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Exploring the nexus between Accounting Anomalies, Stock Returns, and Growth: A Study of KSE-100 Companies

[1]Muhammad Haroon Rasheed*, [2]Tayyaba Zahid, [3]Salma Sadiq

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ABSTRACT

Purpose: Predicting stock movement is of vital interest to managers and investors. The study aims to validate a similar model by identifying accounting variables that significantly predict the stock return at Pakistan Stock Exchange (PSX).

Design and Methodology: The study utilized panel data extracted from the financial statements of nonfinancial firms included in the KSE-100 index from 2005 to 2020. A pooled regression model with a fixed effect for basic variables and a random effect for anomaly variables is used to test their impact on future stock returns.

Findings: The regression analysis indicates that there exists a significant impact of basic accounting variables in forecasting expected return, return yield and return growth. The results for anomaly variables also significantly predict expected return and yield but are unable to predict earning growth significantly.

Implications: The proposed model provides a tool for investors to take advantage of any mispricing existing in the stock market. The study statistically linked accounting anomaly variables with stock returns at Pakistan Stock Exchange. In a developing economy like Pakistan, where market mispricing is high this knowledge can be utilized by researchers, managers, and policymakers to foresee the direction of the business sector in Pakistan.

Keywords: Accounting Anomalies, Stock Return, Investment Decisions, Pakistan Stock Exchange.

1. Introduction

A model that can predict equity future returns at stock markets always remained a point of interest for the researcher, practitioners, and especially stock market investors. In the field of finance, the financial markets are traditionally believed to be efficient (Bloomfield & Hales, 2002) but recent studies are raising questions about the validity of the concept of financial market efficiency. The primary reason is the limited cognitive abilities of investors and a lack of accessibility to relevant data (Hussain et al., 2022). The existing traditional financial literature claims that financial exchange's effectiveness can't be established by a single-factor model i.e., as by Sharpe's (1964) capital asset pricing model (CAPM) but in reality, contrary to the traditional

[1]Lecturer, University of Sargodha, Email: haroon.rasheed@uos.edu.pk
[2]MS Scholar, CUST Islamabad, Email: tayyabazahid27@yahoo.com
[3]PHD Scholar, COMSATS University WAH, Email: salmasadiq89@gmail.com
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assumptions over/under pricing of securities also exists (Rasheed et al., 2021) and to exploit this market mispricing, individuals indulge in trading decisions based on anomaly accounting variables to gain returns beyond market return (Xue & Zhang, 2017).

Existing studies reported various accounting variables to be associated with the future return of the stocks (Penman & Zhu, 2014). These accounting variables are attributed as "anomaly variables" due to a lack of established explanation for their association with the stock return. Ross (1976) clarifies this relationship by utilizing more sensible presumptions dependent on financial markets' shortcomings for efficiency in his arbitrage pricing theory (APT), whereas Fama (1970, 1991) partners these abnormal returns with market conduct that can be clarified with an extended model for expected return and risk. Basu (1977, 1983) used the earnings-to-price ratio to anticipate profits and referred to these profits as abnormal because of market mispricing. Similarly, Ball (1978) contends that the price-to-earnings ratio is a yield that can be attributed to the underlying risks because this ratio reflects actual earnings and growth which usually varies from the expected returns causing deviation in the market prices and investment decisions. Furthermore, Fama and French (1992) in their study linked risk with profit and its growth and recognized the book-to-price (B/P) ratio as a variable in their model that predicts return on risky assets. The book-to-price ratio undoubtedly predicts an increase in profit, yet with little explanatory power (Penman & Reggiani, 2013). Hence currently, the researchers are focusing on identifying new accounting anomalies like earnings-to-price, accounting accruals, book-to-price, sales, and asset development over time, which can be used for reliably gauging future returns by investors (Leung et al., 2020; Penman & Zhang, 2021; Penman & Zhu, 2022)

1.1. Objectives and Significance

Regardless of the nature of the stock market behavior, a validated model based on anomaly accounting variables will have practical applications for all the stakeholders and will encourage future researchers to establish the theoretical dynamics between these accounting anomalies and stock returns. To research this inquiry, the current model will explore anticipated returns, earning growth, and development of income in an organization and establish that accounting factors significantly predict profit and development of profit, and estimated required returns. It is found that the accounting factors that estimate returns can also be utilized for anticipating future income and its growth in the same direction in which they foresee returns. The proposed study, to the best of the information, is the pioneer study in a non-industrial nation like Pakistan to explore these accounting anomalies. This study is aimed at helping the stakeholders to invest in assets that can provide higher returns. Subsequently, this review presents a model dependent on accounting anomalies to assess the existing experimental work, yet more critically, we are likewise ready to add some new insight to the current literature in the context of Pakistan.

