STOCK MARKET BUBBLE IN PAKISTAN VIS-A-VIS ITS IMPACT ON INVESTORS

By

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NATIONAL UNIVERSITY OF MODERN LANGUAGES ISLAMABAD

AUGUST, 2021

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY
In Management Sciences

To

FACULTY OF MANAGEMENT SCIENCES

NATIONAL UNIVERSITY OF MODERN LANGUAGES, ISLAMABAD

AUGUST, 2021

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Thesis/ Dissertation Title:

STOCK MARKET BUBBLE IN PAKISTAN VIS-A-VIS ITS IMPACT ON INVESTORS

Submitted By: Waleed Khalid **Registration #: 462-Ph. D/MS/F13**

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Sys ID #: PD-MS-EF-13-ID011

DOCTOR OF PHILOSOPHY

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Candidate of Ph.D. Management Sciences at the National University of Modern Languages do hereby declare that the thesis **Stock Market Bubble in Pakistan Vis-a-Vis its Impact on Investors.** submitted by me in fulfillment of a Ph.D. degree, is my sole work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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DEDICATIONS

Dedicated to my parents with whose earnest prayers and support I succeeded in achieving my goal of life.

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ACKNOWLEDGEMENTS

At first, I thank Almighty Allah, the most beneficent and the most merciful, who provided me the apt ability, strength and courage to complete my research work successfully.

I would like to express my special gratitude to my eminent and affectionate supervisor Prof Dr. Kashif-ur-Rehman, for providing immeasurable support both academically and mentally. It would have not been possible to complete this research work without his invaluable guidance and support.

I would also like to express my humble gratitude and felicitations to Prof Dr. Naveed Akhter, Dean FMS and Prof Dr. Faid Gul, HOD FMS for providing immaculate and timely guidance throughout my academic career and research work, which helped me in a great way to complete my Ph.D. Dissertation.

Finally, I would like to thank my parents and loved ones, who have supported me throughout the entire process, both by keeping me harmonious and helping me putting pieces together. Without their relentless love and support, I would not have reached my goal today. I am forever grateful for your love.

Submission Statement

In adherence to the requirements pertaining to admission for examination and submission of the research thesis for the Ph.D. degree, it is certified that this research work has not been submitted previously in any university. To the best of my knowledge and belief, this thesis does not contain any such material that has already been written or published by any other person except for references that have been duly referred to in the prescribed manner in this very thesis.

Waleed Khalid

Certificate

This is to certify that Mr. Waleed Khalid registration number 462-Ph.D/MS/F13 has completed his Ph.D. thesis under my supervision. He has incorporated all the changes suggested by local, & forigen evaluators and the Viva Voce committee of panel on Ph.D thesis.

Prof. Dr. Kashif-ur-Rehman

Stock Market Bubble in Pakistan Vis-a-Vis its Impact on Investors.

Abstract

The research in hand encompasses the study of the bubble in PSX and its effects on investors during all stages of the bubble at the market. The study also reveals the determinants that affect the health of market information and how these determinants affect the efficiency of PSX during different phases of the bubble. This research is based on both i.e. quantitative and qualitative analysis. In quantitative analysis, bubble detection has been done through market capitalization and the P/E ratio. Model 1 explains the effect of investor's dispersion of belief and additional investment by the firms during all phases of the bubble on the stock market. Model 2 highlights the impact of insider trading (legal /illegal) and earnings management on the stock market as well as the investors during all stages of the bubble. Model 3 states that as to how M&A and profitable firms affect the stock market through trading, investment and financial reporting and activities during all phases of the bubble. Whereas, Model 4 expresses the impact of firm's relevance of accounting i.e. firm's current accounting and change in accounting information, balance sheet, income statement and firm's other non-accounting information announcements on the stock market during all phases of the bubble. In qualitative analysis comparison of insider trading laws of USA SEC, UK FSMA 2000 and Pakistan SECP Company's ordinance 1984 and securities ordinance 1969 have been made.

For the methodology of bubble detection, overall data of 354 firms for the period from 2002 to 2017 was used. In Model 1 data of 11 industries with 1892 observations for the period from 2006 to 2016 and the PANEL VAR model was applied. For Model 2, four industries with 1458 observation and Unbalance PANEL data of the period 2010 to 2017 had been catered for. For Model 3 data of four profitable industries and M&A firms were catered for. In this model, unbalanced panel data with 3099 observations of the period 2003 to 2017 was used. In Model 4 unbalanced PANEL data with 1839 observations for the period from 2006 to 2017 was considered.

The results of the quantitative analysis indicate that the factors like dispersion of investor beliefs, short-selling, additional investment by the firms in the stock market, insider trading, illegal insider trading, stock-based compensations, firm & managerial incentives & low financial knowledge of stock market investors form the main cause of

bubble in PSX. Whereas, qualitative analysis is based on insider trading laws. The results suggest that SECP should carry out further improvement in-laws on criteria of short selling, tippees, tippers & tipster, criteria on stock-based compensations, submission of annual and quarterly financial reports by firms, benami accounts and whistle blowing policy. This research will benefit all the constituents of PSX i.e. it will help policy makers to understand the implication of legislation and other market determinants and improve market efficacy, assist investors to obtain rational information for making investment decisions and help the academics to understand the dynamics in a better manner.

Keywords: Stock market bubble, investor beliefs, firm's investment, insider trading, insider trading legislation, earnings management, firm's accounting information, IPO's, firms valuation, M&A and profitable firms.

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Abbreviations

i.	STK MKT	Stock Market
ii.	AR	Abnormal Return
iii.	MKT CAP	Market Capitalization
iv.	MPK	Marginal productivity of Capital
v.	PSX	Pakistan Stock Market
vi.	PIN	Private Information
vii.	EMH	Efficient Market Hypothesis
viii.	APM	Asset Pricing Model
ix.	AP	Asset Pricing
x.	MKT CAP	Market Capitalization
xi.	EPS	Earnings Per Share
xii.	IV	Independent Variables
xiii.	IPOs	Initial Public Offerings
xiv.	R&D	Research & Development
xv.	M&A	Merger & Aqusitions
xvi.	MR	Marginal Revenue
xvii.	ROR	Rate of Return
xviii.	MV	Market Value
xix.	SEC	Securities Exchange Commission
xx.	SECP	Securities Exchange Commission of Pakistan.
xxi.	E'sM	Earnings Management
xxii.	DCCA	Discretionary Accruals
xxiii.	GAAP	General Accepted Accounting Principles
xxiv.	BOD	Board of Directors
xxv.	EI	Earnings Inflation
xxvi.	+ve	Positive
xxvii.	-ve	Negative
xxviii.	MKT	Market
xxix.	STK	Stock
xxx.	PSX	Pakistan Stock Exchange
xxxi.	FSA	Financial Services Authority
xxxii.	CJA 1993	Criminal Justice Act 1993
xxxiii.	FSMA.	Financial Services and Markets Act 2000
xxxiv.	PCD	Private company discounting

CHAPTER 01

1.1 INTRODUCTION

Background of the study

This study revolves around the parameters that are responsible for the creation of the stock market bubble phenomenon in the Pakistan Stock Exchange and its consequent effects vis-a-vis investors. Furthermore, this study has carefully examined the causes and effects that have culminated in the creation of the stock market bubble in the Pakistani stock market over the years. The factors affecting the creation of the bubble are the investor's psychological biases like investor's dispersion of beliefs & the firm's additional investment. How the insider trading and E'sM effect on PSX, stock market bubble and its effect on investors equity. How Pakistani profitable and M&A firms lead to the creation of bubble and effect market investors using manipulated financial statements during & after bubble (Yosef et al., 2010) in PSX. The creation of biases in the market by the relevance of accounting may also lead to bubble creation. To what extent the knowledge of investors affects the arbitraging activities in the stock market.

We need to understand the dynamics of the stock market before venturing further on the instant topic. Before proceeding further, we should also understand the configuration and working of a stock market. As Ahmed (1998) mentioned that the investment in any stock market is complex and is influenced by several internal and external factors and such factors may be both macro and micro in nature. A stock market is a sensitive place of investment that is affected by multiple internal and external factors that may be micro or macro in nature. Such factors often lead to a speculative environment in the stock market thereby affecting the functioning of the stock market and fundamental values of firms operating in the stock market. These factors create speculations among the investors which seriously affect the efficiency of the stock market and hence become the source of changes in the Fundamental values of the firms. The roller coaster behavior of the stock markets resulting in stock market bubbles and subsequent crashes has been continuously recurring over the years with a certain degree of unpredictability. Therefore, in the context of this research, we need to understand that what is a stock market bubble? Stock market bubbles, stock market crashes and the financial crisis have been the recurring phenomena right from the earlier days up to the present time. Now, it is to understand what is the stock market bubble? The available literature on the subject of the stock market bubble by various authors terms stock

market bubble as an economic cycle in the stock market which occurs due to rapid increase in the stock market prices over a short period of time due to mostly exuberant and speculative behavior of the investors irrespective of the fundamental values of the assets. (Brunnermeier and Oehmke 2013). Most of the authors have argued that it is an economic cycle that occurs especially in the stock markets by the rapid escalation of share prices, unwarranted by the fundamentals of the assets and driven by exuberant market behavior (Brunnermeier and Oehmke 2013). Different authors have interpreted the Stock Market Bubble differently. Various authors have described the STK MKT bubble in their own ways. By Alana et al., (2016) and Alana and Gracia (2007), the stock market bubble phenomenon originates in the stock market when the asset equity prices of companies exceed their original or fundamental values which subsequently give the respective share ability to earn substantial profits in the future.

Fama (1965) being among the pioneering authors on the subject attributed the stock market bubble to the speculative behavior of investors which leads to considerable increase or escalation in the share prices and termed this phenomenon as pyramiding chain letter work.was one of the pioneer authors who explained the creation of bubbles in the contemporary market. He expressed that speculations or speculative beliefs contribute extensively towards the escalation of share prices in the stock market. He described this phenomenon as the pyramiding chain letter work. Siegel (2003), Kindleberger (1978) and Sornett & Cuypers (2004) concluded that stock market bubbles over the years in different stock markets consist of five stages which are i) Displacement ii) Take off epic iii) Exuberance iv) Critical stage v) Crashing stage. Brunnermeier & Abreu (2003) stated that the word ‘bubble signifies enormous and continuous mispricing of financial or real assets. Blanchard and Watson (1983) stated that the STK MKT bubbles are of two types. The first type is deterministic in nature, whereas the second type is termed as a stochastic bubble. They further mentioned in their study that the stock market bubble consists of two phases (i) run-up phase which encompasses the formulation of bubbles/imbalances. (ii) Crisis phase is marked by the eruption of the crisis in the aftermath of the stock market bubble (Brunnermeier and Oehmke 2013).

Yang (2006) mentioned in his research that no econometric test has been devised so far which can confidently detect the creation of stock bubbles with precision. This is the reason that most of the authors are of the view that market volatility can be measured by stock market capitalization, P/E ratio & earning per share of the market

etc (Basu 1977 & 1997; Gilchrist et al., 2005; Yosef et al., 2010 and Joos et al., 2010). The other factors deal with the behavioral outlook of the investors which reflects on the psychology and biases of investors. The behavioral aspect of investors has been proved by many researchers which affect the stock market. The most prominent of the authors and the books are "Irving Fisher's (money illusion), "Adam Smith's (over weaning conceit of mankind)", "Harry Markowitz's (people focus on gains and losses relative to reference points"), "Herbert Simon's (bounded rationality") and John Maynard Keynes's ("animal spirits in stock markets"). Besides this, many theories were also floated on behavioral factors in which worthwhile theories include CAPAM Theory, Dispersion theory and psychological bias & Asset pricing theory etc. Most of the contemporaries are of the view that this is a field with a little scope yet a lot of work still has to be done to further understand the dynamics of the stock market bubble.

The research starts with the model that deals with the dispersion of beliefs of investors & firms, additional investment in the PSX and how these elements affect the stock market during and after the bubble. This section also encompasses behavioral finance, according to which, market investors are irrational which is contradictory to EMH theory that expresses the market investors as rational. It is generally observed in the empirical literature that risk-taking managers influence pessimistic investors based on their information and resultantly change the market dynamics in their favor. As a result, dispersion of investor belief gets increased in the market. Therefore, the smart investors and firm managers exploit this situation thereby resorting to equity issuance and additional investment plans.

Dispersion of beliefs is an integral constituent part of business phenomena in the STK MKT. It gives rise to speculations among the investors due to which shares, asset values and market indices also get changed e.g. perception of the overconfident investors shows that how they perceive from the precision of signals they receive in the stock market. They will be led to different distribution priorities (with lower variance) about the signal's noise term. Moreover, it is important to understand that the optimists increase the stock prices to cause asset overpricing in the stock market, whereas the pessimists cannot counterbalance it because they face short-sale constraints (Miller 1977 and Gilchrist et al., 2005). Ofek and Richardson (2003) affiliated this point with the internet bubble that happened in the USA in the late 1990s, where the asset prices had been overvalued from their fundamental values.

Gilchrist et al., (2005) in research on the dispersion of beliefs concluded that it increases short-selling, trading short-term securities, capital expenditures, compensation on capital expenditure etc. As a result, a bubble-like situation is created which is exploited by smart & overconfident investors to their interests. This further creates mis-valuation & manipulation in equities & asset prices of the companies (Miller 1977; Bolbol and Omran 2005; Avramov et al., 2009 and Diether et al., 2002). The empirical researches also show that bubble is directly proportional to equity issuance (B>1 = equity issuance due to bubble, B<1= equity repurchase due to bubble crash). Furthermore, an increase in investor's heterogeneous beliefs and the firm's additional financial and investing activities grossly misprice the firm's equities and asset values in the STK MKT. This can be controlled temporarily through excessive equity issuance and it may also help short sellers. (Ding 2014 & 2015; Atmaz & Basak, 2018; Fischer and Merton 1984, Bakke and Whited 2010 and Polk and Sapienza 2008).

In the light of findings of Gilchrist et al., (2005), when the dispersion of investor's belief and additional investment and financing activities increase they give rise to investor's speculative beliefs in the market, firms carry out equity issuance to finance their projects, increase investment opportunities and activities.

In the second section of the research, the effect of insider trading and earnings management has been evaluated in PSX during the pre-bubble, bubble and post-bubble periods. In order to ascertain that whether the insider traders earn more incentives on the investment or non- insider traders earn higher incentives, various empirical studies on insider trading, Earnings management and abnormal returns suggest that illegal insider traders have earned abnormal returns. PSX follows the SEC legislation framework which consists of many loopholes as compared to the FSA UK legislation framework which is comparatively more efficient. In the light of this factor, the impact of insider trading & E'sM on PSX has also been analyzed.

Clark (2014) said that even after seven decades of formulation of insider trading laws, this subject remains controversial in view of the huge volume of literature published on this aspect. Recent research has also proved the involvement of even celebrities and the employees of the SEC in insider trading. As a repercussion of financial devastation, SA 1933 and SEA 1934 were passed by US Congress to regulate the sale of new securities. Prior to these acts, securities used to be regulated by the individual states. Passing of the 'Exchange Act' necessitated the formulation of the SEC and assigned it the task of regulating insider trading. In order to make the security

act more potent, extensive legislation was carried out in the form of ITSA (1984), ITSFEA (1988) & RFD (2000).

Bhattacharya and Daouk (2002) stated that the aspect of insider trading bounced up sharply during the late 1980s after the mass indictments. This further caught sight of the world's market regulators through powerful media outlets like television, cables & the internet leading to the enactment of regulations all over. By 1998 out of 103 SEC's, 87 had carried out legislation on insider trading. However, law enforcement standards varied drastically in different countries yet insider trading was recognized as an international problem. Insiders are discouraged from exploiting negative information for three main reasons by corporate governance. Firstly, by exploiting –ve private information; insiders mint huge profits by selling their shares before information disclosure in the stock market (Jagolinzer 2009; Taylor et al., 2011, Armstrong et al., 2010 & Agrawal & Cooper 2015). Secondly, insider sales entail more legal risk than insider purchases (Cheng and Lo 2006; Johnson et al., 2006; Rogers 2008 & Dai et al., 2016). The third reason is that insider trading cannot be termed as a managerial success. Rather, it will reflect their failure. Foregoing in view, firms with the best corporate governance would discourage insider trading. On the whole, insiders cannot earn abnormal profits from the sale of shares. However, corporate firms may announce incentives to defeat informed insider activities. Conversely, the insiders may earn huge profits from their purchases but shareholders do not show much concern about purchase transactions since they entail lower legal risk. In this scenario, profits may be regarded as a managerial success. Dai et al., (2016) were also of the view that insiders earn abnormal returns through illegal insider trading.

Similarly, the Securities and Exchange Commission of Pakistan & Pakistan Securities Act 2015 has declared insider trading as a criminal offense. This act vests authority in SECP to react in favor of investors by providing protection to them to strengthen the securities market. The law clearly states that 'insiders' & inside information'; market rigging transactions & false trading and other kinds of fraudulently induced trading in securities and market manipulation, i.e. misleading statements or false statements or deceptive devices (schemes) etc. are heinous crimes under the Securities Act 2015.

In this research, a comparison was carried out among SECP officials of 1969 securities, Company's Ordinance 1984 and exchange ordinance and Securities Act 2015 wherein the Securities Act 2015 is considered to be more comprehensive and

effective since it has been incorporated with international securities commission laws, regulations and practices. The SECP 1969 law offered no authority to SECP to intervene in favor of investor protection or resolve their complaints. Moreover, this ordinance also did not vest any authority in SECP to recover penalties, monitor securities transactions, stock exchange audits, regulate Central depository and clearing houses etc. All aforementioned aspects have been catered for in the new Securities Act 2015. The new law segregates the functions of future brokers and future exchanges. The ideas of regulated and licensed persons, security advisors, self-registration and security managers were also incorporated in the new law. The concept of an agent's regime was replaced with the representative system. Classification of security brokers, entry standards, appointing criteria of employees, sponsors, directors and corporate governance code etc. were also made part of this act. The act also vests powers in SECP to issue directions to securities exchange, emergency powers for license cancellation and suspension, order audits of securities exchange and appoint special auditors.

Various researches suggest that insider trading on the basis of inside information may affect the future performance of share prices of certain shares. The senior management of companies controls share prices of respective companies in the STK MKT through insider trading by using asymmetric information in order to earn abnormal profits (Jaffe 1974; Seyhun 1986, 1988 & 1992; Jiang et al., 2017; Huddart et al., 2003, 2006, 2007 a and 2007 b; Beneish & Vargus 2002 and Beneish et al., 2004 & Chowdhury et al., 2018). That is why Jaffe (1974) had stressed for maintaining a comprehensive record of all trading securities. The insiders make use of superior information carefully and selectively to avert any litigation. It has also been observed that insider trading is less in routine trades as compared to opportunistic trades where the possibility of abnormal returns is high (Dai et al., 2016; Elliott et al., 1984; Ke et al., 2003; Jiang et al., 2017; Huddart et al., 2003, 2006 & 2007 and Chowdhury et al., 2018). Insider trading is a common phenomenon and get in enhanced during Pre-IPO and Pre bubble phases. After IPOs & bubble crash periods insider trading gets declined.

Dai et al., (2016) opined if insider trading possesses a positive relationship with abnormal returns it will be called illegal insider trading. Insider trading has a linear relationship with abnormal returns (Jaffe 1974). Huddart et al., (2003, 2006 & 2007) were of the view, that insider trading and earnings inflation possess a significant relationship with each other during all bubble stages. BM is known as stock-based

compensation and posses a positive relationship with abnormal returns. Insider trading also changes the capital structure.

The earnings management is often done by the managers for a number of reasons such as releasing such kind of manipulated information that helps to increase the price of the stock of respective firms for IPOs (initial public offering). The analysts have observed that managers of respective firms avoid giving negative information to the prospective investors to prevent losses to the respective firms in terms of decrease in share prices etc. which can have a domino effect by reducing investor confidence regarding the reputation of the respective firms. The E's M is made both ways i.e. positive or negative information is released in the market which is often beneficial to the managers & insiders of the company. The CFO is often believed to have more inside knowledge regarding the respective firm and he/she uses it to his advantage as well as to the advantage of officials of the firm. This positive and negative manipulation of information is done systematically to bring the prices of the stocks of respective firm up and down i.e. when there is a need for insiders or financial managers of a firm to buy shares, then negative information may be released in the market which will bring down the price of respective shares. Similarly, when the managers having insider information feel that they need to sell the stock of shares held by them, then positive information is released in the market to influence the share of a firm positively which helps in the selling of shares at increased prices resulting in abnormal returns to the inside investors and managers (Seyhun, 1992; Rozeff and Zaman, 1998; Piotroski et al. 2005; Huddart et al., 2003, 2006, 2007a and 2007 b and Chowdhury et al., 2018). Insider trading and the E'sM are common phenomena and get in enhanced during Pre-IPO and Pre bubble phases. After IPOs & bubble crash periods insider trading and the E'sM get declined.

Previous researches have revealed that asymmetric information has a vital role to play in E'sM. Asymmetric information acts as a signaling mechanism to the prospective and existing investors that result in a positive outcome and rise in share prices of the firms. This works well in case the interests of the investors and managers are aligned with that of a firm. It is further argued that in an imperfect market, asymmetric information is found to have a positive relationship with abnormal returns i.e. if imperfect conditions in the market are prevailing then the possibility of abnormal returns are higher. However, in the case of a perfect market, higher levels of symmetric information may result in negative returns. Earlier research has shown that in case there

exists a higher unexplained variance in the accrual quality, information asymmetry is higher. This predicates on the co-existence of definite relationships within accrual-based the E'sM and insider trading, which is accelerated by asymmetric information. Therefore, it can be stated that when markets are not in the competitive state then the E'sM along with insider trading can be termed as an outcome of asymmetric information (Aboody et al., 2005; Seyhun 1992; Rozeff and Zaman 1998; Piotroski et al., 2005 and Chowdhury et al., 2018).

In the third section of the research, the effect of M&A and Profitable firms has been checked on PSX during all stages of the bubble. Here, the intensity of security trading inside and outside of the exchange has also been gauged. Furthermore, by using models, the financial knowledge of PSX investors and their response towards a firm's manipulation during all stages of the bubble has also been assessed. Previous researches have also revealed that as M&A and profitable firms are financially strong, therefore, market investors prefer investment in these firms. They also accept manipulation by those firms for financial incentives. Generally, these firms manage to change the market capitalization indices.

Chen & Krauskop (2013) and Fama & French (2006) have expressed that share prices determine the financial health and economic conditions of firms. The market investors would always prefer to invest in profitable and M&A firms because of their confidence in these firms to fetch good profits and dividends. Chen & Krauskopf (2013) have also ascertained that in the present era of globalization, profitable companies have stressed more upon the aspect of merger and acquisition in order to improve and expand their business and get maximum market shares. Plenborg et al., (2017), Yosef et al., (2010), Berkovitch and Narayanan (1993) and Fama & French (2006) have also expressed that whenever a financial boom prevails the trading of securities of the profitable and M&A firms inside and outside the exchanges get an increase, which also results in the increase of their equity prices from their origin.

Chen & Krauskopf (2013) have expressed that so far four M&A waves have struck the stock market in history and these waves were initiated by economic factors. The first wave of M&A prevailed from 1897 to 1910 and it happened with monopolistic companies that were involved in electricity and railroad industries. The second wave prevailed from 1916 to 1929 and it occurred between oligopolies. This phase was exhausted with the market crash of 1929 resulting in the great USA market depression. Third-wave prevailed from 1965 to 1969. These were the conglomerate mergers that

were motivated by enforcement of anti-trust laws, high stock prices and high interest rates. The fourth wave continued from 1981 to 1989 and it was inspired by deregulation, globalization & the boom of the stock market. This was involved with telecommunication and the banking industries. Does an interesting question arise as to why investors should take investment risks in M&A firms? This important question must be given due consideration by the investors because the understanding of key motives will make an estimation of success or failure and make transactions easier for the investors.

Yosef et al., (2010), Berkovitch and Narayanan (1993), Bhojraj and lee (2002), Fama & Fama (2006) and Plenborg et al., (2017) used valuation techniques to ascertain the trading volume and current market prices of shares of profitable and M&A firms. They also managed to establish the financial health (Profitability, ROA, ROE, Annual growth rate and Earnings) of the firms and the resultant fluctuation of their share prices in the stock market. Yosef et al., (2010) also used Cash flow Vs. Accrual model to find out whether investors prefer manipulation or investing activities of these firms. However, the empirical studies of USA firms suggest that the investors mostly prefer manipulation by these firms during the financial boom and financial crisis. Polk and Sapienza (2008) have also expressed that whenever invest in overvalue securities and firms invest in overvalued projects or issuing new announcements during financial boom then bubble-like conditions arise in the stock market. Coffee (2004) has pointed out that stock prices react strongly to firms asymmetric information. Firms resort to manipulation in order to attract maximum investors. This process is known as E'M and is used for firms and managerial incentives.

Yosef et al., (2010) and Fama & French (2006) also pointed out that market manipulation is an old strategy that is carried out by the firms to create an imbalance in demand and supply and enhance the share prices of their equities. The firms involved in manipulation always have the advantage of inside information as compared to the investors. The stock market investors are very sensitive to the aspect of market risk since they always want to get high returns on their securities. The firms exploit this tendency of the investors to their advantage and float misleading information to lure them for investment in their securities. Generally, the manipulation is carried out by the firms, whenever some financial activity is likely to occur i.e. during the stock market

boom, bubble phases and financial crisis to earn high returns and other incentives on their shares.

Fama et al., (1969) said that in this era of globalization the business community regards M&A as an effective & competitive tool in the stock market. Resultantly the firms raise share prices by expanding their portfolios, exploring new markets, improving profitability by increasing in cost, market capitalization and quick market build-ups etc. On the other hand, industrial sectors have seen the best effects of mergers and acquisitions over the past two decades. The logic behind EMH theory is that market information spontaneously reflects equity prices. In this process, it is considered that shareholders are rational and well-informed. The management of rational shareholder firms controls their decision-making about investment. Such issues are needed to be mindfully tackled in research since returns may differ with different firm's control of shareholders. The empirical studies have also shown that fresh information does affect stock prices i.e. earnings announcements, dividends, and M&A etc. Franks et al. (1991) and Fowler and Schmidt (1989) expressed that the market positively responds to the news of M&A activities. Martynova and Renneboog (2008) pointed out that as M&A announcements float new information in the market, as a result, share prices get increased.

Yosef et al., (2010) said that the trading of M&A firms inside and outside the exchange was not affected during all stages of the bubble. The market investors prefer manipulation by the M&A firms than their investing activities. The profitability of M&A firms was increased during all stages of the bubble.

In the fourth section, the value of relevance accounting has been discussed to assess that how much it affected the PSX during all stages of the bubble. This accounting information available with the firms helps managers and investors to make relatively correct investment decisions. Relevance accounting also predicts the financial knowledge of market investors about respective firms for investment. Generally, value relevance accounting is a broader term in its sense concerning the stock market. There are certain elements like book value of shares and EPS etc which are given due consideration by the investors which also helps in changing the psychological biases of investors to motivate/encourage them to carry out investment in the stock market with a positive frame of mind.

Holthausen and Watts (2001) described that the accounting discipline of the capital market constitutes a significantly vast field of research. This field has further

been enlarged after the 1960s, whereby containing the diversified topics on economics, accounting & finance etc. Value relevance literature is an important aspect of the capital market that determines as to which accounting variables affect the value of an STKMKT. A variable can be stated as value relevant if it shows an affinity to calculate the value of market equity. A similar study on value relevance also predicts alike relationships among equity prices and accounting earnings.

The relevance of accounting is highly curtailed in attracting investors to the stock market. The shareholders also prefer non-accounting information over the accounting information of the firms to gain profits in the short term. Moreover, the firms also invest more in both accounting & non-accounting information during the bubble and crisis periods. They spend on accounting information for the reason that the financial analyst in the market should inflate values of their share in the market and the same phenomena becomes the source of increasing non-relevance accounting information in the market which attracts common investors in the short-run (Ball & Brown 1968; Beaver 1968 and Joos et al., 2010).

Theil (1964) was considered as one of the earliest researchers who defined value relevance as any change in the expectations regarding the outcome of a respective event. Regarding this study, he mentioned that a given financial statement can be termed as value relevant if it affects or alters the assessment of investors along with subsequent decisions with reference to actions of investors in a stock market. There are numerous researches, that describe value-relevant accounting information if the same is related to value in the equity market. (Ohlson 1995 and Beaver 2002). However, most recently, the value relevance is associated with the firm's asset value. As argued by Francis and Schipper (1999).

Ball and Brown (1968) defined the concept of value relevance by using price/return data for the identification of value drivers which affect prices/returns on the market value of respective stocks. Researchers over the years have mentioned that empirical investigations judged the usefulness of value relevance research of accounting information for stock investors (Collins et al., 1997; Landsman et al., 1988; Francis & Schipper 1999 and Gjerde et al., 2008). Furthermore, researches have shown that accounting information is termed as value relevant if the said accounting information holds a statistical relationship with market equity value. Such accounting information is used which has book equity and earning information as the same contains the summary of the balance sheet as well as income statement. The first object is to

ascertain value relevance to measure the extent of variability that occurs in the market values as explained through accounting variables (Aboody et al., 2002).

As per earlier studies, relevance accounting forms a major perspective of Stock market research and contributes significantly towards firms accounting knowledge. The main objective behind this research on value relevance is whether it proves useful in the future made by the investors or not. Many scholars regard accounting information as value-relevant when it possesses a direct statistical relationship with the firm's equity. The main constituents of financial statements are BVE and earnings which lure researchers for comprehensive investigations (Beaver 2002 and Aboody et al., 2002). It has also been concluded from the previous researches that a decline in the financial statement of firms always provides valuable accounting information to the market investors. A macro-economic instability enhances default probability which leads to quick financial collapse. Graham et al., (2005) argued that at the time of economic crisis, the relevance of accounting information & income statement can provide information on the abnormal earnings of firms that get decreased, whereas balance sheet ability to provide information about asset values is enhanced. A study by Ibrahim et al., (2009) shows that during the Asian financial crisis of 1997 the accounting variables of BV, NI & MV were more pronounced.

Easton (1999) and Easton et al., (2001) expressed that changes in financial statements positively affect the firm's share prices. Firms returns have a linear positive relationship with the firm's earnings and BV and the value relevance of accounting enjoys significant importance on the floor of the stock market.

1.2 Problem Statement

1. This needs to be ascertained that in the context of investors speculations in the Pakistani stock market, the variation in the dispersion of beliefs of investors and the respective firm’s behavior and plans for additional investment and financing activities to enhance the share prices affect the stock market bubble during all stages.
2. The nature and different varieties of outcomes when the firms in the Pakistani stock market resort to earnings management to shield and manipulate information from investors of the respective firm’s to their own advantage and covert insider trading activities to turn speculative sentiments of the prospective investors in their favour are needed to be analyzed during all stages of the bubble period.

3. The moves by the profitable firms in the PSX wherein they decide to carry out M&A and manipulation activities to gain the positive speculative opinion of investors in the stock market which in turn increases the prospects of more returns on their shares and leads to the creation of stock market bubble will be studied.
4. This needs to be observed from different angles that how does value relevance of accounting comprising of information such as book value of shares, earnings, earnings per share, net income of the firms etc. and non – accounting information such as IPOs which is of interest for investors in Pakistani stock market culminate into the stock market bubble.
5. Analyze the issue of insider trading in PSX in detail and highlight the weaknesses for effective legislation to SECP and PSX to safeguard the interest of market investors and firms.

1.3 Problem Identification: The scenario

The importance of the stock market cannot be ruled out in the modern world of business. It mobilizes domestic resources, generates economic activities and regulates the circulation of money in the country. KSE was established on 18 September 1947 and was registered as the "company limited by guarantee" on 10, March 1949. Initially, it was constituted of 90 members and five registered companies with thirty-seven million paid-up capital. Thereafter, Lahore Stock Exchange (LSE) and Islamabad Stock Exchange (ISE) were established in October 1970 and October 1989 respectively. On 11 January 2016, all exchanges were merged to formulate the Pakistan Stock Exchange (PSX) which constitutes 540 listed companies with Rs 8.39 trillion paid-up capital and a volume of Rs 3.37 billion. KSE 50 index was introduced in 1950 which was changed into KSE 100 index in 1991. Nowadays the knowledge about the relationship of the capital market and micro variables is emerging significantly due to which various economic reforms have taken place in the developing as well as the advanced countries.

During the 1990s, several steps were taken in Pakistan to introduce economic liberalization, enhancing privatization and opening the stock market for international investors. In the aftermath of these policies, foreign investors were encouraged to invest in PSX which improved the economic stature and circulation of investment in the country (Ahmed and Rosser 1995 and Ahmed et al., 2010). It has also been observed that excessive liberalization invites the creation of a bubble too often in PSX. The historical data also confirms that capitalization rose to 2600 points in 1995 whereas, it

declined to 878 points in 1998. Again this situation arose in 2005 where the index increased to 10,000 points whereas, it declined in May 2005 to 7,000 points. It has been observed that the volatility in a bullish market is high as compare to a bearish market. These days the repo rate is again high as such the volatility is prevailing in the stock market. The Repo rate has been fluctuating from 23.5 % to 0.21 percent since 1995 (Qayyum and Anwar 2011). Again the same situation prevailed from 2008 to 2009 and from 2012 to 2016. The data also suggests that a bubble occurred in PSX after the crash of every STK MKT bubble. The data from 2008 to 2016 indicates that our monetary policy was tight but the index of PSX crossed 50,000 which predicates on stock market manipulation. However, traditional economists are of the view that tighter monetary policy causes a decline in stock prices. While, the easy monetary policy helps in a rise in stock prices, as it happened from 2002 to 2006 which confirms the point of Cassola and Morana (2004).

The comparison of STK MKT of neighboring countries like India, Malaysia, Indonesia, Bangladesh & Vietnam etc. with the PSX, indicates that they are earning billions of dollars in a fiscal year for their countries & attracting FDI's on a massive scale. Whereas, on the contrary, although PSX has a good capitalization yet it has failed to attract FDI e.g. the FDI inflow of India from 2009 to 2012 increased by 63.2% and from 2012 to 2016 the FDI inflow of India increased by 60.2% [1]. On the other hand, the FDI inflow of Pakistan was increased by 16% from 2009 to 2012 while it declined to 7% from 2012 to 2016[2]. It has been very astonishing that on one side the stock market index of PSX was increased up to 50,000 points. Whereas, PSX failed to attract FDI substantially. This speaks of manipulation and misinformation floated in PSX.

Some of the anomalies observed in the PSX and Pakistan economy during the past 20 years are as follow;[3]

1. The study of the economy of Pakistan and PSX for the past 20 years shows that the PSX is not the true representative of the Pakistan economy. It has been observed that the fiscal deficit of Pakistan has been rising continuously since 2008 to date, whereas the PSX index has been rising to 45,000 points and beyond.

[1] Indian Govt website http://www.make in india.com
[2] https://www.invest.gov.pk/statistics
[3] https://tradingeconomics.com/pakistan/industrial-production ; https://www.macrotrends.net/countries/PAK/pakistan/gdp-growth-rate

2. The change in GDP of Pakistan has been declining substantially, whereas if it has moved upward that change has been only to the extent of 0.03% to 0.80 % from 2004 to 2017. On the other hand, our stock market index has been rising 4 to 5 times. This disparity shows the existence of manipulation or miss-valuation in the stock market.
3. In 2009 PSX got crashed and also production rate declined whereas GDP got increased by 2.83 percent. This indicates that PSX is not a true representative of Pakistan's economy.
4. The change in FDI inflow in Pakistan has been declining, whereas the volatility of PSX was increasing, which doesn't truly represent the economy of Pakistan.
5. The listed companies of PSX even in the absence of new projects of their own are earning about 5 to 10 times more than their base prices, which speaks of manipulation on their part.
6. The study of historical data of the last 20 years reveals that after 2008 the GDP, manufacturing scale output and the market index does not seem to support each other. On one side GDP and manufacturing output had declined whereas on the other hand market capitalization index crossed 50,000 points. It has been due to weak legislation and some kind of manipulation by the government. It is further reiterated that SECP laws are based on US SEC laws which inherit many weaknesses and shortcomings. That is why the SECP laws seem ineffective in controlling market index and bubble in PSX.
7. Tremendous legislation has been put in to identify insider trading since 1933 by the SEC USA and FSMA 2000UK. However, some efficient mechanisms could not be evolved so far to identify insiders and insider trading effectively. Prior to PSX, KSE was the biggest stock market of Pakistan from 1950 to 2015. Capitalization of the stock market is of big interest for major players for capital gains through malpractices like insider trading. SECP has detected a number of cases of insider trading in the country from 28 Oct 2004 to 16 June 2011[4].

   The insiders included politicians, industrialists and institutional investors. The corrupt insiders were penalized through a penalty of Rs 7.693 million fine besides making them to pay Rs 195.20 million as compensation to

[4] Connected investors involved in insider trading. BY FAIZAN ZAKARIA POLANI , (LAST UPDATED NOVEMBER 29, 2018) https://archive.pakistantoday.com.pk/2011/06/24/connected-investors-involved-in-insider-trading

the affected firms and investors[5]. These penalties were imposed on only 10 offenders which speak of a very low detection of insider trading cases by the regulators. Apart from there were many more cases were reported to SECP but the influential offenders found escape routes from the courts in the absence of efficient legislation. The offending investors applied different financial techniques like "director's tips", "manipulated financial statements & announcements" Benami accounts and short selling for insider trading.

The research is based on "Company's Ordinance 1984" since all these three bubbles were created under this ordinance. This ordinance is handicapped by numerous weaknesses like absence criteria of short selling, Benami accounts, the inadequate definitions of insider trading, tippees, tippers & tipsters and effective check on the firms with one million paid-up capital with respect to submission of financial statements to SECP. Although the SECP is following US SEC laws but it has not yet incorporated the amendments made in US SEC laws that were made by the US courts on the basis of various insider trading case studies.

1.4 Research questions

1. What are the determinants that influence the STK MKT bubble in PSX and how do these determinants affect investment and investors during different stages of a bubble?
2. How the market manipulation techniques employed by firms affect the investors investment decision (Yosef et al., 2010) in PSX during different phases of the STK MKT bubble?
3. How do the firm's investing and financing activities affect the PSX bubble and what measures may be taken to minimize its impact on common investors of PSX?
4. What is the role of legislation on insider trading in curtailing the STK MKT bubble & what measures may be taken to minimize its impact on PSX investors?
5. How does the STK MKT bubble affect the investors and the investment in Pakistan?
6. Do the Pakistani investors possess knowledge of risk management and financial knowledge to keep pace with the STK MKT?

[5] Studied cases are United Sugar Mills Ltd, Shehzad Textile Mills, Pattoki Sugar Mills, Bawany Air Products and Treet Corporation Limited Treasury Manager.

1.5 Research objectives

1. To find out the determinants affecting the STK MKT bubble in Pakistan and their effects on investors and investment during different stages of the bubble.
2. To identify the effect of firm's manipulation technique on PSX and their impact on decision making by the investors.
3. To identify the effect of firm's investing and financing activities on the PSX bubble and common investors of PSX and suggest remedial measures.
4. To suggest legislative measures for PSX to reduce the effect of insider trading on the Pakistani stock market
5. To evaluate the effects of the bubble on investors & investment in Pakistan.
6. To evaluate the investor's perception of financial risk management about the PSX by suggesting measures to enhance accessibility to market information resources.

1.6 Significance of the study

Expectedly this research will prove beneficial for PSX in many ways being multi-facet and unique as compared to the earlier studies carried out on PSX with a special focus on the creation of bubbles. The research has been developed through observations of PSX in terms of different stages of the stock market bubble through time series analysis and intricacies involved in its operation. For the research, concerted efforts were made to study the literature of various researchers who have dealt with the phenomenon of the stock market bubble in global stock markets over the years. Various variables affecting the stock market bubble phenomenon have been identified during the course of research which is the dispersion of investors belief, insider trading, illegal insider trading, firm's additional investment & financing activities, earnings inflation or abnormal accruals & earnings management, shares transactions valuation, inverse transaction multiples, investors financial knowledge, market capitalization, price to earnings ratio and relevance of accounting information.

This study differs from the previous researches in a way that mixed methodology based on quantitative and qualitative approaches has been used in it. In the quantitative approach, different sets of models and variables have been used to detect bubbles in PSX and their impact on different variables during all stages of the bubble. In qualitative approach, Comparison of UK FSMA laws, US SEC laws & Pakistan SECP laws with critical analysis have also been incorporated in the research. It is a sectorial-based study and covers almost all sectors of the Pakistan industry.

Different models have been used in this study and each model provides different information, model 1 indicates that how the dispersion belief of market investors and firm additional financing activities affect the bubble during all stages. Model 2 explains as to how insider trading, illegal insider trading, abnormal accruals and earnings management affect the stock market bubble during all stages. Model 3 tells as to how profitable and M&A firms affect stock market bubble during all stages. Model 4 as to how the relevance of accounting information affects the stock market bubble during all phases. Model 5 deals with the impact of legislation on the stock market bubble. The aforementioned models further comprise of various sub-models and sector-wise analysis of various industries of Pakistan.

This research has been focused on both conventional as well as behavioral finance, which has practical implications on both third worlds as well as advanced countries. Different models and techniques have been used to identify the STK MKT bubble factors and evaluate their impact on them. This study provides feedback to the readers as how to contain the STK MKT bubble. It has been noticed that very little effort had been directed to explore the field of the STK MKT bubble, although presently it is the hottest debate in the stock markets. It will bring new dimensions in the theory of the investor's role in the stock market bubble. The present research is an effort to highlight the creation of the STK MKT bubble and its impact on investors. This research will benefit all constituents of PSX i.e. (i) for policy makers: to understand the implication of legislation and other market determinants which affect its efficacy. (ii) For Investors: Investors will be able to abstract rational information to make their investment schedules, which will also assist investors to check market misinformation and manipulation of equities by the firms. (iii) For academics: to understand the dynamics of stock markets in a better manner.

1.7 Theories

1.7.1 Behavioral Asset Pricing Theory

It is the theory that analyses the investor beliefs and preferences which lead to make correct investment decisions and regulating asset prices in the STK MKT. According to behavioral asset pricing theory, investor's biases also play a major role in the arbitraging activities in the STK MKT. In the STK MKT the asset prices are more often change when the beliefs of all market investors get biased (Gilchrist et al., 2005 & Fama 1998b). For example, there are over-confident and pessimistic investors in the market. The overconfident investors on the basis of their access to private information

they invest aggressively in the market and as a result, they influence the pessimistic investors as well. Resultantly, the biases of Over-confident and pessimistic investors get coincided which lead to a change in the trends of market capitalization and asset prices (Kent et al., 1998 and Fama 1998b). Miller (1977) opined that the increase of heterogeneous beliefs of investors creates speculations in the market which lead to short selling and change in asset prices. This reduces the firm's equity expenditures and as a result asset prices get enhanced.

1.7.2 Efficient Market Hypothesis

EMH is a hypothesis that suggests that share pieces or asset prices provide comprehensive market information which makes it hard to beat the market on a risk-adjusted basis frequently since market prices only react to new information. Accordingly, the market agents also readjust their market beliefs and choices. Since modern financial markets revolve around EMH, therefore no investor can obtain higher profits without taking higher risks (Fama 1965 and Barberis & Thaler 2005). Fama (1965) also defines that irrational market investors competing for abnormal returns ultimately dictate the correct share values. Whereas, the market remains rational. Moreover, on changes of intrinsic values of shares, the actual values will also get adjusted accordingly. The conditions for an efficient market by Fama (1970) are "no transaction cost for security trading, all available market information to be provided to all participants without cost & everyone must agree on current information for current share price and distributions of each security for future and investors should react rationally. Fama (1970) further categorized the market efficiency into three categories on the basis of information processing in STK MKT and their effect on security prices. That is Weak Form Efficiency (In such markets security prices are purely based on historical data or event), Semi Strong Form Efficiency (in this all market information is available publicly and security prices get adjusted quickly on new information) and Strong Form efficiency (This includes both Public and private stock information about securities which checks obtaining of abnormal returns by the investors).

