Analysis of Accrual Anomaly:

ACase study of Karachi Stock Exchange

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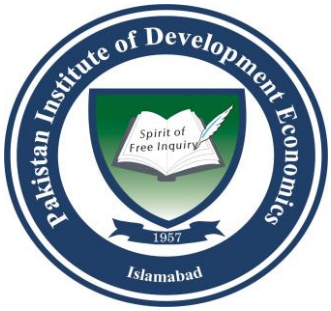

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Certificate

This is to certify that this research dissertation by Jawad Mohammad is accepted in its present form by the Department of Economics and Finance, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the thesis requirements for the degree of Masters of Philosophy in Economics and Finance.

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Dedicated to my Family

Friends and Teachers

(May ALLAH bless them)

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Abstract

This study investigates the existence of Accrual anomaly in Karachi Stock Exchange (KSE) by using a sample of 340 non-financial firms listed at KSE. The objective of the study is to check the persistence of the Accruals and Cash Flow components, their respective effect on future stock prices and a hedge portfolio returns. Ordinary Least Squaretechnique is used to check the persistence of earnings and its components, while GeneralizedLeast Square is also used to examine the effect of earnings and its components on future stock returns.Decile portfolios are formed on the basis of magnitude of accruals for the calculation of hedge portfolio return.The continuity and durability in earnings turns out to be dependent on the accrual and cash flow components of earnings' magnitudes. The efficient market hypothesis which states that all publicly available information is reflected in stock prices fails to hold. In addition, the failure of stock prices to comprehend the different properties of the constituents of earnings looks like investors inability to differentiate between the two components. The non-existence of market efficiency does not qualify that investors are irrational or the opportunitiesof earning profits are not exploited. But normal returns can be earned by opting for an active investment strategy which fully utilizes the analysis of financial statements.The study concludes that accrual anomaly exists in Karachi Stock Exchange (KSE).

Key words: Earning, Accruals, Cash Flows and persistence of Accruals.

Chapter 1

Introduction

1.1 Background:

The never ending day of globalization starts with a never ending day of investing in stocks of the globalized world corporations, starting with the ups and downs of New York Stock Exchange in the West through the London Stock Exchange to the Tokyo Stock Exchange in the East. As hundreds and thousands of people around the world are related to the trading of stocks of their respective stock markets, as their bread and butter is associated with it, so a lot of research is done to identify the problems and their respective corrective measures. One of such problems is determinants of average stockreturns.From Graham & Dodd (1934) to ground breaking work of Fama & French (1992), a lot of people have tried to ascertain, but the very important issue which is complementary to the average stock returns is of earning abnormal stock returns that is how investors are able to earn abnormal stock returns.

The average stock returns show some patterns that are deemed as anomalies as they cannot be rationalized with the help of Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965). For example, Graham and Dodd (1934) and others have contended that stocks with high fundamental to price ratios (value stocks) outperform low fundamentals to price ratios and this behavior of stocks returns is known as Glamour stocks. Another anomaly is thatstocks having low market capitalization (small stocks) results in abnormally high average returns (Banz (1981)).(Rosenberg, Reid, and Lanstein (1985), Chan, Hamao, and Lakonishok (1991), Fama and French (1992)) states that stocks with high book to market value of equity have substantially high average stock returns.Fairfield, Whisenant, and Yohn (2003) and Titman, Wei, and Xie(2004) document that those firms which invest

more have lower stock returns whereas firms having high profits results in higher average stock returns Haugen and Baker (1996) and Cohen, Gompers, and Vuolteenaho (2002). The leading anomaly identified by (Jegadeesh and Titman (1993))known as Momentum anomaly asserts that stocks with low return last year tends to have low returns for subsequent few months and high past returns stocks tend to have high future returns. Sloan (1996) contends that high accruals firms will result in lower stock returns.These anomalies are heavily researched by different people in different countries and coming up with quite different results. This motivates to examine these anomalies in case of Pakistani market. The anomaly which this study is going to examine is accrual anomaly.

Accruals are balance sheet accounts representing liabilities and non-cash based assets employed in accrual based accounting. They comprise of accounts like accounts receivable, accounts payable, goodwill, future tax liability and future tax expense. The application of accrual based accounting system has greatly increased the amount of information in accounting statements, as only cash transactions were reported before. The drawback associated with cash based system was that it failed to provide information related to the business activities like revenue based on credit and future liabilities. The accrual based accounting helps to overcome these deficiencies along with the ability to report non-cash assets like goodwill.

The previous literature and the subject of analysis of financial statements suggestthat in predicting future earnings emphasis should be given to the components of current earnings, accruals and cash flows.[1]As investors main focus is on reported earnings of firms when financial statements are disclosed, so such analysis can be subject to identify mispriced securities. This is what accrual anomaly tends to figure out, stating that the accrual factor of earnings is less persistent than the cash flow factor of earnings. Also, due to investors'

[1] Graham et al. (1962), Bernstein (1993), Schilit (1993), and White et al. (1994).

fixation on earnings, they fail to characterize the different constituent properties of cash flow and accrual earnings. So, negative (positive) future abnormal returns are experienced by firms having relatively high (low) levels of accruals and the returns are concentrated around future earnings announcements.

Most of the work done in Pakistan has made an effort to identify the determinants of stock returns using CAPM (Javid and Ahmad (2008), Muhammad Ibrahim et al. (2012), Yasmeen et al. (2012)). Although one study of Mahmood and Shah (2011) has already been done on accrual anomaly but they have only studied the persistence of accruals and related it to profitability, whereas this study extends the boundary of investigation by scale as well as by methodology.

This motivates to investigate in this studythe persistence of accruals and cash flows, fixation of earnings by investors and the resulting stock prices effect.

1.2 Objectives:

The overall objective of this study is to find out the existence of accrual anomaly in firms listed at Karachi Stock Exchange. This study will check:

- To examine whether accrual and cash flows components of earningsare persistent
- To investigate the fixation of investors' on earnings of the firms
- To explore firms experience abnormal returns due to reversal of Accruals

1.3Significance of study:

Apart from the required rate of return, the basis on which investors invest in a particular stock is the earnings and fundamental analysis of that company. Any error in judging the earnings and fundamentals can result in significant loss.

This study will help individual investors and mutual funds to correctly identify stocks with proper earnings and proper fundamentals to invest, the first of its kind to figure out such a phenomenon in Pakistan.

1.4 Organization of study:

After the introduction chapter, the rest of the study is structured asChapter 2 deals with Overview of Accrual Anomaly, chapter 3 is about literature review, chapter 4 explains the Conceptual Framework and working hypothesis, chapter 5 is about data and methodology, chapter 6 consists of empirical results and discussions, and chapter 7 delve into conclusion and policy implications.

Chapter 2

Overview of the Accrual Anomaly

This chapter provides the brief history of accrual anomaly internationally and in Pakistan's case.

2.1 International evidence of Accrual anomaly:

Sloan (1996) discovered the existence of accrual anomaly in US stock markets, New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) stating that the accrual factor of earnings is less persistent than the cash flow factor of earnings. Also, due to investors' fixation on earnings, they fail to characterize the different constituent properties of cash flow and accrual earnings. So, negative (positive) future abnormal returns are experienced by firms having relatively high (low) levels of accruals and the returns are concentrated around future earnings announcements.

Clinch (2012) studying the accrual anomaly in Australia finds that it exists there. Although there are some idiosyncrasies like persistence of earnings is underestimated by investors andsignificant hedge portfolio returns are earned in the first year of portfolio formation. Kaserer and Klingler (2008) examined the response of accrual anomaly under International Accounting Standards (IAS) and German-Generally Accepted Accounting Principles (GAAP), came up with the result that German-GAAP show same level of earnings persistency for accruals and cash flows. Accrual anomaly exists under fair value accounting which gives managerial discretion; the main cause of the anomaly. Li et. al (2011) investigated the existence of accrual anomaly in China, excluding the firms with losses to avoid the special treatment and delisting regulation bias, evidence of accrual anomaly is found there.

LaFond (2005) investigated whether accrual anomaly exists globally in seventeen countries (Australia,Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands,Norway, Singapore, Spain, Sweden, Switzerland, the U.K., and the U.S) and concluded that in general accrual anomaly results from accrual accounting. Also, the anomaly is a global phenomenon and the causes of the anomaly across countries differs, the reasons are analyst following, managerial discretion and ownership structure.

2.2 Overview in Pakistan's scenario:

Pakistani Stock Market (KSE) is one of emerging markets around the world. There are three stock exchanges which are operational in Pakistan namely Karachi Stock Exchange (KSE), Lahore Stock Exchange (LSE) and Islamabad Stock Exchange (ISE). The one which is oldest, well-known and active among the three is Karachi Stock Exchange.

KSE was founded in 1947 and was liberalized for more effective trading in 1992. Around 651 companies are listed at KSE with a market capitalization of US $ 26.50 approximately (As per KSE site). It was characterized as best operating market in the world by Business Week Magazine in 2002 and International Finance Corporation ranked it as third for percentage returns in local market index in 1991.Due to Badla financing KSE crashed in 2005. The KSE-100 index posted a return of 40.20% in 2007, showing the recovery of the market from the crash of 2005. Other financial instruments are also traded in the market like redeemable certificates, TFCs and preference shares but most of the trading is done in ordinary shares.Since 2003, the trading of derivative instrument Futures has also started.

With the passage of time investing in stocks has increased due to high return which has led to formation of a lot of mutual funds who have trained personnel to analyze firms' financial statements and invest the pooled funds. So, the importance of examining the accrual anomaly is crucial to check whether the anomaly and the resulting mispricing exist or not.

One of the studies conducted in Pakistan is of Mahmood and Shah (2011) who studied the repercussions of accrual and growth anomalies for future profitability and growth in long term net operating assets showing that both affects one year ahead profitability negatively. The accruals effect is due to managers' manipulation to increase current profitability and this will result in earning management relating to growth in long term net operating assets. The negative relation is also due to decreasing marginal returns on future investment and conservative accounting policies.

