Sonia Saher

‘ACCRUAL ANOMALY: BALANCE SHEET VS. CASH FLOW STATEMENT MEASUREMENT OF ACCRUALS’

Master’s Thesis
Oulu Business School
2017
I explore the recent evidence on persistence of accrual anomaly, previously explored by Richard G. Sloan in 1996. Sloan (1996) highlights that the presence of cash flows statement data could improve the results to study accrual anomaly. Therefore, my motivation of the research is to explore accrual anomaly based on cash flows statement (CFS) method and balance sheet (BS) method for measuring accruals. The accounting academics report accruals as many different interpretations (such as the prospective growth of businesses and idiosyncratic risk) therefore, it may not be exploited under accruals hedge strategy. The data is inclusive of NYSE, AmEx, and NASDAQ listed firms, thereby to capture the complete US market from timeline 1990 to 2014. The analysis is based on Feltham & Ohson (1995) earnings persistence model and Mishkin (1983) test model for the market efficiency. I have found that earnings & earnings components are persistent in anticipating future earnings. I have also found that the market is inefficient in learning the persistence of earnings & its components. The market underestimates earnings persistence, overestimates persistence of accruals, and underestimates the persistence of cash flows. BS method and CFS method show the similar behavior of earnings and its components persistence and the market interpretation to them. However, CFS method measures the high persistence of cash flows. Moreover, accruals hedge returns are significant under BS method but insignificant under CFS method. Therefore, I conclude that accrual anomaly exists under BS method and disappears under CFS method. The market misinterpretation of earnings & its components persistence may not be associated with accruals anomaly.
DEDICATION

I dedicate my hard work to

My beloved parents (Gulzar Ahmed & Aisha Gulzar),

My Brothers (My Mentors for life) &

My sister (Shafaq Saher).

Thank you for your eternal love and faith in me, and encouraging me towards life’s happiness & success.
PREFACE

This thesis is written to earn my master’s degree title ‘business administration and economics’ with majors in financial and managerial accounting from the University of Oulu. I have devoted my efforts to write this master’s thesis since September 2016.

This thesis is an independent effort to complete my master’s degree and motivation to continue my work in the field of accounting as a doctoral student. I am thankful to Mr. Richard G. Sloan, whose article has become my foundation of first research-related academic work. This is my first thesis and I am already excited for my doctoral study research work.

I would like to pay a special gratitude to my supervisor, Ms. Anna Elsilä, for her precious time, superb guidance, and support for completing this thesis. With her help, I solved crucial problems arose during the thesis analysis and writing.

I am also grateful to all my colleagues, friends, and family who have been greatly involved in providing solution-oriented suggestions for the problems faced during thesis completion process.

I hope this thesis is an enjoyable read to you.

Sonia Saher

Oulu, April 2017
# TABLE OF CONTENT

1. **INTRODUCTION** .............................................................................................................. 1
  1.1 Background .................................................................................................................. 1
  1.2 Research questions ..................................................................................................... 4
  1.3 Research design .......................................................................................................... 5
  1.4 Scope and limitations ................................................................................................. 7

2. **LITERATURE REVIEW** ................................................................................................. 9
  2.1 Efficient Market Hypothesis (EMH) ......................................................................... 9
  2.2 Theoretical review of accrual anomaly ................................................................. 14
    2.2.1 Accruals and accrual accounting ........................................................................ 16
    2.2.2 Earnings and earnings components .................................................................. 20
  2.3 Related empirical studies ......................................................................................... 25
    2.3.1 Accrual anomaly persistence and its global presence ..................................... 25
    2.3.2 Earnings fixation and mispricing ....................................................................... 32
    2.3.3 Growth as explanation to accrual anomaly ..................................................... 34
    2.3.4 Conditional conservatism and accrual anomaly .............................................. 36
    2.3.5 Accrual anomaly as risk factor explanation ..................................................... 37
    2.3.6 Accrual anomaly as behavioral explanation ..................................................... 39
  2.4 Accrual anomaly v/s other accounting anomalies ................................................... 40
    2.4.1 Post Earning Announcement Drift (PEAD) ...................................................... 40
    2.4.2 Value/glamour anomaly .................................................................................... 42

3. **HYPOTHESES BUILDING** .......................................................................................... 44

4. **DATA METHODOLOGY** ............................................................................................. 46
  4.1 Data collection and manipulation ............................................................................ 46
  4.2 Variables measurement ............................................................................................ 47
5 EMPIRICAL ANALYSIS ........................................................................................................... 52
  5.1 Descriptive Statistics .................................................................................................. 52
  5.2 Hypothesis 1 methodology and results .................................................................... 59
  5.3 Hypothesis 2 methodology and results .................................................................... 64
6 CONCLUSION AND RECOMMENDATIONS ................................................................. 74
LIST OF TABLES

Table 1: Pearson–Spearman correlations coefficients for study variables........... 52

Table 2: Descriptive statistics with mean values (median) based on TACC rank for timeline 1962 to 1991................................................................. 54

Table 3: Descriptive statistics with mean values (median) based on TACC rank and ACC rank for 1990 to 2014............................................................... 57

Table 4: Earnings and its components persistence results from the fiscal year 1962 to 1991........................................................................................................... 61

Table 5: Current earnings and its components persistence results from fiscal year 1990 to 2014........................................................................... 63

Table 6: Market efficiency results for current earnings & its components from year 1962 to 1991........................................................................... 68

Table 7: Market efficiency results for current earnings & its components from the year 1990 to 2014................................................................. 70

Table 8: Hedging strategy performance under BS method and CFS method..... 72
LIST OF FIGURES

Figure 1: Forms of Market efficiency ................................................................. 13
Figure 2: Types of accruals ............................................................................ 19
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFRS</td>
<td>International Financial Reporting Standards</td>
</tr>
<tr>
<td>GAAP</td>
<td>General Adopted accounting principles</td>
</tr>
<tr>
<td>EMH</td>
<td>Efficient Market Hypothesis</td>
</tr>
<tr>
<td>NYSE</td>
<td>New York Stock Exchange</td>
</tr>
<tr>
<td>AMEX</td>
<td>American stock Exchange</td>
</tr>
<tr>
<td>NASDAQ</td>
<td>National Association of Securities Dealers Automated Quotations</td>
</tr>
<tr>
<td>FFH</td>
<td>Functional Fixation hypothesis</td>
</tr>
<tr>
<td>TACC</td>
<td>Accruals calculated under BS method</td>
</tr>
<tr>
<td>CFO</td>
<td>Cash Flows from Operations</td>
</tr>
<tr>
<td>ACC</td>
<td>Accruals calculated under CFS method</td>
</tr>
<tr>
<td>OCF</td>
<td>Cash Flow from operating activities abstracted from CFS</td>
</tr>
<tr>
<td>BHAR</td>
<td>Buy and Hold Abnormal Returns</td>
</tr>
<tr>
<td>DEP</td>
<td>Depreciation and Amortization</td>
</tr>
<tr>
<td>CA</td>
<td>Current assets</td>
</tr>
<tr>
<td>CL</td>
<td>Current liabilities</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

1.1 Background

Accrual anomaly is one of identified market anomalies in the field of accounting and finance. The market anomaly can be defined as an abnormal behavior in the market forecasts (like anticipating earnings, expected returns, stock prices movement etc.) estimated under a given set of publicly available information. Sloan (1996) observes the behavior of realized stock returns with non-cash portion of firm’s reported earnings, called accruals. He shows that when the level of accruals rises in the reported earnings, the stock realized returns start to decline. This inverse behavior was named as accrual anomaly. The study reports that the current earnings are likely to anticipate future earnings, therefore, the capital market fixates on reported earnings but interpret accruals higher than its predictive ability to anticipate future earnings. This cause market mispricing of accruals. Thus, this capital market’s misinterpretation of accruals information in earnings leads accrual anomaly.

The capital market is an infrastructure that works best in prejudice of investors by providing timely information to them efficiently. This timely availability of information is publicly accessible to everyone and reflected in market prices thus reduces the probability of market anomalies appearance. This concept is known as market efficiency when securities’ prices exhibit all the publicly available information and the information is accessible to everyone (Fama, 1970). If the market is efficient, then no one can beat market estimates on basis of holding additional information.

Analysts and investors play a vital role in interpreting publicly available information and could be a reason in misinterpreting the information to cause market inefficiency. They analyze market’s clues and signals based on their analytical skills and on their behavioral judgments (their style of investment) towards market’s performance. If their analysis and judgments hold some biases, the market is likely to suffer distortion in its efficient forecast of stock prices. Sloan (1996) reports that investors rely on reported earnings is a cause of market mispricing. Investors are inexperience in
processing earnings and earnings’ components information, which makes them fixated on reported earnings. Therefore, they misinterpret earnings and earnings components, the accruals and the cash flows, information to anticipate future performance of the stock and create market inefficiency.

The predictive ability of current earnings to anticipate future earnings is known as persistence of earnings. Earnings are broadly categorized (based on monetary and non-monetary portions) in accruals and cash flows components. These two components likely to show different levels of persistence in anticipating future earnings. Prior studies report that the market overestimates the persistence of accruals and underestimates the persistence of cash flows (Sloan, 1996; Collin & Hribar, 2000; Dechow et al 2008). This overestimating accruals and underestimating cash flows do not necessary mean that the capital market misinterprets the information. There are other explanations associated with this type of market behavior.

The contrary explanation to accrual anomaly is that investment decisions are usually made on investment risk premium and expected future returns which are considered as rigorous and arbitrary in nature. Investors make investment decisions based on their analytical skills, expertise and behavioral attributes to optimize investment returns (Pregler & Rasmussen, 2014). Likewise, Lev & Nissim (2006) contribute that the accrual anomaly persists over the period but also add that investors are aware of accrual information and have skills to exploit accrual anomaly. Accruals anomaly comes at cost of attracting high-security risk, high information and transaction cost, and low profits. Trading on highly risky securities with fewer returns and reducing the returns further by bearing information processing and transaction cost demotivate investors to trade on accruals information. Therefore, investors are less concern to accrual anomaly for their stocks trading strategy in the capital market (Lev & Nissim, 2006). If the cost of taking additional risk, and acquiring and processing information are higher than the profit gained by trading on accruals information, the investor will be reluctant to design their trading style on accrual information. Another explanation to accruals anomaly is a risk factor that is not directly associated with accruals but with the economic factors (such as high bankruptcy level in high accruals and stress period
of firms with low accruals) increase risk are indirectly attached to accruals (Khan, 2008). One more explanation to accruals overestimation is the prospective growth of firms associated with accruals. Accruals are attributed to firms’ prospective growth which are evaluated by investors as long-term profitable investments (Fairfield et al, 2003). Last explanation could be the measurement methodology for accruals also explain the accruals anomaly.

Accruals in prior studies have been measured through working capital method/ balance sheet method (hereafter, BS method) where the difference between the change in current assets and the change in current liabilities is treated as accruals. This approach has been used by Sloan (1996). However, the study mentioned that cash flows from operating activities reported under cash flow statement can enhance the precision in measuring accruals. Cash flow statement principle was enacted in 1987 and, therefore, no data was available for Sloan (1996).

Accrual anomaly is decisive when accruals mispricing produces significant accrual hedge returns. Accrual hedge returns are the abnormal returns earned by taking a long position in the lowest accruals portfolios and a short position in the highest accruals portfolio when the market mispricing of current earnings and its components arises. Accruals have the potential to misled investors and cause market mispricing because accruals constitute through accounting discretions, fundamental adjustments, and management best estimation policies permissible under generally accepted accounting principles (GAAP).

Therefore, the motivation of this research is to learn robust trend in current earnings and its components to forecast future performance and the market recent impression in interpreting them. Additionally, whether accruals measurement through cash flow statement method (hereafter CFS method) bring any extra explanation to accrual anomaly or not. Accounting academics have provided considerable evidence on publicly available financial accounting reports suffer accruals manipulation. However, these financial reports framework provides an enhanced perspective of business and its future performance. Especially income statement is one of the financial statements.
that provides crucial information in terms of reported earnings to investors for their fundamental analysis for investment decision making. CFS provides cash flows from operating activities information. Thus, when these operating cash flows subtracted from the operating earnings, would likely to provide precision in measuring accruals. Therefore, accrual information abstracted under CFS method and BS method would significantly provide value adding evidence on accrual anomaly.

The contribution of this thesis is constructed around accrual anomaly existence. The first contribution is this research provides robust evidence on accrual anomaly in the field of accounting with comparative results between BS method and CFS method to calculate accruals. The robust evidence includes the persistence of earnings, the persistence of earnings’ components, the market recent interpretation of earnings and earnings components, the riskiness of portfolios attached based on accrual portfolios, and accrual hedge strategy returns. The second contribution of this thesis is that it provides enhanced picture of accrual anomaly in the presence of AMEX, NYSE, and NASDAQ listed firms in the US market (NASDAQ was ignored in Sloan (1996) study).

1.2 Research questions

My objective for this study is to analyze recent understanding of investors about reported accounting earnings and earnings’ components to explore accrual anomaly. I explore whether stock market fully reflects earnings and earnings components information in stock prices for years 1990 – 2014 in the US market. Furthermore, I analyze how CFS method for accruals measurement can affect Sloan (1998) methodology.

My thesis investigates two research questions. The first question investigates the persistence of current earnings having explanatory power to future earnings and which component of earnings (accruals or cash flows) is more explanatory to anticipate future earnings under two methods for accruals measurement. This question verifies the persistence of earnings and earnings components are significant in anticipating future
earnings through earnings persistence model which is widely used in accounting research (Dechow & Schrand, 2004; Sloan, 1996; Richardson et al., 2005).

Question 1: Do current earnings and earnings’ components have predictive ability for explaining future earnings in the US market? If yes, then do the persistence of accrual component and the cash flow component have equal predictive ability to anticipate future earnings? How CFS method for accruals is impacting the persistence test?

The Second question investigates market efficiency in incorporating earnings and its components information in stock prices. This is to study market recent interpretation of earnings and earnings components. This question verifies whether the market interprets earnings and earnings’ components information differently or not. If the market interprets it differently, does accruals hedging strategy earn significant abnormal returns by trading on accrual information in the market or not? Sloan (1996) documents that the market estimates persistence of earnings correctly but amplifies persistence coefficient of the accrual components and lowers the persistence coefficient of the cash flow component. Therefore, by taking a long position in lowest accruals decile portfolio and a short position in highest accruals decile portfolio, investors can earn abnormal returns. This market efficiency interpretation has compared Sloan (1996) methodology with CFS method. Therefore, my second question will be:

Question 2: Does the US market correctly interpret the persistence of earnings and persistence earnings’ components? Do these market interpretations have different implication under CFS method?

1.3 Research design

My research design is based on empirical analysis. The sample consists of firms listed on New York stock exchange (NYSE), NYSE MKT LLC (formerly known as AMEX) and NASDAQ stock index. Data is based on firms’ annual financial data and stock market data from the timeline 1962 – 1991 for Sloan (1996) replications and 1990 –
2014 for finding recent accrual anomaly based on both BS and CFS methods for accruals. Data has been collected using CRSP sift application. Firm level financial data have been gathered through Compustat and securities returns are gathered from Center for Research in Security Prices (CRSP). Because cash flow statement took time for firms to fully adopt this accounting statement reporting efficiently after it had become mandatory in 1987, I start my thesis sample from the year 1990. I needed one year ahead returns to measure the market response, therefore, the data timeline ends at 2014.

The data for financial firms like banks, insurance and estate business and indemnity provider companies are usually reported in a different format of publicly available financial reports due to different types of assets they deal in. Therefore, not available for calculation of accruals in Compustat.

Accruals calculations are based on two types of methods to study accrual anomaly. The first method for accruals is BS method where the difference between changes in current assets excluding cash & cash equivalent and changes in current liability excluding short-term debts and tax payable is taken as accruals (used by Sloan, 1996). The second method is a typical method for measuring accruals through CFS. Under this method, the difference between operating income after depreciation and cash flows from operating activities (used by Hribar & Collins, 2002) is considered as a measurement of accruals. Sloan (1996) mentions that working capital approach could hinder operating accruals calculations and Hribar & Collins (2002) support Sloan (1996) by providing evidence on accruals discrepancies carry forward in working capital approach mainly when merger and acquisitions are performed. They mentioned that accruals discrepancies are carryforward mostly through inventories and trade receivables under BS method.

After accruals measurements, the study is carryforward with hypothesis testing. Earnings persistence is examined through ordinary least square (OLS) linear regression model used by Sloan (1996) in which subsequent year earnings are regressed on current earnings. Afterward, current earnings’ components (accruals and cash flows) are used as independent variables to test the persistence of earnings’ components. This persistency hypothesis is tested on Feltham & Ohlson (1995) model.
to identify the behavior of current earnings to forecast future earnings. In the later part of empirical analysis, Mishkin (1983) test model is used to observe market’s understanding of earnings and earnings’ components information. For comparison between the different methods in calculating accruals, I have run the above regressions twice, the first time on accruals calculated through BS method and the second time for accruals calculated through operating cash flows approach.

I have found some robust evidence of accrual anomaly persistence. The first finding concludes that persistence of current earnings is significant and, thus, have the explanatory power to anticipate future earnings. The second finding concludes that persistence of earnings’ components i.e. accruals and cash flows are significant, thus, have explanatory power in anticipating future earnings. However, accruals and cash flows project different level of persistence. Persistence of accruals is lower than the persistence of cash flows. This uneven persistence level exists under both BS method and CFS method of calculating accruals. However, operating activities cash flows under CFS method have higher persistence than operating cash flows under BS method. The third finding concludes that market is inefficient in anticipating future earnings and it underestimates the persistence of earnings. The fourth finding concludes that the market is also inefficient in anticipating persistence of earnings’ components. The market usually overestimates accruals and underestimates cash flows. This behavior is consistent with both CFS method and BS method. There are significant abnormal hedge returns under BS method, however, those abnormal returns are insignificant under CFS method.