1.7.3 Signalling Theory

When equal information is not available to the market investors then there is a very low investment by the market arbitrageurs. In order to break the stalemate in the market, the corporate managers float corporate financial signals to shake the asymmetry, which is an integral part of communication policy (Spence 1973). In the STK MKT insiders, transactions float a signal which affects the share prices, however,

the magnitude of that signal effect can not be effectively assessed (Jaffe 1974). Similarly, Firms also send a signal to the STK MKT through accounting statements and E'sM. According to signaling theory the firms after under-pricing their IPO's float signals in the stock market showing that their IPO's are of superior quality (Yong 2019). In STK MKT the larger firms on the eve of launching their IPO's, keep the share values under-priced so that the trading volume of their shares increases and move along with their IPO's (Allen and Faulhaber 1989 and Littler 2006).

1.7.4 Agency Cost

It is the internal company expense that is done by the agents on behalf of the company principal. It can also be caused by the conflict of interest between shareholders and the company management. Overvaluation of share's agency costs, suggests that overvaluation occurs when stock prices of firms exceed their fundamental prices (Shapiro et al., 1994 and Nikkinen & Sahlström 2004). The managers like to inflate share prices since firm-based compensations & employee compensations are issued on the basis of performance to them. For this purpose managers also resort to E'sM, earnings smoothing process, stock-based compensation, positive accounting, and use moral hazard strategy and dictate analyst forecast to avoid negative accounting information in the STK MKT.

1.7.5 Information Asymmetry

In information asymmetry, the level of information with various parties vary from each other. The party with more market information can influence the stock market in his favor. It is generally seen that sellers have more information than buyers. Information asymmetry entails two main problems i.e. Moral Hazard and Adverse selection (Scherbina et al., 2002; Polk and Sapienza 2008 and Hatemi-j 2012).

1.7.5.1 Adverse Selection

Another type of asymmetrical information is termed as "Adverse Selection" wherein the information is deliberately held back by the insiders before the respective agreement is reached by the investors with a firm. This is primarily done to take advantage of the situation by the insiders. However, this adverse selection leads to wrong decision-making by the investors which may harm their financial gains (Tirole 2012 and Rowell & Connelly 2012). The insiders resort to inadequate information dissemination primarily due to the reason that this information may negatively affect the chances of bigger profit by the insiders, in case the insiders have also invested in the respective firm. However, this practice comes at the cost of losses to the investors.

There is another scenario in which the insiders hold their trading as they may foresee that a certain piece of bad information is due to be released shortly which may at least reduce the stock prices in a shorter term and the prices may rebound after a while. In such a case, the insiders may intend to buy stocks at reduced rates to get profits later when the prices rebound. In this instance of asymmetric information as well, the insiders benefit due to insider information at the cost of interest of investors. In brief, the asymmetrical information can be termed as a selection made based on lack of information by the investors (Tirole 2012 and Carlton & Fischel 1982).

1.7.5.2 Moral Hazard

Moral Hazard takes place when during the transactions of securities when one party takes more risk and hides relevant information and to gain the advantage. After the completion of transactions, the party may act differently prior to the agreement. Moral hazard generally Occurs in the process of Short-selling. In certain scenario, the floating of bad information by the manager's benefit the insiders which make the managers in different and they may alter their way of action to make their firm success. (Carlton and Fischel 1982 & Rowell & Connelly 2012). Since insiders at the market place possess superior information, they turn the market dynamics in their favor and resultantly earn abnormal returns. By moral hazards, insiders and other smart investors may undo the compensations of other parties at the market place and rational investors.

1.7.6 Positive Accounting Theory

PAT is a general term used for the theory that provides some information about the behavior of accountants of the firms. It helps in adopting such an accounting standard for the firm that portraits positive accounting financial statements of the firms in the market. Here the managers and accountants would prefer to adopt the accounting standard which would benefit the firms as well as their employees. This phenomenon is known as "The bonus plan hypothesis - Maximize compensation". Whenever some firm get nearer to default the managers adopt such accounting techniques which represent future income in place of current income to avert debt risk. This phenomenon is known as "The debt covenant hypothesis – Minimize problems with creditors". Whenever the firm's managers are under some political pressure, the managers would adopt such an accounting technique which will show the current financial status of the firm weak but bright future prospects. This phenomenon is called "The political cost hypothesis - Minimize political heat" (Whittington 1987 and Osifo & Fasua 2017).

CHAPTER 02

LITERATURE REVIEW

The stock market is a sensitive place of investment that is affected by multiple internal and external factors which may be micro or macro in nature. These factors create speculations among the investors and seriously affect the efficiency of the stock market and ultimately change the par value of company assets and their Fundamental values (Ahmed 1998). Flood et al., (1986) opined that so far no econometric models have been designed by which SKT MKT bubble could be effectively detected. However, American Economist Mr. Greens pan (1999) is of the view that a bubble cannot be detected prior to its existence rather it comes to the limelight after its burst and it can be controlled through effective government policy.

2.1.1 What is the Stock Market Bubble?

Various authors have described the STK MKT bubble in different ways. They regard it is as recurring STK MKT economic activity, excessive deviation of assets & share prices from their origin, due to speculations & an unexpected profit earning by the investors etc (Alana et al., 2016; Alana and Gracia 2007 and Fama 1965). Generally, bubbles are of two types i.e. constructive bubble "run-up phase" and destructive bubble "crisis phase". Fama (1965) further expresses the phenomenon of extensive escalation of share prices due to investor's speculative beliefs as pyramiding chain letter work (Watanabe et al., 2007; Mizuno et al., 2017; Driffill and Sola 1998 and Gurkaynak 2008). Michael James expressed the bubble phenomenon as the company's market confidence of earning a future profit, opportunities of investment and volume of capital available for investment.

Porter and Smith (2003) argued that the issuance of dividends doesn't create STK MKT bubble rather it is the common perception of the investors like a risk-free investment which invites more investment in the market and inflates share prices thereby creating a bubble in the market. Watanabe et al., (2007) express the bubbles or crashes as interesting topics of econo-physics being dynamic in nature or behavior. They define that bubble as the state in which the share prices deviate from their fundamental values. Brunnermeier and Oehmke (2013) associate bubble with mispricing of assets and shares. It always occurs in the aftermath of over-investment in securities which grossly inflate the share prices. It may distort incentives of agents,

firms, corporate companies & financial institutions and their balance sheets (Brunnermeier & Abreu 2003; Polk and Sapienza 2008 and Wurgler et al., 2003).

Minsky in his research discusses the aspect of bubbles & associated bursts. He states that the introduction of new technology or financial innovations gives rise to the expectations of earning higher profits and firm's economic growth. Resultantly share prices start escalating which is followed by the euphoria phase, here investors in a frenzy start trading overvalued assets which results in an explosive rise in asset prices thereby creating bubble (Beneish et al., 2004 and Chowdhury et al., 2018). Costa et al., (2017) base their research on Keynes's theory of 1936 and declare the stock market as a beauty pageant in which numerous speculators contribute. They keep on assessing market trends, bonds & share prices for the forecasting of market affairs with regard to the creation of bubbles and market crashes.

Tirole (1985) and Tran (2017) state that the bubble is created due to the infinite and overlapping generation of investor's presence in the STK MKT. The investors carry out huge investments in buying the assets and as a result company's growth increases and hence its ROR also increases accordingly, which attributes to the creation of the bubble. However, according to Diba and Grossman (1987) creation of a rational bubble starts right from the outset of the business when investors start with buying and selling of securities. With the passage of time and increase in the value of fundamentals of STK MKT, its overvaluation also keeps increasing. Whenever the fundamental value of the STK MKT starts declining the bubble automatically ends. Shiller (2000) has exemplified bubble with feed-back-loop and Amplifier- mechanism. It is created due to the enthusiasm of investors, which imbalances the demand and supply of the market thereby causing the bubble.

Sornette & Cuypers (2004) in their research discusses the stock market bubble that occurred from 1990 to 2000. He spelled out five stages of bubble creation which are i) The investment can be attractive only when the profit gain is higher which may be due to the involvement of international investors or due to the inflation of share prices, ii) In the aftermath of inflation of share prices or involvement of international investors, the smaller investors are also allowed to invest which affects the demand and supply of the STK MKT, iii) In the third stage, the market loses its credibility by moving away from its fundamentals and cannot interpret the market signals accurately, iv) In the fourth stage, the speculations are created among the investors due to which the share

prices are escalated, which produce instability in the STK MKT & v) At the fifth stage, the market collapses which gives rise to anxiety among the investors.

2.1.2 The evidence of the STK MKT bubble

Costa et al., (2017) in their research express that speculative bubble affects every diverse market and its assets including the exchange market, real market and STK MKT. The experimental researches conducted by Noussair et al., (2001) and Taylor (2011) have proved that speculative bubble increases with the issue of dividend to the investors. Speculation is the driving force that motivates investors to invest in the STK MKT. Greenwood and Nagel (2009) in their research on mutual funds during the internet bubble explored that young investors invest more in speculations and market information (Taylor 2011; Martin et al., 2004 and De Medeiros and Daher 2008).

Brooks et al., (2003) in their research on UK STK MKT applied Flood et al., (1986) econometric technique using bubble specification, co-integration & variance bond tests manage to detect bubbles, whereas the same test was conducted by Flood et al., (1986) on US STK MKT and couldn't detect any bubble. As a result, brook commented that it was because of the high volatility of the US market. Similar research was conducted by Bohl (2003) on two data sets (1871 to 1995) and (1871 to 2001), but the bubble was only detected in the data of (1871 to 2001). Mr. Chan and Woo (2006) also researched the data set of Hungary, Russia, Poland & Germany for the period (1920 – 1923) and detected the presence of an inflationary bubble. In current researches, Gilchrist et al., (2005), Joos et al., (2010) using Basu's (1997 & 1977) price-to-earnings ratio and market capitalization techniques also managed to detect bubbles.

2.1.3 Theoretical Back Ground of EMH, Behavioral Finance and Bubbles

Yang (2006) expressed that EMH theory is taken as the backbone of modern financial aspects of the stock market. This theory declares that all markets are efficient places in which no solitary investor can imbalance the stock market equilibrium by selling and purchasing equities. It is mainly because of three reasons i.e. market constitutes irrational and rational investors, secondly market itself floats the information instead of individual investors to retain control of the stock market and thirdly basing on the floated information, prices of the equities are efficiently controlled. Teoh et al., (2002) also opine that EMH theory is of paramount importance to control mispricing in the market.

Shleifer (2000) contradicts the concept of EMH on three reciprocating reasons i.e. investors themselves suggest the value of marketable securities. Second, some of

the investors are irrational and Arbitrageurs who earn their profit from the efficiency of the markets. Moreover, EMH theory is only challenged by behavioral finance since investors carry out arbitraging activities according to their perception. According to Summers (1985), traditional finance does not aim at determining stock values, rather it depends upon the price movement.

Fama (1998 b) in his research questioned the validity of over and under-reaction interpretations. He is of the view that as a result of random variation, the fluctuation of the share prices is approximately equal to the fundamental values. Therefore, it does not result in systematic deviation from efficient returns. He concluded that behavioral hypotheses do not affect the EMH, hence he rejected the idea of "systematic price variations". However, Shefrin (2002) comments that Fama's idea may hold good if stock prices over and under reactions take place in the same time frame. But, according to the empirical studies, evidence stocks do symmetrically show short-term under-reactions and long-term overreactions. Hirshleifer (2014) also opined that over and under reactions are also caused by the lesser attention of investors. Ignore good news to fetch positive high returns, whereas ignoring bad news entails negative abnormal returns. The incidences of over-reaction to important news and under reaction to lesser important news take place simultaneously which is similar to overreaction to accruals & under-reaction to earnings.

Yang (2006) stated that no econometric test has been designed so far which can be confidently regarded as appropriate for the detection of the bubble. That is why most of the authors believe that market volatility can be measured by having the knowledge of behavioral factors that help us in understanding the psychology and biases of investors as well. Many empirical research and empirical papers have also proved that investor psychology always affects the stock market. In this regard, numerous researches have gone in during the period of the mid-20th century and onward. The most prominent authors and books produced are "Irving Fisher's (money illusion)", "Adam Smith's (overweening conceit of mankind)", "Harry Markowitz's (people focus on gains and losses relative to reference points)", "Herbert Simon's (bounded rationality)", and John Maynard Keynes ("animal spirits in stock markets"). Besides this, many theories were also floated on behavioral factors by various authors in which worthwhile theories are CAPAM Theory, dispersion theory, psychological bias theory & asset pricing Theory etc. Most of the contemporaries are of the view that this is a field with a little scope yet a lot of work still has to be done in it. How the behavioral

factors affect the stock market, shall be explained in detail in the succeeding Paragraphs.

Atmaz and Basak (2018) and Gilchrist et al., (2005) worked on the dispersion of belief and average belief theories. According to them, an increase in both elements enhanced STK MKT volume, created investment opportunities, stock volatility & generated abnormal returns. Due to this, risk-taking environments were created which caused changes in the holding of investors. The dispersion never remains constant but keeps on changing with the passage of time.

Kraus and Smith (1998) used the Sun Spot Model to analyze the Pseudo Bubble and found it unlike true or rational bubbles as it has a nil possibility of bursting and also it may not be positive. This gave rise to uncertainty among other investor's beliefs. However, Shleifer (2000) linked this with +ve feedback and price bubble theories. He concluded that smart investors and noise trading were of paramount importance in bubble creation. Later on, Shiller (2002) also opined that the belief of professionals, media & group thinkers are contributing factors that affect investor biases. Modigliani and Cohn (1979) stated that inverse movements occur due to the variation in assessments of share value by different investors. It is because, firstly they do not apprehend that inflation reduces the quantum of debt & raises the profit of shareholders and secondly, investors fail to apprehend that future earnings may be increased due to inflation. Cohn and Lessard (1981), following the two valuation error hypothesis, studied the behavior of 8 countries stock markets and found that a strong –ve relationship existed between stock returns and inflation.

2.1.4 Historical Bubbles

Barber and Odean (2000) and Brunnermeier and Abreu (2003) argued that the study of the history of the bubble reveals that the stock market crashes, bubbles and financial constraints are the common factors at every stage of stock market development. This phenomenon is a recurrence factor and has occurred with striking regularities in the economy of the third world and the advanced countries. There are some of the best-documented examples about stock market bubbles and crashes in the asset pricing model, e.g. in 1634 in Holland when the prices of tulip flowers had gone up even for a little while, the Tulip flowers cast more than a gold bar. No one in the country could afford to buy tulip flowers. People held their own tulip flowers rather than purchase them. In its aftermath, the prices of tulips went down and the holding quantity was sold in panic by investors. Similarly in the 17th century, British companies

sold their shares in their colonies which also caused a serious stock market bubble. In 2005, half the population of Miami got involved in the real estate business and a year later there was no buyer of their vast lands. In the last decade also, most of the industries followed a similar pattern and as a result stock market moved in ruins and was destroyed. Moreover, the mergers and acquisitions in the 1980s by the companies threw heavy investments in highly overvalued stocks, which caused over-saturation and they failed to perform. As a result, investors resold stocks in panic which caused the market bubble.

Hoppit (2002) says that the history of the bubble is not new. The first bubble was diagnosed in the early 18th century in England which is known as the "South Sea Bubble". In that era the economy of England was good and people used to take it as a status symbol for investing in various fields like securities & real estate etc. In 1710 England was stuck by an economic recession. Therefore Robert Harley in connivance with John Blunt laid the foundation of the "South Sea Company" which traded in slaves with Spanish colonies in America. They stressed on the parliament to force the banks to issue loans to eliminate the financial crisis. This company undertook the enormous task of clearing national debts and overcome the financial crisis, which it managed successfully. Consequentially, King George accepted the Governorship of South Sea Company. For the 1st time in history, this company issued IPO's to the masses and induced confidence in them for the investment in it and earn profit. The financial condition of this company was further stepped up after the Anglo Spanish war and the value of it its share enhanced from 130 pounds to 300 pounds. At times the value of its shares rose even beyond one thousand pounds. In 1720, it was revealed to the people that the share value of the company does not match its financial health. Therefore, the value of its shares declined from 300 pounds to 124 pounds which were below the original value of its shares. As a result, investors suffered heavy losses. The firm went bankrupt and failed to pay back the bank loans on which "House of Commons" passed an order for its investigation.

Chen (1999) studied another bubble that was created after the reunification of Hong Kong with China in 1997. The main cause of the creation of this bubble was that the Chinese Government had committed not to interfere with the internal affairs of Hong Kong. As a result, Chinese companies were given special privileges and the value of their shares got a tremendous boost. However these companies failed to capitalize and benefit from favorable conditions due to the reasons of i) Poor Management, ii)

Financial manipulations & iii) insider Trading. These malpractices caused the sudden decline of their share values.

Sornette & Zhou (2003) carried out a study of the real estate bubble of the USA. They probed into the fact that how the investment shifted from the stock market to the real estate market. They observed that after the passage of comments by Mr. Greens Pane, the Financial Adviser of the USA that the bubble can be controlled at the Gov. level, the Federal Reserve of USA reduced the yield rates. Resultantly, a major portion of investment shifted from the stock market to the real estate market, thus creating a real estate bubble.

Brunnermeier & Oehmke (2013) state that according to the "Expectation Theory", share values always affect the STK MKT and the investor's psyche. Moreover, stock market information also plays a vital role in market volatility. The investor belief is distorted during the run-up phase of the bubble, which may be as a result of rational behavior or belief distortion of investors. This also testifies Green's pan statement that moral hazards like over-investment and over-leveraging also gravely affect the stock market behavior. The low volatility is ideally suited to the run-up phase as fetching investment is easier during low volatility. Since risk factor also reduces during this period, the investors enhance their investment un-proportionally, which create an imbalance in the financial system of the stock market. e.g. speculators with short-term debts may not be confident to compete and might be forced to sell their shares at Pre-sale price not considering that this may cause depression in the market and force others also to sell shares at the pre-sale price, thus disturbing the market balance.

The crisis phase begins with the gradual buildup of the bubble and corresponding imbalances. Then the sudden bursting of the STK MKT bubble due to some pre-planned move called the "Minsky movement", in which the investors are already aware of the creation of the bubble in the background. The crisis phase is grossly affected by the amplification mechanism, which may be directly "caused by contractual links" or indirectly "caused by externalities". If the imbalances of the run-up phase or supported by credit then the bursting of the bubble will lead to lower investment which will make the amplification mechanism stronger. Since the financial crisis occurs suddenly, therefore it takes a prolonged time to recovery. This is because of the adverse effect and deep drawn-out recession in the aftermath of shock caused by the sudden bursting of the bubble.

The Chinese authors, Zhou et al., (2010) researched the stock market bubble in which they used data of two bubble periods from 2005 to 09. They concluded that the ultimate cause of the creation of the bubble in the Chinese stock market was due to the split shares reforms of the Chinese government (i.e. 2/3 of non-tradable shares and 1/3 tradable shares). During the first stage of the bubble i.e. 2005-07, the Chinese government was able to manage the bubble through split share reforms but ultimately during the second phase of the bubble i.e. 2007-09, the bubble was again created. This predicates that by mere issuance of equity, the bubble can be controlled but only for a short time. Shiller (1981), Porter and Le Roy (1981) and Gurkaynak (2008) also used S&P data to find out excessive stock market volatility. They pointed out that the company's good financial health and annual reports lure in the investors for investment in their shares. Schiller also concluded that if companies raise their dividend prices, the prices of shares will increase.

Conlon (2004), Flood et al., (1986) and Adrian & Brunnermeier (2016), all of these authors have conducted research on the rational bubble model and come out with the most similar point of view. They believe that during rational bubbles, investors tend to hold the bubble asset securities, as they are confident of getting enhanced prices in the future. Although some variations may allow the bubble to grow stochastically and burst with some probability, their implication is identical and prices will rise tremendously. The same phenomena have already been observed in various run-up phases of the financial crisis. DeLong et al., (1990) and Abreu and Brunnermeier (2003), this team of authors have elaborated this point, stating that investors failed to pick the trends of the market and threw heavy investments into risky assets. Resultantly, a boost was created in the stock market and prices of assets increased tremendously. Therefore, on the sudden bursting of the bubble, the investors suffered from colossal financial losses.

2.1.5 Literature Review Summary of Base Papers

Model 1: Empirical Literature: How Do the Firm's Investment & Financing Activities And Investor's Dispersion Of Beliefs Affect The Stock Market Bubble?				
Sr. no	**Authors**	**Origin**	**Purpose**	**Results**
1	Miller (1977)	USA	The purpose of the paper is to ascertain the effect of investor's divergence of opinion in investing securities during short constraints and in the presence of risk factors.	(1) Investor's beliefs vary with uncertainty and risk factors. (2) High risky equities fetch low returns, while increase share prices. (3) The short-sale theory might be compatible with the positive correlation between momentum earnings and investor divergence of opinion and (4) Investor's beliefs negate EMH theory at the market floor.
2	Scherbina et al., (2002)	USA	The author studied the concept of Miller (1977) about the effect of dispersion of investor's beliefs on stock market return.	(1) Dispersion of investor's beliefs has an inverse relationship with stock returns. (2) The optimist investors always affect the opinion of pessimist investors in the stock market. (3) Dispersion of investor's belief has a positive relation with, share book to market ratio, market turnover, volume and debt to book ratio and (4) Dispersion of investors increases the prices of shares.
3	Gilchrist et al., (2005)	USA	How do the firm's managers behave during a speculative bubble and how do they exploit it by issuing equity against new and present projects in the market?	(1) Investor's beliefs affect stock prices during the bubble period. (2) The firm's additional investment activities increase investor's dispersion of beliefs during the bubble period and (3) Dispersion of Investor beliefs and MPK has a linear relation with equity issuance, investment and Tobin's Q.
4	Verardo (2009)	USA	The author investigated the concept of Miller (1977) and Scherbina et al., (2002) on the aspect of relationship of dispersion of investor's belief and stock market returns.	(1) The author negated the point of view of Scherbina et al., (2002) and supported Miller's (1977) point of view that dispersion of investor's belief has a linear relationship with the stock market return and (2) An increase in dispersion of investor's beliefs increases the market volume and share prices of the firms.
5	Atmaz & Basak (2018)	USA	To develop a model of tractable dispersion of beliefs that highlights the regularities of a firm's stock price, mean returns, volatility, and trade and disallows an individual investor to control the stock market.	(1) Dispersion of belief increase a firm's stock prices, volatility and the trading volume of the stock market and (2)Higher dispersion reduces the effect of learning.
6	Ding (2015)	Australia	How investor's divergence of opinion or dispersion of investor's belief affect equity prices and investing activities of the stock market.	(1) The firm managers invest in risky projects during investor's high dispersion of beliefs to enhance stock prices and (2) Dispersion possesses a positive relationship with Tobin's Q, cash flows, equity prices and for new projects.
7	Polk & Sapienza. (2008).	England	The Stock Market and Corporate Investment: A Test of Catering Theory	(1) A linear relationship exists between Abnormal investment, investor Sentiment & market mispricing of shares due to which the volatility is increased.

8	Asker et al., (2011) ; Bakke & whited (2010) and Wurgler et al., (2003)		To ascertain how do the firms stock prices affect the investment decisions.	(1) Mispricing affords an opportunity for the firm managers in terms of additional financing and investment activities. (2) During mispricing and mis-valuation in the stock market, small firms issue excessive equities as compare to the larger firms and (3) Investment of firms is directly affected by market mis-valuation, which enhances firms cash flows, investment, additional investment and financing activities and earning profitability.
Model 2: Empirical Literature: How Do The Earnings Management and Insider Trading by the Firms Contribute Towards Stock Market Bubble?				
Sr. No	**Authors**	**Origin**	**Purpose**	**Results**
1	Jaffe (1974).	USA	The role of Insider trading on Abnormal Return and contents of insider trading information.	(1) Insiders are likely to earn huge profits as compare to the outsiders who are constrained by transaction costs. (2) The relationship between insider trading and abnormal return is partially significant. (3) Insiders arbitrage in the stock market on the basis of private information, hence earn profits. (4) Insiders respond promptly to the growth strategies when trading and (5) Abnormal returns are caused by insider traders. Therefore, SEC should possess the data of insiders.
2	Seyhun (1986)	USA	To re-investigate the Jaffe (1974) concept of "Insiders' profits, costs of trading, and market efficiency" and Earning probability of abnormal return by insiders as well as the outsiders.	(1) Insiders have a significant linear relationship with abnormal returns. (2) Highly ranked insiders and the transaction costs prevent outsiders from earning abnormal returns and (3) The profit to insiders is decreased if the expected loss of informed outsiders is accounted for.
3	Seyhun (1988)	USA	Standard of insight of various market insiders.	(1) It has been observed that on the basis of frequent interaction with the firm's high returns are earned by the insiders and (2) Also the cluster transactions and stock market abnormal returns enjoy a strong correlation in the next 60 days.
4	Huddart et al., (2003), Huddart & Louis (2006); & Huddart & Louis (2007)	USA	What was the role of Insider Trading, Earnings management on Abnormal returns and on the 1990's Technology Bubble in USA Stock Market?	(1) The authors concluded that the relationship between the abnormal accruals and the abnormal post-bubble returns was found to be much stronger for companies whose insiders resorted to stock selling in the bubble period than the firms whose insiders were involved in buying. (2) Insider trading possesses a direct relationship with earnings management during all stages of the bubble and (3) Stock-based compensations were the major contributors to the technology bubble.
5	Chowdhury et al., (2018).	USA	How Insiders dominate Stock Market through insider trading and Earnings Management.	(1) Insiders earn abnormal returns through asymmetric information and manipulated financial statements. (2) Insider trading possesses a linear relationship with earnings management and (3) Insiders use earnings management for personal incentives more in growth firms as compare to value firms.

6	Dai et al., (2016)	USA	The impact of corporate governance to check insider trading and manipulation by insiders.	(1) Illegal insider trading has a positive relationship with abnormal returns. (2) Legal insider trading has a negative relationship with abnormal returns. (3) Corporate governance should implement anti insider trading policies for the transparency of the stock market and (4) Firms should implement strong corporate governance mechanisms to reduce insider trading and exploitation of firm's asymmetric information.
7	Dargenidou et al., . (2018).		What is the impact of insiders post earnings drift on Stock market	(1) Insiders always enhance their investment in the stock market through insider trading and discretionary accruals.
8	Elliot et al., (1984)		Impact of distributional characteristics on public announcements.	(1) The results predict a direct relationship between insider trading and the application of private information with respect to profitable firms.
Model 3: Empirical Literature: What Role do The M&A & Profitable Firms Play towards Bubble Creation & Their Impact on the Stock Market during Bubble Periods.				
Sr. No	**Authors**	**Origin**	**Purpose**	**Results**
1	Yosef et al., (2010)	USA	Impact of Merger and Acquisition on Stock Market Bubble.	(1) No result was found of Transaction multiples on the stock market bubble. (2) Market investors like manipulation by M&A firms & prefer to invest in them. (3) The profitability and risk of M&A Firms have been increased during all stages of the bubble and (4) Market investors prefer Abnormal accrual over cash flows in the stock market.
2	Lie and Lie (2002)		To estimate corporate value by using multiples. Multiples of forecasted earnings possess lesser valuation errors as compared to the empirical multiples and Use of transaction multiples on the basis of firm's earnings & P/E ratio.	(1) Estimation through EBITDA is better than EBIT. (2) Estimation by multiple of Sales has less accuracy than multiples of EBITDA and EBIT.
3	Henschke & Homburg (2009)		To re-investigate the concept of Lie and Lie (2002) about the transaction multiples to determine corporate values and for what reason the "industry-based multiples" were ignored.	(1) Differences of opinion among the firms cause value estimation errors for different multiples and (2) However, estimations can be improved by settling the differences of the firms.
4	Officer (2007) and Shapiro et al., (2000)	USA	Impact of Transaction multiples on the stock market	(1) Introduce the concept of Transaction multiples to detect the arbitraging activities of the firm's equities.
5	Bhojraj and Lee (2002)	USA	To select comparable market base firms for research and equity valuation.	(1) They develop a so-called "warranted multiple" for each firm and identify peer firms as those having the closed warranted multiple (2) Develop warranted multiples valuation. (3) Introduce the concept of transaction multiples to detect the arbitraging activities of the firm's equities. (4) In the light of valuation theory, selection of peer firm on the basis of close warranted multiple. (5) Peer firms

				selected on the basis of close warranted multiple entails sharp development with regard to the firms selected by other techniques and (6) Comparison of market firms with peer firms.
6	Durrani et al., (2019)	Pakistan	To re-investigate the concept of Yosef et al., (2010) Impact of Merger and Acquisition on Stock Market Bubble in the context of Pakistan and Impact of Merger and Acquisition on Stock Market Bubble.	(1) IN PSX, the M&A firms equity arbitraging get increased during Bubble period. Market investors like manipulation by M&A firms & prefer to invest in them and (2) The profitability and risk of M&A Firms have been increased during all stages of bubble.
Model 4: Empirical Literature: How does the firm's relevance of accounting information contribute towards Stock Market Bubble?				
Sr. No	**Authors**	**Origin**	**Purpose**	**Results**
1	Navdal (2010).	Norway	Role of the relevance of accounting (income statement and Balance sheet) on the Stock market during financial Crisis	(1) The author found that BVS and earnings are value-relevant in Norwegian Stock Market. (2) Book values of firms in accounting information affect more on equity prices as compared to the accounting information of earnings and (3) Value relevance of accounting information affects significantly on equity prices during the financial crisis.
2	Aiman and Mohammad (2010)	Egypt	Role of the relevance of accounting on the Egyptian Stock market	(1) Financial reporting is the major source of providing financial information about the performance and operation of firms in the stock market
3	Easton (1999) and Easton et al., (2001)	USA	To ascertain the impact of financial statements and changes in financial statements on equity prices and on firm's returns.	(1) Change in financial statements positively affect the firm's share prices. (2) Returns have a linear positive relationship with the firm's earnings and BV and (3) Relevance of accounting enjoys significant importance on the floor of the market
4	Su et al., (2001)	China	To re-investigate Easton and Harris (1992) and Easton (1999) models in relation to value relevance of accounting in the Chinese stock market with Chinese GAAP accounting principles.	(1) The value relevance of firms' accounting information affects more positively to A-share than to AB-share firms and (2) BV of shares is value-relevant for the investors in Chinese stock markets.
5	Joss et al., (2010)	USA	To evaluate the impact of the relevance of accounting information on the technology bubble in the USA and its effect on the issuance of IPO's.	(1) Relevance of accounting information for IPO's launched during the bubble period has been weak hence these IPO's did not yield much success. Value relevance of non-accounting information did not affect stock market bubble and (2) The strategy of Tech firms to finance their projects while launching IPO's has been weak.
6	Barth et al., (2001)		Comparison under "US GAAP, IFRS and German GAAP" for earnings before and after adoption".	The financial statements prepared under US GAAP and IFRS are more value-relevant as compared to the financial statements prepared under German GAAP.

2.2.1 Empirical Literature: How do the Firm's Investment & Financing Activities and Investor's Dispersion of Beliefs affect the Stock Market Bubble?

In the present times, the research on asset prices & their fundamental values has taken utmost importance. It has been generally observed that maintaining a balance between both is a cumbersome task. Some of the financial theories say that investor's biased beliefs lead to gross variations in asset prices & create a bubble. On the contrary, some theories say that even unbiased belief of investors may also cause a change in asset prices & create a bubble (Miller 1977; Hong et al., 2002 and Gilchrist et al., 2005). Orlitzky (2013) opines that the firm's stock prices contain such information which affects market efficiency & investor's speculative beliefs. Similarly, Thaler (2005) supported Orlitzky by expressing it as part of behavioral finance which deals with investor's psychological biases & heuristics. Shefrin (2002) and Shiller (2005) say that the crux of behavioral finance is that the trade is not only carried out on precise business fundamental information but also on investor's sentiments or their unprecedented beliefs.

Miller (1977) argued that asset prices do not come at par with their fundamental values & the "Asset Pricing" bubble generally occurs when heterogeneity of beliefs persists in all agents. However, prices can vary from their fundamentals even if the beliefs are unbiased. If pessimist investors fail to push short-sale constraints, then prices will excessively go in favor of optimists & exceed fundamental values. The author formulated a model on the basis of short sale constraints & exogenously heterogeneous beliefs, which were later made use of in multiple empirical research (Diether et al., 2002; Gilchrist et al., 2005 and Atmaz & Basak 2018). Lakonishok et al., (1992) say that in the USA it is thought that the institutional investors trading collectively change the investor's psychological biases & speculative beliefs. Whereas the results indicate that it is because of the change in demand & supply ratio of shares.

Kent et al., (1998) researched under-reactions (by rational investors) and overreactions (by overconfident investors) and concluded that rational investors control STK MKT for the short term. Whereas, overconfident investors control the entire STK MKT and the psychological biases of rational investors too (Hirshleifer 2001). De Bondt & Thaler (1987) in their research on market fundamentals, explored that the past performance of the firm's shares makes the investors pessimistic and optimistic (Taffler

2017 and Aliber & Kindleberger 2017). However, Fama (1998 b) supports EMH theory and negates the aforementioned research points. Whereas, Shefrin (2002) comments that Fama's idea may hold good if stock prices over and under reactions take place in the same time frame. But according to the empirical studies, evidence suggests that stocks do symmetrically show short term underreactions and long term overreactions.

According to Gilchrist et al., (2005), Banerjee et al., (2009), Ohnishi et al., (2017) and Atmaz & Basak (2018), variation in beliefs and preferences of investors play a vital role in creating equity prices inflation. These beliefs and biases are the sources of manipulation that lead to change the market capitalization index of the stock market. The earlier findings on the aspect of dispersion of beliefs of investors on asset prices are mixed e.g. much empirical research has concluded that stock market returns have a negative relationship with investor's dispersion of belief (Scherbina et al., 2002; Stein and Hong 2003; Park 2005; Berkman et al., 2009 and Yu 2011). Whereas, others are of the opinion that negative relation pertains to the stocks with some specific characteristics like small and worst rated short constraints etc. However, Yan et al., (2003), Pantzalis et al., (2006) and Avramov et al., (2009) in their researches have concluded that stock market returns have a positive relationship with the dispersion of beliefs. On the contrary, prevailing theoretical works do not provide satisfactory answers for these heterogeneous results.

Miller (1977) is one of the pioneer authors who researched Short sale constraints & heterogeneous beliefs simultaneously. The model formulated by him was further expanded in multiple directions. In another research, Scheinkman et al., (2008) used a model which concluded that overconfidence may also give rise to heterogeneous beliefs that lure speculative investors to pay more prices than their fundamental values. In afore stated researches, a Miller style model was used which spells out that how rational managers conduct themselves during bubble generated by short-sale constraints and heterogeneous beliefs and how they make their decision of equity issuance & real investment. However, to maintain their monopoly, firms issue only that quantity of shares where MR= MC. Therefore, the new share price could not bring market prices to normal values, thereby increasing the cost of capital.

Bolbol and Omran (2005) in their research applied four hypotheses to measure the relation of stock returns with investment i.e. Passive Informant Hypothesis (in which

investors do not trust stock market returns), Active Informant Hypothesis (Managers make use of important market information), Financing Hypothesis (Firms resort to external financing to affect the stock market return), Stock Market Pressure Hypothesis (Managers lure firms to issue security for profit in the name of shareholders interest and also to protect their jobs). The authors also commented that the rise in prices of the stock market increases equity capital cost. At this stage, the investment must be enhanced by the investors until MPK equals equity cost. They also found out that if investment exceeds beyond the requirement of fundamentals then the MPK falls below capital cost. The authors have concluded that in Arab countries mostly the firms are family-owned, therefore liberalization does not exist in the STK MKT. Hence, cash flow does not affect investment as a result of Arab firm's Dividend Policy.

Polk and Sapienza (2008) discuss the market mispricing effect on investment by firms. They point out that when investment is done in overpriced firms, the asset prices & equity values increase thereby causing mispricing. Mispricing also occurs due to asymmetrical information & excessive short-term investments. Firms generally possess two sources to finance their investment i.e. equity issuance & retain earnings. The stock prices volatility and market investment opportunities (Tobin's Q) also affect the firm's investment, E'sM and additional investment & financing activities. Heaton (2002) comments that STK MKT mispricing accelerates investment opportunities, resultantly firms throw additional investments in the market which further aggravates the process of mispricing. Mispricing always affects the belief of the investors which lead to change in the firm's asset prices in the market.

Asker et al., (2011) and Bakke & whited (2010) have questioned the validity of the effect of stock prices on investment decisions under ideal conditions like symmetric information, EMH and absence of regulatory distortions. This objection is not valid because economic fundamentals and equity value of investments also change the prices[6]. The managers do cater to assets mispricing while investing. If the firm's stock is overvalued, shareholders will be benefitted by issuing equity & investors always prefer to

[6] Research papers of Luo (2005) and Chen and Agrawal (2008) confirmed that stock market information guides investment decisions. They also highlights corporate decisions (Capital structure of a firm), employment, and issuance of equity.

invest in projects with +ve NPV (Shleifer and Vishny 2003)[7]. The research has shown that short sales and heterogeneous beliefs of investors can contain a Speculative bubble. The results show that larger firms carry out less mispricing as compared to smaller firms. Moreover, firms resort to mispricing in the stock market based on market opportunities and by floating private information[8]. This is also called the signaling effect.

Wurgler et al., (2003) and Baker et al., (2008) are of the view that volatility of stock prices creates investment opportunities for the firms and enhances their equity financing for the upcoming projects. However, external equity financing affects the investment independently. In the research, a simple version from Stein's (1996) model was used to drive a testable channel for equity financing which deduced an exceptional sensitivity to corporate investment & equity firms. Resultantly, equity-dependent managers will boldly issue equity to financing investment in the scenario of over-valuation of their stock prices, whereas they do away with their investment in the event of undervaluation of their stock prices. The results also indicate that financially confined firms are sensitive to investment and issue more equity to mislead stock prices. As a result, they earn more profit for further investment. External information affects investment and Tobin's q significantly, therefore earnings announcements and M&A both give rise to stock prices of the equity-dependent firms.

Gilchrist et al., (2005), in their research state, that the higher the dispersion in belief, the greater will be the short-term sales, which will create a bubble in the market. This will also induce biases among the investors and the optimistic investor will control the prices according to their interests. Generally, the firms resort to the issuance of securities to earn profits when marginal revenue and marginal cost become at par. The authors also opined that the rise in bubble effect will force the managers for equity issuance, thereby increasing capital expenditure that will create investment opportunities (Tobin's Q). Various authors have researched this subject and have come out with varying results. As Scherbina et al., (2002) are of the view that dispersion possesses an inverse relationship with the returns. Similarly, Ofek and Richardson (2003) state that the burst of the internet bubble resulted

[7] Shleifer and Vishny's (2003) are of the view that overvalued firms while issuing equity must cater for reposing confidence in the shareholders by building a perception of raising another firm. This perception answers the question as to why the firms investing in –ve NPV projects. This will not allow MPK to decline.

[8] Blanchard & Watson (1983) state that by issuing equity and floating information in the market through investment will affect the market values of the firms.

in sudden issuance of equities by the firms, which also confirmed Scherbina's stance of an inverse relationship between dispersion and returns.

Brainard and Tobin (1968) and Tobin (1969) are of the view that the examination of corporate investment and the stock market in the parameters of Q theory, indicated that corporate decisions generally conform to the current value of marginal Q (Future MPK of new capital). MPK is reflected by the stock prices and the firms keep on investing until the time existing capital assets become equal to the replacement cost. Similarly, if the MV of capital assets increases, either due to an increase in ROC or due to a decrease in terminal rate, firms must continue investing till MPK becomes equal to the capital cost. In the stock market, the MPK & Tobin's Q is used to measure financial activities and investment opportunities in the capital market.

Lubo and Tung (2000), in their research, determine the relationship between Price variability, quarterly earnings announcement and analyst quarterly earnings forecast dispersion. The research results coincided with the results of ALV (Abarbanell, Lanen, and Verrecchia 1995) who regarded price variability to have a positive association with the forecast dispersion[9]. Similarly, Chirinko and Schaller (1996) commenting on the creation of 1980's boom of Japanese equity markets, express that whenever the bubble has been created in the Japanese market, the investors have increased investing activities for wealth maximization[10] whereas, the firms resorted to enormous issuance of equities to improve their performance. During the boom period, fixed investments were tremendously increased to the extent of 6 to 12 percent, which had a significant impact on the investment.

Kaizoji and Sornette (2010) have studied the phenomena as to how an EMH is affected by market bubbles and crashes, in the perspective of multiple agents and arbitrage limits that curtail the bursting of bubbles prior to their inflation. It has also been explained as to how rational traders benefit from market trends and by exploiting the noise traders. This process predicates the creation of dispersion of belief amongst the traders which ultimately affects the positive feedback of investors. The study of historical bubbles and crashes in the market shows that these have mostly been created due to irrational investors.

[9] Gilchrist et al., (2005) & Ohnishi et al., (2017) say that the concentration of speculative funds on limited stocks creates bubble.
[10] Varian (1985) & Stenstad and Rabben (2010) studied the performance of the Oslo Stock exchange basing on the best available portfolio EPS and the worst available portfolio EPS revisions given in the Analyst Forecasts. They found that investors tend to buy stocks with favorable EPS revision and sell stocks with less favorable EPS revision

Because they are fond of hearing pseudo-news and would always like to earn maximum profit with minimum investment. A boom in the market is generally created as a result of drastic political and technological changes and through an exploration of new markets, which consequently alters the philosophy of dispersion of belief of traders and market fundamentals as well.

Ofek and Richardson (2003) have examined the creation of the internet technological bubble and explained the causes of inflation of prices during the bubble and the reasons for the deflation of security prices in the market. The results of their research concluded that optimistic investors have always overwhelmed the pessimistic investors and contributed to the change dispersion of belief of investors and also the dynamics of short sale constraints of the market. Furthermore, when bubble bursts, EMH loses its credibility and theoretical support in the market as it happened in the case of the technological internet bubble during 1998-00, where share prices of internet companies drastically jumped up by 1000 times in 1998 and the market lost share prices by 70 percent in 2000. The results indicated that the share prices of 20 percent of companies rose to 1500 dollars, whereas 50 percent of companies rose to 500 dollars and of the remaining 30 percent companies, the share prices enhanced to 600 dollars. Moreover, pessimistic investors have entered the market suddenly and turned into optimistic investors thereby substantially raising the fundamental values of the share prices (Miller 1977 and Hong et al., 2002).

2.2.2 Empirical Findings

Gilchrist et al., (2005) are of the view that an increase in dispersion of investor's beliefs will lead to an increase in market manipulation as well as affect the stock market capitalization[11]. Mis-valuation creates timely investment opportunities for smart market investors and firm managers (Chirinko and Schaller 1996). Whenever, the dispersion of investor's beliefs and MPK increase in the US market, bubble-like conditions are created in the stock market. These conditions in the stock market directly affect the firm's investment, issuing equity and Tobin's Q. Resultantly, the firm's cost of capital, investing and external financing actives also get increased. Therefore, the dispersion of investor's beliefs and the marginal product of capital create market opportunities, enhance equity

[11] Brown et al., (1987) explained that having controlled timing advantage, analyst's forecasts become more accurate and precisely link to stock returns as compared to time series forecast.

issuance by the firms and augment the existing investments of the firms. Hence, the paper spells out a positive relationship between dispersion, MPK, firm investment, equity issuance and Tobin's Q.

