Empirical Relation Among Fundamentals, Uncertainty and Investor Sentiments: Evidence of Karachi Stock Exchange

SULEMAN SARWAR

COMSATS Institute of Information and Technology, Lahore, Pakistan
1-Km off, Raiwand Road, Lahore
Email: sulemansarwar@yahoo.com
Tel: +923216507882

WASIM HUSSAN

Minhaj University, Lahore, Pakistan
Email: m.wasimhassan@gmail.com
Tel: +923334355001

SOHAIL NAWAZ MALHI

Minhaj University, Lahore, Pakistan
Email: dawoogreen@yahoo.ca
Tel: +923004801506

Abstract

The present study covers all non-financial companies listed in Karachi Stock Exchange over the period 1998-2009 to explore the significant determinants of stock returns. Market premium, size, uncertainty and investors sentiment has confirmed significant positive relation with stock returns. In contrast, book to market was significant negative which confirmed the return of overvalued stocks were higher or vise versa; such over/under valuation was associated with the trading volume. Result of discretionary accrual was not in line with previous researchers; managers do not manipulate the earnings to catering the stock prices. Significant positive trading volume and negative book to market verified that highly traded stock become overvalued and yield high return. In conclusion, present study confirmed the noise trading theory in Pakistani markets.

Key Words: Stock Returns, CAPM, Investor Sentiment, Trading Volume, Uncertainty.

Introduction

Stock exchange plays a fundamental role for developing the economic condition of a country. Listed company issued the share in the stock market that helps to convert the savings into investments; such investments help to boost the business activities. Well functioning secondary markets are taken as an indicator of the economic development of a country (Levine and Zervos, 1996). Emerging stock markets attract the local and foreign investors; on the other hand, Investors are reluctant to invest in stock exchanges due to unpredictable variations in the stock prices. Although numerous researchers effort to explore the determinants of stock prices but could not form a valued principle. Present study attempts to investigate the prominent determinants of stock returns in Pakistani context.

Previously, researchers believed the randomly walk theory; it is not possible to predict the future prices. On the other hand, numerous studies rejected random walk theory and confirmed a number of anomalies to predict the stock returns i.e. CAPM, ICAPM, APT, Three Factor Model (TFM) and Four Factor Model

(FFM) etc. Capital Asset Pricing Model (CAPM)1 provided the foundation for upcoming portfolio theories. Banz (1981) was the first who examined the size effect in NYSE and concluded a significant negative relation. Rosenberg, Reid and Lanstein (1985) concluded a significant positive association between book to market and stock returns in US Markets. Basu (1977) explored a strong bound between price to earning ratio and US stock's return. Litzenberger and Ramaswamy (1979) found a significant positive effect of dividend yield on stock return. Bhandari (1988) identified a significant positive relation among leverage and retuns.

Size is the better variable then the CAPM for calculating the stock return because CAPM relates to market risk while size explores the company's financial position, Chan and Chen (1991) confirmed a significant relation among size and cash flow. Book to market value is used as a proxy of over/under valued stocks. Stocks with high book value and less market value are undervalued stocks and vise versa is overvalued stocks. George and Hwaiy (2007) argued book to market depicts the operating distress risk while leverage deals with the financial distress risk. Leverage increases the risk of investors; increases in demand of the leverage by companies change its risk status and risk adverse investors avoid such stocks. In Pakistan, industry leverage ratio is high that ultimately reduces the leverage risk of a company (Nishat, 2000).

In accounting earning a numerous transactions of accrual are involved therefore it's not reflecting the actual operating profit (Healey, 1985; Huang, 2009). Management uses the under or over manipulated earnings for their own benefits i.e. increase in salary, allowances, bonuses etc. so actual position of the stock cannot be judge by the earning (Dechow et al., 1995). In contrast, cash flow presents the actual operating performance of the company.

Accrual is the difference between earning and cash flow and is further divided into two parts, non-discretionary accrual and discretionary accrual. Non-discretionary accrual is that accrual which obligation has to be meeting in the near future and uncontrollable i.e. rent of office building. Discretionary accrual is controllable by manager; they manipulate the earnings by transforming the income or expenses. Stock price uncertainty provides the information about the uncontrollable factors that may cause the fluctuation in stock prices; like macroeconomic factors, political instability, war on terrorism etc. Investor's sentiment portrays the tune, feeling and psychology of the investors in the stock market. Most of the investors in stock markets follow the trends with the hope of maximizing its returns. Trading volume is used as a proxy of investor's sentiment.

