The Relationship Between Fundamental Analysis and Stock Returns Based on the Panel Data Analysis; Evidence from Karachi Stock exchange (KSE)

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Abstract
Fundamental analysis has gained huge popularity among capital markets researchers in last decades. It uses current and past financial reports (Piotroski 2000, 2004; Fama and French, 2004; Elleuch 2009, Seng 2012), along with political and economic data in order to assign intrinsic value to firms and help to identify mispriced securities (Kothari, 2001). Both fundamental and technical analyses are used to forecast stock returns with the aim to buy stock when they are under-priced and sell when they are overpriced.Our study aimed to investigate the ability of the historical accounting data in predicting future stock returns using fundamental analysis especially in emerging economy i.e. Pakistan. Data were collected for the eleven-year period from 2007 to 2017 for 115 non-financial companies listed on Karachi stock exchange (KSE) with available ten years consecutive data. This paper utilizes five indicators from multiple areas i.e. profitability ratios, liquidity ratios, leverage ratios, and market-based ratios. For analysis, this study used penal data analysis (common effect model, fixed effect model, and random effect model). The results indicates that the fundamental analysis can predict future stock returns in Pakistani listed companies and end up with the implications and future directions.
Keywords: Fundamental analysis, Penal data analysis, emerging economy i.e. Pakistan,

1. Introduction
Researchers has identified factors including firm size, past stock performance, value and growth as some of the factors affecting stock returns. Fundamental analysis examines the company's stocks prices movements by their historical financial and accounting data. It includes analysis of the company's earnings, expenses, profit, management experience, assets and liabilities and industry dynamics. Such analysis helps investors to make the investments strategies for getting the surplus returns (Mahmoud and Sakr 2012), Elleuch 2009), Fama and French 2004), Piotroski 2000, 2004). Five readily fundamental signals which are considered more efficient by the financial analyst in predicting the stock returns i.e. current ratio, leverage ratio, returns on assets, earnings per share and Price Earnings Ratio. The current study uses the fundamental analysis for the same purpose in Pakistani stock market.

Investors use fundamental analysis and technical analysis for the predictions of future price movements (Frankkel and Froot 1986, 1990). Both are completely different in nature but their goals are the same i.e. evaluation of stock markets. The choice of appropriateness and suitability of the specific approach is a question with not very clear and vague answer. Investors' priority is what determines the selection of the analysis technique. Technical analysis is more focused on market indicators including analysis based on stock prices movements, the volume of stock trade, financial forecasts, and market trends while ignoring the company's basic or fundamental published financial data in making investment strategies (Neely 1997).
The salient features and differences of the two analysis techniques are given below as:
1. Fundamental analysis is used in the identification of firms with good growth and income potential in the long run and undervalued stocks in the short run.
2. Technical analysis is more attractive to investors in making short-term investment decisions for determining the market current value and their sentiments about expected changes in the market prices (Allen and Taylor 1990), Lui and mole 1998).

Sometimes, combination of these approaches is more fruitful because first identifying the undervalued stocks through fundamental analysis and then right timing for the entry in the market through technical analysis. The purpose of both the cases is same i.e. to buy the securities when the stock prices of the specific securities are undervalued and sell when overvalued.

Market efficiency plays a vital role in the successful outcome of the selected investment strategies by the investors as evidenced in developed economies. Investors attempt to beat the market by predicting price movements using fundamental analysis under the overall macroeconomic indicators (Menkhoff, 1998). The proponents of the fundamental analysts argue that it is not easy for investors to use the same information and to

forecast the whole stock exchange market. The efficient market theory is applied to individual shares and not to the whole market (Teweles & Bredley 1998). For short term, it's difficult to predict stock movements through fundamental analysis. (Harvey, 1996. Mac Donald and Taylor, 1992).

1.1.1 Objectives of the study:

The stock returns have always been the main focus for investors and equity researchers while analysing the stock markets. The forecasting of the stock return is usually based on historical data of the firms in order to earn maximum returns. The status of the stock market efficiency and firm-specific attributes as proposed by the market efficiency theory are still fuzzy attributes in forecasting stock returns in developing economies like Pakistan where inefficiencies in the market may lead to high returns through the use of historical firms' data. The current study aims at fulfilling the research gap in studying the predictability of fundamental analysis on stock returns

Generally, this study is aimed at the applicability of fundamental indicators of firms on stock returns. Specifically, the impact of liquidity (measured in current ratio), market indicators (measured in EPS and P/E ratio), leverage (measured in D/E ratio) and profitability (measured in ROA) of the firms on their respective stock return is studied here. The study will enable us to answer the following questions:

1. Can Liquidity ratios (Current ratio) predict the stock return?
2. Can Market-based ratios (EPS, P/E) predict the stock return?
3. Can Leverage ratios (D/E) predict the stock return?
4. Can Profitability (ROA) ratios predict the stock return?

1.1.2 Significance of the study

The study can help improve the ability of investors, general people, traders, brokers, etc. to make better investment and more accurate projections of the future returns. It will also enable increased understanding of the predictive ability of financial ratios and their respective role in forecasting stock returns for academic purposes. Fundamental analysis at the company level will provide is a good understanding of the firm's financial variables, value estimation and future profitability (Jones 2009). Investment decisions ignoring the fundamental and/or technical analysis carries greater probability of being flawed and risky besides promoting increased speculative activities in the market, thus posing a permanent hindrance to its development. Therefore, enabling investors in conducting in-depth analysis for a secure investment with the expected positive return is also the main significance of this study.

This rest of the study is structured as follows: this introductory segment is followed by the Theoretical foundations as well as their empirical findings are described in the literature review section. Then the adopted methodologies are illustrated. Finally, the empirical results are presented in tables and diagrams and the paper ends up with the discussion of the implications and future recommendations.

1.2 Literature Review

The relationship between the fundamental analysis and stock's valuation was studied by Graham and Dodd (1934) for the first time. They identified the essential elements of fundamental aspects of share price valuation including assets, liabilities, earnings, expenses, profits, industry dynamics and management expertise. Literature has identified that investors make sound investment decisions by analysing the companies' historical data including balance sheet, income statement, other annual report information, related news, industry outlook, and company's dividend declaration announcement (Dugalic, 2000).