1.4 **Scope and limitations**

This research will help investors to understand accruals and cash flows components’ characteristics in reported operating earnings. This research itself is an explanation of market prices efficiency to absorb the effect of accruals and cash flows components using financial statements information. Moreover, when fixations effect has been addressed, it provides insight of accounting reported numbers that will ultimately help investors for improved decision making at low cost. This research also sets the ground
for market efficiency study under operating cash flows adjustment to learn more about accruals’ anomalous behavior and increase knowledge for the readers who aimed to become business analysts.

Limitation of my study is twofold. The first one is related to data and the second one is technical complications. In collecting data, delisting returns have not been taken in examination like Sloan (1996) methodology due to data access limitation. NASDAQ stock market listed firms are also added to Sloan (1996) replication which exhibits insignificance of the market in learning earnings information. The second limitation is related to the market efficiency test and abnormal returns in research academics use as a proxy for to explore the market efficiency. However, the question of normality of returns and abnormal returns have a different perspective of explanations under different accounting research. Sloan (1996) replication results are also conducted after dealing with outliers which have also impacted the results providing more enhanced and different results over Sloan’s (1996) study.

Following this chapter, chapter 2 is a literature review. Literature review starts with the efficient market hypothesis (EMH). Next, it is followed by earnings and its components theoretical review explained through accrual anomaly. Afterward related empirical studies on accrual anomaly are discussed. Chapter 3 explains variables and data methodology. Chapter 4 explains descriptive and empirical analysis and results of the research. Chapter 5 concludes and summarizes the thesis.
2 LITERATURE REVIEW

2.1 Efficient Market Hypothesis (EMH)

The efficient market hypothesis is defined as the market knows all and, therefore, incorporates all relevant information in stock prices fairly. EMH is based on an efficient market where there are a large number of rational investors actively competing among themselves to maximize their profits by critically analyzing all publicly available information to anticipate future price (Fama, 1965; Fuller, 1998). In other words, EMH is nothing but a perfect market where there is no transaction cost, uniform expectations among investors, no entry barriers for investors, and investors are rational in enhancing their wealth. EMH also claims zero autocorrelation for stock returns that is stock returns itself assumed to have no relationship over a time series (Scott, 2015, 202). Fama et al (1969) support the above claim as they show that the market returns start to rise even before the happening of events. Increased volatility in reported earnings prior to the happening of event brings shaky confidence and volatility of its persistence. Therefore, investors put efforts to gain information to minimize the uncertainty. Fama et al (1969) conclude that market efficiently anticipates the happening of events through past signals thus optimize the changes in stock prices. EMH says that new information is readily available and markets are so quick to absorb the information that no thorough analysis by market players can beat the market.

The market efficiency has been challenged due to its impractical existence based on two extreme assumptions which are unlikely to existence in a real world. The first assumption is that the market efficiency supports fair game concept where there is no risk premium and all investors get the opportunity to earn equally without getting abnormal returns for taking the risk (Scott, 2014, 202; Fama, 1970). In reality, the risk is directly related to returns of securities i.e. investors yield higher returns for taking higher risk. The risk associated with securities is assumed to have evaluated by investors ex-ante and have a positive relationship with market returns (Fama & MacBeth, 1973). The second assumption of market efficiency claims that there is zero
correlation between market returns and news announcement (Scott, 2014, 203). In reality, the research found a correlation between news announcements (for example good news or bad news in earnings announcements) and abnormal returns. Ball & Brown (1968) report that stock market is more likely to respond toward earning announcements and adjust itself. Therefore it can be seen that markets are not efficient and suffer from anomalous parameters to produce abnormal returns.

Theoretically, there are scattered views on the market efficiency in absorbing information. One view suggests that the consensus of investors ‘analyses in evaluating the information is what reflected in the market prices. The consensus in investors’ decision making aggregates investors collective ability to define market prices and suppress individual forecast in anticipating stock performance. This consensus can beat individual forecast that arises in terms of noise (irrational trading style). Thus, we can say that the market incorporates information based on averages of individual analysis estimates (Scott, 2015, 124–126). Analysts conduct their thorough fundamental analysis on the basis of presently available public information (inclusive of past information) to anticipate market performance. However, analysts hold different mind-set in interpreting the information. They possess a different set of skills to process the same set of information. Different in a way that investors have different level experience in analyzing market signals or they may have a different set of style and expertise to approach the same set of market information (Scott, 2015, 192–193). This triggers biases and noises in interpreting the market information and keeps the market inefficient.

The contrary view proposed the market prices determination is a random process. Malkiel (2016, 24) explains that market performance is nothing but random walk where future performance is difficult to estimate on the basis of historic moments. The analysis done by experts and the decision made by naïve investors are equal. It is just selecting a random stock for investment decisions, therefore, very difficult for them to anticipate efficient prices. However, Tini (1990) finds that informed traders subside the discrepancies and noises, and push the market to incorporate all new information quickly and unbiasedly. Past information would be beneficial in the determination of
stock prices if everyone holds all related information equally and there is no information advantage. If all information is known today, only then EMH can exist which is least likely to happen (Malkiel, 2003). The addition to random walk comes seasonal random walk in the stock prices. Where random walk estimates are compared with values the same prior year time. This concept attached to the historic performance of stock. This means that market prices will be same as at the time in prior year, keeping every other thing constant. However, historic performance data can drag share price momentum that inflates market prices. Like for example, if past performance of the stock is showing increasing trend and the present situation is economically on bearish trend and vice versa, inefficiency of the market will likely to arise. Therefore, it might not be impossible to accurately anticipate future prices but too complicated to adjust analysis for anticipating stock prices by considering all publicly available information.

The biased analysis is incorporated because of two reasons that may cause the market to determine biased share prices. The first reason is when investors deliberately attempt to reach a consensus which ultimately steals the independency of the individual analysis, therefore, put biasness in the forecast. This biasness is also named as systematic biasness. The second reason is when all investors try to reach the forecast of big analyst house (Dow Jones industrial average, Yahoo finance, Google finance etc.) among them could bring out biasness in the analysis. This biasness is also termed as anchoring (Campbell & Sharpe, 2009). These biases involve at a different version of EMH.

There are three versions of EMH i.e. weak form EMH, semi-strong-form EMH, and strong-form EMH proposed in finance and accounting. These three versions of market efficiency are based on technical analysis and fundamental analysis in incorporating information in market prices. Technical analysis is designed to identify a set pattern of historic events’ information and exploit market by predicting future during the adjustment period of prices determination through demand and supply in trading of stocks. Longer the time is taken by demand and supply of stocks to define market prices, the better chances for technical analysis to exploit the market. Fundamental
analysis is designed to incorporate future potential and historic performance of firms efficiently. For example, earnings and dividend announcements, risk evaluation of the company, expected interest rate etc. Analysts project future cash flows to evaluate the present value of stock and compare it with current prevailing market prices to seek opportunities to exploit. Let’s discuss the three versions of EMH now.

First version is weak-form EMH evolves around historic data (historic prices, trade volume, short interest) which is readily available at low or no cost to the public, therefore, difficult to beat the market to earn abnormal returns (Bodie et al, 266, 2014). Weak-form of EMH argues that prevailing market prices absorb all the historic information related to securities and, therefore, worthy for forecasting future prices through trend analysis. In simple words, technical analysis cannot beat market under weak-form EMH. Weak-form EMH can be criticised on random walk theory which makes the market prices uncertain predict future returns (Dickinson & Muragu, 1994; Malkiel, 2016, 138–145) and the momentum effect, investors perceive the idea that if stock out-performed in past, it will continue to follow that trend in future causing mispricing and, eventually, creating opportunities for abnormal returns (Scott, 2015, 202; Latif et al, 2011). The technical analysts follow past information to anticipate future which is high unlikely to be precise for investment decisions, as history never repeats the same and bring anomalous behavior in their technical analysis, called technical anomaly (Kok et al, 2014).

The second version is semi-strong-form EMH evolves around company’s prospective growth (such as product line, management quality, balance sheet composition, patents, earnings forecast, accounting practices etc.) including past performances. In other words, semi-strong-form of EMH claims that current market prices absorb all the qualitative and quantitative information of past and future perspective of the business. Under this version of EMH, neither technical analysis nor fundamental analysis can beat the market. Critics can be generated like companies never disclose its competitive information to the public to avoid the risk of losing a competitive edge in market competition (Bodie et al, 2014, 266; Dickinson & Muragu, 1994). That means insider trading by insiders (such as managers, the board of directors etc.) can beat this version
of efficiency because of access to the private profile of companies which companies keep in secretive to sustain their competitive edge over hostile takeovers. Technical anomalies (discussed earlier) but also fundamental anomalies, anomalous behavior triggered in stock prices due to the discrepancies in fundamental analysis, have weakened this version of EMH (Elena-Dana & Loana-Cristina, 2013). Accounting anomalies are also a part of fundamental anomalies.

The third version is strong-form EMH is a highly idealistic concept of market efficiency which proclaims that market prices absorb all the materialistic information that is held within company (inside information) and all publicly available information. (Bodie et al, 2014, 265). In Strong-form EMH none (including insiders) can beat market forecast. However, this is totally hypothetical in the real world due to the uncertainty of unseen future.

Figure 1: Forms of Market efficiency

Above Fig. 1 summarises above discussion and is abstracted with help of information gathered from books ‘Essential of Investment’ by Bodie et al (2014, 265 – 266), ‘Financial accounting theory’ by Scott (2014, 141; 215), and Latif et al (2011). This
diagram will help us to understand the role of Accounting in EMH. In Figure 1, three circles represent forms of EMH (weak form, semi-strong form, and strong form). Arrows represent analyses that measure EMH (i.e. Technical analysis, fundamental analysis, and insider trading) in predicting future market prices. Under weak-form EMH, technical analysis cannot beat the market’s forecast. Under semi-strong EMH, both technical analysis and fundamental analysis can beat the market’s forecasts. Under strong-form EMH, none can beat the market’s forecasts. Three different levels of EMH show three different level of efficient pricing (inefficient pricing, efficient pricing, and fundamental values) respectively. Strong-form of EHM strives to achieve fundamental values of firms’ shares. Fundamental value is when there is no inside information and all information is public information for firm stock (Scott, 2014, 140).

Each level of EMH holds a missing set of information and to access that additional information additional cost is required. In practice, analysts usually perform cost v/s benefit analysis. If EMH is true, then this cost is expected to be zero and cost v/s benefits analysis will have no relevance. Traders will be reluctant to gather more information as there are no incentives of collecting information (Grossman, 1976). To minimize the cost of accessing information, accounting standard setters play a very important role. They are actively involved in providing access to materialistic information about business performance through financial statements to its users for analyzing fundamental values. Accounting standard setters, through GAAP, help businesses to produce high-quality financial statements that sketches firm’s true and fair financial position. However, GAAP follows accrual accounting principle under which many discrepancies create accrual anomalies that deteriorate the market efficiency as users will misinterpret the information provided in financial statements by companies. Thus, financial reports hold crucial information to cause market inefficiency.

2.2 Theoretical review of accrual anomaly

Research academics have found accrual anomaly, on of accounting anomaly, can distort EHM. Accrual anomaly likely to appear where the market fails to interpret
accruals information correctly. Accrual anomaly is a fundamental anomaly that exhibits an inverse relationship between accounting accruals and expected stock returns. Accrual anomaly originates due accruals, which is a part of financial statements companies report to the public about business conducts and performances on ongoing bases. Those financial reports are constituted either on actual cash flows-base criterion or on recognition based criterion. These financial reports are strictly scrutinized by security exchange commission through auditing process to enhance the quality of information presented to investors and gradually increase the values of financial reports. Investors’ high reliance on unqualified audit statement, a statement issued by auditors when companies financial reports are free from all materialistic misrepresentation and frauds, assist them to identifying the quality of financial statements. This intensive scrutiny of financial reports, however, based on accrual-based accounting which motivates companies to involve in accounting discretions (Penman, 2003).

Financial statements framework is designed to clearly present the articulation of financial reported numbers. However, this is not necessary that every investor understands or interprets the financial reports accurately. There are many constraints (such as time constraint, cost constraint, skills of processing constraint etc.) which make investors to consider accounting reported numbers at their face values. This concept is known as Functional Fixation Hypothesis (hereafter FFH). Investors analyze the circumstances with their past experiences, habits, and attitudes. They resist processing of reported accounting information, accounting policies and procedures, and their impact on their investment decision (Raihi-Belkaoui, 2009, 370–372). FFH assumes a strong relationship between accounting policies and procedures, and market prices. If investors understand accounting standards and the framework of financial reports, the precision in forecasting future cash flows in their analysis can be achieved (Hand, 1990). Hand (1990) finds empirical support for FFH that the market optimistically gives more weight to high accruals as firm’s better performance ongoing prospective and pessimistically process low accruals. However, this misinterpretation of accruals information is still an argument whether it is a market inefficiency or there
are other explanations to this interpretation of the market. Therefore, it is necessary to understand how accruals become the part of financial statements.

2.2.1 Accruals and accrual accounting

Accounting standards have efficiently been improving since last 50 years to achieve the truthful and transparent representation of general purpose financial reports. Accounting procedures have shown a drastic shift from historic costing and stewardship to improved decision-based representation of future cash flows based on fair value accounting (Hitz, 2005). Increased responsibility of disclosing materially relevant information and quarterly reporting of interim financial reports have a significant effect on market prices efficiency (Ball, 1992; Bernard & Thomas, 1989; Tini, 1990). More timely information can be accessible at cheap cost and this timely availability of accounting financial information enhance the decision-making of users (Barth et al, 2001). The accounting practices have shifted from cash-based accounting to accrual accounting. These accounting reporting changes have provided enhanced information to users but also encouraged companies to exercise manipulation in accounting policies to report business performance that in the best interest of investors and management. Accrual accounting sets the ground these discrepancies.

Accrual accounting can be defined as an accounting system used by firms to match firms’ economic benefits (revenues) with economic efforts (operating expenses) to produce true and fair operating performance (earnings). Revenues are economic benefits which are recorded when they are earned and can be measured reliably. Expenses are expired cost or utilized asset costs and recorded when benefits are consumed to earn those respective period revenues (Revsine et al, 2014, 57–59). Cash-based accounting suffers from time recognition issues because revenues and expenses are recorded on actual cash inflow and outflow rather than happening of business activities. Therefore, cash-based accounting inherited with high volatility in reporting earnings (earnings were high when net cash flows were positive and low when net cash flows were negative). Accrual accounting is designed to remove time recognition issues appeared in cash accounting and reduced the volatility in reporting earning
through GAAP matching principle and revenue recognition principles (Dechow, 1994).

Revenue-recognition principle and matching principle of accounting (recognition-matching principle) under GAAP are the fundamental principles of accrual accounting. Revenue-recognition principle defines as recording revenue when the business activity is performed and the revenue is reliably measurable in a fiscal period. While matching principle is to match respected expenditure occurred to conduct those business activities to earn revenue for the same fiscal year. These GAAP principles objectify and enhance the business performance reporting by providing enhanced relevance of business activities on the ongoing concern. Reporting under accrual accounting, revenues and expenses are irrespective of actual cash inflow and cash outflow but depends on happening of business activities. Recognition-matching principle, therefore, requires maintaining accrual accounts (for example trade receivables and allowance for bad-debts) Adjusting entries are made at every fiscal year end to adjust temporary timing recognition issues.

Adjusting entries in accrual accounting system enhance informativeness to deliver relevant information about going concern issues (risk of business to carry out business activities in foreseeable future) of businesses to the stakeholders. One problem with accrual accounting system is its flexibility which originates opportunities for management to manipulate financial reports (Revsine et al. 2012, 76–83). Let’s assume that management goal was to report €100 million profit to its shareholder, however, all the time management knows that 5% of the sales is not recoverable from the trade receivables. Analysts and investors neither have knowledge about company’s trade receivables nor do they actually know who is likely to default in paying back. Therefore, management, to win the promises they made to the shareholders, involve in manipulating accrual information. These estimations may not be intentional sometimes economic situation trigger management to change their judgments about accruals estimates. For example, a firm estimated that 95% of trade receivables will be recovered in following year and 5% provision for bad debts has been made under management best estimation. Next year, firms found that trades receivables recovery
is only 92% (situation 1) and 8% is bad debts or 97% (situation 2) of trades receivables is recovered. The firm initially recorded 5% of provision for no recovery, however, it is 8% in situation 1 and 3% in situation 2, and therefore, the firm must pass reversal entry to adjust for these accruals by recording 3% loss in situation 1 and 2% income in situation 2 in the year it becomes known. This flexibility of accruals can be risky because these accrual errors are needed to be adjusted through adjusting entries for matching revenue and expenses but these adjustments come at cost. Previous year errors in accruals are adjusted in current year earnings. Thus, riskiness is involved when accrual estimation error that arises on overestimation or underestimation of accruals and requires reversal adjustment in following years (Dechow & Dichev, 2002). These accruals are temporary adjustments and therefore may attract risks like fraud, management’s optimism, or misjudgments of management in anticipating the accuracy of accruals. When these estimates go wrong, they require adjusting entry and disclosure in financial reports, known as accrual estimation errors.

Firms follow two types of approaches under GAAP to adjust accrual errors. The first approach is retrospective approach under which company reports accounting changes for all the years on a consistent accounting basis (like for example, new accounting change has always exercised in accounting books since the incorporation of business) to enhance the comparability of change and its impact on the performance report. This approach is often used in adjusting accrual errors within an entity. However, retrospective approach reduces the integrity of reporting as investors decisions were relying on reported performance in the earlier fiscal periods. The second approach is called prospective approach under which no adjustment is made to record accounting changes in books for prior years and often use for changing in accounting estimates. New accounting changes are applied only to future periods and changes are reported under notes of financial reports as additional disclosure. This approach is used for change in accounting estimates (Revsine et al. 2012, 77–78). These approaches for handling accounting changes reforms accruals in the financial statements.