Chapter 3

Literature Review

3.1 Literature Review:

Rayburn (1986) studied the relationship of Operating Cash Flow and accruals with security returns, using firm specific holdout models came up with the result that current accruals causes abnormal returns whereas random walk regression shows that all components of accruals do so. The difference in the result of the two models may be caused by the large outliers resulting from holdout model.

Sloan (1996) investigated that whether the different information contained in the components of earnings that is accrual and cash flow is reflected in stock prices states that continuity in earnings of firms show to depend on the relative scale of Cash Flows and Accrual components of earnings. Investors are obsessed with earnings factor only. As accruals are not persistent and investors not being able to distinguish between these two factors leads to decrease in stock prices.

Bradshaw etal. (2001) examined that whether analysts and auditors make use of the information in accruals shows that analysts fail to identify the Accrual segment of earnings and its consequent non-persistence in earnings forecasts. Auditors also do not point to the Generally Accepted Accounting Principles (GAAP) violations and rather stating the violation in their audit opinions. This study also verifies that investors do not foresee the adverse outcome of having high accruals.

Xie (2001) separating total accruals into normal and abnormal Accruals found that market overprices both of them but the abnormal accruals are highly overpriced, which is also validated by the hedge-portfolio test. The overpricing of normal accruals is mixed and

weak while that of abnormal accruals is due to their relation with one year ahead earnings. so the overpricing of total accruals is due to overpricing of abnormal accruals which results from managerial discretion.

Barth etal. (2001) investigated the role of accruals in forecasting future cashflows, divided earnings into cashflows and six accrual components improved the forecasting ability of earnings. Also, components of current earnings have high explanatory power than the aggregate earnings and its six lags and that of cashflow and that of aggregate accruals. The proxies of future cash flows such as returns, share prices or discounted cashflows can be used to forecast future cash flows for several years.

DeFond and Park (2001) studied the abnormal accruals reversal and valuation of earnings surprises by market, decomposed the accruals in income increasing abnormal accruals and Income decreasing abnormal accruals, and investigating the effect of earning surprises. They find that good news earnings surprises comprising of income increasing abnormal accruals have lower earnings response coefficients(ERCs) than ERCs of Income decreasing abnormal accruals and vice versa for the bad news earnings surprises. They also find that after the announcement date, the cumulative abnormal returns are substantially higher for good news firms having income decreasing abnormal accruals.

Beneish and Vargus (2002) studied the impact of insider trading on earnings quality and valuation effects of accruals and turns out to be an informative indication for both of them. They show that the income increasing accruals continuity in the following years is lesser when there is abnormal insider selling and vice versa. Mispricing of accruals in earlier literature is caused by the income increasing accruals and investors price them as they are of high quality. The hedge portfolio return based on insider trading outperform the return on

accruals, whilethe income increasing accruals' lower persistence complimented by the abnormal insider selling is due to earnings management.

Dechow and Dichev (2002) studied the quality of accruals and earnings by employing a new approach for the calculation of accruals came up with the notion that precise estimates of accruals improves the equivalency of current accruals and past, present and future cash flow realizations but an imprecise measure causes a reduction in the role of accruals. Also, using volatility of earnings and accruals for their respective quality, they find that the ability of earnings to measure performance is enhanced by accruals compared to cashflows and the persistence of accruals is less than cashflows.

McNichols (2002) examinedaccrual estimation errors by doing a comparison using Dechow & Dichev (2002) and Jones (1991) models separately and then in combined formed showing that both models are misspecified, the first one showing that CFO is a noisy proxy for the cash flows included in accruals while the second one shows that extensive part of non-discretionary accruals is included in the discretionary accruals.

Hribar and Collins (2002) studied the impact of the measuring error of accruals, pointed that calculating accruals using balance sheet approach results in a substantial erroneous measurement rather it should be done using cashflow statement. The presence of earning management indicated by the partitioning variable if correlated with acquisitions and mergers or discontinued operations will show that earning management exists which in reality won't. Also the tests for market pricing will be understated.

Fairfield et al. (2003) probed the extent to which the differential persistence and valuation of accruals can be explained by the role of accruals as a component of growth in net operating assets, states that accruals and growth in long term net operating assets being parts of growth in net operating assets negatively effects the one year ahead return on assets

(ROA)equally. Conservative bias or the lower rates of economic profits are the cause of lower persistence of accruals rather than the earnings management.

Hribar et al. (2003) examined that how institutional investorsvalue accruals and found that high institutional ownership firms along with a minimum threshold level of actively trading institutions show low mispricing due to accruals compared to low institutional ownership firms. Also, an accrual based hedge portfolio's one year ahead returns are smaller for high institutional ownership firms than lower institutional ownership firms.

Callen and Segal (2004) studied the impact of accrual, cash flow and operating income news on current stock returns and came up with the result that accrual news causes current stock returns rather than expected return news . While operating income news more likely to impact current stock returns than expected return news and cashflow news. On the whole, the result is that expected future accruals steer current stock returns.

Desai et al. (2004) investigated that whether accrual anomaly is a manifestation of the glamour stock phenomenon stated that if we add another fundamental Cash Flow from Operations (CFO/P) to sales growth, Book to Market(B/M), Earnings to Price(E/P), Cash Flow to Price(C/P) then accrual and value glamour anomalies are the same anomalies, otherwise both are different sources of mispricing. As the characteristics of both accruals and value glamour anomalies are captured by CFO/P fundamental.

LaFond (2005) investigated whether accrual anomaly exists globally and came up with an affirmative answer. Further checking either the underlying cause is common or not, he found that it differs considerably across markets due to analyst following, managerial discretion and ownership structure. Also, he concluded that accrual anomaly is not caused by specific accrual measurement methods but generally due to the use of accrual accounting.

Core (2006) scrutinized the theories and explanations offered for the mispricing of accruals and accrual components and checked whether the earning fixation hypothesis is a causal explanation for the accrual anomaly. After removing 1% of the data, the study found that earning fixation hypothesis fails, however the methodology itself is questionable whether it is right to delete outliers.

Cheng and Thomas (2006) examined whether accrual anomaly is part of the value glamour anomaly, using different measures of accruals calculation found that CFO/P includes total accruals in explaining future annual returns which occur smoothly in the next year but fails to explain the future announcement returns which are grouped around future earnings information releasing dates. Regardless of controlling CFO/P, future annual returns are explained by the abnormal returns and concentrate around quarterly earnings announcements. Using different control variables like CFO/P, B/M and sales growth, the abnormal accrual coefficient is significant while that of CFO/P is insignificant which shows that abnormal accruals are not an indication of value glamour anomaly.

Richardson et al. (2006) studied how the lower persistence of accrual factor of earnings is caused by accounting distortions, states that the tradeoff between relevance and reliability lead to the lower persistence of accrual component of earnings. Also the inclination towards fair value accounting by the accounting standard setters will decrease the persistence and reliability of earnings due to increase in accounting distortions.

Liu and Qi (2006) investigated that either informed traders having proprietary information on accrual quality make use of the information against average investors, came up with the result that despite of controlling for trading costs, informed traders are able to earn abnormal returns, thus taking benefit of the proprietary information relating to accruals quality, which is the main driver for the persistence of accrual anomaly.

Lev and Nissim (2006) examined the persistence of accrual anomaly and reported that it still exists. They found that although institutions trade on accrual information on a timely basis but the intensity of the trade has increased over time. However the accrual anomaly exists showing that the failure of stock prices to equal intrinsic values is due to the lackluster response of institutional and other investors to accruals information. They stated that persistence of accrual anomaly is due to undesirable fundamentals of extreme accruals firms to institutional investors and the high transaction costs as large number of securities are involved and the intensity of short sales associated with an accrual strategy which is unbearable for an individual investor. So these factors will lead the accrual anomaly to exist for some time.

Shevlin et al. (2006) tried to answer the failure of accrual anomaly to be arbitraged away and turned up with two impediments to arbitrage, deficiency of close substitutes and transaction costs. Deficiency of close substitutes results in higher future abnormal returns originating from accrual based trading positions while stocks having higher transaction costs specially with lower prices and lower trading volume are profitable using the accrual based trading strategy. If arbitragers are wise enough to understand the manipulation of reported earnings by managers, it will be difficult for them to eliminate the mispricing.

Pincus etal. (2007) investigated whether accrual anomaly exists internationally taking into consideration 20 countries and concluded that accrual anomaly exists in only the US, the UK, Canada and Australia. The alternative explanations taken into account for the accrual anomaly show that it is due to earning management and limits to arbitrage. They also found that the anomaly is more expected to exist in those countries where accrual accounting is extensively used, lower concentration of share ownership and common law tradition. Also, OCFs under weighted in the four countries but not in the other countries which may be due to the fact that earning management occurs through structuring of transaction not through

accruals. Furthermore, less efficient markets' stock prices and economic fundamentals show a weaker relation, this may be due to less confidence of investors on reported fundamentals.

Subramanyam and Venkatachalam (2007) examining the impact of earnings and operating cashflows on equity valuation employed ex-post intrinsic value measure by using dividend discount model which excludes the earning fixation problem and the resulting accrual and cashflow components mispricing comes up with the result that earnings have high explanatory power than cashflows in explaining ex-post intrinsic values. Also, their approach suggests that accruals mispricing is substantially diminished.

Zhang (2007) investigating the two factors of accrual anomaly investment/growth and persistence found that both matters on the firms business model which results in different cross-sectional results. Accrual anomaly is higher in the firms/ industries which have high correlation between accruals and employees growth, a measure used to indicate the investment information in accruals. The earnings persistence factor is inconclusive in one-year-ahead earnings growth but investment factor is substantiated in long-term earnings growth, not the persistence factor. So accrual anomaly results due to the investment information contained in the accruals.

