18th, 1947, the Karachi stock exchange was created. The first index was formed consist of fifty companies and was called by KSE 50 index. In October 1970, by the government of Pakistan under the ordinance of securities and exchange, the second stock exchange was made in Lahore. On 25th October 1989, another exchange was formed in Islamabad known as Islamabad stock exchange. In 2016, the government of Pakistan enacted a special legislation known as stock exchanges (corporatization, demutualization and integration) act, 2012 (known as demutualization act). By this act, the three exchanges were combined to form the new combines exchange called Pakistan stock exchange, which started its process on January 11th, 2016 under the new name. As on January 26th, 2016 there are 581 companies listed in Pakistan stock exchange and the total market capitalization is Rs. 6,710.879 billion. All the companies listed in Pakistan Stock Exchange go through strict rules and regulations executed by and Securities Exchange Commission of Pakistan and the administration of Pakistan stock exchange limited. There are total of 35 sectors listed on Pakistan stock exchange, as on January 27th, 2016. There are few studies carried on emerging markets like the Asian market compared to the developed countries. Bandara, Hareendra and Samarakoon (2002) examine the impact of the market in response to dividend announcement and concluded that there is a significant impact on the market.

Dissabandara (2001) see the impact of the stock market by dividend announcement and found that there is a negative impact on the market because of an announcement that dividend amount is decreasing and positive when there is an announcement of an increase in dividend amount. Another study conducted by Ramesh and Nimalathasan (2011) and Gunasekara (2011) to examine the impact of bonus issue on stock prices and they document that there is a negative as well as a positive impact of the stock prices by issuing the bonus shares. The primary purpose of this study is to investigate the reaction of the emerging market by financial information and also to see the impact of financial variables on stock prices in emerging markets. A less attention has been paid to the Pakistan stock exchange till date, and it will facilitate the investor to invest in Pakistani market.

Objectives of the Study

The main objectives of this paper are

1) To examine the relationship between earnings per share and the stock price.
2) To examine the relationship between return on assets and the stock price.
3) To examine the relationship between book value per share and the stock price.
4) The essential ratio before and after the 2008 crisis year. Which ratio has a strong relationship with the stock price before and after 2008?

LITERATURE REVIEW

The impact of financial information on the stock market is not a new topic and is started since 1968. After onward lot of work has been done by different researchers on different markets to examine the factors influencing the stock prices. Bhana (1995), used earning per share to examined the stock market response at the Johannesburg stock exchange. Results showed that the investors overreact to short term earnings movement. The results are quite unusual that is the increase in company earnings; there is a decrease in share prices for the specific time.

Su (2003), study the impact of share prices by earning per share in the Chinese stock exchange. The results revealed that the investors least bother to get the earning per share information before investing in the stock market.

It is hard to forecast the returns. However, it is observed that the international investor more closely observes the earning per share of the company as compared to the local investor. Further, it is believed that there is a negative impact of Earning per share on Stock returns. EPS creates pressure on the prices of the shares after the announcement. There is an upward trend of the company higher expected earnings per share announcement for the expected announcement date of financial information of that company in the market. In 2003, Zhu examined earning per share and the stock market return and conclude that there is positive relationship between earnings per share and stock prices. Hadi (2004), study the importance of financial variables in the banking sector of the Kuwait stock exchange. He took the banking sector of Kuwait. The regression model was used. By using the returns on assets, Net Interest, earning assets ratio, and loss ratio as financial ratios, found that there is a significant impact of financial ratios on the stock returns of Kuwait stock market.

Perera and Thrikawala (2010) studied how investors use the financial information in their investment decisions. They utilized that data of Sri Lanka came from Colombo stock exchange. They conclude that there is an association between stock prices and financial data. Mahmoudi, Shirkavand and Salari (2011) examined the relationship between earnings announcement and investors behavior in the case Tehran stock exchange Iran. They examined the investor reaction on a positive and negative announcement about earnings. The sample is splitting into two groups. The first group contained firms with 5% increase in Earning per share after last announcement. Moreover, the second group consist of companies with the decrease in earnings per share due to last announcement.. The study revealed that there is a strong relationship between the stock reactions on earning per share announcement day. Increased in earning per share showed the positive stock price reaction, and a decrease in earnings per share announcement showed the negative stock price reaction.

Ghayoumi, Nayeri, Ansari and Raeesi (2011) examined the behavior of the investors about the financial information in the Tehran Stock Exchange from the period 1999 to 2006. They took earning per share, the change in earning per share, and the book value of a share and showed that there is a significant positive relationship exists between the earning per share and stock return.