Based on accruals definition, accruals are categorized into four categories. These four categories are dependent on whether cash is received before disbursement or revenue
recognition or whether cash is delayed in paying disbursement or revenue recognitions to resolve the timing recognition problem of cash flows. These four categories are described in Figure 2. The left side of the figure represents profit and loss statements under revenues and expenditure whereas top scale represents balance sheet under assets and liabilities from accruals. These four categories are deferred revenues, accrued revenues, accrued expenditures and prepaid expenditures. Because these accruals are temporary adjustments, assets and liabilities are likely to adjust in following fiscal year.

**Figure 2: Types of accruals**

In accounting practices, increase in current assets, excluding cash and cash equivalent, promises future inflow of cash and decrease in current assets is a future outflow of cash. Similarly, for liability increase causes a future outflow of cash and decrease in current liabilities is a future inflow of cash. Thus, taking the difference of change in current assets and change in current liabilities is defined as total operating accruals within a fiscal year.

Benefits of accrual accounting have been proven from accounting research. Dechow (1994) documented that cash flows face the difficulty of time recognition problem and
have a lesser capability to predict firm’s performance, therefore, accrual accounting better captures the economic performance of firms than cash flow accounting. Dechow & Dichev (2002) mention that if accruals estimations are performed considerably and efficiently that reversal of estimations is expected to be smaller in the future fiscal years could result in better quality earnings for improved decision making. Estimation errors are those estimations that are required to reverse in next fiscal year. Accrual accounting helps in firms by reforming the bookkeeping system and supports its expenditures practices. Not neglecting the cash-based accounting, accrual accounting has also improved performance-oriented budgeting in public sector. Therefore, if all companies adopt hybrid accounting system (combination of cash-based accounting and accrual-based accounting) and avoid 100% accrual accounting basis, the companies can improve their capital budgeting (Diamond, 2002). Earnings are also lies under hybrid accounting system; therefore, it incorporates accruals.

2.2.2 Earnings and earnings components

Earnings are a measurement of firm performance calculated under difference of assets inflows in terms of revenue and gains/losses, directly or indirectly, attached to cash-to-cash cycle associated with the assets outflows in terms of expenses (SFAS No. 95, Para 36). In simple words earnings is a difference between revenues and expenses. Analysts and investors are more interested in reported earnings because it is a most fundamental parameter in defining the performance of a firm. Accounting earnings have the predictive ability to assess firms’ performance which is reflected in share price (Barth et al, 2001).

Accrual anomaly has been studied thoroughly by disaggregating earnings into its components to learn which component is contributing in accrual anomaly. Earnings are disaggregated into two main components i.e. accruals and cash flows. The accrual component of earnings is a non-cash component for which expected future cash inflow or outflow will take place in future but business activities conducted in a current fiscal year or cash flows occurred in past but revenue and expenditure have not recognized yet. The cash flow component of earnings is a component for which cash inflows and
outflows are taken place for conducting business activities in the same fiscal year. Components of earning can be defined by the following equation.

\[
\text{Operating Income} = \text{Operating Accruals} + \text{Operating Cash flows} \quad (1)
\]

Accrual accounting policies hinder the concept or real earnings. On one hand, accruals increase the credibility of earnings (Dechow & Dichev, 2002), but on the other hand its flexibility welcomes accounting discrepancies. “...At any time, a significant proportion of those cycles is normally incomplete and the amount of related revenues, expenses, gain, and losses vary in degree of uncertainty. Estimating those uncertain results of incomplete cycles is costly and involves risks, but the benefits of timely financial reporting based on sales or other more relevant events rather than on cash receipts or other less relevant events, outweigh those cost and risks” (SFAS No. 95, Para 36). Even though accrual enhances the credibility but its incorporate risk by overstating/understating accounting earnings.

Previously discussed, major risk attached to accruals are of misrepresentation and fraudulent activities involvement in the presence of accruals. Gong et al. (2009) report that accruals flexibility brings biased forecasts on the future performance of business operations of a company. Thus, high accruals lead to optimistic management biasness in forecasting earnings and vice versa. This explains positive relationship between earnings forecast errors and accruals. Earning management is not fraud but there is a very thin line between them. Management uses accruals as a tool to report numbers which look attractive to investors and creditors (Mantone, 2014). The best examples of fraudulent risk are the cases of Enron and Worldcom, where they managed to deceive investors by manipulations of accounting policies.

Earnings management is ultimate consequence of accruals. Earnings management can be defined as a process to report smoothed earnings and to make sure that earnings are
not too high or low as compare to prior financial year reported earnings. Earning management is usually done to improve losses and to create an optimistic opinion about company’s performance in eyes of investors. Not all accruals are subjected to earnings management. There are two types of accruals, discretionary accruals (non-obligatory such as estimates and provisions) and non-discretionary (obligatory accruals such as unpaid salaries, unpaid bills etc.). Usually, management practices earnings management through discretionary accruals. Roychowdhury (2006) reports findings of earnings management in sales discounts to boost revenue, over production for reporting less cost of goods sold, reduction in non-obligatory expenditures to report high operating profits. Investors perceived that management is being opportunistically handling abnormal accruals (Mitra & Cready, 2005). Cohen et al (2008) report that companies’ involvement in accrual management has been in control after passing of Sarbanes-Oxley Act (2002). Sarbanes-Oxley Act ultimately put the pressure on companies to report real earnings and do adjusting managements that benefits in increasing shareholders’ wealth. This puts emphasis on high accruals in defining the high quality of reported earnings.

Earnings quality can be defined as earnings which sketch accurate image of a company performance, predict the future performance of the company, and help investors in optimizing investing decisions for investors (Dechaw & Schrand, 2004). Dechaw (1994) shows that accruals are inversely related to the quality of earnings. Dechaw (1994) argues that the accrual component of earnings though reflects a better financial picture of companies but high accruals management can result in hindering the quality of reported earnings. In simple words, accruals bring opportunistic personal biasness from the management that shadows the predictability of current earnings to anticipate future earnings. If investors fail to understand the real earnings and misinterpret the persistence of earnings and earnings components to measure the future performance of business, market mispricing is likely to happen.

Persistence of earnings is achieved when earnings are of higher quality. Persistence of earnings can be defined as continuity and durability of current earnings in explaining future earnings and is usually measure by regressing current earnings with future
earnings (Atashband et al., 2014). Ball & Brown (1989) find evidence on earnings persistence. According to Ball & Brown (1989), good news generates good expectations and bad news generates negative expectations, therefore, they persist in respective directions. To support Balls & Brown (1989) findings on earnings persistence, Dechow & Schrand (2004) explore earnings by conducting comparative persistence test on cash flows statement components and income statement components. They argued that accruals are meant to provide enhanced predictability in earnings to forecast future performance. Dechow & Schrand (2004) found that income statement components have more persistence to explain future earnings than cash flow statement’s components. Reasoning the persistence results, Income statement components have high persistence and less volatility because accruals accounting enhances the relevancy of reported earnings. Hence better estimator for future earnings.

Accrual component of earnings are further disaggregated under working capital components to study which accrual factor is contributing more persistence in defining future earnings. Barth et al (2001) further dissect the accrual component of earnings for persistence check-up for anticipating future cash flows. Accruals measured under working capital method is composed of change in account receivable, change in inventories, change in account payables, depreciation and amortization, and other accruals. Barth et al (2001) argue that accrual’s components imprint different predictive ability for future earnings and can provide an enhanced understanding of earnings persistence to predict future performance. They report that change in account receivable, change in inventory, amortization, and depreciation have a positive relationship with future cash flows. Whereas, change in account payables has an inverse relationship with future cash flows. All components are found significant in predicting future cash flows. Further added, they also report that the disaggregation model is more explanatory for predictability of future performance when earnings are disaggregated into its components. Adding to this, Richardson et al (2005) study the reliance of accruals affecting persistence of earnings. They argued that less reliable accruals exhibit less persistence, therefore, more likely to cause assets mispricing. They defined accruals as the sum of current accruals, non-current accrual, and net
financial assets. They find that working capital accruals exhibit less reliability and less persistence, therefore, more likely the cause of asset mispricing.

Inventories and account receivable capture the biggest portion in the total working capital and contribute more in accrual anomaly. Thomas & Zhang (2002) explore the accruals’ components in relation with abnormal returns. They provide supportive evidence that asset mispricing is mostly due to inventories (account receivable follows the next rank). Inventory is positively related to a future earnings i.e. increase in inventory causes increase in future operating earnings and decrease in inventories causes decrease in operating earnings. Inventories held in storage is likely to be sold in future and ultimately increase the earnings. Inventory is contributing more to mispricing is because inventories absorb most of the accruals errors in terms of recognition under lower of cost or net reliable value principle. Management reports more ending inventories to report a higher level of income. Thomas & Zhang (2002) argue that the increase in current year closing inventory causes decrease in subsequent year closing inventory but operating earnings tends to increase in both years. However, the decrease in closing inventory causes an increase in subsequent year closing inventory but future earnings decrease in both years. The market is slower to respond in understanding these inventories reversing. That explains that account receivables and inventory are more volatile and less persistent to lower overall persistence of the accrual component of earnings.

Summarizing the above discussion, we developed the theoretical understanding of accrual anomaly. We discussed the EMH exists at three different levels and found to have anomalies in the technical analysis and fundamental analysis. We also know that the market absorbs information through consensus in the analysis of market players, however, there are biasness get involved. Accrual anomaly involves biasness in analyzing accounting reported earnings where investors fixate on earnings. After that, we discussed accrual anomaly and accruals construction process i.e. how accruals become the part of publicly available financial reports. Then the theoretical review provided the understanding of accrual accounting and its importance in articulating the accounting reported earnings. Accounting earnings are a composition of accruals and
We also learned that accruals and cash flows are broader components of earnings which established under accrual accounting system and can be disaggregated into further sub components. Finally, I established accruals causal relationship with earnings persistence, earnings quality, riskiness, fraud risk, and earnings management are learned. Next section explains accruals anomalies empirical findings.

2.3 Related empirical studies

After the discovery of accruals causing a disturbance in investors’ analysis, researchers have extensively studied accruals anomaly and reported results in understanding all the aspect of this anomaly. Related empirical studies are summarized as follows.

2.3.1 Accrual anomaly persistence and its global presence

Sloan (1996) is the first to identify accrual anomaly in accounting research academic. According to him, investors are misinterpreting earnings and earnings’ components because of earnings fixation. He argued that earnings hold crucial information that helps investors for their fundamental analysis. He found that current earnings and earnings’ components are explanatory to anticipate future earnings. However, there are many reluctances and biases from investor’s side to understand the composition of earnings. Earnings’ accrual component and earnings’ cash component show different persistence level in anticipating future earnings. Accruals are more persistent than cash flow component of earnings but market overestimates the persistence coefficient of accruals and underestimates the persistence coefficient of cash flows. Therefore, this misinterpretation of earnings’ components is more likely to cause market mispricing. Sloan (1996) argument is supportive of the inverse relationship between abnormal future returns and accruals. Sloan used AMEX/ NYSE indexes data to find accruals anomaly. Accruals are calculated through balance sheet approach due to unavailability of cash flows statement data for the study period. Future earnings are regressed to current earning for persistence check-up in Sloan (1996) study. Later, he decomposed current earnings into its accruals and cash flow components. For market efficiency test, Sloan (1996) uses Mishkin test (discussed in methodology chapter) for studying
market interpretations. He also reports that accruals are negatively correlated with the realized future returns and investors can exploit this opportunity through hedge fund accruals strategy i.e. taking a short position in high accruals portfolio securities and a long position in low accruals portfolio securities.

Sloan (1996) welcomes many researchers to explore accrual anomaly for its persistence and its interpretation under EMH. Zach (2003) studies accrual anomaly in association with other anomalies appeared during event time of businesses which is found to affect returns. His study measures accrual anomaly by combining book-to-market returns and size matched returns methodology for measuring returns. He finds that mergers and acquisitions (hereafter M&A) are associated with accrual anomaly. He reported that high accruals deciles portfolio holds most M&A events which overestimate accruals hedge returns. His finding over adopting different methodology in measuring returns are found to have the same effect on accrual returns. His sub-findings of hedge returns are appeared to have similar results for AMEX/NYSE listed firms sample and NASDAQ listed firms sample. However, hedge returns are appeared to be higher in NASDAQ listed firm sample while reporting book-to-market and size-matched returns.

Accrual anomaly persistence has sustained its importance in the field of accounting research. Sloan (1996) suggests that abnormal returns under accrual anomaly are likely to persist for three years, however, abnormal returns opportunity is stronger in the first year but eventually declines in subsequent years. Investors can earn hedge returns by taking a long position in low accruals securities and a short position in high accrual securities. Lev & Nissm (2006) support accruals anomaly persistence and report that accrual anomaly persists with the same magnitude as in the history and institutional holding do respond to accruals information. The response is, however, great in the first quarter of fiscal year and diminish over fiscal year closing. They report that the stock trading based on accrual information is lower in magnitude because investors find extreme accruals information is usually linked with small firm-size, low market prices, low book-to-market ratios, and that are unfavorable to trade on for institutions. One the other hand, substantial processing, and transaction costs make it complex for
individuals to trade on accrual information. Lev & Nissim (2006) highlight that investors are usually doing risk (in terms of litigations and liquidity) and reward (returns) analysis for trading on accrual information. However, Green et al (2011) argue that raw and risk-adjusted returns are not appearing to be positive to support the persistence of accrual anomaly because mispricing signals are reducing and hedge funds based accruals have readjusted accrual anomaly and reduced the extreme accruals over years.

The persistence of earnings’ components, accruals and cash flows components, contribute to accrual anomaly i.e. the market understanding these earnings components brings mispricing of securities. When a company reports a low level of accruals in its earnings is perceived as less accounting policies discrepancies and more of actual cash flows, ultimately, yield higher returns. Therefore, investors are expected to invest in firms with the low level of accruals. However, investors’ biases encourage investors give more weighting to accruals than cash flows while taking investment decisions (Sloan, 1996; Hirshleifer et al, 2012). Accruals have low persistence due to the estimation error of accruals that is like to reverse in future (Dechow & Dichev, 2002). Likewise, Richardson et al (2005), a continuation of Sloan (1996), find that accruals with less reliability build up less persistent earnings. According to Richardson et al. (2005), investors usually fail to employ persistence of reliable accruals which causes market mispricing. They support their argument by explaining that when less reliable information become part of financial statements, earnings persistence starts to decline due to the measurement of error of accruals.

Supporting the persistence of earnings, Dechow & Ge (2006) explore the additional explanation for earnings persistence under the presence of a high and low level of accruals. Dechow & Ge (2006) argues that earnings persistence is dependent on the level of accruals and also negative and positive directions of accruals. Firms are having large positive accruals when currents assets are larger than current liabilities whereas negative accruals are current liabilities are larger than current assets. Positive accruals bring increasing cash flows to the firm in future, therefore, accruals bring better persistence in earnings. However, negative accruals firms would be engaged in some
special item transactions such as adjusting impairment losses which are high unlikely to readjust positive cash flows, hence, bring the impact on earnings persistence. Dechow & Ge (2006) conclude that low accruals firms which are usually settling their assets impairment as a special item in other comprehensive income statement, therefore, have higher positive returns than other low accrual firms even though they have performed poorly in past.

Cash flow component of earnings show higher persistence than accrual components of earnings but the market underestimates cash flows persistence. Dechow et al (2008) study the higher persistence behavior of cash flows in showing higher persistence for anticipating future earnings. Dechow et al (2008) decompose the cash flow component of earnings into three components to study the higher persistence of cash flows. Those three components, changes in free cash flows, debt issuance, and equity issuance, are responsible for positive cash flows (cash inflows the company). Dechow et al (2008) argue that when the cash flow component of earnings is positive, it is consumed over three activities of business such as saving as a reserve, clearing the pending debts, and distributing it to shareholders as a dividend. On contrary, when this component of earnings is negative, the company generates the need of cash. That need of cash is fulfilled by reducing the cash reserves, taking more loans, and issuing new stocks. Dechow et al (2008) test if market understands this composition of the cash flow component of earnings or not. They find that investors fixation on earnings and picking stock market prices as a parameter for decision making is due to their expectation about firms to outflow cash in settling debts and disburse dividends. That is why they expect lower persistence in the cash flow component. They also report that cash distributed to settle debts has lower persistence. This study supports investors understanding of the unequal persistence behavior of earnings components. The finding on accrual anomaly persistence for Dechow et al (2008) is also inconsistent with mispricing. They report that accruals anomaly is a reasoning to the future growth of the business that it is meant to be reinvested in the business to support future operating activities. Managers are more likely to invest in accruals or retaining cash to the business seeking to support more opportunities for the business. The other major finding of this paper is that inflow of cash through lowering reserves or outsourcing the funding has more
persistance. The final finding of this paper was that free cash flows are not a basic parameter for evaluating firms’ value. They find the decline in future returns when the firm starts to retain cash within the firm. One reasoning could be that the firm is out of investing ideas for future investments.

Accrual anomaly was identified in the US market by Sloan in 1996 but research academics have also found its presence at the global level. Every country has their own infrastructure of financial reporting. Many countries incorporate legal issues for companies to report in their financial reporting along with the international accounting reporting. Therefore, the presence of accrual anomaly has two explanations. The first explanation is the difference legal and geographical settings in reporting financial statements across nations. That requirement pushes the organization to follow different approaches and accounting method resulting in a different level of accruals based on the geographical settings. The geographical setting incorporates legal and local accounting practices that organization must adopt to produce financial statements within that particular region. Hence, creating doubts on global existence accrual anomaly. The second explanation is that IFRS (International Financial Reporting Standards) and GAAP adopted countries are expected to have same accrual anomaly effect that arises under accrual accounting. GAAP is followed in the US while other countries are adopting IFRS.