Palmon et al. (2008) checked that whether accrual anomaly is sensitive to size and concluded that accrual anomaly is dependent upon company size and that incremental information about future returns is provided by the interaction of accruals and company size. High abnormal returns can be earned by going short in high accrual decile firms while going long in the smallest quartile of lowest accrual decile firms.

Kaserer and Klingler (2008) examined the response of accrual anomaly to different accounting standards. As companies in Germany are shifting from German-GAAP to IAS, they came up with the result that German firms following German-GAAP show same level of

earnings persistency for accruals and cash flows, and no evidence of accrual anomaly is found before 2000 the years before the adoption of IAS. Also, accounting system which relies on true and fair view can be abused as it gives managerial discretion whereas a conservative accounting system does not provide the said space.

Ashiq Ali etal. (2008) investigated that whether trading on the accrual anomaly is profitable, used actual transaction costs and found that top 10% of mutual funds having highest weights in low accruals stocks however have small exposure to low accruals stocks. Although they earn excess returns after deducting transaction costs but they are less diversified and highly volatile in returns and fund flows both. Due to these factors mutual funds do not trade aggressively on accrual anomaly which results in its persistence.

Li et al. (2011) investigated the existence of accrual anomaly in China and found that when firms with losses are included then accrual anomaly fails to exist, as the earning management done is to avoid special treatment and delisting regulation. But when the firms with losses are excluded to remove the effect of delisting regulation, the result is the existence of accrual anomaly in China's stock market and a positive hedge portfolio return confirms it. Also, earning management by the profit firms results in accrual anomaly.

Mahmood and Shah (2011) studied the repercussions of accrual and growth anomalies for future earnings and long term growth in net operating assets in Pakistan found to have a negative impact on one year ahead profitability. The accruals effect is due to managers manipulation to increase current profitability and this will result in earning management relating to operating asset’s long term growth. The negative relation is also due to decreasing marginal returns on future investment and conservative accounting policies.

Clinch et al. (2012) studied accrual anomaly in Australia and found that it exists there. Although there are some idiosyncrasies like persistence of earnings is undervalued by

investors, not only accruals but also the impact of cashflows on the persistence of earnings is erroneously measured and hedge portfolio returns are only significant in the first year and decreasing over the three year post portfolio formation period.

Chapter 4

Conceptual Framework and Working Hypothesis

This chapter discusses the theoretical framework and development of the hypothesis.

4.1 Theoretical Framework:

The scrutiny of accrual and cash flow components is heavily stressed in financial statement analysis for the estimation of future earnings. As Graham et al. (1962) has pointed out that the future earnings power of a firm is determined by the underlying information in current earnings and its constituents, the importance of which cannot be neglected.They have worked out earnings power by a five step procedure needed to align current earnings for a variety of operating accruals like infrequent depreciation levels, arbitrary reserves and varying methods of inventory valuation. The rationale for the adjustment is non-recurring characteristic of these accruals in future earnings. This approach is usually advocated as Bernstein (1993) states that:

"Cash flow from operations (CFO), as a measure of performance, is less subject to distortion than is the net income figure. This is so because the accrual system, which produces the income number, relies on accruals, deferrals, allocations and valuations, all of which involve higher degrees of subjectivity than what enters the determination of CFO. That is why analysts prefer to relate CFO to reported net income as a check on the quality of that income. Some analysts believe that the higher the ratio of CFO to net income, the higher the quality of that income. Put another way, a company with a high level of net income and a low cash flow may be using income recognition or expense accrual criteria that are suspect."

Similar rationale is given by Financial Accounting Standard Board (FASB) (1980, para.54)as explanation for the importance of cash flow information in financial statements of firms.

The basic idea behind this thought is that the constituents of current earnings that are accruals and cash flows have different effects for the measurement of future earnings. Although current earnings comprises of both components but the persistence of current earnings will be short lived if it is primarily due to the accrual factor rather than the cash flow factor.[2]

The association between earnings and stock prices has been extensively studied. As Ball and Brown (1968) contend that the value relevant information embedded in earnings is due to the concurrent positive relationship between earnings and stock returns. On the other hand, many studies manifest the inability of investors in forecasting future earnings performance correctly subject to available information (Ou and Penman (1989), Bernard and Thomas (1990), Hand (1990), Maines and Hand (1996)). So the prospects of the well-known relationship between stock returns and earnings may be to a certain extent show the guileless fixation on reported earnings in disguise, instead of value relevant information embedded in earnings. Thus, as already stated that persistence of accruals is short lived, so the resulting effect will also translate into decrease in stock prices due to reversal of earnings which shows that the information content of accruals and cash flow differs as verified by the naïve expectation model tested against market efficiency.[3]

If markets are not efficient then there is room for investors to earn abnormal returns by beating the market due to the valuable information at hand. If investors are indeed guilessly obsessed with earnings then it will transpire in overpricing (underpricing) stocks in which the accrual component is relatively high (low). This takes place due to not fully foreseeing the lower persistence of accrual component of earnings.So, negative (positive)

[2] Rayburn (1986), Sloan (1996), Bradshaw et al. (2001), Xie (2001), Beneish and Vargus (2002), Dechow and Dichev (2002), Fairfield (2003), Core (2006), Richardson et al. (2006), Pincus et al. (2007), Zhang (2007), Li et al. (2011), Clinch (2012).

[3] Rayburn (1986), Sloan (1996), Bradshaw et al. (2001), Xie (2001), Fairfield (2003), Pincus et al. (2007), Li et. Al (2011), Clinch (2012).

abnormal stock returns will result when the mispricing is corrected when lower (higher) future earnings are realized than expected earnings. Thus, those investors will earn positive abnormal stock returns who have taken long (short) position on less (high) accrual firms.[4]

4.2 Development of Hypothesis:

From the above arguments it can be deduced that the level of accruals and cash flow should be examined in the earnings of firms for the purpose of future earnings predictions. As the high accruals earnings will mean revert so the inability of investors to see through earnings will cause a decline in stock prices of high accrual firms. If information is not symmetric, then room to earn abnormal stock return arises, which should be exploited. In short, following hypothesis can be formulated:

Hypothesis 1: The persistence of current earnings performance is negatively affected by accrual factor of earnings and positively affected by cash flow factor of earnings.

Hypothesis 2: The earnings expectations inherent in stock prices fail to reflect fully the higher earnings persistence due to cash flow factor of earnings and the lower earnings persistence due to the accrual factor of earnings.

Hypothesis 3: Positive abnormal returns can be earned by a hedge portfolio by taking long position in the stock of firms having relatively low levels of accruals and a short position in the stock of firms having relatively high levels of accruals.

[4] Sloan (1996), Xie (2001), Beneish and Vargus (2002), LaFond (2005), Liu and Qi (2006), Lev and Nissim (2006), Shevlin et al. (2006), Pincus et al. (2007), Palmon et al. (2008), Clinch (2012).

Chapter 5

Methodology and Data

This chapter of the study illustrates methodology, econometric tools used to accomplish the objectives of the study and the data used in the study.

5.1 Methodological Framework:

This section describes different econometric techniques which will aid us to analyze our hypothesis to achieve objective of the study.

5.1.1 Portfolio Formation:

Portfolios are formed on the basis of accruals and size. Stocks are sorted into ten deciles on the basis accruals and size, equal number of stocks are put into each decile. The top decile has the stocks with highest accruals or size values. Then first decile which is now a portfolio in itself, the annual buy and hold return for one year holding is calculated. The same is repeated for the ten portfolios for each respective year.

Ibbotson (1975) technique is used to calculate Jensen alphas for each portfolio to adjust abnormal returns for the expected returns. The method uses the time series regression estimated for each portfolio separately for each year of the assessment period based on the Sharpe Lintner CAPM given in the following equation:

$$(R_{pt} - R_{ft}) = \alpha_p + \beta_p (R_{mt} - R_{ft}) + \varepsilon_{pt} \quad (1)$$

Where R_{pt} = equal weighted return on portfolio p in year t

R_{mt}= market return in year t

R_{ft}= riskless rate of return in year t

The technique assumes that investors use Sharpe-Lintner Capital Asset Pricing Model (CAPM) to calculate expected returns. The excess return is measured by α_p that is Jensen Alpha and β_p shows the relative risk of each portfolio.

5.1.2 Accrual and Cash Flow persistence:

As Freeman et al. (1982) shows future earnings as a function of current year earnings:

$$Earnings_{t+1} = \alpha_o + \alpha_1 Earnings_t + \nu_{t+1} \quad (2)$$

α_1 measures the persistence of the accounting rate of return on assets, which is mean reverting and should be less than one (beaver (1970), Freeman et al. (1982)). As equation (2) does not differentiate between accrual and cash flow components of earnings, so it be can written as:

$$Earinings_{t+1} = \gamma_o + \gamma_1 Accruals_t + \gamma_2 Cash\ Flows_t + \nu_{t+1} \quad (3)$$

Where $\gamma_1 < \gamma_2$, because accrual factor is less persistent than the cash flow factor shown by the small coefficient of accrual factor.

5.1.3 Rational Expectation Model:

The outline of Mishkin (1983) is used to examine rational expectations hypothesis.Abnormal stock returns are zero in expectations, which is the basic inference of market efficiency and can be stated as:

$$E\left(r_{t+1} - \mathrm{r}_{t+1} \mid \phi_t\right) = 0 \quad (4)$$

where

ϕ_t = the set of information available to the market at the end of period t,

$E(...|\phi_t)$= the objective expectation conditional on ϕ_t

r_{t+1} = the return to holding a security during period t+1, and

r_{t+1} = the market's subjective expectation of the normal return for period t+1.