Scherbina et al., (2002) think that the analyst forecast (proxy used for measuring heterogeneous beliefs of investors in the stock market) show that companies with higher dispersions earn low returns as compared to other equities with similar characteristics. In addition, the portfolio with the highest quintile performed badly by 9.48 percent as compared to the portfolio with the lowest quintile. In small stocks and those which have performed poorly in recent years, the effect is more obvious. Dispersion of investor's beliefs creates information asymmetry in the market which also predicts a trend of psychological bias. The last finding by the authors is that optimist investors always affect the opinion of pessimist investors in the stock market.

Wurgler et al., (2003) are of the view that small firms do not invest on the basis of debt contrary to the larger firms. Therefore, they finance their projects by issuing equities frequently in the market. As a result, their bond rating and securities increase manifolds as compared to the larger firms, hence enjoy better investment opportunities. Investment opportunities have been precisely defined by "Tobin's Q" and "market to book ratio" in the paper. The paper suggests, whenever a boom is created in the market due to manipulation, the smaller firms resort to external financing to support their projects. While the larger firms rely on debt and loans to support their projects. Another interesting result is that here Tobin's Q represents market manipulation, which indicates that investor's beliefs also get adjusted according to the market manipulation. Asker et al., (2011) also opined that short sales and heterogeneous beliefs of investors can contain a Speculative bubble. The results show that larger firms carry out less mispricing as compared to smaller firms. If the firm's stock is overvalued, shareholders will be benefitted by issuing equity.

Bakke and Whited (2010) argued that the KZ index possesses a positive correlation with the investment sensitivity of q. Moreover, he also pointed out that firms with restricted equity investment are affected more by stock market variations. This proves the existence of positive linear relation among q sensitivity, investment and a firm's tendency of over-investment through debt. Due to the difficult interpretation preposition, the KZ index relies on the size of the firms. This result affirms that a strong relationship

between SDEV and Tobin q exists. Another interesting result that firms having high SDEV have a low level of bond and security rating in the stock market, low cash flows and heavily rely on equities. In addition, the market mis-valuation possesses a significant relation with investment, Tobin's Q, M/B ratio, cash flows, TA's, Leverage, Bond Rating and securities issuance in the market. Whenever mis-valuation of assets and equities takes place in the market, the perception of the investment also gets changed accordingly. It is also noticed that firms issue equity and hold other financial activities in the bubble period for shareholder's wealth maximization and incentives. The firm's investment is directly affected by the bubble, enhancement of cash flow, investments and earning profitability (Wurgler et al., 2003).

Stenstad and Rabben (2010) are of the view that optimism in analyst forecasts in recent years has faded out for the reasons of using the knowledge of past biases, change of incentives and availability of quality data by the forecast analysts. Moreover, analyst's forecast optimism can be expressed as the difference between forecasted EPS and actual EPS. Moreover, forecast errors are not homogeneous, rather are of different magnitudes. The price deflation shows that deviation in actual EPS from forecasted EPS depends on the level of EPS & this price reduces heteroscedasticity. The research also highlights that analyst's optimism is always high in smaller firms as compared to the larger firms. Two main determinants of forecast bias have been enumerated by the authors which are economic incentives and the cognitive biases for analyst's bias proposals. The incentive-based analyst forecast is issued to enhance the economic activities of the market. This contributes to increase the activities of trading securities and M&A (Mensa et al., 2011). Optimistic forecasts are generally issued by the analyst to attain maximum information from the management particularly in the scenario where information asymmetry exists between investors and the management. It has been observed that forecast bias is created due to analyst incentives when earnings skewness also exists. Since analysts try to minimize forecast errors, the optimistic bias is rationally expected to prevail. It is difficult to differentiate between the explanations about forecast biases and the hypothesis, but analysts do get incentives by forecasting the median. However, management incentives of going for earnings baths grossly shares towards optimistic bias in forecasts of analysts, this can be regarded as the precise example of cognitive bias.

Atmaz and Basak (2018), the authors worked on the dispersion of investor's beliefs and average investor's beliefs theories. According to them, an increase in both elements enhances STK MKT volume, creates investment opportunities, generates stock volatility and abnormal returns. Due to this, a risk-taking environment is created which causes changes in the holdings of investors. The dispersion never remains constant but keeps on changing with time. As per the research of Atmaz & Basak (2018), a rise in the dispersion of investor's beliefs affects stock market volume +vely and invites substantial investments from the investors. It will also assist in the enhancement of equity issuance and inflate the share prices. These findings are also identical to empirical findings of (Gilcrist et al., 2005; Ajinkya et al., 1985; Seguin et al., 1996 & Goetzmann and Massa 2005). The dispersion of investor's belief has been measured through two proxies i.e. Average investor's belief and dispersion of forecasted value of EPS.

Kremer et al., (2009) say that heterogeneous belief is the outcome of viewpoints of various traders with varying assessments about future prices of assets. These beliefs may be derived from heterogeneous market information or homogeneous market signals, but interpreting differently. Substandard assessment of investors in the market also contributes towards investor's heterogeneous beliefs. Yu (2011) comments that the dispersion of belief brings variations in the stock prices, which may increase risk aversion by financially weak investors. Bad news will create lesser pessimism in the risk of avoiding the economy. Investors with the higher risk-averse approach will have lesser exposure to the stock market, which will curtail wealth transfer to "Pessimistic investors".

Atmaz & Basak (2018) state that the empirical studies about the effects of dispersion of belief of investors on the dynamics of asset pricing model are diversified. e.g. many works entail negative relations amid dispersion of investor's belief and stock market returns. Whereas, some state that negative relation only exists for stocks having low quantities, worst cost rate and short-sale constraints. However, these results have not been proved satisfactorily by the available theoretical work. Dispersion of investor beliefs is considered rather risky for investors & produces only +ve dispersion mean returns. The authors have devised a dispersion of belief model which explains about regularities of stock prices, stock trading volume, volatility and mean returns. They applied two proxies to measure the dispersion of belief i.e. investor's average bias and dispersion in investor's

beliefs. It was found that on prevailing of good cash flow news, stock prices increased in a convex manner. Similarly, when the economy is optimistic, the stock prices will increase & mean returns will recede in belief dispersion and vice versa when the economy is pessimistic. It was also concluded that the existence of belief dispersion aggravates trading volume & stock volatility. Moreover, if belief dispersion is disentangled from Bayesian learning (probabilities), the stock volatility will be abnormally increased. The research also concluded that investor heterogeneity is measured from belief dispersions which decreases over a period of time and takes too long to disappear totally.

Ding (2014 a, 2015 b) states that if belief dispersions among equity market investors on the composition of corporate investments are visualized as extremely optimistic, the firms will rationally resort to invest in riskier projects to exploit these dispersions of belief. In the event, firms will tend to invest in R&D and M&A whereas curtailing investment in CAPEX & the derived results also verify the same phenomena. The effect of dispersion of belief is further magnified when positive return shocks to CAPEX are experienced by the firms. The results also indicate that belief dispersion in the Australian financial sector develops a risk-taking aptitude in corporate investment. Moreover, investor's dispersion of belief is further affected by short-sale constraints, miss-valuation of assets and excessive investment in riskier projects by the market investors. The categories of investments i.e. CAPEX, R&D and M&A are the major investments that the firms undertake. In the light of finance and accounting, R&D and M&A are regarded as the riskiest projects in relation to CAPEX, in view of the high uncertainty of returns from R&D and M&A.

Ding (2014 a, 2015 b), In view of the dismissal of redundant analysts by the firms, the analyst’s coverage to affected firms also reduces. Which further curtails the production and quality of information as well. Reduction in analyst coverage is also related to an increase in belief dispersions. Since this reduction substantially decreases the information flow hence greater variation in believes is caused.

Goldstein and Pauzner (2005) say that this research analyzes the relationship of price informativeness to stock price investment sensitivity. Using two proxies of informativeness i.e. “price non-synchronicity” and “public information (PIN)”, a positive relationship between informativeness and stock price investment sensitivity was

established. However, the results state rather a meager role of price informativeness on the stock market. In certain cases, prices provide information about which managers are not aware. Thereby guiding the managers in investment decision making. Titman and Daniel (1999) have also expressed that markets provide worthwhile information to managers, therefore investment efficiency is enhanced. Whereas, Goldstein and Guembel (2008) state that the investors who possess PIN of the market, invest aggressively and change the market trend in their favor. As a result the other investors also start investing in the stock market which aggravates manipulation thereby raising the share prices beyond fundamental prices (Chowdhury et al., 2018).

Scherbina et al., (2002) express that it has been ascertained that in the analyst's forecast, the stocks with higher dispersion earn lower returns as compare to other stocks of the same characteristics. Moreover, the highest quintile dispersion portfolios perform poorly as compare to portfolios in the lowest quintile dispersion by 9.48 percent annually. The effect is more evident in small stocks and those whose performance over the past years has been poor. The research also highlights that analyst earnings forecasts are used to measure the investor's difference of opinion in the stock market. The difference of opinion brings out the asymmetry in the market information and also indicates the trend of investor's psychological bias. If optimist investors keep the pessimist investors away from the market through high or short sale costs, the market prices will increase.

Gebhardt et al., (2001) argued that analyst's forecast dispersions can be implied as a proxy to cater for the risks for the explanation of the cost of capital and were astonished to find the same negative relationship. However, the aforementioned relationship has been established as positive in the research by Carleton et al., (1988). The derived results firmly disallow the concept of implied dispersion forecast as a proxy for risk in view of a -ve relationship in dispersion & future returns. However, a standard risk-based multi-factor cannot explain or account for the said relation. The dispersion in analyst forecasts can correctly be explained as a proxy for opinions variations about stocks. The consistency of results is conformed to the hypothesis that stock prices will always present an optimistic view when investors with the lowest valuation are kept away from the trade. Analyst’s incentive structure can prove to be an obstruction, since analysts may not prefer to issue forecasts under gross pessimistic conditions. This may create an upward bias and lead to

consensus forecasts. Resultantly, the investors will rely more on unofficial and anonymous information resources knowingly “whisper forecasts”, which are readily available on multifarious internet sites.

Verardo (2009) in his research explored a definite relationship between heterogeneous belief & stock returns at the cross-section of the US market. Heterogeneity of beliefs has been measured by the proxy of dispersion of analyst forecast earnings. The portfolios having greater heterogeneity of beliefs afford maximum profits. It was concluded from the cross-sectional regressions that heterogeneity of beliefs put a +ve impact on the continuation of returns with controlled visibility of stocks volatility, information precisions and uncertainty of fundamentals. The study has confirmed the existence of robustness in momentum and profitability strategies in local and international markets. The existence of +ve autocorrelation in returns has also been verified by behavioral and rational theories. The difference of opinions of agents generates price drift in the stock markets. The behavioral model shows that the heterogeneity of investors possesses a +ve relation to the momentum. The study concluded that turnover and dispersion in the forecast, both possess a sig. relationship to the momentum of profits whereby, depicting multiple aspects of heterogeneous belief (Atmaz & Basak 2018; Miller 1977 and Gilchrist et al., 2005). The results indicate that positive auto-correlation in CAR for six months have increased due to differences of beliefs in the market. The belief of investors is updated by the combination of their prior believes and new information about investment and stock prices.

Schiller (2000) says that according to the primitive economic thought process, the value of the company is based on tangible assets. Whereas, in the new scenario the value of the company is based on intangible assets. The authors in their research have endeavored to find out, how the value of a company's intangible assets increases from their fundamental values in relation to tangible assets. It has been concluded from the research that the efficient market always represents the true fundamentals of firm values. As per old economic strategies, the investors use to give weightage to the firm’s tangible assets while making investments. Whereas, in the modern economy, investors give little importance to the value of intangible assets. Instead, they prefer to invest on the basis of financial information about companies. Resultantly, psychological biases & mis-valuations are

created in the market which predicates unsatisfactory financial reporting and accounting standards. The value of intangible assets in the modern economy is mainly based on five factors i.e. Tobin's Q, investment ratio, issuance of equity, MPK and forecasting of analysts which also reflect the cost of capital of a firm. It has been concluded from the research that an increase in the value of intangible assets also affects the value of tangible assets of the firms positively. Moreover, Tobin's Q and Investment ratios also reflect the true value of intangible assets of the firms in the market. Investors also make investment decisions on the basis of the volatility of the firm's shares in the market. Therefore, excessive investment in noisy shares causes a bubble in the market.

As per Suzuki et al., (2015), the Japanese SEO process confirms Miller's hypothesis (1977) about the deviation of opinions. These SEOs comprise stocks having both short as well as long sale constraints. The stocks with short-sale constraints are linked to the under reactions of the market. The proxy of divergence of opinions about stocks having short sale constraints possess a –ve relationship to stock returns both at the time of announcement as well as on the issuance date. The results show that an increase in the divergence of opinions about stocks tremendously, increase in the issuance of equity results in fetching of abnormally high returns. In the research, the data of SEO from Japanese Stock Markets for the period from 01-01-1998 to 31-12-2011 have been made use of. According to Miller (1977) in view of the excessive divergence of opinions about basic values of stocks, the short sale constraint stocks would be overpriced and due to biases of financial media (Bhattacharya et al., 2012). "These findings are reminiscent of the story of the nail soup in Brealey and Myers (1991), except that here analysts (accountants) are the ones who put the nail in the soup and investors (analysts) are the ones to take it out". After the collapse US stock market bubble in the late 1990s, there has been great resentment between analysts of Wall Street and investors/regulators due to conflict of interests. This research deals with the mechanism, how much analysts react to the conflict of interests and inflate their stock value recommendations, and how much the investor digest those conflicting recommendations. The authors physically collected handwritten information from various companies about revenues and assets and shared it with analysts of those companies. This approach was applied to handle the pressures of IB clients and the Brokerage business.

Two hypotheses i.e. rational discounting and native investor hypothesis were used to differentiate between conflicting interests of investors.

Kroszner & Rajan (1994) are of the view that five factors are of significant importance for any analyst forecaster i.e. buy, hold sell, strong buy and strong sell related to investment banking and brokerage business. The other factor is the extent to which, investors negate the opinion of analysts facing higher conflicting levels. The other aspect is 3 to 12 months medium-term performance of financial analysts revisions, related to the volume of visualized conflicts. Here the question arises, did there any difference exist between analyst and investors conflict of interest during pre and post 1990's stock market bubbles.

Agrawal & Chen (2008), analyzed the conflict of interest between brokerage and investment by the banks. They expressed that if analysts issue optimistic equity recommendations they may mislead the investor biases. These conflicts were more prominent in the era of the 1990's stock market bubble in relation to investment banking. Analysts upgraded recommendations about stock prices and trading volumes, displayed a negative relationship with potential IB / brokerage conflicts. The result showed that when analysts upgrade their recommendations under pressure investors accord lower credibility to those. However, the relation between them for downgraded recommendations under pressure will be negative for stock prices & positive trading volume. As an aftermath of the research, it was established that the investors could not be misled by the analyst's recommendations during the decade of the 1990s. Resultantly, the necessity of regulation of rigorous analyst's research was felt.

2.2.3 Development of Conceptual Framework & Hypothesis:

Miller (1977), Gilchrist et al., (2005), Yan et al., (2003); Avramov et al., (2009), Bolbol et al., (2005) & Ohnishi (2017), Polk and Sapienza (2004) Love & Zicchino (2006) & Atmaz & Basak, (2018) are of the view that an increase in investor's belief leads to increase in market manipulation as well as its effects on stock market capitalization and firm's asset pricing. For example, when pessimistic and optimistic investors are systematically biased or optimistic in their beliefs, cause a change in asset prices and mispricing which leads to speculative bubble creation (Saad et al., 2018 & Diether et al. 2002). These mispricings create timely investment opportunities for the investors and firm

managers (Wurgler et al., 2003; Scheinkman et al., 2008; Baker et al., 2008; Polk and Sapienza 2008 and Bakke & Whited 2010). The firm's managers exploit mis-valuation in their own interest that may enhance short selling, market investors dispersion of belief & equity issuance which is mostly done when MR = MC of capital dilution. Such conditions are ideal for the firm managers for external financing which assists in supporting their running as well as new projects. As result share prices of firms enhance manifolds. Mis-valuation of the stock market directly affects the short Selling by investors, firm's investment, net equity issuance and Tobin's Q (Gilchrist et al., 2005; Polk and Sapienza 2008 and Bakke and Whited 2010). Consequently, the Cost of capital and investment increases. In the research, the proxy of dispersion of analyst forecast has been used to identify investor's heterogeneous beliefs, market short-selling & mis-valuation of stocks in the market. On the creation of the stock market bubble the firms carry out equity issuance and this process continues even after the crash of the bubble since the cost of capital is increased. The other reasons for equity issuance are that during the bubble period, the demand for shares gets escalated in the short run. Moreover, the managers also intend to earn a maximum profit for respective firms. The empirical researches also show that bubble is directly proportional to equity issuance (B>1 = equity issuance due to bubble, B<1= equity repurchase due to bubble crash).

The past researches also reveal that dispersion of beliefs possesses a sig. positive relationship with investment and MPK (Gilchrist et al., 2005; and Gilchrist & Himmelberg 1998). Whereas, the relationship of investment with Tobin's Q is negative in larger firms and positive in smaller firms. It is because Tobin's Q defines the firm's stock market investment opportunities, whereas the investment deals with the investing activities of the firms. It was observed that dispersion of beliefs possesses a positive relationship with Tobin's q. That is why the executive of the firms have a keen interest in the value of Tobin's Q for their strategic investment and financing decisions. Furthermore, due to the increase of COC, the firms tend to increase investment till the time MPK becomes equal to the cost of capital (Gilchrist et al., 2005; Love & Zicchino 2006; Gilchrist & Himmelberg 1998; Bobol and Omran 2005 and Baker et al., 2003). During the bubble period, the additional investment and financing activities are beneficial for the firms as they control asset prices temporarily in the short run and maximize the investor's wealth in the long run. The

research determines the relationship between dispersion, MPK (Firms Finances), firm's investment, equity issuance, & Tobin's Q.

Gilchrist et al., (2005), Bolbol and Omran (2005), Miller (1977), Gilchrist and Himmelberg (1998) and Polk and Sapienza (2008) are of the view that in order to understand the models empirical predictions, we need to explore the relationship among investment, issuance of net equity, Tobin's Q and proxy regarding our belief dispersion. Firstly, a comparison is required for the above-mentioned variables showing investment opportunities between 2006-2016. This will be followed by the division of firms into PSX. The stock prices of the firms of the former are more likely to be affected by the bubble phenomenon. This needs assessment at the firm level in detail. The difficulty was also faced in the identification of issues mentioned in the Q Framework. This was due to the endogenous response of Tobin's Q and the issuance of net equity towards dispersion. Tobin's Q help in controlling investment opportunities at the market place and subsequently conclude the bubble-driven nature of equity issues. Therefore to experiment with the following two ideas. Firstly, to apply variance of forecast pertaining to analyst's earnings to be an indicator regarding bubble phenomenon. This measure is less likely to correlate with opportunities of investment in stark contrast to variables of returns on lagged stocks as well as equity issuance variables. Secondly, to apply recursively ordered Vector Auto Regressive model for isolation of the exogenous component of the said variable (Fischer and Merton 1984; Bakke and Whited 2010; Suzuki et al., 2015; Love and Zicchino 2006; Ding 2014 and 2015 and Atmaz & Basak, 2018).

2.2.4 Hypothesis

H1: A surge in the stock market bubble leads to hetrogeniety of investor beliefs which further leads to escalation in specualative practices thereby resulting in miscalculated assessment of stock prices and inflated share prices culminating further in short selling of shares. Due to which additional investment and financing activities are also generated in the speculative market.

H2: In case of enhancement in stock market bubble, respective firms resort to equity issuance to maximize their cost of capital which encourages the stock market investors to further invest in the respective firm's shares. Increase in bubble leads to equity issuance which increases the firm's Cost of capital & thus enhances the investment,

short selling & financial activities of the firms. Whenever the dispersion of investor's beliefs and MPK are increased in the speculative market, the equity issuance by the firms is also increased.

H3: Issuance of equity reduces the bubble effect temporarily. However, in an efficient market, the equity issuance temporarily controls the equity and asset prices, whereas in the speculative markets it causes short selling and inflates share prices.

H4: The investment opportunity in the respective Stock market positively affects the firm's investment activities.

H5: Dispersion of investor's belief possess a linear relationship with MPK in bubble period. However, both of these variables directly affect the market investment opportunities, firms investing activities and equity issuance.

H6: Rising trend in stock market mispricing and dispersion of investors belief leads to reduction in the respective firm's cost of capital thereby resulting in expansion of investment in the firm's shares and enhanced financial gains.

2.3.1 Empirical Literature: How Do Earnings Management and Insider Trading by the Firms Contribute Towards Stock Market Bubble?

Buying and selling of securities by the individuals who possess access to the non-public information about securities in the stock market are called insider trading. It can be legal or illegal. Insider trading can be legal when trading company directors legally disclose transactions of their shares in the stock market. When the share prices are still non-public, insider trading under such circumstances is known as illegal insider trading. It may include deceiving other investors about share prices when market information is still non-public. SEC does possess a policy framework to protect investors from the effect of insider trading. Term Insider includes CEOs, directors or individuals possessing 10 percent or more shares of a firm. It is obligatory for the insiders, to comply strictly with the policies of the SEC and avoid disclosure of any information about the sale and purchase of shares of their companies.

Strict legislation by SEC prevents insiders from gaining financial advantages from their privileged position. Insider trading offenses are punishable by fines, repayments and confinements under the securities legislation rules. However, corporate insiders having duly notified to SEC can legally trade, sell or buy stocks within their companies. As a

result, information gained through corporate directors, employees or officers by the investors is shared within their family members, business partners or friends and those individuals exchange shares based on that information. Moreover, staff members of other companies who are in a position to access insider information through law firms, banks or government institutions can also be regarded as illegal insiders. Insider trading results in violation of investor's trust and adversely affects the investments.

Clark (2014) says that even after seven decades of formulation of insider trading laws, this subject remains controversial because of the huge volume of literature published on this aspect. Recent research has also proved the involvement of even celebrities and the employees of the SEC in insider trading. As a repercussion to financial devastation, S A 1933 and SEA 1934 were passed by US Congress to regulate the sale of new securities. Prior to these acts, securities used to be regulated by the individual states. The passage of the exchange act necessitated the formulation of the SEC and assigned it the task of regulating insider trading. To make the security act more potent, extensive legislation was carried out during subsequent decades in the form of ITSA (1984), ITSEA (1988) and RFD (2000).

Bhattacharya & Daouk (2002), the aspect of insider trading bounced up sharply during the late 1980s after the mass indictments. This further caught sight of the world's market regulators through powerful media outlets like television, cables and the internet leading to the enactment of regulations all over. By 1998 out of 103 SEC's, 87 had carried out legislation on insider trading. However, law enforcement standards varied drastically in different countries yet insider trading was recognized as an international problem. Insiders are discouraged from exploiting negative information for three main reasons by corporate governance. First, insiders by exploiting –ve private information mint huge profits by selling their shares before information disclosure in the stock market. Secondly, insider sales entail more legal risk than insider purchases. The third reason is that insider trading cannot be termed as managerial success rather it will reflect their failure (Johnson et al., 2006 and Rogers 2008). Forgoing in view, even firms with the best corporate governance would discourage insider trading. On the whole, insiders cannot earn abnormal profits from the sale of shares. However, corporate firms may announce incentives to defeat informed insider's activities. On the other hand, insiders may earn huge profits from their

purchases but shareholders do not show much concern about arbitraging, since they entail lower legal risk. Here the profits may be regarded as a managerial success.

As by Jiang et al., (2017), rules and laws have been enacted on insider trading but they are vague and complex and hardly allow laying strong hands-on culprits. As a result of this legal ambiguity, a case of significant insider trading came to the limelight in April 2014 in which CEO of "Hedge Fund Pershing Square Capital" Mr. William Ackman earned more than one billion dollars profit on his deal with Allergan. The stocks were secretly purchased two months prior to the offer by Mr. Ackmen. This predicates that he used non-public information to gain profit. Since rules are not in black and white, therefore, the definition of insider trading leaves much space to determine its legality. Mr. Ackman managed to evade the allegation of illegality on the plea that he had concluded the deal after prior intimation to the attorney of Mr. Robert Khuzami (former SEC Enforcement Head).

Henry Manne's publication "Insider Trading and the Stock Market (1966)" invited an open debate even on the regulation of insider trading. The moral and economic arguments erupted from the debate say it is a fraudulent practice that exploits non-insiders, even insider investors violating basic ethics will pursue insider trading and as insiders possess specific accurate information. Therefore, if they are allowed for insider trading, it will gravely affect the market. The first argument as mentioned above is the moral one which is subjective and deals with fairness whereas, the remaining two are objective and based on economic aspects which are of utmost importance as they significantly affect the market behavior.

Khanna (1997) and Goshen & Parchomovsky (2006) are of the view that for regulating insider trading besides imposing restrictions on insider traders, suitable incentives should also be provided to them so that they endeavor to collect and collate information. This argument suggests that regulations about insider trading do exist to protect information from the insiders, to obstruct insider trading. The supporters take this arrangement as optimal because the information traders can conveniently endorse liquid capital and efficient markets. Therefore the government should also protect information traders instead of shareholders to regulate the markets.

Jalil (2003) and O'Hara & Easley (1998) state that another reason as to why to regulate insider trading is that as a result of minting abnormal profits by insiders through using non-public information, the confidence of outsiders will be shaken and they will stop investment. As a result, liquidity will decrease and the cost of capital will rise. This implies that corporate investment will also be discouraged if access to PIN is allowed to insiders. The focal point of the aforementioned argument is that insider trading should be stopped because it creates fake competition in the stock market and gives an artificial rise to the stock prices which then suddenly fall and ultimately makes the market inefficient.

In Pakistan, SECP had formulated the Securities Act 2015, which declared insider trading as a criminal offense. This act vests authority in SECP to react in favor of investors by protecting them & strengthen the securities market. The law clearly states that 'insiders' & inside information, market rigging transactions, false trading and other kinds of fraudulent induced trading in securities & market manipulation i.e. misleading or false statements or deceptive devices (schemes) etc. are heinous crimes under the Securities Act 2015. The salient sections which encompass curtailment of insider trading are Sections 127 to 136 of the said Act. [12]

A comparison carried out by the SECP officials between Securities Act 1969 & Securities Act 2015 revealed that the Securities Act of 2015 is more comprehensive and effective because it has been incorporated with international security commission laws, regulations and practices. The 1969 law offered no authority to SECP to intervene in favor of investor protection or resolve their complaints. Moreover, this ordinance also did not vest any authority in SECP to recover penalties, monitor securities transactions, Stock exchange Audits and regulate Central depository and clearing houses etc. All afore stated aspects have been catered for in the new act and the new law segregates the functions of future brokers and future exchanges. The ideas of regulated and licensed persons, security advisors, self-registration and security managers were also incorporated in the new law. The concept of an agent's regime was replaced with a representative system. Classification of security brokers, entry standards, appointing criteria of employees, sponsors, directors and corporate governance code etc. were also made part of this act. The act also vests

[12] Prior to the SECP act 2015, the aspect of insider trading had also been clearly defined in Companies Act of 1969 (Section 15(A), Section 15(B)), companies act 1984 (Section 15(A), Section 15(B)), Companies act re-schedule 1997 and Companies act re-schedule 2001(prohibition of insider trading).

powers in SECP to issue directions to securities exchange, emergency powers for license cancellation and suspension, order audits of securities exchange and appoint special auditors.

2.3.2 Empirical Studies

Research by Jiang et al., (2017) on the subject of insider trading explains that professional legal education creates indecisiveness among the directors & executives of the firms about insider trading. They keep them over-involved in professional legalities and in turn lose most of the incentives which they could otherwise have obtained by taking the right decisions at the right time. It was observed that lawyer insiders always earn lower abnormal returns as compared to the non-lawyer insiders. Similarly, the purchase of company stocks by Lawyer insiders entails lesser future earnings surprises and profitability of firms as compared to the non-lawyer insiders. Legal insider trader trading has low returns as compared to illegal insider trading & the same is also recognized by Dai et al., (2016)[13] .

According to Cheng and Lo (2006), the insiders select trade and information disclosure timings of their own choice to obtain optimum profits. Lee, Mikkelson, and Partch (1992) are of the view that just before repurchase announcements, the firm managers enhance purchasing frequency of shares and decline share selling. Shi et al., (2007) comment that insiders tend to sell their shares on getting good news whereas resort to buying on the breaking of bad news. However, they refrain from profitable trades prior to earnings announcement because of litigation risk. Despite having significant proof about informed trading, the majority of insider trading seems legal and attracts no attention to securities enforcement. This predicates the existence of sufficient space between the legal and illegal trading behavior of insiders. Jaffe (1974) was the pioneer to research abnormal returns and insider trading. He concluded that firms earn abnormal profit by insider trading which effect the EMH theory. They use informants for the purpose and in return pay them incentives. As a result managerial and firms incentives, equity issuance & E'sM also get increased.

[13] . A number of policies may be implemented by corporate governance bodies such as voluntary insider trading or trading restrictions to prevent insider trading (bhattacharya 2012).

Research conducted by Cohen et al., (2012) showed that insider trading does not predict the future abnormal returns of the firms. They argued that mechanisms to prevent insider trading and exploitation of information include such measures that limit incentives to managers where they engage legally in an insider trading activity through disciplinary actions undertaken by a respective firm. Such rules and regulations adopted by a firm help in discouraging the insider trading activity as well as restrict the managers of the respective firm to exploit insider information through signaling the same to prospective investors. Such measures affect six-monthly profits to persons involved in insider trading.

Empirical research also predicts that the efficiency of insider trading directly relates to the size of the firm and market information. Lakonishok and Lee (2001) argued that the predictability of insider tradings is generally related to the stock returns of small firms. Whereas the analyst's recommendations reduce the profit of the insider trading which results in decreasing insider purchases. Aboody and Lev (2000) state that insider gains are greater in R&D based firms. Whereas Wintoki et al., (2017) have described similar results with regard to advertisement-based firms. Piotroski et al., (2005), Cziraki et al., (2013) and Skaife et al., (2013) concluded that insider trading possesses a +ve relationship with B/M ratio and –ve relationship with preceding stock returns in an efficient market. The authors have confirmed that insider trading also affects internal controls of the firm and corporate governance.

Korczak et al., (2015) also state that it was not know how much corporate insiders affect returns proceedings of their trades. They also concluded that fixed insider effects represent the major portion of stock returns proceedings, whereas personal factors can hardly be measured. Davidson et al., (2014) in their research have predicted that uneconomical executives having criminal records mint more profits because they never cater to any rules and self-control.

Seyhun (1992) in his research established that insiders always enjoy an advantage over outsiders on the basis of their knowledge to predict the quantum of future returns [14]. His conclusion confirmed that abnormal returns varied based on the insight level of the firms, hence was Jaffe's hypothesis. Furthermore, it was also confirmed that enormously

[14] His result also satisfies to the conclusions of Jaffe on insiders behavior or trading. Moreover, Seyhun established various kinds of insiders by distinguishing between officers, directors, officer directors, board of directors, and shareholders.

higher abnormal returns were earned by the high-ranking insiders as compare to the insiders ranking low. Analyzing the information obtained through multiple levels according to the given hypothesis, Seyhun confirmed that having information advantage at back, insiders resort to a larger transaction. On the other hand, in view of the capability displayed by outsiders of mimicking insider transactions, he arrived at the conclusion that the cost of the transaction made it unprofitable. Therefore, abnormal returns could not be earned by outsiders. Seyhun (1988) concluded that shares and options, form a major part of managerial compensations in the US and it is accounted for sixty percent of the compensation of CEOs. Hence is considered a prominent part of a manager's earnings. Since managers own a good amount of shares of the company, then if share prices perform well they earn huge benefits. On the other hand, if share prices perform badly, the managers are bound to lose much of their wealth. From the investment point of view, this arrangement is good because managers and investor's incentives stand correlated and managers try to put in their best to ensure that their company's performance does not drop. Consequently benefiting the investors in the process.

Huddart et al., (2006, 2007 a and 2007 b) carried out research on the process of creation of the 1990's stock market bubble. This disclosed that how earning management and insider selling were thrown into the market, and how the large grants of equities led to the creation of this bubble. This made managers too much concerned about their stock performance and forced them to inflate earnings. They also concluded that the relationship between the abnormal accruals and the abnormal post-bubble returns was found to be much stronger for companies whose insiders resorted to stock selling in the bubble period than the firms whose insiders were involved in buying. They also implied the technique of Jaffe and identified the existence of insider selling and insider buying in the US market. It is widely believed that the 1990's bubble of the stock market was the outcome of E'sM. It is alleged that heavy compensations issued based on stock, prompted incentives to the managers who inflated earnings. Resultantly, they managed to keep stock prices high and accelerating.

Coffee (2004) states that the rise in stock-based compensations to the executives made managers highly sensitive to short-term stock performances. He also comments that an increase in stock selling by managers caused a rise in equity ownership. Hence, stock

positions must be limited to stock manager's consumption. Abnormal pending stock sales afford opportunities to the managers to inflate the stock prices of their companies prior to selling. The earnings manipulation process enables managers to inflate stock prices. Armstrong et al. (2010), after having studied the effect of equity-based incentives of CEOs on earning manipulation, established that frequency of accounting irregularities is lesser in the firms who provide higher equity incentives to their managers. This raises the possibility of containing E's M to raise stock prices in the bubble period.

As per Lin and Howe (1990), after research on NASDAQ's insider trader's profitability, concluded that insiders having close affinity to the firms possess more accurate, relevant and reliable information as compare to the remotely placed insiders of the firms. Their hypothesis was confirmed with the outcome of their results. CEOs earned larger abnormal returns as compared to the remote insiders, who earned the least abnormal returns. This is for the reason that CEOs watch routine operations of firms more closely as compared to the bulk of shareholders (remote insiders) who lack access to day-to-day operations. After having accounted for transaction costs, Lin and Howe managed to extract the clue that Fama's "semi-strong market hypothesis" holds good in the scenario because outsiders could not manage to earn higher abnormal returns by disclosing insider transactions.

Del Brio and Miguel (2010) carried out a study of the Spanish stock market on different lines than contemporary studies. They concentrated on the impact of different kinds of market signaling actions and expected reactions to them in the markets. The signaling effect of insider transactions found out was equal to 1. The reaction of insider's stock selling was observed negative, but after combining the signaling effect of insiders selling, companies' dividend policy showed a downward shift. The authors, therefore concluded that only insider transactions are not relevant but insider transactions combined with corporate actions and signaling impact are more relevant. The study of the opposite relationship concluded that bringing in stocks by insiders gave a positive signal to the stock market which resulted in the rise of stock prices.

Dickgiesser and Kaserer (2010) studied the German stock market to formulate an EMH. The study aimed at investigating, whether outsiders may be able to replicate insider transactions for abnormal earnings or not. They concluded that announcements of

transactions made by directors enormously affected proceeding returns. However, outsider's abnormal returns declined when these transactions were taken into consideration (Iqbal and Shetty 2002). This shows that the EMH was not affected by these interferences. It was also proved that default risk made it highly uneconomical for outsiders to replicate transactions. The overall outcome of these results indicated that publicly available information affects stock prices in the efficient market.

2.3.3 Earnings Management

Earnings Management is an accounting technique for producing positive financial reports about the company's financial state and business activities. It is also the application of such accounting rules, which help in making financial statements showing inflated revenue or assets of the company. This also smoothens up fluctuations in earnings by presenting consistent yearly or monthly profits. Fluctuations in expenses and income may be a normal routine but greater variations may panic investors, who believe in the growth of returns and stability. Depending upon the rise or decline in expectations, the stock prices of companies rise or fall accordingly.

Stolowy and Breton (2004) state that earnings management is the activity pursued by managers to earn incentives. Xiong (2006) has divided incentives into two main groups. The first group is internal incentives by applying multiple accounting choices, while the other group is capital market incentives, which rely more on accounting information by analysts and investors. Veenman et al., (2013) spell out that the earnings benchmark is the most common capital incentive that E'sM comes across. This benchmark represents previous performance i.e. desire to show an upward trend and desire of analysts to meet or beat expectations. The study by Dechow and Skinner (2000) revealed that the reasons behind managerial incentives to meet benchmarks were to avoid firm's losses and show an increase in quarterly earnings and meet the expectations of analysts.

Burgstahler and Dichev (1997a, 1997b) have stated that unusually small decreases in earnings, incorporate small losses & abnormally frequent small increases in earnings result in small increases in income. The authors reasoned that if earnings do not meet the earnings benchmark, then the cross-sectional deviations of expected earnings will become relatively smooth. On the other hand, if earnings meet the earnings benchmark, a sharp discontinuity of lower intensity of -ve deviations in expected earnings shall be seen in the

vicinity of the earnings benchmark. DeGeorge et al., (1999) concluded that if E'sM is applied by the managers to achieve analyst's expectations then similar results as deduced by Burgstahler and Dichev (1997a) will be achieved, showing discontinuity in the earnings distribution[15].

Rozic et al., (2017) in their study pertaining to the Croatian markets, analyzed that their companies resort to E's M to avert losses or decline in earnings. However, the impact of this practice has been very meager. On the other hand, after eliminating discretionary accruals, the results indicated a minor negative impact on the firm's earnings or revenues. The results of the research indicated that a reduction in E's M will also cause the reduction in irregularities of the firm's financial reporting & manipulations.

Stolowy & Breton (2004) stated that income smoothing aims at producing growing profit streams for firms which shows that managers make effort to control profit variances. Although it will be next to impossible to ascertain whether these changes incorporate manipulations or manipulations are managerial discretions. This enables manipulators to carry on with it as these changes cannot surely be declared attributing towards manipulations. Therefore, so far as earnings move in the positive direction and are increasing, their volatility cannot be questioned.

Bauwhede et al., (2003) have argued that payment ratios of constant dividends are also said to be a smooth earnings incentive. In the countries where the direct taxation system exists, earnings can be smoothed by the companies to reduce tax payments. Income smoothing can also be done based on contracting theory, where managers make all-out efforts for smooth earnings to protect their jobs and get higher incentives. Capital market value is of utmost importance in the smoothness of earnings, thereby confirming that bigger profit variance results in bigger risk. Higher risk involves the higher cost of capital that is why managers are given incentives to smooth the earnings. Some studies show that earnings smoothing is used to mislead shareholders about the company's performance, whereas, some studies contradict this point by stating that earnings smoothing is used by managers to disclose information on the firm's plans. Tucker and Zarowin et al., (2006)

[15] Gore et al., (2001) predicted that earning changes, earning levels and earnings surprises of firms were distributed unevenly around zero. This concludes that the process of discontinuities of distribution earnings spreads beyond corporate environments and accounting GAAP regime

comment that well-performing firms have better prospects of earnings smoothing as compare to firms with poor performance backgrounds.

Dontoh & Ronen (1993) and Watts and Zimmerman (1990) say that stock prices strongly react to information asymmetry while publishing accounting information. Due to the competition among the firms and to attract maximum investors, annual reports are prepared by the managers in such a manner that helps in smoothing earnings in favor of companies. Beaver (1968) & Ball and Brown (1968), through earnings management, diffuse bad information about their companies and float good information in the market-place to obtain abnormally high returns in the future from the stock market. Abnormal variations of returns are used to highlight accounting information results during announcements. The aforementioned statement that managerial operational efficiency, which the firms share in the stock market through accounting modifications leads their firms to variation in annual results. Some other authors have concluded that changes in accounting methods increased the earnings of about seventy-five percent of firms. Similar results were also obtained with respect to the firms who were benefited from the change in accounting standards.

2.3.4 Empirical Studies on Insider Trading and Earnings Management

Kumar & Vij (2017) researched 32 companies of Bahrain's stock market to ascertain the effect of earnings announcements on the stock market efficiency. Although these two possess a strong relationship with each other, merely a semi-strong relationship between these is found in Bahrain stock markets. Earning announcements play a vital role when there are over and under reactions in the market. But analysis of the USA and UK markets show the existence of only a semi-strong relationship. However, the study of the Indian stock market predicts delayed reaction from Indian stock markets after earnings announcements. If at the time of earnings announcements, good news prevails, then investors earn abnormally high returns.

Again Huddart & Louis (2006, 2007 a and 2007 b) in research on “Managerial stock sales and earnings management during the 1990s-stock market bubble” said that companies issue stocks with the help of beneficiaries in favor of executives and managers to sell or resell stocks at their own. The main purpose of these activities is to inflate the share prices that help the firms to inflate the stock prices as well as bring bubble in the market. In the

said research, the authors expose the effect of the bubble on the share prices and vice versa. The authors concluded that both bubble and inflated prices are directly proportional to each other. Earnings management and insiders, help to increase the volatility of shares of the respective firms. As a result, in the 1990s the companies inflated their prices by increasing the number of compensation stocks in favor of top executives. The firms also offered incentives to their managers, to escalate their stock prices through earnings manipulation prior to stock selling. Sticking to the assigned objectives, the managers ensured E'sM & insider trading prior to bubble creation which lasted till the bubble burst. The results indicated that most of the firms managed to earn 24 percent more returns during the last stage of the bubble. On the other hand, the returns of the firms were 88 percent more, where insiders sold excessive stocks. However, during the correction period, insider trading, E'sM & firm returns were reduced as compared to the bubble period. The results of the research indicate that stock-based compensations, E'sM & Insider trading played a vibrant role in the creation of the 1990's bubble of the US Stock market (Friedlan 1994; DuCharme et al., 2004 and Jo and Kim et al., 2008).

According to Geiger and North (2006), Jiang et al., (2017) and Beneish & Vargus (2002), insiders obtain earnings through displaying favorable asset values of their firms to favorably change the perception of investors and enhance their trades. CFOs enjoy superior authority in financial reporting and firm's earnings with regard to equity incentives. However, the investigation into manager's incentives and penalties for overstatements reveals that income-increasing accruals are much greater in case of abnormal insider buying as compared to abnormal insider selling. The latter is more concerned with opportunistic E's M. The authors conclude that how important the top management contributes towards the firm's manipulations and earnings inflations.

Xiong (2006) expresses that there is another element like insider trading, which is used to enhance the share values from their fundamental value in the short run, which is called CEO compensation stocks and options. It is the process in which the CEO compensates managers for their efficiency by allocating some quantity of short-term shares. These shares are traded in the market at the discretion of the CEO, but their profit is enjoyed by the managers. From 1998 to 2001, the technological bubble prevailed in the US stock markets. One of the reasons for that bubble was also resorting to the practice of

Stock-based compensations by the CEOs of the firms. The author is also of the view, these stock options are made use to sell the firm's shares to over-optimistic and overconfident investors in the speculative markets, to increase share prices in the short term.

Aboody et al., (2005) comment that share prices dictate the quality of earnings by informed insiders who take more risk & earn abnormally high profits. Core et al., (2006) concluded that managers of the firms purchase more shares when share prices are low. Cheng et al., (2005) are of the view that managers of the firms get involved in E'sM, when they are given high equity incentives. They tend to increase their share values and hence more equity issuance takes place. Sawicki & Shrestha (2008) have evaluated that insiders resort to buying shares of their firms when the share value drops and sell their shares when share value increases. Therefore, it is proved that insider trading is linked with E's M and as a result insiders get abnormal returns.

Ball & Shivakumar (2008) state that similar research was conducted to observe the impact of E'sM on IPOs of the firms. It was established that prior to the IPOs the complete team of firms comprising managers, auditors, litigants, rating agencies, BOD's and analysts, manipulated their financial reports to inflate the values of their IPOs. The primary objective was to assess its effects on market regulatory financial standards and the secondary objective was to increase the value and demand of supply of their IPOs. The research findings predicate that the listed companies carry out excessive manipulations in financial reporting as compared to the listed companies to earn abnormal profits during the process of issuing of IPOs. In UK-based firms, E'sM and Earnings manipulations are higher in relation to US-based firms[16].