The fundamental analysis assesses the firm's intrinsic value for the current prices of its stock is fair, overpriced or under-priced. It is based on the notion that by evaluating the economy, management, products, financial condition, performance and other related information can better select the stock which will outperform the market resulting in consistent gains. The future price movements in the capital market can be forecasted by analysing different signals from the economy, specific industry and companies through fundamental analysis. The true value of any stock can be determined by analysing the earning capacity of the firm which is further dependent upon the investment environment and other industry-specific factors including profitability, operational efficiency, dividend policy, capital structure and management quality.

The stock returns can be predicted using historical accounting data especially financial ratios (Wang, 2007; Tian, 2008; Li, 2009; Tamimia, 2011). Fundamental factors including profitability, solvency and liquidity and operating efficiency are helpful in formulating success fundamental investment strategies and there exists an optimistic correlation between these cumulative fundamental indicators and high-performance companies (Venkates, Madhu, Ganesh, 2012; Mahmoud, Sakr, 2012). The fundamental signals including profitability ratios (ROA, CFO), operating efficiency, solvency and liquidity are found as significant predictors of future earnings for both of short run as well as long-run (Dynas, Hancock 2012; CK, Tyagi, 2012). The financial improvements can also strongly affect the current market returns and help predict future earnings (Pascal (2003).

Nguyen (2004) also studied the relationship between the accounting information and the future stock return in non-financial firms in Japan. His findings were in conformity with the findings of CK, Tyagi and L (2012)

that accounting information is good predictors of future stock returns. Chan, Hamao, and Lakonishak (1990) studied four accounting information namely earning yield, size, book to market ratio and cash flow yield for predicting the stock return and found the similar predictive ability of all the four accounting information on stock returns. Dhatt, Kim and Mukherji (1999) studied the relationship between the stock returns and fundamental variables for the period of 1982-1992 in Korea. It was found that book to market, sales price and debt to equity ratio have a significantly positive relationship with the stock return while the market value of equity has a negative relationship with stock return. Their findings concluded that among all the considered variables the book to market ratio is the best predictor of the stock.

Sharma and Pretti (2009) found that people decide on the basis of the intrinsic value of the firm, measured with the help of fundamental analysis, while it is very difficult to decide on the basis of growth analysis. Their results confirmed that fundamental analysis is insignificant in differentiating the low and high group firms. According to Emin, Yasemin, Akarim and Sibel (2012) the impact of market-based ratios (Earning per share (EPS), Price to earnings ratio (P/E) and Market to book ratio (M/B)) on stock returns of the insurance companies of Turkey, for the period of ten years i.e. 2000 to 2009, was much pronounced. At the end that market is efficient, stock prices can adjust when new information accesses to the market (Fama, Fisher, Jensen and Roll 2007).

The cash flows of the firm affect its liquidity and resultantly their operational activities (Soenen (1993), while increased liquidity or current assets might also signal the misalignment of the return on investment with firm's objectives (Home and Wachowiz 2000). It pushes the company to make adjustments to the firm's cash flows and liquidity which are best measured with the help of fundamental ratio analysis and come up with best asset structure in line with firm's financial goals.

San and Hancock (2012) also studied the relationship of fundamental analysis and forecast of earnings for a period of 1990-2000 from 33 countries in the world. It was found that fundamental analysis predicts stock returns differently in short term and long term besides confirming a significant effect of macroeconomic variables, news about the companies, industrial and country context on the prediction of the stock returns. Nguyen (2003) found that fundamental analysis (cash flows, external financing, and dividend) is useful in forecasting the future stock returns along with explaining the momentum phenomenon in the stock prices.

Investors are able to earn more return on their stocks by relying on fundamentals including book-to-market ratio, size of the firm and leverage with the prominent effect of book-to-market ratio and size in predicting the stock returns (Titman (1995). Leverage is significantly and negatively related to stock return (Sheeja, Roberta, Goughb, 2010; Penman, 1993). Firm's performance is also greatly affected by leverage and choice of the capital structure can greatly hinder or promote the achievements of its goals (Modigliani & Miller, 1958, 1963; Jensen & Meckling, 1976; Myers, 1977). Leverage minimizes the strength of investment of the firm resultantly causes decline in stock prices (Cai, Zhang, 2010; Dimitrou, Jain, 2008; Alti, 2006; Hovakimian, 2004, 2006; Parson, Titman, 2007; Huang, Ritter, 2009; Frank, Goval, 2008; Walech. 2004).

Among fundamentals, multiple variables have been found responsible for their effect on stock returns. Khan (2012) found earning per share (EPS), return on equity (ROE), cash flow ratio and debt to equity ratio (D/E) ratio have significant positive while net profit margin ratio has significant negative impact on the stock return. According to Lev and Thiagarajan (1993) the earnings prediction by fundamentals signals like sale growth, gross margin are significantly related to stock returns and future earnings predictions. Except for debt to equity ratio (D/E) all other fundamental variables have been found with the significant positive relationship with stock return (Soomro, et al (2012) and Dampsey (2010). Hatta (2012) used price earnings ratio, earning per share (EPS), debt to equity ratio (D/E), dividend per share, net profit margin and return on assets as proxies for financial factors in determining stock returns. His findings also supported that investigated that earning per share (EPS) and price earnings ratio have a significantly positive and debt to equity ratio (D/E) and net profit margin are the significantly negative relationship with stock returns. Martini, et al (2009) studied the role of cash flow, firm size, market-based ratios, liquidity ratios, profitability ratios and leverage ratios on stock return and found negative relationships except for profitability, market-based ratios and turn over ratios on stock returns.