2. Literature Review

Sharpe (1964) explored the interconnection of risk and the return for investments in stock markets. One of the fundamental criticism behind these models is the restricted accessibility of data in financial exchanges, which prompts failure of market efficiency and cause unusual returns (Rasheed et al., 2018). That is the prime reason that different researchers incorporated this relationship with other traditional and behavioral market factors (Rasheed et al., 2021). Fama and French (1992) clarified this relationship by utilizing different elements of the traditional view. One of their reviews is dependent on various accounting factors, which include book-to-value, firm size, and income to cost to clarify this relationship and set up that size has a negative effect and book-to-cost has a positive effect. Another variable is firm size, which is found to impact future returns (Banz, 1981). Bhandari (1988) contends on traditional models that those models should also incorporate the influence of firm leverage and in his review leverage has been found to have a solid positive connection with anticipated returns (Penman, 2010). Market anomalies i.e. abnormal returns happen when markets neglect to comprehend relevant information making stock market behavior predictable (Barth & Hutton, 2004; Richardson et al., 2010; Xie, 2001). Traditionally better yields are related to higher risks (Beaver, 1968). Still significant proof likewise demonstrated that market mispricing occurs because of the absence of insightful capacities of investors (Hussain et al., 2022). They don't think about significant variables while dissecting and putting resources which prompt mispricing and at last unusual return (Bradshaw et al., 2006). Market participants are found to consider other variables (Bloomfield & Hales, 2002). It is widely expressed in the existing literature that investors deviate from financial fundamentals in data handling (Collins et al., 2003; Prechter, 2016). The appropriate assessment and the nonappearance of data among financial decision-makers lead to abnormal benefits (Lev & Nissim, 2006). Ross (1978), and Penman and Zhu (2022) took on a model that whether various factors from accounting performance impact expected returns and the current review is also an attempt in the same direction. The chosen bookkeeping factors for the current review are earning to price (E/P), book to price (B/P), accruals (ACCR), return on assets (ROA), and change in net operating assets (ΔNOA), investment (I), and external financing (EF). The selected elements are examined individually in the forthcoming areas. Where earning to price (E/P), and the book to price (B/P) are considered basic forecast variables due to an established linkage in the existing literature, and the remaining are considered anomalous variables given to the ambiguity associated with their impact on a future return.

2.1. Earning to Price Ratio

Basu (1977) study the connection between risk and return concerning earning to price (E/P) ratio and found a positive relationship between anticipated returns and the E/P ratio. The element of risk is implied in the earnings of the firms, and the total growth of income makes contrasts with

current and future income (Adiputra et al., 2021). The distinction in realized and anticipated earnings is due to the mispricing existing in the stock market (Ball, 1978). Hence E/P ratio is used to foresee anticipated returns (Berk, 1995). The normal profit and required return show that the adjustment of the premium is trailed by the adjustment of the normal return (Ohlson & Juettner-Nauroth, 2005). Recent studies reported that instability in the costs of stock is impacted by the adjustment of anticipated profit towards actual returns (Arshad, 2021; Dubinsky & Johannes, 2006). The conservative quality of GAAP shows lower book worth and upgrades the worth of expected returns in the future demonstrated by a past report (Feltham & Ohlson, 1995). The reliance on conservative estimates in accounting leads to changes in expectations of investors. Creating an under or overpricing of stocks in the market (Zhang, 2000). According to Lintner (1956), other bookkeeping factors besides the earnings ratio can be used to predict profit. Beaver and Ryan (2000) reasoned that behavioral factors also cause investors to over/under-react to the market (Pokharel, 2020; Rasheed, Gul, et al., 2021).