Dechow et al., (1996) say that the firms having a proportionately higher number of independent directors, audit committees & smaller boards, entail lower manipulations in earnings. A similar study was conducted on 75 fraudulent US firms and 75 firms with a higher number of independent directors, where lesser chances of fraud were observed. In the light of the Cadbury committee report of the UK, the non-executive directors were found more efficient in containing the practices of E'sM. The presence of independent

[16] Teoh et al., (1998a, 1998b) states that E'sM is always carried out before equity issuance. The reason behind is that it helps in the growth of companies net income. E'sM is more commonly used by IPO firms in order to earn abnormal returns from short selling. To achieve their objectives, the IPO firms get prepared the financial reports of their own choice through their analysts and float in the market, which in turn enhances their market capitalization & managerial incentives.

directors also reduces manipulation in earnings which is further enhanced by appointing audit committees.

Abarbanell and Lehavy (2003) said that the moderate level of earnings management will help to provide constructive feedback to investors and firms. At present, the firms use the earnings bath technique to inflate the stock prices in the market. The earnings bath is a manipulation technique used by the firms to show a good view of their financial statements to the investors or use a time delaying strategy to inflate their share prices. The results call for revisiting interpretations of empirical findings which suggest that equity-market-based incentives are deemed essential to manage earnings. Dargenidou et al., (2018) concluded that insider corporate trading after earnings announcement affects the market structure and creates earnings surprises. As a result of the earnings surprises, the directors will resort to insider trading with respect to the sale and repurchase of shares. Access to insider information puts the directors in an advantageous position. Earnings surprises bring only transitory changes in the market fundamentals. Furthermore, they will not affect the share prices in the parallel direction of earnings Surprise. However, at the last Directors of the companies always get involved in insider trading after the earnings announcement surprise.

Agrawal & Cooper (2015) carried out an analysis of 500 firms that were involved in accounting scandals. It was revealed that managers were involved in stock selling by misquoting earnings thereby committing crimes like insider trading and earnings manipulations. These scandals were always accompanied by the decline in stock prices, hence caused a slump in the stock market. Consequently, the executives and the companies involved in misreporting also faced litigations from investors and regulators. The gravity of the offense was determined from the aspect, whether the corporate securities were traded before the revelation of accounting problems or continued even thereafter.

Maritvold and Flaa (2015) researched the impact of insider tradings on Swedish STK MKT. During the process of research, he identified 6627 insider trading cases in NASDAQ & OMX Stockholm during the period from 2010 to 2014. He perceived that how quality information helps in determining the stock prices in the future and how the outsiders make use of that information for earning abnormal returns. In the research, the author has implied an event study technique that proved that insiders were well informed about the capacity of respective firms in violation of EMH. Various characteristics of a

firm like industry, financial leverage, and market capitalization in connivance with traded volume & type of insiders cause huge variations in abnormal returns in the market. It was concluded that information disclosed by insiders affects the enterprise value permanently, which results in higher returns & purchases. Furthermore, in insider trading, low leverage firms earn higher abnormal returns as compared to firms with higher financial leverage. It has also been noticed that individually the managing directors are more active in insider trading activities as compare to general shareholders.

Beneish et al., (2004) carried out another research on insider trading and E'sM and stated that the investors always expect positive earnings on their securities after the process of E'sM & insider trading. The author concludes that E's M and insider trading do not have much of a role to play during pre return and post-return periods, rather the investors themselves perform these activities after evaluating the market trends. They further established that the firms which perform these activities, provide substantial incentives to their managers. Cheng and Warfield (2005) have also opined that the managers offered higher incentives, diligently engage them in E'sM to enhance the value of the shares of their firms & also to meet analyst forecasts expectations.

Chowdhury et al., (2018) state that insider trading & E'sM possess a positive relationship with each other and also affect the quality of earnings. If the earnings quality is lower, insider trading will be increased. Lower E'sM quality also predicates information asymmetry among investors and the management. In case information asymmetry in the market is high, the E's M will increase as investors may not be having enough resources to get to the requisite information or monitor the manager's activity. Moreover, an increase in accrual-based management will also result in equity-based compensations. Despite prolonged restrictions, insider trading has always remained a point of concern for the regulators. It is also affirmed that insider trading, DA & information asymmetry vitally affect the sales of marketable securities. Furthermore, the major insiders also get involved actively in E'sM for their incentives.

Chowdhury et al., (2018) researched DCCA, insider trading & information asymmetry. In the research, they made use of US stock market data covering the period from 2004-12. They analyzed whether earnings are manipulated based on asymmetry of information by the insiders to obtain profit from informed traders or the relationship

between insider trading & E'sM is influenced by some intervening information. It was found that insider trading concerning selling as well as asymmetric information possessed a positive linear relationship with DCCA. Hence confirming the moderate effect of asymmetry of information. It also established that the involvement of key insiders for personal benefits in high DCCA is more pronounced in growth firms as compared to value firms. The results also indicate that E's M encourages opportunistic insiders more than routine buy & sell trading. The research also concluded that the regulators must keep a critical eye on insider trading & E's M to curtail the opportunistic activities of insiders to avert corporate scandals.

2.3.5 Development of Conceptual Frame Work & Hypothesis

Seyhun (1986, 1988, 1997 & 1988), Jaffe (1974), Chowdhury et al., (2018) & Huddart (2003, 2006, 2007a and 2007 b) state that insider trading has been known for temporarily mispricing a certain number of shares through their easy access to inside information. Such information is often used to affect the future performance of the respective shares. The information held by senior managers or directors of respective companies can be positive or negative. However, the same information is used intelligently and manipulated to produce positive outcomes by encouraging investors to invest in respective firms. Such class of managers and directors of respective firms, generally forecast t+1 (next yearly information) and display it to prospective investors for the advantage of the firms (Rozeff and Zaman 1998; Piotroski and Roulstone 2005 and Beneish & Vargus 2002),

The existing research mentions that insider trading is based upon superior information along with the needs of cash flows. The insiders don't disclose information in a hurry to avoid litigation and reaction from regulatory authorities (Dai et al., 2016). The researchers have mentioned that illegal insider tradings are +vely associated with abnormal returns. Insider trading is found to be extensive when there is a strong possibility or likelihood of abnormally high earnings. It can be further understood by bifurcating the trades in the stock market as routine being opportunistic. It has been observed that insider trading is less in routine trades as compared to opportunistic trades where the possibility of abnormal returns is high (Seyhun 1986,1988, 1988 & 1992; Elliott et al. 1984; Dai et al., 2016; Ke et al., 2003 and Chowdhury et al., 2018).

The earnings management is often done by the managers for many reasons, such as releasing such kind of manipulated information that helps to increase the price of stocks of respective firms for IPO (initial public offering). The analysts have observed that managers avoid giving negative information to the prospective investors, to prevent losses to the respective firms in terms of decrease in share prices etc. This can have a domino effect by reducing investor confidence in the reputation of the requisite firms. The earnings management can be positive or negative depending on the information released in the market, which is often beneficial to the managers and insiders of the company. The CFOs are often believed to have more inside knowledge of requisite firms and they can use it to their advantage as well as to the advantage of other managers of the firm. This positive and negative manipulation of information causes variation in stock prices systematically. When insiders and financial managers of the firms intend to buy shares then they float negative information in the market, which brings down the price of shares. Similarly, when the managers having insider information intend to sell the shares, then they release positive information to influence the shares of the firms positively, which results in abnormal returns to inside investors and managers (Seyhun, 1992; Rozeff and Zaman 1998; Huddart et al., 2006, 2007 a & 2007 b; Beneish & Vargus 2002; Beneish et al., 2004 and Chowdhury et al., 2018).

Previous researches have also revealed that asymmetric information plays an important role in earnings management. Such asymmetric information acts as a signaling mechanism for the prospective & existing investors which boosts the share prices. Furthermore, in an imperfect market, asymmetric information is found to have a positive relationship with abnormal returns. However, in the case of a perfect market, higher levels of asymmetric information may result in negative returns. Earlier researches have also shown that when higher unexplained variance in the accrual quality exists, the information asymmetry will be higher. Therefore, we may contend that a definite relationship exists between accrual-based E'sM and insider trading, which is accelerated by asymmetric information. Therefore, we can state that when markets are not in a competitive state, then earnings management along with insider trading can be termed as an outcome of asymmetric information (Aboody et al., 2005; Seyhun, 1992; Beneish et al., 2002; Chowdhury et al., 2018; Rozeff and Zaman 1998 and Piotroski et al., 2005).

Earnings management, earning inflation, insider trading and managerial stock-based compensations cause inflation in the share prices of STK MKT, which results in the creation of a stock market bubble. This phenomenon has also been confirmed by the papers of Hudadart (2005, 2006, 2007 a and 2007 b, Chowdhury et al., 2018, Fuller & Jensen (2002), Armstrong et al. (2010) and Coffee (2004). Moreover, In the USA market, managers of the firms, CEOs & CFOs focus too much on stock-based compensations & earnings manipulation mechanisms to obtain abnormal returns. Equity and managerial-based compensations are carried out mainly for the two reasons i.e. share prices are inflated through EsM with financial manipulations and managers concentrate on those stocks that may form part of future managerial and equity-based compensations. Most of the researches has also revealed that whenever a stock market bubble is created, the bonds between earnings inflation and insider trading get stronger. Waldman et al., (1990) & Brunnermeier and Nagel (2004) say that these prospects generate speculations among the investors which invoke arbitrageur behavior in them. The empirical findings have revealed that a –ve relationship between abnormal accruals and returns always resulted due to net insider selling by the firm's Managers, CEOs & CFOs. Since BM ratio is linked with insider trading, therefore whenever insider trading will increase, it will also affect the BM ratios and firm size accordingly (Rozeff and Zaman 1998; Seyhun 1986 & Lakonishok and Lee 2001; Nofsinger et al., 2003; Chowdhury et al., 2018 and Huddart et al., 2006, 2007 a and 2007 b). We will imply the variable of leverage in our analysis to control the limitations of acquiring funds to expand the capacity of firms.

Numerous researches have proved a strong +ve link between insider trading & AR. The same findings were carried forward by Betzer and Theissen (2009) whereby commenting on insider trading in Germany. Jeng et al. (2003) worked on insider purchases which increased AR have of firms by 6 percent approx. Jaffe (1974) & Seyhun (1985) also came out with similar results. According to Tonk et al., (2018) found an AR was identified in the purchase & sale of shares by the directors after 20 holing days. Lin and Howe (1990) came out with the idea that of positive ARs during the counter-market phase. Furthermore, Singal (2004) observed that insiders generally trade their shares in small amounts for limited periods to avert disclosures of their intentions from outsiders and as a result earn higher profits (Beneish & Vargus 2002 and Chowdhury et al., 2018).

Senior management of firms & insiders enjoys easy access to the firm's PIN which may be positive or negative. This information enables them to manipulate or misprice the share values of the firms. As a result, they lure in the ignorant investors for excessive investments and resultantly earn abnormal profits, managerial & firm incentives. Insiders hide information to earn profit & avoid litigation. Firms earn abnormal profit by illegal insider trading (Dai et al., 2016)

Earnings inflation is primarily known as unexpected accruals and it measures earnings management. Earnings inflation is carried out along with insider trading prior to the bubble period or in the pre-bubble period. The high earnings inflation is conducive to stock-based compensations and managerial incentives and inflates the share prices of the firms in the stock market during over-reaction and under-reaction. As per the empirical studies, earnings inflation, the book to market ratio and abnormal returns possess a strong relationship with each other in the stock market. The earnings inflation dictates the rise or fall of a firm's equities in the stock market. The firm managers also use earnings inflation to mislead the equity prices and financial statements before the issuance of IPO's, insider trading and M&A activities in the stock market (Teoh e al., 1998; Beneish & Vargus 2002 and Huddart et al., 2003 and 2006).

B/M ratio is a controlling variable and may possess a positive or negative relationship with earninsgs management and abnormal returns. According to the empirical studies the relation of BM ratio is negative with earnings management (Solan and Skinner 2002), whereas according to Ali et al., (2011) Teoh et al., (1998) and Beneish (1999) BM ratio possesses a positive relationship with earnings management. Therefore the firm managers would prefer to sell their shares when the earnings management is high (Ali et al., 2011 and Beneish 1999). BM ratio represents the stock-based compensation, managerial incentives and earnings management.

When buying and selling of securities become excessive in the stock market due to psychological reasons is called market overreaction. Whereas, when securities become under-value, the process is called market under-reaction. The bubble and financial crisis take place due to the upward or downward over-reactions and under-reactions.

2.3.6 Hypothesis

H7: Insider trading & managerial Incentives hold a positive relationship with earnings inflation during the bubble period. However, insider trading and earnings management are generally carried out prior to the stock market bubble and the financial crisis because firm managers are very keen to get enhanced value of the firm's shares.

H8: Legal Insider trading possesses a negative relationship with abnormal returns during all stages of the bubble period. In an efficient market due to the possession of equal information by the investors, an individual investor can not change the market dynamics without taking the risk.

H9: Illegal Insider Trading possess a positive relationship with stock returns during all stages of the bubble periods. However, if the markets are speculative and asymmetric, the insiders may benefit themselves through insider trading.

H10: Insider trading holds a negative relationship with the firm's capital structure.

H11: Insider trading and E'sM possess a negative relationship with the stock market crash. However, insider trading and earnings management are done prior to financial events.

2.4.1 Empirical Literature: How do the Profitable and M&A firms contribute towards Bubble Creation and their Impact on Stock Market.

M&A is referred to as the stabilization of companies and their assets. It constitutes multiple transactions like acquisitions, mergers, consolidations, purchase of assets, tender offers and management acquisitions. This term is also applied to the financial departments of institutions that handle M&A. While, the profitable firms are the firms that generate profits as a result of their business activities. Fama et al., (1969) say that in this era of globalization, the business community considers M&A as an effective & competitive tool in the stock market by the profitable firms. Resultantly, the firms raise share prices by expanding their portfolios, exploring new markets, improving profitability by an increase in cost, market capitalization and quick market build-ups etc. On the other hand, industrial sectors have seen the best effects of M&A over the past two decades. The logic behind EMH theory is that available information is immediately reflected by the stock prices. In the process, it is considered that shareholders are rational and well-informed. Rational shareholders consider that the firm's management controls their decisions about investing. Such issues need to be mindfully tackled in research since returns may differ with different

firm's controls of shareholders. The empirical studies have also shown that fresh information does affect stock prices i.e. earnings announcements, dividends, and M&As etc. Franks et al. (1991) & Fowler & Schmidt (1989) express that M&As directly affect but in a different manner to both of the participative firms. The market positively responds to the news of mergers. Martynova and Renneboog (2008) have pointed out that as M&A announcement floats new information in the market and the share prices increase.

Chen & Krauskopf (2013) says that in the present era of globalization, profitable companies have stressed more on the aspect of merger and acquisition in order to improve and expand their business and get maximum market share. Most investors prefer to invest in such companies. The impact of M&A is highly pronounced in the case of acquiring firms. So far, five M&A waves have struck the stock market in history and these waves were initiated by economic factors. The first wave of M&A prevailed from 1897 to 1910 and it happened between monopolistic companies which were involved in electricity and railroad industries. The second wave prevailed from 1916 to 1929 and it occurred between oligopolies. This phase was exhausted with the market crash of 1929 and the great depression of the USA. Third-wave prevailed from 1965 to 1969. These were the conglomerate mergers that were motivated by enforcement of anti-trust laws, high stock prices and high interest rates. The fifth wave continued from 1981 to 1989 and it was inspired by the deregulation, globalization and the boom of the stock market. This was involved with telecommunication and the banking industries.

2.4.2 Empirical Studies

A very little research on M&A and profitable firms and bubbles has been done so far (Yosef et al., 2010). The first research was carried out by Ljungqvist & Wihelm (2003) on the US technology bubble (1999–01) and they established that IPO's pricing is primarily controlled by the company's ownership configuration & insider selling behavior during the bubble period. Brunnermeier & Nagel (2004) in their research on the Tech bubble concerning hedge funds concluded that these were excessively utilized during the zenith of the bubble. Brooks & Katsaris (2003) express that during the tech bubble high tech sector played a vital role in bubble creation. It is a matter of concern that due to nationalization policies, M&A activities could not flourish in Pakistan. However, after 1995 only the banking sector afforded reasonable M&A activities.

Fama et al. (1969) & Berkovitch and Narayanan (1993) express that M&A always keeps pace with EMH theory and attracts rational investors. According to Chen & Krauskopf, rational investors prefer to invest in M&A and profitable firms to earn maximum profit. Various researchers have made efforts to assess discounting of equities and trading of shares inside and outside of the exchanges e.g. De Franco and Jin (2008) have used the multiple of "Enterprise Value to EBITDA" and "EV to sales", Shapiro et al., (2000) have used "EV to Earnings Before Interest, Tax & Income from other extraordinary items (EBITDA) multiples", Officer (2007) has used "EV to EBITDA & EV to sales found that price to BV of the private firm was on the much higher side" and Yosef et al., (2010) have used "P/E, EV/S & P/B for measuring equity trading inside & outside exchanges transactions".

Plenborg et al., (2017) used numerous techniques for stock valuation in the stock market. However, the technique of multiples valuation approaches have been commonly applied for this purpose. This technique relies on selling alternative substitutes of stocks at the fundamental price. The analysts also used these techniques after identifying the companies of similar characteristics on the basis of profitability, risk & growth etc. However, the companies working in the same industry generally do not possess similar economic characteristics i.e. profitability level, risk and growth. To resolve this issue, the authors used the SARD approach which is more flexible and can fit in to meet the need of desired multiple. Moreover, it is less sensitive to the sample size as compared to the industry approach. Therefore, the results also indicate that the SARD approach provides exceptionally accurate valuation multiples estimates.

Brown et al., (1999) researched R square taking into consideration the value relevance changes of the past four decades. The R square has been used in numerous studies to identify value relevance accounting. However, it has more often been used in the research of the capital market to identify the impact of the firm's relevance accounting on the stock market which keeps on varying continuously on yearly basis. The main objective of this research was to establish whether R square is capable of diagnosing the impact of value relevance as per the expectations of the authors. It was concluded that the relevance of financial accounting reporting was one of the desirable financial disclosures aspects. The results of the research indicated that the continuous annual increase of R square speaks

of an increase in activities of the relevance of accounting. Whereas, continuous decline in the annual value of R square will represent a decline in the activities of the relevance of accounting & the annual fluctuations in the value of R square will indicate that the value relevance activity of a firm is not efficient.

Yosef et al., (2010) conducted their research on mergers and acquisitions to evaluate how stock market trends & stock market bubbles affect M&As in the US market. In their research authors employed three models i.e. Transaction valuation to measure securities trade in the market within & outside of the stock exchange, Olson Model to assess how the company's economic condition affect stock market trends & E'sM model to establish that how much managerial incentive is created by M&A firms, how do they manipulate to enhance their securities. The overall results indicated that no change did take place in transaction valuations & trade of US M&A firms within or outside of the stock exchange. However, the firms did manage to increase the value of their securities through their economic conditions & E's M.

Chatterjee & Lubatkin (1990) focused on the analysis of systematic risk changes associated with risk management of bidding merger firms with similar characteristics. This study also brought out the relationship between shareholder's risk and merger strategies. It was also established that the bidding firms reduce their risk on security returns through merger activities. The test results also suggested that merger activities may enhance the value of the bidding firms because they contribute towards systematic reduction of risk, which otherwise the stockholders may not achieve by themselves. The overall results differentiated b/w the performances of corporate & shareholders diversifications in relation to unrelated & related mergers.

Bhojraj and Lee (2002) used cross-sectional multiple valuation regression analysis i.e. EV/S, P/B & M/E. They employed 8 proxies to determine profitability, risk & growth. They also made use of the previous year's regression about each company's running year reporting which predicts companies' future and current multiples. These are also known as warranted multiples of the company and assist in the identification of comparable firms. The authors concluded that warranted multiple approaches served as the most accurate valuation estimation approach than other methodologies like size and industrial classifications.

2.4.3 Development of Conceptual Framework, Research Design & Hypothesis

In order to understand the impact of profitable and M&A firms on the stock market bubble in Pakistan, examples across the world were studied and related to Pakistan. The stock market in Pakistan has been largely speculative in nature and the system of checks and balances is weak (Ahmed and Rosser 1995). The stock market bubbles abroad were studied in terms of the technology sector of the USA that was witnessed during the early 1990s which ended up bursting in 1999 followed by a rebound in 2003. The profitable firms carry out M&A and launch new projects to get market share and increase the value of equity prices. The mergers and acquisitions increase during the bubble period by the profitable firms, however, the pricing as a result of such mergers and their performance during the period of the stock market bubble did not change (Yosef et al., 2010).

The tech bubble in question also affected companies of the stock market in other sectors in addition to the tech companies which can be termed as a spillover effect of stock market bubble creation in a specific sector. The bursting of the bubble resulted in cautiousness among the investors despite the rebound in NASDAQ, USA stock market which does indicate the psychological impact among investors in case of the bursting of the bubble (Gilchrist et al., 2005; Huddart & Ke 2007 and Yosef et al., 2010). The said cautiousness has been witnessed to prevail for some years in post-bubble & burst periods. In the course of study of the pre-bubble period of 1993-97, followed by the bubble period of 1998 – 2000, then the bubble burst in 2000 and its after-effects followed by the rebound in 2003. The sampling firms that have been considered for M&As in the said period are from high and low tech profitable companies & services sector of the USA registered in NASDAQ (Huddart & Ke 2007; Yosef et al., 2010 and Gilchrist et al., 2005).

It has been witnessed that the frequency of mergers and acquisitions has increased in the period prior to the bubble in the stock market by the profitable. As the bubble phenomenon in the context of NASDAQ was due to an increase in investment and pricing in the high tech sector, hence, it has been observed that there has been a 95% increase in the mergers in the high tech sector in the early 1990s during the initial period of a stock market bubble.

This increase in mergers and acquisitions fell to the pre-bubble period on the outset of the bursting of the stock market bubble. Furthermore, the transaction multiples of high

tech profitable firms mostly remained stable during the bubble period (Yosef et al., 2010). However, there have been instances that transaction multiples did decrease in the bursting of the bubble. There have been alterations in investor behavior in the bubble phenomenon. It has been observed that investors tend to value the shares based on future performances and forecasts during the bubble period and bursting phase. However, in the case of the post-bubble burst and pre-bubble phase investors made decisions basing on the current performance of the profitable firms. It has already been mentioned above that investors approached with a fair degree of caution in the market after the bubble burst despite the movement of the capital market towards stability which is a natural outcome of investor psychology.

Similarly, during the bubble sub-period, the investors did take into account seriously the accruals factors, however, the importance of accruals seemed to diminish on the bursting of the bubble. It has also been observed that during the bubble period, investors are more likely to take major risks in terms of mergers and acquisitions in the market which was replaced by little or calculated risk in the post bubble burst scenario. The findings have been influenced and supported by the differentiation between expected accruals and that of unexpected accruals. Other studies have shown that management of the company or firm's earnings is expressed in terms of the magnitude of the discretionary or expected accrual component of respective earnings. (e.g., Dechow & Skinner 2000). However, this behavior is prevalent during the bubble but changes at the bursting of the bubble.

Brooks and Katsaris (2003) mentioned that the observation as mentioned above that high tech profitable sector performance resulted in a contagious effect on other sectors. These mergers were mainly due to synergy in merging sectors i.e. merging sectors had a great deal in common regarding the type of services or products that were manufactured or produced by the merging firms. This can be termed as natural since the human resource and expertise were more or less of the same nature and understanding.

The related researches are Brush, (1996); Healy et al., (1992); Ravenscraft & Scherer, (1987) & Seth, (1990); risk diversification (e.g., Chatterjee & Lubatkin, 1990; Markides, 1994; Nahavandi & Malekzadeh 1988 and Ravenscraft and Scherer 1987); obtaining market (monopolistic) power (e.g., Borenstein 1990; Chatterjee 1991; Ravenscraft & Scherer, 1987); management change due to poor performance (e.g.,

Ravenscraft & Scherer, 1987 & Resti, 1998); maximizing managers utility and minimizing agent conflict (e.g., Datta et al., 2001). Notably, studies show that larger firms are more likely to experience agency problems that lead to empire building and hubris in takeover bid-ding acquirers (Schlingemann & Stultz 2004). There have been investigations about profitable firm's M&A in the private and public sectors. It is widely believed that the evaluation of private firms is done on the discount as compared to the public sector. However, empirical evidence did not yield accurate or consistent results. It is also observed that such firms who have overpriced shares when stock markets are in a bullish setting; such firms are more likely to move towards M&A (e.g., Shleifer & Vishney 2003).

Here on the aspect of profitable and M&A firms, it has to be explored that how these affect the STK MKT bubbles. For this purpose three models have been applied by various researchers i.e. transaction multiples (De Franco et al. 2008; Yosef et al., 2010; Bhojraj and Lee 2002 and Shapiro et al., 2000), inverse transaction multiples (Lo 2004; Core et al., 2003 and Yosef et al., 2010), Ohlson (1995) model (accruals Vs. unexpected accruals, accruals vs. cash flows). The transaction model is used to identify the trading activities of these firms inside as well as outside of the exchanges, whether these get enhanced or decreased. In the inverse transaction multiples, different accounting variables have been used which will provide information about the firm's profitability (ROE & PM ratios), risk-taking behavior (sales growth and size) & change the capital structure (leverage) (Yosef et al., 2010). Ohlson model will be made use of to ascertain firm's economic condition, investor's financial and risk distress management knowledge. In the Ohlson model further two models, i.e accrual vs. unexpected accruals and accruals vs cash flows will be applied. The accruals vs unexpected accruals model will identify how much the investors prefer the firm's E'sM. Whereas, Accruals vs. cash flows will identify as to whether the investors prefer the firm's E'sM or investing activities (Yosef et al., 2010; Rozic et al., 2017 and Kothari et al., 2005).

2.4.4 Hypothesis

As mentioned, the frequency of M&A by the profitable firms shows an increase in the pre-bubble or bubble periods in stock markets due to increased investor confidence as well as tendency to maximize profits or beneficial outcomes due to stock market bubble by merging companies keeping in view the synergy of operations of merging firms. We also

witnessed the decreasing trend in mergers and acquisitions by the profitable firms in the post-bubble burst period followed by a cautious approach by the investors despite rebounding of the market owing to the natural psychological tendency of the investors where they are afraid to lose more as a result of the bubble burst in the stock market.

To examine the aforementioned observations through different financial variables as well as their relevance, the behavior of such financial variables during the pre-bubble phase as well as bubble phase, bubble burst phase and post-bubble burst phase till rebounding of the stock market will have to be seen. The value relevance in terms of using time series properties for the relevance of financial accounting during different phases in the bubble cycle(e.g., Brown et al., 1999; Francis & Schipper 1999; Lev & Zarowin 1999). Such results will be further investigated that show conservative accounting in the bubble burst phase and liberal or relaxed accounting practices when the stock market bubble is in full swing.

H12: Managerial-based incentives offered by the profitable and M&A firms have a significant positive relationship with earnings management & firm's earnings manipulation during the bubble periods. The market investors also support manipulation by the profitable firms for the reason of getting higher returns.

H13: The transaction valuations variable shows considerable increase in the profitability of profitable and M&A firms during the duration of the stock market bubble. Transaction valuations increase dramatically during the bubble periods, because the annual revenue of these firms is higher as compared to the other firms. The market investors would like to invest and trade in securities of these firms for discounting.

H14: The investors of Profitable and M&A firms implicitly approve of manipulation practices by these firms and prefer to invest in such firms for better prospects of profitable returns.

2.5.1 Empirical Literature: How does the firm's value relevance of Accounting Information contribute to Stock Market Bubble?

Holthausen and Watts (2001) describe that the accounting discipline of the capital market constitutes a significantly vast field of research. This field has further been enlarged after the 1960s, whereby containing diversified topics on economics, accounting and finance etc. Value relevance literature is the most important factor

present in the capital market, which determines to which accounting variables affect the value of a stock market. A variable can be stated as value relevant if it shows an affinity to calculate the value of market equity. A similar study on value relevance also predicts the relationship between stock prices and accounting earnings.

Ball and Brown (1968) and Beaver (1968) argued that financial statements must have something for the shareholders to bank upon so that in the long run they could be supported to survive in the capital market. The firm's relevance of accounting justifies price variations as a useful part of financial statements. The firm's earnings announcement and accounting information about the stock market are supported by the authors. Authors in their studies have tried to find the effect of accounting information on stock prices in the STK MKT. They further float information contents about accounting earnings and state that the market prompts the annual earnings through competitive information sources. It was also concluded that the result of correlation indicated a positive relationship between changes in stock prices and unexpected earnings.

Bartov et al., (2002) say that the US committee on Financial Accounting Standards declared that non-financial performance measures should also be assessed on similar criteria, as adopted for financial performance measures with reference to comparability, relevance & reliability. Relevance is termed as the floating of non-financial information by the firms that disclose internal information to the investors. Moreover, the Value Relevance accounting depicts the book value of the firm's shares, market to book value and Earning per share, which attracts investment from the investors. Another research on the Relevance of accounting was carried out by Scholz et al., (2001), which established a +ve relationship amid firms, patent rights, firm's R&D expenses and market value of shares. It was concluded that the variable of R&D also provides non – Financial information of the firms. The authors also established that release of non-financial information may help to mitigate causality problems, but it is very difficult to assess the time of the release of such information. Since non-financial measures are mostly issued side by side with financial information, therefore their effects also cannot be isolated.

Theil (1964) is considered as one of the pioneer researchers, who defined value relevance as the change in expectations regarding the outcome of a respective event. With

reference to this study, he mentioned that a given financial statement can be termed as value relevant if it affects or alters the assessment of investors along with subsequent decisions regarding the actions of investors in a stock market. Much empirical research describes the value relevance of accounting information which is related to value in the equity market. (e.g., Ohlson, 1995; & Beaver 2002). However, most recently the value relevance is associated with the firm's value. Francis and Schipper (1999) stated that value relevance is the ability of accounting information that is used to understand the firm's value.

A study by Navdal (2010) further mentioned that if association is absent between accounting numbers and company value, then accounting information can not be considered to be value relevant. Therefore, it can be said that value relevance is measured as accounting information concerning the understanding of equity investors. Historically speaking, the value relevance concept can be termed as a modern one with its first publication by Miller and Modigliani (1966). They emphasized upon that earnings is the only approach that characterizes the value as the present value for the permanent earnings in the future. Miller and Modigliani emphasized the capital structure of the firms and concluded that the firm value is not likely to be affected by the firm's financial structure. Approximately twenty years after Miller and Modigliani, the Landsman adopted a balance sheet approach, which mentions the book value information.

Ohlson (1995) by using the previous literature, based his research work on the adoption of the abnormal earnings approach. This work mentioned that firm value is represented as a linear function of equity's book value. Holthausen and Watts (2001) have identified a total number of 62 studies mentioning value relevance that was published in the pre-1990 period. However, the concept of value relevance was discussed seriously in the post-1990 period and critically evaluated and modified for improvements.

Bushman and Smith (2001) in their research on predicted & explanatory power of accounting variables, established how they affect the stock prices of firms in the presence of the relevance of accounting information. The idea behind the accounting function was the provision of information that reflected the performance of the firms. Resultantly, its effect could be felt on the stock prices. Accounting information preferably should be investor-oriented, although this could not be proved with

empirical models due to a weak explanation of the relationship between prediction and association. Another finding suggests that the accounting standards & information of the firms disseminate accurate information, which reduces the uncertainty of the firm's returns.

Navdal (2010) said that the investors needed to use accounting data, which is conventional to find useful accounting information. The accounting data usefulness is a necessary element for the value relevance concept. Kam mentioned that there are three ways to determine the usefulness of data. Firstly, financial statements are analyzed to see whether required information is mentioned or not. Kam observed that the larger firms are found to disclose more financial data as compared to smaller firms. Secondly, Kam suggests observing the effects on decision-making by the people can be useful. It was observed through previous empirical findings that investors are concerned with non-financial information more to make investment-related decisions. Thirdly, the determination of correlation is made between share prices and accounting data with special reference to earnings. Kam concluded that a respective item can be termed as holding information content in case it affects the investor's opinion regarding security value.

Aiman and Mohammad (2010) and Vishnani and Shah (2008) argued that the listed firms communicate with shareholders through financial statements. Since public information plays a significant role in the capital market, therefore many countries have framed laws to implement relevant accounting standards for all segments doing business. Accounting information is useful for both foreign and native investors in the capital market. Nurnberg (2012), Financial reporting is the major source of providing financial information about performance and operation of firms.

Collins et al., (1997) and Keener (2011) in their research have discovered that the descriptive power of BVA and earnings have not receded over the past 40 years rather its explanatory power has increased during the said period. The authors have also concluded that the relationship between book values, stock prices and earnings is convex. However, Holthausen and Watts (2001) and Negakis (2005), have ascertained that stock prices are not affected by earnings and book values in a similar way. Collins et al., (1997) have stated that the combined relevance of BV and earnings have gradually increased with time, whereas the relevance of extraordinary earnings has decreased. Ohlson (1995) defines

stock value as a function of EPS and BV per share. Regression analysis was applied by using the R square to measure the relevance. The same results were deduced by Easton (1999) and Francis and Schipper (1999) and they also affirmed that the relevance of accounting values cannot be rejected. Whereas on the contrary, Lev & Amir (1996) observed the existence of declination in the relevance of accounting with the passage of time.

Javed and Malik (2016) have expressed that small enterprises are more exposed to losses as compared to larger enterprises. As per the assessment of Ohlson's framework, BV's are sig. increased in relation to earnings for the share price assessment. Generally, smaller companies tend to associate themselves with companies governed by potential earnings growth instead of their achievable earnings. Therefore in the case of small businesses more importance is thrown on BV. Hayn (1995) and Collins et al., (1999) have concluded that investors do not take power losses as seriously as earnings. The firms with –ve earnings possess a lower-earning response as compared to +ve earnings because stockholders may exercise the option of liquidation at any moment. Similarly, bad news poses little impact on share prices as compared to good news. As a result, the value of the coefficient will be least and hence the value of R square. Accordingly, the relevance of extraordinary profits reduces. It was also identified that uneven response to good or bad information may affect a firm's earnings. Beaver (2002) points out that accounting information has a significant role to play regarding sale/purchase and other respective processes in a business.

Cheng et al., (2014) state that –ve profits affect the relevance of earnings negatively. These ideas are in line with those, who preferred BV's as compare to the earnings especially when earnings are –ve are partially extraordinary. Application of regression analysis reveals that when earnings are –ve the companies will suffer from financial difficulties whereas, +ve earnings will put the companies in profit. Burgsthaler and Dichev (1997), Pineda et al., (1998), and Sanchez (1999) researched the aspect of functional relations between stock prices, company's BV, earnings and found that a convex relationship existed between them. This relationship is directly proportional to the relative prices of earnings and BV instead of ROE. It was further ascertained that due to the likelihood of a company becoming bankrupt, the explanatory power of earnings was varied.

It was also concluded that the amount of companies' intangible assets is linked with the stock price variation.

Francis and Schipper (1999) and Cheng et al., (2014) are of the view that MV relevance is defined as a statically association between prices or returns and financial information. Since pricing reflects the available information, therefore market prices at the best are explained through accounting-based measures. Value relevance indicates that the financial information included in financial statements for explaining stock market measures is relevant if it causes variations in securities. The authors have specified 4 approaches to examine accounting relevance which are i) fundamental analysis ii) prediction of value relevance iii) information view & iv) measurement view.

Lev and Zarowin (1999) conducted their research on the relevance of accounting by using two-way methods i.e. R square and earnings response coefficients. Where R square represents the explanatory power of the variables or the degree of association among them. Moreover, R square is deduced from regression analysis and assists in expressing the extent of association between earnings and stock returns. The ERC represents the sensitivity of the securities prices to earnings. The research results indicated that the low slope ERC does not provide information about earnings to the investors. Whereas on the other hand, high slope ERC suggests that the relevance of accounting in the market is positive which enhances the investor's belief and lures them into buying excessive securities. When Lev and Zarowin were conducting their research on the relevance of accounting, during the same time, various other empirical researches were also busy analyzing these issues and the most commonly used models by them on the relevance of accounting had been price regression analysis model and return regression models[17].

Holthausen & Watts (2001) analyze various components of the balance sheet and introduced the balance sheet model which reflects MVE= MVA-MVL. The authors have used the balance sheet model in the price regression analysis model in which DV was Security prices whereas IV are BVS and some other balance sheet components. The results depicted that the relationship b/w BVE and Stock prices was stronger as compared to the relationship between earnings and stock returns (Francis and Schipper 1999 and Lev and Zarowin 1999). On the other hand, the research results of Berk and DeMarzo (2007)

[17] e.g. (Francis & Schipper, 1999; Collins et al., 1999; Lev & Zarowin, 1999 & Gjerde et al., 2005)

indicated an inverse relationship in contradiction to the aforementioned researches. Berk & De Marzo also concluded that the firm's intangible assets, as well as non-financial variables, also affect firms accounting information that attracts investors in the capital market. The same criteria were also proved by Aboody and Lev (1998) in their research.

Comprehensive research by Easton (1999) identified a link of the relevance of accounting data with other market variables. During the 1990s, the earning per share and returns were more frequently used for the firm's financial analysis at the exchanges. In the research, the price metric has been used for the relevance of accounting which has further been regressed through other financial variables. The R square in the research is used for the explanatory power of various financial variables and their effect on the relevance of accounting. An increase in the value of R^2 to the fiscal year predicted the existence of a stronger relationship among the relevance of accounting and financial variables.

Joos et al., (2010) indicated that in a stable market share values, MKT performance evaluation, share failure prediction, optimal contracting & decision making are affected by accounting information. On the other hand, accounting plays a sig. role during the tech bubble and the same has been expressed by various market observers that flawed & outdated accounting contributed aggressively in the crash of the internet bubble. The examination of the ability of failure prediction provides a fair amount of information on the data of the stock market in the context of addressing the issue of the creation of a high-tech bubble. The newly raised firms have very little discretion for manager's manipulations about accounting earnings, accruals & changes in the firm's cash flows. However, in contradiction to escalated accounting criticism which aggravates the bubble, it is revealed that accounting variables provide important information for failure prediction in the case of internet IPOs. The research also concluded that the traditional system of financial reporting plays the role of an anchor at the time of speculative bubbles. At the time of going public, internet IPOs displayed weak accounting fundamentals which played a vital role in describing the failures of internet ex-post IPOs. These findings indicate the discarding of important information relating to risk assessment by investors which could otherwise have been used by them to discriminate their internet stocks.

Beaver (2002) argued that perfect knowledge of an accounting institution and standards form the backbone of relevant accounting research. These researches are

primarily based on case studies as compare to large comparative studies. This research also proves that the value relevance of accounting information does not entirely bank upon accounting regulations rather it is provoked by numerous external factors like the degree of changes in the accounting relevance, different types of accounting regulations, business climate, business cycle & industry structure.

2.5.2 Development of Conceptual Frame Work & Hypothesis

The scope of this study is to ascertain the importance of the firm's accounting information in the STK MKT. The market investors give due importance to the firm's accounting information while taking investment decisions (Ball and Brown 1968; Easton 1999 and Su et al., 2001). Su et al., (2001) have stated that the value relevance of accounting information is a vast field. After 1970 numerous empirical research works were carried out in this field out of which mostly encompass the US stock market. In empirical studies, two types of models were used to assess the firm's relevance of accounting information with stock market returns i.e Return model (Easton 1999) and the Market valuation model (Ohlson 1995). In the return model relationship of the firm's earnings and net income information with stock market return have been explained. Whereas in the market valuation model, the relationship of the firm's balance sheet and income statement information with the firm's equity valuation has been discussed.

Beaver (1968) and Easton (1999) have expressed that earnings possess a direct relationship with the firm's returns in the stock market. If the earnings increase, the returns will also increase and vice versa. That is why the investors pay due attention to the earnings, change in earnings and earnings announcement while making their investment plan in the stock market. Su et al., (2001) stated that the investors prefer investing in larger firms since their accounting information is easily available on the floor of the stock market, whereas they do not pay much heed to smaller firms as their accurate accounting information is available in the stock market. If investors prefer only the earnings of the larger firms and lose sight of change in earnings they may end up as losers, which predicates on their low financial and accounting knowledge.

In relevance of accounting information most commonly used model is the market valuation model (Ohlson 1995). This model constitutes of balance sheet and income statement. This model provides more comprehensive information as compared to the return

model, because the returns model provides short-term firm's accounting information, whereas market valuation provides both i.e short as well as long-term information. The return model provides better accounting information about the larger firms, whereas for smaller firms market valuation model provides more detailed accounting information. The market valuation model enjoys an advantage over the return model because the return model only focuses on the firm's earnings and change in earnings, where the market valuation model focuses on both earnings, change in earnings and firms' book value of equity. Francis & Schipper (1999) and Navdal (2010) say that firm's book value of equity affects the return of the firm's equity during the financial crisis and bubble-like conditions.

The firm's accounting information plays a vital role on the floor of the stock market, especially while trading securities. The investor's accord due to importance to the firm's earnings and net income when investing since both of the features affect the firm's asset prices and share values during the financial crisis and bubble-like conditions (Joos et al., 2010 and Navdal 2010). That is why the firms endeavor to improve their accounting information prior to launching the IPO's (Goot et al., 2003 and Nadval 2010). In this model non-accounting information represents hot market issues like IPO's and gives their impact on the stock market bubble during all stages. The accounting and non-accounting information create speculations in the stock market and as a result lures in the investors for heavy investments. This stance has also been accepted in the paper of Yosef et al, (2010) that investors always prefer the manipulation by the profitable firms for gaining high profits.

2.5.3 Hypothesis

H15: Earnings and BVE affect the firm's stock prices significantly during all stages of the bubble. The explanatory power of BVE and the firm's earnings increases during the bubble stages. This hypothesis explains whether the firm's earnings have more explanatory power than BVE or vice-a-versa. The firm's accounting information affects the BVS & earnings during the bubble period which leads to gross variations in stock prices. In this hypothesis firm's earnings represent an income statement, whereas the firm's BVE represents the balance sheet. Furthermore, the hypothesis also explains whether the firm's income statement information affects more the firm's stock prices or balance sheet information.

H16: Earnings and changes in earnings significantly effect firm's stock prices during all stages of the bubble. The Firm's earnings possess a linear relationship with the firm's returns. This hypothesis also explains that how the firm's change in earnings affects the stock prices of the firms during the bubble period.

H17: The non-accounting information significantly affects the firm's equity value during all stages of the bubble. This hypothesis explains, how the non-accounting information i.e. issuance of IPO's affects the equity values of the firms prior to bubble and during bubble phases.

H18: The firm's relevance of accounting information significantly affects the firm's stock values during all stages of the bubble.

H19: Firms Relevance of accounting information in terms of balance sheet & Income Statement information contribute towards variations in stock prices during the bubble Period.

2.6.1 Stock Market Mechanism and Policy

2.6.2 Evaluation of research as Stock market Mechanism & Policy in PSX

Background of the Study

The main theme of this study is to explore the weaknesses of PSX and formulate an efficient system and legislation to improve its efficiency that can help to improve the country's economy. It is pertinent to mention here that a mechanism is a sequel of events that influences the stock market. It may be good or bad depending upon the health of information floated in the market. However, the main functions of an efficient mechanism are to ensure transparency in the market, to improve upon the market legislation, market information, prevent manipulation & misinformation to avert the creation of imbalance in the stock market. Unfortunately, several snags are negatively affecting PSX. These include criteria of short selling, incomplete insider trading laws, illegal insider trading, benami accounts, tippers and stock-based compensations etc. The aforementioned reasons are damaging PSX in the absence of comprehensive legislation.