The market-based ratios including earning yield, dividend yield, earning per share (EPS) and market to book ratio are very important to the investors in the measurement of the market value of the firm and identification of the under-priced and over-priced stocks and make sound investment decisions. Such ratios can also help in the forecasting of the stock return in order to minimize the future risk in the selection of stock (Kheradyar and Ibrahim (2011) and Chang, et al (2008). According to Aydogan and Gorsoy (2000), Demir (2000) price earnings ratio has a significantly positive effect on stock returns. Market efficiency is also an important aspect of the stock returns. Ou and Penmen (1989) found that the market is always not efficient and that investors can earn irregular and abnormal returns with the help of fundamental analysis. Contrary to this, Fama and French have strong arguments that the market is always efficient and investors cannot earn the abnormal return. Tehrani (2012) argued in support of the involvement of behavioural aspects in investment decisions made by the investors leading to abnormal returns. Yaoguang (2009) found that market-based ratios had a significant positive impact on the returns of the stock in the Chinese stock market. He further confirmed a strong negative

relationship between the size of the firm and stock return. Zeytinoglu, Akram and Cilek (2012) documented that the market-based ratios including earning per share (EPS), price to earnings ratio (P/E) and market to book ratio (M/B) have explanatory power on both the current stock returns and one-year future stock returns in Turkey. Khmkeaw and Labouschange (2012) studied the relationship between the sectorial fundamental analysis and stock returns. They used Price to earnings ratios (P/E), dividend yield and market capitalization as proxies of company's fundamental values and found that these ratios are positively and significantly linked with stock returns with the market capitalization as the most highly impacting factor on stock returns.

Kabejh, et al (2012) studied the relationship of return on equity, return on assets and return on investment on stock returns in Jordan. They found a strong relationship between these variables and stock return. They further confirmed that Return on asset and Return on investment have a positive strong impact on stock return while the remaining variables have a weak positive impact on the return of the stocks studied individually. Using fuzzy regression analysis, Zarezadeh, et al (2011) confirmed a positive relationship between financial indicators and the stock returns, while a significantly negative relationship between EPS and dividend per share and stock return. Aono and Iwaisako (2010) found a similar relationship between financial indicators (ratios) and stock returns in Japan. Nimala, et al (2011) investigated the determinants of share prices in India and found that price-earnings ratios, leverage, and dividend are the good and positive determinants of the share prices beside effect of the type of industry. Hassan and Rehman (2008) found that the stock returns are highly correlated with the proxies taken for the firm's fundamentals in the majority of the Asian emerging markets. Ersita and Rully (2003) found that EPS and P/E have a linear relationship with stock prices in the pharmaceutical industry of Indonesia.

Piotroski (2002) suggested that a firm having a better realization of earning can be due to the stronger fundamental signals. He further argued that there exists a positive relationship between initial historical information and both future earnings and earnings announcements. Meulbroek, Sloan, Hutton and Dechow (2000) argued that a firm having low fundamental ratios such as earnings ratios and book to market ratio shows low stock return. They suggested that short sellers position themselves against such situation in the market by constantly updating their investment strategies to lower their costs and enhance returns Asquith and Meulbroek (1996). Swart (2011) studied the effect of both the fundamental analysis and technical analysis on market adjusted returns of the European government bonds. Liquidity factors, international risk and the current state of the economy are used as a Fundamental factor and shows that both fundamental and technical analysis can generate significant future returns on the European Government bonds. Based on the above detailed literature we develop the following hypothesis concerning the variables under study;

Hypothesis: The stock return is positively related to liquidity ratios (measured in Current ratio), Market base ratio (measured in EPS, P/E) and profitability ratios (measured in ROA), while negatively related to leverage ratios (measured in D/E).

1.3 Methodology and data description
1.3.1 Sample and Data collection:
This study has studied the relationship between fundamental analysis and stock returns of non-financial companies listed on Karachi Stock Exchange (KSE) using panel data. Our sample includes 115 non-financial companies with data collected and analysed for the period 2003 to 2012 i.e. eleven years. Data is taken from multiple sources including annual reports, financial statements analysis of non-financial companies by State Bank of Pakistan, Karachi Stock Exchange (KSE) website and Business Recorder.
Panel data analysis is preferred for studying the relationship between fundamental analysis and stock returns. It utilizes three types of models for data analysis.
1. Common Effect Model (Pooled Regression)
2. Fixed Effect Model
3. Random Effect Model
These models are based on different assumptions on the bases of intercepts i.e. constant and sloop. In common effect model intercept (Constant) remains constant across the cross sections and time series, while it's group-specific in fixed effect model and remains non-specific and behave randomly in random effect model.
1.3.2 Model selection
The choice between common effect model and fixed effect model is based on redundant fixed effect likelihood test. F- Stat is used for the model selection, wherein an insignificant value of F- Stat will lead to the selection of the common effect model else fixed effect model is chosen for the analysis. In our case, both tests were applied and resulted in a significant value of F-Stat. Later on the test for redundant fixed effect likelihood test namely, Hausman test was also applied. The insignificant value of Chi-Square value suggests the use of random effect model, hence it is applied to our data analysis.
Econometric Model
Econometrically our basic model looks like;

$$Y_{it} = \alpha + \beta X_{it} + e$$

This equation can be rewritten as putting the variables

$$SR_{it} = \beta_0 + \beta_1\,CR_{it} + \beta_2\,Lev_{it} + \beta_3\,ROA_{it} + \beta_4\,P/E_{it} + \beta_5\,EPS_{it} + e\,\mu_t$$

Whereas:

t = Shows Time Series	i = Shows Cross Sections	β_0 = Intercept
SR = Stock Return	CR = Current ratio	Lev = Debt to equity ratio
ROA = Return on Assets	P/E = Price to Earnings ratio	EPS = Earnings per Share
e = Error term		

1.3.3 Measurement of variables

The following table summarizes the variables and their formulae for calculations.

Measurement of variables   Table 01

Variable	Formula	Description
Current Ratio	$Current\ Ratio = \dfrac{Current\ assets}{Current\ liabilities}$	Measure of liquidity
Leverage Ratio	$Leverage\ Ratio = \dfrac{Total\ Debts}{Total\ Assets}$	Measure of use of debt financing
Return on Assets	$Return\ On\ Assets\ = \dfrac{Net\ Incom}{Total\ Assets}$	Measure of profitability
Price Earnings Ratio	$Price\ to\ Earning\ ratio = \dfrac{Share\ prices}{Earning\ per\ share}$	Measure of future prospective growth
Earnings per Share	$EPS\ = \dfrac{Net\ incom}{No.\ of\ Shares\ outstanding}$	Measure market efficiency in terms of profitability
Stock Returns	$Stock\ Returns = \ln\dfrac{P_1}{P_0}$ Whereas: P_1 = Current Price, P_0 = Previous Price and ln = Natural Logarithm	Measures gains/losses of investors in a particular period of time

Current ratio shows the ability of the firm to meet its short-term obligations. The current ratio is more informative than another liquidity measure (Altman (2000). Leverage ratios show the dependency of the firm on the debt financing. Debt financing is either good or bad for companies; its depends upon the situation if the amount of interest made to the provider is less than the profit generated by that debt it is good for the firm otherwise the opposite is true. A study conducted by shows that in both cases it increases firm financial risk and may stop financial flexibility (Brigham and Ehrhardt (2003). They found a negative relationship between leverage and stock returns (Bradshow, Ridshardson, Sloan, 2004).

