Stock Return Predictability Using Panel Regression: Empirical Evidence from Pakistani Equity Market

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Abstract

The main goal of this study is to examine firm and market level variables that predict stock returns by using quarterly data taken from July 1999 to December 2015. The study sample is sub-divided into pre and post financial crisis of 2007-08. The results of the study depict that in the pre-financial crisis period momentum and earnings growth rate are the significant predictors of stock returns while momentum, earnings growth rate, institutional ownership and trading volume are the significant predictors of stock returns in the post-financial crisis period. Furthermore, overall results show that momentum, earnings growth rate and size are the significant predictors of stock returns for the overall sample period. The results of the study are robust and can be generalized to other time periods.

Keywords: Return predictability, earnings growth, momentum, size, trading volume, institutional ownership, book-to-market ratio

Introduction

Finance literature has revealed many cross-sectional relations among macroeconomic variables and future stock returns. Beyond their historic insights, those relations are applicable to the extent that they offer insights into the future. Whether the standard relation maintains outside a study's original setting is an open question, the solution to which could through light on why cross-sectional return predictability is discovered within the first place (Mclean & Pontiff, 2016). In the cross-sectional regression method, researchers regress the firm-level return predictors on stock returns and analyse the regression results. Following Jagadeesh & Titman's (1993) study for the United States, other studies, such as Chan et al. (2001), Fama & French (1998), Grundy & Martin (2001), Shafana et al. (2013), Pincus et al. (2007), Demirtas & Zirek (2011), Lee (2012), Rouwenhorst (1998, 1999), Chen et al. (2013), Chen et al. (2014), Chen et al. (2013), Titman et al. (2004), Güzeldere & Sarıoglu (2012), Beneish, Lee & Nichols (2013) and Wang & Wu (2011) conducted studies across the world covering different markets and time periods.

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Relationships between stock returns and return predictors are visible in many markets around the world and are not valid only for a few markets with specific features (Fama & French, 1992; 2012; 2015). Our contribution to the literature arises from this study coming up with pre and post financial crisis in Pakistan equity market by using pooling framework and allowing for parameter coefficients to stochastically vary over the duration of sample period. Hearn et al. (2010) study four South Asian equity markets, namely India, Pakistan, Bangladesh and Sri Lanka. Their study, however, is constrained in terms of sample timeframe and the number of predictors variables included. Our study provides a pre and post financial crisis comparison which adds new insight to the already known relations of firm and market level predictors and stock returns.

In the presence of these issues and the importance to forecast the pre and post financial crisis stock returns, it is vital to test the empirical link among firm and market level predictors and stock returns. The importance of this study becomes more evident as this study is not only analysing stock return predictors but also their varying degree of influence in the pre and post financial crisis. The findings of this study are significant for investors who deal in equity market on regular basis, irrespective of financial crisis or market boom. This study identifies separate set of predictors which are significantly linked to stock returns in the pre and post financial crisis period.

Different monetary, political, social and financial systems of countries reflect on the fundamental (firm level) and marketplace (market level) variables on stock returns with specific manner. Because of varying methods and controls it's much hard to really interpret the current state of the literature at the cross-sectional predictors of stock returns. It isn't, however, only an area of great interest for the researchers over decades but also of vital importance for practitioners, of business world, dealing with financial sector (Subrahmanyam, 2005). The literature on stock returns has diverse views on return predictability. Some researchers, for example, conclude that firms in concentrated industries earn higher returns than firms where competition is high as concentrated industries have high barriers to access thus isolating the companies from external competition. While other researchers show that the higher returns are only compensation for the higher risk due high entry and exit barriers and thus there is no significant difference in the risk adjusted returns of stocks across different industries and even geographical boundaries. A large body of the empirical evidence, however, suggests that returns are only partially predictable (Binsbergen Jules, & Koijen 2010; Campbell & Shiller 1988; Cochrane, 2007; Fama & French 1988). Relationship between stock returns and return predictors is visible in many markets around the world (Fama & French,

1998; Grundy & Martin 2001; Pincus et al., 2007; Titman et al., 2004; and Wang & Wu, 2011). But the return predictors and their degree of predictability vary with respect to time and market. These also vary for the type of financial securities including equity, debt and derivative securities. A large body of literature is available for return predictability using capital asset pricing model, a single factor model, and Fama & French (1993) three factor model. But these models are still lacking in precisely predicting returns across different financial markets and times (Fama & French, 2010; 2012; 2015). Daniel & Titman (1997) argue that, after controlling for size and book/market ratios, returns are not strongly related to betas calculated based on the Fama & French (1993) factors. Research in this area is, especially, lacking in Pakistan. As part of the emerging financial market, the interest of the international investors is increasing in Pakistan. Therefore, the research on Pakistani equity market is not only important to domestic investors but also to international investors. So the main objective of this study is to provide research based information to existing and potential investors, both domestic and foreign, about return predictability in Pakistani stock market. This study also segregates the sample period into pre and post financial crisis and provides separate findings for the two sub-periods. This is helpful for investors to make appropriate investment decisions in different market conditions.