Lafond (2005) provides evidence on global existence of accrual anomaly by conducting accrual anomaly study in 17 countries. According to Lafond (2005), accrual anomaly is also present in Non-US countries. Factors that defined to evaluate accrual anomaly is the level of managerial discretion (earnings smoothing), transparency of information, law regime, and institutional ownership of shares. He reports that accrual anomaly is unrelated to the code law (law that captures whole systems and therefore incorporates the rights of all stakeholders) v/s common law (the law that applied at micro level therefore incorporates the rights of stockholders mostly) countries or investors protection level. Lafond (2005) finds accrual mispricing in both high managerial discretion countries (UK, USA, Japan, Hong Kong, and Belgium) and least managerial discretionary country (Italy and Denmark) reported be insignificant.
Lafond (2005) also finds that non-transparent information does lower abnormal returns and vice versa and reports that there are countries which have reported to have significant abnormal returns in the high informative system. He finds an inverse relationship between high institutional holding and abnormal returns in some countries. However, findings have combined views. There are some countries that have low institutional holdings and high abnormal returns (that also conforms) but there are some countries which have high institutional holding and high abnormal returns.

Pincus et al (2007) also supported international evidence on accrual anomaly based on 20 countries by keeping institutional holdings and accountings system as an explanation for accrual anomaly. Adding to Lafond (2005), Pincus et al (2007) find that overall accrual anomaly is pervasive in nature and the market underestimates the accrual component of earnings and overestimates the cash flow component. Pincus et al (2007) find positive association of accrual anomalies with common law regime country, the level of permitted accrual accounting, versatile ownership structure, weak shareholders right, and level of insider trading. Their findings also support earnings management and limits to arbitrage explanation for accruals mispricing.

The first finding of Pincus et al (2007) provide the evidence on accrual anomaly is related to the legal regime and persist in common law countries. Reasoning to above is common law countries are for shareholders, while the coded law is for stakeholders. Many the merrier principle applies for the coded law countries. Many people have access to inside information, less likely it will report accrual anomaly. Due to the fact, the coded law countries provide better protection to stakeholders, therefore, companies are bound to produce high-quality earnings and high-quality accruals. Moreover, those countries which encourage accrual accounting system and low institutional holdings would likely to suffer from accrual anomaly. Pincus et al (2007) find that common law countries (Australia, Canada, UK, and the US) are more likely to overweight accruals. Their second finding is that accruals anomaly is a consequence of high restriction on insider trading that restricts accrual information to flow in the market. Thus, countries that reported to have a high level of restriction on inside trading suffers from accrual anomaly.
anomaly. Their third finding provides the support accrual anomaly by explaining that accrual accounting permits earnings smoothing, therefore, positively associated with accrual anomaly. High accruals accounting countries report a high level of earnings management and, thus leads to accruals mispricing. Their fourth finding is countries with high protection to shareholders’ interest tend to find fewer opportunities in accounting discretions, thus, companies produce high value-relevant earnings in the best interest of shareholders. Their sixth finding is related to equity market performance within countries. They argue that countries, where earnings are reported to influence market prices, are high likely to be involved in accruals discretionary. Their last finding is that accrual anomaly is inversely related to the dispersed ownership of shareholders. One person holding a bigger portion of shares of a company is treated as insiders and assume to possess greater knowledge over company’s reported earnings. Similarly, a large number of owners tend to fixate more on earnings, therefore, earnings’ accruals discretion is likely to cause market mispricing. Concluding Pincus et al (2007), accrual anomaly exists at a global level. However, the accrual accounting practices, legal regime, institutional holdings, inside trading restriction and earnings smoothing have affected accruals anomaly in different institutional settings.

There is some research evidence that accrual anomaly has decline over the period. Green et al (2009) study the accrual anomaly persistence to check for the recent existence of accrual anomaly. They report that accrual anomaly is no longer persist as abnormal returns start to decline and accrual hedge returns are no longer positive. Extensive trading in hedge funds in extreme decile is a cause of decline in accrual anomaly. Dechow et al (2011) support the decline accrual anomaly over the period. According to Dechow et al (2011), accruals anomaly holds other strong explanations such as the risk of securities, issues in designing accruals anomaly research framework and measurement criteria, and firms’ potential growth supported by accrual information. They report that rational pricing of securities and flaws in research designs are ongoing questions of accrual anomaly but growth factor is the key explanation for firms involving in accruals accounting instead of calling it accrual anomaly. Mohanram (2014) also supports the argument that accrual anomaly has
declined over time because of increased importance of cash flow analysis. He explores the supportive arguments to explain that decline. He explains that accruals are inversely proportional to future returns but this inversely relationship is weaker in the presence of future cash flow analysis. He also explained that high accruals quality and reduced management discretions, improved accounting standards restructuring, and increased importance of cash-based analysis are the reasons behind the diminishing of accruals anomaly. Mohanran (2014) reported that firms with future cash flow analysis tend to show a weaker relationship between accruals and future returns.

2.3.2 Earning fixation and mispricing

Earnings fixation is beneficial for investors because it saves the cost of processing information. Totally relying on that reported earnings could lead to failure of optimal decision-making for the investors because those reported earnings absorbs management manipulation. Under fixation hypothesis, decision makers are reluctant to alter their own process of analysis with responding to the changes in accounting procedures that input critical data for decision-making through financial reports (Riahi-Belkaoui, 2002, 370–373). Sloan (1996) reasons accruals mispricing as investors’ fixation on earnings that ultimately leads to market pricing because investors are usually do not understand the composition of earnings. Hence, they misanalyse the accrual and cash flow components of earnings to cause market mispricing. Sloan (1996) fixation reasoning was further explored by Collin & Hribar (2000) on quarterly earnings announcements. They reported that earnings fixation leads to asset mispricing not only for yearly earnings announcement but also for quarterly data. The market also overreacts on quarterly announced earnings’ accrual component. Investors’ opinion is fixated because of their own personal capabilities to process earnings information. For example, change in depreciation process could be understood by the person who has profound knowledge about accounting financial statements and can realize how can that effect on the decision-making process while others will be contemplating past performance in stock prices.
Based on above argument, Shi & Zhang (2012) explores functional fixation hypothesis (FFH). They argue that fixation of earnings is due to four reasons. The first reason is the difference of persistence of earning components explained under Sloan (1996) and Bradshaw et al (2001). The second reason is accruals attributed to potential growth plans in the eyes of investors. However, accruals are negatively associated with the future growth of business (Fairfield et al, 2003). The third reason is the risk factors attached to accruals where riskiness where investors try to evaluate through q ratio (total market value of outstanding shares to the replacement cost of firm’s asset), therefore, the company adjusted investments relating it to changes in discount rate. The final reason is the missing close substitute securities for high accruals portfolios to arbitrage away completely explained in Mashruwala et al (2006).

Shi & Zhang (2012) expect that fixation on earnings by an investor would likely to increase the responsiveness of earnings announcements and prices would move upward. Thus, earnings’ components will continue to produce uneven persistence. Their hypothesis claims that hedge returns will be higher for firms with high earnings response coefficient and high cash flow component persistence. When this high responsiveness in earnings and high persistence of cash flows are combined, the portfolio will likely to produce higher hedge returns than those hedge returns produced separately under earnings responsiveness and cash flows persistence. Their findings support fixation hypothesis their four reasons explained earlier. They explained that persistence reason and risk reason are inter-related as extreme accruals produce risky portfolios and uneven persistence in earnings components. They find no significance for growth reason to fixating on earnings even after controlling the unsystematic risk (idiosyncratic risk) and transaction costs. Their findings also produce weak significance of growth as fixation excuse for accrual anomaly. Shi & Zhang (2012) conclude that uneven persistence is an explanation to market fixation. They also reported that stock prices are responsive to earning announcement and uneven persistence of earnings components. Thus, investors can exploit accrual anomaly by paying attention to those stocks that are high responsive to earnings announcements. They report that high earning response coefficient firms exploit accrual anomaly and thus yield high hedge returns.
Earnings fixation brings greater responsibility on auditor and analyst to inform investors about the earnings composition. Bradshaw et al. (2001) explore whether earnings fixation has been understood by the analysts and auditors or not. If yes, then do they inform investors? To provide evidence on that, Bradshaw et al. (2001) check the accruals and earnings persistence under the knowledge of auditors and analysts. Bradshaw et al. (2001) find that analysts are usually ignorant of low persistence earnings and give more weight to accruals in forecasting future earnings (prospective growth reason or no benefits earns by trading on accrual information (Lev & Nissim, 2006) reason) with their optimistic biases. Even though earnings announcement makes them revise the analysis but still holds optimistic biases. On the other side, if accruals are not reliable that would overstate the earnings and auditors are more likely to inform the management or issue qualified report, however, Bradshaw et al. (2001) do not find any significant evidence where auditor issued qualified reports on basis of high accruals.

2.3.3 Growth as explanation to accruals anomaly

Accruals are also considered as the prospective growth of businesses instead of calling it a market mispricing. Accruals are presumed to act as growth in long run. They are presumed to be a temporary adjustment in books of accounts in short run. It is possible that the temporary change in assets in terms of accruals is representing an adjustment to company’s growth strategies. Fairfield et al. (2003) provide evidence on growth explanation of accrual anomaly.

Fairfield et al. (2003) investigate that different persistence of accruals and cash flows components of earnings are not just because of market misunderstood the level of persistence expectations but due to growth explanation. Fairfield et al. (2003) construct hypothesis as the negative association of accruals with abnormal returns is attributed with both accruals and growth in net operating assets. The argument is based on the correlation of accruals with total assets expected to be higher than the correlation of accruals with operating cash flows. They argued that earnings’ components unequal persistence, i.e. lower persistence of accruals and higher persistence of cash flows, is
resultant of their correlation when variables are deflated with total average assets. In simple words, together a dollar increase accruals and a dollar increase cash flow will contribute in an increase of asset but their ratio to total assets will be generated impact which is lower than a dollar respectively.

Fairfield et al (2003) proxy accruals calculated through working capital approach as the interpretation of growth which similar to Sloan (1996) approach to measure accruals. However, it has also been considered as a current portion of future growth, which is subsequent year earnings deflated with total current assets. They comment that researchers usually misunderstand return on assets with profitability. When earnings are deflated with average total assets it becomes a return on assets. They find that association of future abnormal returns with returns on assets is not the same as association future abnormal returns with operating earnings. Finally, controlling long-term net operating assets brought persistence difference between the accruals and the cash flows closed. Therefore, concluding that the market understands earnings and its components persistence. Fairfield et al (2003) report that different persistence of accruals and cash components of earnings is due to growth anomaly where the market fails to imply this inverse relationship of current earnings with future growth in net operating assets hence misprice the growth in net operating profits. They find that the inverse relationship between accruals and subsequent year future earnings is lower than the inverse relationship between cash flows and subsequent future earnings. They also find the inverse relationship between long-term net operating assets (long-term growth) and subsequent year earnings (short-term growth).

On contrary, Shon & Zhou (2010) find no evidence on accruals anomaly as a representation of asset growth anomaly. They based their argument on the negative association of short-terms earnings with investment. They expected that accruals anomaly and growth base explanations are two separate concepts. They consider a change in working capital as an explanation to short term-growth, the net change in operating assets subtracted abnormal accruals to defined long-term growth. Shon & Zhou (2010) finds that accruals anomaly can yield future abnormal returns and confirms Sloan (1996) study results. Their study says that significance of abnormal
returns is due to long-term or short-term growth of firms. Even after controlling growth factor, accruals anomaly produced significant abnormal returns under hedge strategy.

2.3.4 Conditional conservatism and accrual anomaly

Accrual anomaly is also studied under the light of accounting conservatism. Accounting conservatism can be defined as timely reporting of all losses arises during business activities and withholding profits information until they are put through intensive scrutiny for verification. This reporting of timely loss recognition criteria is constructed under accounting activities like timely writing off the expired assets, impairing goodwill losses, inventories reporting under lower of cost or market values criteria etc. Conservatism provided a contrary explanation for accrual anomaly also negating fixation hypothesis as reasoning to the market anomaly. Accruals play a vital role in accounting conservatism to report the timely losses.

Konstantinidi et al (2016) report that accrual anomaly persists strongly in loss years of firms. They reported that accruals and cash flows components of earnings follow different analytical processing by investors, therefore, investors do not fixate on earnings. When market efficiency test was run separately on firms with loss years and firms with profit years, Konstantinidi et al (2016) report that markets do underestimate accruals and overestimate cash flows but the fixations hypothesis is failed due to conservatism in accruals. Their study adds a dummy variable in the Mishkin (1983) test model to observe the accrual anomaly. They report that the negative accruals and negative cash flows have wider differences in uneven persistence. However, investors understand the information of lower persistence of accruals during loss time. Konstantinidi et al (2016) report that accounting conservatism is well understood by investors, therefore, they understand the persistence of accruals under timely reported loss situation thus fixation on hypothesis is failed to defined accruals as an anomaly. Later, Patatoukas (2016) study conditional conservatism under accrual anomaly. According to Patatoukas (2016), conditional conservatism is a cause of low persistence in earnings. In the presence of accounting conservatism, markets are supposed to
overestimate the accruals, if markets are fixating on reported earnings. Therefore, market mispricing is expected to be higher in the year of loss.

2.3.5 Accrual anomaly as risk factor explanation

Sloan (1996) reports that the extreme accruals portfolios have relatively higher market betas as compare to other decile portfolios based on accrual rankings. Sloan (1996) reported that extreme deciles are exhibiting riskier securities, which can be arbitrage away through accrual hedge strategy. Hedge returns strategy can yield investors abnormal returns. But is that risk factor attached to the portfolio is a systematic risk or accruals are the explanation to high risk incorporated in extreme accrual portfolios?

The answer to the above argument is the idiosyncratic risk factor associated with the stock price individually. Idiosyncratic is also term as an unsystematic risk that not truly associated with the whole portfolio but with each individual security in the respective portfolio. This risk is not correlated with market risk, therefore, can be mitigated with diversification strategy (don’t put all eggs in one basket- don’t invest in only one type of portfolio) in accrual portfolio. Investors, through their diversification strategy, try to minimize this idiosyncratic risk. Mashruwala et al (2006) investigate about the inability of accruals to arbitrage away. They provide the explanation of fear of investors to completely hedge accrual anomaly is due to absent of any close substitute of security or the transaction cost involvement in hedging the accrual anomaly. A high correlation is required between high accruals securities and substituting high accruals securities. Mashruwala et al (2006) find that idiosyncratic risk is relatively twice higher on extreme decile accrual portfolios then other decile accruals portfolios concluding missing of a close substitute securities for those extreme portfolios. They also report that only 50% of risk can be arbitrage away by active trading strategy when there is no close substitute for securities is found. That gains importance of transaction cost of security. The transaction cost for those high idiosyncratic risk securities is also higher for trading. Therefore, restricting investors to completely arbitrage away high idiosyncratic risk associated with high accruals securities.
In supporting the risk-based explanation for accruals, Khan (2008) explores the evidence for accruals anomaly as a risk-based interpretation that is unrelated to accruals. Khan (2008) argues that high and low average returns in extreme accruals portfolios are producing accruals anomaly due to risk factors which are directly unrelated to accruals but correlated with accruals. Khan (2008) uses 4 factors CAPM interpretation for risk-adjusted returns associated with accruals which are based on risk factors attached to financial distress in low accruals firms and high growth in high accrual firms. He highlights that accruals extreme deciles have reported to have financial distress in lowest accrual decile portfolio and high bankruptcy in highest accruals decile portfolio. In simple words, accruals itself is not a risk but have the ability to attract many inherent explanations to attract risks such as bankruptcy, and growth opportunities. Khan (2008) four factors CAPM include is based on reasoning that expected returns are positively correlated to expected dividend on the market portfolio, news announcement associated with the portfolio, small-minus-big (SMB), and High-minus-Low (HML). This model answer the argument that abnormal returns are influenced by either the news about the future cash flows (expected future dividends) and news that influence expected returns (portfolio related news announcements). He finds that high and low average abnormal returns on accruals lowest and highest portfolios are similar as high and low average abnormal returns under those portfolios derived under four factor CAPM. However, 4-factor model is providing evidence as collective risk-factors. Khan (2008) finds that market does understand accruals but average returns are actually an interpretation of risk-based factors which are driven from accruals.

Adding evidence for accruals to be a risk-based expiation, Hirshleifer et al (2012) also investigate if accrual anomaly is mispricing or a risk. According to Hirshleifer et al (2012), if firms are engaged in boosting up reported earnings through operating accruals, firms will tend to fall into the trap of economic shock and produce a different set of risks. Thus, accrual anomaly cannot be the only reason to produce an inverse relationship of accruals with future returns. They added accrual factor-mimicking portfolio, formed under Sloan (1996) hedge accrual portfolio strategy in Fama & French (1993) three-factor model. They find that this accrual factor-mimicking
portfolio an important factor in predicting future returns. Accrual Factor-mimicking is reported to represent 40% of the tangency of the portfolio, where Sharpe Ratio (returns per unit risk) is maximum. Hirshleifer et al (2012) find that accrual factor-mimicking portfolio is correlated to returns under the three-factor model. However, to explain that correlation of accrual factor-mimicking portfolio is associated with risk or security mispricing, Hirshleifer et al (2012) rearrange the accrual factor-mimicking portfolio to test if its high risk is associated with returns. The paper argued that if risk and accruals are found to have high correlation then accrual anomaly contributes in market mispricing. They find no correlation between risk and accruals reporting that accrual anomaly is contributing market mispricing but a risk factor. That means high risk associated with accrual mimicking portfolio is not contributing to higher future returns. Thus, factor concluded accrual anomaly as asset mispricing than accruals anomaly as explanatory to risk.