Return on asset measuring the profitability of the company by dividing net income by total assets. Price/Earnings ratio a market-based ratio giving an indication to investors about the growth prospects of the company stocks in the future. The earning per share is also a market-based ratio showing the market efficiency or per share earnings of the firm. It shows earnings power of the firm.

Stock returns mean the gain or loss from a security in a particular period of time. Investors carry different portfolios stock returns are calculated to evaluate each performance. Normal returns could be calculated by different models i.e. Constant mean return model, Market model, Fama and French three-factor model, Carhart four-factor model and Market adjusted returns. In this study, returns are measured by simple market adjustment method described in Table 01.

1.4 Result and Discussion

This section discusses the results of our data analysis. It starts the discussion on descriptive statistics of our data, followed by the explanation of our correlation matrix and lastly analysis of the panel data to establish our hypotheses.

1.4.1 Descriptive Statistics

The descriptive statistic is presented in Table 02, which shows Mean and Median explaining the central tendency for all variables, Maximum and Minimum values showing the range of the data and Standard deviation (SD) elaborating the dispersion of the data for each variable. Jarque bara test shows that there is no problem of normality and all the data is normal.

The average value of the current ratio is 1.732063, with a range of 0.039591 to 8.35 and SD of 2.650787. The mean value of the earning per share is 0.507445, with a range of -6.52373 to 18.592 and SD of 1.659386. Leverage has a mean value of 0.180566, ranging from 0.000203 to 1.044835 and SD of 0.11727. The returns on assets have a mean of 0.46884, with a range of -0.4009 to 0.750794 and SD of 0.150053. The mean value of price to earnings ratio is 0.14882, ranging from 28.38095 to -2.0989 and SD of 1.891404. The Mean for stock return is 0.065039, ranging from -2.302585 to 4.787492 with SD of 0.60.1288.

1.4.2 Correlation matrix

As evident in Table 03, the correlation matrix indicates a negative relationship of current ratio with stock returns while all other variables ratios (EPS, LEV, P/E and ROA) demonstrated a positive association with the stock returns. These results are consistent with the available literature as confirmed by Walech (2004), Hovakimian (2004, 2006), Alti (2006), Parson and Titman (2007), Dimitrou and Jain (2008), Frank and Goval (2008) Huang and Ritter (2009), Cai and Zhang (2010), Venkates, Madhu and Genesh (2012), Dynaseng and Jason, R. Hancock (2012), San and Hancock (2012), Khan (2012) and Soomro, et al (2012),

The above mentioned studied the fundamental signals for the prediction of stock returns including leverage ratio as debt to equity ratio (D/E), Profitability ratio as return on assets (ROA), liquidity as current ratio, market based ratios as EPS, P/E in addition to operating efficiency, solvency, operating efficiency and cash flow ratios

1.4.3 Panel Data analysis

We carried out panel data analysis to study the effect of fundamental analysis (measured through different financial ratios) on stock returns. Specific fundamental ratios are taken as independent variables and stock returns as the dependent variable. The data is analysed using common effect model, fixed effect model and random effect model required in panel data analysis along with the respective selection tests for these models in E-views 7. Results of our panel data analysis are discussed below

1.4.3.1 Interpretation the results of Common effect model:

As discussed earlier the intercept remains constant across cross-sections and time series when common effect model is used, therefore the common intercept for all the independent variables is 0.015854. Variables namely returns on assets (ROA), earnings per share (EPS) and price to earnings (P/E) ratio are significantly impacting the stock return positively with the p-value of 0.0317, 0.0153 and 0.0376 respectively. The current ratio (Cr) is negatively and insignificantly linked to stock returns while leverage (Lev) is positively and insignificantly related to the stock returns. R- Square is 0.223364 which shows dependent variable (Stock returns) is explained 22 % by these explanatory variables.

1.4.3.2 Interpretations of Fixed effect model:

As discussed earlier the intercept in fixed effect model is group specific with a value of 0.003776. Individual intercepts can be calculated by the adding individual intercepts with the common intercept. The p-value of Returns on assets is 0.0040 which is significantly related to the stock returns, the coefficient of the return is positive so it is positively significant related to stock returns.

In the table 04, earnings per share is also significantly related to stock returns because P-value of earnings per share is 0.0196 and the coefficient is positive so the earnings per share are positively significant related to stock returns. The value of the coefficient shows that there is a direct relation exist between the EPS and stock returns i.e. when increment occurs in the EPS the stock returns also increase which shows a significant relation exists having P-value 0.0196. Historically earnings per share show a positive relation to stock returns when the value of the stock is considered as the present value of expected cash flows.

The current ratio has insignificant relation with the stock returns because of its P-value i.e. 0.8637 but the coefficient of the current ratio is negative which means that current ratio is negatively insignificant related to stock returns. There is inverse relation exist between current ratio and stock returns i.e. if the current ratio increase the stock returns will be decreased which shows that there is an insignificant relation exist between current ratio and stock returns. The current ratio measures the companies' ability to meet its current obligations as and when they become due. Thus as a liquidity measure, current ratio is not expected to significantly impact the stock prices and thus stock returns. The price to earnings (P/E) also has significant relation with stock returns by the p-value 0.0240, and the coefficient of Price to earnings (P/E) is positive so it has positive significant relation with stock returns.

The coefficient value of the leverage is 0.150785 which shows that there is a positive relation exists between leverage and stock returns of the companies. The P-value of the leverage ratio is 0.3245 which shows that there is an insignificant relation between stock returns and Leverage.

Leverage add financial risk to a company and thus are expected to influence the stock prices as the investors add a risk premium to their required rates of return. But, according to Modigliani and Millar (1958), the value of the firm is dependent upon the expected cash flows produced by the firm regardless of the fact that operations are financed through debt or equity. Moreover, according to static trade-off theory the financial distress is not felt by the investors up to a certain limit and if companies limit their leverage below this point they may not experience the negative impact of leverage on stock prices.