2.2. Book-to-Price Ratio

It is expressed that the book-to-price (B/P) proportion catches the growth of profit to foresee normal returns (Ball, 1978). Fama and French's (1993) model incorporates B/P as a proxy of development to clarify the relationship between risk and return. Their model shows a clear linkage between expected future returns demonstrated by the B/P ratio (Bustani et al., 2021). Penman et al. (2015) examined that the B/P is a good tool for measuring the increase in income. Shroff (1995) further clarifies that assuming there is no growth, at that point, the actual yield is equivalent to the anticipated return of the investments, and growth needs to be considered in the form of B/P ratio. It shows that the normal future rate of return will be the same as the actual yield (Ball, 1978). Profit can anticipate expected returns in a better manner since profits have a more direct connection with anticipated future returns (Penman & Reggiani, 2013). This technique is utilized in many examinations as a trading model (Bradshaw et al., 2006). Past investigations likewise prescribed low book-to-price prompts low stock returns (Merton, 1987) and is a significant determinant of future return.

2.3. Accruals:

Sloan (1996) utilized accruals as an anomaly variable to foresee the future returns of a firm. The study considered profit as a variable that is directly linked to bookkeeping and as businesses use the conservative approach of bookkeeping substantial part of profits remain on balance sheets in the form of accrual (Easton & Pinder, 2007). Exploratory analysis of the prior studies showed that the directors' choice to perform bookkeeping activities by utilizing bookkeeping norms impacts bookkeeping information which eventually sways on expected return in the stock market (Eckbo et al., 2000). In the study of Thomas and Zhang (2002), it is observed that the accruals of

a firm impact firm's return. Studies tested the effect of accrual by utilizing the model of working capital accruals and it is established that accruals significantly estimate profit and income growth (DeFond & Park, 2001). Jones et al. (1994), and Beaver and Engel (1996) utilized accrual in their examination and uncovered that accruals do affect the current profit and future income (Moehrle, 2002). Li & Mohanram (2014) concluded the same that the connection between future returns and accruals is significant. Sloan (1996) demonstrates the stock return of the future can be gauged based on accruals.

2.4. Return on Asset

It is observed from the literature that the relationship between ROA and return is significant. According to Fama and French (2006), anomaly research established the way for researchers to explore the effect of variables related to profitability on the normal return. This relationship poses a great illustrative ability to show the link between risks and return (Adinugraha, 2022). Anomaly research use profit factors that are found to be strongly linked with the return, and specialist contends on the effect of ROA (Novy-Marx, 2010). This use of net income supports the gauging of future returns in a better manner than any other variable (Swandewi & Purnawati, 2021). The decision-making for stock investors in comparison with debt investors is different (Dor et al., 2007). The effect of the accrual part of working capital is not the same as the cash part when we clarify the impact of ROA one year ahead. One more clarification in this regard is that the differential constant of incomes and accruals is contingent on ROA (Sloan, 1996). It can be concluded that variables utilized by Sloan (1996) are part of the income as well as a part of an increase in net operating assets. Thus, this is observed that the connection between net operating assets and income growth and development is substantial. These factors are considered to research the combined impact of investment and non-investment-related changes in financial reports (Wu et al., 2010).

2.5. Change in Net Operating Assets

Various examinations observed that changes in net operating assets have a significant correspondence with future returns (Fairfield et al., 2003; Rudianto, 2021). Penman and Zhang (2021) stated that the adjustment of net operating resources can be used as a fundamental anticipating variable of acquiring returns. It increments the current earnings and decreases any future profit and when they charge it to the income statement in the upcoming year it declines the future income resulting in a decline of future profits (Zhu et al., 2022). As indicated by the conservative rule of bookkeeping when investment is added to income, it declines the required rate (Penman & Zhang, 2021). Analysts use changes in net operating resource variables in their examinations to look at their effect on stock returns and it is established that there is a positive relationship between change in NOA and stock return (Soliman, 2008). Extra exploration in this

space expresses that organizations with a higher degree of net operating assets have a more significant relationship with high future profits (Cremers & Weinbaum, 2010).