A model that satisfies the efficient-markets condition in (4) is:

$$E(r_{t+1} - r_{t+1} | \phi_t) = \beta(X_{t+1} - X^e_{t+1}) + \varepsilon_{t+1} \quad (5)$$

Where

ε_t = a disturbance with the property that $E(\varepsilon_{t+1} | \phi_t) = 0$,

X_t = a variable relevant to the pricing of the security in period t,

X^e_{t+1} = the rational forecast of X_{t+1} at time t [i.e $X^e_{t+1} = E(X_{t+1} | \phi_t)$]

β = a valuation multiplier.

The implication of market efficiency highlighted by this model is that only unanticipated changes in X_{t+1} can be correlated with $(r_{t+1} - r_{t+1} | \phi_t)$. In this case, the variable X represent earnings performance and β shows earning response coefficient, so the above model is used using the two specifications of the earnings forecasting equations in (2) and (3). So we have:

$$(r_{t+1} - r_{t+1} | \phi_t) = \beta(Earnings_{t+1} - \alpha_o - \alpha_1^* Earnings_t) + \varepsilon_{t+1} \quad (6)$$

Market efficiency imposes the constraint that $\alpha_1 = \alpha_1^*$. So, stock prices should correctly anticipate the average persistence of earnings performance as necessitated by the constraint.For equation (3), the equation takes the form as:

$$(r_{t+1} - \mathrm{r}_{t+1} \mid \phi_t) = \beta(Earnings_{t+1} - \gamma_o - \gamma_1^* Accruals_t - \gamma_2^* Cash\ flows_t) + \varepsilon_{t+1} \quad (7)$$

Now dual constraints $\gamma_1 = \gamma_1^*$ and $\gamma_2 = \gamma_2^*$ are imposed by market efficiency. If investors are unable to differentiate between the two components of earnings then the coefficients on the two factors are equal (i.e $\gamma_1^* = \gamma_2^*$), otherwise market efficiency requires $\gamma_1^* < \gamma_2^*$.

Estimation Technique:

Iterative weighted non-linear least squares (Mishkin 1983) is used to estimate the two systems of equations. The asymptotically distributed lilkelihood ratio is used to test market efficiency, as $\chi^2(q)$:

$$L = 2n \log (SSR^c / SSR^u) \quad (10)$$

Where

q = the number of constraints imposed by market efficiency,

n = the number of observations,

SSR^c = the sum of squared residuals from constrained weighted system, and

SSR^u = the sum of squared residuals from unconstrained weighted system.

5.2 Variables definition and Construction:

Earnings

The variable shows magnitude of earnings of firms measured as operating income after depreciation which leaves out non-recurring items like discontinued operations, special items, extraordinary items and non-operating income. This variable is also used by Sloan (1996) and Bradshaw et al. (2001).

Accruals

The variable represent balance sheet account that signifies liabilities and non-cash based asset such as accounts receivables, account payables, good will, future tax liability and future interest expense. The variable is also used by Sloan (1996) and Desai (2004) measured as:

Accruals = (ΔCA - ΔCash) – (ΔCL - ΔSTD - ΔTP) – Dep

Where ΔCA = change in current assets

ΔCash = change in cash/cash equivalents

ΔCL = change current liabilities

ΔSTD = change in debt included in current liabilities

ΔTP = change in income taxes payable

Dep = depreciation and amortization expenses

The calculation of accruals leaves out debt in current liabilities as it is associated with financing transactions rather than operating transactions.

Also accruals are further divided in current assets(ΔCA - ΔCash), current liabilities(ΔCL - ΔSTD - ΔTP) and depreciation components each of which is scaled by average total assets.

Cash flows

The variable stands for the cash transactions of a firm. It is calculated as a difference of earnings and accruals component of earnings. It is used by Sloan (1996) his study as well.

The variables earnings, accruals and cash flows are divided by average total assets for standardization as to make cross-sectional and temporal comparisons possible.

Size

The relation between size and stock returns is showed in many studies. It is measured as the natural log of the common equity at fiscal years end value. It is also employed by Sloan (1996) and Desai et al. (2004) in their respective studies.

Book to market

Used as a proxy for growth of firms and its relation with stock prices which show that a low book to market ratio firms will have high returns.It is measured as natural log of the ratio of book value of equity to market value of equity at fiscal years end. It is also employed by Sloan (1996) and Desai et al. (2004).

Beta

Beta measures the volatility of a security or portfolio with respect to market. It is calculated as a regression of excess return on the risk premium. It is also used by Sloan (1996).

Earnings to price

Ahigh earnings to price ratio means that the firm is less risky. It is measured as ratio of earnings per share divided by price of the stock at fiscal year end. The variable is employed by Sloan (1996) in his study.

5.3 Data:

The sample of this analysis consists of 340 firms listed at Karachi Stock Exchange (KSE). The data covers the time period from 1998 to 2011. The balance sheet data of non-financial firms listed at KSE is taken from Balance Sheet Analysis published by State Bank of Pakistan (SBP). Annual and monthly stock prices data is taken from business recorder website khistocks.com. The data includes firms from almost all sectors of the economy except financial firms which are not included due to different structure of their Accruals.

Chapter 6

Empirical Results and Discussions

The empirical results and interpretation of the results is presented in this chapter. Section 1 discusses the summary statistics of the data, Section 2 explains the persistence of accrual and cash flow factors of earnings, and Section 3 describes the rational expectations model whereas Section 4 explains the returns to a hedge portfolio and relation of accruals with other control variables.

6.1 Descriptive Statistics:

The descriptive statistics of earnings and its constituents are reported in Table 1. Panel A describes the mean and median values of earnings and its constituent components accrual and cash flows of each portfolio. The strong negative relation between accruals and cash flows is apparent, and as mentioned by Dechow (1994). As evident, the mean (median) value of cash flows is 0.15(0.11) in the lowest portfolio and goes on to decrease to 0.07(0.06) in the highest portfolio sorted on the basis of accruals. However, a positive relation exists between accruals and earnings with a mean (median) values of 0.09(0.06) for the lowest portfolio and 0.12(0.10) for the highest accrual sorted portfolios.

Panel B reports the results for the two risk proxies which have the potential to determine the systematic variation as a result of incomplete adjustment for risk for the accrual sorted portfolios. The first proxy calculated by employing the Ibbotson (1975) procedure is portfolio beta. The lowest accrual portfolio has a beta of 0.69, in the middle portfolio its almost constant except portfolio three and six, and the highest accrual portfolio has a beta of 0.67. So the portfolios at extremes are less risky than the middle ones. However, a hedge portfolio comprising of equal amount of short and long position in lowest and highest portfolio has a beta of 0.02.

Table 1: Mean (Median) values of selected characteristics for ten portfolios of firms formed annually by assigning firms to deciles based on the magnitude of accruals.

	Portfolio Accrual Ranking									
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Panel A: Components of Earnings										
Accruals	-0.50	-0.15	-0.09	-0.06	-0.03	-0.01	0.02	0.06	0.11	0.44
	-0.27	-0.14	-0.09	-0.06	-0.04	-0.02	0.01	0.04	0.10	0.20
Cashflows	0.15	0.13	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0.07
	0.11	0.11	0.13	0.10	0.07	0.10	0.09	0.08	0.08	0.06
Earnings	0.09	0.10	0.08	0.05	0.11	0.08	0.08	0.08	0.10	0.12
	0.06	0.09	0.08	0.10	0.07	0.07	0.08	0.05	0.09	0.10
Panel B: Risk Proxies										
Beta	0.69	0.70	0.67	0.75	0.70	0.57	0.74	0.75	0.74	0.67
Size	5.06	5.26	5.44	5.55	5.42	5.71	5.72	5.57	5.69	6.49
	5.57	5.03	5.22	5.06	5.81	5.44	5.51	5.20	5.63	5.52
Panel C: Components of Accruals										
Current Assets	-0.11	-0.04	-0.02	0.01	0.02	0.04	0.07	0.09	0.13	0.20
	-0.04	-0.02	-0.01	0.00	0.01	0.03	0.07	0.08	0.13	0.20
Current Liabilities	0.10	0.06	0.03	0.03	0.02	0.01	0.03	0.00	-0.01	-0.11
	0.15	0.05	0.02	0.01	0.01	0.02	0.01	0.01	0.00	-0.03
Depreciation	0.08	0.05	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.03
	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03

Note: The firm characteristics are computed as follows:
Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.
Earnings = income from continuing operations divided by average total assets
Cash flows = the difference between earnings and accruals
Portfolio beta = the beta coefficient from a time series regression of the excess return on the portfolio over the risk free rate on the risk premium using 13 years in the sample.
Size = the natural log of the market value of common equity measured at fiscal year end.
Current asset = the change in non-cash current assets divided by average total assets.
Current liabilities = minus the change in current liabilities (exclusive of short-term debt and taxes payable) divided by average total assets
Depreciation = minus depreciation expense divided by average total assets.

Firm size, the second risk proxy measured as the natural logarithm of market value of equity shows an increasing trend in portfolio means with small firms in lowest accrual portfolio and large firms in the highest accrual portfolio. Also the lowest accrual portfolio contains small firms with relatively high risk than the highest accrual portfolio having large firms with low risk. So, a minor net exposure to small firms would exist in a hedge portfolio consisting of equal amount of short and long positions in lowest and highest accrual portfolio.

Panel C describes that which component of accruals plays an active role in the variation of accruals and from the results it is clear that current assets component of accruals plays a vital role in the variation of accruals, as its mean and median values spans over from -0.11 (-0.04) to 0.20 (0.20). Whereas, the mean and median values for current liabilities and depreciation components lie between 0.10 (0.15) to -0.11(-0.03) and 0.08 (0.04) to 0.03 (0.03).

6.2 Results for Accrual and Cash Flow persistence:

Table 2 shows OLS regression results for equation (2), estimating the effect of current earnings on future earnings performance. The coefficient of the parameter α_1 is 0.858 which is less then unity showing sluggishly mean reverting characteristics as predicted by previous studies.[5] The null hypothesis of temporary earnings performance is rejected by a t-statistics of 61.9.