Results of market premium, size, uncertainty and investors sentiment confirmed significant positive association. In contrast, book to market is significant negative which confirmed the return of overvalued stock are higher or vise versa; such over/under valuation is associated with the trading volume. Result of DAccrual is not in line with previous researchers; managers do not manipulate the earnings to catering the stock prices. Uncertainty is proved to be significant positive in Pakistani context which implies that higher return is associated with the uncertain stocks. Trading volume reflects the investor's sentiment about the particular stock which portrays the tune, feeling and psychology of the investors.

Rest of the paper originated as following: 2nd Section is about literature review that discusses the overviews of prior researches. 3rd Section contains data and methodology to find the regression estimations in this research. 4th Section is results and analysis that argued about the findings. 5th Section sum up the conclusion, recommendations and limitations of this study.

Literature Review

CAPM is known as the first asset pricing model presented by Sharp (1964), Lintner (1965) and Black (1974). CAPM discusses the role of market premium to estimate the expected returns. After the wide coverage of CAPM, Basu (1977) introduced price earning ratio as an important determinant of stock return

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[1] CAPM Presented by Sharp (1964), Lintner (1965) and Black (1974).

in US markets. Litzenberger and Ramaswamy (1979) studied US stocks over the period of 1936-1977 and proved the significance of dividend yield. Banz (1981), Rosenberg, Reid and Lanstein (1985), Bhandari (1988) further continue this series and proved the effect of size, book to market and leverage respectively. Fama and French (1992) commenced the three factor model (TFM), proved size and book to market contains high significance power than market premium. Carhart (1997) brings in four factor model (FFM) by adding momentum factor, proved significant positive. George and Hwang (2007) further extended FFM by incorporating the leverage effect; leverage confirmed a significant negative relation to find the equity returns in US markets.

Tripathi (2009) calculated the equity return by using the data of Indian stock market from 1997 to 2007; Size and PE Ratio confirmed a significant negative relation while book to market and Leverage proved significant positive. Dhatt et al. (1999) studied the non-financial Korean companies for 10 years (1982-1992). Size, book to market ratio, sales and debt to equity ratio provided mix evidences. Khan. I (2009) studied price earning ratio and market to book ratio by using the data of textile firms listed in KSE 100 index. 30 firms selected out of 160 firms which have larger assets, both of the variables were insignificant. Khan. F et al. (2012) investigated the size and leverage premium on 200 KSE listed companies in Pakistan over the period 2001 to 2007, size comes out significant positive whereas leverage was insignificant. Bhatti et al. (2010) analyzed 8 Pakistani industries to find out the relation among systematic risk and stock return. Results verified significant positive association; indicates high leverage ratio may cause the uncertainty in stock prices. Polk and Sapienza (2009) examined the effect of discretionary accrual on investment and stock return over the period 1963-2000. Discretionary accrual is used as a proxy for mispricing, results confirmed that managers manipulate the earning to cater the stock prices.

Crouch (1970) studied the US stocks and confirmed a positive relation between trading volume and market return as well as individual returns. Salman (2002) assessed the significant positive relation between trading volume, systematic risk and stock returns of 98 companies listed in Istanbul stock market. Guner and Onder (2002) analyzed Turkish stock market and confirmed a strong relation between trading volume and uncertainty of stock returns. Grifin et al. (2007) postulated a strong positive association between trading volume and equity returns among 46 countries. Ravindra (2008) validated a positive significant relation among trading volume and stock returns of Chilean stock markets over the period of 2003 to 2006. Chen and Zhou (2001) studied the relation between trading volume, stock returns and uncertainty in Chinese stock markets from 1990-1999. Return uncertainty and trading volume uncertainty exhibits a strong autocorrelation in Shenzhen Stock Exchange and the Shanghai Stock Exchange. On the other hand, return uncertainty proved a significant determinant to find out the stock returns while trading volume uncertainty was insignificant. Zhu (2007) studied Chinese stocks and confirmed significant negative relation among returns and volume. Tripathy (2010) applied ARCH, GARCH, EGARCH, TARCH, PGARCH, Component GARCH model and confirmed the mixed relation between trading volume and Indian stock returns over the period of 2005 to 2010. Finding of Tripathy further indicates that old news have no effect on trading volume and stock returns while recent news plays a significant role to analyze trading volume and stock returns.