2.6.3 Methodology of Analytical Analysis

The study is based on analytical research on insider trading laws and legislations, which involves serious thinking skills, evaluation of the facts and figures and information pertinent to the research that is being carried out. This research is done to derive the

relevant information after taking into account the sensitive details of the material produced. The facets of insider trading in the study are the definition of insider trading, short selling, anonymous transactions, tippees, tippers and tipsters. The data used for the research is secondary in nature and has been taken from the websites of Pakistan, the USA and the UK.

2.6.4 General Purview of USA and UK Laws

The relevant USA legislation on effective management of Stock Market along with their respective sections include SA 1933 section 5, 6, 7, 8, 8(a),10, 10b(5) 12, 12 (a1, a2), 15,17, 20, 20(b & d). This SA 1933 defined registration of Securities & insider trading. The SEA 1934 (Section 4, 10 (b-5), 9, 13, 14 (a,c), 16(a), 15(a,b), 20 also define securities registration, insider trading, short selling (Short selling & its criteria) & fair disclosure of firms Financial Statements. The SEA 1936 (Reshdule of 1934 insider trading act), SEA 1935 (Public Utility Holding Company in which information about firms audit, disclosure of financial statement & penalty on misrepresentation of firms financial statement have been defined), SEA investment act 1940 section 3c(1 & 7) and SEA 1939 (Trust Indenture Act) which covers investor's protection against firms resorting to fraudulent activities by imposing SEA firms financial disclosure laws), SEC (1938) & SEC (2010) SHO regulations define criteria of short sellings, ITSA (1984) & ITSFEA (1988) & ITSEA (2000 reschedule) defined Insider trading for M&A firms, introduced tippers law for the first time, online financial reporting of the firms & electronic surveillance capability for investors & illegal /legal insider trading laws), Sarbanes Oxley Act of 2002 (SOX) defined Insider trading in section 404 (a) (beneficiary's transaction filing before the end of third day), Earnings management, accounting standards for firms & its IPOs, protection of whistle below act for financial misstatements and anonymous accounts, rule for tippers & filling of insider documentations within 03 days) & in the UK vide Company's Act 1985 & 86 (Sections 173 to 178) & in FSMA 2000 Section 118 insider trading is regarded as a heinous crime) & CJA 1993 Section 57(2) a, 58 (2&3) & FSMA 2000 Part 5 & Section 118 (define secondary insider trading & primary insider trading laws like Tippers & timely online filing of securities transactions. In FSMA 2000 a surveillance team was formed who is responsible for conducting detailed investigations on insider trading), FSMA 2000 Section 397 defines misleading statements and misleading practices as a criminal offense.

In FSMA 2000, short selling has been banned even under financial crisis. It has been observed that the aforementioned anomalies form the main cause of bubble creation in the stock market and are strictly restricted in advanced countries to avert the creation of the stock market bubble.

2.6.5 Relevance of Pakistan Vs USA & UK Laws

Prior to 1930, there were no financial laws in the USA rather they functioned on blue sky law which failed due to the non-professional approach of regulators. After the severe market crash of 1929, the necessity of legislation of new SEC laws was direly felt. In the aftermath of the crisis, President Roosevelt introduced the 1st SEC law in 1933, which was further improved in SEA 1934 law. Through these laws, anti-fraud provisions were introduced by mandatory disclosure of common market information for all investors. Secondly, the SEC exercise sticks supervision on regulating securities. The SEC SRO's generally comprise different exchanges, clearinghouses & brokers etc. These organizations regulate business & exercise control over dealers & brokers. SEC is responsible to frame or amend all business regulations which are essentially required to get them registered. These laws exercise an effective check on insider trading and securities could not be traded without registration.

However, According to SEC 1933 & SEA 1934, registration of securities was declared mandatory & market misinformation was banned. In this regard Section 16 (b) of SEA 1934 & the Section 17(a) & Section 10 (b) of SA 1933 may be referred.

SEA 1934, Section 16 (b), profit from purchase and sale of security have to be declared within six months. This section imposes restrictions on insider dealing and makes insiders liable to penal action or recovery of profit made by the insiders for trading within 6 months of sale purchase of securities. However, this section does not address the issue of insider tippers and tippees, who may deal with securities based on insider information. As a result, the legal scope of Section 16 (b) stands restricted. Although, section 17 (a) of SA 1933 restricts i.e "prohibits fraudulent means, "material misstatement and omission to state material facts in the sale of securities. This provision is limited to deceptive selling during the process of distribution of shares".

Section 10 b of SEA 1934 & rule 10 b (5), this section is primarily used against insider trading being illegal. This rule states that: "It shall be unlawful for any person,

directly or indirectly, (a) to employ any device, scheme, or artifice to defraud, (b) to make any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which they were made, not misleading, or (c) to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of a security".

The above-mentioned law prohibits fraud and misrepresentation in securities dealing. However, it does not cover insider dealing. Section 10 b and rule 10 b (5) deals with some extent with the fraud of insider dealers, but it does not cover the corporate outsiders. Disclosure & abstain rule was promulgated in ITSA 1984 & ITSEA 1988 based on two famous cases filed in the US supreme court i.e Chiarella v. SEC USA & Dirk v. SEC USA. According to these laws, the tippee insiders who violated the insider laws for personal gains were declared liable & those who use the information for investor protection were not considered liable. The provision of these decisions was incorporated in section 10 b and in rule 10 b-5, to strengthen the tippee's laws. After the case of Chiarella, rule 14 e-3 was incorporated in section 14 e. This rule prohibited disclosure of any material information to the insiders. According to US Laws, misappropriation is said to take place when insider trading is done for personal gains. On the other hand, when constructive insider trading is done to protect common investors and to stabilize the stock market, the misappropriation section is not said to be invoked.

"Section 10b-5 & rule 10 b-5(2)", since under rule 10 b-5 insiders could not be held liable for mere possession of information. Therefore, rule 10 b-5 (1) was adopted in 2000 by SEC. This new rule provided that a person can be liable for insider trading under rule 10 b 5, only he/she fails to prove his selling or purchasing of securities by any means. Before becoming aware of the insider information. Rule 10 b-5(2) was adopted by SEC to define the scope of trust and confidence in a person in the light of misappropriation theory thereby restricting the rule of Tippers & Tippees as well. SEC further clarified through rule 14 e-3, whereby restricting purchasing of securities while in possession of material information by other than tender offerers.

Criticism: It has also been learned that although insider cases in the light of rule 10 b-5 were decided differently by US courts the enforcement of insider regulations by the

US regime has been much better than contemporary regimes. However, the successful insider dealing cases detected by the SEC USA have been much meager compare to the volume the securities traded.

2.6.5.1 UK Insider Trading Laws

Prior to the 1980s, financial institutions of the UK were regulated through stock exchanges & Govt had to provide the only legal framework. But, after the internationalization of the UK market, enormous insider trading cases were reported. To curtail these cases necessity of effective legislation was needed. Therefore, with time & through various reforms, SROs were eliminated by the UK in FSMA was introduced. FSA was introduced in 1985 and 1986 which was further improved in 1998 and comprehensively introduced in 2000 which is known as FSMA 2000. UK parliament amended companies act 1980 "Company Securities (Insider Dealing) Act 1985" since this act contained so many deficiencies with regard to the scope liabilities. Therefore, it was further strengthened vide FSA 1986 section 173 to 178 in order to address the weaknesses of "Company Securities (Insider Dealing) Act 1985" and also important insider trading directive of the European community. UK legislated and introduce CJA 1993 Part V. This act mainly focused on the scope of liabilities but also contained various snags which were necessitated for further legislation & FSMA 2000 got introduced.

2.6.5.2 Financial Service & Market Act 2000

In 1997 UK government introduced FSMA to strengthen FSA and granted extra civil powers to effectively deal with insider dealing and other market abuses. This bill was promulgated into FSMA 2000. The FSMA primarily addresses the market abuses and also strengthens FSA to handle misuse of "information & market manipulation". Most of the shortcomings of CJA 1993 reflect the poor performance of prosecution and that it did not cover all sorts of market abuses and interference of SROs etc. Moreover, CJA 1993 also did not effectively check offenders and their impact on market abuses. The FSMA 2000 was introduced to make UK markets efficient and making them leading financial centers. It is further added that FSMA did not suspend CJA 1993 rather complemented it. It also bonded the power of FSA to deal with market abuses as a criminal offense. The salient features of FSA were that it was enabled to initiate criminal proceedings against offenders. It could impose penalties under section 123 of FSMA 2000 against offenders. It could issue

restitution orders and ask offenders to disclose their illegal gains which they got through market abuses and also could approach courts for issuance of " injunction & restitution order".

Insider dealing & market abuses were defined in section 118 of FSMA 2000 part 8 which was later amended to introduce Market abuse directives and the changes were reflected in new securities Section 118 of FSMA 2000. The reforms in FSMA 2000 were aimed at establishing an efficient market regime. However, it was confusing as market participants have to comply with both market abuse directives as well as to complex illustration of original section 118 of FSMA 2000. However, misuse of information and distortion offenses were retained under sections 118 (4) and (8) by the treasury decision.

Retention of criminal sections of CJA 1993 in FSMA 2000 by the UK government gives a clear indication that they are harsh on all market abuses and insider dealing. Under this law, Mr. Asif Nazir Butt was convicted for breach of insider dealing laws Section 52 (1) & CJA 1993 along with 4 accused's vide confiscation order he had to pay an amount of 3,48,325 pounds and also to bear the prosecution cost of 60,000 pounds. Mr. Asif Nazir Butt violated the trust of his bank reposed in him and was found to be involved in insider dealing with his co-accused which is a typical case of Tippees. This resulted in his long-term imprisonment.

"In misuses of information sections of FSMA (Section 118)", FSA was benefited from vagueness and poor legal requisites while handling insider dealing. That is why it was insisted to retain provisions of misuse of information CJA 1993. It is easy to assess the behavior of information whether it has been disclosed to occasional market users or regular market users. Although, the definition of misuse of information is included in section 118 of FSMA 2000 & in CJA 1993 are similar yet not identical. In the new rule, the word misuse of relevant information has been stressed upon. Whereas, CJA 1993 states only about the misuse of information. Basing on the provision of misuse of information, FSA apprehends 11 cases in 2007 only whereas only 13 successful cases were done from 1987 to 1997. From the analytical study, it is evident that insider dealing laws of the UK are fragmented, vague and repetitive. Since these have been repeated in CJA 1993 and new securities law FSMA 2000, Section 118.

If we look at the standard laws of UK FSA & USA SEC laws, then one thing comes to our mind that basically, three major regulatory systems are currently operative in the world i.e UK FSA, USA SEC & EU securities directives. The USA SEC regulatory body is based on SROs which comprise Clearinghouses, stock markets & exchanges etc. In this system, market players have to play an important role very fairly to make the market efficient & in the process also to combat insider dealing and misuse information. This system is being followed in the USA and the same system is being practiced in Pakistan as well. This SRO system can be successful in countries like the USA where markets are old and mature with sufficient expertise and enormous capitalization at their back & a huge volume of transactions of shares too. However, this system may not be successful in developing countries with fragile economies like Pakistan. The other form of regulatory system works under the supervision of the government and is run by the autonomous body under the provisions of law formulated by the government. As has been implemented in UK FSA. FSMA 2000 & CJA 1993. This system does not allow insider dealers & market participants to manipulate the information in their favor.

The regulatory system followed in the UK remains effective due to monitoring of government & proved efficient in combating insider dealing & information. It is therefore recommended that the same system should be followed by the PSX to curtail the political interference & favoritism in the best interest of common investors & the country's economy as well. Insider dealing regulations adopted by the US according to their internal circumstances, due to multiple controvartialities in insider dealing rules, antifraud provisions and judicial precedents. It seems essential to bring reasonable legal clarity in these aspects. But it has been very difficult to legislate at the federal level in the USA, being a large country at different legislation levels of the USA. UK law has been framed taking various provisions from CJA 1993, FSMA 2000 and EU directives. That is why the definition of insider dealing has been effectively designed by this law. However, the business community has expressed its reservation about section 118 – (4) & (8) and EU directives as well as being confusing. However, this law is amply clear on insider dealing with knowledge of inside information in various sections. International standards are generally implemented by various countries to define their jurisdiction as well as establish economic harmonization internationally. In the case of the UK & EU, directives are

considered to provide economic harmonization internationally. Although various snags do exists in US & UK laws, but being experienced markets they are considered as influential at the international level as such as regarded as best practices.

Primary insiders are the ones who possess inside information. It has been further divided into two categories i.e. traditional insiders and access insiders. Traditional insiders who by their status like owners & shareholders etc are likely to possess inside information. Whereas, the access insiders are those individuals who because of their jobs like executives, employees etc. are likely to have inside information. Insider dealing is tackled differently in UK law which is based on CJA 1993 part V and FSMA 2000 Section 118. It will be more appropriate to compare insider dealing provisions under Section 118 of FSMA 2000 with the provisions of CJA 1993. Keeping in mind the scope of insider & insider information definition, the definition under both laws are almost similar and especially the primary insiders are more similar. The insider law under CJA 1993 was taken from an article (2-1) of insider dealing directive, whereas primary insider FSMA 2000 was derived from market abuse directives. The main difference in both definitions is the addition of "access to inside information". This has been done to stop the involvement of "organized crime group & terrorist in the financial market".

Traditional insiders vide CJA 1993 are directors, shareholders, owners etc. While as per FSMA 2000 they are administrators, managers, directors & employees etc. As far as access insiders are concerned, it can be conveniently said that employees are primary insiders. The US law does not apportion any responsibility of insider trading on traditional insiders. However, among the directors, officers & shareholders, more than 10% are considered as insiders as they possess a relationship with issuers. But, under UK laws even a person in a firm who is a mere cleaner can be taken as an insider. Access insiders are such a group of people who do not possess a relationship to the issuer but do serve to augment their business just as lawyers, bankers, accountants. They play a very important role in decision-making by the issuer. Therefore they possess access to inside information which can be used for personal gains under the deal.

Secondary insiders are individuals who possess an indirect relationship with the secondary insiders. They are outsiders but exist as friends & spouses etc. Prior to 1984, no law existed to hold tippees accountable in the USA. In the aftermath of Mr. Chirella VS

US SEC and Dirk VS US SEC, a dire need was felt to legislate on the issue to combat tippees. Therefore, SEC introduced Rule 10 b-5(1) and Rule 10 b-5(2) in Section 10 b in SEA 1984. Moreover, misappropriation theory was also introduced to ascertain who falls under the category of tippees. In US law, Tippees are considered as Secondary insiders. As per UK Section 57-1 of CJA 1993, it was required to prove that the insider possesses inside information from an inside source, which was difficult to prove. Therefore, the reliability of FSMA section 118 b-e CJA 1993 was questioned.

2.6.6 Critics of Pakistani PSX & SECP Legislation

The Study of the stock market shows that they are very complex in nature which can not be easily understood by the average investor. Here, the insiders and short-sellers play with the Psychology of general investors to operate on misleading or inaccurate information. Resultantly, some appear as losers & some as winners. Since no mechanism or criteria exists in Pakistan to exercise control over insiders, therefore, they exploit insider trading in their favor to earn maximum incentives. The legal aspect of insider trading has been inadequately covered under sections 220 to 224 of the company's ordinance 1984 & section 17 e (VI) in SECP ordinance 1969. These too favor the firm owner in trading their securities

Although, the abovementioned sections of companies ordinance 1984 & SECP act 1969 declare that insider trading is a heinous crime and bound insiders to declare their trading of securities within six months to corporate law authority (Sarbanes Oxley Reference for writing). However, research proves that no prosecution of any kind has been made in Pakistan under these laws. These laws can be improved by removing these snags by implementing these laws in letter and spirit.

2.6.6.1 Prohibition of Buying and Selling

In Pakistan, the laws on insider trading are contained in "Companies Ordinance 1984, Section 223 to 224" and in "securities Ordinance 1969, Section 17 (e) 6". Necessary protection to listed companies and firms from insider trading has also been insured through the company's ordinance section 220 to 222. Under these, it has been made mandatory for the laws company's management to inform SECP about all legal insider trading within 6 months of their occurrence. "Companies ordinance 1984, Section 223 and Securities act section 17 (e) 6 also prohibits insider trading by such insiders who possess material

nformation which they have not disclosed on the floor of the market. Vide securities ordinance section 23-3, shareholders are empowered to claim their losses from the firms involved in insider trading. Whereas, vide section 24 criminal restrictions can also be imposed on offending companies or insiders. SECP is practicing US SEC laws which inhabit certain weaknesses. However, US SEC has improved its legislation through various case studies. Whereas, Pakistan has yet to carry out the requisite amendments in the SECP laws. The legislation that prohibits trading based on inside information is contained in "securities ordinance section 17" which states

> "(a) to (d) omitted
> (e) do any act or practice or engage in a course of business, or omit to do any act which operates or would operate as a fraud, deceit, or manipulation upon any person, in particular—
> (i) To (v) omitted.
> (vi) being a director or an officer of the issuer of a listed equity security or a beneficial owner of not less than ten percent of such security who is in possession of material facts omit to disclose any such facts while buying or selling such security"

It is sad to mention that no interpretation of insider trading laws has been done so far by the Pakistani courts. Therefore, the regulators have perforce to rely on the above-mentioned statued being the only statued both in "Company's Ordinance and Securities Ordinance" on the prohibition of trading on the basis of possession of nonpublic material information. The above-mentioned statues contain three major snags firstly it provides an inadequate definition of an insider. Secondly, it doesn't cover the aspect of tippees and tippers. And thirdly in the absence of any guideline, it is handy caped to explain the non-public material information.

Since existing laws (reference) on insider trading have not been taken cognizance of by the Pakistani courts, therefore, the knowledge of both investors & insiders about these laws is vague. Three fundamental shortcomings in the above-mentioned laws include that insiders are not well defined. Secondly, the tippers are also not clearly defined. Therefore apportioning of the blame on insiders (the tippers) or his source (the tippee) is not possible. Thirdly, in the absence of any guidelines, it will be difficult to detect "Non-Public Information" which has to be disclosed by the insiders before insider trading.

2.6.6.2 Definition of Insider trading and Standard of Materiality under PSX & SECP Laws

In the light of the securities ordinance, insider trading is forbidden for officers & directors of the firms owning 10% or more securities of the company. Although the term

director is not well defined, however, the enormous ambiguity exists in the definition of an officer in the light of SECP Ordinances. It is because the officer may be appointed in such slots that he may be enjoying comprehensive information about the company's affairs & inside information. It is, therefore, imperative that all persons falling in the ambit of 10 percent holding of issuers securities must be in line with section 224 of Companies Ordinance 1984.

In UK, inside information or insider trading is defined under "CJA 1993 Section 56 (1) & FSMA 2000 Section 118 C (2)".Under UK laws this definition is more specific, precise and relatively clear. Any price-sensitive inside information does affect the share prices in the stock market. In insider definition, if some well-informed insider discloses any information regarding the status of securities in the market this may be termed as specific. However, if the details of security prices are also floated on the floor of the market it may be termed as precise (Insider trading EU directives). The UK Laws define price-sensitive information in two ways i.e price information and specific information. This term is also used for the definition of insider trading as well as the materiality of inside information.

Under US SEC law Section 10 b (5) specific information is a prerequisite for information to be material. The laws also explain that these are the reasons investors or shareholders possess sufficient inferences of inside information that determines the materiality of information. These laws also suggest that insider trading can not be prohibited since it is conducted by the insider on the basis of their practical experience, superior knowledge and greater analysis power. In US laws the terms specific, precise and materiality have generally been based on the case studies of "TSC Industries Inc. v. Northway Inc. and SEC v. Texas Gulf Sulphur".

Another important aspect of insider trading is materiality. It contains the public information that must be disclosed by the issuers to the shareholders prior to trading securities by the insiders. The legal connotation about the standard of materiality remains elusive, even in US laws. However, some worthwhile standards of materiality may be found in European community directives on "coordinating regulations on insider trading". Under these directives, insiders are prohibited to deal in securities, if they had unpublished price-sensitive information.

Section 17 of SEC 1969, Section 23 & section 24 deal with the materiality of information. This kind of information if disclosed can affect the investors and the market directly or indirectly. Although in Pakistani courts the question of materiality arises more oftenly with context to the inside information however it does not amply explain the insider trading materiality. As per "Prem's Judicial Dictionary the word material means of such nature as to affect in any way, directly or indirectly, the probability of anything to be determined by the proceeding, or the credit of any witness". If we follow the verdict of Pakistani courts on materiality with regard to insider trading it will set an inferior standard which will not be of much value for the investors, while dealing in securities. The concept of materiality has been defined in US SEC laws in ITSA 1984 and ITSE 1988 based on the case study of "TSC Industries Inc. v. Northway Inc. and SEC v. Texas Gulf Sulphur". Although Pakistan is following US SEC laws yet no effort has been made to address the issue of materiality specifically. The explanation of materiality under US SEC laws though exist but it is not comprehensive as compare to UK FSMA 2000 laws. Security Ordinance 1969 prohibits insider trading for Issuer Company's director or officer or any beneficial owner having 10 % ownership or more. The description of the term officer is relatively vague in relation to insider trading since every officer is not likely to have confidential information about the issuer company's affairs. Similarly, the officer's definition is also not clearly stated in US SEC laws. However, it states that if an officer by virtue of his assignment possesses some private non-public or material information he should forgo his title of an officer or should not accept the responsibility of an issuer. The person holding 10 % or more equity share falls under insiders and it has also not been clearly defined in SEC laws. They should be dealt with in the preview of the legality of section 224 of the company's ordinance 1984.

2.6.6.3 Liability of Tippees

Insider trading is not done only by the persons holding inside information but another class of inside information acquirers also play a vital role in insider trading, who are the tippees. The tippees are very complex in nature i.e. they are not only friends or relatives of insiders, but also intrude in form of market analysts, who get information from company agents about the firm's dividend payout plans & regarding earnings of company projects.

To curtail the role of tippees in the market, they must be held accountable. Moreover, efficient market analysts must be employed, who will be having more valuable market information and will benefit the general investors.

After a lot of confusion with regard to the tippees, US Supreme Court took up a case on the subject of tippees to streamline the decision of the SEC. The case primarily pertained to Mr. Dirk, an employee of the mutual fund. Who was briefed by the analysts about the occurrence of massive fraud in the mutual fund. Mr. Dirk disclosed this information to the clients of a mutual fund, who sold their shares immediately & saved them from the loss. The SEC blamed Mr. Dirk for violating insider trading laws. The US Supreme Court reversed this decision on the plea that Mr. Dirk has disclosed this information in the general public interest rather than benefiting himself personally.

Similarly, in another decision of the same kind by the Supreme Court in which they gave a verdict in the case of Chiarella VS SEC. In that decision, Mr.Cherrella who was an officer of SEC managed to obtain M&A information during the process of printing official documents. On the basis of that information, he bought the securities of the M&A Company and minted huge profits. US Supreme Court declared him committing insider trading crime. In the aftermath of these cases, for the first time legislation was done on the tippees/ tippers, which was implemented vide ITSA 1984 & ITSEA 1988 & be the part of SEC 1933, 1934 & Sarbanes Oxley laws 2002. Since PSX is still in the infancy stage, therefore no legislation on tippees exists so far. US SEC law 14 e-3 was amended after the in-laws "Chiarella VS SEC" case which deals with tippees.

Under UK FSMA 2000 laws "Section 118 (a,b,c & d) and CJA 1993, Section 57 a(i),(ii) and 57(2)" the terms insider trading tippees, tippers and tipsters have been more comprehensively defined as compared to the USA SEC and SECP laws. Under UK laws the insider trading has been divided into two categories i.e. primary and secondary insider trading. These have already been explained in detail in the aforementioned UK FSMA 2000 section.

2.6.6.4 Short Selling

It is a process that is adopted by the insiders. When share prices reach their zenith, they sell their shares and when share prices start retarding, the insiders repurchase the shares. Basically, short selling by insiders is banned under the SEC laws of the US.

Currently, four rules to regulate the criteria of short sellings are practiced i.e. ban the short selling, apply Uptick rule, SHO regulations 2010, or ban short selling in the financial crisis. In Pakistan, the standard on criteria of short selling does not exist. Since the whole world is advancing to implement SHO regulations in 2010, it is suggested that PSX must also move towards this criterion rather than the adoption of the Uptick rule of SA 1933 & SEA 1934. It is further suggested that in the absence of strong investment at the back of shares in Pakistan, short-selling must be banned to avert market manipulation.

2.6.6.5 Benami Accounts / Anonymous Accounts

Benami is a phenomenon in which purchasers buy properties or shares in someone else's names. This practice is very common so far as Pakistan is concerned. It is highly unfortunate that the validity of this practice has been upheld by the highest judiciary in their decisions to the extent of dismissing the petitions filed with regard to Benami in the light of Quran & Sunnah (Khan Imtiaz & Dawn Mar 18, 2019; ARY News 22-May-2020). In the US whistle-blowing policy has been implemented to detect anonymous transactions.

2.6.7 Suggested Mechanism for PSX in the light of research

The stock market mechanism is a process that pertains to the legislations & market efficient information system (Kelley 1980; Mitchell et al., 1988; Friedman 1989; Zuasti et al., 2019; Albelooshi 2008; Jain et al., 2008; Holland & Foo 2003; Karmel 2007; Grullon et al., 2015; Wells et al., 2013; Grünewald et al., 2010; Aktas et al., 2008; SA 1933; SEC 1934; Surbanes Oxely 2002; FSA 1985, 1986 etc).

Short selling is a phenomenon that is adopted to earn heavy profits in the stock market. The research results also show that the main cause of bubble creation in PSX is short selling. Since no criteria of short-selling have been defined in PSX Laws of Companies Ordinance 1969, 1984 & Reschedule 2000, therefore no appropriate check on short-selling exists in PSX. It is worth mentioning that the first law on short-selling was introduced in the US stock market after the creation of the 1929 stock market bubble, which was approved by SEC 1933 and effectively implemented in 1938 (Uptick Law). Thereafter, the next short-selling law SHO 2010 Regulations was legislated in 2007 and implemented in 2010. It has also been observed that short selling is banned in most of the developed countries to maintain stability in the stock market as like the FSMA 2000 of the UK. The results of the research indicated that the stock market bubble in the Pakistani stock market

is mainly due to short selling i.e. selling over a shorter period of time for smaller gains. Subsequently, another issue arises due to short selling, which is equity issuance by the firms in the Pakistani stock market wherein, the firms give an impression to its investors that it is starting a new project for additional investment and financing activities and this information is disclosed by the respective firms through their quarterly unaudited reports. This exercise of equity issuance is carried out to enhance profits in the short term, based on speculations. This results in temporary gains to the firms. However, an ordinary investor may suffer due to a lack of understanding of these tactics by the Pakistani firms. There are two kinds of investors in the stock market who play their role in the creation of the speculative stock market bubble. These are over-confident investors (firm managers and market manipulators) and pessimistic investors (ordinary/simple market investors). The overconfident investors willfully create a speculative environment in the market through manipulative strategy. By doing so, they ultimately convince the pessimistic or defensive investors to invest in the respective shares of the firms based on such information, which may not be true. However, the pessimistic investors fail to foresee the truth of the argument put forward by the overconfident investors. This ultimately disturbs the entire market and it behaves unnaturally and resultantly a stock market bubble is created. In the advanced or first world countries, the official market regulators restrict the short selling, equity issuance and additional investment in the market by the firms in order to prevent speculative tendencies.

However, in the Pakistani stock market, such regulations are hardly exercised thereby making PSX speculative in character. There is a positive and a negative side to the speculative strategies adopted by the firms. In case, when the market is down, such speculative strategies may lead to bringing the respective stock market out of the bearish trend. However, in case, when the market is already performing in a very bullish manner, such speculative strategies result in the creation of a bubble thereby deteriorating or misbalancing the stock market which is harmful in the long run. Furthermore, Pakistani firms in collaboration with the political elite, resort to earnings inflation strategy by inflating their revenues and financing which mostly goes unchecked causing loss to the ordinary investors in most cases. The way out of this situation with special reference to the Pakistani stock market is the application of an effective and authentic information

providing system to the investors in the stock market i.e. any information being provided by the respective firm must be audited and authentically filed so that on the violation, the respective firms can be proceeded against for breach of trust, much like the system in the stock markets of advanced countries. In the USA, Goldman Sachs and Stanley Morgan closely monitor the financing and investment plans laid out by the firms in the USA stock market and subsequently issues authentic information to the investors based on their study of the respective firms.

In the Pakistani stock market, there exists a positive relationship between insider trading and earnings inflation during all the stages of the stock market bubble. The problems created in the Pakistani stock market are also due to illegal insider trading, in which owners through their front men, invest in the stock market causing an artificial rise in the stock prices and then resort to profit-taking, which in turn decreases the price of shares causing loss to ordinary investors. There is no comprehensive law preventing illegal insider trading in the Securities Act 1969, Companies Ordinance 1984 & Securities Act 2015 etc. Furthermore, there are no laws on Benami accounts, modified short selling of shares criteria and tippers. It is pertinent to mention here that the USA has proper safety checks for the prevention of insider trading in their laws such as SEC 1933, SEA 1934, SEC 2001(after the technology bubble burst).

The tipper's laws have not been defined in the insider trading laws of PSX as has been done by the USA (SEC 1984, 1988 & Sarbanes Oxley Law 2002) & by UK (Criminal Justice Act 1993 in Section 56, 57, 57 (2a) & FMSA 2000 section 118(e). As per these laws, tippers have been further divided into Primary insider traders (Directors, Company Secretaries, Executives & sponsored Officers (USA 10b-5 & 14 (e) 3 etc) and Secondary insider traders (Spouses, Friends & other sponsors outside the company). Tippers fall into illegal insider trading in the entire developed world. Therefore it is imperative that tippers are not at all covered in PSX Legislation.

In the USA to counter insider trading & misvalaution of financial statements, whistle policy has been introduced vide Sarbanes Oxley law 2002. This does not form part of PSX legislation & hence is needed to be introduced.

Similarly, No legislation on Benami Accounts as well has been carried out in PSX. Whereas, this has been amply covered vide Whistleblowing Policy of Sarbanes Oxley law 2002.

Managerial & firms incentives have not been well defined in PSX & SECP legislations as done in Whistleblowing Policy of Sarbanes Oxley law 2002 in the USA.

In PSX legislation only arbitraging activities have been explained under misleading statements, whereas in USA SEC legislation & UK FMSA 2000 & CJA 1993, arbitraging activities and disclosure of financial statements of the firms have also been well defined and for their counter check Whistleblowing Policy of Sarbanes Oxley law 2002 exists & in the UK vide Criminal Justice Law 1993 & FMSA 2000 Stock market surveillance system has been introduced.

In the Pakistani stock market during the bubble period, as per the transaction multiple/inverse transaction multiple models, the volume of share transactions both inside and outside of the stock market increase which indicates that during the bubble period, there is increased activity in terms of short selling, equity issuance and arbitrage of shares. Furthermore, to ascertain the financial knowledge and risk distress management of the common investors of the Pakistani stock market, we have used cash flow vs accruals models. These models state that the Pakistani investors approve the manipulative practices of the respective firms thereby, ignoring their original accounting information and investment activities; as long as it remains beneficial for the investors.

2.6.8 Legislation Summary

Sr. No	Facets	Pakistan SECP Insider trading Laws	USA SEC Insider Trading Laws	UK Insider Laws
1	Insider trading Laws (Prohibition of Buying and Selling)	"Companies Ordinance 1984 section 220 to 224 Security and exchange ordinance 1969 section 17 e (VI) SECP ordinance 1969 Section 23 (3) and section 24"	"SEC 1933 Section 17(a), 10b-5 rule 10 b-5(2) & SEC 1934 Section 16(b), Section , Section 16 and 17"	Follow Directive of the European Community for Insider trading, FSMA 2000, Section 118, Section 123 Section & CJA 1993 Section 52"
2	Definition of Insider trading	"Companies Ordinance 1984" defines insider trading and prohibits insiders to use "material non-public information" while trading equities.	US SEC laws define insider trading and prohibit insiders to use "material non-public information" while trading equities.	FSMA defines insider trading based on price-sensitive information which if used will affect equity prices.

3	Standard of Materiality Definition	Materiality is adequately defined in SECP laws. However, its question frequently arises in the courts pleading in the context of such information that may "directly or indirectly" affect the materiality case laws. If such a low standard definition of materiality is applied for insider trading it will seriously affect the interest of shareholders.	(i) In the US SEC materiality is handled through case laws i.e "TSC Industries Inc. v. Northway Inc. and SEC v. Texas Gulf Sulphur". (ii) In US SEC laws the definition of materiality is defined but is rather secondary based.	(i) Follow EU directives. (ii) Materiality is precisely and specifically defined. (iii) Refer to "European Community Directive on Coordinating Regulations on insider Trading (89/592/EEC.
4	Tippees, Tipster and Tipper	(i) Section 17 (vi), under this law the tippees, tipsters and tippers have not been adequately defined. (ii) Moreover, no case law on these exist in the Pakistani courts on which they may be penalized. (iii) SECP follows US SEC laws on the subject. Although, US SEC has upgraded its laws SECP has yet to upgrade these laws.	(i) Follow case laws "Chiarella and Dirk vs US SEC and the US Supreme Court on insider trading. (ii) Insider trading laws on tippees were upgraded in Section 14 e (3) " US SEC 1933 and US SEA 1934" (iv) Section 14 e-3 "if Tippee carries out insider trading for personal gain, he will do violation and if he does for the public interest it will not be considered as a violation of laws.	(i) Defined in "Section 118 (a, b, c, d) and CJA 1993, Section 57 a (i), (ii) even the lowest employee will be taken as insider". (ii) Under FSMA 2000, insider trading has been divided in to "Primary and Secondary insider trading" to identify Tippees, Tipster and Tipper.
5	Criteria of Short Selling	Criteria of Short selling has not been defined in "Company's Ordinance 1984 and Security and exchange ordinance 1969"	(i) Follow Up tick law "SEC 1934 , Section 10 (a-1)". Introduced in 1938 and discontinued in 2006. (ii) Currently follow securities SHO 2010 regulations. According to this short selling of securities is prohibited if prices decrease by 10% or more during a trading day.	(i) Section 131 (f): The UK Financial Conduct Authority ("FCA") Short selling is not banned under UK FSMA 2000. However it has been restricted by the UK Govt. Since it disturbs the market transparency. Short selling can be allowed occasionally by the governemnt when deemed essential.
6	Anonymous Transactions	Benami is a phenomenon in which purchasers buy properties or shares in someone else's names. This practice is very common so far as Pakistan is concerned. Unfortunately, the validity of this practice has been upheld by the highest judiciary in their decisions to the extent of dismissing the petitions filed with regard to Benami in the light of Quran & Sunnah (Khan Imtiaz VS The Islamic Republic of Pakistan, PLD 1983 F.S.C. 28 & Dawn Mar 18, 2019; ARY News 22-May-2020).	(i) US SEC introduced whistle blowing policy in Sarbanes Oxley law 2002 to counter insider trading and anonymous transactions. (ii) "Dodd-Frank Act (SEC & CFTC) Whistleblower	(i) Follow Section 340 of FSMA 2000. (ii) As per this Section each anonymous transaction is considered as criminal offense.

CHAPTER 03

RESEARCH METHODOLOGY

This chapter comprises of research methodology, description of variables, sources of data and conceptual framework of four models in the light of which research questions and research objectives will be discussed at length. The chapter will commence in chronological order starting with the sample data and its resource, description of variables, explanation of econometric models i.e (PANEL VAR model, balance and unbalance PANEL data) and the framework.

3.1.1 Sample and Nature of Data

In the research, the data of 354 firms registered in the SECP & Stock market of Pakistan for the period from 2003 to 2016 has been used. The aforesaid firms are affiliated with products and services sectors etc. In the research sample banking sector and financial institutions have not been included. These data have been abstracted from the firm's annual reports and COMPUSTAT database. The data of insider trading and equity issuance was taken from the Firm's annual reports, whereas the remaining data was taken from the COMPUSTAT database. The data is secondary in nature since it has been obtained from the COMPUSTAT database and from different websites.

In model 1, we have applied data from 2006 to 2016 & the PANEL VAR model with five variables like dispersion of investor's belief, Tobin's Q, MPK, Investment & equity issuance. For model 2, we have used data for the period from 2010 to 2017 with six variables i.e. Earnings inflation, equity issuance, Book to market ratio, size, BHAR & insider trading. In the model, unbalanced PANEL Data has been applied. For Model 3 data for the period from 2003 to 2017 with 26 financial variables have been used. This model deals with profitable & M&A firms and the data applied is taken from the COMPUSTAT database, whereas M&A samples were taken from the Competition Commission of Pakistan Govt Website. Model 4 constitutes two sub-models namely the return model and market value of the firm's model. In both models, six variables have been used.

3.1.2 Research Design

Research design is a strategy applied to research to formulate a brief plan that handles the research questions by analysis and interpretation of available data. The study research design starts with bubble detection, econometric models that how the firm's

additional investment & financing activities, investor's dispersion of beliefs, earnings management, insider trading, the profitable and M&A firms and relevance of accounting information contribute towards the stock market bubble.

3.1.2.1 Bubble Detection

The bubble detection has been carried through graphical representation of market capitalization and the P/E ratio that was derived from empirical researches of Joos et al., (2010); Odean and Barber (2000); Basu (1977 & 1997) and Gilchrist et al.,(2005), etc. The graphical representation is based on the overall firms listed on the inventory of PSX. The 354 firms were considered for the determination of market capitalization KSE 100 index for bubble detection. The market value of company stocks with relation to companies' earnings is determined by the P/E ratio. If the P/E ratio of stock prices is higher it means that the firm's share price is also higher than its earnings and predicts that the firm's shares are over-valued. Similarly, the proxy of the P/E ratio is also applied to determine stock market bubble and bubble crash periods (Basu 1977 and 1997).

3.1.2.2 Reason for Sector-wise Study

A sector represents a group of companies with common characteristics in business, product and services etc. categorization of the economy into different sectors is done for ease of analysis. It helps the analysis to understand whether the economy requisite sectors are expanding or contracting. In the stock market financial sectors are divided into sub-sectors which help investors to evaluate the performance of similar companies.

The study is generally based on sectoral analysis, however, some industries have been grouped on the basis of return on assets and return on equity. The basic purpose of the sectoral analysis is that the dynamics of every sector are different therefore its analysis has also been done independently to get a clear picture of regression results. Moreover, investors also prefer sectoral analysis as it helps them to identify that which sectors give a better and common performance during different stages of the bubble which helps them to carry out profitable investments.

3.1.2.3 Reasons for Study of Non- financial Sector:

Non-financial firms are the legal entities that deal in goods, production and service industries. the non-financial firms and sectors are based on sole “proprietorship and enterprises”. They come into existence by state law and also possess an integral legal status.

The non-financial firms and sectors do not only contain the big corporations and firms but may also include unlisted smaller firms and shops.

Just like developed countries, the non-financial sector has been preferred as it plays an important role in the circulation and flow of money in the economy besides creating investment and job opportunities in the country. It is the backbone of every country, it increases investment & financing activities in the economy and contributes towards GDP growth. The table showing details of the sector-wise analysis is appended below,

Sr. no	Sector	Sr. no	Sector
1	Cement Sector	7	Information Technology Sector
2	Chemical Sector	8	Petroleum Sector
3	Pharmaceutical Sector	9	Sugar Sector
4	Corporations Sector	10	Minerals Sector
5	Food Sector	11	Textile Sector
6	Electrical Machinery & Apparatus Sector	12	Auto Sectors

3.1.3 Panel VAR Model

Panel VAR models afford an advantage over time series & cross-sections. It provides a better analysis of the heterogeneous behavior of time series data. Moreover, in the case of larger data, it controls its abnormal behavior through extrapolation and keeps the relationship between dependent and independent variables stable and stronger over the time period. The PANEL VAR model is being applied for the reason that the data of Pakistani firms are either abnormal or incomplete. PANEL VAR model possesses the ability of predictability of behavior of variables and regression of two-way relationship. Canova and Ciccarelli (2013) argued that the PANEL VAR model is also ideally suited to address various issues like the apprehension of the interdependency of static & dynamic variables. It addresses issues pertaining to various units without any hindrance, comfortably identifies the variations of shocks in exogenous variables & also caters for cross-sectional dynamic heterogeneities. The approach of the PANEL VAR Model being comprehensive has also been used by Gilcrist et al., (2005), Ding 2015 and Atmaz (2018) in order to identify the relationship of depression with investment, Tobin's Q, MPK & equity issuance.

3.1.3.1 Econometric Model How to do the Firm's Additional Investment & Financing Activities and Investor's Dispersion of Belief during Stock Market Bubble

In this model, two dependent variables i.e dispersion of investor's belief and MPK which represents the firm's additional investment and financing activities have been used. Whenever, dispersion of investor's belief and MPK increase in the Pakistani stock market, it creates a bubble that leads to excessive equity issuance by the firm's managers which further increase investment activities and also create market investment opportunities. Both the variables also create market mis-valuation and speculations in the stock market thereby enhancing the shares prices and asset values of the firms. The managers also float investment signals which further give rise to the dispersion of investor's beliefs and affect the share prices. Investor's dispersion of belief also raises the Cost of capital, market capitalization and firm's abnormal returns in the stock market (Miller 1977; Gilchrist et al., 2005; Love & Zicchino 2006; Ding 2015 and Atmaz & Basak, 2018).

The dispersion of belief also gets changed as a result of good as well as the bad financial news of the firms. When firms with over-valued shares put in additional investment in their market stocks their share prices get enhanced therefore grossly move away from their fundamental prices which causes a bubble in the stock market. Inflation in share prices will lead to misevaluation. Resultantly excessive equity issuance will be done by the firms during bubble period to finance their projects (Miller 1977; Ghilchrist et al., 2005; Miller 1977; Ghilchrist et al., 2005; Polk and Sapienza 2008; Asker et al., 2011; Ding 2014; and Atmaz & Basak 2018). The firms also enhance their investing and financing activities during the bubble period (Ghilchrist et al., 2005; Polk and Sapienza 2008 and Asker et al., 2011).