The pattern of the years shows that decline occurs in the second and third year by the coefficient of -0.040841 and -0.081701 respectively after that increase occur in three years after that continuous decline occurs in the patterns shows in the table……….

R square shows the model fitness and explain the effect independent variable due to the independent variables, so on the table R- Square is 0.244812 which shows dependent variable (Stock returns) is explained 24 % by these explanatory variables

1.4.3.3 Redundant Fixed Effects Test

Redundant fixed effects tests is used for the selection of the common effect model and fixed effect model. As discussed earlier that F- Stat of the redundant fixed effect model is used for the selection i.e. if the value of the F-Stat is significant the fixed effect model will choose otherwise common effect model will be selected. In the above table, the value of F- Stat is 5.840076 which is insignificant and gave a proof of the selection of fixed effect model. According to the literature if fixed effect model is selected then will move further for another test i.e. Random effect model which is discussed as under

1.4.3.4 Random Effect Model

After the application of the fixed effect model, the literature compel to further use random effect model, wherein the intercept behave randomly which is calculated as 0.004654 and individual intercepts can be calculated as under in table 06.

Current ratio

The current ratio has insignificant relation with the stock returns because of its P-value i.e. 0.8669 but the coefficient of the current ratio is negative -0.001255 which means that current ratio is negatively insignificant related to stock returns. There is inverse relation exist between current ratio and stock returns i.e. if the current ratio increase the stock returns will be decreased which shows that there is an insignificant relation exist between current ratio and stock returns. The current ratio measures the companies' ability to meet its current obligations as and when they become due. Thus as a liquidity measure, current ratio is not expected to significantly impact the stock prices and thus stock returns

Returns on assets

Returns on assets are significantly related with the stock returns because of the P value of Returns on assets i.e. 0.0046 and the coefficient of the return is positive i.e. 0.413494 so it is positively significant related to stock returns.

Earnings per share

In the above table Earnings per share is also significantly related to stock returns because P value of earnings per share is 0.0188 and the coefficient is positive 0.029645 so the earnings per share are positively significant related to stock returns. The value of the coefficient shows that there is a direct relation exist between the EPS and stock returns i.e. when increment occurs in the EPS the stock returns also increase which shows a significant relation exists having P-value 0.0188. Historically earnings per share show a positive relation to stock returns when the value of the stock is considered as the present value of expected cash flows. As, Ashley (1962), Ball et.al. (1993), Marsh and Power (1999), Yalçıner et.al. (2005), Mirfakhr et.al. (2011) find positive and significant relationship between earnings per share and stock prices; however Somoye et.al.(2009), Al-Tamimia et.al. (2011), Rahgozar (2011) find weak and negative relationship between earnings per share and stock prices

Price to Earnings (P/E)

Price to earnings ratio (P/E) is the best indicator of the company-specific factors. Different research have provided volatile result of the Price to earnings ratio and stock i.e. Puckett (1964), Basu (1977, 1983), Aydoğan and Gürsoy (2000), Demir (2001), Krismawati and Movizar (2009) found positive and significant relationship between price to earnings ratio (P/E) and stock price. In contrast, Mirfakhr et.al. (2011) find a negative and significant relationship between the price to earnings ratio (P/E) and stock price. According to Chang et.al. (2008) that P/E ratio provides different explanation in different companies i.e. In low-growth companies, P/E ratio affects stock prices while in high-growth companies P/E ratio is insufficient to explain stock prices. Nargeleçekenler (2011) finds a significant relationship between P/E ratio and stock prices in some of the sectors included.

Turning to our results, Price to Earnings (P/E) also has insignificant relation with stock returns by the p values and is 0.0295, and the coefficient of Price to Earnings (P/E) is positive so it has positive 0.039095, so positively significant relation with stock returns.

Leverage (D/E ratio)

The coefficient value of the leverage is 0.147018 which shows that there is a positive relationship existed between leverage and stock returns of the companies. The P value of the leverage ratio is 0.3363 which shows that there is an insignificant relation between stock returns and Leverage.

Leverage add financial risk to a company and thus are expected to influence the stock prices as the investors add a risk premium to their required rates of return. But, according to Modigliani and Millar (1958), the value of the firm is dependent upon the expected cash flows produced by the firm regardless of the fact that operations are financed through debt or equity. Moreover, according to static trade-off theory the financial distress is not felt by the investors up to a certain limit and if companies limit their leverage below this point they may not experience the negative impact of leverage on stock prices

The above pattern of the years shows that decline occurs in the second and third year by the coefficient of -0.037859 and -0.076195 respectively after that increase occur in three years after that continuous decline occurs in the patterns shows in the table

R square shows the model fitness and explain the effect independent variable due to the independent variables, so on the table R- Square is 0.229830 which shows dependent variable (Stock returns) is explained 22 % by these explanatory variables

Line Fitness (F Statistic)

The value of F statistic is Significant which shows that the line is minimum variation. The value of the F- Stat is 0.000000 which is shows that is significant so that the sum of the square deviation is minimum which gives a good overall explanatory power to the model.

1.4.3.5 Hausman Test

Selection of the model is based on the Chi-Square value in the Hausman test and as discussed above that if the P value of the Chi-Square is significant then fixed effect model will be selected and if the P value of the Chi-Square is insignificant the random effect model will be selected. According to the table 07, the Hausman test P-value of Chi-Square is 0.2956 which is insignificant which provide bases to the acceptance of random effect model because of the Chi-square value. The Chi-square value is insignificant and the decision will be taken through the random effect model and all the facts and figure given in the random effect will be considered which is deeply discussed above in the interpretation of random effect model.

1.5 Conclusion

This study examines the impact of fundamental analysis and their predictive power of stock returns for the period of 2007 to 2017 by using fixed effect model. The Strong Correlation between various ratios and their power to predict stock return has been well documented by Seigel (2007).The study is used for four variables from five different areas of, profitability, liquidity, solvency, and market-based ratios. These variables are a current ratio, return on assets, leverage, earnings per share and price to earnings ratio.