2.6. Investment

McConnell and Muscarella, (1985) explained that increasing the capital investments of any organization is one of the important determinants that is linked to future return, and also results in increasing the future return of the stock. The studies of Blose and Shieh (1997), and Few and Vogt (1997) also tracked down a significant positive connection between the extent of capital investment declarations and the degree of new actual investments which eventually put a positive impact on profit and income growth (Shahbaz et al., 2021). The study of Ofek and Richardson (2003) also states that the degree of an organization's past income, investment, and profits firmly affects future profit and profit growth. Organizations choose to put their resources into those investments with the highest possible yield and try to maximize other bookkeeping variables which are linked with returns. Studies recommend that the negative stock returns related to high capital investment are linked to the organizations that rely on the issuance of their stock capital for funding future investments (Myers & Majluf, 1984). On the other hand, Titman et al. (2004) established a negative connection between future stock returns and capital investments of a firm. This behavior is independent of a firm's long-term return or equity issuance to finance those capital investments (Özkan, 2021) hence this investment anomaly needs further exploration for building a better understanding of its impact on firm return.

2.7. External Financing

This anomaly comprises all financing exercises with the collaboration of the capital market for a firm (Singh, 2022) and it is used to anticipate returns by Li et al., (2009). The impact of this anomaly indicated that organizations that have a higher gearing ratio are conversely identified with high stock returns and future growth. A capital structure highly geared toward debt financing prompts low future profit and development anticipation (Goodman et al., 2013). Modigliani and Miller (1958) and other researchers are of the view that debt financing enjoys the benefit of considerable tax benefits. However, DeAngelo and Masulis (1980) contended that uncertainty related to the assessment of taxes increases the risk and future growth of the firm but the traditional Modigliani and Miller (1958) capital construction irrelevance stays legitimate even in presence of taxes. External financing is likewise contrarily connected with future profit and income growth which is the reason it is additionally anticipated to predict future returns in the same direction (Li et al., 2009). According to Butler et al. (2011) along with capital structure, external financing is a significant determinant of recent and future returns and growth. Bradshaw et al. (2006) explored the impact of overall external financing on future stock returns it is observed that overall external financing exercises negatively foresee future stock returns more significantly rather than

individual financing activities. Some analysts posit the explanation of negative affiliation and it is contended that the negative connection is because of the accruals that organizations with higher bookkeeping gatherings have lower future stock returns (Cohen & Lys, 2006).

Therefore based on the preceding theoretical linkage it is proposed that,

H1: *Accounting anomaly variables are a significant determinant of forward return.*
H2: *Accounting anomaly variables are a significant determinant of realized yield.*
H2: *Accounting anomaly variables are a significant determinant of future growth.*

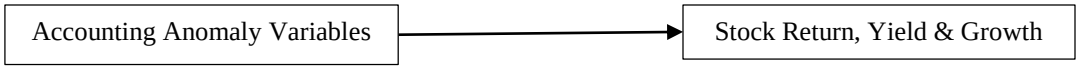

Figure 2.1. Research Model

3. Methodology

The current study aims to explore the relationship between accounting anomalies and stock returns for non-financial companies included in the KSE-100 index of the Karachi Stock Exchange (KSE). The reason for focusing on KSE-100 companies is that they represent 86% of the overall market capitalization. The sample period is of 15 years from 12/2005 to 12/2020. The variables of the study are divided into three categories i.e., endogenous variables, basic forecast variables, and anomaly variables, and are explained accordingly.

Measurement of variables

This section will explain the measurements of the variables incorporated in the current study in the table 3.1.

Table 3.1 Variables Measurement

Variable	Measurement	Source
Endogenous Variables		
Forward Returns (R_{t+1})	Annual return quantified as a compounded monthly return	Penman et al. (2015)
Realized Forward Earning Yield (E_{t+1}/P_t)	E_{t+1}/P_t	Penman et al. (2015)
Earnings per Share Growth Two Years after Fiscal Year ($\Delta E_{t+2}/E_{t+1}$)	E_{t+2}/E_{t+1}	Penman et al. (2015)