In the analysis of the stock market in order to ascertain the effect of investment on the stock market bubble, the PANEL VAR model comprising of five variables i.e MPK, dispersion of investor's belief, Tobin's Q, equity issuance and Investment has been used. These variables are estimated in logs and behave exogenously. Dispersion of investor's beliefs provides information about the current investment opportunities in the stock market. The equation of the PANEL VAR Model is appended below.

$$\mathrm{Y_{it}} = \mathrm{AY_{it-1}} + \mathrm{f_{it}} + \mathrm{e_{it}} + \mathrm{V_{it}} \quad ---------- \quad 1$$

Where

$\mathrm{Y_{it}}$ is $1 * \mathrm{K}$ vector of independent variables & X_{it} is $1 * \mathrm{L}$ vectors of exogenous covariates

$e_{it} + V_{it}\ is\ 1$

$* L\ vector\ of\ independent\ variables\ specific\ to\ fixed\ effect\ \&\ errors$

$K * K$ matrices are $A_{1,} - - - A_p$, $matrix\ B\ are\ parametrs\ of\ estimation$

In the above model, A represents five by five matrix coefficients, where f_{it} is a fixed effect vector, e_{it} is error term i.e "vector of common time shocks" and V_{it} represent "set of mutually orthogonal structural shocks". In order to explain the above model, we applied Arellano and Bover (1995) procedure was applied by Ghilchrist et al., (2005), Love and Zicchino (2006), Miller (1977), Scherbina et al., (2002); Ding (2014) and (2015); and Atmaz et al., 2018. The order of the five variables structural shocks equation is mentioned below.

$$\eta_{it} = \eta_{it}^{X1}, \eta_{it}^{X2}, \eta_{it}^{X3}, \eta_{it}^{X4}\ \eta_{it}^{X5} - - - - - - - - - - - - - - - 3$$

For dependent variables Shocks to other variables

$$\eta_{it} = \eta_{it}^{mpk} \& \eta_{it}^{d} - 4$$

Where the equation of PANEL VAR model is $Y_{it} = \{ X1_{it}, X2_{it}, X3_{it}, X4_{it}, X5_{it} \}' - - - 5$

Where,

$$Y_{it} = \left\{ Investor's\ dispersion\ of\ belief_{it}, MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, \text{equity Issuance} \right\}' - -6$$

Variables: DV's = Dispersion of investor's belief

IV's = $\boldsymbol{\alpha}$ + Investment (It/Kt) + Net equity issuance +MPK+ Tobin's Q -------+ $\mathcal{E}$

The empirical theory states that whenever dispersion of investor's belief shock occurs, current and future investment activities get increased and this shock also affects MPK moderately. In the aftermath of the dispersion shock, the investment will mostly be attributed to dispersion changes which will be beneficial for MPK in the future. Similarly, as per empirical studies firm's additional investment and financing activities (MPK), the shock also affects the other variables moderately. The studies also reveal that whenever mispricing takes place, the market opportunities favor MPK due to which gross equity issuance resorts to the firm managers. The aforementioned model also states that investment, MPK and market opportunities get enhanced as a result of investor's belief shock, due to which equity issuance by the firms also enhances.

3.1.3.2 Impulse response functions and identification

IRF is a segment of the PANEL VAR model and is used to estimate the response of shocks of various variables on each other. If the graph of response is horizontally non zero i.e. it is either clearly above the horizontal axis or below the horizontal axis then it is called significant. IRF also caters for coefficient matrix and correlation of residuals or orthogonal Structural shocks of variables with each other. Hamilton (1994) and Lutkepohl (2005) focused only on the Autoregressive structure of the PANEL VAR model and prove that the model becomes stable if all modules of the matrix are less than one.

In mdel 1 five variables have been applied in which MPK and dispersion of investors beliefs are dependent variables. Whereas, tobin's Q, Investment and equity issuance are independent variables. If the shocks of dependent variables effect the independent variables then the graphical line will go upward or downward from zero, which shows significant relationship.

3.1.3.3 Granger Causality

The granger causality test is used to establish whether a unidirectional or bi-directional relationship between DV and IV exists. When independent variable X affects the dependent variable Y only. It is called a unidirectional relationship. Whereas both variables affect each other then the relationship is said to be the bi-directional relationship. It has been observed that in this model the behavior of all variables is exogeneous;

$$\begin{bmatrix} Y1 \\ Y2 \\ Y3 \\ Y4 \\ Y5 \end{bmatrix} = \boldsymbol{\alpha}_{o_{it}} + \beta_{1_{it}} \begin{bmatrix} Y1_{t-1} \\ Y2_{t-1} \\ Y3_{t-1} \\ Y4_{t-1} \\ Y5_{t-1} \end{bmatrix} + - - - + \beta_{p_{it}} \begin{bmatrix} Y1_{t-p} \\ Y2_{t-p} \\ Y3_{t-p} \\ Y4_{t-p} \\ Y5_{t-p} \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \\ e_{4t} \\ e_{5t} \end{bmatrix}$$

$t = represent\ time\ ,\quad P = number\ of\ lags,\ \boldsymbol{\alpha}_{o_{it}} + \beta_{1_{it}} + - - - + \beta_{p_{it}}$ = represent constants

$$\begin{bmatrix} Disp \\ MPK \\ I \\ Eq\_Issu \\ Tobin's\ Q \end{bmatrix} = \boldsymbol{\alpha}_{o_{it}} + \beta_{1_{it}} \begin{bmatrix} Disp_{t-1} \\ MPK_{t-1} \\ I_{t-1} \\ Eq\_Issu_{t-1} \\ Tobin's\ Q_{t-1} \end{bmatrix} + - - - + \beta_{p_{it}} \begin{bmatrix} Disp_{t-p} \\ MPK_{t-p} \\ I_{t-p} \\ Eq\_Issu_{t-p} \\ Tobin'sQ_{t-p} \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \\ e_{4t} \\ e_{5t} \end{bmatrix}$$

3.1.4 PANEL Data Model

PANEL data constitutes cross-sectional time-series data. It is an econometric statistical technique that is mostly used in the analysis of social sciences, econometrics and

various other fields of researches. This econometric model comprises temporal (T) and spatial (N) dimensions. The PANEL data contains numerous observations over time about cross-sectional units that enable researchers to the analysis of dynamic changes in data of short time series. This technique was first used by Engel in 1857 for the budget survey which was primarily related to the pattern of expenditure on food as an income function. However, this data was introduced chronologically by Lazarsfeld and Fiske (1938) by studying the relationship between product sales & radio advertising. Panel data estimation techniques further developed in the 2nd half of the 20th century and were used as an F.E model by Kuh (1959) and Hoch (1962) and as R.E model by Nerlove & Balestra (1966) and Hussain &Wallace (1969). The advantages afforded by the PANEL data are that it helps to analyze larger samples of cross-sectional time-series data and keeps it under control. Moreover, it assists in finding complex relationships between Dependent variable "Y" & Independent variables "X". In PANEL data N refers to different cross-Sections and the T is referred to different intervals of time. The Matrix of Panel Data is appended below,

Cross-Sections

$$Time\ Series \begin{bmatrix} y_{11} & y_{21} & \cdots & y_{i1} & \cdots & y_{N1} \\ y_{12} & y_{22} & \cdots & y_{i2} & \cdots & y_{N2} \\ \vdots & \vdots & \ddots & \vdots & & \vdots \\ y_{1t} & y_{2t} & \cdots & y_{it} & \cdots & y_{Nt} \\ \vdots & \vdots & & \vdots & \ddots & \vdots \\ y_{1T} & y_{2T} & \cdots & y_{iT} & \cdots & y_{NT} \end{bmatrix}$$

3.1.4.1 PANEL Data Equation

$$Y_{it} = \boldsymbol{\alpha}_{it} + \beta X_{it}' + --+e_{it} \qquad i = 1, --, N \ \& t = 1, --, T \text{----------(1)}$$

Where I denote cross-sections dimensions, t denotes time-series dimensions, $\boldsymbol{\alpha}_{it}$ is a Scalar, β is referred to $K * 1$ & X_{it} refers to *it* th observation of explanatory variable & e_{it} denotes random variation about mean 0 & cannot be estimated N= n*T data points.

$$e_{it} = \mu_i + \lambda_t + \upsilon_{it} \qquad i = 1, --, N \ \& t = 1, --, T \text{----------(2)}$$

Various assumptions that can be made in the estimation of eq (1) are as under.

1. In the first assumption, Intercept & slope coefficients are kept constant over cross-sections & time but here the error term indicates differences.
2. In the second assumption, the slope coefficient may be kept constant whereas the intercept may vary.

3. In the third assumption, the slope coefficient can be constant, whereas the slope-intercept over time & cross-sections may vary.
4. In the fourth assumption coefficients of intercept & slope may be considered to vary over time.

3.1.5 Econometric Model of How do Earnings Management and Insider Trading by the Firms Contribute Towards Stock Market Bubble?

Since insiders and the firm's management possess access to the private-public information of respective firms, they may exploit it in their favor during all stages of the bubble. They can resort to manipulation to attract ignorant market investors. They also hide information to earn abnormal returns in order to get managerial incentives and also avoid legal actions. The empirical studies reveal that Earnings management and insider trading possess a linear relationship during the financial crisis and bubble-like conditions.

3.1.5.1 Association Between Insider Selling and Earnings inflation

Xie et al., (2003) and Teoh et al. 1998 a and 1998 b; Huddart et al., (2003, 2006, 2007 a & 2007 b); DuCharme et al., (2004); Louis (2010) and Al Farooque et al., (2018) are of the view that the insider selling along with the earnings management is ordinarily used to inflate the prices of shares in the stock market. To achieve the short-run increase in the value of shares, firm managers resort to the selling of managerial stocks in the stock market. The beneficiaries are privy to such activities and the same is done with their consent. This is significant in the stock market operations of firms through various studies (Skinner and Dechow 2000; Watts and Zimmerman 1990, Beneish et al., 2004 and Beneish & Vargus 2002).

The studies have affirmed that insider purchasing (INSB) / Selling (INSS) in line with Earnings Management is employed in order to inflate share prices. As short-run measure inflation of shares is done through the selling of managerial stocks in which shareholders are also taken into confidence (Sawicki & Shrestha 2008; Huddart et al., 2006, 2007 a and 2007 b; Al Farooque et al., 2018; Beneish & Vargus 2002; Tonk et al., 2018; Rozeff and Zaman 1998 and Watts and Zimmerman 1990), the below-mentioned model assists in determining the relationship between EI & Insider trading w.r.t selling with each other. The appended below model will provide the information as to how insider selling

incentives for income-generating & earnings management by the managers through the relevance of accounting information & insider trading is carried out.

$$\text{Abnormal Acc or } EI_{it} = \boldsymbol{\alpha}_o + \beta_1 INSS_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4 \text{ Size}_{it} + \beta_4 \text{ Equity Issuance}_{it} + --+e_{it}[18]$$

$$INSS_{it} = \boldsymbol{\alpha}_o + \beta_1 \text{Earnings Inflation}_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4 \text{ Size}_{it} + \beta_4 \text{ Equity Issuance}_{it} + ---+ e_{it}$$

Here we need to control the book-market value as it may end up correlating with the respective firm's incentives for the management of earnings. The relationship of leverage & firms was also identified in empirical studies (see Huddart et al., 2003, 2006, 2007 a and 2007 b; Watts and Zimmerman 1990 and Beneish et al., 2004). Managers tend to inflate the earnings of the firms before they offer seasonal equities. By Collins et al., (1999), the managers are interested in managing the annual earnings to increase their respective compensations.

As per empirical litreature insider trading is based on insider sale and purchase, Where insider sale has been used independently to find the relation with different variables. Similarly, this research is also based on the same principal.
It is also clarified that insider trading is only done during pre-bubble period because these are the insiders only who know about the new future projects which are being launched in the market. As such they are in a better position to predict the bubble period on account of the availability of the firm's private information (Huddart et al., 2003and 2006; Jaffe 1974; Beneish & Vargus 2002; Chowdhury et al., 2018 and Ali et al., 2011).

3.1.5.2 Abnormal Return Models

The Abnormal Return Model has been further categorized into Bubble Model, the pre-Bubble Model & the Bubble peak Model. These models will help to ascertain the impact of insider trading, abnormal accruals & managerial incentives on the firm's abnormal returns during the bubble all stages of the bubble. The empirical research has explained that the variables like insider trading, Abnormal Accruals & managerial incentives get reduced during bubble peak periods. Dai et al., (2016). Moreover, if the

[18] **"Note:** INSS= insider trading w.r.t Selling; EI= Earnings Inflation; By exercising control over BM value, which is used for Earnings Management, Firms incentive & how Earnings can be manage effectively. The variables of leverage & size are also the controlling variables While equity issuance to control Insider trading."

relationship of insider trading with abnormal returns becomes positive it will indicate that illegal insider trading is being carried in the market & if this relationship becomes negative this will indicate the existence of legal insider trading[19].

$$ABRET = \boldsymbol{\alpha}_{o} + \beta_1 \text{Earnings Inflation} + \beta_2 \text{INSS}_{it} + \beta_3 \text{BM}_{it} + \beta_4 \text{Leverage}_{it_1} + \beta_5 \text{Size}_{it} + \beta_6 \text{Equity Issuance}_{it} + ---+ e_{it}$$

$$Pre\ bubble_{ABRET} = \boldsymbol{\alpha}_{o} + \beta_1 \text{Earnings Inflation} + \beta_2 \text{INSS}_{it} + \beta_3 \text{BM}_{it} + \beta_4 \text{Leverage}_{it_1} + \beta_5 \text{Size}_{it} + \beta_6 \text{Equity Issuance}_{it} + --+ e_{it}$$

$$Bubble\ Peak\ ABRET_i = \boldsymbol{\alpha}_{o} + \beta_1 \text{Earnings Inflation} + \beta_2 \text{INSS}_{it} + \beta_3 \text{BM}_{it} + \beta_4 \text{Leverage}_{it_1} + \beta_5 \text{Size}_{it} + \beta_6 \text{Equity Issuance}_{it} + ---+ e_{it}$$

Leverage & size are controlling variables whose value may be positive or negative because, on one side Leverage, it measures the risk of firms where its relationship is negative. Whereas contrarily it serves as a proxy for earnings for the creditors & hence its relationship becomes +ve. Similarly, Size determines risk where it possesses a -ve relationship on the contrary it provides future growth opportunities where its relationship becomes +ve. Various authors have interpreted these variables differently i.e. leverage as Growth expectation Abrabnell & Lehavy (2003), Size & leverage related to earnings management (Watts and Zimmerman 1990 and Yosef et al., 2010); size to control earnings management (Ball & Shivakumar 2008 and Al Farooque et al., 2018, etc.) Equity issuance: The issuance of equity is kept under control by providing managerial incentive & stock-based compensation Huddart et al., (2003, 2006, 2007a and 2007b).

3.1.5.3 Measuring Long-Run Abnormal Return (Buying Hold Abnormal Return)

The study of various literature shows that four formulae i.e. CAAR "cumulative Abnormal Average Return", BHAR "Buying Hold Abnormal Return", Fama French three-factor Model and Firms operating performance to measure abnormal returns. The first three formulae are based on a firm's stock prices while the fourth one is based on Firms financial

[19] Legal insider trading will indicate that SECP insider trading polices are strongly implemented at the market place & illegal insider trading will indicate that either the legislation by SECP is inefficient or its ineffective. In addition, it provides valuable information about how SECP insider trading laws affect stock market's abnormal returns. The below mentioned models are the abnormal return models. These econometric models have been designed with the help of Yosef et al., 2010; Dai et al., 2016; Chakravarty 2001 Skinner and Sloan 2002; Joss et al., 2010 & Huddart et al., 2006; Huddart et al., 2006, Al Farooque et al., 2018; Beneish & Vargus 2002; Skinner and Sloan 2002; Tonk et al., 2018; Rozeff & Zaman 1998; Watts and Zimmerman (1990) papers. The below mentioned models will provide worth-mentioning information about the all stages of bubble."

statement / Cash flows. The formula of BHAR is used as an alternative to CAAR to measure long-term abnormal returns. It is preferred over CAAR since it encompasses more volume of information and identifies stock volatility than CAAR. The formula of BHAR is based on compounding interest and it provides more realistic results. The first segment of BHAR ($1+R_{i,t}$) represents returns of the firms, whereas the second segment ($1+R_{bt}$) represents the industry's Benchmark. BHAR provides accurate information about firms performance both during the period when its shares are below the industry benchmark as well as when the values of its shares are above the benchmark (Barber & Lyon 1997; Teoh et al., 1998; Goot et al., 2003; Kothari and Warner 2007 and Joos et al., 2010).

$$BHAR_i = \prod_{t=1}^{n}(1 + R_{i,t}) - \prod_{t=1}^{n}(1 + R_{b,t})$$

3.1.6 Econometric Model of How do the Profitable and M&A firms Contribute towards bubble Creation and their Impact on Stock Market

Profitable firms launch new projects during the bubble period and also carry out M&A activities. As a result of the speculations of investors increase due to which the equity trading and share prices are enhanced manifolds. Resultantly, the arbitrageur's activities and valuation of these firms also enhance inside as well as outside of the exchange (Yosef et al., 2010). The empirical studies reveal that although the momentum and activities of profitable and M&A firms remain constant during all stages of the bubble yet these decline during the bubble crash period. It has also been observed that market investors prefer manipulation by these firms in order to earn higher profits (Yosef et al., 2010).

3.1.6.1 Transaction Multiples Analysis

We will proceed with the pricing of mergers and acquisitions and transactions of profitable firms in the four periods of the bubble. It is observed that the price which has been paid per dollar in terms of accounting fundamentals has changed in relation to the trends prevailing in the stock market. The same can be done by applying the price to earnings multiple techniques which is normally used in the valuation of firms. 'P' is the sale price of the firm's equity under observation, whereas 'E' is the net income which is taken before the extraordinary items (Yosef et al., 2010; De Franco et al., 2008 and Plenborg et al., 2017). Other multiples that are used for the valuation of firms include price to book ratio (P/B) and enterprise value to sales (EV/S). 'B' is known as the book value of equity. 'EV' is termed as the sale price of the respective firm's equity in addition to total

liabilities excluding current liabilities. Whereas, 'S' is known as the total revenues of the firms. The variables of E, B and S are taken for the year immediately before the sale transactions (Yosef et al., 2010).

The aforementioned multiples are used for positive values. However, the advantage in using P/B, EV/S multiples is that these can be used for firms having negative values as well and giving rise to an increased sample size of firms (Bhojraj & Lee 2002 and De Franco and Jin 2008). It has been observed that negative earnings are generally found in high-tech firms because of expenses that are incurred on R&D as per GAAP. The firms under our study will be of the positive book value of equity. However, the book value of these firms may even be negative for which value of equity EV/S multiple is useful (Yosef et al., 2010).

In theory, it is suggested that expected growth along with profitability should have a positive correlation with the transaction multiples. We further expect that growth and profitability proxies should bear a negative relation to the inverse of previously mentioned transaction multiples. Regarding the financial leverage, it is risky on one hand but it also acts as a proxy with reference to the creditor's demand for high-quality assets along with conservative earnings. The size of the firm can also serve as another proxy regarding risk factors e.g. firms that are smaller in size have lower transaction multiples and larger inverse transaction multiples (see Francis et al., 2005). The size of the firms helps in capturing the value drivers beyond the risk of firms e.g. opportunities for future growth (see Francis et al., 2005). Therefore, the relation between firm size and multiples can be termed as equivocal. The coefficients for different phases of bubbles represent the mean difference between various transaction multiples after adjusting for differences in the composition of industry, size of the firm, risk factor and profitability of the respective merging profitable firms.

$$Transaction\ value \text{ ratios}_{it} = \boldsymbol{\alpha}_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + Post\ Bubble_{it} - - - - - - - + e_{it}$$

3.1.6.2 Price Regression Analysis

The transaction valuations tell about the volume of securities of firms traded inside/outside the exchange. Similarly, price regression analysis is applied during four sub-

periods of the bubble to determine M&A and profitable firm's equity prices. The relevance of the financial statement of the company after the bursting of the bubble (Olstein, 2006). The behavior of financial variables of a target firm will be ascertained in a bubble sub-period as a proxy for the future. To explore the changes in a relationship between the information of financial statements along with the target prices, price level analysis will be used in all sub-periods of the bubble. (see also Collins et al., 1997 & Core et al., 2003 among others).

Previous researches have recommended that financial data may be deflated through the proxy of scale in respective accounting research instead of inclusion of scale proxy to be an independent variable. The advantages witnessed through deflation of financial data by scale proxy helped in reducing the effect of heteroscedasticity, R^2 bias i.e. multi colinearity and coefficient bias i.e. the effect of the independent variable over the dependent variable. Therefore, the deflation of Eq 2 gives the following book value regarding equity.

$$P_{it} = \boldsymbol{\alpha}_{it} + \beta_1 BV_{it} + \beta_2 E_{it} + \beta_3 R\&D_{it} + \beta_4 Sales_{it} + - - - - - - - + e_{it}$$

$$P_{\frac{it}{BV_{it}}} = \boldsymbol{\alpha}_o(\frac{1}{BV_{it}}) + \beta_1(\frac{BV_{it}}{BV_{it}}) + \beta_2(\frac{E_{it}}{BV_{it}}) + \beta_3(\frac{\text{neg } E_{it}}{BV_{it}}) + \beta_4(\frac{SalesCh_{it}}{BV_{it}}) + - - - + e_{it}$$

3.1.6.3 Explanation of purchase price through accruals vs. cash flows

This price regression model helps in determining the effect of accruals Vs cash flow while trading securities in the stock market. Where accruals and abnormal accruals dictate manipulation done by the M&A and profitable firms. Whereas, firm's cash flows spell out the investment activity of the M&A and profitable firms. It has been observed that market investors prefer manipulation while purchasing and trading securities of the target firms. Moreover, the investors also prefer investing in M&A and profitable firms launching new projects (Yosef et al., 2010; Huddart et al., 2003 & 2006 and Chowdhury et al., 2018). During the above-mentioned stages of the bubble, firm managers try to take such actions which result in increasing the sale price. If the management is of the view that price is a positive function in terms of earnings then in such cases firms can project accruals upwards by employing an accounting technique that considers net income to be a summation of cash flows resulting from operations as well as accruals. Now we will go for the re-estimation of the regression model of the basic price through its decomposition. Here, we will consider

the loss to be a dummy variable whose value will be 1 in case the earnings are negative before extraordinary items and will have a value of zero otherwise (Yosef et al., 2010; Beneish & Vargus 2002 and Core et al., 2003). This arrangement will allow for isolation of coefficient over accruals vs ash flows for the profit-making firm.

$$P_{\frac{it}{BV_{it}}} = \boldsymbol{\alpha}_o(\frac{1}{BV_{it}}) + \beta_1(\frac{BV_{it}}{BV_{it}}) + \beta_2(\frac{Total\ ACC_{it}}{BV_{it}}) + \beta_3(\frac{CFO_{it_1}}{BV_{it}}) + \beta_4(\frac{Total\ ACC_{it} * loss}{BV_{it}}) + \beta_5(\frac{CFO * loss_{it}}{BV_{it}}) + \beta_5(\frac{Sales_{it}}{BV_{it}}) - -+\mathrm{e}_{it}$$

Accruals are based on earnings management which represent firms manipulation. Whereas, cash flow represents the firm's original investment in the market. If investors prefer accruals then they would discard cash flows. That means market investors prefer manipulation by the firms. If investors prefer cash flow, it shows that investors possess the knowledge about the financial health of the firms (Yosef et al., 2010). Cash flow Vs accruals has been identified by applying the Ohlson Price regression model, which further constitutes total accruals Vs Cash flows and abnormal accruals Vs cashflows models. If investors prefer total accruals, abonormal accruals against cash flows, it predicts that the investors prefer firms manipulation. If investors prefer cash flows against total accruals and abnormal acrruals, it indicates that investors have financial knowledge of firms and the market.

3.1.6.4 Earnings Management

In this section, it will be tried to find out the impact of abnormal accruals over M&A and profitable firms during all phases of the stock market bubble. Jone's Model (1991) is applied to identify the Abn ACC. Kothari et al., (2005) have argued that earnings management has a relation with the firm's performance. Hence, the performance impact of accruals must be considered. During the estimation of accruals, we need to consider the ROA as an independent variable for the modified form of Jone's model. It has been observed that high-growth firms are more likely to hold higher accruals (Mc Nichols 2002). Therefore, growth options can be controlled through the inclusion of book to the market ratio in the modified form of the Jones model (Raman and Shahrur 2008). Therefore, the equation will be written as

$$\left(\frac{TA_{it}}{\mathrm{TA}_{t-1}}\right) = \beta_o\left(\frac{1}{\mathrm{TA}_{t-1}}\right) + \beta_1\left(\frac{\text{Ch rev}}{\mathrm{TA}_{t-1}} - \frac{\text{ch AR}}{\mathrm{TA}_{t-1}}\right) + \beta_2\left(\frac{GPPE_t}{\mathrm{TA}_{t-1}}\right) + \beta_e(ROA_t) + \beta_4(BM_t) - - - - - - - - + \mathrm{e}_{it}$$

Yosef et.al (2010), Brooks & Katsaris (2005) and Bhojraj and Lee (2002), In this segment, it will be endeavored to analyze the impact of pre-bubble, during the bubble, Post bubble, and after bubble crash on M&A. Earlier researches indicate that according to the various phases of the bubble the transaction multiples also get varied. These transaction multiples represent the actual Firm value of M&A. As the bubble increases accordingly the transaction multiples also get increased. Similarly, the investors also tend to invest in those firm securities which they expect that their transaction values shall be enhanced with the pace of time. The firm's financial information & Investor's dispersion of belief during the bubble period plays a vital role in enhancing the volatility of Transaction multiples.

"Ohlson (1995), Yosef (2010), Olstein (2006) and Core et al., (2003), the other model used in the analysis is Firms economic condition model which explains how the M&A firms economic conditions have been affected during the four stages of a bubble. This model provides information about firms accounting manipulations and relevant accounting. The investors mostly prefer to invest during bubble periods in the firms which entail better earnings, whereas after the bubble burst their preference of investment switches over to those firms which possess better cash flows. In this analysis, we have made use of two models of the Firm's economic condition that is Firms standard condition model and the Firms economic condition Model deflated by BV (for reduction of hetroscadicity and multicollinearity issues). Data of only positive values have been used in these models. The results indicate that the economic conditions of M&A firms contribute to enhance the values of equity from their fundamental values. The results of the empirical analysis also describe that E'sM & free cash flows of M&A firms were not affected by the bubble rather than the Bursting of the Bubble.

3.1.7 Econometric Model of How do the firms relevance of accounting information contributes towards Stock Market Bubble?

The accounting information of a firm can say to be value relevant only if it reflects its equity at the stock market. The accounting information is also reflected in the income statement or balance sheet of the firm (Ball and Brown 1968 Aboody and Hughes (2002)

and Liu et al., 2002 and Penman et al., 1989). Most of the researches carried out so far on the value relevance of accounting is based on the returned model and market value based Olson model (1995). The return model deals with the firm's expected and unexpected earnings impact on their equities. In the earlier researches of value relevance return window model was used by Ball and Brown (1968). But nowadays, a comparatively popular return model of Easton and Harris (1991) is being used. This explains the impact of earnings and changes in earnings in order to attract market investors to enhance the equity prices of firms.

Most of the research work on the relevance of accounting has been carried out by US scholars followed by the Chinese. Therefore our research framework has benefitted from the efforts of both work as return model has been derived from Su et al., (2001); Lev and Zarowin (1999) and Easton (1999). By Su et al., (2001), earnings & change in earnings play an important role in firms' stock valuation as well as firms stock volatility in the stock market, Furthermore, these variables can represent the relevance of accounting. It bitterly explains the relevance in terms of the bubble and other financial crises. In the Return models, the Earnings variable depicts Firms Net income and Change in earnings represents the firm's unexpected earnings & firms new accounting information. The Return Model is appended below.

$$Return_{it} = \boldsymbol{\alpha}_{it} + \beta_1 EPS_{it}/P_{t-1} + \beta_2 CH\ EPS_{it}/P_{t-1} + - - + \mathrm{e}_{it}$$

The second model used in the study is the market value-based Olson model (1995), also known as the price regression model. In this model, equity prices are taken as the dependent variable to determine accurate accounting information. This being a non-traditional model is more often being used in the current researches (Burgstahler and Dichev 1997; Kothari and Zimmerman 1995 and Navdal 2010). This model constitutes of balance sheet and income statement. It explains which out of the two i.e balance sheet or income statement affects more on firm's equity prices at the market (Navdal 2010). Although the price regression model does not provide new information yet it entails three advantages. First, it defines the impact of accounting information on stock prices in the long run, whereas the returned model expresses the impact in the short run. (Navdal 2010 and Kothari & Zimmerman 1995). Secondly return model does not cover income statement and balance sheet information simultaneously, whereas the price regression model covers

both the aspects and the third price regression model measuring both Firm's non-accounting information as well as the relevance of accounting effect on firms security valuation. The equation of price regression model is expressed below;

$$MV_{it} = \boldsymbol{\alpha}_{it} + \beta_1 BVS_{it} + \beta_2 Earnings_{it} + - - + \mathrm{e}_{it}$$

3.1.7.1 Balance Sheet Vs Income Statement

$$MV_{it} = \boldsymbol{\alpha}_{it} + \beta_1 BVS_{it} + \beta_2 EPS_{it} + - - - - + \mathrm{e}_{it}$$

3.1.7.2 Accounting Information Vs Non-Accounting information

Firms' accounting information plays a vital role on the floor of the stock market, especially while trading securities. The investor's accord due to importance to the firm's earnings and net income when investing since both of the effects of the feature of firm's asset prices and share values during the financial crisis and bubble-like conditions (Joos et al., 2010 and Navdal 2010). That is why the firms endeavor to improve their accounting information prior to launching the IPO's (Goot et al., 2003 and Nadval 2010). In this model non-accounting information represents hot market issues like IPO's and gives their impact on the stock market bubble during all stages. The accounting and non-accounting information create speculations in the stock market and as a result, lures in the investors for heavy investments. This stance has also been accepted in the paper of Yosef et al, (2010) that investors always prefer the manipulation by the profitable firms for gaining high profits.

$$MV_{it} = \boldsymbol{\alpha}_{it} + \beta_1 Hot\ Market\ Issue_{it} + \beta_2 NI_{it} + - - + \mathrm{e}_{it}$$

3.2.1 Variables Description

Sr.no	Variables	Discription	Source	Authors
1	Investment	Capital Expenditure / beginning-of-period of net book value of PPE	Standard & Poor Compustat	Gilchrist et al., (2005); Aktas et al.,(2015); Malmendier & Tate (2005), Love and Zicchino (2006); El Ghoul et al., (2017)
2	MPK	Log ((Sales/Capital)/Industry avg ratio)*(0.2)) 0.2=(r + δ)= Financial Friction **(See Appendix)**	Standard & Poor Compustat	Gilchrist et al., 2005, Love & Zicchino (2006); Gilchrist and Himmelberg (1998) & Love et al., (2006)
3	Dispersion	$d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$ **(See Apendix)**	Standard & Poor Compustat	Teoh et al.,(2004); Tonks et al.,(2018) and Gilchrist et al., (2005), **see appendix**
4	Net equity-Issuance	Net equity issue is the ratio of change in book equity less the change in retained earnings to book value of total assets.	Standard & Poor Compustat	Rashid 2012 For Model 1 Pt-1
5	Net equity-Issuance	$= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$	Annual Reports & Standard & Poor Compustat	Gilchrist et al., (2005); Chan et al., (2007); Roberts & Sufi (2009); Frank and Goyal (2003); Pontiff and Woodgate (2008); El Ghoul et al., (2017)
6	Tobin's Q	$= \left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$	Standard & Poor Compustat	Gilchrist et al., (2005); Love and Zicchino (2006); Aktas et al.,(2015); Lindenberg and Ross (1981) and El Ghoul et al., (2017)
7	Total Accruals	$= \Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Depriciation_t$ Or	Standard & Poor Compustat	Yosef et,al (2010); Chowdhury (2018), Huddart et al., (2003, 2006 2007 a and 2007 b) & Teoh et al., (1998)

		= Net income – cash flow from opreations		
8	Abn Acc or EI	$= \frac{Total\ Acc_t}{TA_{t-1}} - \boldsymbol{\alpha}_0 \frac{1}{TA_{t-1}} + \boldsymbol{\beta}_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \boldsymbol{\beta}_2 \frac{GPPE_t}{TA_{t-1}} + \boldsymbol{\beta}_3 ROA + \boldsymbol{\beta}_4 BM$	Standard & Poor Compustat	Yosef et,al (2010); Chowdhry (2017), Hudart et al., (2003, 2006 & 2007) & Teoh et,al. (1998)
9	Insider Trading (NIST)	Therefore insider trading is measured on the basis of top five executives like (President, CFO, COO & chairman of the board). The same methodology was adopted by the website Thomson and Reuter. $= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$	Firms Annual Reports, Financials, SCEP & Business Recorder	Beneish & Vargus (2002); Huddart et al., (2003, 2006, 2007); Jaffe (1974); Seyhun (1986,1988 & 1992); Core et al.,(2006); Aktas et al., (2008); Harlow and Howe (1993); Lin and Howe (1990); Baesel & Stein (1979); Agrawal and Nasser (2012); Massa et al., (2015); Louis et al., (2010) and Teoh et al., (2004).
10	Size	1. log of total market capitalization of common stock 2. log of total assets	Standard & Poor Compustat	Chowdhury (2018), Chen et al., (2002), D'avolio (2002), Hudart et al., (2003, 2006, 2007 a & 2007 b) & Teoh et,al. (1998), Yosef et al., (2010)
11	BM	The ratio of common book equity to the market value of equity	Standard & Poor Compustat	Chen et al., (2002), D'avolio (2002), Chowdhury (2018), Hudart et al., (2003, 2006 2007 a & 2007 b) & Teoh et,al. (1998), Yosef et al., (2010), Aktas et al.,(2015) and Datta et al., (2001)
12	Leverage	$= \left(\frac{Total\ Liabilities\ - Current\ Liabilities}{Total\ Asset}\right)$	Standard & Poor Compustat	Felo et al.,(2018); Yosef et,al (2010); Chowdhury (2018), Hudart et al., (2003, 2006 2007 a & 2007 b), Teoh et al., (1998) & Aktas et al.,(2015)
13	Buying Hold Abnormal Returns	(1+ Firms Return)- (1+ Market Return KSE)	Standard & Poor Compustat	Joos et al., (2010); Chan et al., (2007); Goot et al., (2003)
14	Returns	(r2-r1)/r1	Standard & Poor Compustat & PSX, Business Recorder	Easton (1999); Liu & Liu (2007), Chen et al., (2010), Malmendier and Tate (2005), Lev and Zarowin (1999) and Merika (2007)

16	Sales Growth	Percentage Change in Sales	Standard & Poor Compustat	Yosef et al., (2010)
17	Transaction Value	is the sale price of firm's equity	Standard & Poor Compustat	Yosef et al., (2010)
18	Enterprise Value	the sale price of firm's equity plus total liabilities less current liabilities	Standard & Poor Compustat	Yosef et al., (2010)
18	Market Value	Common shares outstanding multiply by Current market price	Standard & Poor Compustat	Yosef et al., (2010)
19	Sales	Sales/Turnover (Net)	Standard & Poor Compustat	Yosef et al., (2010)
20	Profit Margin	$= \left(\frac{EBITDA}{Sales}\right)$	Standard & Poor Compustat	Yosef et al., (2010)
21	ROA	$= \left(\frac{EBITDA}{Total\ Assets}\right)$	Standard & Poor Compustat	Yosef et al., (2010)
22	ROE	$= \left(\frac{Netincome\ Before\ Extraordinay\ Items}{Book\ Value}\right)$	Standard & Poor Compustat	Yosef et al., (2010)
23	Bubble Period	Dummy	Standard & Poor Compustat	Yosef et al., (2010)
24	Crash Period	Dummy	Standard & Poor Compustat	Yosef et al., (2010)
25	Pre Bubble Period	Dummy	Standard & Poor Compustat	Yosef et al., (2010)
26	Post Bubble Period	Dummy	Standard & Poor Compustat	Yosef et al., (2010)
27	P/E	$= \left(\frac{Sale\ price\ of\ Firm'sEquity}{Net\ incme\ before\ extraordinary\ Items}\right)$	Standard & Poor Compustat	Yosef et al., (2010)
28	EV/S	$= \left(\frac{EV}{Total\ Revenue}\right)$	Standard & Poor Compustat	Yosef et al., (2010)

29	P/S	$= \left(\frac{Price\ of\ Firm's equity}{Book\ Value\ of\ Equity}\right)$	Standard & Poor Compustat	Yosef et al., (2010)
30	Negative Earning	Dummy= Negative earning before extraordinary items 1, otherwise 0.	Standard & Poor Compustat	Yosef et al., (2010)
31	CFO	Cash Flow From Operations	Standard & Poor Compustat	Yosef et al., (2010)
32	Sales Change	Annual Change in sales	Standard & Poor Compustat	Yosef et al., (2010)
33	Hot Issue Market (Non-Accounting Variable)	Average first-day initial returns 90 days prior to the IPO's	Standard & Poor Compustat	Bhattacharya et al., (2010)
34	EPS/P	$= \left(\frac{EPS}{Price\ beg-of\ Year}\right)$	Standard & Poor Compustat	Liu & Liu (2007), Chiou et al., (2010), Malmendier & Tate (2005), Lev and Zarowin (1999) & Merika (2007)
35	Change in EPS/P	$= \left(\frac{\Delta EPS}{Price\ beg - of\ Year}\right)$	Standard & Poor Compustat	Easton (1999); Liu and Liu (2007), Chen et al., (2010), Malmendier and Tate (2005), Lev and Zarowin (1999) & Merika (2007)
36	BVS	Book Value Per Share	Standard & Poor Compustat	Easton (1999); Liu and Liu (2007), Joos & Lang (1994); Navdal (2010) & Merika (2007)
37	MVE	$MVE = Price * Number\ Of\ Out\ Standing\ Shares$	Standard & Poor Compustat	Liu and Liu (2007), Chiou et al., (2010), D'avolio (2002); Joos & Lang (1994) and Navdal (2010)
38	Net Income	Net income (loss)	Standard & Poor Compustat	Liu and Liu. (2007), Chiou et al., (2010);
39	P/E Ratio	$= \left(\frac{\text{Market value of common stock}}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$	Standard & Poor Compustat	Basu (1977 & 1997); Kane et al.,(1996) & Perez (2009)

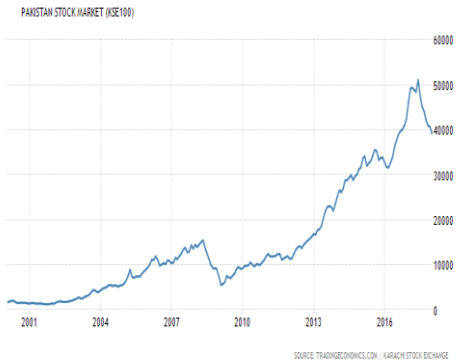
CHAPTER 04

RESULTS AND DISCUSSION

4.1.1 Bubble Detection

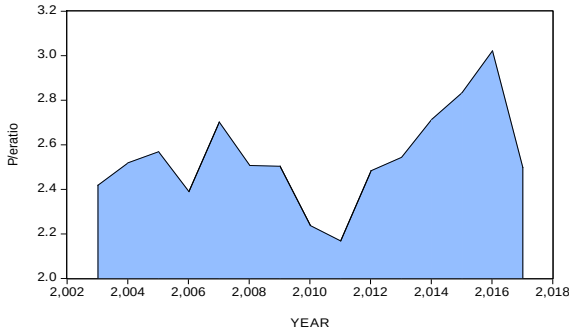
The diagrams drawn below express the graphical representation of bubble-like conditions in PSX. Similar graphical expressions were also made use of various authors like Joos et al., (2010); Odean and Barber (2000); Basu (1977 & 1997) and Gilchrist et al.,(2005), etc in their research on bubble detection in stock markets.

F*ig 4.1.1.1: Pakistan KSE 100 index Data from 2000 to 2017*



Source: Trading economics.com

Fig 4.1.1.2: Data of Firms P/E Ratio for Bubble Detection from 2000 to 2017



The aforementioned diagrams clearly represent bubble detection from “2003 to 2006”, “2007 to 2009” and “2012 to 2017”. The results of both graphical representations are identical. The 1st bubble started in 2004 and reached its highest point in 2005 and then declined in 2006 which represents the crash period. Similarly, the 2nd bubble started in 2006 and reached its zenith in 2008 and declined in 2009 and the 3rd bubble started in 2012 and reached its highest point in 2015 and declined in 2016. During the stated segments of periods change in the firm's market capitalization, change in risk factors, the uncertainty of

the firm's security valuation & the involvement of investors in terms of buying & selling can clearly be derived from the diagrams. Bubble detection is always based on the total number of market firms, their market capitalization and P/E ratio. In this study, the data of 354 firms that existed on the inventory of PSX was considered for bubble detection by P/E ratio. Similarly, 354 firms were considered for the determination of market capitalization KSE 100 index for bubble detection. The market value of company stocks in relation to companies' earnings is determined by the P/E ratio. If the P/E ratio of stock prices is higher it means that firm's share price is also higher than its earnings and predict that firms shares are over-valued. Similarly, the proxy of P/E ratio is also applied to determine stock market bubble and bubble crash periods (Basu 1977 and 1997).

4.2.1 Model 1: How do the firms do investment & financing activities and how investor's dispersion of beliefs affect the stock market bubble?

Table 4.2.1.1: Descriptive Statistics

	Dispersion	*Equity issuance*	*INV*	*MPK*	*Tobin's Q*
Mean	1.1075	0.0825	0.1545	0.0357	0.1232
Median	1.1708	0.0771	0.1549	0.0286	0.1298
Maximum	1.5699	0.1978	0.2807	0.0746	0.1520
Minimum	0.5322	0.0280	0.0205	0.0136	0.0812
Std. Dev.	0.3032	0.0608	0.0766	0.1844	0.2118
Skewness	0.2455	1.7279	0.0057	0.7574	0.4888
Kurtosis	2.3529	11.9343	2.0524	2.4745	2.2993
Observations	1892	1892	1892	1892	1892

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

The above-stated descriptive statistics consist of dispersion of investor's beliefs equity issuance, investment, MPK & Tobin's Q The results have been based on different ranges of data like Mean, Median, maximum & Minimum. The analysis of lag Length criterion & descriptive statistics indicates that all variables are satisfying the various conditions like lag length criterion & descriptive statistics (i.e. S.D, skewness and kurtosis related to them are satisfied). As it is evident from the table of dispersion of investor s beliefs that its mean is equal to 1.107535, the median is equal to -1.170816, S.D is equal to 0.303208, Skewness is equal to 0.245471 and kurtosis is equal to 2.352871. The data used for the purpose contains 1892 observations. Similarly, the descriptive statistics of MPK is that its mean is equal to 0.035667, the median is equal to 0.028634, S.D is equal

to 0.184421, Skewness is equal to 0.757387 and kurtosis is equal to 2.474538. In investment its mean is equal to 0.154462, the median is equal to 0.154863, S.D is equal to 0.076626, Skewness is equal to -0.00568 and kurtosis is equal to 2.052413. The results of descriptive statistics of variables like Investment, Equity issuance, MPK, dispersion & Tobin's Q indicated that data is not normally distributed because when the value of Kurtosis exceeds 15 the data is known as a black swan and not normally distributed.

The study is generally based on sectoral analysis, however, some industries have been grouped on the basis of return on assets and return on equity. The basic purpose of the sectoral analysis is that the dynamics of every sector are different therefore its analysis has also been done independently to get a clear picture of regression results. Moreover, investors also prefer sectoral analysis as it helps them to identify that which sectors give a better and common performance during different stages of the bubble which helps them to carry out profitable investments.

4.2.2 Cement Industry 0f Pakistan

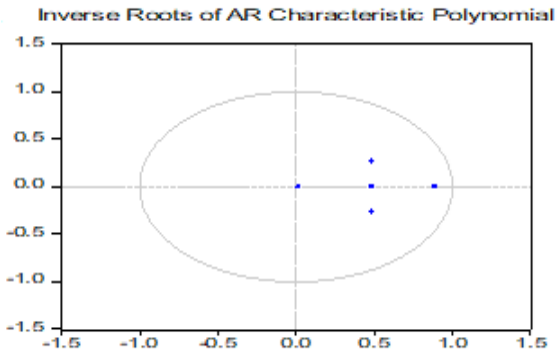
Model Stability Test

Roots of Characteristic Polynomial
Endogenous variables: DISPERSION INV MPK EQ_ISSUE TOBINSQ
Exogenous variables: C
Lag specification: 1 2

Inverse Roots of AR Characteristic Polynomial

Root	*Modulus*
0.9487	0.9487
0.499784 - 0.456129i	0.6766
0.499784 + 0.456129i	0.6766
0.6069	0.6069
0.011707 - 0.512471i	0.5126
0.011707 + 0.512471i	0.5126
-0.019809 - 0.318981i	0.3196
-0.019809 + 0.318981i	0.3196
0.032223 - 0.029263i	0.0435
0.032223 + 0.029263i	0.0435

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag Length Criterion.