Table 2: Results of Future earnings performance on current earnings performance

Parameters	Coefficients
α_o	0.0030
t-stat	(2.01)**
α_1 (Earnings)	0.8582
	(61.94)***
R^2= 0.55	

Note: OLS is estimation technique.Earnings is income from continuing operations divided by average total assets
***denotes significance at 1%
**denotes significance at 5%
*denotes significance at 10%

The parameter estimates of equation (3) are provided by Table 3, showing the effect of the constituent factors of earnings that is accruals and cash flows impact on future earnings performance. The accruals coefficient γ_1 has the value of 0.853 whereas the coefficient of the cash flows component of earnings γ_2 is 0.867. The argument of accrual and cash flow factors to be equal is rejected by the F-test (F= 1952.05). So, there is strong evidence that both

[5] Beaver (1970), Freeman et al. (1982)

components have different properties with respect to the persistence of earnings, and the results are consistent with Sloan (1996).

Table 3: Results of future earnings performance on the accrual and cash flow components of current earnings performance

Parameters	Coefficients
γ_o	0.0030
	(2.1)**
γ_1 (Accruals)	0.8536
	(59.12)***
γ_2 (Cash Flows)	0.8678
	(66.16)***
F-test of $\gamma_1 = \gamma_2$: 1952.05 R^2= 0.59	

Note: OLS is estimation technique.
Accruals is the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets. Earnings are income from continuing operations divided by average total assets. Cash flows is the difference between earnings and accruals
***denotes significance at 1%
**denotes significance at 5%
*denotes significance at 10%

6.3 Results for Rational Expectation Model:

The system of equations (2) and (6) estimated using non-linear GLS is reported in Table 4, reporting a current earnings coefficient α_1 of 0.772 whereas the stock price equation coefficient α_1^* is 0.768 which are approximately the same. Thus, it shows that average earnings persistence is foreseen by the stock prices. The null hypothesis of market efficiency is not rejected as shown by the likelihood ratio of 0.010 (marginal significance level = 0.825). So, inferences regarding current earnings for future earnings are precisely forecasted by stock prices.

Table 5 gives an account of estimation of equations (3) and (7) using non-linear GLS, the purpose of which is to examine the effect of constituent factors of earnings on future earnings and on stock prices in the other equation. The coefficient of Accruals γ_1 and Cash Flows γ_2 in forecasting equation is 0.761 and 0.791. The failure of fulfillment of the

conditions of market efficiency's dual constraint of $\gamma_1 = \gamma_1^*$ and $\gamma_2 = \gamma_2^*$, shows that the constituent factors of earnings, accruals and cash flows do not possess different implications.

Table 4: Results of future earnings on current earnings and non-linear stock price reaction to information in current earnings about future earnings

Parameter	Coefficient	S.E
Panel A: Regression of future earnings on current earnings		
α_1 (Earnings)	0.7727	0.0220
R^2= 0.62		
Panel B: Regression of non-linear stock price reaction to information in current earnings about future earnings		
α_1^* (Earnings)	0.7686	0.0093
β	1.34	0.0116
R^2= 64		
Test of market efficiency: $\alpha_1 = \alpha_1^*$ Likelihood ratio statistic0.010 Marginal significance level0.825		

Note: GLS is estimation technique.

Earnings are income from continuing operations divided by average total assets.

Abnormal returns are computed by taking the raw buy-hold return, inclusive of dividends and subtracting the buy-hold return on a size matched portfolio of firms. The size matched portfolios are based on market value of equity deciles of KSE.

As the coefficients turn out to be 0.870for $\gamma_1^*$and 0.744 for γ_2^* that is for accruals and cash flows respectively. So, the magnitude of accruals from the stock prices equation is higher than magnitude from forecasting equation whereas that of cash flows is less than the forecasting equation's magnitude.So, the results infer that the lower (higher) persistence of earnings performance due to accrual (cash flow) constituent of earnings is not rationally anticipated by the stock prices. The null hypothesis of market efficiency is rejected by the likelihood ratio statistic of 190.20 (marginal significance level =0.00). The coefficients of accrual and cash flows components are not the same as that of earnings (0.7720), so investors do not fixate on earnings rather investorsconsiders accruals to persist for longer time period than cash flows. The results conform to that of Sloan (1996).

Table 5: Results of future earnings performance on Accrual and Cash Flow components of current earnings and non-linear stock price reaction to information in accrual and cash flow components of current earnings about future earnings

Parameter	Coefficient	S.E
Panel A: Regression of future earnings on components of current earnings		
γ_1 (Accruals)	0.761196	0.0093
γ_2 (Cash Flows)	0.791409	0.0093
R^2= 0.67		
Panel B:Regression of non-linear stock price reaction to information in Accrual and Cash Flow components of current earnings about future earnings		
γ_1^* (Accruals)	0.870165	0.0093
γ_2^* (Cash Flows)	0.744998	0.0093
β	0.008141	0.0011
R^2= 0.68		
Test of market efficiency:$\gamma_1 = \gamma_1^*$ and $\gamma_2 = \gamma_2^*$ Likelihood ratio statistic 190.20 Marginal significance level 0.00		

Note: GLS is estimation technique.
Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.
Earnings = income from continuing operations divided by average total assets
Cash flows = the difference between earnings and accruals
Abnormal returns are computed by taking the raw buy-hold return, inclusive of dividends and subtracting the buy-hold return on a size matched portfolio of firms. The size matched portfolios are based on market value of equity deciles of KSE.

6.4Results for Hedge Portfolio

Table 6 gives an account of the size adjusted returns and returns calculated through Jensen Alphas. For the first year after portfolio formation using size adjusted returns shows a negative association between abnormal returns and portfolio accruals.The lowest accrual portfolio posts an abnormal return of 10.35% (t=3.65) while the highest accrual portfolio posts -0.93% (t=-3.56) abnormal returns.The equally valued hedge portfolio formed by going long in lowest decile accrual portfolio and short in highest accrual decile portfolio yields a return of 11.26% (t=3.85).The size adjusted returns for the second year reports a weak negative forecasted relation than the first year. The lowest accrual portfolio posts an abnormal return of 2.68% (t=2.21) while the highest accrual portfolio posts -0.36% (t=-2.58) abnormal returns, whereas the hedge portfolio for the second year results in a return of 3.04%

(t=2.45).The third year size adjusted returns still shows a negative relation but its statistically insignificant. The lowest accrual portfolio posts an abnormal return of 0.50% (t=1.13) while the highest accrual portfolio posts -0.29% (t=-1.50) abnormal returns, whereas the hedge portfolio for the second year results in a return of 0.79% (t=1.8).

The abnormal returns results computed through Jensen Alphas are quite similar to those calculated through size adjusted returns. The equally valued long position in lowest accrual portfolio and short position in highest accrual portfolio that is a hedge portfolio for the first year earned an abnormal return of 11.34% (t=3.15), for the second year 3.06% (t=2.07) and for the third year 0.71% (t=1.42). The results show the failure of investors to differentiate between the constituents of earnings that are accruals and cash flows.

Table 6:Time series means of equal weighted portfolio abnormal stock returns

Portfolio Accrual						
	Size Adjusted Returns			Jensen Alphas		
Ranking	Year t+1	Year t+2	Year t+3	Year t+1	Year t+2	Year t+3
Lowest	**0.1033** (3.65)***	**0.0268** (2.21)**	**0.0050** (1.13)	**0.1010** (2.70)***	**0.0215** (1.40)	**0.0050** (0.88)
2	**0.0118** (2.06)**	**0.0035** (1.54)	**0.0030** (1.90)*	**0.0973** (1.48)	**0.0203** (0.10)	**0.0042** (1.03)
3	**0.0105** (2.90)***	**0.0017** (0.87)	**0.0015** (1.05)	**0.0913** (2.08)**	**0.0180** (0.21)	**0.0030** (1.15)
4	**0.0104** (1.43)	**0.0014** (0.91)	**0.0018** (0.92)	**0.0753** (1.18)	**0.0111** (1.30)	**0.0019** (1.42)
5	**0.0094** (1.10)	**0.0014** (0.74)	**0.0011** (0.51)	**0.0624** (1.29)	**0.0050** (1.58)	**0.0016** (1.86)*
6	**0.0088** (1.70)*	**0.0007** (0.55)	**0.0011** (0.71)	**0.0508** (0.26)	**0.0011** (0.25)	**0.0010** (0.36)
7	**-0.0020** (-1.07)	**-0.0014** (-0.51)	**-0.0007** (-0.29)	**-0.0023** (-3.02)***	**-0.0008** (-0.91)	**0.0006** (1.10)
8	**-0.0049** (-2.89)***	**-0.0020** (-1.12)	**-0.0021** (-0.77)	**-0.0070** (-2.19)**	**-0.0021** (-2.04)**	**-0.0008** (-1.03)
9	**-0.0070** (-1.72)*	**-0.0027** (-2.02)**	**-0.0025** (-1.34)	**-0.0095** (-2.06)**	**-0.0053** (-0.34)	**-0.00162** (-1.37)
Highest	**-0.0093** (-3.56)***	**-0.0036** (-2.58)***	**-0.0029** (-1.50)	**-0.0124** (-3.18)***	**-0.0091** (-2.48)**	**-0.0021** (-1.22)
Hedge	**0.1126** (3.85)***	**0.0304** (2.45)**	**0.0079** (1.8)*	**0.1134** (3.15)***	**0.0306** (2.07)**	**0.0071** (1.42)

Portfolios are formed annually by assigning firms into deciles based on the magnitude of accruals in year t. The values in parentheses are t-statistics based on the time series of the annual portfolio abnormal stock returns. Accruals is the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets

The size adjusted returns are computed by taking the raw buy-hold return, inclusive of dividends and subtracting the buy-hold return on a size matched portfolio of firms. The size matched portfolios are based on market value of equity deciles of KSE.