Materials and Methods

This study holds the data of all non-financial companies listed in Karachi Stock Market (KSE) over the period 1998 to 2009. Financial institutions were excluded due to difference in operations and accounting treatments. Merged, acquired and delisted stocks are also eliminated from this study. Data is collected from audited annual reports of companies, KSE annual Report, KSE website, State Bank of Pakistan and Business Recorder (brecorder.com).

Stock return is the dependent variable of the study which is calculated by using daily basis price. Market Premium (MP) is the difference between market return and 6-month t-bills issued by state bank of Pakistan. Size is the market capitalization of the company i, at year t. Book to market (BM) is computed by Fama and French (1992) method.

Market leverage is most appropriate determinant as compare to book leverage in stock market studies. Market leverage is the ratio of total liability and market capitalization. Dividend yield is calculated by dividing dividend to market capitalization. Anderson.K and Brooks.C (2005) method is used to calculate the earning to price ratio. Earning to price does not inform about the yearly operating income. So, cash flow to price ratio is incorporated to examine the effect of actual operating income on stock return. Discretionary accrual is the part of accounting earning that is manipulated by the managers and is calculated as similar to Polk and Sapienza (2009) method. Uncertainty in daily stock prices is the ninth explanatory variable that encompasses the reaction of macroeconomic, political instability and war on terror etc. Uncertainty is the fluctuation of daily stock prices and is computed by taking standard deviation of daily stock prices. Trading volume is examined to identify the effect of investor's sentiment on stock returns in Pakistani context.

Estimated model of the study is as followed

$$Equity\ Return_{i,t} = \alpha_{i,t} + \beta MP_{i,t} + \beta Size_{i,t} + \beta BM_{i,t} + \beta Levg_{i,t} + \beta Divd_{i,t} + \beta EP_{i,t}$$
$$+ \beta CP_{i,t} + \beta DAccrual_{i,t} + \beta Uncertainty_{i,t} + \beta Trading\ volume_{i,t} + \varepsilon_{i,\,t}$$

Results And Discussion

Table 1 describes descriptive statics of studied variables; most of the variables contain more than 4000 observations.

Table 1: Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Equity Return	4094	0.1422	0.5470	-0.9076	6.2523
Market Premium	4728	-8.5935	4.3386	-16.1816	-0.8368
Size	4488	19.0728	2.0919	13.8212	27.1017
Book to Market	3838	0.3704	1.0622	-6.3591	4.1471
Leverage	4488	7.9869	15.6219	0.0000	289.9415
Dividend Yield	4488	0.0386	0.0909	0.0000	2.9557
Earning to Price	4488	-0.1753	2.2261	-43.1204	53.9114
Cash Flow to Price	4488	-0.2579	3.8023	-58.1629	95.8294
Discretionary Accrual	1208	18.7056	1.9361	10.0249	25.7918
Uncertainty	4632	6.5157	16.4617	0.0000	383.1635
Trading Volume	3070	3.3007	1.6877	-6.3296	10.8405

Equity return (ER) has a mean value 0.1422 with a standard deviation 0.5470, minimum and maximum value of equity return is -0.9076 and 6.2523 respectively. Market premium (MP) has mean -8.5935, standard deviation 4.3385 while -16.1816 is minimum and -0.8368 is the maximum value. Size is the third variable that contains 4488 daily observation with a mean value 19.07 and standard deviation 2.0919. Book to market (BM) has a mean value 0.3704 with a standard deviation 1.0622, minimum value is -6.359 and maximum value is 4.1474. Leverage (Levg) is the forth explanatory variable with a mean 7.9869 and standard deviation 15.6219. Mean value of Dividend Yield (Divd) is 0.0386 while the standard deviation 0.0909. Earning to Price ratio (EP), Cash flow to Price ratio (CP), Discretionary Accrual (DAccrual), Uncertainty and turnover of trading volume have mean values -0.17153, -0.2579, 18.7056, 6.5157 and 3.3007.

Table 2 indicates the estimated results of fixed effect model (FEM). The first explanatory variable of the estimated results is MP; coefficient value 0.0646 with a significant value 0.000. The significance of MP confirms the existence of Capital Asset Pricing Model (CAPM) in Pakistan.