Literature Review

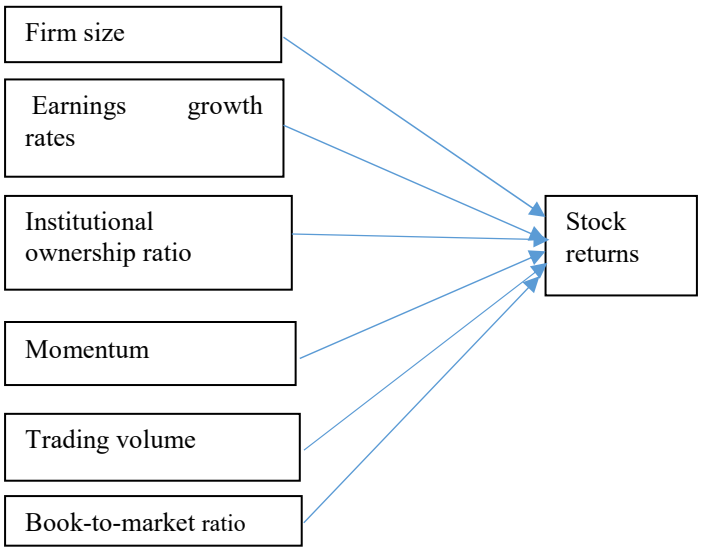
Chordia & Swaminathan (2000) and Fargher & Weigand (1998) found that the stock returns of businesses with larger buying and selling volumes lead those of organizations with smaller trading volumes. Ravichandran & Bose (2012) and Tripathy (2010) additionally investigated the empirical relationship among trading volume and stock returns inside the U.S and Indian stock markets. Both researches indicated that recent information about trading volume substantially related to stock price. Badrinath et al. (1995) and Sias & Starks (1997) determined that the stock returns of groups with a better institutional ownership ratio react faster to company facts than inventory returns of companies with a decrease institutional ownership ratio. Weber (2016), Sias et al. (2006), Liang et al. (2011), Watkins (2006), and Ye (2012) also investigated, using different research methods, the relation among stock returns and changes in ownership by institutional investors. The results of their research indicated that the institutional ownership ratio had a huge impact on stock returns. In addition, the past literature has said that announcements of earnings are important real-time information for investors. Usually, changes in most organizations' stock returns and trading volumes are affected by earnings reports. Beneish, Lee & Nichols (2013), Chen et al. (2013), DeFond et al. (2007), Landsman et al. (2012),

and Lyle & Wang (2015) determined that annual profits announcements affect the volatility of inventory fees and trading volumes of stocks; consequently, annual earnings announcements have data content results. Da, Engelberg & Gao (2010) discovered that small corporations earn better returns than large firms and corporations with high book-to-market ratios had higher stock returns than their low book-to-market ratios counterparts. Abbas et al. (2014), Chai et al. (2013), Hassan & Javed (2011), and Nguyen et al. (2012) found the short-term momentum influence in different stock markets. Though, more tests by particular periods and size indicate the poor performance of the momentum profit after controlling for risks. Dou et al. (2013) found that the momentum influence exists in large and small stocks, but was absent across the whole market. Fama & French (2012) tested the momentum validity in different markets by considering more risk variation. Their results support the momentum phenomenon. Gibbons, Ross, & Shanken (1989) rejected the momentum hypothesis by stating that the true intercepts were zero in their study. Even when small stocks were excluded, global models did not explain regional portfolio returns and local models perform poorly on the size-momentum portfolios of Europe and Asia Pacific. Hanson & Sunderam (2013) used short interest as a proxy for sophisticated investors and found that increase in short interest is associated with lower future returns in value and momentum stocks.