The Jensen alpha is the estimated value of α from $(R_{pt}-R_{ft})=\alpha_p+\beta_p(R_{mt}-R_{ft})+\varepsilon_{pt}$, where R_{pt} denotes the raw buy-hold return to portfolio p in year t, inclusive of dividends, R_{ft} is the risk free rate measured as the annual T-bill yield, R_{mt} is the market return, estimated by as the return on KSE-Whole Index return.

The hedge portfolio consists of a long position in the lowest accrual portfolio and an offsetting short position in the highest accrual portfolio.

***denotes significance at 1%

**denotes significance at 5%

*denotes significance at 10%

Table 7 furnishes further confirmation of the accrual and future stock returns relationship by reporting regressions of stock returns on accruals and other control variables using Fama and Macbeth (1973) approach.For each of the 13 years a separate cross sectional regression is run and their means of coefficients along with t-statistics are reported. Panel A, describes the regression of future stock returns on accruals and reconfirms the results reported in table 6 that there exists a negative relation between future stock returnsand accruals which is more significant in the first year than the subsequent two years to follow.

Panel B presents regression results of future stock returns on the constituents of accruals that are current assets, current liabilities and depreciation.All the coefficients of the accrual components are negative for the first two years and current asset component being the highest in magnitude along with high significance level, thus being the major constituent to contribute to accruals (as shown in table 1). The component of current liabilities also slightly influences the accruals and thus playing a significant role in forecasting future stock returns for the first year only.

Panel C describes results of regressions on certain other variables which previous studies consider as the determinants of stock returns (Fama and French 1992).The inclusion of variables like size, book to market (B/M), beta and earnings to price (E/P) is to check whether the forecasting power of accruals is integrated by these variables or not. The results of panel C show that the coefficient of accruals is quite similar in magnitude and significance level to the results described in panel A of univariate analysis. So, accruals provide additional and supplementary power to the prediction of future returns along with these control variables.

Table 7: Cross-sectional regression tests of the explanatory power of accruals with respect to future annual stock returns

Panel A: Cross-sectional regressions of stock returns on accruals Dependent variable is stock return for:			
	Year t+1	Year t+2	Year t+3
Intercept	0.18	-0.03	0.13
t-stat	(6.03)***	(-1.46)	(4.81)***
Accruals	-0.29	-0.20	-0.06
	(-1.97)**	(-1.96)**	(-1.66)*
Panel B: Cross-sectional regressions of stock returns on the components of accruals Dependent variable is stock return for:			
	Year t+1	Year t+2	Year t+3
Intercept	0.04	-0.02	0.03
	(0.63)	(-0.51)	(0.62)
Current Assets	-0.20	-0.17	-0.13
	(-2.01)**	(-2.02)**	(-1.70)*
Current Liability	-0.19	-0.15	0.05
	(-1.71)*	(-0.81)	(1.15)
Depreciation Expense	-0.15	-0.13	0.01
	(-1.57)	(-0.37)	(1.77)
Continued…			

Panel C: Cross-sectional regressions of stock returns on accruals and other predictors of returns			
	Dependent variable is stock return for:		
	Year t+1	Year t+2	Year t+3
Intercept	0.35	-0.01	0.04
	(3.58)	(-0.07)	(0.43)
Accruals	-0.26	-0.26	-0.35
	(-2.41)**	(-2.08)**	(-1.45)
Size	-0.03	-0.01	0.01
	(-1.83)*	(-1.01)	(0.51)
Book to market	0.01	0.08	0.08
	(0.93)	(2.07)**	(1.80)*
Beta	0.13	-0.04	-0.04
	(3.00)***	(-1.26)	(-0.77)
Earning to price	-0.01	-0.01	0.01
	(-1.81)**	(-0.87)	(1.01)

The numbers reported are time series means of the estimated parameters from cross-sectional regressions.
Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets
Current asset = the change in non-cash current assets divided by average total assets.
Current liabilities = minus the change in current liabilities (exclusive of short-term debt and taxes payable) divided by average total assets
Depreciation = minus depreciation expense divided by average total assets
Size = the natural log of the market value of common equity measured at fiscal year end.
Book to market = the natural log of the ratio of the book value of common equity to the market value of common equity measured at year end.
Beta = estimated from a regression of monthly raw returns on the KSE-Whole Index.
Earnings to price = estimated as earnings per share divided by the fiscal year end stock price.
***denotes significance at 1%
**denotes significance at 5%
*denotes significance at 10%

Chapter 7

Conclusion and Policy Recommendations

This chapter consists of conclusion of our study and policy recommendations in light of our results.

7.1 Conclusion

The study examined that whether constituents of earnings that are accrual and cash flow possess different effects for future earnings based on 340 non-financial firms listed at KSE for the period of 1998 to 2011. The analysis is carried out in three parts.

Firstly, the persistence of earnings and its constituent's accruals and cash flows. The study shows a strong negative relation between accrual and cash flow components of earnings evident in previous studies like Dechow (1994). It also shows that current asset is the major component of accruals same as Sloan (1996).Results also conclude that a positive relationship exists between current earnings and future earnings and future earnings are also associated with the accrual and cash flow constituents of earnings.

Secondly, although market efficiency exists in earnings case only butthe results manifest that lower persistence of earnings performance due to the lower persistence of accrual component is not anticipated by stock prices along with the higher persistence of cash flows. So, rejecting the existence of market efficiency which shows the investors inability to differentiate between the two constituent factors of earnings.

Thirdly, the benefit from accrual anomaly can be achieved by taking equal value long position in highest accrual portfolios and short position in lowest accrual portfolios, thus earning positive hedge portfolio returns.Also, the univariate analysis shows that accruals affect future stock returns negatively and along with other control variables its effect is not

subsumed by other control variables showing the same negative relation with almost same magnitude.

So, accrual anomaly exists in Karachi Stock Exchange (KSE).The continuity and durability in earnings turns out to be dependent on the accrual and cash flow components of earnings' magnitudes.The efficient market hypothesis which states that all publicly available information is reflected in stock prices fails to hold. In addition, the failure of stock prices to comprehend the different properties of the constituents of earnings looks like investors inability to differentiate between the two components. The nonexistence of market efficiency does not qualify that investors are irrational or the presence of chances earning profits that are not exploited. But normal returns can be earned by opting for an active investment strategy which fully utilizes the analysis of financial statements.

7.2 Policy Implications

From above results and conclusions this study comes up with the following implications such that:

1. Security Exchange Commission of Pakistan (SECP) should make the firms binding to explicitly state the earnings and the corresponding Accrual and Cash Flow components values.
2. SECP that firms reporting under Generally Accepted Accounting Principles (GAAP) should truly reflect the values of accruals and the level of managerial discretion should be declined.
3. Any investor who opens an account with a broker should be liable to take some introductory courses which enable him/her to analyze the financial statements correctly.

7.3 Future Research

This study found an explanation for accrual anomaly. Further research may be carried out as there is not much research on accrual anomaly in emerging markets especially in case of Pakistan. In future researchers can work on:

1. The existence of accrual anomaly may be due to outliers, so a study comparing both types of empirical results will be a good contribution.
2. Also the computation of accruals using statement of cash flows will be a good insight into the existence of accrual anomaly.
3. The existence of arbitrage opportunities can also be studied.
4. The impact of discretionary and non-discretionary accruals to cause accrual anomaly will further identify the causes of the anomaly.

7.4 Limitations of the Study

As this area of research is not yet been explored by the researchers, so there are different types of limitations in this study. As the data of stock prices before 1998 is not computerized as the trading before that was manually done not electronically. So study's sample of analysis would have been easily extended.Also, accruals are calculated using balance sheet approach, it would have been much better to calculate it using cash flow statement.

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Appendix

The list of companies taken into account in this study is listed below:

Industry	Companies
Textile	(Colony) Sarhad Textile Mills Ltd.
Textile	(Colony) Thal Textile Mills Ltd.
Textile	Adil Textile Mills Ltd.
Textile	Ahmed Hassan Textile Mills Ltd.
Textile	Al-Qadir Textile Mills Ltd.
Textile	Ali Asghar Textile Mills Ltd.
Textile	Allawasaya Textile & Finishing Mills Ltd.
Textile	Annoor Textile Mills Ltd.
Textile	Apollo Textile Mills Ltd.
Textile	Artistic Denim Mills Ltd.
Textile	Ashfaq Textile Mills Ltd.
Textile	Asim Textile Mills Ltd.
Textile	Ayesha Textile Mills Ltd.
Textile	Azam Textile Mills Ltd.
Textile	Babri Cotton Mills Ltd.
Textile	Bhanero Textile Mills Ltd.
Textile	Bilal Fibres Ltd.
Textile	Blessed Textiles Ltd.
Textile	Brothers Textile Mills Ltd.
Textile	Chakwal Spinning Mills Ltd.
Textile	Colony Mills Ltd. (Colony Textile Mills Ltd.)
Textile	D.M. Textile Mills Ltd.
Textile	Dar Es Salaam Textile Mills Ltd.
Textile	Data Textiles Ltd.
Textile	Dawood Lawrencepur Ltd. (Dawod Coton Mills)
Textile	Dewan Khalid Textile Mills Ltd.
Textile	Dewan Mushtaq Textile Mills Ltd.
Textile	Dewan Textile Mills Ltd.
Textile	Din Textile Mills Ltd.
Textile	Elahi Cotton Mills Ltd.
Textile	Ellcot Spinning Mills Ltd.
Textile	Faisal Spinning Mills Ltd.
Textile	Fateh Textile Mills Ltd.
Textile	Fatima Enterprises Ltd.
Textile	Fazal Cloth Mills Ltd.
Textile	Fazal Textile Mills Ltd.
Textile	Gadoon Textile Mills Ltd.
Textile	Ghazi Fabrics International Ltd.
Textile	Glamour Textile Mills Ltd.