2.3.6 Accrual anomaly as behavioral explanation

Anomalies have also boosted the study behavioral finance and accounting which explains the reasoning of anomalous trending in the market. These behavioral attributes are the reasoning of the market mispricing and could also be the interpretation for the market understanding of earnings and earnings’ components. The First behavioral explanation of anomalies is limited attention & Biases. It depicts that individual makes decisions by reviewing a limited amount of information due to short time span or inability to crave more relevant information. Investors here pay more attention to readily available public information for their analysis (Scott, 2014, 191–192). Acquiring additional information welcomes additional cost and to avoid this additional cost, investors just process the information that is accessible. Thus, fixation on earnings becomes accruals mispricing. They either anchor on some initial arbitrary baseline to process their subsequent analysis and overestimate, underestimate or could not understand the process of reported inputs (Barberis & Thaler 2003) or there is motivated reasoning where investors are more likely to intake information at its face values when information matches with their analysis and are more sceptical over information that varies (Scott, 2014, 191–192). Good news is more likely to be
consistent in nature whereas bad news will be perceived as more skeptical (Hutton et al, 2003). This motivation reasoning can interrupt investors’ analysis and create myopic judgments in interpreting earnings and earnings’ components.

The second behavioral reasoning is self-attribution bias. Self-attribution bias is when an analyst is perceiving that effectiveness of decision-making is due to the professional capabilities that he or she owns and the opposite situation where external factors not in his or her control could distort the analysis (Scott, 2014, 192; Billett & Qian, 2008). This attribute welcomes functional analysis anomaly and cause inefficiency in the market. This also includes investor overconfidence. Investors either set very narrow window for confidence interval associated with their own estimates of prices or they are poorly trained to estimate probabilities of events occurrence (Barberis & Thaler 2003). Investors are also found to have a conservative attitude towards reported earnings and they understate the reported earnings (Pincus et al, 2007; Dechow et al, 2008).

2.4 Accrual anomaly v/s other accounting anomalies

Other accounting anomalies explained in academics are PEAD and value/ glamour anomaly (Francis et al., 2003; Richardson et al., 2010; Lewellen, 2010). These two anomalies are totally different than accrual anomaly.

2.4.1 Post Earning Announcement Drift (PEAD)

PEAD explains that firms with good news (improved quarterly earnings) tend to show increasing abnormal returns whereas firms bad news (reduced quarterly earnings) tend to show decreasing abnormal returns after earning announcements (Scott, 2014, 202–204). Provided the fact that investors fixate on accounting earnings for their investment decisions, Ball & Brown (1968) explore earnings to be a supportive measurement tool for stock price forecasting. Ball & Brown (1968) argue that EMH helps market to adjust to new information and eventually eliminates the probability of abnormal returns. They conclude that market anticipates good news and bad news, however,
takes the time to incorporate accounting information, therefore, generate some abnormal returns for a time.

Later, Bernard & Thomas (1989) explain that PEAD holds two views on its existence. The first view is that these abnormal returns are temporary and the market delay in responding towards the new set of information is because of the inability of the investors to process information or the cost exceeds gains in taking advantage of the new information. The second view is the inefficiency of Capital Asset Pricing Model (CAPM), a common tool to measure assets pricing, to visualized the security risk becomes a part of the market price and produces abnormal returns. CAPM assumes that investors are informed about all unknown parameters and stock systematic risk (Beta), all investors are rational in decision making, and markets are perfectly liquid to speed up buying and selling process of securities (Scott, 2014, 197–200; Ball & Brown, 1968). Bernard & Thomas (1989) conclude that the market is slower to respond to accounting information due to CAPM inefficiency to measure the systematic risk, i.e. ignorance of other risk-related factors, and to incorporate transactions cost and, therefore, PEAD exist after earnings announcement. Rejecting EMH, Ball (1992) studies earnings–price anomaly and report that earnings information contributes in predicting the future abnormal returns. According to Ball (1992), earnings–price anomaly exists because of the inefficiency of the capital market in absorbing information i.e. the market inefficiency or biasness and inadequate methodology of researchers in calculating the rate of returns or the abnormal rate of returns. Firm size is a better proxy to calculate the expected rate of returns than considering market beta. Supporting evidence on PEAD study, Bird et al., (2014) report that market sentiments on announcement drift are based on investors reaction to earnings announcement but investors usually face complications in interpreting firms’ worth by those announcements and, therefore, they react more to negative news more. Hung et al. (2015) provided the evidence over PEAD presence in the global market and conclude that PEAD started to decline where there are sophisticated investors, less concurrent earnings announcement, and lower transaction cost and arbitrage cost. Information shocks thus increase PEAD.
Collins & Hribar (2000) investigates whether accrual anomaly is different from earnings anomaly. Earnings anomaly also termed as post earnings announcement drift (PEAD) where stock continue to produce abnormal returns even after earnings announcement for a time period and the market needs time to incorporate earnings information after its announcement. Collin & Hribar (2000) examine accrual anomaly for quarterly data and contribute persistence accrual anomaly results reported under Sloan (1996) results. Collin & Hribar (2000) find that investors overestimate the persistence of accrual component in all quarterly reported earnings. Collin & Hribar (2000) also find that earnings anomaly is recorded under PEAD is separately producing abnormal returns. They find that accrual anomaly and earnings anomaly produces abnormal returns and cause market mispricing. The hedge strategy, therefore, active in both anomalies and together produce higher returns.

2.4.2 Value/glamour anomaly

Value-glamour anomaly is based on book values reported under financial reports are compared to market prices ratios. If book values-to-market ratios are high, firm’s market value is cheaper than the value of the company reported in its books. Similarly, if the ratio values are low, then firm’s is under-reporting its worth when its market value is high. Under this anomaly, unfavorable stocks are often under-priced because of pessimistic expectation of investors (value anomaly) and highly attractive stocks are often intertwined with investors biased expectations (glamour anomaly). Desai et al (2003) argue that investors based their opinion on past performance of the stock, therefore, when the stock changes its book-to-price ratio trend, it creates abnormal returns. They claim that value/ glamour anomaly is linked to accruals anomaly. The argument is based on the explanation that accruals discretion makes stock looks good to investors, high sales and accruals show a positive correlation, both anomalies (accrual and value/glamour anomalies) like to appear when accruals reversal happens or book-to-market ratios reverse in future, and both anomalies react to earnings announcements. Desai et al (2003) find that accrual abnormal returns continue to persist after controlling value/ glamour proxies and vice versa. Hence, concluded that both anomalies are different from each other.
Accounting policies, the difference of legalities, taxation context, and different industrial setup can be the given reason of how firms get high or low values to their book-to-market ratios. However, investors’ behaviouristic factors, e.g. value/ glamor investors have the attitude of over-confident and too much optimism which dragged their investment decisions to overreact to good news. Whereas, pessimistic investors will under-react to bad news, creates that anomalies (Duong et al, 2014). A multinational study conducted in eight countries by The Brandes institute (2012) to provide global evidence on value/ glamour anomaly. They found their result consistent around the eight countries, valuation metrics, and market capitalization. They documented that overall value premium is stronger than glamour premium in long run. However, in short run glamour stock has the ability to beat value stock.

Summarizing this chapter, market efficiency has been a consistent dilemma under field of accounting and finance. EMH exists at three different level where technical anomaly, fundamental anomaly, and insiders trading distort the efficiency of the market. Accrual anomaly is a type of fundamental anomaly that causes market mispricing. Accruals are the consequence of accrual accounting and can influence earnings quality and its persistence which may misinterpreted by investors as an outcome on fixation on reported earnings. Accruals anomaly is considered as an explanation of earnings fixation for market mispricing. However, there are other interpretation of accruals such as risk factor, growth, and behavioral biases. Not to be mistaken with PEAD and value/glamour anomalies, accrual anomaly has found its global existence, however, recent studies reported a decline in accruals anomaly. Coming chapter describes the construction of hypothesis.
3 HYPOTHESES BUILDING

Quickly recalling, my thesis research questions addresses accrual anomaly existence and do investors understands this anomaly. To answer the first question, I am testing earnings and earnings components ability to anticipate future earnings. If operating earnings are a basic performance indicator, it is likely to anticipate future earnings. However, accruals motivate management for earnings smoothing, and hinder earnings quality but also help to increase the relevancy of current earning to report future performances. Moreover, announced earnings are always processed by analysts and investors and reconcile for earnings qualities i.e. adjusting the earnings for transitory gains and these adjusted earnings explains the cause for mispricing stocks. If earnings are basic performance indicator and investors fixate on earnings, I expect that earnings are likely to persist and reflect company’s performances. Moreover, earnings volatilities are mainly caused by accruals and accruals are expected to reduce the quality of future earnings. Therefore, I expect that both components will be responsible for anticipating future earnings. However, I expect that persistence of accruals to be lower than the persistence of cash flow component. These earnings components behavior is expected to remain unaffected by adopting CFS method for accruals. Sloan (1996) focuses on the aspect that these two components, cash flows and accruals with the persistence of these two components in explaining future earnings. My first hypothesis structure as follows as:

\[ H1: \text{Accounting current earnings performance persistence declines in the great extent of the accrual component of earnings and increases in the great extent of cash flow component.} \]

The Second hypothesis is built upon the market efficiency to absorb the information related to accruals and cash flows components of earnings in market prices. Previous research has provided the evidence on the relationship between earnings and stocks returns. The market response to earnings announcements and evaluate the persistence as investors reaction. Abnormal returns after earning announcements depicting positive earnings surprises brings positive returns and vice versa (Ball & Brown,
1968). If investors are naïve understanding reported earning, it is likely to cause market mispricing. I expect that market does not fully reflect the information of current earnings to objectifying future earnings because of earnings management and accruals quality. However, if investors are fixating on earnings than the market is expected to understand earnings information efficiently. Apart from market understanding of earnings, I expect that earning components may anticipate future earnings but their persistence would not be correctly anticipated by as the market expect accruals as companies’ potential growth plans. I expect that adopting CFS method for accruals may not affect the market understanding. Following Sloan (1996) hypothesis, my second hypothesis is constructed as follows:

**H2(i):** Stock prices reflecting future earnings expectation inefficiently absorb higher earnings persistence associated with earnings’ cash component and lower earnings persistence associated to earnings’ accrual component.

Following Sloan (1996), above hypothesis guide me to explore the relationship and the effect market expectations displacement from its actual relationship with earnings and abnormal returns. I extended the hypothesis to explore investors’ strategies for trading in the stock market to retrieve extra returns from naïve earning expectations. According to Sloan (1996), investors are more likely to overprice the stocks when earnings’ accruals are high and underprice the stock when accruals are low because reduced its persistence in earnings performance associated to accruals is not fully anticipated by investors. Moreover, under accrual anomaly, an inverse relationship is formed between accruals and abnormal returns. Thus, it will yield significant accrual hedge returns. I expect that these follows similar relationship under CFS method for accruals. Based on this explanation of Sloan (1996) my next hypothesis is:

**H2(ii):** Investors will take a long position when reported earnings contain small accrual level and a short position when reported earnings contain large accrual level in it while formulating his or her trading strategy to earn positive abnormal returns.
4 DATA METHODOLOGY

4.1 Data collection and manipulation

This thesis is an empirical analysis based on ordinary least square (OLS) regression for accrual anomaly. Models are discussed under analytical part. All the data used in this study is publicly available. There are two types of data used in this study i.e. firms annual financial reporting data, and firms’ monthly market performance data. CRSP sift application has been used to download both data types. ‘Time series access’ tool is used to download market index data (CRSP legacy) and ‘CRSP/Compustat access’ tool is used to download firms’ financial data (Compustat Legacy). Data is further then manipulated using SAS 9.4 (Statistical analysis system) program coding.

The sample consists New York stock exchange (NYSE), NYSE MKT LLC a.k.a American stock exchange (formerly known as AMEX) and NASDAQ for the fiscal year 1990 to 2010. Cash flow statement was enacted from 1987, so, I kept my study from 1990 to ensure that many of companies understand cash flow statement articulation and efficiently adopted this standard accounting requirement. Data for financial firms like banks, insurance and estate business and indemnity provider companies are usually reported in a different format of publicly available financial reports due to different types of assets they deal in. Therefore, I excluded all the firms with SIC code 6000 to 7000 to eliminate all financial firms. Firms with fiscal year end in the month of December is considered for the study. Observations for which working capital accruals information was not sufficient, or whose subsequent year financial reported earnings were missing, or whose market information for the respective financial year reported earnings are missing, or cash flow from operating activity is missing are eliminated from the data. Returns are also realized 4 months after earning announcements because research has documented that in 4 months all firms’ financial information is known (Sloan, 1996; Bernard & Thomas, 1990). Therefore, I calculated annual returns starting from Month May after the fiscal year ended in December. Further data have been dealt through the winsorizing process to eliminate the impact of extreme outliers included in the data. Research methods have shown the practice of
handling outliers for controlling the biasness of data and therefore recommended removing or treating outliers before conducting any statistical test (Osborne & Overbay, 2004). The winsorizing process helps in shrinking the data spread without losing any observation so that result will not carry any biasness due to extreme values. Outliers impose biasness to data and deleting all outliers would not be a good option because my research is multivariate and deleting outlier would be resulting in losing observation (Cousinaeu & Chatlier, 2015). Therefore, the winsorizing of the data with 1 percentile at each extreme end of data range (1st percentile and 99th percentile) is a suitable option.

4.2 Variables measurement

Financial data variable for my thesis study are Earnings, accruals (under BS method and CFS method), operating cash flows (under BS method, and CFS method). All variables are deflated with the total average asset (demonstrating firm size) for relative comparison and normalization of data. This section defines all the above study variables with their measurement procedures.

Earnings can be explained as operating income of a business after depreciation (Compustat OIADP, formerly data item 178). This earning is selected because Sloan (1996) explains that recurring and extraordinary items are complex to scale under Compustat legacy. Mathematically:

\[
Earnings = \frac{Operating\ income\ after\ Depreciation}{Average\ total\ Assets}
\]  

(2)

Accruals is a non-cash portion of existing earnings and is calculated through two approaches. The first method is based on BS method used in previous research (Dechow, 1994; Sloan, 1996) to measure accruals. This approach is also called a working capital method to calculate accruals because it is net of operating assets.
Under this approach, accrual is a difference of total current assets excluding cash and cash equivalent, and total current liabilities excluding short-term debt (excluding tax payable). Short-term debt is a part of financing activities therefore excluded from operating accruals and taxes are excluded to compliance with earnings (because it is before taxes and, therefore, could not be part of accruals as well). Depreciation and amortization expense is subtracted from the equation, because it is a wear and tear cost which systematically allocated over a period of useful life of an asset (encouraging non-cash transactions for previously recorded cash transactions). Cash is already outflow when purchasing the asset. Therefore, deprecations and amortizations are the notional cost (presumed cost) for which there are no actual cash inflows and outflows appeared in books that is why it is added back in earnings while adjusting cash flow statements (Fazal, 2011). If depreciation and amortizations expense are not subtracted from accruals, accruals will be posting double counting of depreciation amount. Mathematically:

\[
TACC = \frac{(\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep}{\text{Average total Assets}}
\]  

(3)

Where

\(\Delta CA\) = Change in current assets (ACT, formerly Compustat item 4)

\(\Delta Cash\) = Change in cash & cash equivalents (CHE, formerly Compustat item 1)

\(\Delta CL\) = Change in current Liabilities (LCT, formerly Compustat item 5)

\(\Delta STD\) = Change debt as current liabilities (DLC, formerly Compustat item 34)

\(\Delta TP\) = Change in income tax payable (TXP, formerly Compustat item 71)
Dep = Depreciation and Amortization expense (DP, formerly Compustat item 14)

The second method for accruals calculation is the traditional method of calculating accruals (Hribar & Collins, 2002) because working capital approach brought in errors and biasness to the result of the researches based on this measurement because of estimation errors mostly driven by inventories and then trade receivables. Sloan (1996) also admits that this approach can affect the results of his study. He uses balance sheet approach because Cash flow statement enacted by FASB under SFAS no.95 in 1987. Therefore, Compustat data was not available for prior years’ cash flows from operating activities. Under cash flow statement, accruals have 75% explanatory to changes in current accounts and therefore articulate better results (Hribar & Collins, 2002). Mathematically;

\[ \text{ACC} = \frac{\text{Earnings} - \text{Operating cashflows}}{\text{Average total assets}} \]  

(4)

Where operating cash flows are the cash flow from operating activities, abstracted from the cash flow statement, representing the cash component of earnings. Data downloaded from Compustat legacy (Compustat OANCF, formerly data item 308) which is deflated further by the average total assets. Mathematically;

\[ \text{OCF} = \frac{\text{Cash flow from Operating activities}}{\text{Average total assets}} \]  

(5)

BS method uses cash flow from operation (CFO) which is cash portion of existing earnings calculated by taking the difference of earnings (Eq. 1) and TACC (in Eq. 2). Mathematically;
\[ CFO_{(w)} = Earnings - TACC \quad (6) \]

Net current assets (\(\Delta CA\)), net current liability (\(\Delta CL\)) and depreciation (\(Dep\)) are accruals’ components and measured with following formulas:

\[ \Delta CA = \frac{\Delta CA - Cash}{Avg.\, Total \, Assets} \quad (7) \]

\[ \Delta CL = - \frac{\Delta CL - \Delta STD - \Delta TP}{Avg.\, Total \, assets} \quad (8) \]

\[ Dep = - \frac{Depreciation \, and \, Amortization}{Avg.\, Total \, Assets} \quad (9) \]

Buy and hold size adjusted abnormal returns (BHAR) have been measured for market efficiency test. BHAR is a difference between securities raw returns inclusive of dividend minus equal weighted securities return on portfolio based on decile ranking of NYSE/AmEx & NASDAQ equity market values. Raw returns and portfolio returns are on monthly bases are downloaded from CRSP legacy further compounded for annualizing through continuous compounding from month May to April after December fiscal year end. Compounding process is first by transforming monthly returns in logarithmic returns and then add from May to April. These logarithmic returns are then normalized by taking exponential. Mathematically:
\[ BHAR_{it} = \prod_{t=0}^{m}(1 + R_{it}) - \prod_{t=1}^{m}(1 + R_{pt}) \]  

\( R_{it} \) is firm’s monthly raw returns inclusive of dividends and \( R_{pt} \) is firm’s size-matched monthly portfolio returns based on market value decile ranking portfolio. Size-matched portfolio ranking is downloaded from CRSP legacy.