H_1: Firm level variables are significant predictors of firm stock returns

H_2: Market level variables are significant predictors of firm stock returns

Model



$R_{i,t=}$ $\propto_i+$ $\beta 1_{SIZEi.t}$ $+\beta 2_{VOLUMEi.t}$ $+\beta 3_{IORi.t}$ $+$ $\beta 4_{EGRi.t}$ $+\beta 5_{BMRi.t}$ $+\beta 6_{MOMENTUMi,t}$ $+\mu_{i,t}$….. 1

Methodology

This study uses panel regression to predict firm stock returns with help of firm level predictors including, size, earning growth rate and institutional ownership ratio, and market level predictors including, trading volume, book-to-market ratio and momentum. In this study unbalanced panel data is used for 363 firms from June 1999 to December 2007 and June 2009 to December 2015. The time period for the panel is divided into pre and post financial crisis sub-samples. During 2008 stock exchange index remained freeze and therefore it is excluded from the analysis. The check for individual variation Hausman test is applied to choose from fixed and random effect models. In the fixed effect technique the constant is treated as group specific. This method that the model allows for different constants for each group.

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it}$$

Where

$\alpha_i (i = 1 \ldots . n)$ is the unknown intercept for each entity (n entity-specific intercepts).

Y_{it} is the dependent variable (DV) where i=entity and t=time. X_{it} represents independent variable (IV), β_1 is the coefficient for that IV, and u_{it} is the error term.

The fixed effect model controls all the time-invariant changes among the individuals, so the expected coefficients of the fixed effect models cannot be biased due to overlooked time-invariant characteristics. If the error terms are correlated, then Fixed Effect isn't appropriate due to the fact that inferences might not be accurate and that association maybe due to random effect. This is the principal motive for the Hausman test. While the purpose behind random effects model is that, in contrast to the constant consequences model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables used in the model. In the fixed effect model those variables are absorbed by the intercept. The random effects model is:

$$Y_{it} = \beta X_{it} + \alpha + \mu_{it} + \varepsilon_{it}$$

Random effects anticipate that the entity's errors terms are not correlated with the predictors over time which takes time-invariant variables to a position as explanatory variables. Random effect permits to generalize the inferences beyond the pattern used within the model. To decide among fixed or random effect, Hausman test is use which tests the null hypothesis that the random effect model is better than the fixed effect

model. Hausman (1978) test assumed that there are two estimators $\beta^{\wedge}$and $\beta^{\wedge}_1$of the parameter vector β and added two hypothesis-testing procedures. Under H_0, both estimators are consistent but $\beta^{\wedge}_0$ is inefficient, and under H_1, $\beta^{\wedge}_0$ is consistent and efficient, but $\beta^{\wedge}_1$is inconsistent.

For the panel statistics the appropriate optimal choice between the fixed effects and the random effects techniques examines whether or not the regressor are correlated with error terms. The Hausman test uses the following statistical test:

$$H = (\beta^{\wedge FE} - \beta^{\wedge RE})\ '\ [\text{Var}\ (\beta^{\wedge FE}) - \text{Var}\ (\beta^{\wedge RE})]^{-1}(\beta^{\wedge FE}) - \text{Var}\ (\beta^{\wedge RE}) \sim \chi^2(k)$$

If the result of statistics value is large, at that point the difference between the estimates is important, so we reject null hypothesis that the random effect model is reliable and, therefore, use the fixed effects model. A small value of the Hausman statistic, however, suggests that the random effects model is more suitable. The following equation is tested in this study:

$$R_{i,t} = \propto_i + \beta 1_{SIZEi,t} + \beta 2_{VOLUMEi,t} + \beta 3_{IORi,t} + \beta 4_{EGRi,t} + \beta 5_{BMRi,t} + \beta 6_{MOMENTUMi,t} + \mu_{i,t}$$

Where

$R_{i,t}$ is the stock return of firm i at time t, $\beta 1_{SIZEi,t}$ is the size of firm i at time t, $\beta 2_{VOLUMEi,t}$ is trading volume of firm i at time t, $\beta 3_{IORi,t}$ is institutional ownership ratio for firm i at time t, $\beta 4_{EGRi,t}$ is earning growth rate of firm i at time t, $\beta 5_{BMRi,t}$ is book-to-market ratio of firm i at time t and $\beta 6_{MOMENTUMi,t}$is the momentum of firm i at time t.