Hejaz, Jafari and Heidarpoor (2011) examined the impact of financial variables on the company's stock returns in the Tehran stock exchange. They utilized the data of production companies over 2000 to 2004. The dependent variable of the study was annual stock returns, and the dependent variables were net income, operating profit, cash flows. Take company size as a control variable. The results revealed that as compared to other variables, the operating profit is more relevancy with stock returns. Kheradyar, Ibrahim and Matnor (2011) examined the impact of the financial variable on stock return in the Malaysia stock exchange. The findings showed that the financial ratios have strong relevance with the stock returns. Moreover, the book to market ratio has the most substantial impact on stock retunes. Furthermore, this research also reveals the fact that financial information has the power to forecast stock return values.

Mgbame & Ikhatua (2013) tested the stock instability and financial information for the Nigerian stock market. The primary purpose of the research is to check the relationship between financial information and stock instability in the Nigerian stock market. The result revealed that there is a significant relationship between stock instability and these financial ratios. Wang, Fu and Luo (2013) tested the financial information reaction on share prices in the Chinese stock exchange for one year in 2011. This study concludes that there is a significant relationship between financial information and share price. The research used to earn per share and return on assets to clarify the stock prices impact to financial information. The results showed that there is a positive relationship exists between the stock price and financial information. Emamgholipour et al. (2013) tested the impact on stock return and the performance estimating market ratios of listed companies in the Tehran stock exchange from the period of 2006 to 2010. They conclude that there is a significant and positive impact of earning per share on stock returns. On the other hand, the book value per share and the price-earnings ratio has a significant and negative impact on stock return.

Menike and Prabath (2014) examined the significance of the book value per share increased by financial information. The study document that there is a strong relationship between financial data and stock price. Previous literature showed that there is an essential relationship between financial data and stock prices. This is need to find this relationship in developed and developing markets. As a lot of work has been done in developed economies and less work has been done in emerging economies like Pakistan. Therefore this study fills the gap in the context of Pakistan.

Research Hypotheses

The following hypothesis developed to achieve the objectives of this paper that based on the previous work done by the researchers.

Hypothesis 1: *There is a relationship between earning per share and the stock price.*

Hypothesis 2: *There is a relationship between return on asset and the stock price.*

Hypothesis 3: *There is a relationship between book value per share and the stock price.*

RESEARCH METHODOLOGY

Data

In the study, a sample of 100 listed companies of Pakistan stock exchange from the period of 2004-2007 and 2011-2014 have been taken. The data have been taken from the annual reports of the companies and the Pakistan stock exchange. Panel regression was used to test the hypothesis. returns on assets, earning per share, and book value per share were taken as independent variables while Stock returns was considered as dependent variable. Panel regression has been extensively used in the literature to examined the relationship between stock prices and financial variables. Moreover, Semi-log model also used to examine the relationship among the stock prices and the financial variables. The literature used log values to overcome the issue of data stationarity.

Variables

The dependent variable was share price, which is taken from the state bank of Pakistan database. Multiple financial ratios were taken as independent variables that were earning per share, returns on asset and book value per share to examine the which type of financial ratio has a more significant impact on the share price of Pakistan stock exchange. The variables were calculated as follows:

Earnings per share: Net income/Total number of share outstanding

Returns on asset: Net income/Total assets

Book value per share: Equity/Total number of share outstanding

Empirical Model

To run the regression model, regression assumptions, normality, heteroscedasticity, autocorrelation and multicollinearity were tested

We run a panel regression.

$$P_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 ROA_{it} + \beta_3 BVPS_{it} + \varepsilon_{it} \quad (1)$$

- P = Average Stock price.
- EPS = Earnings per Share.
- ROA = Returns on Assets
- BVPS = Book value per share.

RESULTS

This section provides our findings. Table 1 and Tables 2 gives summary statistics for the variables of interest, over the 8 years, categorized as four years before the crisis and four years after the crisis. Firm's on average earning per share was 12.631 % with a standard deviation of 27.0764 % for 2011-2014 and 12.582 % with the standard deviation of 17.782 % for 2004-2007 respectively.

Table 1: Descriptive Statistics

Variables	Obs	Sum	Mean	SD	Min	Max
2011-2014						
Share price	388	34392.88	117.7	204.12	0.00	1835
EPS	388	3688.21	12.63	27.07	-78.36	286.92
ROA	388	2698.33	9.24	12.96	-37.11	43.84
BVPS	388	38501.63	131.8	261.04	-28.70	1883.15
2004-2007						
Share price	380	29382.07	96.65	101.59	0.00	553.90
EPS	380	3824.8	12.58	17.78	-50.10	127.90
ROA	380	3753.3	12.38	13.18	-32.40	60.40
BVPS	380	20085.9	66.07	90.65	-40.20	1000.40

Note: EPS = Earnings per Share; ROA = Returns on Assets;
BVPS = Book value per share; SD = Standard Deviation

Table 2 demonstrate the correlation among the variables. As expected, there is a high positive correlation between earnings per share and share price. Also, as expected, the other variables like return on asset and book value per share have a positive correlation with the share price. The high correlation suggests that maybe there is multicollinearity in the data, and we have added some explanatory variables unnecessarily.