Accruals portfolios’ beta has been calculated using Sharpe-Lintner version of CAPM. CAPM is a linear model which explains investors expected returns on their investment over a risk-free rate by defining beta as the covariance of expected returns on investment and market expected returns. This is and shown as under:

\[ (R_{pt} - R_{ft}) = \alpha_{p} + \beta_{p}(R_{mt} - R_{ft}) + \varepsilon_{pt} \]  

Where:

\( (R_{pt} - R_{ft}) \) = Portfolio excess returns over risk-free securities.

\( (R_{mt} - R_{ft}) \) = risk premium (\( R_{mt} \) is the expected rate of return on the market at time t)

\( \alpha_p \) = Jensen Alpha / Abnormal returns / returns generated with other information.

\( \beta = \) Systematic risk or volatility in returns of security incorporated due to the functioning of the market. If \( \beta = 1 \), portfolio returns rise or falls in equal comparison of the market. If \( \beta > 1 \), then security returns rise or falls at a greater percentage of market return. When beta is less than one, security returns rise or falls is least impact by market fluctuations.
5 EMPIRICAL ANALYSIS

5.1 Descriptive Statistics

Table 1 explains Pearson Spearmen correlations coefficient among studied variables. Earnings represents operating earnings before depreciation expense calculated through Eq. (2), TACC represents total accruals calculated through BS method using Eq. (3), CFO represents cash flows from operation calculated through Eq. (6), OCF represents operating cash flows abstracted from cash flow statement using Eq. (5), and ACC is accruals calculated abstracted using Eq. (4).

Table 1: Pearson–Spearman correlations coefficients for study variables

<table>
<thead>
<tr>
<th></th>
<th>TACC</th>
<th>CFO</th>
<th>Earnings</th>
<th>ACC</th>
<th>OCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TACC</td>
<td>–</td>
<td>-0.354</td>
<td>0.235</td>
<td>0.649</td>
<td>-0.246</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td></td>
</tr>
<tr>
<td>CFO</td>
<td>-0.354</td>
<td>–</td>
<td>0.736</td>
<td>0.110</td>
<td>0.858</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001)</td>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
</tr>
<tr>
<td>Earnings</td>
<td>0.235</td>
<td>0.736</td>
<td>–</td>
<td>0.500</td>
<td>0.715</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
</tr>
<tr>
<td>ACC</td>
<td>0.649</td>
<td>0.110</td>
<td>0.500</td>
<td>–</td>
<td>-0.100</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td></td>
<td>(&lt;.0001)</td>
</tr>
<tr>
<td>OCF</td>
<td>-0.246</td>
<td>0.858</td>
<td>0.715</td>
<td>-0.100</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td>(&lt;.0001)</td>
<td></td>
<td>(&lt;.0001)</td>
</tr>
</tbody>
</table>

Probability of correlation is shown in parenthesis

In Table 1, TACC has the negative correlation with CFO and OCF while positively correlated with ACC and Earnings. The correlation coefficient of CFO has the inverse relationship with TACC and ACC whereas the positive relationship with earnings and OCF. Following relationship shows no autocorrelation among variables. In short, CFS method also confirms the similar relationship i.e. ACC has the negative relationship with OCF and the positive relationship with earnings. It can also be observed that...
TACC and ACC are positively correlated which explains that BS method for accruals and CFS also absorbs the change in working capital. Similarly, CFO and OCF also share a positive relationship.

The descriptive statistics of Sloan (1996) replication study (inclusive of NASDAQ firms) after dealing with outliers has been summarized in Table 2. The sample consists of 40922 observations from the fiscal year 1962 to 1991. Accruals divided into 10 portfolios are based on TACC ranks (portfolios based on accruals calculated under BS method) for panel A. In panel A, accruals show the positive relationship with earnings and negative relation with cash flows i.e. the increase in accruals causes an increase in earnings but decrease in CFO and vice versa. These behaviors also confirm the correlation among variables in table 1. In panel B, beta is calculated through Eq. (11) over the years by TACC rank deciles. Beta depicts a U-shaped curve (i.e. high beta at extreme ends and gradually declines and then starts increasing again). It has been found that beta in extreme deciles are higher concluding high accruals and low accruals are risky portfolios. In Panel C, ΔCA, calculated through Eq. (7), is found to have more disparity than ΔCL, calculated through Eq. (8) and Dep, calculated through Eq. (9) conforming Hribar & Collin (2002) study. ΔCA is more volatile in extreme ends portfolios. These descriptive results for the variables follow the similar patterns as under Sloan (1996) confirming that collective market of US (inclusive of NASDAQ listed firms) follows a similar pattern as explained above.
Table 2: Descriptive statistics with mean values (median) based on TACC rank for timeline 1962 to 1991.

<table>
<thead>
<tr>
<th>N = 40922</th>
<th>Lowest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Highest</th>
</tr>
</thead>
</table>

**Panel A: Components of Earnings**

<table>
<thead>
<tr>
<th></th>
<th>$TACC$</th>
<th>-0.184</th>
<th>-0.095</th>
<th>-0.068</th>
<th>-0.050</th>
<th>-0.036</th>
<th>-0.021</th>
<th>-0.006</th>
<th>0.016</th>
<th>0.054</th>
<th>0.164</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(-0.163)</td>
<td>(-0.094)</td>
<td>(-0.068)</td>
<td>(-0.051)</td>
<td>(-0.036)</td>
<td>(-0.023)</td>
<td>(-0.008)</td>
<td>(0.015)</td>
<td>(0.053)</td>
<td>(0.143)</td>
</tr>
<tr>
<td></td>
<td>$CFO$</td>
<td>0.183</td>
<td>0.160</td>
<td>0.149</td>
<td>0.144</td>
<td>0.130</td>
<td>0.123</td>
<td>0.108</td>
<td>0.094</td>
<td>0.059</td>
<td>-0.070</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.208)</td>
<td>(0.173)</td>
<td>(0.157)</td>
<td>(0.146)</td>
<td>(0.133)</td>
<td>(0.121)</td>
<td>(0.112)</td>
<td>(0.101)</td>
<td>(0.072)</td>
<td>(-0.018)</td>
</tr>
<tr>
<td></td>
<td>$Earnings$</td>
<td>-0.008</td>
<td>0.065</td>
<td>0.081</td>
<td>0.094</td>
<td>0.094</td>
<td>0.101</td>
<td>0.102</td>
<td>0.110</td>
<td>0.113</td>
<td>0.110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.044)</td>
<td>(0.082)</td>
<td>(0.092)</td>
<td>(0.097)</td>
<td>(0.097)</td>
<td>(0.099)</td>
<td>(0.103)</td>
<td>(0.114)</td>
<td>(0.124)</td>
<td>(0.132)</td>
</tr>
</tbody>
</table>

**Panel B: Risk Proxies**

|       | $Beta$ | 1.197  | 0.928  | 0.826  | 0.696  | 0.668  | 0.709  | 0.842  | 0.857  | 1.027  | 1.142  |

**Panel C: Components of Accruals**

<table>
<thead>
<tr>
<th></th>
<th>$\Delta CA$</th>
<th>-0.083</th>
<th>-0.012</th>
<th>0.003</th>
<th>0.014</th>
<th>0.021</th>
<th>0.031</th>
<th>0.045</th>
<th>0.068</th>
<th>0.109</th>
<th>0.246</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(-0.049)</td>
<td>(-0.005)</td>
<td>(0.005)</td>
<td>(0.012)</td>
<td>(0.016)</td>
<td>(0.024)</td>
<td>(0.039)</td>
<td>(0.064)</td>
<td>(0.106)</td>
<td>(0.212)</td>
</tr>
<tr>
<td></td>
<td>$\Delta CL$</td>
<td>-0.041</td>
<td>-0.020</td>
<td>-0.017</td>
<td>-0.016</td>
<td>-0.013</td>
<td>-0.014</td>
<td>-0.014</td>
<td>-0.016</td>
<td>-0.020</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.022)</td>
<td>(-0.016)</td>
<td>(-0.012)</td>
<td>(-0.012)</td>
<td>(-0.010)</td>
<td>(-0.008)</td>
<td>(-0.010)</td>
<td>(-0.012)</td>
<td>(-0.018)</td>
<td>(-0.035)</td>
</tr>
<tr>
<td></td>
<td>$DEP$</td>
<td>-0.074</td>
<td>-0.063</td>
<td>-0.054</td>
<td>-0.049</td>
<td>-0.043</td>
<td>-0.039</td>
<td>-0.037</td>
<td>-0.036</td>
<td>-0.035</td>
<td>-0.032</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.057)</td>
<td>(-0.059)</td>
<td>(-0.052)</td>
<td>(-0.047)</td>
<td>(-0.041)</td>
<td>(-0.036)</td>
<td>(-0.034)</td>
<td>(-0.033)</td>
<td>(-0.032)</td>
<td>(-0.028)</td>
</tr>
</tbody>
</table>

N= number of observations in sample size.
Lowest to highest represents portfolios created by accrual-ranked deciles calculated under balance sheet method.
Beta is obtained by regressing securities raw returns with market returns under:

$$R_{pt} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + \epsilon_{pt}$$

Every variable represents mean values with median values in parenthesis along TACC rank.
Table 3 summarizes the descriptive statistics of focused variables from the fiscal year 1990 to 2014 after dealing with outliers. Decile rankings are calculated twice using both accrual measures described earlier. In panel A, TACC in lowest TACC rank portfolio is $-0.220 \ (0.196)$ and reached to $0.151 \ (0.130)$ in highest TACC rank portfolio. In contrast, CFO declines along TACC rank portfolios showing $0.048 \ (0.157)$ in lowest TACC rank and reaches to $-0.151 \ (-0.061)$ in the highest deciles imprinting strong negative association with TACC. However, earnings in the lowest TACC rank portfolio is $-0.172 \ (-0.051)$ and reaches to $0.002 \ (0.084)$ imprinting positive association with TACC. TACC has risen by 27.3% in lowest TACC rank portfolio and declined by 6.1% in highest TACC rank portfolio over the period. TACC shows an inverse relationship with CFO but positive relationship with earnings also conforms with Sloan (1996) study.

Panel B of Table 3 explains beta values which have also risen over the period but still follows U-shape trend along TACC ranking portfolios. Extreme TACC ranked portfolios are found to be riskier with beta values of 1.464 in the lowest decile and 1.269 in the highest decile. This indicates risk proxy for extreme portfolio rankings. Beta values have risen because timeline from 1990 to 2014 captures two major of market collapses appeared in 2002 and 2008. Shiller (2000) provides evidence that market prices rise during market bubble time. The market bubble is appearing when market prices surge from their fundamental values evaluated under self-attributed bias and fundamental analysis bias. However, Scott (2014, 200–202) says that the market efficiency remains unaffected due to market bubbles because it is designed to provide information efficiently.

Panel C of Table 3 explains TACC components. $\Delta CA$ shows much of variations along TACC ranked portfolios starts from $-0.064 \ (-0.027)$ in the lowest TACC rank portfolio and reaches to $0.213 \ (0.183)$ in the highest TACC rank portfolio. In contrast, $\Delta CL$ ranges from $-0.084 \ (-0.043)$ in the lowest TACC rank portfolio to $-0.011 \ (-0.023)$ in the highest TACC rank portfolio. $\Delta CL$ range is quite smaller than the range of $\Delta CA$. Similarly, Depreciation ranges from $-0.092 \ (-0.069)$ to $-0.032 \ (-0.027)$ from the lowest to the highest TACC rank portfolios which are also lower than $\Delta CA$. 
Likewise, the descriptive statistics of TACC components also conforms Sloan (1996) as there are more variations found in current assets and prior study documented that usually inventory and trade receivables (Hribar & Collin, 2002).

Panel D of Table 3 explains earnings’ components measured through CFS approach. ACC confirms the similar negative relationship with OCF and the positive relationship with earnings. ACC in lowest ACC rank portfolio (portfolios of accruals under CFS method) is $-0.246$ ($-0.210$) and reached to $0.173$ ($0.154$) in highest ACC rank portfolio. However, values are bit higher than TACC and CFO because of a portfolio created under different method for accruals. There were some firms found to have lowest accruals under BS method but highest accruals under CFS method. In my study, I did not consider income from extraordinary activities which is adjusted in CFS adjustment process. For example, some unrealised currency exchange gain reported in CFS, carry forward joint venture gain/loss adjustments, and pension planning adjustment etc. Then there was some other adjustment which was required under CFS such adjustment for provision for bad debts. In contrast, OCF declines along ACC rank portfolios showing $-0.087$ (0.022) in lowest ACC rank portfolio and reaches to $-0.065$ ($-0.017$) in the highest deciles imprinted strong negative association with TACC. However, earnings in the lowest ACC ranked portfolio is $-0.333$ ($-0.227$) and reaches to $0.106$ ($0.140$) depicting positive association with TACC. ACC shows inverse relationship with OCF and positive relationship with earnings also conforms to Sloan (1996) study.

In Panel E of Table 3, beta also depicts U-shaped i.e. high beta values in extremes deciles showing high riskiness of extreme deciles. In lowest ACC rank portfolio, beta is 1.617 whereas, in highest ACC rank portfolio, the beta value is 1.303. Beta values are higher under CFS methods because of the accrual different approach brought the portfolios riskier. ACC values in extreme deciles are also higher than TACC. However, beta forms U-shaped curve.
Table 3: Descriptive statistics with mean values (median) based on TACC rank and ACC rank for 1990 to 2014.

<table>
<thead>
<tr>
<th>N= 57510</th>
<th>Lowest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Highest</th>
</tr>
</thead>
</table>

**Panel A: Components of Earnings**

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TACC</td>
<td>-0.220</td>
<td>-0.115</td>
<td>-0.083</td>
<td>-0.062</td>
<td>-0.046</td>
<td>-0.032</td>
<td>-0.017</td>
<td>0.004</td>
<td>0.039</td>
<td>0.151</td>
</tr>
<tr>
<td></td>
<td>(-0.196)</td>
<td>(-0.112)</td>
<td>(-0.081)</td>
<td>(-0.060)</td>
<td>(-0.044)</td>
<td>(-0.030)</td>
<td>(-0.016)</td>
<td>(0.003)</td>
<td>(0.035)</td>
<td>(0.130)</td>
</tr>
<tr>
<td>CFO</td>
<td>0.048</td>
<td>0.077</td>
<td>0.086</td>
<td>0.081</td>
<td>0.074</td>
<td>0.057</td>
<td>0.041</td>
<td>0.020</td>
<td>-0.021</td>
<td>-0.151</td>
</tr>
<tr>
<td></td>
<td>(0.157)</td>
<td>(0.148)</td>
<td>(0.140)</td>
<td>(0.128)</td>
<td>(0.117)</td>
<td>(0.102)</td>
<td>(0.088)</td>
<td>(0.069)</td>
<td>(0.039)</td>
<td>(-0.061)</td>
</tr>
<tr>
<td>Earnings</td>
<td>-0.172</td>
<td>-0.037</td>
<td>0.003</td>
<td>0.019</td>
<td>0.028</td>
<td>0.025</td>
<td>0.024</td>
<td>0.023</td>
<td>0.016</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(-0.051)</td>
<td>(0.036)</td>
<td>(0.058)</td>
<td>(0.066)</td>
<td>(0.072)</td>
<td>(0.070)</td>
<td>(0.070)</td>
<td>(0.072)</td>
<td>(0.078)</td>
<td>(0.084)</td>
</tr>
</tbody>
</table>

**Panel B: Risk Proxies**

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta</td>
<td>1.464</td>
<td>1.205</td>
<td>1.106</td>
<td>1.047</td>
<td>1.001</td>
<td>1.012</td>
<td>1.076</td>
<td>1.037</td>
<td>1.116</td>
<td>1.269</td>
</tr>
</tbody>
</table>

**Panel C: Component of Accruals**

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔCA</td>
<td>-0.064</td>
<td>-0.013</td>
<td>0.000</td>
<td>0.008</td>
<td>0.013</td>
<td>0.022</td>
<td>0.033</td>
<td>0.052</td>
<td>0.087</td>
<td>0.213</td>
</tr>
<tr>
<td></td>
<td>(-0.027)</td>
<td>(-0.006)</td>
<td>(0.001)</td>
<td>(0.005)</td>
<td>(0.007)</td>
<td>(0.013)</td>
<td>(0.022)</td>
<td>(0.042)</td>
<td>(0.079)</td>
<td>(0.181)</td>
</tr>
<tr>
<td>ΔCL</td>
<td>-0.084</td>
<td>-0.032</td>
<td>-0.023</td>
<td>-0.018</td>
<td>-0.015</td>
<td>-0.014</td>
<td>-0.013</td>
<td>-0.014</td>
<td>-0.015</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>(-0.043)</td>
<td>(-0.021)</td>
<td>(-0.016)</td>
<td>(-0.012)</td>
<td>(-0.009)</td>
<td>(-0.007)</td>
<td>(-0.006)</td>
<td>(-0.008)</td>
<td>(-0.010)</td>
<td>(-0.023)</td>
</tr>
<tr>
<td>DEP</td>
<td>-0.092</td>
<td>-0.071</td>
<td>-0.060</td>
<td>-0.051</td>
<td>-0.044</td>
<td>-0.040</td>
<td>-0.036</td>
<td>-0.034</td>
<td>-0.034</td>
<td>-0.032</td>
</tr>
<tr>
<td></td>
<td>(-0.069)</td>
<td>(-0.065)</td>
<td>(-0.057)</td>
<td>(-0.049)</td>
<td>(-0.042)</td>
<td>(-0.037)</td>
<td>(-0.033)</td>
<td>(-0.031)</td>
<td>(-0.031)</td>
<td>(-0.027)</td>
</tr>
</tbody>
</table>
Panel D: Components of earnings based on accrual rank deciles calculated through CFS Approach