VAR Lag Order Selection Criteria.

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	222.3269	NA	1.91E-08	-6.4214	-6.2908	-6.3696
1	379.0726	290.4405	3.50E-10	-10.5610	-9.9081	-10.3023
2	402.1239	40	2.49e-10*	-19.3073*	-9.5933*	-10.3028*
3	411.6004	15.3296*	3.06E-10	-10.5765	-8.8792	-9.9039
4	427.2433	23.46442	3.16E-10	-10.5660	-8.3464	-9.6865
5	441.9818	2037376	3.42E-10	-10.5289	-7.7871	-9.4425

** "indicates lag order selected by the criterion; LR: sequentially modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.2.1: Analysis of Cement Industry of Pakistan in the light of Panel Var Model:

Vector Auto-regression Estimates.
Sample: 1 161
Included observations: 133
t-statistics in [ ]

	DISPERSION(-1)	INV	MPK	EQ_ISSUE	TOBINSQ
DISPERSION(-1)	-0.4477	-0.1275	-0.0047	-0.1040	-0.8696
	0.0686	0.0839	0.0062	0.0489	0.2265
	[-6.524]	[-1.5208]	[-0.7648]	[-2.1280]	[-3.8391]
DISPERSION(-2)	0.2145	0.2880	0.0150	-0.1103	0.6650
	0.0667	0.0815	0.0060	0.0475	0.2203
	[3.2151]	[3.5321]	[2.4769]	[2.3210]	[3.0192]
INV(-1)	0.2002	0.3538	0.0254	-0.1428	-0.3229
	0.0638	0.0779	0.0058	0.0454	0.2105
	[-3.1388]	[4.5394]	[4.4088]	[-3.1429]	[-1.5337]
INV(-2)	0.2783	-0.0943	-0.0220	-0.0852	-0.6568
	0.0562	0.0686	0.0051	0.0400	0.1853
	[4.9567]	[-1.3745]	[4.3230]	[2.1308]	[-3.5438]
MPK(-1)	-0.2780	-1.0017	0.8643	2.5379	6.0605
	0.9871	1.2062	0.0893	0.7032	3.2583
	[-0.2817]	[-0.8305]	[9.6799]	[3.6089]	[1.8600]
MPK(-2)	0.9770	3.7585	-0.2096	-1.3237	-12.9677
	0.9514	1.1625	0.0861	0.6778	3.1402
	[1.0269]	[3.2331]	[-2.4360]	[-1.9531]	[-4.1295]
EQ_ISSUE(-1)	-0.0829	0.1717	0.0383	-0.1934	0.4723
	0.1089	0.1331	0.0099	0.0776	0.3596
	[-0.7613]	[1.2900]	[3.8881]	[-2.4915]	[1.3134]
EQ_ISSUE(-2)	0.1395	0.0851	0.0207	0.0701	0.1649
	0.1095	0.1338	0.0099	0.0780	0.3615
	[1.2742]	[0.6360]	[2.0863]	[0.8986]	[0.4561]
TOBINSQ(-1)	-0.0626	-0.1693	-0.0020	-0.0298	0.5271
	0.0221	0.0270	0.0020	0.0157	0.0728
	[-2.8365]	[-6.2802]	[-0.9946]	[-1.8949]	[7.2378]
TOBINSQ(-2)	-0.0922	0.2531	0.0071	-0.0033	-0.0682
	0.0233	0.0285	0.0021	0.0166	0.0769
	[-3.9608]	[8.8945]	[3.3583]	[-0.1970]	[-0.8876]
C	-0.5609	0.0523	-0.0102	-0.0679	0.4373
	0.0749	0.0915	0.0068	0.0534	0.2472
	[-7.4905]	[0.5717]	[-1.5057]	[-1.2721]	[1.7689]
R-squared.	0.5447	0.5294	0.7190	0.2316	0.5388
Adj. R-squared.	0.5152	0.4988	0.7008	0.1817	0.5088
Sum.sq. resids.	1.6316	2.4363	0.0134	0.8281	17.7774
S.E. equation.	0.1029	0.1258	0.0093	0.0733	0.3398
F-statistic.	18.4264	17.3217	39.4050	4.6408	17.9881
Log likelihood.	146.7252	1.14E+02	543.2003	202.6769	-50.3136

Akaike AIC.	-1.6452	1.24E+00	-6.4509	-2.3234	0.7432
Schwarz SC.	-1.4381	1.0372	-6.2439	-2.1163	0.9503
Mean dependent.	1.0809	0.2248	-0.0363	0.0223	1.3017
S.D. dependent.	0.1478	0.1777	0.1702	0.0811	0.4848

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

*Fig **4.2.1.1a**: Cement Sector Impulse Response*

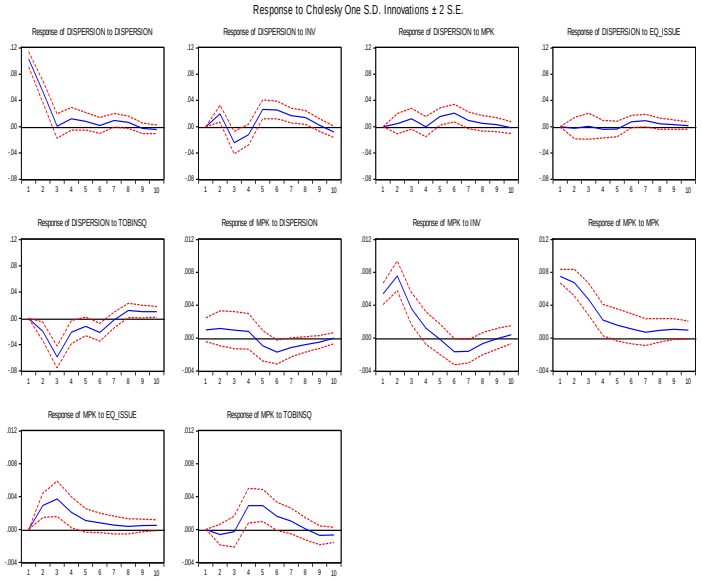
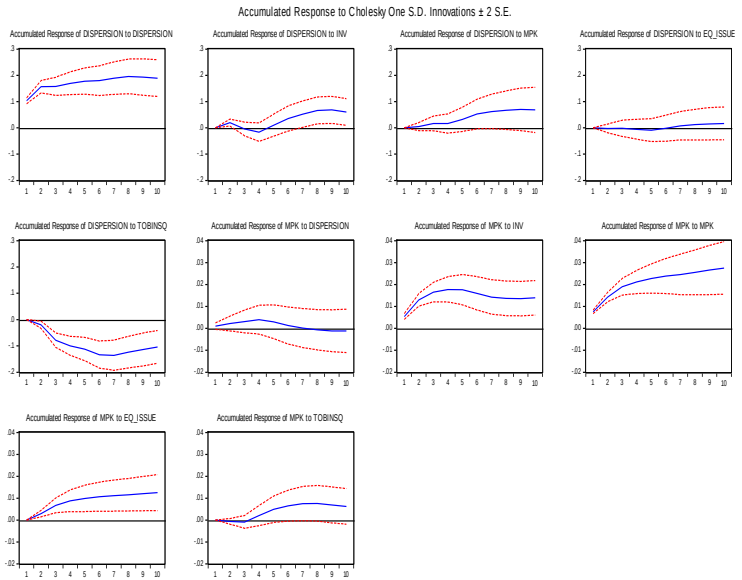


*Fig **4.2.1.1b**: Cement Sector Accumulated Impulse Response*



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$\text{Where,} \quad Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$\text{Shocks} \quad \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.2.2: Cement Industry PANEL VAR Causality Test:

Dependent variable: Dispersion				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
INV	5.5712	2.0000	0.0617	*DISPERSION*	5.4244	2.0000	0.0664
MPK	7.3808	2.0000	0.0250	*INV*	9.7087	2.0000	0.0078
EQ Issu	5.1661	2.0000	0.0755	*EQ Issu*	7.3125	2.0000	0.0258
Tobins Q	7.3125	2.0000	0.0258	*TOBINSQ*	6.4262	2.0000	0.0402
All	35.2748	8.0000	0.0000	*All*	18.2692	8.0000	0.0193

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ---------- 1$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ---------- 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Results of Cement Industry of Pakistan

The causation of the PANEL VAR model with respect to the cement industry indicate that the dependent variables i.e. dispersion of investor's beliefs(-1) & MPK(-1) possess a linear relationship with investment(-1), equity issuance(-1) & Tobin's Q (-1). The dispersion of investors' beliefs does not have significant relation with EQ_Issue at D(-1) and D(-2). MPK has a linear relation with all variables at (-1) and (-2) These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 54 & 71 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of the cement industry of Pakistan is concerned the variable of dispersion of investor's beliefs is creating fluctuations due to its shocks in all variables less Tobin's Q in the short-run as well as in the long run. Similarly, MPK is creating extreme fluctuation in all independent variables as compared to the dispersion of investor's beliefs. However, accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs & MPK of the cement industry creates a bubble in the PSX.

In the light of the Cement industry PANEL VAR causality test it has been observed that the cement industry is highly speculative therefore opportunistic investors play a vital role in investment which also affects the perception of pessimistic investors, as a result, the dispersion of beliefs gets increased. This further aggravates the speculations which give rise to short selling. This point is further confirmed by dispersion & MPK and dispersion & equity issuance results. The results also indicate that additional investment & financing activities (MPK) by the firms in the cement industry generate investment opportunities & speculations. The granger causality test further explains that in the cement industry dispersion of investor's beliefs & MPK (firms investing and financing activities) effect the PSX capitalization index and leads to bubble creation. Results also confirm that the investment in the cement industry is generally based on speculations in view of the low knowledge & pessimism of the investors.

4.2.3 Chemical & Pharmaceutical Industries Of Pakistan

Model Stability Test

Roots of Characteristic Polynomial

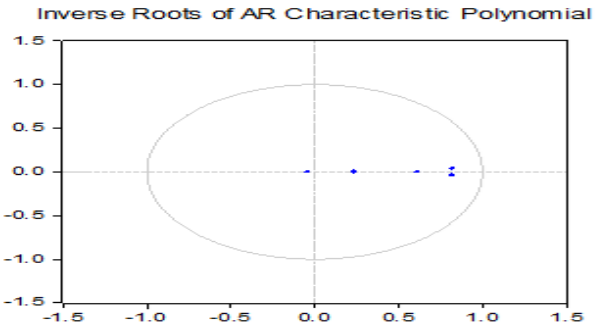
Endogenous variables: DISPERSION INV MPK EQISSU TOBINSQ

Exogenous variables: C

Lag specification: 1 2

Root	*Modulus*
0.6999	0.6999
0.297045 - 0.324046i	0.4396
0.297045 + 0.324046i	0.4396
0.368740 - 0.195866i	0.4175
0.368740 + 0.195866i	0.4175
0.2857	0.2857
0.077491 - 0.216636i	0.2301
0.077491 + 0.216636i	0.2301
-0.105873 - 0.082162i	0.1340
-0.105873 + 0.082162i	0.134014

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag-Length Criterion

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-136.4270	NA	0.0001	4.7142	4.8888	4.7825
1	-46.9688	161.0252*	8.98e-06*	2.5656*	3.6128*	2.9752*
2	-36.3500	17.3439	0.0000	3.0450	4.9648	3.7959
3	-15.7931	30.1503	0.0000	3.1931	5.9856	4.2854
4	7.5153	30.3008	0.0000	3.2495	6.9146	4.6831
5	31.6332	27.3337	0.0000	3.2789	7.8166	5.0539

** "indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.3.1: Analysis of Chemical & Pharmaceutical Industry Of Pakistan in the Light of Panel VAR Model

Vector Auto-regression Estimates.
Sample: 1 422
Included observations: 382
t-statistics in [ ]

	DISPERSION	*INV*	*MPK*	*EQissu*	*TOBINSQ*
DISPERSION(-1)	0.7817	0.0285	-0.0061	2.3225	-0.0384
	0.0593	0.0246	0.0142	1.0100	1.0981
	[13.1931]	[1.1589]	[-0.4261]	[2.2995]	[-0.0349]
INV(-1)	0.5029	0.1636	0.1321	24.9024	5.0093
	0.2317	0.0963	0.0556	39.4941	4.2941
	[2.1704]	[1.6983]	[2.3748]	[0.6305]	[1.1665]
MPK(-1)	0.2011	-0.4093	0.8072	-35.3827	-8.0561
	0.2799	0.1164	0.0672	47.7064	5.1870

	[0.7185]	[-3.5173]	[12.0110]	[-0.7416]	[-1.5531]
EQissu (-1)	0.0017	0.0002	0.0002	-0.0222	-0.0047
	0.0006	0.0003	0.0002	0.1030	0.0112
	[2.8426]	[0.7922]	[1.2902]	[-0.2153]	[-0.4158]
TOBINSQ(-1)	-0.0009	0.0002	0.0024	-0.3951	0.4191
	0.0050	0.0021	0.0012	0.8471	0.0921
	[-0.1819]	[0.0815]	[1.9839]	[-0.4664]	[4.5505]
C	-0.1950	-0.0225	0.0408	15.3129	4.1523
	0.0899	0.0374	0.0216	15.3142	1.6651
	[-2.1700]	[-0.6015]	[1.8909]	[0.9999]	[2.4938]
R-squared.	0.6859	0.1760	0.6163	0.0152	0.2156
Adj. R-squared.	0.6692	0.1322	0.5959	-0.0371	0.1739
Sum sq. resids.	10.1051	1.7464	0.5827	0.2936	3470.5690
S.E. equation.	0.3279	0.1363	0.0787	0.5589	6.0763
F-statistic.	41.0587	4.0168	30.1948	0.2910	5.1669
Log likelihood.	-27.2876	60.4878	115.3711	-541.1307	-319.2390
Akaike AIC.	0.6658	-1.0898	2.1874	10.9426	6.5048
Schwarz SC.	0.8221	-0.9334	2.0311	11.0989	6.6611
Mean dependent.	1.0089	-0.1473	0.1829	6.1202	3.3986
S.D. dependent.	0.5701	0.1463	0.1238	54.8759	6.6851

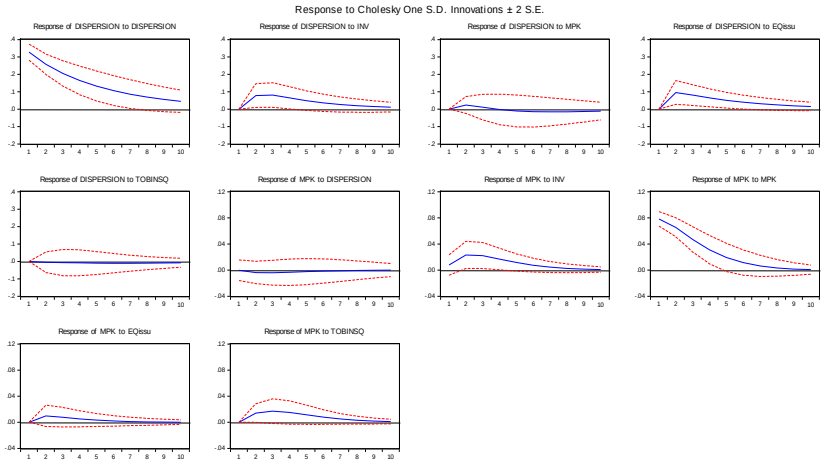
Econometric model:

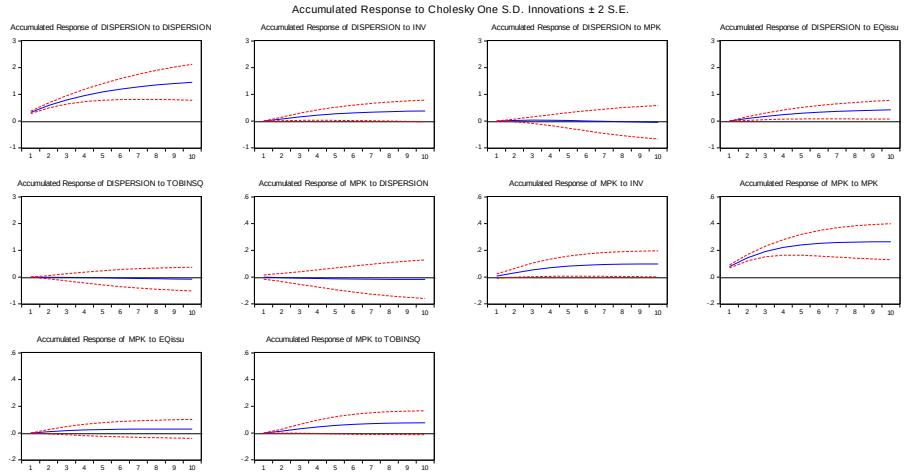
$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.3.1a: Chemical & Pharmaceutical Industry Impulse Response Fig 4.2.3.1b: Chemical & Pharmaceutical Industry Accumulated Impulse Response.





Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$\textit{Where,}\quad Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$\textit{Shocks}\quad \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.3.2: Chemical & Pharmaceutical Industry PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*Df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
MPK	0.3233	1	0.5696	*DISPERSION*	0.2222	1	0.6374
INV	4.8585	1	0.0275	*INV*	4.0496	1	0.0442
EQ Issu	8.1496	1	0.0043	*EQ*	4.9481	1	0.0261
TOBINSQ	0.1187	1	0.7304	*TOBINSQ*	12.5161	1	0.0004
All	12.4657	4	0.0142	*All*	15.1596	4	0.0044

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Chemical & Pharmaceutical Industries of Pakistan

The causation of the PANEL VAR model concerning Chemical & Pharmaceutical Industries Of Pakistan indicates that the dependent variables i.e. dispersion of investor's beliefs & MPK possess a linear relationship with investment, equity issuance & Tobin's Q at (-1). Whereas, at lag(-1) MPK and Tobin's Q have an inverse relationship with the dispersion of investor's beliefs. However, MPK has a linear relationship with all the variables accept dispersion of investor's beliefs at lag (1). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 68 & 61 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of the chemical & pharmaceutical industry of Pakistan is concerned the variable of dispersion of investor's beliefs is creating excessive fluctuations due to its shocks in investment & equity issuance variables less Tobin's Q & MPK in the short run as well as in the long run. Similarly, MPK is creating extreme fluctuation in all independent variables as compared to the dispersion of investor's beliefs. However, accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results show that in Chemical & Pharmaceutical Industries bubble is created due to their investor's speculative beliefs as well as investments in the STK MKT.

In the light of the chemical & pharmaceutical Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the cement industry. The variation is that in cement industry firms additional investment & financing activities (MPK) play a major role in investment, financing & equity issuance activities. Whereas, in chemical and pharmaceutical industries dispersion and additional investment & financing activities both equally affect on PSX market index. The most interesting result is that MPK & dispersion both do not affect each other. The reason behind this is that these industries are highly profitable, therefore investors take speculations and additional investment & financing activities in the industries seriously.

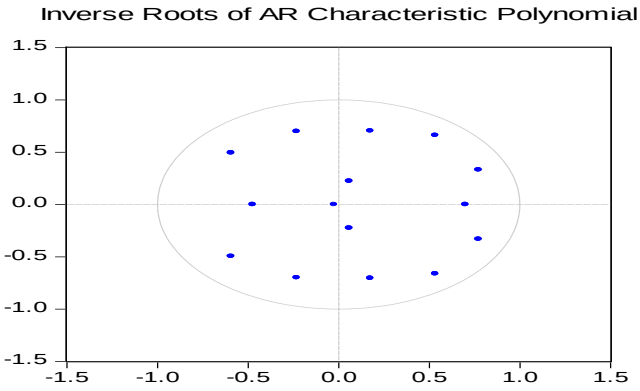
4.2.4 Corporations of Pakistan

Model Stability Test

Roots of Characteristic Polynomial
Endogenous variables: DISPERSION INV MPK EQIssu TOBINSQ
Lag specification: 1 3

Root	Modulus
0.534408 - 0.661737i	0.850581
0.534408 + 0.661737i	0.850581
0.772187 - 0.331377i	0.840288
0.772187 + 0.331377i	0.840288
-0.593413 - 0.494633i	0.772529
-0.593413 + 0.494633i	0.772529
-0.229579 - 0.699486i	0.736198
-0.229579 + 0.699486i	0.736198
0.176051 - 0.704037i	0.725714
0.176051 + 0.704037i	0.725714
0.700739	0.700739
-0.47284	0.47284
0.058626 - 0.224843i	0.23236
0.058626 + 0.224843i	0.23236
-0.02481	0.024808

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag Length Criterion

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-12.8193	NA	0.0000	0.7583	0.9551	0.8323
1	53.4317	115.5868	0.0000	-0.9971	0.1839	-0.5527
2	135.0440	125.0231	2.39E-08	-3.4061	-2.2411*	-4.5914*
3	166.6064	41.63548*	1.99e-08*	-3.6854*	-0.5362	-2.5003
4	184.6230	19.9332	0.0000	-3.3882	0.7451	-1.8328

** "indicates lag order selected by the criterion; LR: sequentially modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.4.1: Analysis of Corporations of Pakistan in the Light of Panel Var Model

Vector Auto-regression Estimates.
Sample: 1 75
Included observations: 50
t-statistics in [ ]

	DISPERSION	*INV*	*MPK*	*EQIssu*	*TOBINSQ*
DISPERSION(-1)	0.7957	0.0027	0.0257	0.6251	0.9561
	0.1597	0.0056	0.0077	0.2622	0.3189
	[4.9817]	[0.4836]	[3.3345]	[2.3841]	[2.9976]
DISPERSION(-2)	-0.1356	-0.0044	-0.0264	0.4815	0.1832
	0.2289	0.0080	0.0111	0.3757	0.4571
	[-0.5923]	[-0.5463]	[-2.3855]	[1.2813]	[0.4007]
DISPERSION(-3)	-0.2282	0.0021	0.0060	-0.2534	0.3107
	0.1871	0.0066	0.0090	0.3071	0.3736
	[1.2194]	[0.3217]	[0.6638]	[0.8250]	[0.8316]
INV(-1)	-8.4011	-0.2935	-0.0119	-6.9610	-1.5673
	4.7910	0.1677	0.2316	7.8647	9.5669
	[-1.7535]	[-1.7502]	[-0.0512]	[-0.8850]	[-0.1638]
INV(-2)	-0.9046	-0.3086	-0.1423	-2.8815	0.7962

	2.6022	0.0911	0.1258	4.2718	5.1963
	[-0.3476]	[-3.3877]	[-1.1312]	[-0.6745]	[0.1532]
INV(-3)	3.7176	-0.1317	-0.0410	-1.5309	-3.6846
	2.3207	0.0812	0.1122	3.8096	4.6341
	[1.6019]	[-1.6209]	[-0.3656]	[-0.4018]	[-0.7951]
MPK(-1)	0.7277	1.0644	0.9242	0.2397	-13.8254
	3.6653	0.1283	0.1772	6.0169	7.3192
	[0.1985]	[8.2959]	[5.2158]	[0.0398]	[-1.8889]
MPK(-2)	6.4526	3.2648	-0.3086	10.9283	8.6452
	6.9965	0.2449	0.3382	11.4853	13.9711
	[0.9222]	[13.3304]	[-0.9125]	[0.9515]	[0.6187]
MPK(-3)	27.9168	-0.5840	0.4484	18.1053	-4.2298
	17.2111	0.6025	0.8320	28.2532	34.3683
	[1.6220]	[-0.9692]	[0.5389]	[0.6408]	[-0.1230]
EQIssu(-1)	0.1926	0.0013	-0.0021	-0.0621	0.4473
	0.1080	0.0038	0.0052	0.1774	0.2157
	[1.7827]	[0.3349]	[-0.4025]	[-0.3501]	[2.0733]
EQIssu(-2)	0.0284	0.0002	-0.0004	-0.0047	0.0042
	0.0282	0.0010	0.0014	0.0463	0.0563
	[1.0071]	[0.1767]	[-0.2686]	[-0.1014]	[0.0751]
EQIssu(-3)	0.0040	-0.0014	0.0001	-0.0133	0.0050
	0.0248	-0.0009	0.0012	-0.0407	-0.0495
	[0.1618]	[-1.6360]	[0.0792]	[-0.3278]	[0.1006]
TOBINSQ(-1)	0.2530	0.0009	0.0027	0.1514	0.2754
	0.0836	-0.0029	0.0040	-0.1372	-0.1669
	[3.0268]	[0.3042]	[0.6584]	[1.1033]	[1.6504]
TOBINSQ(-2)	-0.0860	-0.0016	-0.0039	0.1033	-0.4168
	0.0976	-0.0034	-0.0047	-0.1602	-0.1949
	[-0.8812]	[-0.4554]	[-0.8148]	[0.6447]	[-2.1383]
TOBINSQ(-3)	0.0986	0.0002	0.0054	-0.0068	-0.0266
	0.0841	-0.0029	0.0041	-0.1381	-0.1680
	[1.1719]	[0.0759]	[1.3157]	[-0.0492]	[-0.1580]
C	-0.7109	0.0025	0.0114	-0.4565	2.7333
	-0.3624	-0.0127	-0.0175	-0.5948	-0.7236
	[-1.9619]	[0.2009]	[0.6479]	[-0.7674]	[3.7774]
R-squared.	0.7281	0.9818	0.7043	0.2112	0.5470
Adj. R-squared.	0.6006	0.9733	0.5657	-0.1585	0.3346
Sum sq. resids.	6.1896	0.0076	0.0145	16.6795	24.6810
S.E. equation.	0.4398	0.0154	0.0213	0.7220	0.8782
F-statistic.	5.7115	115.1079	5.0815	0.5713	2.5756
Log likelihood.	-18.9492	141.9590	126.4656	-42.7405	-52.1450

Akaike AIC.	1.4562	-5.2483	-4.6027	2.4475	2.8394
Schwarz SC.	2.0800	-4.6246	-3.9790	3.0713	3.4631
Mean dependent.	0.9733	0.0266	0.0115	0.1822	0.9723
S.D. dependent.	0.6959	0.0942	0.0323	0.6708	1.0766

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.4.1a: Corporations Impulse Response

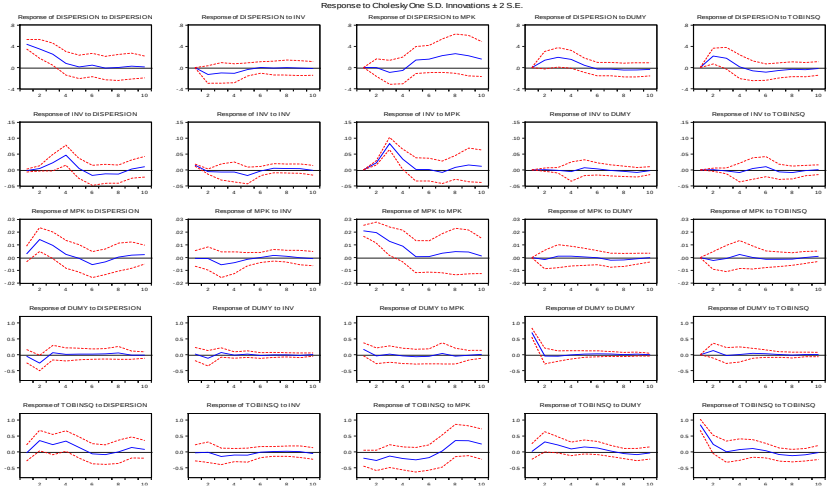
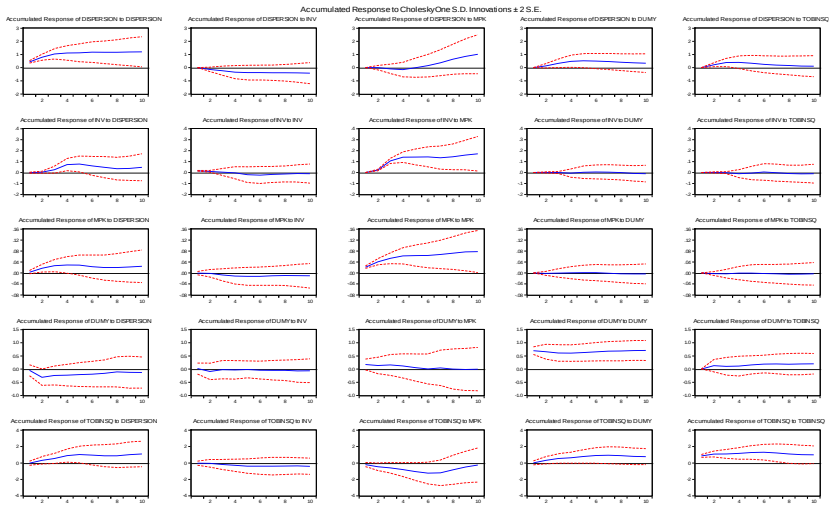


Fig 4.2.4.1b: Corporations Accumulated Impulse Response



*i) Dumy= Equity Issuance= (New shares – share repurchase)/beginning market value * 100*

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$Where, \quad Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$Shocks \quad \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$; *Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$; *Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.4.2: Corporations of Pakistan PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
MPK	14.3143	3	0.0025	*DISPERSION*	8.2015	3	0.042
INV	9.2739	3	0.0259	*INV*	2.2150	3	0.5290
EQ Issu	19.8630	3	0.0002	*EQ Issu*	5.1503	3	0.1611
TOBINSQ	12.0644	3	0.0072	*TOBIN'S*	0.6224	3	0.8913
All	51.1995	12	0	*All*	27.3212	12	0.0069

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - - - - - - - - - - - - - - - - - - - 1$$

$$Where,\ \ Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' - - - - - - - - - - - - - - 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Corporations of Pakistan

Every corporation is a company but every company cannot be a corporation. Company is based on sole proprietorship and partnerships, whereas, corporations are larger companies with larger businesses that are based on shareholders. The causation of the PANEL VAR model with respect to Corporations of Pakistan indicates that the dependent variable i.e. dispersion of investor's beliefs and MPK possesses a linear relationship with investment, MPK, equity issuance & Tobin's Q at all lags (-1) (-2) &(-3). These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 60 & 56 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of Corporations of Pakistan is concerned the variable of dispersion of investor's beliefs is creating extreme fluctuations due to its shocks in all variables in the short-run as well as in the long run. However, accumulative impulse response again confirms that dependent variable dispersion of investor's beliefs also possesses a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs of the Corporations industry creates a bubble in the PSX & highly speculative market.

In the light of the Corporations of Pakistan Industry PANEL VAR causality test, it has been observed that the general test results are slightly different from the cement industry. The variation is that in cement industry firms additional investment & financing activities (MPK) play a major role in investment, financing & equity issuance activities. Whereas, incorporation dispersion of investor's beliefs is the sole source of bubble creation in PSX. The results prove that corporations are also included in highly speculative markets.

4.2.5 Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan

Model Stability Test

Roots of Characteristic Polynomial

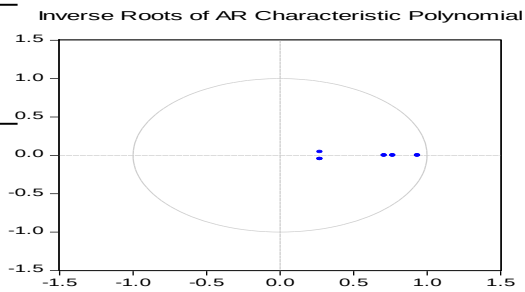
Endogenous variables: DISPERSION INV MPK EQ_issue TOBINSQ

Exogenous variables: C

Lag specification: 1 2

Root	Modulus
0.831219 - 0.039315i	0.832148
0.831219 + 0.039315i	0.832148
0.575273 - 0.063767i	0.578796
0.575273 + 0.063767i	0.578796
0.214265 - 0.361176i	0.419949
0.214265 + 0.361176i	0.419949
-0.066520 - 0.401999i	0.407466
-0.066520 + 0.401999i	0.407466
-0.085864 - 0.109729i	0.139331
-0.085864 + 0.109729i	0.139331

No root lies outside the unit circle.
VAR satisfies the stability condition.



Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan

Lag Length Criterion

VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-528.3950	NA	0.3E-06	6.0271	6.1168	6.0634
1	-76.9351	872.3114	2.30E-06*	1.2083*	1.7466*	1.4266*
2	-55.3351	40.5152*	2.40E-06	1.2467	2.2337	1.6470
3	-38.3876	30.8311	2.63E-06	1.3377	2.7733	1.9199

** "indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.5.1: Analysis of Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan in the Light of Panel Var Model

Vector Auto-regression Estimates.
Sample: 1 237
Included observations: 217
t-statistics in [ ]

	DISPERSION	*INV*	*MPK*	*EQ_issue*	*TOBINSQ*
DISPERSION(-1)	0.8847	0.0219	0.0659	0.2226	0.0462
	0.0249	0.0224	0.0431	0.0759	0.0886
	[35.5763]	[0.9783]	[1.5293]	[2.9327]	[0.5218]
INV(-1)	0.0015	0.3371	0.2617	0.3875	-0.0778
	0.0746	0.0672	0.1292	0.2276	0.2657
	[0.0203]	[5.0182]	[2.0249]	[1.7021]	[-0.2929]
MPK(-1)	0.0446	-0.0646	0.7766	-0.0118	0.0797
	0.0213	0.0192	0.0370	0.0651	0.0760
	[2.0916]	[-3.3627]	[21.015]	[-0.1806]	[1.0493]
EQ_issue(-1)	0.1260	-0.0297	0.0080	0.2005	0.0345
	0.0220	0.0199	0.0382	0.0673	0.0785
	[5.7182]	[-1.4982]	[0.2088]	[2.9798]	[0.4393]

TOBINSQ(-1)	-0.0026	0.0246	-0.0118	-0.0596	0.7620
	0.0128	0.0115	0.0221	0.0390	0.0455
	[0.2056]	[2.1387]	[-0.533]	[-1.5294]	[16.7578]
C	-0.2210	0.1118	0.0275	0.4968	0.4905
	-0.0519	-0.0468	-0.0900	-0.1585	-0.1850
	[-4.2570]	[2.3904]	[0.3061]	[3.1344]	[2.6515]
R-squared.	0.9019	0.1886	0.7341	0.1094	0.6241
Adj. R-squared.	0.8996	0.1694	0.7278	0.0883	0.6151
Sum sq. resids.	5.9647	4.8395	17.9091	55.5794	75.7064
S.E. equation.	0.1681	0.1514	0.2913	0.5132	0.5990
F-statistic.	38.8158	9.8114	116.4795	5.1833	70.0499
Log likelihood.	82.0444	104.7263	-37.2470	-160.1235	-193.6553
Akaike AIC.	-0.7009	-0.9099	0.3986	1.5311	1.8401
Schwarz SC.	-0.6074	-0.8165	0.4920	1.6245	1.9336
Mean dependent.	1.7650	0.1985	0.3584	0.1257	1.5100
S.D. dependent.	0.5307	0.1662	0.5584	0.5375	0.9656

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.5.1a: Food, Electrical Machinery & Apparatus, IT & Petroleum Petroleum Sectors Sectors impulse Response

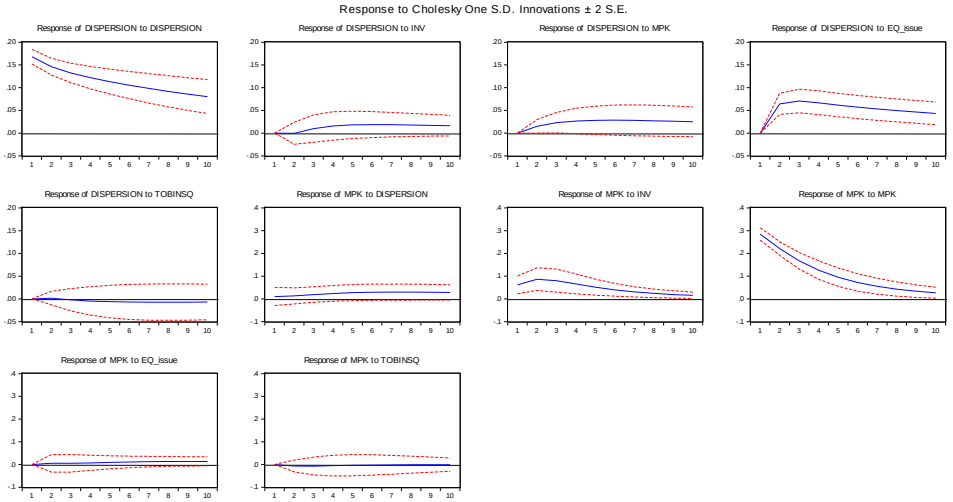
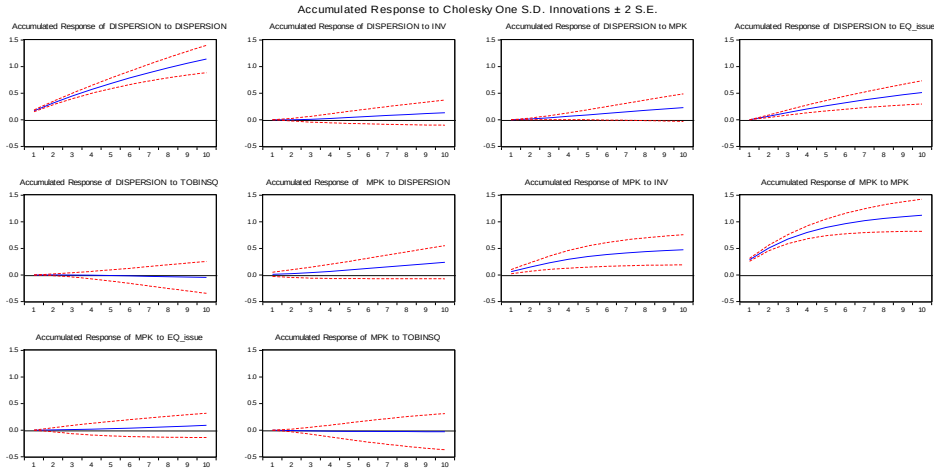


Fig 4.2.5.1b: Food, Electrical Machinery & Apparatus, IT & Accumulate Impulse Response



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$\text{Shocks } \eta_{it} = \eta_{it}^{mpk} \& \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$; *Net Equity Issuance=* $\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$; *Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.5.2: of Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors of Pakistan PANEL-VAR-Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*Df*	*Prob.*	*Excluded*	*Chi-sq*	*Df*	*Prob.*
MPK	3.3850	1	0.0658	*DISPERSION*	0.5837	1	0.4448
INV	5.1621	1	0.0231	*INV*	4.2777	1	0.0386
EQ Issu	6.7835	1	0.0092	*EQ*	0.0057	1	0.94
TOBINSQ	1.6539	1	0.1984	*TOBINSQ*	0.0287	1	0.8654
All	18.2717	4	0.0011	*All*	4.8418	4	0.3039

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------\ 1$$

$$Where,\ \ Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------\ 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan

The causation of the PANEL VAR model with respect to Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan indicate that the dependent variable i.e. dispersion of investor's beliefs and MPK possess a linear relationship with investment, MPK, equity issuance & Tobin's Q at lag(-1). While MPK has an inverse relation with Tobin's Q at (-1). These results prove that if the dispersion of investor's beliefs and MPK increases, the rest of the variables shall also increase. These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 90 & 73 respectively, which means that independent variables are effectively explaining the DV.

So far as the of impulse response & accumulated impulse response of Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan is concerned the variable of dispersion of investor's beliefs is creating extreme fluctuations due to its shocks in all variables in short-run as well as in the long run. However, accumulative impulse response again confirms that dependent variable dispersion of investor's beliefs also possesses a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs of Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan industries create a bubble in the PSX & highly speculative markets.

In the light of Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the corporate industry. In Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan dispersion of investor's beliefs is the sole source of bubble creation in PSX. The results prove that these industries are also included in highly speculative markets.