Textile	Globe Textile Mills (OE) Ltd.
Textile	Globe Textile Mills Ltd.
Textile	Gulistan Spinning Mills Ltd.
Textile	Gulistan Textile Mills Ltd.
Textile	Gulshan Spinning Mills Ltd.
Textile	Haji Mohammad Ismail Mills Ltd.
Textile	Hajra Textile Mills Ltd.
Textile	Hala Enterprises Ltd.
Textile	Hamid Textile Mills Ltd.
Textile	Husein Industries Ltd.
Textile	ICC Textiles Ltd.
Textile	Ideal Spinning Mills Ltd.
Textile	Idrees Textile Mills Ltd.
Textile	Indus Dyeing & Manufacturing Co. Ltd.
Textile	Ishaq Textile Mills Ltd.
Textile	Ishtiaq Textile Mills Ltd.
Textile	Island Textile Mills Ltd.
Textile	J.A. Textile Mills Ltd.
Textile	J.K. Spinning Mills Ltd.
Textile	Janana De Malucho Textile Mills Ltd.
Textile	Jubilee Spinning & Weaving Mills Ltd.
Textile	Karim Cotton Mills Ltd.
Textile	Khalid Siraj Textile Mills Ltd.
Textile	Khurshid Spinning Mills Ltd.
Textile	Khyber Textile Mills Ltd.
Textile	Kohat Textile Mills Ltd.
Textile	Kohinoor Industries Ltd.
Textile	Kohinoor Spinning Mills Ltd.
Textile	Kohinoor Textile Mills Ltd.
Textile	Landmark Spinning Industries Ltd.
Textile	Mahmood Textile Mills Ltd.
Textile	Maqbool Textile Mills Ltd.
Textile	Masood Textile Mills Ltd.
Textile	Mehr Dastagir Textile Mills Ltd.
Textile	Mian Textile Industries Ltd.
Textile	Mohammad Farooq Textile Mills Ltd.
Textile	Mubarak Textile Mills Ltd.
Textile	N.P. Spinning Mills Ltd.
Textile	Nadeem Textile Mills Ltd.
Textile	Nagina Cotton Mills Ltd.
Textile	Nazir Cotton Mills Ltd.
Textile	Nishat (Chunian) Ltd.

Textile	Nishat Mills Ltd.
Textile	Olympia Spinning & Weaving Mills Ltd.
Textile	Olympia Textile Mills Ltd.
Textile	Paramount Spinning Mills Ltd.
Textile	Premium Textile Mills Ltd.
Textile	Prosperity Weaving Mills Ltd.
Textile	Quality Textile Mills Ltd.
Textile	Quetta Textile Mills Ltd.
Textile	Ravi Textile Mills Ltd.
Textile	Redco Textiles Ltd.
Textile	Regent Textile Industries Ltd.
Textile	Reliance Cotton Spinning Mills Ltd.
Textile	Reliance Weaving Mills Ltd.
Textile	Resham Textile Industries Ltd.
Textile	Ruby Textile Mills Ltd.
Textile	Safa Textiles Ltd.
Textile	Saif Textile Mills Ltd.
Textile	Sajjad Textile Mills Ltd.
Textile	Saleem Denim Industries Ltd.
Textile	Salfi Textile Mills Ltd.
Textile	Sally Textile Mills Ltd.
Textile	Salman Noman Enterprises Ltd.
Textile	Samin Textiles Ltd.
Textile	Sana Industries Ltd.
Textile	Sapphire Fibres Ltd.
Textile	Sapphire Textile Mills Ltd.
Textile	Sargodha Spinning Mills Ltd.
Textile	Saritow Spinning Mills Ltd.
Textile	Service Fabrics Ltd.
Textile	Service Industries Textiles Ltd.
Textile	Shadab Textile Mills Ltd.
Textile	Shadman Cotton Mills Ltd.
Textile	Shahtaj Textile Ltd.
Textile	Shahzad Textile Mills Ltd.
Textile	Shams Textile Mills Ltd.
Textile	Sind Fine Textile Mills Ltd.
Textile	Sunrays Textile Mills Ltd.
Textile	Suraj Cotton Mills Ltd.
Textile	Taha Spinning Mills Ltd.
Textile	Tata Textile Mills Ltd.
Textile	The Crescent Textile Mills Ltd.
Textile	Towellers Ltd.

Textile	Yousaf Weaving Mills Ltd.
Textile	Zahidjee Textile Mills Ltd.
Made-up Textile Articles	Aruj Garment Accessories Ltd.
Made-up Textile Articles	Fateh Sports Wear Ltd.
Made-up Textile Articles	Gul Ahmed Textile Mills Ltd.
Made-up Textile Articles	International Knitwear Ltd.
Made-up Textile Articles	Liberty Mills Ltd.
Made-up Textile Articles	Moonlite (Pak) Ltd.
Other textiles n.e.s.	Al-Abid Silk Mills Ltd.
Other textiles n.e.s.	Bannu Woollen Mills Ltd.
Other textiles n.e.s.	Ibrahim Fibres Ltd.
Other textiles n.e.s.	Latif Jute Mills Ltd.
Other textiles n.e.s.	Noor Silk Mills Ltd.
Other textiles n.e.s.	Pakistan Synthetics Ltd.
Other textiles n.e.s.	Rupali Polyester Ltd.
Other textiles n.e.s.	S.G. Fibres Ltd.
Other textiles n.e.s.	Suhail Jute Mills Ltd.
Other textiles n.e.s.	The National Silk & Rayon Mills Ltd.
Other textiles n.e.s.	Tri-Star Polyester Ltd.
Sugar	Adam Sugar Mills Ltd.
Sugar	Al-Abbas Sugar Mills Ltd.
Sugar	Al-Noor Sugar Mills Ltd.
Sugar	Ansari Sugar Mills Ltd.
Sugar	Baba Farid Sugar Mills Ltd.
Sugar	Bawany Sugar Mills Ltd.
Sugar	Chashma Sugar Mills Ltd.
Sugar	Crescent Sugar Mills And Distillery Ltd.
Sugar	Dewan Sugar Mills Ltd.
Sugar	Faran Sugar Mills Ltd.
Sugar	Fecto Sugar Mills Ltd.
Sugar	Habib - ADM Ltd.(Habib Arkady LTD.)
Sugar	Habib Sugar Mills Ltd.
Sugar	Haseeb Waqas Sugar Mills Ltd.
Sugar	Husein Sugar Mills Ltd.
Sugar	JDW Sugar Mills Ltd.
Sugar	Khairpur Sugar Mills Ltd.
Sugar	Kohinoor Sugar Mills Ltd.
Sugar	Mehran Sugar Mills Ltd.
Sugar	Mirpurkhas Sugar Mills Ltd.
Sugar	Mirza Sugar Mills Ltd.
Sugar	Noon Sugar Mills Ltd.
Sugar	Pangrio Sugar Mills Ltd.

Sugar	Sakrand Sugar Mills Ltd.
Sugar	Sanghar Sugar Mills Ltd.
Sugar	Shahmurad Sugar Mills Ltd.
Sugar	Shahtaj Sugar Mills Ltd.
Sugar	Shakarganj Mills Ltd.
Sugar	Sindh Abadgar'S Sugar Mills Ltd.
Sugar	Tandlianwala Sugar Mills Ltd.
Sugar	The Premier Sugar Mills & Distillery Co. Ltd.
Sugar	The Thal Industries Corporation Ltd.
Other food products n.e.s	Clover Pakistan Ltd.
Other food products n.e.s	Indus Fruit Products Ltd.
Other food products n.e.s	Ismail Industries Ltd.
Other food products n.e.s	Mitchell'S Fruit Farms Ltd.
Other food products n.e.s	Morafco Industries Ltd.
Other food products n.e.s	Murree Brewery Co. Ltd.
Other food products n.e.s	National Foods Ltd.
Other food products n.e.s	Nestle Pakistan Ltd.
Other food products n.e.s	Noon Pakistan Ltd.
Other food products n.e.s	Punjab Oil Mills Ltd.
Other food products n.e.s	Quice Food Industries Ltd.
Other food products n.e.s	S.S. Oil Mills Ltd.
Other food products n.e.s	Shezan International Ltd.
Other food products n.e.s	Unilever Pakistan Foods Ltd. (Rafhan Bestfoods Ltd.)
Other food products n.e.s	Unilever Pakistan Ltd.
Other food products n.e.s	Wazir Ali Industries Ltd.
Chemicals, Chemical Products and Pharma.	Abbott Laboratories (Pakistan) Ltd.
Chemicals, Chemical Products and Pharma.	Bawany Air Products Ltd.
Chemicals, Chemical Products and Pharma.	Berger Paints Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Biafo Industries Ltd.
Chemicals, Chemical Products and Pharma.	Buxly Paints Ltd.
Chemicals, Chemical Products and Pharma.	Clariant Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Colgate-Palmolive (Pakistan) Ltd.
Chemicals, Chemical Products and Pharma.	Data Agro Ltd.
Chemicals, Chemical Products and Pharma.	Dawood Hercules Chemicals Ltd.
Chemicals, Chemical Products and	Descon Chemicals (Pvt) Ltd. (Nimir Resins Ltd.)