The research explores what if any the impact of fundamental analysis is on stock returns. The study is also designed to check the validity and forecasting quality of fundamental analysis in non-financial sectors listed on Karachi Stock Exchange. The purpose of the study is to help investors to make efficient and accurate investment decisions regarding future stock prices. This empirical investigation provides help to investors, stock exchange dealers, and brokers etc to forecast stock prices through fundamental analysis and get excess returns.

The study found the significant positive impact of some fundamental indicators on stock return prediction. The result of the study proves coherence with previous studies such as those of J.D Piotroski (2004), Fama and French (2004), J. Elleuch (2009) and D. Seng and J.R Hancock (2012). Market-based ratios and profitability prove to have a greater impact on stock returns than other ratios. For the first time, in Pakistan this study used the predictive power of fundamental analysis, using the ratios as variables in Pakistani firms. The significant positive impact has proven the validity and predictive power of fundamental analysis.

Results disclose that there is a significant relationship between Coefficient of return on assets, price earnings ratio and stock returns. Investors see company's profitability (return on assets and return on equity) while making investment decisions. One among the various factors based upon which Investors make investment decision is when Return on assets (ROA) ratio are greater or equal to the average of industry, which affects the company and brings about variation in stock prices and stock returns. Also, Price earnings ratio strongly affect stock prices, so variation in these ratios can also bring movement in stock prices and thus stock returns.

Although few variables of the study proved significant coefficient value, some other variables of the study have shown insignificant coefficient values, such as current ratio, leverage, and earnings per share. The current ratio measures the companies' ability to meet its current obligations as and when they become due. So there is no direct relation to current ratio and stock returns. Thus current ratio is not expected to significantly impact the stock prices and thus stock returns. Leverage add to the financial risk of a company and thus are expected to influence negatively the stock prices. However, according to static trade-off theory, the financial distress is not felt by the investors up to a certain limit and if companies limit their leverage below this point they may not experience the negative impact of leverage on stock prices. When the value of the stock is considered as the present value of expected cash flows, then there should be positive relationship founded between earnings per share and stock returns. One plausible explanation of the insignificant relation of earnings per share with stock return can be the market imperfection and investors' irrationality. This study has also some limitations as are described below.

1.5.1 Limitation of the Study

Besides the significance of this study, there are also some limitations of the study as well. First, this study uses only fundamental analysis for the study and ignores technical analysis. The investor uses both fundamental and technical analyses for future stock prediction, first they use fundamental analysis to find out undervalued companies, and then use technical analysis to know about the right time to enter into the market. Second, this study uses shorter time periods, ten years from 2000 to 2010, so it will be better for the study to use data for the longer time period. Third, fundamental analysis is not contained only the take variables there are other indicators

use in the fundamental analysis that should be considered. Fourth this study only uses data from Pakistani listed companies; it will be better to capture the entire Asian market for the study.

1.5.2 Future Implications:

This study provides a greater insight into the research on fundamental analysis and their predictive quality in Pakistan. But simply fundamental analysis is not enough for successful forecasting decisions, so it is for the future implication to use both fundamental and technical analysis for the better prediction of future stock returns. Also, the time horizons will be increased as well as to select the entire Asian market for the study.

REFERENCES

Abarbanell, J.S., & Bushee, B.J, (1997). "Fundamental Analysis, Future Earnings, and Stock Prices" *Journal of Accounting Research, 35(1*), 1-24.

Abarbanell, J.S., and Bushee, B.J. (1998). Abnormal Returns to a Fundamental Analysis Strategy. *The Accounting Review*, Vol. 73, No. 1, 19-45.

Al-Debie, M., and Walker, M. (1999). Fundamental Information Analysis: An Extension and UK Evidence.*BritishAccountingReview*,Vol.31,261-280.

Ashley, J. W, (1962), Stock prices and changes in earnings and dividends. *Journal of Political Economy*, vol. 70, issue.1, 82-85.

Apergis, N. (1999). Forecasting Stock Prices from Macroeconomic Fundamentals: Further Evidence from an Error Correction Model. Advances in Quantitative Analysis of Finance and Accounting, Vol. 7, 165-177.

Aydoğan, K., and G. Gürsoy, (2000), "P/E and Price-to-Book Ratios as Predictors of Stock Returns in Emerging Equity Markets", Emerging *Markets Quarterly*, vol.4, issue 4, 60-67.

Ball, R., Kothari, S.P., and Watts, R.L., 1993. "Economic Determinants of the Relation Between Earnings Changes and Stock Returns". *The Accounting Review*, vol.68, issue 3, 622638.

Basu, Senjoy, (1977). "Investment Performance of Common Stocks in Relation to their Price-Earnings Ratio: A Test of efficient Market Hypothesis" *Journal of Finance* 32. no. 3 (June): 663-682.

Banz, R., 1981, The relationship between return and market value of common stocks*, Journal of Financial Economics* 9, 3-18

Bauman, M.P. (1996). A Review of Fundamental Analysis Research in Accounting. *Journal of Accounting Literature,* Vol. 15, 1-33.

Beneish, M., Lee, C.M, and Tarpley, R.L, (2001), "Contextual Fundamental Analysis through the prediction of Extreme Returns". *Review of Accounting Studies*, vol. 6, pp 165-189.

Carhart, Mark M. 1997. "On persistence in Mutual funds Performance." *Journal of Finance* 52, no.1 (March): 57-82

Chang, H, L, and Chen, Y, S., (2008), "The Relationship between Stock Price and EPS" *Economics Bulletin*, vol. 3, pp 1-12.

Chan, L. K., Hamao, Y., & Lakonishok, J. (1990). Fundamentals and Stock Returns in Japan. Columbia: *Center on Japanese Economy and Business Graduate School of Business Columbia University.*

Chen, Nai-flu, Richard Roll, and Stephen A. Ross. 1986. "Economic Forces and Stock Market. " *Journal of Business* 59, no. 3 (April): 383-404.

CK, V., Tyagi, D. M., & L, D. G. (December, 2012). Fundamental analysis and stock returns: An Indian. *Global Advanced Research Journal of Economics, Accounting and Finance Vol. 1(2)* , 033-039.

Datar, V.T, Naik NY, Radcliffe R (1998). Liquidity and stock returns: An alternative test, *Journal of Financial Markets, 1 (2),* 203-219.