Measures

To measure the size of firm, natural log of market capitalization is used as a proxy. For market capitalization market price per share is multiplied with the number of common shares outstanding at the end of each quarter for each firm. Trading volume is defined as the natural log of number of common shares traded each quarter. Institutional ownership ratio is defined as the number of shares held by institutional investors divided by the total number of common shares outstanding. For earnings growth rate the ratio of current quarter's net income ($N.I_{it}$) with previous quarter's net income ($N.I_{it-1}$) is used a proxy. Momentum is defined as winners' minus losers' firm stock returns (WML) Carhart (1997) and Fama & French (1998). All stocks are divided into three groups (losers, neutral and winners) according to their returns. Because our data starts from July 1999 thus first momentum portfolio is formed at the end of June 1999. The losers' portfolio contains 30% of stocks with the lowest quarterly returns, while 30% of stocks with highest past returns are assigned to

winners' portfolios and the remaining 40% are part of the neutral portfolio. In this study book value of equity (BVE) equals to total assets minus total liabilities and preferred equity (if any). Then this value is divided by the total number of common shares outstanding to get the book value per share. For market value per share the closing price of the stock is used at the end of each quarter. The ratio of B/M is then calculated for each firm at the end of each quarter. For firm stock returns the following formula is used:

$$R_t = l_n \, P_{t/P_{t-1}}$$

So 'Rt' is the continuous compounded return for quarterly size, book-to-market ratio, momentum, institutional ownership ratio, trading volume and earnings. 't'and'Pt', 'Pt-1''t' and't-1' correspondingly and natural log denoted by 'ln'.

Data

Data used in this study is collected in two sub-sample periods i.e. from June 1999 to December 2007 and June 2009 to December 2015. The time from January 2008 to May 2009 is excluded due to financial crisis situation around the world. Firms with at least five years data are included in the final sample. Firms which are delisted during the study time period, and do not fulfil the 5 years criterion, are excluded from the study. Similarly, recently listed firms with less than five years data are excluded. This study, furthermore, removes the data of firms with negative B/M ratio (Chen & Lee, 2013; Weber, 2015). A total of 496 non-financial firms are part of the population but after data screening some firms are excluded leaving 363 firms which are used in the final sample.

Results and Findings

Pool A: Data from July 1999-December 2007

Table 1: Redundant Fixed Effects Test

Effects Test	Statistic	df	Prob.
Cross-section F	30.4892	-3,625,800	0.000
Cross-section Chi-square	6574.468	362	0.000

In this case p-value of cross-section chi-square is significant at a 0.01 level of significance which shows that fixed effect model is preferred over common effect model.

Table 2: Correlated Random Effects-Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.

Cross-section random	6.520018	6	0.3675

Table 2 shows that the value of Hausman test is statistically insignificant therefore fixed effect model is preferred over random effect model.

Table 3: Fixed effect Model
Dependent Variable: Stock returns

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2814.437	213.3967	13.18876	0.000
BMR	-0.54042	0.679229	-0.795638	0.4263
EGR	0.000169	4.42E-05	3.822558	0.0001
IOR	-9.15E-05	0.000183	-0.501439	0.6161
MOM	-133.409	65.40782	-2.039645	0.0414
SIZE	1.54E-07	3.70E-07	0.417696	0.6762
TV	-7.06E-07	2.20E-05	-0.032139	0.9744

Fixed Effects (Cross)

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.6629	Mean dependent var	2464.971
Adjusted R-squared	0.6416	S.D. dependent var	7178.774
S.E. of regression	4297.671	Akaike info criterion	19.62749
Sum squared resid	1.07E+11	Schwarz criterion	20.02988
Log likelihood	-60172	Hannan-Quinn criter.	19.76703
F-statistic	31.00519	Durbin-Watson stat	0.322022
Prob(F-statistic)	0.000		

Table 3 shows the results of the fixed effect model for firm and market level variables on stock returns for the pre-financial crisis period of July 1999-December 2007. The coefficients of book-to-market ratio, institutional ownership ratio, size and trading volume are statistically insignificant as their p-value are above any acceptable significance level. The coefficients of earnings growth rate and momentum, however, are statistically significant at 0.01 and 0.05 level of significance,

respectively. The results show that stock returns are significantly positively affected by earnings growth rate while momentum is significantly negatively associated with stock returns.

Pool B: Data from July 2009-December 2015

Table 4: Redundant Fixed Effects Tests

Effects Test	Statistic	df	Prob.
Cross-section F	1.176933	-3,629,795	0.0128
Cross-section Chi-square	432.755	362	0.0062

In this case p-value of cross-section chi-square is significant at a 0.01 level of significance which shows that fixed effect model is preferred over common effect model.