Result of MP is in line of Haque and Sarwar (2013), Khan.F et al. (2012). Size confirmed significant positive relation with stocks return, coefficient of size is 0.1975 with the P-value 0.001. Significant negative size effect is similar to Tripathi (2009) and Sloan (1996). BM use as a proxy of over/under valuation of stocks. BM confirms significant negative relation, similar to Hirshleifer, Hou and Teoh (2012). The justification of book to market value result indicates that in Pakistani stock market, returns of overvalued stocks are higher than undervalued stocks. Leverage and dividend yield are insignificant with the P-value 0.152 and 0.578 respectively, results indicates that leverage and dividend yield are not important determinants of stock return. Insignificance of leverage and dividend yield is consistent with Fama and French (1992), Khan. F et al. (2012), Allen & Rachim (1996).

Table 2: Fixed Effect Model (FEM)

Equity Return	Coefficient	P-value
Market Premium	0.0646	0.000
Size	0.1975	0.001
Book to Market	-0.1413	0.001
Leverage	0.0076	0.152
Dividend Yield	0.3160	0.578
Earning to Price	0.0424	0.214
Cash Flow to Price	-0.0031	0.717
Discretionary Accrual	0.0196	0.221
Uncertainty	0.0032	0.021
Trading Volume	0.0418	0.040

All the earning components are insignificant; result of DAccrual is not in line with previous researchers. In Pakistan, managers do not manipulate the earnings to catering the stock prices. Uncertainty is proved to be significant positive in Pakistani context which implies that higher return is associated with the uncertain stocks. Trading volume is used as a proxy of investor's sentiment. Trading volume conformed significant positive association to stock return; return of frequently traded stocks are higher or vise versa.

Conclusion

The attention of this empirical study was to explore the key determinants of stock return in Pakistan. All non-financial KSE listed companies were analyzed to investigate the effect of company and market related variables on company's stock return. Fixed effect regression technique was used to regress the stock return model. Results of market premium, size, uncertainty and investors sentiment confirmed significant positive association. In contrast, book to market was significant negative which confirmed the return of overvalued stock were higher or vise versa; such over/under valuation was associated with the trading volume.

Result of DAccrual was not in line with previous researchers; managers did not manipulate the earnings to catering the stock prices. Uncertainty was proved to be significant positive in Pakistani context which implied that higher return was associated with the uncertain stocks. Trading volume reflected the investor's sentiment about the particular stock which portrays the tune, feeling and psychology of the investors. Significant positive trading volume and negative book to market verified that highly traded stock become overvalued and yield high return. In conclusion, present study confirmed the noise trading theory in Pakistani markets.

Future researchers may analyze the significance of fundamentals, uncertainty and investors sentiments by splitting the time period. Difference proxies can be used to investigate the impact of investor's sentiment on stock returns. Regional country analysis can be conducted to compare the effect of variables in different stock markets.

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Appendix: A

Variable	Formula
Equity Return	$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$$
Market Premium	$$MP = R_m - R_f$$
Size	$$Size = \ln(Market\ Capitalization)$$
Book to Market	$$BM = \ln\left(\frac{Book\ value\ of\ stockholders'\ equity\ -\ Book\ value\ of\ preferred\ stock}{Market\ Capitalization}\right)$$
Leverage	$$Levg = \frac{Total\ Liabilities}{Market\ Capitalization}$$
Dividend	$$Divd = \frac{Total\ Dividend}{Market\ Capitalization}$$
Earning to Price	$$E/P\,n_i = \frac{\sum_{t=1}^{n} EPS_{it}}{nP_i}$$
Cash Flow to Price	$$\frac{CF}{P} = \frac{Earning\ before\ extra\ ordinary\ items + Depriciation\ and\ amortization + change\ in\ working\ capital}{Market\ Capitalization}$$
Discretionary Accrual	$$DACCR_{i,t} = ACCR_{i,t} - NORMALACCR_{i,t}$$
Uncertainty	$$Uncertainty_{i,t} = \sqrt{\frac{\sum_{t=1}^{n}(P_{i,t} - \overline{P})^2}{n-1}}$$
Trading Volume	$$TV_{i,t} = \frac{\sum_{t=1}^{n}(TV_{i,t})}{n}$$