Basic Forecast Variables		
Earning to Price Ratio (E_t/P_t)	EBIT/Pt	Penman et al. (2015)
Book to Price Ratio (B_t/P_t)	Equity/Market Price	BarrRosenberg and Lanstein (1998), Fama and French (1992), and Lakonishok et al. (1994).
Anomaly Variables		
Accruals (ACCR)	Accruals/Average Assets	Fairfield et al., (2003) and Sloan (1996)
Change in Net Operating Asset (ΔNOA)	%ΔAssets/Average Assets	Fairfield et al. (2003)
Returns on Asset (ROA)	EBIT/Assets(t-1)	Chen et al. (2007)
Investment (I)	ΔPPT+ΔInventory/ Assets(t-1)	Chen et al., (2010) and Lyandres et al. (2008)
External Financing (EF)	ΔDebt+ΔEquity/Average Assets	Bradshaw et al. (2006)

3.1 Model Specification

To test for the proposed relationships, model is tested using software like e-views and excel. The following equations represent models for forward return, earnings yield, and forecast earnings growth:

$$R_{t+1} = \alpha + \delta_1 \frac{E_{it}}{P_{it}} + \delta_2 \frac{B_{it}}{P_{it}} + \delta_3 ACCR + \delta_4 \Delta NOA + \delta_5 ROA + \delta_6 I + \delta_7 EF + \varepsilon \ldots\ldots\ldots\ldots(1)$$

$$\frac{E_{t+1}}{P_{it}} = \alpha + \delta_1 \frac{E_{it}}{P_{it}} + \delta_2 \frac{B_{it}}{P_{it}} + \delta_3 ACCR + \delta_4 \Delta NOA + \delta_5 ROA + \delta_6 I + \delta_7 EF + \varepsilon \ldots\ldots\ldots\ldots\ldots(2)$$

$$\frac{\Delta E_{it+2}}{E_{it+1}} = \alpha + \delta_1 \frac{E_{it}}{P_{it}} + \delta_2 \frac{B_{it}}{P_{it}} + \delta_3 ACCR + \delta_4 \Delta NOA + \delta_5 ROA + \delta_6 I + \delta_7 EF + \varepsilon \ldots\ldots\ldots\ldots\ldots(3)$$

3.2 Statistical Techniques

We utilized panel data analysis techniques using OLS with fixed effects and random effects to find results. The study utilized the OLS regression model as it provides the BLUE estimates. First the data is tested for these assumptions and then the study utilized fixed effects for regression with basic forecasting variables and utilized a random effect model for regression with accounting anomalies based on langarage multiplier and hausman test for their suitability. Another reason for the selection of random effect for anomaly variables is that these variables among individual organizations are correlated across years of measurement and are not uniform across every

organization because they vary based on the accounting tradition of that organization for which random effect is more appropriate.

4. Data Analysis and Discussion

Before the final results, the descriptive statistics of the study are reported and later the results of hypothesis testing are discussed.

4.1 Descriptive Statistics

Table no. 4.1 displays the descriptive statistics of the data. The descriptive statistics comprised of mean, median, standard deviation, and range of all the variables incorporated in the study.

Table 4.1: Descriptive Statistics

	Mean	Median	S.D	Minimum	Maximum
R_{t+1}	0.057	0.042	0.134	-0.485	0.726
$\frac{\Delta E_{it+2}}{E_{it+1}}$	0.075	0.282	0.240	-0.557	0.586
$\frac{E_{t+1}}{P_{it}}$	0.108	0.044	0.359	-0.677	0.596
$\frac{E_{it}}{P_{it}}$	0.027	0.018	0.039	-0.080	0.400
$\frac{B_{it}}{P_{it}}$	0.044	0.070	0.426	-0.084	0.698
ACCR	0.072	0.026	0.227	-0.512	0.798
ROA	0.188	0.144	0.156	0.008	0.691
ΔNOA	0.070	0.025	0.223	-0.654	0.594
I	0.078	0.036	0.149	-0.622	0.793
EF	0.048	0.028	0.124	-0.114	0.492

4.2 Model 1: Forward Return

Table 4.2 shows the results for the forward return. Penman and Reggiani (2013) explained that the "forward return" of an organization can be predicted based on anomaly variables. Their results indicate a significant impact of the earning-to-price ratio (E/P) and book-to-price ratio (B/P) on future returns. The anomaly variable is also found to significantly forecast the future return of a stock. The current results are also aligned with the existing literature and indicate a significant impact of basic and anomaly variables in forecasting future realized returns. The variable of ROA explained the future return on the opposite side from the other anomaly variables.