However, VIF is less than 10, which suggest that there is no multicollinearity in the independent variables.

Table 2: Correlation

	Share Price	EPS	ROA	BVPS
2011-2014				
Share Price	1			
EPS	0.85	1		
ROA	0.47	0.54	1	
BVPS	0.27	0.28	0.15	1
2004-2007				
Share Price	1			
EPS	0.74	1		
ROA	0.46	0.50	1	
BVPS	0.32	0.30	0.02	1

Note: EPS = Earnings per Share; ROA = Returns on Assets;
BVPS = Book value per share

The result of the panel regression is given in Table 3 and Table 4, respectively, for the periods of 2011-2014 and 2004-2007. All the assumptions of panel regression are met. The Shapiro-Francia Normality test suggests that the data is normal. Panel data is used to apply regression, to decide between fixed or random effect run a Hausman test. The null hypothesis is preferred, then the model is the random effect vs alternative effect. F test value of the model is greater than 0.05 then use the random effect model and value for 2011-2014 is 0.0865, which influence to use random effect model.

The regression line for all financial variables is

$$P_{it} = 69.44 + 0.366 EPS_{it} + 2.492 ROA_{it} + 0.157 BVPS_{it} + \varepsilon_{it} \tag{2}$$

The model is tested on a 5% level of significance. The model is fully fitted as evident prob > F value (0.0000). Therefore, we reject H_0 in favour of H_1. There is a relationship between stock prices and financial ratios in the PSX. From the panel regression results in Table 4 showed that ROA and BVPS significantly impact on the Share Price. The highest Intraclass correlation value shows that the model is explaining 78% deviation in stock prices.

Table 3: Regression Results (2011-2014)

	Coefficients	**Std. Error**	**T**	**P>t**
EPS	0.36	0.35	1.02	0.30
ROA	2.49	0.85	2.9	0.00***
BVPS	0.15	0.06	2.46	0.01***
Constant	69.44	21.04	3.3	0.00***

Note: Number of Observations = 388; R-Squared = 0.2069; chi2 - Statistics = 24.42** Prob>F = 0.000***; Shapiro-Francia Normality test = 0.3569; * 10%, ** 5%, *** 1% level of significance

As per Table 6, EPS and BVPS significantly impact the Share Price for the period of 2004-2007. As expected, both EPS and BVPS positively impact the share price. A one-unit increase in earnings per share is expected to increase share price by 1.816. While one per cent increase in book value per share will increase share price by 0.237, this suggests that financial ratios do impact the share price generates.

The regression line for all financial variables is

$$P_{it} = 65.148 + 1.815\, EPS_{it} + 0.588 ROA_{it} + 0.237 BVPS_{it} + \varepsilon_{it} \tag{3}$$

The model is tested on a 5% level of significance. The model is fully fitted as F test value (0.0000). Therefore, we reject H_0 in favour of H_1. There is a relationship between stock prices and financial ratios in Pakistan stock exchange.

Table 4: Regression Results (2004-2007)

	Coefficients	Std. Error	T	P>t
EPS	1.81	0.30	5.97	0.00**
ROA	-0.58	0.48	-1.2	0.23
BVPS	0.23	0.05	4.13	0.00**
Constant	65.14	6.95	9.37	0.00**

Note: Number of Observations = 380; R-Squared = 0.4341; F- Statistics = 18.95**; Prob>F = 0.000**; Shapiro-Francia Normality test = 0.9607 p = 0.5032; * 10%, ** 5%, *** 1% level of significance

As per the model, ROA and BVPS significantly impact the Share Price for the period of 2011-2014. As expected, both ROA and BVPS positively impact the share price. A one-unit increase in book value per share is expected to increase share price by 0.1569. While one per cent increase in ROA will increase share price by 2.4918, this suggests that financial ratios do impact the share price generates.

CONCLUSION

This study was conducted to investigate the relationship between financial ratios and share price in the Pakistan Stock Exchange. The empirical analysis showed that financial ratios have a positive and significant impact on firm performance. This indicates that earnings per share and return on assets lead to a substantial contribution to share price.

The findings of this study are in line with the existing literature. From 2004-2007, the earning per share and book value per share are significantly influence the stock price. However, earning per share show a strong relationship with the stock price in Pakistan Stock Exchange. Perhaps, this is because of the brokerage houses and investors who gave more importance to the earnings per share to predict the share price. The p-value of return on asset and book value per share shows the strong relationship with the stock price the reason for the change of preference may be due to the crisis years in all over the world which was 2008. The preference has been changed, and after 2008, it is found that more importance is given to return on assets for the prediction of share price.

In the comparison of 2004-2007 and 2011-2014, interesting results are found. From 2004-2007, the most critical ratios were earning per share and book value per share. However, the things get changed in 2011-2014 era, the significance of book value per share is still alive with the stock price but earning per share has been replaced with return on asset to measure the stock returns that was insignificant in 2004-2007 era.

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