Dechowa, P. M., Huttonb, A. P., Meulbroek, L., & Sloan, R. G. (2011). Short-sellers fundamental analysis and stock returns. *Journal of Financial Economics 61 (2001) 77–106* , 30.

Dhatti, MS., Kim. Y H.,Hatti, & Mukherji, S. (1999). *Relations Between Stock Returns and Fundamental Variables: Evidence from a Segmented Market.* Printed in the Netherlands: Kluwer Academic Publishers.

Dyna, S, and Jason, R.H, (2012), "Fundamental Analysis and the Prediction of Earnings". *International Journal of Business and Management*, vol. 7, pp 32-41.

Elleuch, J., (2009), "Fundamental Analysis Strategy and the Prediction of Stock Returns", *International Research Journal of Finance and Economics.*

Fama, Eugene., and Kenneth R. French. (1993). "Common Risk Factors in Returns on Stocks and Bonds. " *Journal of Financial Economics,*33, 1 (January):3-56.

Fama EF, French KR (1992). The Cross Section of Expected Returns, *Journal of Finance, 47 (2),* 427-465.

Ferreira, R., and J. D. Krige. (2011), "The Application of Fundamental Indexing to the South African Equity Market. *Investment Analysis Journal*, vol.73, pp 1-12.

Frankel. J. A. and Froot. K.A. (1986), "Understanding the US dollar in the eighties: the expectations of chartist and fundamentalists, *Economics Record*, vol.62, pp 24-38.

Freeman, R.N., Ohlson, J.A., and Penman, S.H. (1982). Book Rate of Return and Prediction of Earnings

Changes: An Empirical Investigation. *Journal of Accounting and Research*, Vol. 20, No. 2, 639-653. http://dx.doi.org/10.2307/2490890

Gordon MJ (1962). "The Investment, Financing and Valuation of the Corporation" Irwin, Homewood Illinois.

Graham B, Dodd D (1996). Security Analysis: The Classic 1934 Edition, *McGraw-Hill*, New York, NY.

Holthausen, R. W., and Larcker, D. F. (1992). The Prediction of Stock Returns using Financial Statement Information. Journal *of Accounting and Economics*, Vol.15, 373-412. http://dx.doi.org/10.1016/0165-4101(92)90025-W

Jaouida E (2009). Fundamental Analysis Strategy and the Prediction of Stock Returns, *International Research Journal of Finance and Economics*, Issue 30, page 95-108. (Faculty of Economics and Management Sciences, University of S fax, Tunisia)

Jegadeesh N, Titman S (1993). Returns to buying winners and selling losers: Implications for stock market efficiency*, Journal of Finance 48*: 65-91.

Khamkaew, T. and Labuschagne, C, C, A. (2012), "Sectorial Analysis of Firms Fundamental Factors and Stock Returns*", International Journal of Economics and Finance Studies*, vol.4.

Krismawati E.D, and, R.Movizar, "Earning Per Share And Price Earnings Ratio Effect To The Changes On Stock Prices in the Go Public Pharmaceutical Industry Indonesia StockExchange.http://papers.gunadarma.ac.id/index.php/economy/article/view/4298/4161

Lev B, Thiagarajan R (1993). Fundamental information analysis, *Journal of Accounting research 31*:190-215

Liven, J.H. (1990), "Chartists, fundamentalists and exchange rates dynamics", *International Journal of Finance and Economics*, vol.2, pp 281-290.

Lui, Y. Mole, D., (1998), "The use of fundamental and technical analyses by foreign exchange dealers", *Journal of International Money and Finance*, vol. 17, pp 535-545.

Menkhoff, L., (1997), "Examining the use of technical currency analysis", *International Journal of Finance and Economics,* vol. 2, pp 307-318.

Mahmoud, A., and Sakr, S, (2012), "The Predictive Power of Fundamental Analysis in Terms of Stock Return and Future Profitability performance", *International Research Journal of Finance and Economics.*

Marsh, I. W., and D. Power, (1999), "A Panel-Based Investigation into the Relationship between stock prices and dividends, *Financial Econometrics Research Centre Working Paper*, WP 99-08.

Mukherji, S., Dhatt, M.S., and Kim, Y.H. (1997). A Fundamental Analysis of Korean Stock Returns.*Financial Analysts Journal,* May/June, 75-80. http://dx.doi.org/10.2469/faj.v53.n3.2086

Myers, S., and N. Majluf, 1984, Corporate Financing and Investment Decisions when Firms have Information that Investors do not have, *Journal of Financial Economics* 13, 187-221.

Neely, C. J., (1997), "Technical analysis in the foreign exchange market: a layman's guide. *Federal Reserve Bank of St. Louis Review*.

Nguyen, P. (2003). Fundamental a nalysis and stock returns: Japan 1993-2003. tokyo: *WBP Financial Integrator* .

Nishat, M., and R. Shaheen, (2004), "Macroeconomic Factors and Pakistani Equity Market", *The Pakistan Development Review*, Vol., Issue.4, 619-637.

Ou J, Penman S (1989a). "Financial statement analysis and Prediction of stock returns. " *Journal of Accounting and Economics 11*:295-329.

Ou, J.A., and Penman, S.H. (1989b). Accounting Measurement, Price-Earnings Ratio, and the Information Content of Security Prices. *Journal of Accounting Research*, Vol. 27, Supplement, 111-144. http://dx.doi.org/10.2307/2491068

Penman, S.H. (1992). Return to Fundamentals. *Journal of Accounting, Auditing and Finance*, Vol. 7, 465-483.

Piotroski J (2002). Value investing: The use of Historical financial statement information to separate winners from losers, *Journal of Accounting Research*.

Ross, Stephen. 1976. "The arbitrage Theory of Capital Asset Pricing. " *Journal of Economics theory* 13, no.2(December): 341-360

Rahgozar R.,(2011), "Relationship Between Total Stock Returns and Stock Prices, with Selected Financial Variables, Market Risk, and their Variations", *Midwest Finance Association Chicago*, 2-5.

Seng, D., & Hancock, J. R. (February 2012). "Fundamental Analysis and the Prediction of Earnings". *International Journal of Business and Management, Vol. 7, No. 3* , 15.

Sloan R (1996). "Do stock prices fully reflect information in accruals and cash flows about future earnings", *The Accounting Review*, 71:289-315.