All proxies such as (ΔNOA, ACCR, EF, and I) are significant but an increase in these variables is resulting in a decrease in the future return and can be used for the predictions of return. Indicating full support for our first hypothesis.

Table 4.2: Estimation for Forward Return

	Basic Forecasting Variables		Adding Anomaly Variables	
Variables	Coefficient	Prob	Coefficient	Prob
C	0.233	0.000	0.060	0.001
$\frac{E_{it}}{P_{it}}$	0.130	0.000	0.079	0.029
$\frac{B_{it}}{P_{it}}$	-0.033	0.018	0.008	0.031
ACCR			-0.032	0.026
ΔNOA			-0.016	0.019
ROA			0.017	0.091
I			-0.002	0.018
EF			-0.003	0.023
Adj. R^2	0.176		0.230	
P Value	0.001		0.001	

4.3 Model 2: Forward Earnings Yield

Table 4.3 show the results of basic and anomaly variables against forward earning yield and indicates that both basic variables i.e. book-to-price as well as earning to price predict future earnings as well. But the negative sign indicates that the low (high) book value of current earnings predicts higher (lower) subsequent earnings. This result backs up previous research findings of Ball (1978), Basu (1977), and Fama and French (2006). ACCR is an anomaly variable that calculates the accrual part of earnings as a percentage of total assets and forecasts future revenues. As a result, a negative coefficient represents that higher (lower) accrual forecasts lower (higher) upcoming earnings. ΔNOA & investment also show these methods. Return on assets takes the positive sign of coefficient in the prediction of forward earnings, so a higher return on assets is a good predictor of higher forward earnings and earnings yield. EF is a financing variable that is determined by the change in the financing of the firm and a negative sign indicates that by an increase in external financing of a firm the company's forward return and yield decrease. All these significant relations indicate full support for our second hypothesis.

Table 4.3: Estimation for Forward Earning Yield Regression.

	Basic Forecasting Variables		With Anomaly Variables	
Variables	Coefficient	Prob	Coefficient	Prob

C	0.453	0.000	0.114	.0012
$\frac{E_{it}}{P_{it}}$	0.342	0.000	0.194	0.002
$\frac{B_{it}}{P_{it}}$	-0.066	0.000	-0.016	0.006
ACCR			-0.015	0.000
ΔNOA			-0.063	0.008
ROA			0.084	0.000
I			-0.069	0.000
EF			-0.141	0.099
Adj. R^2	0.241		0.327	
P Value	0.000		0.000	

4.4 Model 3: Growth Forecast

Table 4.4 displays the results for the growth forecast of a firm and it is evident from the results that the relationship of basis variables and anomaly variables with growth forecast is different from the earning and earnings yield. There is a negative relationship between earning to price and growth in the current earnings forecast and it is reciprocal with the price-to-earnings ratio. Many previous studies have suggested that the P/E ratio is positive and a good predictor of growth (Penman & Reggiani, 2013) but our results indicate otherwise. One of the possible explanation can be that future growth cannot be measured by changes in current income or that a firm's current poor performance is an indication that there are higher chances of getting better growth and a good current performance decrease the probability of surpassing that growth rate and hence there exist a negative relationship between earning and growth of a company but the results of the book to price are aligned with the existing literature and results indicate that an increase in book to price ratio can lead to an increased growth rate of the firm. As far as the results of anomaly variables are concerned, accruals are found to predict future growth, Similarly, a change in net operating assets and investment is found to be a significant indicator of future growth and is negatively associated with growth, as predicted in the existing literature and as found against forwarding return and yield because it increases current earnings and decreases forward earnings in the future and predicts growth negatively. The anomaly variables of ROA and EF are found to be non-significant. One of the possible explanations can be the fact that both of these variables are not linked with the future growth of the firm, the source of financing and current return from projects doesn't determine the future growth of an organization. These mix results indicate a partial support for our last hypothesis.