Pharma.	
Chemicals, Chemical Products and Pharma.	Dewan Salman Fibre Ltd.
Chemicals, Chemical Products and Pharma.	Dynea Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Engro Corporation Ltd. (Engro Chemical Pakistan Ltd.)
Chemicals, Chemical Products and Pharma.	Fauji Fertilizer Bin Qasim Ltd.
Chemicals, Chemical Products and Pharma.	Fauji Fertilizer Co. Ltd.
Chemicals, Chemical Products and Pharma.	Ferozsons Laboratories Ltd.
Chemicals, Chemical Products and Pharma.	Glaxosmithkline (Pakistan) Ltd.
Chemicals, Chemical Products and Pharma.	Highnoon Laboratories Ltd.
Chemicals, Chemical Products and Pharma.	ICI Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Leiner Pak Gelatine Ltd.
Chemicals, Chemical Products and Pharma.	Linde Pakistan Ltd. (Boc Pakistan Ltd.)
Chemicals, Chemical Products and Pharma.	Nimir Industrial Chemicals Ltd.
Chemicals, Chemical Products and Pharma.	Otsuka Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Pakistan Gum & Chemicals Ltd.
Chemicals, Chemical Products and Pharma.	Pakistan PVC Ltd.
Chemicals, Chemical Products and Pharma.	Sanofi aventis(Aventis Pharma)
Chemicals, Chemical Products and Pharma.	Sardar Chemical Industries Ltd.
Chemicals, Chemical Products and Pharma.	Searle Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Shaffi Chemical Industries Ltd.
Chemicals, Chemical Products and Pharma.	Sitara Chemical Industries Ltd.
Chemicals, Chemical Products and Pharma.	United Distributors Pakistan Ltd.
Chemicals, Chemical Products and Pharma.	Wah Nobel Chemicals Ltd.
Chemicals, Chemical Products and Pharma.	Wyeth Pakistan Ltd.
Other Manufacturing n.e.s.	Al-Khair Gadoon Ltd.
Other Manufacturing n.e.s.	Bata Pakistan Ltd.

Other Manufacturing n.e.s.	Crescent Steel & Allied Products Ltd.
Other Manufacturing n.e.s.	Dadex Eternit Ltd.
Other Manufacturing n.e.s.	Diamond Industries Ltd.
Other Manufacturing n.e.s.	Eco Pack Ltd.(Plastobag Ltd.)
Other Manufacturing n.e.s.	Emco Industries Ltd.
Other Manufacturing n.e.s.	Fateh Industries Ltd.
Other Manufacturing n.e.s.	Gillette Pakistan Ltd.
Other Manufacturing n.e.s.	Goodluck Industries Ltd.
Other Manufacturing n.e.s.	Grays Of Cambridge (Pakistan) Ltd.
Other Manufacturing n.e.s.	Huffaz Seamless Pipe Industries Ltd.
Other Manufacturing n.e.s.	International Industries Ltd.
Other Manufacturing n.e.s.	KSB Pumps Co. Ltd.
Other Manufacturing n.e.s.	Khyber Tobacco Co. Ltd.
Other Manufacturing n.e.s.	Leather Up Ltd.
Other Manufacturing n.e.s.	Pak Leather Crafts Ltd.
Other Manufacturing n.e.s.	Pakistan Engineering Co. Ltd.
Other Manufacturing n.e.s.	Pakistan Tobacco Co. Ltd.
Other Manufacturing n.e.s.	Philip Morris (Pakistan) Ltd.
Other Manufacturing n.e.s.	Service Industries Ltd.
Other Manufacturing n.e.s.	Thal Ltd. (Thal Jute Mills Ltd.)
Other Manufacturing n.e.s.	Treet Corporation Ltd.
Other Manufacturing n.e.s.	Tri-Pack Films Ltd.
Other Manufacturing n.e.s.	United Brands Ltd.(Udl Industries Ltd.)
Other Manufacturing n.e.s.	ZIL Ltd. (Zulfeqar Industries Ltd.)
Cement	Al-Abbas Cement Industries Ltd.
Cement	Cherat Cement Co. Ltd.
Cement	D.G. Khan Cement Co. Ltd.
Cement	Dadabhoy Cement Industries Ltd.
Cement	Dandot Cement Co. Ltd.
Cement	Dewan Cement Ltd. (Pakland Cement Ltd.)
Cement	Fauji Cement Co. Ltd.
Cement	Fecto Cement Ltd.
Cement	Gharibwal Cement Ltd.
Cement	Kohat Cement Co. Ltd.
Cement	Lafarge Pak. Cement Ltd. (Pakistan Cement Ltd.)
Cement	Lucky Cement Ltd.
Cement	Maple Leaf Cement Factory Ltd.
Cement	Mustehkam Cement Ltd.
Cement	Pioneer Cement Ltd.
Cement	Zeal Pak Cement Factory Ltd.
Mineral Products	Balochistan Glass Ltd.
Mineral Products	Frontier Ceramics Ltd.

Mineral Products	Ghani Glass Ltd.
Mineral Products	Karam Ceramics Ltd.
Mineral Products	Shabbir Tiles And Ceramics Ltd.
Mineral Products	Tariq Glass Industries Ltd.
Motor Vehicles, Trailers & Autoparts	Agriauto Industries Ltd.
Motor Vehicles, Trailers & Autoparts	Al-Ghazi Tractors Ltd.
Motor Vehicles, Trailers & Autoparts	Atlas Battery Ltd.
Motor Vehicles, Trailers & Autoparts	Atlas Engineering Ltd. (Allwin Engineering Industries Ltd.)
Motor Vehicles, Trailers & Autoparts	Atlas Honda Ltd.
Motor Vehicles, Trailers & Autoparts	Baluchistan Wheels Ltd.
Motor Vehicles, Trailers & Autoparts	Bela Automotives Ltd.
Motor Vehicles, Trailers & Autoparts	Bolan Castings Ltd.
Motor Vehicles, Trailers & Autoparts	Dewan Automotive Engineering Ltd. (Allied Motors Ltd.)
Motor Vehicles, Trailers & Autoparts	Exide Pakistan Ltd.
Motor Vehicles, Trailers & Autoparts	General Tyre & Rubber Co. Ltd.
Motor Vehicles, Trailers & Autoparts	Ghandhara Industries Ltd.
Motor Vehicles, Trailers & Autoparts	Ghandhara Nissan Ltd.
Motor Vehicles, Trailers & Autoparts	Hinopak Motors Ltd.
Motor Vehicles, Trailers & Autoparts	Honda Atlas Cars (Pakistan) Ltd.
Motor Vehicles, Trailers & Autoparts	Indus Motor Co. Ltd.
Motor Vehicles, Trailers & Autoparts	Millat Tractors Ltd.
Motor Vehicles, Trailers & Autoparts	Pak Suzuki Motor Co. Ltd.
Motor Vehicles, Trailers & Autoparts	Sazgar Engineering Works Ltd.
Motor Vehicles, Trailers & Autoparts	Transmission Engineering Industries Ltd.
Fuel and Energy Sector	Altern Energy Ltd.
Fuel and Energy Sector	Ideal Energy Ltd.
Fuel and Energy Sector	Japan Power Generation Ltd.
Fuel and Energy Sector	Karachi Electric Supply Co. Ltd.
Fuel and Energy Sector	Kohinoor Energy Ltd.
Fuel and Energy Sector	Kohinoor Power Co. Ltd.
Fuel and Energy Sector	Mari Gas Co. Ltd.
Fuel and Energy Sector	S.G. Power Ltd.
Fuel and Energy Sector	Sitara Energy Ltd.
Fuel and Energy Sector	Southern Electric Power Co. Ltd.
Fuel and Energy Sector	Sui Northern Gas Pipelines Ltd.
Fuel and Energy Sector	Sui Southern Gas Co. Ltd.
Fuel and Energy Sector	The Hub Power Co. Ltd.
Information, Comm. and Transport Services	Pak Datacom Ltd.
Information, Comm. and Transport Services	Pakistan International Airlines Corporation Ltd.
Information, Comm. and Transport	Pakistan National Shipping Corporation.

Services	
Information, Comm. and Transport Services	Pakistan Telecommunication Co. Ltd.
Information, Comm. and Transport Services	Telecard Ltd.
Coke and Refined Petroleum Products	Attock Refinery Ltd.
Coke and Refined Petroleum Products	National Refinery Ltd.
Coke and Refined Petroleum Products	Pakistan Oilfields Ltd.
Coke and Refined Petroleum Products	Pakistan Refinery Ltd.
Coke and Refined Petroleum Products	Pakistan State Oil Co. Ltd.
Coke and Refined Petroleum Products	Shell Pakistan Ltd.
Paper, Paperboard and Products	Baluchistan Particle Board Ltd.
Paper, Paperboard and Products	Central Forest Products Ltd.
Paper, Paperboard and Products	Century Paper & Board Mills Ltd.
Paper, Paperboard and Products	Cherat Packaging Ltd.
Paper, Paperboard and Products	Dadabhoy Sack Ltd.
Paper, Paperboard and Products	Merit Packaging Ltd.
Paper, Paperboard and Products	Packages Ltd.
Paper, Paperboard and Products	Pakistan Paper Products Ltd.
Paper, Paperboard and Products	Security Papers Ltd.
Electrical Machinery and Apparatus	Ados Pakistan Ltd.
Electrical Machinery and Apparatus	Johnson & Philips (Pakistan) Ltd.
Electrical Machinery and Apparatus	Pak Elektron Ltd.
Electrical Machinery and Apparatus	Pakistan Cables Ltd.
Electrical Machinery and Apparatus	Pakistan Telephone Cables Ltd.
Electrical Machinery and Apparatus	Siemens (Pakistan) Engineering Co. Ltd.
Electrical Machinery and Apparatus	Singer Pakistan Ltd.
Electrical Machinery and Apparatus	The Climax Engineering Co. Ltd.
Other Services Activities	Dadabhoy Construction Tech. Ltd.(Pak German Prefabs Ltd.
Other Services Activities	Dreamworld Ltd.
Other Services Activities	Gammon Pakistan Ltd.
Other Services Activities	Javedan Corporation Ltd. (formerly Javedan Cement Ltd.)
Other Services Activities	Pakistan Hotels Developers Ltd.
Other Services Activities	Pakistan Services Ltd.
Other Services Activities	Shifa International Hospitals Ltd.