<table>
<thead>
<tr>
<th></th>
<th>Lowest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>-0.246</td>
<td>-0.109</td>
<td>-0.068</td>
<td>-0.042</td>
<td>-0.023</td>
<td>-0.006</td>
<td>0.011</td>
<td>0.032</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>(-0.210)</td>
<td>(-0.105)</td>
<td>(-0.066)</td>
<td>(-0.040)</td>
<td>(-0.021)</td>
<td>(-0.005)</td>
<td>(0.010)</td>
<td>(0.029)</td>
<td>(0.061)</td>
</tr>
<tr>
<td>OCF</td>
<td>-0.087</td>
<td>0.001</td>
<td>0.028</td>
<td>0.048</td>
<td>0.058</td>
<td>0.056</td>
<td>0.055</td>
<td>0.046</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.084)</td>
<td>(0.090)</td>
<td>(0.089)</td>
<td>(0.084)</td>
<td>(0.075)</td>
<td>(0.069)</td>
<td>(0.064)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Earnings</td>
<td>-0.333</td>
<td>-0.108</td>
<td>-0.040</td>
<td>0.006</td>
<td>0.035</td>
<td>0.050</td>
<td>0.065</td>
<td>0.077</td>
<td>0.091</td>
</tr>
<tr>
<td></td>
<td>(-0.227)</td>
<td>(-0.022)</td>
<td>(0.025)</td>
<td>(0.049)</td>
<td>(0.062)</td>
<td>(0.071)</td>
<td>(0.080)</td>
<td>(0.093)</td>
<td>(0.111)</td>
</tr>
</tbody>
</table>

Panel E: Risk Proxies

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.617</td>
</tr>
</tbody>
</table>

N= number of observations in the sample.
Lowest to highest represents portfolios created by accrual-ranked deciles calculated under balance sheet method.
In panels D and E, lowest to highest accruals portfolios are measured under cash flows statement method.
Beta is obtained by regressing securities raw returns with market returns under $R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + \epsilon_{pt}$.
Every variable represents mean values with median values in parenthesis along TACC rank.
5.2 Hypothesis 1 methodology and results

Earnings persistence is calculated through Feltham & Ohlson (1995) model called earning dynamics where persistence is addressed as the proportionate of current earnings likely to persist in future earnings. Earning dynamics model is given by the following equation:

\[ Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + \theta_{t+1} \]  

(12)

Here \( \alpha_1 \) measures persistence of earnings, where \( 0 \leq \alpha_1 < 1 \). When \( \alpha_1 = 0 \) that suggested that earnings do not persist and earnings behavior are totally transitory. In other terms, \( \alpha_1 \) is also exhibiting empirical implication of current earnings are likely to anticipate future earnings i.e. higher \( \alpha_1 \) is, higher the value higher persistence of earnings will be shown, and therefore exhibit greater relevance of income statement for firm valuation (Kothari & Sloan, 1992). Also, \( \alpha_0 \) in above equation interprets the effect of information (for example research and development expenditure) other than abnormal earnings are known that helped in explaining the future earnings.

We can break down this earnings dynamics model into further earnings’ components i.e. Accruals and cash flow as used by Sloan (1996):

\[ Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 cash flows_t + \epsilon_{t+1} \]

(13)

Where current earnings are broken down into its two components i.e. accruals and cash flows. \( \gamma_1 \) represents the persistence of accruals and \( \gamma_2 \) represents the persistence of cash flows. Sloan (1996) conclude that accrual component of earnings is less persistence than cash flow component of earnings (i.e. \( \gamma_1 < \gamma_2 \)). I also check the level of persistence
of earnings components under BS and CFS method. $\gamma_0$ explains the other abnormal earning impact that combination of accruals and cash flows of the current year failed to reflect for future earnings. $\varepsilon_{(t+1)}$ is residuals value of the model.

Table 4 is ordinary least square regression summary for testing whether earnings are transitory, earnings are expected never to be repeated in future, or earnings follows random walk for Sloan (1996) study timeline. Model earnings estimator ($\alpha_1$) is 0.8023 showing current earnings explanatory position for future earnings. This means firms’ current earnings show persistence inclusive of all three indexes are conforming with Sloan (1996) results. The current earnings do possess an explanatory power to explain future earnings. T-values for testing earnings’ transitory behaviour (i.e. $\alpha_1 = 0$) is 276.12 of probability <0.0001 (also Pr $>|F|$ probability is <0.0001) strongly rejects the hypothesis that earnings are transitory. For a random walk (i.e. $\alpha_1 = 1$) I have found (Pr $>|F|$) probability <0.0001 also strongly rejects the null hypothesis that earnings are following a random walk. Mean values across industry level for $\alpha_1$ is 0.7432 and ranges from 0.7051 to 0.8380. $\alpha_1$ estimator is quite lean to upper side of industry level.

Part b of Table 4 explains OLS regression result for earning components showing their explanatory power for anticipating future earnings for the timeline 1962 to 1991. Accrual component coefficient ($\gamma_1$) is 0.7190, while cash flow component coefficient ($\gamma_2$) is 0.7991 which is quite higher than accrual component explaining cash components has more explanatory power for future earnings. F-test is used to evaluated the earnings components persistence test that cash flows and accruals are equally exhibiting persistence for future earning ($\gamma_1 = \gamma_2$) and found that with f-values of 364.91 with probability of < 0.0001 strongly rejects the null hypothesis that cash components and earnings equally explanatory to future earnings ($\gamma_1 = \gamma_2$) and accept that the accrual component of earnings is less persistent than the cash flow component ($\gamma_1 < \gamma_2$).
Part a: Ordinary Least Squares (OLS) Regression analysis exhibiting current earnings persistence in anticipating future earnings (t-statistics in parentheses).

\[ \text{Earnings}_{t+1} = \alpha_0 + \alpha_1 \text{Earnings}_t + \delta_{t+1} \]

| Estimate | Mean     | Q1      | Median   | Q3      | Pr > |t| |
|----------|----------|---------|----------|---------|------|---|
| \( \alpha_0 \) | 0.0127   | 0.0110  | 0.0049   | 0.0150  | 0.0219 | (26.13)** | <.0001 |
| \( \alpha_1 \) | 0.8023   | 0.7432  | 0.7051   | 0.7740  | 0.8380 | (276.12)** | <.0001 |

N = 40922


\[ \text{Earnings}_{t+1} = \gamma_0 + \gamma_1 \text{Accruals}_t + \gamma_2 \text{Cash Flows}_t + \delta_{t+1} \]

| Estimate | Mean     | Q1      | Median   | Q3      | Pr > |t| |
|----------|----------|---------|----------|---------|------|---|
| \( \gamma_0 \) | 0.0112   | 0.0052  | 0.0051   | 0.0129  | 0.0193 | (22.33)** | <.0001 |
| \( \gamma_1 \) | 0.7190   | 0.6778  | 0.6234   | 0.6846  | 0.7673 | (154.01)** | <.0001 |
| \( \gamma_2 \) | 0.7991   | 0.7423  | 0.7274   | 0.7719  | 0.8278 | (265.02)** | <.0001 |

N= number of observations in sample.

These results confirm with Sloan (1996). Mean values across industry levels for the accruals parameter are consistently smaller than the cash flow component parameters.

Table 5 summarizes the robust results of OLS regression on earnings and earnings components persistence in explaining future earnings from the year 1990 to 2014. Part ‘a’ of Table 7 explains the current earnings persistence in explaining future earnings.

The model has been tested again for transitory behavior and randomness behaviors of earnings. The current earnings estimator (\( \alpha_1 \)) is 0.8269 showing strong explanatory
power for future earnings. I also reject that earnings are transitory in nature (i.e. \( \alpha_1 = 0 \)) because of t-value of 392.65 with probability of < 0.0001 (Pr > |F| probability of <0.0001). Earnings random walk behavior (i.e. \( \alpha_1 = 1 \)) is also rejected based Pr > |F| probability of <0.0001. This is robust results for earnings concludes that earnings persist and with the almost same level of persistence to explain future earnings. This finding also confirms Sloan (1996) study that is current earnings has explanatory power in anticipating future earnings. Industry mean value of \( \alpha_1 \) is of 0.7734 and ranging from 0.7328 in the first quartile to 0.8487 in the third quartile.

Part b of Table 5 summarizes results for persistence test for earnings’ components measured under BS method. It shows that TACC and CFO are persisting in explaining future earnings. I found that TACC coefficient (\( \gamma_1 \)) is 0.6995 persist (t-value is 126.64 with probability <0.0001) is significantly explanatory in defining future earnings. Similarly, CFO coefficient (\( \gamma_2 \)) also significantly persist in explaining future earnings (t-values is 385.41 with probability 0.0001). Further, I test if accrual component of earnings (\( \gamma_1 \)) is as persistence as cash flow component of earnings (\( \gamma_2 \)) i.e. they are equal (\( \gamma_1 = \gamma_2 \)). Persistence test is tested through f-statistics. Accruals estimate (\( \gamma_1 \)) is 0.6995 and cash flow component estimate (\( \gamma_2 \)) is 0.8299 which is quite higher than accrual component. Based on f-value for this test is 562.43 with probability < 0.0001, I reject the hypothesis that accrual component of earnings is equally persistence as cash flow component (\( \gamma_1 = \gamma_2 \)) under BS method. I accept the alternative hypothesis that accrual component is less persistence than cash flow component of earnings (\( \gamma_1 < \gamma_2 \)). Industry level mean value of accrual component estimate (\( \gamma_1 \)) is also found to be lower than cash flow components estimate (\( \gamma_2 \)). This behavior remains same across industry first quartile to 3\(^{rd}\) quartile.

Part c of Table 5 summarizes results for persistence test for earnings’ components measured under CFS method. It shows that ACC and OCF are persisting in explaining future earnings. I found that ACC coefficient (\( \gamma_1 \)) is 0.6968 persist (t-value is 149.17 with probability <0.0001) is significantly persisting and explanatory in defining future earnings.
Table 5: Current earnings and its components persistence results from fiscal year 1990 to 2014.

Part a: Ordinary Least Squares (OLS) Regression analysis exhibiting current earning defining future earnings (t-statistics in parentheses) from fiscal year 1990 to 2014.

\[ \text{Earnings}_{t+1} = \alpha_0 + \alpha_1 \text{Earnings}_{t} + \theta_{t+1} \]

| N = 57510 | Pooled | Industry Level | \( \text{Pr} > |t| \) |
|-----------|--------|----------------|------------------|
| \( \alpha_0 \) | -0.0036 | -0.0151 | -0.0090 | 0.0058 | 0.0144 | <.0001 |
| \( \alpha_1 \) | 0.8269 | 0.7734 | 0.7328 | 0.7912 | 0.8487 | <.0001 |

Part b: OLS regression analysis exhibiting current earnings’ components defining future earnings (t-statistics in parentheses) under BS method from fiscal year 1990 to 2014.

\[ \text{Earnings}_{t+1} = \gamma_0 + \gamma_1 TACC_t + \gamma_2 CFO_t + \theta_{t+1} \]

| N = 57510 | Pooled | Industry Level | \( \text{Pr} > |t| \) |
|-----------|--------|----------------|------------------|
| \( \gamma_0 \) | -0.0085 | -0.0079 | -0.0078 | 0.0015 | 0.0116 | <.0001 |
| \( \gamma_1 \) | 0.6995 | 0.6249 | 0.5966 | 0.6755 | 0.7456 | <.0001 |
| \( \gamma_2 \) | 0.8295 | 0.7413 | 0.7186 | 0.7911 | 0.8590 | <.0001 |

Part c: OLS regression analysis exhibiting current earnings’ components defining future earnings (t-statistics in parentheses) under CFS method from fiscal year 1990 to 2014.

\[ \text{Earnings}_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 OCF_t + \theta_{t+1} \]

| N = 57510 | Pooled | Industry Level | \( \text{Pr} > |t| \) |
|-----------|--------|----------------|------------------|
| \( \gamma_0 \) | -0.0075 | -0.0087 | -0.0110 | 0.0031 | 0.0119 | <.0001 |
| \( \gamma_1 \) | 0.6968 | 0.61248 | 0.57642 | 0.6734 | 0.77262 | <.0001 |
| \( \gamma_2 \) | 0.8672 | 0.8140 | 0.7611 | 0.8300 | 0.8882 | <.0001 |

N = number of observations in the sample.
t-values are mentioned in parenthesis.
* = 0.05 level of significance, ** = 0.01 level of significance, and *** = 0.001 level of significance.
Similarly, OCF coefficient ($\gamma_2$) is 0.8672 also significantly persisting in explaining future earnings ($t$-values is 385.41 with probability 0.0001). I also found that ACC and TACC have quite same coefficients but OCF shows higher persistence than CFO component of earnings. Further, I test accrual component of earnings ($\gamma_1$) is as persistence as cash flow component of earnings ($\gamma_2$) i.e. they are equal ($\gamma_1 = \gamma_2$). Persistence test is tested through $f$-statistics. I observed that ACC coefficient ($\gamma_1$) is 0.6968 and OCF coefficient ($\gamma_2$) is 0.8672 are not equal but OCF is more persistence than ACC. F statistic to reject this hypothesis are based on $f$-value of 562.43 with probability < 0.0001. Thereby, I reject the hypothesis that ACC is equally persistence as OCF ($\gamma_1 = \gamma_2$) and I accept the alternative hypothesis that ACC less persistence than OCF ($\gamma_1 < \gamma_2$). Industry level mean value of the accrual component estimate ($\gamma_1$) is also found to be lower than the cash flow components estimate ($\gamma_2$). This behavior remains same across industry first quartile to 3rd quartile.

To summarize hypothesis 1 findings, I observed that the current earnings and its components persist and have explanatory power to forecast future earnings under both methods. I also observed that CFS approach is a better estimate for predicting accruals as R-square value is improved to 0.7317 (R-square value is 0.7235 in the case of BS method) and the cash flow component of earnings is more persistent in explaining future earnings under CFS method than BS method.

5.3 Hypothesis 2 methodology and results

Mishkin (1983) test (hereafter MT) is used to test the market efficiency in incorporating earnings and earning components information in market prices and observe market expectations. Sloan (1996) used MT to observe market reaction considering earnings and earnings components. MT model has been proposed in 1983 to review the rational expectations of the market under EMH. According to MT, EMH views that market subjectively measured returns are expected to be equal to the objectively measured returns from historic information provided the same set of information available at a time (Abel & Mishkin, 1983). Mathematically, it can be represented under where the left-hand side (L.H.S) of equation represent market
subjective assessment, and right-hand side of the equation represents objective assessment:

$$E_m(r_{t+1}|\Phi_t) = E(\bar{r}_{t+1}|\Phi_t)$$

(14)

Or

$$E(r_{t+1} - \bar{r}_{t+1}|\Phi_t) = 0$$

(15)

Where;

$r_{t+1}$, represents actual return during time t.

$\bar{r}_{t+1}$, represent market subjective expectation of returns during time t.

$\Phi_t$ represents set of available information at the beginning time t.

Following Mishkin (1983) procedure the other function Sloan generated following:

$$E(r_{t+1} - r^*_{t+1} | \Phi_t) = \beta(X_{t+1} - X^*_{t+1}) + \varepsilon_{t+1}$$

(16)

Where:

$\varepsilon_t$ = a disturbance with the property that $E(\varepsilon_t | \Phi_t) = 0$

$X_t$ = variable relevant to pricing of any security.

$X^*_t$ = forecasted value variable $X_t$ at time $[X^e_{t+1} = E (X_{t+1} | \Phi_t)]$

$\beta$ = value multiplier for the variable explanatory to pricing of security.
Sloan (1996) transformed the above model by considering that X variable as earnings and applied it to earnings persistence Eq. (12):

\[
Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + \vartheta_{t+1} \quad (12)
\]

\[
(r_{t+1} - \bar{r}_{t+1}) = \beta(Earnings_{t+1} - \alpha_0 - \alpha_1' Earnings_t) + \epsilon_{t+1} \quad (17)
\]

L.H.S of Eq. (17) is represents BHAR. So, if earnings are the predictive variable for market pricing and the market is efficient then \(\alpha_1 = \alpha_1'\) thus it explains the market has accurately measured the average level of persistence of earnings.

Further, under Eq. (13) we know that earnings are extended to its components i.e. accruals and cash flows so:

\[
Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 cash flows_t + \epsilon_{t+1} \quad (13)
\]

And MT application will lead to:

\[
(r_{t+1} - \bar{r}_{t+1}) = \beta(Earnings_{t+1} - \gamma_0 - \gamma_1' Accruals_t - \gamma_2' Cash flows_t) + \epsilon_{t+1} \quad (18)
\]

L.H.S. of Eq. (18) represents BHAR. Eq. (13) and Eq. (18) explain that if markets are efficient then we expect that market supposed to predict the accruals persistence as \(\gamma_1' = \gamma_1\) and the cash flows persistence as \(\gamma_2' = \gamma_2\). When we compare the market subjective expectations with objective performance then we expect the earnings’
accruals persistence to be less than the cash flows persistence, therefore under efficient market $\gamma_1^* < \gamma_2^*$.