Table 4.4: Estimation for Growth Forecast

	Basic Forecasting Variables	Adding Anomaly Variables

Variables	Coefficient	Prob	Coefficient	Prob
C	1.530	0.000	0.030	0.011
$\frac{E_{it}}{P_{it}}$	-0.744	0.000	-0.212	0.022
$\frac{B_{it}}{P_{it}}$	0.109	0.000	0.038	0.046
ACCR			-0.073	0.032
ΔNOA			-0.035	0.018
ROA			-0.015	0.113
I			-0.010	0.038
EF			-0.017	0.109
Adj. R^2	0.201		0.372	
P Value	0.000		0.000	

5. Conclusion

The current study empirically examines the relationship between accounting variables and the return of a business organization in Pakistan. The study tested a model unique to the context of the Pakistan stock market by including various accounting anomaly variables such as return on asset, change in net operating assets, accruals, investment, and external financing to predict stock return for non-financial Pakistani companies that are a part of with KSE-100 index. Data for these companies were taken from 2005 to 2020 by using the OLS cross-sectional regression analysis. This study is of the view that with the help of risk-related accounting variables, the required rate of return of a stock can be calculated by looking into accounting data and can be utilized for predicting earning variables. Based on the existing literature, the accounting anomalies variables are included in the model of this study. The study concluded that an organization's investment, asset growth, accruals, external financing, and net operating assets predict the earnings for forwarding growth and yield in the same way as they predict future returns. It is argued that there is a strong link between the forecast's return and rational forecasting, which is at the heart of rational pricing. This study does not necessarily mean that the anomaly variables explain the relationship between return and risk. However, adding more variables to the model indeed reduces the prediction of error and increases the power of forecasting for the correct future return. This study's model describes the relationship between return and risk by using multiple factors to show the prediction of forwarding returns. When this model used the anomaly variables in addition, the explanatory power to forecast the forward return was increased significantly. Bradshaw et al. (2006) concluded from past studies that investors do not study the market in detail when investing, they collect the wrong information and suffer a loss. Here the arbitrage process starts and the phenomenon of over/under-pricing manifests itself. One of the reasons for this is that investors

prefer their past choice and this under/over the pricing of stocks is found to be significantly linked with the accounting variables.

The model used in this study anticipates the future revenue and growth factors, as well as the return, to evaluate the effect of accounting variables on return calculation for rational decision-making. The following questions have to be answered to increase the expectation of earnings and whether the anomaly variables increase the earnings growth and future profit in the same way as they do for the prediction of return. The expected return is related to the P/E ratio and B/P ratio as many other studies suggest including Ball (1978) and Basu (1977). But for stocks, predicting return is more challenging due to the lack of fixed payment and absence of growth. So, this model applies certain characteristics of the Fama and French (1993) models for the factor of the book to price. This study is different from other studies that have been done on anomalies. As in previous studies, many researchers used investment for growth, but the current study focuses on earnings growth (Fama & French, 2006). Furthermore, other studies consider long-term growth for an infinite period, this study focuses on the short-term allocation of earnings and introduces expected earnings growth. So, the model of undertaken study additionally accounts for anomaly variables to enhance the explanatory power of the model to explain the relationship between return and risk.

5.1 Implications of the Study

Conclusively, it's not yet clear that either the relationship between return and risk is explained by traditional research using different accounting factors to eliminate market inefficiency or it is attributed to wrongly or less detailed evaluation of financial information while making investment decisions which makes stock prices deviate from fair value. But regardless of the underlying reasons for abnormal returns, the accounting factors play a vital role with good prediction power and are needed to utilize by investors to get optimal benefit from their portfolios. These factors help the investors to evaluate financial information carefully to predict the required return for the risk taken. If the securities are trading on their fair intrinsic value markets will perform efficiently but in the real world and especially in developing economies like Pakistan, the model of the current study will be of vital use to exploit any arbitrage opportunities that arise due to mispricing.

5.2 Limitations and Recommendations

The current study developed a framework based on various accounting variables for which theoretical justification is not yet established. Future studies can explore the underlying reasons for these linkages and further add other companies, sectors, periods, or economies to increase the generalizability of this model. Further anomaly variables may be identified and added to this model. Further other methadolgies can be applied to validate the results of the current study.

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