Sharp, William F. 1964. Capital Asset Prices: "A Theory of Market Equilibrium under Conditions of Risk. " *Journal of Finance* 19, no. 3 (September): 425-442.

Skogsvik, S. (2008). Financial Statement Information, the Prediction of Book Return on Owners' Equity and Market Efficiency: The Swedish Case. Journal of Business Finance & Accounting, Vol. 35, http://dx.doi.org/10.1111/j.1468-5957.2008.02099.x

Statman, Meir, 1987. "How many stock make a Diversified Portfolio? " *journal of Financial and Quantitative Analysis* 22, no. 3 (September):353-363

T. Oberlechner, (2001), "Importance of Technical and Fundamental Analysis in the European Foreign Exchange Market". *International Journal of Finance and Economics*, vol. 6, pp 81-93.

Descriptive Statistics   **Table: 02**

	CR	EPS	LEV	ROA	P/E	SR
Mean	1.732063	0.507445	0.180566	0.046884	0.148782	0.065039
Median	1.056993	0.157895	0.166195	0.023801	0.092229	0.009756
Maximum	8.35	18.592	1.044835	0.750794	28.38095	4.787492
Minimum	0.039591	-6.52373	0.000203	-0.400976	-2.0989	-2.302585
Std. Dev	2.650787	1.659386	0.11727	0.150053	1.891404	0.601288
Jarque -Bera	5016889	40287.02	9730.116	484.2444	947110.9	2521.546
Probability	0	0	0	0	0	0

Correlation matrix   **Table:03**

	CR	EPS	LEV	ROA	P/E	SR
CR	1.00					
EPS	0.075116	1.00				
LEV	-0.20685	-0.22773	1.00			
ROA	0.103819	0.636016	0.34285	1.00		
P/E	0.267241	0.113427	0.01001	0.122496	1.00	
SR	-0.00689	0.138517	0.02955	0.134383	0.036392	1.00

Common and fixed effect model   **Table 04**

Dependent Variable: Stock Returns	Dependent Variable: Stock Returns
Method: Pooled Least Squares	Method: Pooled Least Squares
Total pool (balanced) observations: 1232	Total pool (balanced) observations: 1232
Sample: 1 11	Sample: 1 11
Included observations: 11	Included observations: 11
Cross-sections included: 112	Cross-sections included: 112

Common effect model					**Fixed effect model**				
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015854	0.039850	0.397848	0.6908	C	0.003776	0.038155	0.098968	0.9212
Current ratio	-0.000850	0.007871	-0.108020	0.9140	Current ratio	-0.001286	0.007487	-0.171725	0.8637
Leverage	0.098747	0.159922	0.617471	0.5370	Leverage	0.150785	0.152980	0.985651	0.3245
Returns on Assets	0.329048	0.153031	2.150209	0.0317	Returns on Assets	0.420079	0.145854	2.880125	0.0040
Price to Earnings	0.005165	0.009032	0.571823	0.0375	Price to Earnings	0.009398	0.008587	1.994386	0.0240
Earnings per share	0.032273	0.013289	2.428588	0.0153	Earnings per share	0.029447	0.012599	2.337242	0.0196
R-squared	0.223264				R-squared	0.244812			
Adjusted R-squared	0.209280				Adjusted R-squared	0.224139			
F-statistic	5.840076				F-statistic	12.63163			
Prob(F-statistic)	0.000024				Prob(F-statistic)	0.000000			
Durbin-Watson	1.998128				Durbin-Watson	2.133257			

Redundant Fixed Effects Test — Table 05

Redundant Fixed Effects Tests
Pool: POOL
Test period fixed effects

Effects Test	Statistic	d.f.	Prob.
Period F	15.677824	(10,1216)	0.0000
Period Chi-square	149.404412	10	0.0000
R-squared	0.223264		
Adjusted R-squared	0.209280		
F-statistic	5.840076		
Prob(F-statistic)	0.000024		
Durbin-Watson stat	1.998128		

Random Effect Model — Table 06

Dependent Variable: SR_?			Included observations: 11	
Method: Pooled EGLS (Period random effects)			Cross-sections included: 112	
Total pool (balanced) observations: 1232			Sample: 1 11	
Swamy and Arora estimator of component variances				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004654	0.069607	0.066856	0.9467
Current ratio	-0.001255	0.007484	-0.167656	0.8669
Leverage	0.147018	0.152845	0.961876	0.3363
Returns on Assets	0.413494	0.145765	2.836723	0.0046
Price to Earnings	0.039095	0.008583	1.059610	0.0295
Earnings per share	0.029645	0.012596	2.353504	0.0188

Random Effects (Period)

	A	B	A+B
1—y	0.020601	0.004654	0.025255
2—y	-0.037859	0.004654	-0.033205
3—y	-0.076195	0.004654	0.071541
4—y	0.260333	0.004654	0.264987
5—y	0.234370	0.004654	0.239024
6—y	0.305805	0.004654	0.310459
7--y	-0.045974	0.004654	0.04132
8--y	-0.122383	0.004654	-0.117729
9--y	-0.002500	0.004654	0.002154
10--y	-0.253101	0.004654	0.248447
11--y	-0.283097	0.004654	0.278443

R-squared	0.229830			
Adjusted R-squared	0.215874			
F-statistic	7.539328			
Prob (F-statistic)	0.000001			
Durbin-Watson stat	2.122559			

Hausman Test   **Table 07**

Correlated Random Effects - Hausman Test
Pool: POOL
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.		Prob.
Period random	6.110523	5		0.2956

Period random effects test equation:
Dependent Variable: Stock Returns
Method: Panel Least Squares
Total pool (balanced) observations: 1232
Sample: 1 11
Included observations: 11
Cross-sections included: 112
Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
Current ratio	-0.001286	-0.001255	0.000000	0.8922
Leverage	0.150785	0.147018	0.000041	0.5570
Returns on Assets	0.420079	0.413494	0.000026	0.1975
Price to Earnings	0.029398	0.009095	0.000000	0.2313
Earnings per share	0.029447	0.029645	0.000000	0.4674
R-squared	0.244812			
Adjusted R-squared	0.234139			
F-statistic	12.63163			
Prob (F-statistic)	0.000000			
Durbin-Watson stat	2.133257			