Table 6 summarises the results of market efficiency under Sloan (1996) study time. Sloan (1996) concludes that the market understands reported annual earnings correctly, however, fails to differentiate between earnings components. Therefore, the market gives more weight to accruals and less weight to cash flows. Part a of Table 6 describes the market efficiency test for earnings persistence. This is multiple equation regression testing for Eq. (12) and Eq. (17). This test is conducted to understand the market understanding of announced earnings. The results are decisive on Wald testing for asymptotic error known as chi-square to test two equations. From hypothesis 1 we know that $\alpha_1$ is the earnings persistence coefficient and Eq. (12) describes $\alpha_1^*$ is the market interpretation of announced earnings. I have found that under the presence of NASDAQ-listed firms, the market is inefficient in understanding earnings persistence. Instead, they underestimate earnings persistence. $\alpha_1$ is found to be 0.8023 whereas $\alpha_1^*$ is 0.7589. I reject the null hypothesis that the market is correctly estimating earnings persistence ($\alpha_1 = \alpha_1^*$) and accept alternate hypothesis ($\alpha_1 > \alpha_1^*$) given Wald test score is 29.90 with a probability of <.0001. Part b of table 6 summarizes market efficiency in the understanding persistence of earnings component persistence for Sloan (1996) timeline. This multi equations testing is conducted on Eq. (13) and Eq. (18). From equations, we know that $\gamma_1$ is persistence coefficient for accruals and $\gamma_2$ is persistence coefficient for cash flow component. I have found the market overweights the accrual component and lowers the cash flow component persistence. $\gamma_1^*$ represents the market’s understanding of the accrual component of earnings and $\gamma_2^*$ represents the market’s understanding of the cash flow component of earnings. I test whether the market correctly anticipates the accrual component of earnings ($\gamma_1 = \gamma_1^*$) and the cash flow component of earnings ($\gamma_2 = \gamma_2^*$). I have found that $\gamma_1$ is 0.7180 whereas $\gamma_1^*$ is 0.7856 depicting that market are overestimating the accrual component of earnings. On the other hand, $\gamma_2$ is .8020 and $\gamma_2^*$ is 0.7151 depicting market is underestimating the cash flow component of earnings.
Table 6: Market efficiency results for current earnings & its components from year 1962 to 1991.

\[ \text{Earnings}_{(t+1)} = \alpha_0 + \alpha_1 \text{Earnings}_t + \nu_{(t+1)} \]
\[ \text{BHAR}_{(t+1)} = \beta \left( \text{Earnings}_{(t+1)} - \alpha_0 - \alpha_1 \text{Earnings}_t + \nu_{(t+1)} \right) \]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha_1 )</td>
<td>0.802331</td>
<td>0.0030</td>
</tr>
<tr>
<td>( \alpha_1^* )</td>
<td>0.74587</td>
<td>0.0100</td>
</tr>
<tr>
<td>( \beta )</td>
<td>1.881771</td>
<td>0.0313</td>
</tr>
</tbody>
</table>

Test Results of Market Efficiency:

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Statistic</th>
<th>Pr &gt; ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha_1 = \alpha_1^* )</td>
<td>Wald</td>
<td>29.09</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

\[ \text{Earnings}_{(t+1)} = \gamma_0 + \gamma_1 \text{TACC}_t + \gamma_2 \text{CFO}_t + \epsilon_{(t+1)} \]
\[ \text{BHAR}_{(t+1)} = \beta \left( \text{Earnings}_{(t+1)} - \gamma_0 - \gamma_1 \text{TACC}_t + \gamma_2 \text{CFO}_t + \epsilon_{(t+1)} \right) \]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 )</td>
<td>0.7180</td>
<td>0.0048</td>
</tr>
<tr>
<td>( \gamma_1^* )</td>
<td>0.7856</td>
<td>0.0167</td>
</tr>
<tr>
<td>( \gamma_2 )</td>
<td>0.8020</td>
<td>0.0031</td>
</tr>
<tr>
<td>( \gamma_2^* )</td>
<td>0.7151</td>
<td>0.0109</td>
</tr>
<tr>
<td>( \beta )</td>
<td>1.7813</td>
<td>0.0309</td>
</tr>
</tbody>
</table>

Test Results of Market Efficiency for earnings’ components:

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Statistic</th>
<th>Pr &gt; ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 = \gamma_1^* )</td>
<td>Wald</td>
<td>15.16</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>( \gamma_2 = \gamma_2^* )</td>
<td>Wald</td>
<td>58.74</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

N= Number of observations in sample size.

I have rejected the hypothesis that accruals are efficiently anticipated \((\gamma_1 = \gamma_1^*)\) and accepted alternate hypothesis that markets are inefficient in anticipating accruals instead it overvalues the accrual component \((\gamma_1 < \gamma_1^*)\) based on Wald test statistics 15.16 (Pr is <.0001). I have also rejected they hypothesis that the market is efficiently
anticipating the cash flow component persistence ($\gamma_2 = \gamma_2^*$) and accepted the alternate hypothesis that market is inefficient in anticipating the cash flow component instead it is underestimating the cash flow component ($\gamma_2 > \gamma_2^*$) based on Wald test statistics 58.74 (Pr is <.0001).

Table 7 summarises the robust findings of the market efficiency for timeline 1990 to 2014. The similar testing approach is followed to evaluate the results as in Table 6. Part a of Table 7 describes the market efficiency test for the earnings persistence. I have found that the market is still inefficient in understanding the earnings persistence. Instead, they underestimate the earnings persistence. $\alpha_1$ is found to be 0.8267 whereas $\alpha_1^*$ is 0.7732. I reject the null hypothesis that the market is correctly estimating the earnings persistence ($\alpha_1 = \alpha_1^*$) and accept alternate hypothesis that the market is underestimating earnings ($\alpha_1 > \alpha_1^*$) given Wald test score is 21.58 (probability of <.0001).

Part b of Table 7 summarizes the market efficiency in understanding the persistence of earnings’ components under BS method for timeline 1990 to 2014. I have found that the market overestimates the accrual component and underestimates the cash flow component persistence. I test whether the market correctly anticipates the accrual component of earnings ($\gamma_1 = \gamma_1^*$) and the cash flow component of earnings ($\gamma_2 = \gamma_2^*$). I have found that $\gamma_1$ is 0.6999 whereas $\gamma_1^*$ is 0.9228 depicting that the market is overestimating the accrual component of earnings. On the other hand, $\gamma_2$ is 0.8289 and $\gamma_2^*$ is 0.7563 depicting the market is underestimating the cash flow component of earnings.
### Table 7: Market efficiency results for current earnings & its components from the year 1990 to 2014.

**Part a: Market efficiency test for current earnings through MT Model from the fiscal year 1990 to 2014. The sample size is of 57722 observations.**

\[ \text{Earnings}(t+1) = \alpha_0 + \alpha_1 \text{Earnings}(t) + \nu(t+1) \]

Abnormal returns \((t+1) = \beta \cdot (\text{Earnings}(t+1) - \alpha_0 - \alpha_1 \cdot \text{Earnings}(t) + \nu(t+1)) \]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha_1 )</td>
<td>0.8267</td>
<td>0.0021</td>
</tr>
<tr>
<td>( \alpha_1^* )</td>
<td>0.7732</td>
<td>0.0113</td>
</tr>
<tr>
<td>( \beta )</td>
<td>1.1631</td>
<td>0.0260</td>
</tr>
</tbody>
</table>

**Test Results of Market Efficiency:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Statistic</th>
<th>Pr &gt; ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha_1 = \alpha_1^* )</td>
<td>Wald</td>
<td>21.58</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

**Part b: Market efficiency test for current earnings’ components under BS method through MT Model from the fiscal year 1990 to 2014 timeline. The sample size is of 57722 observations.**

\[ \text{Earnings}(t+1) = \gamma_0 + \gamma_1 \text{TACC}(t) + \gamma_2 \text{CFO}(t) + \epsilon(t+1) \]

\[ \text{BHAR}(t+1) = \beta (\text{Earnings}(t+1) - \alpha_0 - \gamma_1 \cdot \text{TACC}(t) + \gamma_2 \cdot \text{CFO}(t) + \epsilon(t+1)) \]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 )</td>
<td>0.6990</td>
<td>0.0055</td>
</tr>
<tr>
<td>( \gamma_1^* )</td>
<td>0.9228</td>
<td>0.0306</td>
</tr>
<tr>
<td>( \gamma_2 )</td>
<td>0.8289</td>
<td>0.0022</td>
</tr>
<tr>
<td>( \gamma_2^* )</td>
<td>0.7563</td>
<td>0.0119</td>
</tr>
<tr>
<td>( \beta )</td>
<td>1.1279</td>
<td>0.0257</td>
</tr>
</tbody>
</table>

**Test Results of Market Efficiency for earnings’ components:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Statistic</th>
<th>Pr &gt; ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 = \gamma_1^* )</td>
<td>Wald</td>
<td>51.63</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>( \gamma_2 = \gamma_2^* )</td>
<td>Wald</td>
<td>36.08</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

**Part c: Market efficiency test through MT Model for current earnings’ components under CFS method from the fiscal year 1990 to 2014. The sample size is of 57722 observations.**

\[ \text{Earnings}(t+1) = \gamma_0 + \gamma_1 \text{ACC}(t) + \gamma_2 \text{OCF}(t) + \epsilon(t+1) \]

\[ \text{BHAR}(t+1) = \beta (\text{Earnings}(t+1) - \alpha_0 - \gamma_1 \cdot \text{ACC}(t) + \gamma_2 \cdot \text{OCF}(t) + \epsilon(t+1)) \]

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 )</td>
<td>0.696342</td>
<td>0.00467</td>
</tr>
<tr>
<td>( \gamma_1^* )</td>
<td>0.805911</td>
<td>0.0257</td>
</tr>
<tr>
<td>( \gamma_2 )</td>
<td>0.866615</td>
<td>0.00241</td>
</tr>
<tr>
<td>( \gamma_2^* )</td>
<td>0.762687</td>
<td>0.0134</td>
</tr>
<tr>
<td>( \beta )</td>
<td>1.149769</td>
<td>0.0262</td>
</tr>
</tbody>
</table>

**Test Results of Market Efficiency for Earnings Components:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Statistic</th>
<th>Pr &gt; ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \gamma_1 = \gamma_1^* )</td>
<td>Wald</td>
<td>17.66</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>( \gamma_2 = \gamma_2^* )</td>
<td>Wald</td>
<td>58.39</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>
I have rejected the hypothesis that the accruals are efficiently anticipated \((\gamma_1 = \gamma_1^*)\) and accepted alternate hypothesis that the market is inefficient in anticipating accruals instead it overvalues the accrual components \((\gamma_1 < \gamma_1^*)\) based on Wald test statistics 51.63 \((Pr < .0001)\). I have also rejected the hypothesis that the market is efficiently anticipating the cash flow component persistence \((\gamma_2 = \gamma_2^*)\) and accepted the alternate hypothesis that the market is inefficient in anticipating cash flow component instead it is underestimating the cash flow component \((\gamma_2 > \gamma_2^*)\) based on Wald test statistics 36.08 \((Pr < .0001)\).

Part c of Table 7 summarizes the market efficiency in understanding the persistence of earnings’ components under CFS method for timeline 1990 to 2014. I have found that the market also overestimates the persistence of accrual component and underestimates the cash flow component persistence under this method. the result accrual component efficiency shows that \(\gamma_1\) is 0.6963 whereas \(\gamma_1^*\) is 0.8059 depicting that the market is overestimating the accrual component of earnings. Therefore, I reject the hypothesis that the market efficiently estimates the accrual component persistence \((\gamma_1 = \gamma_1^*)\) and accepted alternate hypothesis that the market is inefficient in anticipating accruals instead it overvalues the accrual components \((\gamma_1 < \gamma_1^*)\) based on Wald test statistics 51.63 \((Pr < .0001)\). On the other hand, the market is also inefficient in estimating cash flows as result shows \(\gamma_2\) is 0.8666 and \(\gamma_2^*\) is 0.7627 depicting the market is underestimating the cash flow component of earnings. I have rejected the hypothesis that the market efficiently anticipates the cash flow component persistence \((\gamma_2 = \gamma_2^*)\) and accepted the alternate hypothesis that the market is inefficient in anticipating cash flow component instead it is underestimating the cash flow component \((\gamma_2 > \gamma_2^*)\) based on Wald test statistics 36.08 \((Pr < .0001)\). I found that under CFS method, the gap of market inefficiency under CFS is lower than the market inefficiency under BS method for accruals.

Summarizing hypothesis 2 results, the market is inefficient in understanding the reported earnings instead market underestimates the reported earnings. One reason investors are underestimating the earnings information is the behavioral attributes lie at investors evaluations. Investors to remain on the safe side and not to over price the
fundamental values lowers the standard reported values. The other point that I have found is markets are underestimating cash flows and overestimating accruals. This behavior of earning components is, however, consistent with Sloan (1996) study. This behavior is also consistent with BS method and CFS method.

Table 8 is summarizing the hedge strategy for accruals portfolio. The first column of Table 8 contains extreme accruals portfolios (portfolio with the lowest accruals and portfolio with the highest accruals). I have observed that on average buy and hold returns have shown an inverse relationship with accrual rankings. Column (a) includes Sloan (1996) study inclusive of NASDAQ firms. I have found that lowest decile returns are insignificant, however, the highest decile portfolio shows significant BHAR. Taking a long position in lowest accruals and a short position in the highest accruals would yield a significant return of 9.4% under accrual hedge portfolio strategy for the first year but these hedge returns have declined to 5.1% (almost half of the first year) but still significant at the time from 1962 to 1991.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t+1</td>
<td>t+2</td>
<td>t+1</td>
</tr>
<tr>
<td>Lowest Accruals</td>
<td>0.031</td>
<td>0.018</td>
<td>0.0575</td>
</tr>
<tr>
<td></td>
<td>(0.1116)</td>
<td>(0.2826)</td>
<td>(0.233)</td>
</tr>
<tr>
<td>Highest Accruals</td>
<td>-0.063</td>
<td>-0.033</td>
<td>-0.056</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001) *</td>
<td>(0.0123)</td>
<td>(0.132)</td>
</tr>
<tr>
<td>Low - High</td>
<td>0.094</td>
<td>0.051</td>
<td>0.113</td>
</tr>
<tr>
<td></td>
<td>(&lt;.0001) ***</td>
<td>(0.0095) **</td>
<td>(0.001) ***</td>
</tr>
</tbody>
</table>

T-values are mentioned in parenthesis.
* = 0.05 level of significance, ** = 0.01 level of significance, and *** = 0.001 level of significance.

Column (b) explains BHAR for timeline 1990 to 2014 under BS method. I have found that in year one, the lowest decile portfolio and the highest decile portfolios’ BHAR
averages are insignificant but trading on hedge strategy could yield 11.3% returns and falls to 6.7% in next year. Column (c) shows recent findings on the basis of CFS method. I have found that accruals hedge returns are insignificant under CFS method. BHAR means of the lowest and the highest accruals decile portfolios are insignificant and also hedge returns calculated under CFS method are found to have insignificant hedge returns. This concludes that accrual anomaly does not persist anymore in the presence of Nasdaq-listed companies and accruals are given weight more weight due to growth factors or behavioral attributes factors by investors. Investors do not fixate on earnings and infact they underestimate earnings to remain on safe the side of the risk in overestimating fundamental values of stocks.
6 CONCLUSION AND RECOMMENDATIONS

This research explores recent evidence on accrual anomaly. I study the US NYSE/AMEX/ NASDAQ listed firms to capture the whole US market. My study covers the timeline from the fiscal year 1990 to 2014. The sample size is 57412 firms’ fiscal years started with December year-end. Two accruals measurement methods were used to see if the accrual anomaly behave differently under these methods. I checked that if the market still underestimates the accrual component of earnings and overestimates the cash flow component of earnings. Later I checked if the market misinterprets the earnings’ components then can investors earn abnormal returns by taking a long position in the lowest accruals portfolio and a short position in the highest accruals portfolios.

My findings are inconsistent with the efficient market hypothesis. My findings show that earnings and earnings’ components are explanatory to anticipate future earnings. This finding confirms Sloan (1996) study. I find that the market is inefficient to absorb reported earnings and earnings’ components information. These findings are different from Sloan (1996) but confirms Dechow & Ge (2006) and Pincus et al (2007) where they find that the market underestimate earnings. This inefficiency could be because of presence of NASDAQ listed companies which shows high trading of stocks and produce more volatile returns (Zach, 2003). I find that the market underestimates the persistence of earnings, gives more weight to the accrual component of earnings and less weight to the cash flow components. The underestimating of cash flows and overestimating of accruals are consistent from prior studies (Sloan, 1996; Pincus, 2007; Dechow & Ge, 2006). These behaviors of the market remained the same under both accruals calculation methods. The findings for the hedge returns are significant under BS method and not significance under CFS method. Therefore, I conclude that accrual anomaly exists under BS method and does not exist under CFS method. Changing of method brings shaky confidence on existence of accrual anomaly. The market’s inefficient interpretations are more likely associated with either self-attributed biasness or accruals representations for growth factors. Increase in beta values over the period is more likely associated with Khan (2008) risk factor.
explanation and also the market collapsed appeared in year 2002 and 2008. Smaller persistence of accruals may be attributable to earning management reasoning and the reversal of accruals errors estimates (like it mentioned in Dechow & Dichev, 2002) would also incorporate the lower persistence of accruals.

Inefficiency in the market estimates do not necessarily imply that investors are not rational or sophisticated. I consider that the market is not naïve instead it undervalues the firms’ earnings based other performance such as the business product-line, management changes, or the infrastructure change could bring down the expectations of investors. Increased earnings might look catchy for investors in the short-term perspective but in long-run there are some other factors that get involved like inflations, interest rates etc. Overestimating the accrual component of earnings follows the growth explanation for better future perspective of the firms. While decreasing the persistence of cash flows is associated with Dechow et al (2008) explanation that extra cash will be settled to pay off company’s commitments. Investor do not like dead cash if the company has no future plans for investments. The final explanation could be the study ignores the cost of the transaction and could be a reason that investors are underestimating the earnings (Lev & Nissim, 2006). Information acquisitions and processing cost is also a key factor for investors to correctly estimate earnings in real time. My current research design does not explore the factors that precisely explain the underestimating behavior of the market. Therefore, it can be the future scope of the study could be explored further.

It is possible that cash flows from operating activities if adjusted with other comprehensive income adjustment could improve the results because cash flow statement adjusts net income after other comprehensive income and I have found that companies with the lowest portfolio rank in accruals under BS method have shown the highest accruals portfolio rank in accruals under CFS method is due to other comprehensive income adjustments. However, due to limited time constraint, I conclude this thesis with no further addition that the different ways of accruals impact the existence of accrual anomaly. Therefore, required through analysis to further explore accrual anomaly.
References


Diamond, J. (2002). Performance budgeting is accrual accounting required?


LaFond, R. (2005). Is the accrual anomaly a global anomaly?


Zach, T. (2003). Inside the accrual anomaly'. Available at SSRN 417781,