Table 5: Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	36.18644		0.000

Table 5 shows that the value of Hausman test is statistically significant therefore random effect model is preferred over fixed effect model.

Table 6: Random effect 2009 to 2015

Dependent Variable: Stock returns				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	74.84004	4.386296	17.06224	0.000
BMR	0.003493	0.015443	0.226194	0.821
EGR	0.000426	0.000197	2.16167	0.031
IOR	-0.00042	0.000139	-3.03367	0.002
MOM	-4.29209	0.737387	-5.82067	0.000
SIZE	-2.06E-08	4.38E-08	-0.46916	0.639
TV	-0.00066	0.000104	-6.3738	0.000

Random Effects (Cross)			
Effects Specification			
		S.D.	Rho
Cross-section random		8.124029	0.003
Idiosyncratic random		148.5768	0.997
Weighted Statistics			
R-squared	0.5970	Mean dependent var	45.75298
Adjusted R-squared	0.5764	S.D. dependent var	149.2848
S.E. of regression	148.8047	Sum squared resid	2.25E+08
F-statistic	11.94918	Durbin-Watson stat	2.083891
Prob(F-statistic)	0.000		

Table 6 shows the results of the random effect model for firm and market level variables on stock returns for the post financial crisis period of July 2009-December 2015. The coefficients of book-to-market ratio and size are statistically insignificant as their p-value are above any acceptable significance level. The coefficients of institutional ownership ratio, momentum and trading volume; and earnings growth rate, however, are statistically significant at 0.01 and 0.05 level of significance, respectively. The results show that stock returns are significantly positively affected by earnings growth rate while momentum is significantly negatively associated with stock returns.

Pool C: Overall data from July 1999-December 2015

Table 7: Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.610298	-36,221,765	0.000
Cross-section Chi-square	1635.298	362	0.000

In this case p-value of cross-section chi-square is significant at a 0.01 level of significance which shows that fixed effect model is preferred over common effect model.

Table 8: Correlated Random Effects-Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.27775	6	0.2185

Table 8 shows that the value of Hausman test is statistically significant therefore random effect model is preferred over fixed effect model.

Table 9: Fixed effect model
Dependent Variable: Stock returns

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	73.20872	4.74258	15.43648	0.0000
BMR	-0.00698	0.023331	-0.29929	0.7647
EGR	-2.73E-06	6.78E-07	-4.02523	0.0001
IOR	-9.01E-06	5.47E-06	-1.64634	0.0997
MOM	-2.56562	1.184885	-2.16529	0.0304
SIZE	-24.9136	6.056352	-4.11363	0.000
TV	-1.73E-08	1.32E-08	-1.3063	0.1915

Fixed Effects (Cross)
Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.6721	Mean dependent var	61.31145
Adjusted R-squared	0.6564	S.D. dependent var	275.0082
S.E. of regression	267.1312	Akaike info criterion	14.02989
Sum squared resid	1.55E+09	Schwarz criterion	14.16334
Log likelihood	-154900	Hannan-Quinn criter.	14.07333
F-statistic	4.599274	Durbin-Watson stat	1.825753
Prob(F-statistic)	0.000		

Table 9 shows the results of the random effect model for firm and market level variables on stock returns for the entire period of July 1999-Decemebr 2015. The coefficients of book-to-market ratio and trading volume are statistically insignificant as their p-values are above any acceptable significance level. The coefficients of size and earnings growth rate; momentum, and institutional ownership ratio, however, are statistically significant at 0.01, 0.05 and 0.1 level of significance, respectively. The coefficients for all variables are negative and therefore show that stock returns of those firms are low in the subsequent periods where is high earnings growth reported, institutional ownership is high, size of the firm is high and momentum of is high and vice versa. These findings are consistent with overreaction hypothesis where investors overreact to higher earnings announcements, prefer larger firms, herd behavior of buying stocks following institutional investors and using momentum strategies. But such investment strategies bring lower returns in the subsequent periods and therefore the coefficients are significantly negative for all the three variables.

Discussion and Analysis

On the basis of our results earnings growth rate, institutional ownership ratio and momentum are statically significant and better return predictors. On the other hand size and book-to-market ratio are statically insignificant in the 1999-2015 period while trading volume is statistically significant in 2009-2015 period of time (Chen et al., 2013) whereas its coefficients are statistically insignificant during 1999-2007 period as well as over the entire period of 1999-2015.

Watkins (2006) finds that stock returns for firms with higher institutional ownership are significantly higher than firms with lower institutional ownership ratio. This is consistent with the view that institutional investors are more knowledgeable and have more expertise than individual investors and therefore, the stocks they select for their portfolio are earning significantly higher returns than the stocks of firms with lower institutional ownership ratio. Our results do not support the view that firms with high institutional ownership have significantly higher stock returns as compared to those firms with low institutional

ownership ratios. Contrary to the above view, the beta coefficients for institutional ownership are negative in all three cases of this study. The beta coefficient for the period July 1999-December 2007 is, though, insignificant while for the period of July 2009-December 2015 and the entire sample period of 1999-2015, beta coefficients are significantly negative. The possible explanation for this result is the herd behavior where individual/ less informed investors follow the buying behavior of institutional investors and thus results in lower stock returns in subsequent periods. The results of institutional ownership ratio, however, are not robust across all time periods. The results are significant in 2009-2015 and overall sample periods but it is insignificant in 1999-2007 period. Blume & Keim (2012) also find that institutional investors underweight the largest stocks and overweight the smallest stocks relative to market weights. As smaller firms experience more losses in crisis situation therefore the beta coefficient for institutional ownership is negative. Our findings are also consistent with risk taking behaviour of institutional owners. With the background of better performance in the period of 2003-2007, institutional investors become overconfident and therefore invest heavily in risky stocks; increasing institutional ownership ratios of risky firms. As a result of the financial crisis of 2007-08, the prices of such stocks decrease significantly and thus the beta coefficients are significantly negative. The results are also consistent with the view that institutional ownership is high in firms with high stocks liquidity, therefore, when such stocks are traded more and more in crisis situation (post 2007-09 financial crises) hence they are losing more value (overreaction; Daniel, Hirshleifer & Subrahmanyam, 1998; Wyart & Bouchaud, 2007). Individual investors hold on to their portfolios (disposition effect, Odean 1998; Weber & Camerer 1998) and therefore decrease the trading volume (decrease short term overreaction, Jegadeesh & Titman (1995) in crisis situation.

Our results support Barth et al. (2014) findings that earnings growth rate is negatively associated with stock return due to accounting manipulations. Therefore, when a firm reports earnings, investors may obtain incremental facts if they can assess whether the earnings surprise is driven by changes in revenues or changes in expenses (Aboody et al., 2008; Jegadeesh & Livnat, 2006). There is a growing literature on the predictability of stock returns based on the information contained in past returns. The real debate surrounding the nature of momentum returns, nevertheless, probably arose when Fama & French (1996) admitted that their three-factor pricing model was unable to explain momentum returns. This fact triggered a number of theories departing from the traditional asset pricing models and agent rationality framework to find possible explanations for momentum returns within the framework of the behavioural finance theory. Momentum results of this study are

consistently significant throughout the period. It is due to the presence of different types of agents in the market that leads to stock price overreaction and ends in long term reversal (Daniel et al., 1998; Hong & Stein 1999). However, other theories show that the presence of disposition investors, who hold on to loser stocks longer than winner stocks, will, in the presence of an imperfectly elastic demand function, generate a price under-reaction to public information (Grinblatt & Han 2005; Muga & Santamaria 2009)**.**

Conclusion

Stock returns predictability is a debatable phenomena in finance research. The single theory or model is able to reasonably explain it over time as well as in financial markets around the world. Researchers find contradictory results over time and geographical locations, and therefore find justifications both in terms of tradition and behavioural finance theories. Our findings for Pakistani firms are no exception to it. We find that institutional ownership ratio, earnings growth rate, momentum, and firm size are significant predictors of firm stock returns almost across all time periods included in this study. The interesting finding, however, is that the coefficients for these variables are significantly negative. The support, therefore, comes more from the behavioural theories of how financial markets works than the conventional finance theories. Unlike the historical studies, we could not find any significant prediction power for book-to-market ratio and trading volume for firm stock returns. The coefficient for trading volume is significant in 2009-2015 period but it is insignificant in the period from 1999-2007 as well as the overall period. Based on our findings it is concluded that the firms with higher institutional ownership ratio, earnings growth rate, size, and momentum trading earn significantly lower stock returns. This is also true for trading volume in the post 2007 financial crisis period. Our findings are, however, suffering from the limitation that stock returns include only changes in stock prices. Dividends are not included while calculating stock returns. Future researchers may improve on this shortcoming in our research.

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