4.2.6 Sugar Industry of Pakistan

Model stability Test

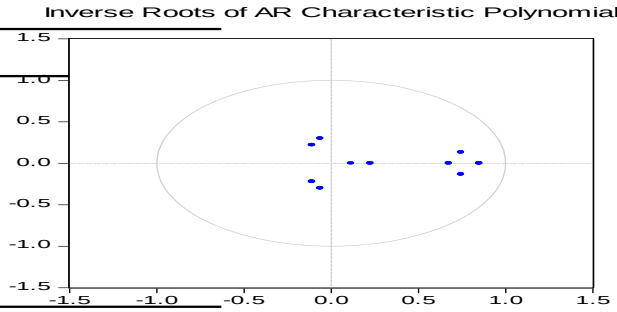
Roots of Characteristic Polynomial

Endogenous variables: DISPERSION INV MPK EQ_issu TOBINSQ

Lag specification: 1 2

Root	Modulus
1.076726	1.076726
0.756899	0.756899
0.491652 - 0.540581i	0.730719
0.491652 + 0.540581i	0.730719
0.464208	0.464208
-0.17411	0.174107
0.130982	0.130982
-0.033055 - 0.111680i	0.116469
-0.033055 + 0.111680i	0.116469
-0.02759	0.027587

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag Length Criterion

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-1044.4400	NA	0.007742	9.328352	9.404265	9.358991
1	-706.5920	657.6762	6.4E-04*	6.547486*	7.0030*	6.7313*
2	-696.0670	20.0205	5.46E-04	6.6762	7.5112	7.0132
3	-670.6490	47.2226	5.44E-04	6.6724	7.8870	7.1627
4	-649.0380	39.1863	5.62E-04	6.7026	8.2967	7.3460
5	-625.1100	42.3280*	5.69E-04	6.7121	8.6858	7.5087

** "indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.6.1: Analysis of Sugar Industry of Pakistan in the Light of Panel Var Model

Vector Auto-regression Estimates.
Sample: 1 258
Included observations: 232
t-statistics in [ ]

	DISPERSION	*INV*	*MPK*	*EQ_issu*	*TOBINSQ*
DISPERSION(-1)	0.7553	0.0063	0.0009	0.1443	0.0852
	0.0597	0.0154	0.0055	0.2190	0.0528
	[12.6614]	[0.4116]	[0.1689]	[0.6586]	[1.61211]
INV(-1)	1.0962	0.3930	0.0710	-0.8660	-0.6910
	0.3744	0.0965	0.0347	1.3747	0.3316
	[2.9277]	[4.0720]	[2.0445]	[-0.6299]	[-2.0838]
MPK(-1)	0.3578	0.1190	0.5615	0.3924	0.5470
	0.4125	0.1063	0.0383	1.5146	0.3654
	[0.8673]	[1.1194]	[14.669]	[0.2591]	[1.4972]
EQ_issu(-1)	0.0235	-0.0023	-0.0003	-0.0083	0.0107
	0.0104	0.0027	0.0010	0.0382	0.0092
	[2.2607]	[-0.8633]	[-0.2549]	[-0.2174]	[1.1607]
TOBINSQ(-1)	0.1480	-0.0174	-0.0173	-0.1126	0.6579
	0.0532	0.0137	0.0049	0.1951	0.0471

	[2.7839]	[-1.2667]	[-3.5158]	[-0.5770]	[13.976]
C	-0.6091	0.0795	-0.0408	0.1843	0.4217
	0.1009	0.0260	0.0094	0.3704	0.0894
	[-6.0376]	[3.0563]	[-4.3635]	[0.4974]	[4.7194]
R-squared.	0.6548	0.1867	0.7536	0.0108	0.7981
Adj. R-squared.	0.6373	0.1456	0.7411	-0.0392	0.7879
Sum sq. resids	12.4328	0.8259	0.1070	167.5880	9.7521
S.E. equation.	0.3544	0.0913	0.0329	1.3011	0.3139
F-statistic.	37.5518	4.5457	60.5433	0.2164	78.2702
Log likelihood.	-36.9732	105.3838	212.6563	-173.5350	-24.2233
Akaike AIC.	0.8185	-1.8930	-3.9363	3.4197	0.5757
Schwarz SC.	0.9702	-1.7414	-3.7847	3.5714	0.7273
Mean dependent.	1.2989	0.0971	0.0797	0.1894	1.0431
S.D. dependent.	0.5884	0.0988	0.0646	1.2763	0.6815

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.6.1a: Sugar Industry Impulse Response

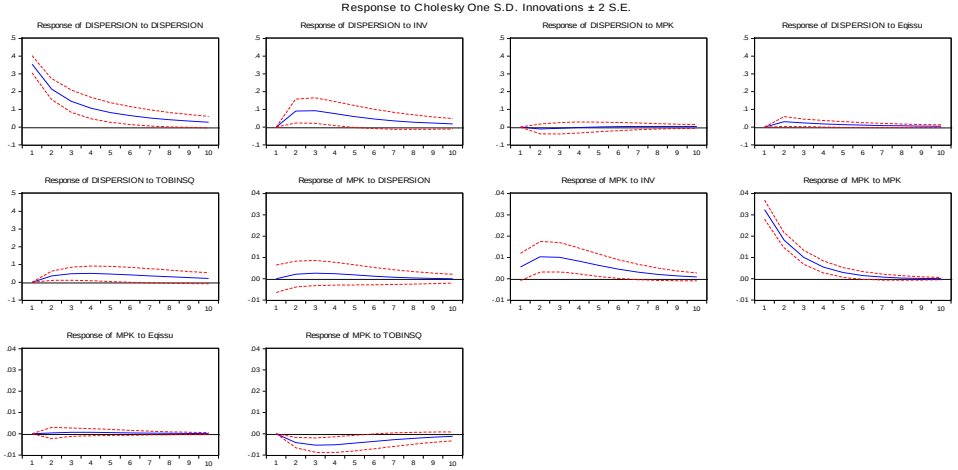
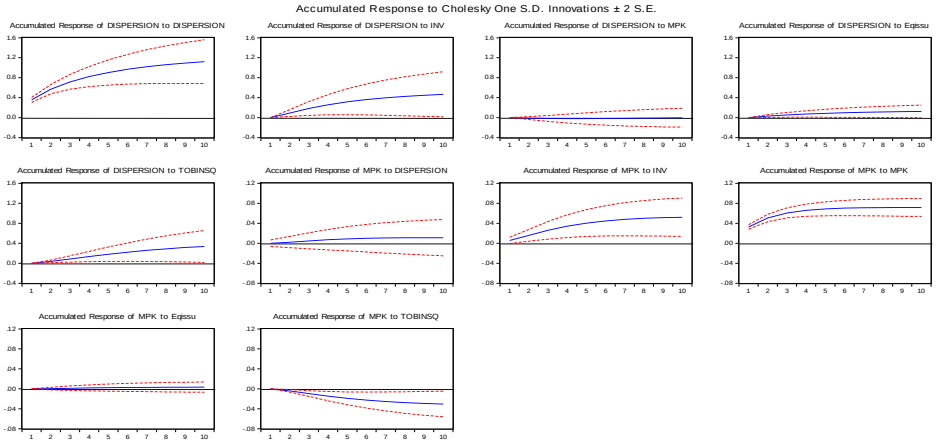


Fig 4.2.6.1b: Sugar Industry Accumulated Impulse Response



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$\textit{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$\textit{Shocks } \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.6.2: Sugar Industry of Pakistan PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
INV	5.4453	1	0.0196	*DISPERSION*	0.9137	1	0.3391
MPK	0.7843	1	0.3758	*INV*	5.6318	1	0.0176
EQ	16.3493	1	0.0001	*EQ*	0.4938	1	0.4822
TOBINSQ	0.4615	1	0.4969	*TOBINSQ*	4.5599	1	0.0327
All	27.4600	4	0	*All*	6.3911	4	0.1718

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} ------------------- 1$$

$$Where,\ \ Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' ------------- 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Sugar Industry of Pakistan

The causation of the PANEL VAR model with respect to the sugar industry Of Pakistan indicates that the dependent variables i.e. dispersion of investor's beliefs possess a linear relationship with investment, equity issuance & Tobin's Q at lag(-1). Whereas, the MPK possesses a linear relationship with all variables except Tobin's Q and EQ issue where the relationship is inverse at lag (-1). These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 65 & 75 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of the sugar industry of Pakistan is concerned the variable of dispersion of investor's beliefs is creating excessive fluctuations due to its own shocks in investment & equity issuance, Tonin's Q & MPK in the short-run as well as in the long run. Similarly, MPK is creating extreme fluctuation in all independent variables as compared to the dispersion of investor's beliefs. However, accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results show that in sugar Industry bubble is created due to their investor's speculative beliefs as well as investments in the STK MKT.

In the light of the sugar Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the cement industry. The variation is that in cement industry firms additional investment & financing activities (MPK) play a major role in investment, financing & equity issuance activities. Whereas, in the sugar industry dispersion of investor's beliefs and additional investment & financing activities (MPK) both equally affect on PSX market index. The most interesting result is that MPK & dispersion both slightly each other. The reason behind this is that these industries are highly profitable, therefore investors take speculations and additional investment & financing activities in the industries seriously.

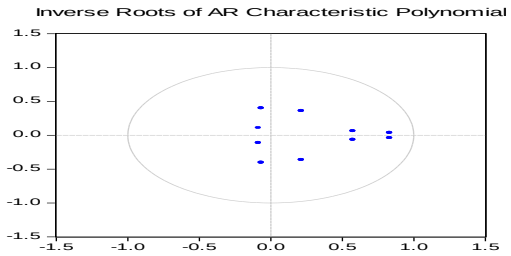
4.2.7 Minerals Sector of Pakistan

Roots of Characteristic Polynomial

Endogenous variables: DISPERSION INV MPK EQissue TOBINSQ
Exogenous variables: C
Lag specification: 1 2

Root	Modulus
0.831219 - 0.039315i	0.832148
0.831219 + 0.039315i	0.832148
0.575273 - 0.063767i	0.578796
0.575273 + 0.063767i	0.578796
0.214265 - 0.361176i	0.419949
0.214265 + 0.361176i	0.419949
-0.066520 - 0.401999i	0.407466
-0.066520 + 0.401999i	0.407466
-0.085864 - 0.109729i	0.139331
-0.085864 + 0.109729i	0.139331

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag Length Criterion

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-69.7799	NA	7.68E-06	2.4123	2.5838	2.4796
1	28.8624	178.1926	7.16E-07	0.0367	1.0660*	0.4408*
2	55.6790	44.11764*	6.86e-07*	-0.0219*	1.8651	0.7190
3	69.2739	20.1729	20.1729	0.3460	3.0907	1.4236

** indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information*

Table 4.2.7.1: Analysis of Mineral Sector of Pakistan in the Light of Panel Var Model

Vector Auto-regression Estimates.
Sample: 1 83
Included observations: 69
t-statistics in [ ]

	DISPERSION	*INV(2)*	*MPK*	*EQissue*	*TOBINSQ*
DISPERSION(-1)	-0.6308	-0.0453	-0.0133	-1.0605	-0.0545
	0.1515	0.0775	0.0101	1.8121	0.1165
	[-4.1638]	[-0.5847]	[-1.3172]	[-0.5852]	[-0.4678]
DISPERSION(-2)	0.0659	0.0424	0.0078	0.2397	0.0804
	0.1432	0.0732	0.0096	1.7126	0.1101
	[0.4600]	[0.5798]	[0.8193]	[0.1399]	[0.7304]
INV(-1)	-0.4081	0.2579	-0.0600	4.2974	-0.0319
	0.3404	0.1740	0.0227	4.0716	0.2616
	[-1.1988]	[1.4820]	[-2.6438]	[1.0554]	[-0.1219]
INV(-2)	0.7041	0.0235	0.0709	-0.0942	0.2715
	0.3086	0.1578	0.0206	3.6912	0.2372

	[2.2817]	[-0.1488]	[3.4435]	[-0.0255]	[1.1445]
MPK(-1)	-2.4704	-0.7803	0.5509	8.1886	4.8681
	2.3553	1.2041	0.1571	28.1728	1.8104
	[-1.0488]	[-0.6480]	[3.5072]	[0.2906]	[2.6889]
MPK(-2)	2.5199	1.1127	-0.1962	1.6344	-6.6396
	2.1720	1.1104	0.1449	25.9804	1.6695
	[1.1601]	[1.0020]	[-1.3546]	[0.0629]	[-3.9769]
EQissue(-1)	-0.0322	0.0088	-0.0009	-0.1982	0.0111
	0.0152	0.0077	0.0010	0.1812	0.0116
	[-2.1264]	[1.1328]	[-0.8617]	[-1.0936]	[0.9503]
EQissue(-2)	0.0284	0.0074	0.0028	-0.1979	0.0134
	0.0209	0.0107	0.0014	0.2502	0.0161
	[1.3555]	[0.6877]	[2.0140]	[-0.7906]	[0.8334]
TOBINSQ(-1)	-0.2719	0.0238	-0.0262	0.0549	0.6123
	0.1712	0.0875	0.0114	2.0476	0.1316
	[-1.5885]	[0.2717]	[-2.2953]	[0.0268]	[4.6538]
TOBINSQ (-2)	0.4059	-0.0421	0.0261	2.8722	0.5610
	0.1856	0.0949	0.0124	2.2196	0.1426
	[2.1875]	[-0.4441]	[2.1119]	[1.2940]	[3.9329]
C	-0.1223	0.0689	0.0246	-0.4755	0.1506
	0.1891	0.0967	0.0126	2.2620	0.1454
	[-0.6465]	[0.7124]	[1.9535]	[-0.2102]	[1.0361]
R-squared.	0.8059	0.4101	0.8274	0.0840	0.6230
Adj. R-squared.	0.7876	0.3545	0.8112	-0.0024	0.5874
Sum sq. resids.	9.6122	1.7627	2.9593	111.8627	62.7177
S.E. equation.	0.2459	0.1053	0.1364	0.8388	0.6281
F-statistic.	44.0080	7.3693	50.8260	0.9727	17.5167
Log likelihood.	5.5889	154.0056	108.6698	-209.1570	-158.5270
Akaike AIC.	0.1190	-1.5772	-1.0591	2.5732	1.9946
Schwarz SC.	0.4083	-1.2879	-0.7697	2.8626	2.2839
Mean dependent.	1.4791	0.1374	0.2860	0.1032	1.5214
S.D. dependent.	0.5335	0.1310	0.3139	0.8378	0.9778

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.7.1a: Mineral Industry Impulse Response

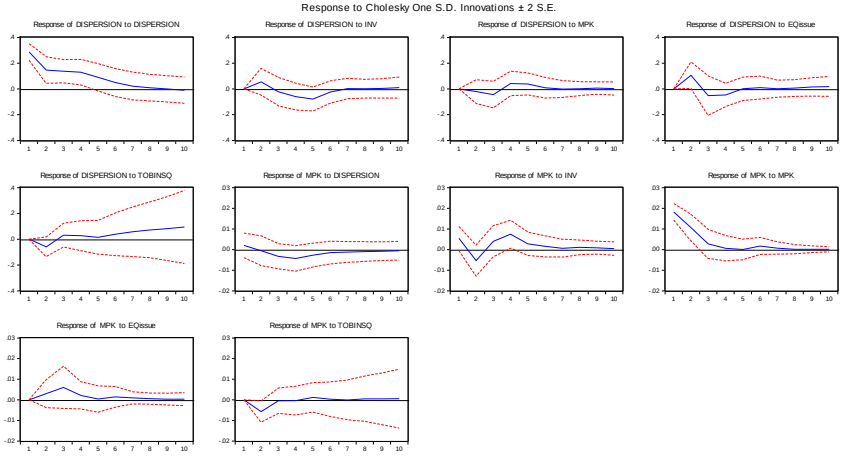
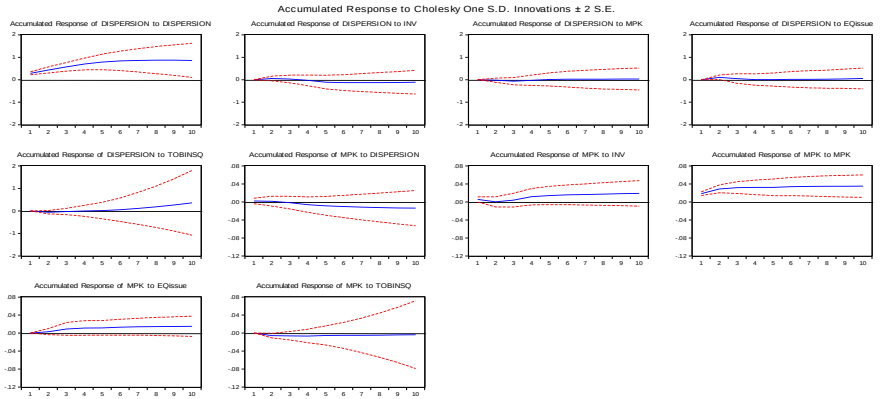


Fig 4.2.7.1b: Mineral Industry Accumulated Impulse Response



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ----------1;$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ----------2;$$

$$\text{Shocks } \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$; *Net Equity Issuance=* $\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$; *Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.7.2: Mineral Sector of Pakistan PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
INV	8.0100	2	0.0182	DISPERSION	2.2194	2	0.3297
MPK	5.9468	2	0.0511	INV	11.2339	2	0.0036
EQ	6.0252	2	0.0492	EQ	6.0252	2	0.0492
TOBINSQ	9.2108	2	0.01	TOBINSQ	1.7023	2	0.4269
All	21.7831	8	0.0053	All	25.0775	8	0.0015

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} ------------------- 1$$

$$Where,\ \ Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' ------------- 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Minerals Sector of Pakistan

The causation of the PANEL VAR model to the mineral sector Of Pakistan indicates that the dependent variables i.e. dispersion of investor's beliefs & MPK possess a linear relationship with investment, equity issuance & Tobin's Q at lag (-1) & (-2). These results prove that if the dependent variables increase, the rest of the variables shall also increase. These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 80 & 82 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of the mineral industry of Pakistan is concerned the variable of dispersion of investor's beliefs & MPK are creating high fluctuations due to its shocks in all variables in the short-run as well as in the long run. Similarly, However, accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs & MPK of the mineral industry creates a bubble in the PSX.

In the light of the mineral Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the cement industry. In the mineral industry dispersion and additional investment & financing activities both equally effect on PSX market index. The most interesting result is that MPK & dispersion both do not affect each other. The reason behind this is that these industries are highly profitable, therefore investors take speculations and additional investment & financing activities in the industries seriously.

4.2.8 Textile Industry Of Pakistan

Roots of Characteristic Polynomial

Endogenous variables: DISPERSION I MPK EQISSU TOBINSQ

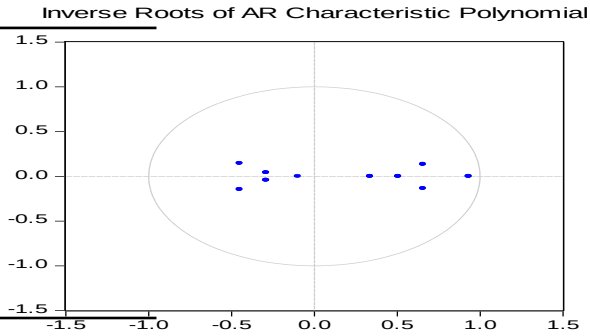
Exogenous variables: C

Lag specification: 1 2

Root	Modulus
0.932057	0.932057
0.657667 - 0.134795i	0.671339
0.657667 + 0.134795i	0.671339
0.506466	0.506466
-0.448881 - 0.145983i	0.472022
-0.448881 + 0.145983i	0.472022
0.336271	0.336271
-0.290689 - 0.042341i	0.293756
-0.290689 + 0.042341i	0.293756
-0.09904	0.099036

No root lies outside the unit circle.

VAR satisfies the stability condition.



Lag Length Criterion

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	896.8577	NA	1.84E-12	-12.8325	-12.7269	-12.7896
1	1180.4300	542.6642	4.46E-14	-16.553	-15.91962*	-16.2956
2	1223.5530	79.42059	3.44e-14*	-16.81372*	-15.6526	-16.34187*
3	1241.2830	31.3779	3.83E-14	-16.7091	-15.0202	-16.0228
4	1267.6020	44.68615	3.78E-14	-16.7281	-14.5114	-15.8273
5	1281.9670	23.3551	0.0000	-16.5751	-13.8306	-15.4598

** "indicates lag order selected by the criterion; LR: sequentially modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.8.1: Analysis of Textile Industry of Pakistan in the Light of Panel Var Model

Vector Autoregression Estimates

Sample: 1 612

Included observations: 496

t-statistics in [ ]

	DISPERSION	*I*	*MPK*	*EQISSU*	*TOBINSQ*
DISPERSION(-1)	0.8471	-0.1596	0.0412	1.2607	1.6223
	0.0522	1.2518	0.1921	1.2706	4.4278
	[16.218]	[-0.1274]	[-0.2142]	[0.9922]	[0.3663]
DISPERSION(-2)	0.2320	0.6273	0.1168	-1.7317	12.8410
	0.0559	1.3394	0.2055	1.3594	4.7374
	[4.1510]	[0.4683]	[0.5682]	[-1.2738]	[2.7105]
I(-1)	0.0013	0.3300	-0.0250	-0.0368	0.1136
	0.0021	0.0503	0.0077	0.0511	0.1781
	[0.6316]	[6.5557]	[3.2372]	[-0.7196]	[0.6382]
I(-2)	0.0016	0.1321	0.0032	-0.0478	0.1027
	0.0020	0.0483	0.0074	0.0491	0.1710

	[0.7772]	[2.7323]	[0.4282]	[-0.9741]	[0.6007]
MPK(-1)	0.0321	1.0133	0.8374	-0.0364	0.5611
	0.0093	0.2224	0.0341	0.2258	0.7868
	[3.4593]	[4.5553]	[24.5338]	[-0.1613]	[0.7132]
MPK(-2)	-0.0130	0.0236	0.0036	0.1759	-0.0286
	0.0041	0.0990	0.0152	0.1005	0.3501
	[-3.1528]	[0.2385]	[0.2387]	[1.7503]	[-0.0816]
EQISSU(-1)	0.0031	-0.0542	0.0109	-0.1658	0.0191
	0.0019	0.0454	0.0070	0.0461	0.1605
	[1.6555]	[-1.1946]	[1.5602]	[-3.6006]	[0.1189]
EQISSU(-2)	0.0038	-0.0336	0.0138	0.0168	0.0908
	0.0018	0.0439	0.0067	0.0445	0.1552
	[2.0871]	[-0.7656]	[2.0545]	[0.3763]	[0.5853]
TOBINSQ(-1)	0.0007	0.0129	0.0018	0.0229	0.4875
	0.0009	0.0208	0.0032	0.0211	0.0737
	[0.8230]	[0.6211]	[0.5528]	[1.0853]	[6.6166]
TOBINSQ(-2)	-0.0001	-0.0026	0.0000	0.0237	0.3039
	0.0011	0.0257	0.0039	0.0261	0.0909
	[-0.1103]	[-0.1020]	[0.0099]	[0.9069]	[3.3428]
C	0.0012	-0.0122	-0.0071	0.0166	-0.1183
	0.0007	0.0177	0.0027	0.0180	0.0626
	[1.6225]	[-0.6899]	[-2.6236]	[0.9244]	[-1.8888]
R-squared.	0.9112	0.2861	0.6415	0.0621	0.3435
Adj. R-squared.	0.9092	0.2701	0.6335	0.0412	0.3288
Sum sq. resids.	0.0085	4.8913	0.1152	5.0390	61.1942
S.E. equation.	0.0044	0.1046	0.0161	0.1062	0.3700
F-statistic.	45.8405	17.9138	79.9801	2.9618	23.3849
Log likelihood.	184.4588	389.6515	124.80980	382.840	-188.9390
Akaike AIC.	-0.8007	-1.6535	-5.4022	-1.6238	0.8731
Schwarz SC.	-0.7908	-1.5544	-5.3031	-1.5246	0.9722
Mean dependent.	0.0107	-0.1075	-0.0398	-0.0229	-0.8958
S.D. dependent.	0.1448	0.1224	0.2652	0.1084	0.4516

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Fig 4.2.8.1a: Textile Industry Impulse Response

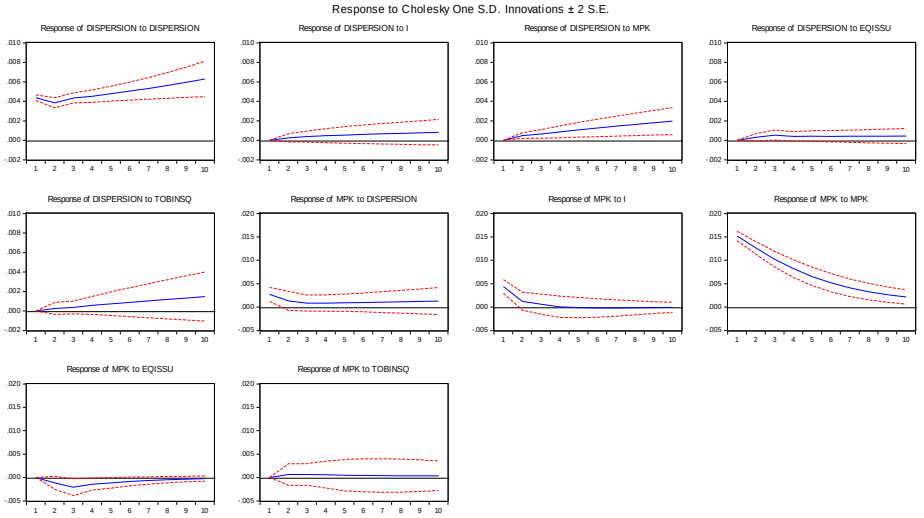
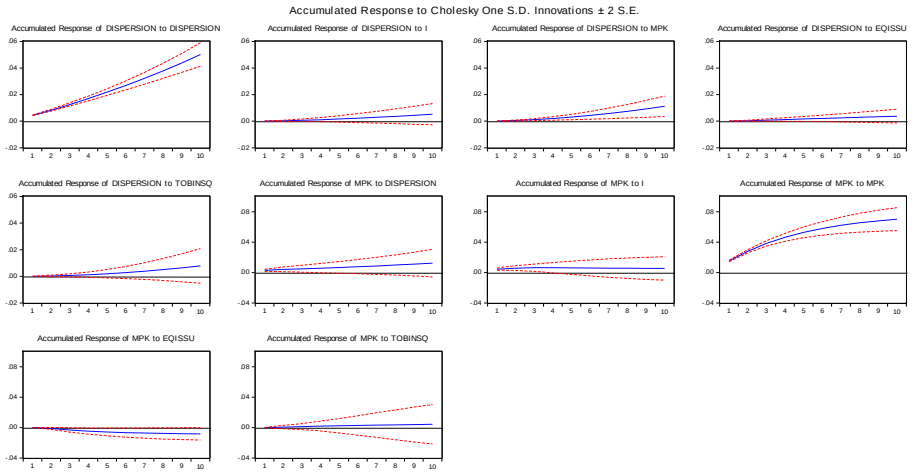


Fig 4.2.8.1b: Accumulated Response Impulse Response



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

$$\textit{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' - - - - - - - - - - 2;$$

$$\textit{Shocks } \eta_{it} = \eta_{it}^{mpk} \,\&\, \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$; *Net Equity Issuance=* $\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$; *Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.8.2: Textile Industry of Pakistan PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
INV	5.9468	2	0.0511	*DISPERSION*	0.0124	2	0.9938
MPK	14.6902	2	0.0006	*INV*	1.6279	2	0.4431
EQ	2.3499	2	0.3088	*EQ*	4.5139	2	0.1047
TOBINSQ	8.4948	2	0.0143	*TOBINSQ*	0.1404	2	0.9322
All	21.7831	8	0.0053	*All*	20.7597	8	0.0078

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \quad ---------- 1$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \quad ---------- 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Textile Industry Of Pakistan

The causation of the PANEL VAR model with respect to the Textile industry Of Pakistan indicate that the dependent variables i.e. dispersion of investor's beliefs possess a linear relationship with investment and equity issuance at lag(-1) & Lag(-2). Whereas, the relationship of Tobin's Q is not stable at lag(-1). While the MPK has a linear relationship with all the variables at lag (1) & (-2). These results prove that if the dependent variables increase, the rest of the variables shall also increase. These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that as the explanatory power of model's R-square of variables of dispersion of investor beliefs & MPK are 91 & 64 respectively, which textile industry of Pakistan is concerned the variable of dispersion of investors beliefs is creating fluctuations due to its shocks in all variables in short-run as well as in the long run. Similarly, MPK is creating fluctuation in all independent variables as compared to the dispersion of investor's beliefs. However, accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs & MPK of the textile industry creates a bubble in the PSX.

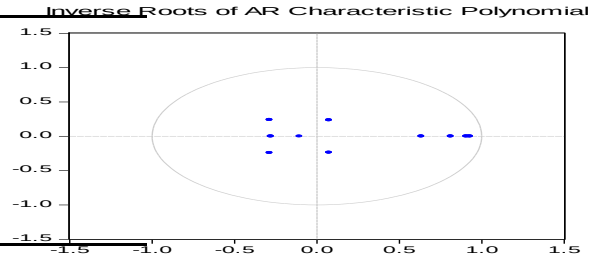
In the light of the textile Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the mineral industry. The variation is that in mineral industry firms MPK & dispersion of investor's beliefs both play a major role in creating a bubble in PSX. Whereas, in the textile industry dispersion and additional investment & financing activities both equally effect on PSX market index moderately.

4.2.9 Auto Sector Of Pakistan

Roots of Characteristic Polynomial
Endogenous variables: DISPERSION INV MPK EQ_issu TOBINSQ
Exogenous variables: C
Lag specification: 1 2

Root	Modulus
0.9292	0.9292
0.907818	0.907818
0.813003	0.813003
0.634803	0.634803
-0.285700 - 0.240710i	0.373585
-0.285700 + 0.240710i	0.373585
-0.27887	0.278869
0.074702 - 0.236347i	0.247872
0.074702 + 0.236347i	0.247872
-0.10459	0.104591

No root lies outside the unit circle.
VAR satisfies the stability condition.



Lag Length Criterion

VAR Lag Order Selection Criteria						
Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-385.6240	NA	2.45E-04	5.8740	5.9827	5.9182
1	-39.8655	660.3203	1.97E-06	1.0506	1.702567*	1.3155
2	2.3292	77.4098	1.52E-06	0.7920	1.9873	1.277748*
3	31.5648	51.43701*	1.43e-06*	0.728349*	2.4669	1.4348
4	48.3887	28.3350	1.63E-06	0.8513	3.1332	1.7786
5	66.1027	28.5023	1.84E-06	0.9609	3.7860	2.1089

** "indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion"*

Table 4.2.9.1: Analysis of Auto Industry of Pakistan in the light of Panel Var Model

Vector Auto-regression Estimates.
Sample: 1 241
Included observations: 175
t-statistics in [ ]

	DISPERSION	*INV*	*MPK*	*EQ_issu*	*TOBINSQ*
DISPERSION(-1)	0.8193	0.0177	-0.0371	-3.5028	0.1272
	0.0848	0.0537	0.0550	0.8193	0.1651
	[9.6572]	[0.3286]	[0.6759]	[4.2755]	[0.7704]
DISPERSION(-2)	0.1087	-0.0008	0.0342	2.6538	-0.0578
	0.0689	0.0436	0.0446	0.6650	0.1340
	[1.5789]	[-0.0186]	[0.7677]	[3.9907]	[-0.4311]
DISPERSION(-3)	0.0588	0.0001	-0.0043	1.3482	0.0752
	0.0513	0.0325	0.0332	0.4951	0.0998
	[1.1470]	[0.0032]	[-0.1297]	[2.7231]	[0.7541]
INV(-1)	0.1151	0.0713	-0.0555	2.0054	-0.3457
	0.1822	0.1154	0.1180	1.7592	0.3544
	[0.6318]	[0.6175]	[-0.4705]	[1.1399]	[-0.9754]
INV(-2)	0.1534	0.1042	0.1527	-0.7793	-0.1251
	0.2617	0.1658	0.1695	2.5274	0.5092
	[0.5861]	[0.6286]	[0.9006]	[-0.3083]	[-0.2456]
INV(-3)	0.7141	0.4400	0.0400	1.3727	0.9886
	0.2145	0.1359	0.1389	2.0713	0.4173
	[3.3295]	[3.2382]	[0.2881]	[0.6627]	[2.3689]
MPK(-1)	0.0053	-0.0775	0.8050	0.7121	0.7131
	0.1577	0.0999	0.1022	1.5231	0.3069
	[0.0334]	[-0.7759]	[7.8800]	[0.4675]	[2.3239]
MPK(-2)	0.0070	-0.0173	0.0035	0.7220	-1.0349
	0.1266	0.0802	0.0820	1.2225	0.2463
	[0.0550]	[-0.2152]	[0.0429]	[0.5906]	[-4.2018]

MPK(-3)	0.1730	0.0570	0.0519	-0.5400	0.7372
	0.0910	0.0577	0.0590	0.8790	0.1771
	[1.9007]	[0.9892]	[0.8803]	[-0.6143]	[4.1627]
EQ_issue (-1)	0.0017	0.0006	0.0047	-0.1291	-0.0252
	0.0108	0.0068	0.0070	0.1041	0.0210
	[0.1574]	[0.0922]	[0.6750]	[-1.2393]	[-1.1988]
EQ_issue (-2)	0.0308	0.0008	-0.0049	-0.0532	-0.0019
	0.0104	0.0066	0.0067	0.1003	0.0202
	[2.9651]	[0.1226]	[-0.7348]	[-0.5304]	[-0.0955]
EQ_issue (-3)	0.0285	-0.0007	0.0063	0.0498	-0.0075
	0.0107	0.0068	0.0070	0.1037	0.0209
	[2.6512]	[-0.1091]	[0.9043]	[0.4806]	[-0.3582]
TOBINSQ(-1)	0.0163	-0.0186	-0.1175	0.0725	1.3557
	0.0508	0.0322	0.0329	0.4907	0.0989
	[0.3208]	[-0.5771]	[-3.5687]	[0.1476]	[13.7124]
TOBINSQ(-2)	-0.0404	-0.0175	0.5703	0.6127	-0.5048
	0.0684	0.0433	0.0443	0.6608	0.1331
	[-0.5906]	[-0.4045]	[12.8676]	[0.9272]	[-3.7922]
TOBINSQ(-3)	0.0246	0.0622	0.3947	-1.0085	-0.0203
	0.0835	0.0529	0.0541	0.8061	0.1624
	[0.2941]	[1.1765]	[7.3002]	[-1.2511]	[-0.1249]
C	-0.0714	0.0153	0.0189	0.6325	0.0213
	0.0409	0.0259	0.0265	0.3952	0.0796
	[-1.7439]	[0.5900]	[0.7113]	[1.6005]	[0.2671]
R-squared.	0.9632	0.2692	0.9742	0.3000	0.9291
Adj. R-squared.	0.9560	0.1250	0.9691	0.1619	0.9151
Sum sq. resids.	0.7949	0.3190	0.3336	74.1414	3.0095
S.E. equation.	0.1023	0.0648	0.0663	0.9877	0.1990
F-statistic.	132.7017	1.8664	191.2336	2.1716	66.3947
Log likelihood.	88.0161	130.0120	127.9641	-120.6150	26.7783
Akaike AIC.	-1.5656	-2.4785	-2.4340	2.9699	-0.2343
Schwarz SC.	-1.1270	-2.0400	-1.9954	3.4085	0.2043
Mean dependent.	-1.5271	-0.0331	0.3143	0.1255	0.4735
S.D. dependent.	0.4874	0.0693	0.3769	1.0789	0.6830

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} - 1;$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE+BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$.

Fig 4.2.9.1a: Auto Industy Impulse Response

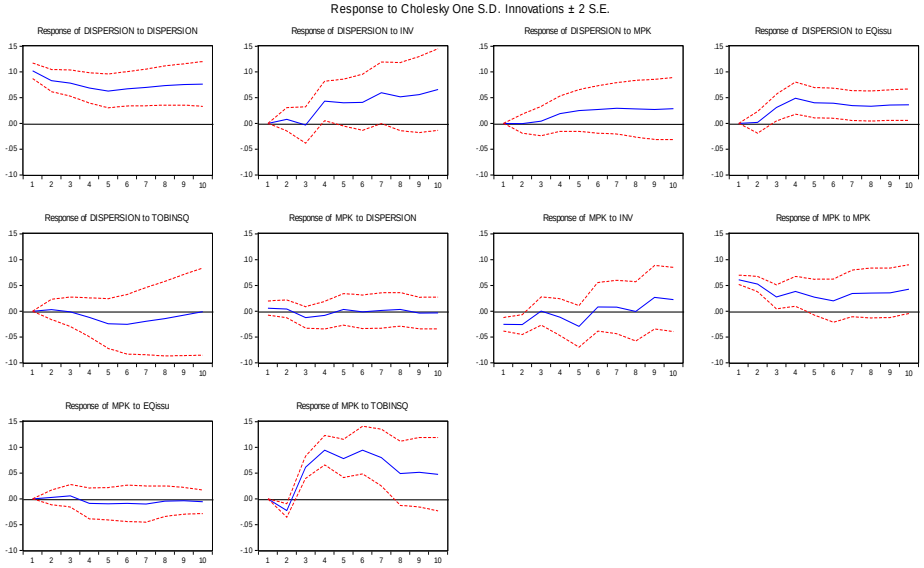
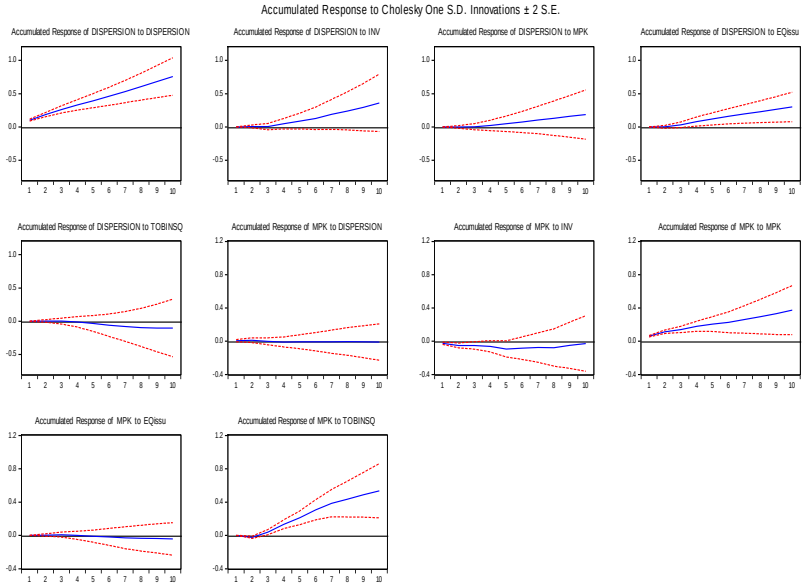


Fig 4.2.9.1b: Auto Industy Accumulated Response



Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} \text{ ---------- } 1;$$

$$\text{Where, } Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' \text{ ---------- } 2;$$

$$\text{Shocks } \eta_{it} = \eta_{it}^{mpk} \& \eta_{it}^{d}$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j/12}}{Total\ Assets}$; *Net Equity Issuance=* $\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$; *Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Table 4.2.9.2: Auto sector of Pakistan PANEL VAR Causality Test:

Dependent variable: DISPERSION				*Dependent variable: MPK*			
Excluded	*Chi-sq*	*df*	*Prob.*	*Excluded*	*Chi-sq*	*df*	*Prob.*
INV	8.4456	3	0.0766	*DISPERSION*	1.9128	3	0.7518
MPK	21.9223	3	0.0002	*INV*	9.6968	3	0.0459
EQ	11.6644	3	0.02	*EQ*	1.3704	3	0.8493
TOBINSQ	3.6285	3	0.4586	*TOBINSQ*	23.9833	3	0
All	41.6544	12	0.0004	*All*	44.0112	12	0.0002

Econometric model:

$$Y_{it} = AY_{it-1} + f_{it} + e_{it} + V_{it} ------------------- 1$$

$$Where, \quad Y_{it} = \left\{ MPK_{it}, d_{it}, \frac{I_{it}}{K_{it}}, Q_{it}, equity\ Issuance \right\}' -------------- 2$$

Description of variables

Investment= Captial Expenditure / beginning-of-period of net book value of PPE; MPK= Log ((Sales/Capital)/Industry avg ratio)(0.2)) whre 0.2 (r + δ)= financial friction ; Disperssion=* $d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$*; Net Equity Issuance=*$\left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$*; Tobin's Q =* $\left(\frac{MVE + BV\ of\ Total\ Liabilities}{Book\ Value\ of\ Total\ Asets}\right)$

Auto Sectors Of Pakistan

The causation of the PANEL VAR model with respect to the Auto sector of Pakistan indicates that the dependent variables i.e. dispersion of investor's beliefs & MPK possess a linear relationship with investment and equity issuance at lag (-1), (-2) & (-3) except Tobins's Q where the relation is not stable at all lags (-1), (-2) & (-3). That shows that the industry is highly speculative. These results are in line with the results of the previous studies of Gilchrist et al., (2005). It has also been observed that as the explanatory power of the model's R-square of variables of dispersion of investor beliefs & MPK are 96 & 97 respectively, which means that independent variables are effectively explaining the dependent variables.

So far as the impulse response & accumulated impulse response of the auto-sector industry of Pakistan is concerned the variable of dispersion of investor's beliefs & MPK is creating extreme fluctuations due to its shocks in all variables in the short-run as well as in the long run. The accumulative impulse response again confirms that dependent variables also possess a linear relationship with all independent variables. The results of impulse response & accumulated impulse further indicate that dispersion of investor's beliefs & MPK of the auto-sector both create a bubble in the PSX.

In the light of the Auto Industry PANEL VAR causality test, it has been observed that the general test results are symmetrical to the textile industry. The variation is that in mineral industry firms MPK & dispersion of investor's beliefs both play a major role in creating a bubble in PSX. Whereas, in the Auto industry dispersion and additional investment & financing activities both equally affect on PSX market index extremely.

Results and Discussion

The dispersion of investor's beliefs creates speculation among investors, as a result, the financial and additional investment activities get increased which leads to bubble creation in PSX. However, the impact of additional investment is more pronounced during the bubble period as compared to the dispersion of investor's beliefs. During the bubble period, a firm's capital expenditure (equity issuance) & financing activities get increased, which benefit firms in short selling, arbitraging & create investment opportunities. In PSX during the bubble period dispersion of investor beliefs, investment, MPK, and net equity issuance possess a linear relationship. Like empirical researches, the study of PSX also confirms that to control stock prices, equities are issued, but it is a short-term strategy and

does not completely control the bubble. It has been observed that during the bubble period investment activities did take place in PSX but without strong financial backing or projects, which predicates the existence of manipulation in the STK MKT. The results are symmetrical to empirical studies that had taken place in the USA. The reason for this is that in the USA & PSX SEC legislation is being practiced. The details have been explaining in Chapter 2, 2.6.1.

Bubble in stock markets can be contained in Pakistan if the equity issuance procedure can be streamlined through such institutions which can guide the investors after studying the investment plans of the respective firm that intends to issue equity in the market, as done by Goldman Sachs and Morgan Stanley financial institutions in the USA. These institutions further are tasked to monitor the securities issuance of the respective companies on a quarterly and annual basis and formulate an effective plan to control the STK MKT bubble constructively. This approach will reduce the effect of the bubble and also increase the level of investment by ensuring that investment in the stock market will be linked to investment in projects in other sectors of the economy.

4.3.1 Model 2 a: How do the earnings management and insider trading by the firms contribute towards stock market Bubble

Table 4.3.1.1: Descriptive Statistics

	EI	*BM*	*INS_PURCHASE*	*INS_SALE*	*Levrage*	*EQ_Issu*	*SIZE*
Mean	1.5724	0.0179	0.0034	0.0028	0.0344	0.0007	0.3204
Median	1.6048	0.0075	0.0000	0.0000	0.0103	0.0000	0.3095
Maximum	3.7528	1.6270	1.1466	0.7242	0.9827	0.6486	0.5616
Minimum	-3.7698	-0.3316	0.0000	0.0000	0.0003	-1.6037	0.0755
Std. Dev.	0.4331	0.0715	0.0440	0.0246	0.0746	0.0508	0.0912
Skewness	0.6163	0.4461	9.9769	3.3005	1.3005	3.5086	0.4922
Kurtosis	2.0668	2.1634	10.8780	10.6912	4.6376	12.7303	3.9242
Observations	1458	1458	1458	1458	1458	1458	1458

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$ *, Net Insider Trading=* $\left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$*, Abn Acc or EI=* $\frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$*, BM = Ratio of common book equity to market Value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage =* $\left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$*.* $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

The above-stated descriptive statistics consist of earnings inflation, insider trading w.r.t sales and purchases, equity issuance, leverage, size & BM The results have been based on different ranges of data like Mean, Median, maximum & Minimum.. The analysis of descriptive statistics indicates that it's all variables are away from their origin and the

conditions i.e. S.D, Skewness and Kurtosis related to them are satisfied. As per the descriptive statistics of EI that its mean value is equal to 1.57 Median is equal to 1.60, S.D is equal to 0.4331, Skewness is equal to -2.652 and kurtosis is equal to 2.06. The data used for the purpose contains 1458 observations. Similarly the descriptive statistics of Net equity issuance, its mean is equal to 0.0007, Median is equal to 0.00000732, S.D is equal to 0.51, Skewness is equal to 3.508 and kurtosis is equal to 12.73. the mean value of Insider Selling is equal to 0.00274, Median is equal to 0.01, S.D is equal to 0.02, Skewness is equal to 3.3 and kurtosis is equal to 10.69. As per the descriptive statistics of Leverage, its mean is equal to 0.341, Median is equal to 0.01, S.D is equal to 1, Skewness is equal to 1.3 and kurtosis is equal to 4.637. The mean value of BM is equal to 0.017, Median is equal to 0.01, S.D is equal to 0.1, Skewness is equal to 0.446 and kurtosis is equal to 2.163. The mean of Size is equal to 0.3, Median is equal to 0.3, S.D is equal to 1, Skewness is equal to 0.49 and kurtosis is equal to 3.92.

EsM, EI and insider trading & managerial stock-based compensations cause inflation in the share prices in the stock market which results in the creation of a stock market bubble. This phenomenon has also been confirmed by the papers of Hudadart (2005, 2006, 2007), Fuller & Jensen (2002), Greenspan (2002), Armstrong et al. (2010) and coffee (2004) as well as the technology bubble of USA stock market which prevailed during the period from 1997-02. Moreover, In the USA market, managers of firms, CEOs & CFOs focus too much on stock-based compensations & earnings manipulation mechanisms, in order to obtain abnormal returns on their securities in the short as well as in the long run. Equity-based or managerial-based compensations are carried out mainly for the two reasons i.e. share prices are inflated through EsM with financial manipulation and managers also concentrate on those stocks which they think that may form part of future managerial-based compensations and equity-based compensations. Most of the researches also reveal that whenever a stock market bubble has created the bonds between earnings inflation and insider trading get stronger as have been the case in the US tech Bubble of the late 1990s. De Long, Shleifer, Summers, and Waldman (1990) & Brunnermeier and Nagel (2004), these prospects generate speculations among the investors which invoke arbitrageur behavior in them. The empirical findings also revealed that a – ve relationship between abnormal accruals and abnormal returns have always resulted due

to net insider sellers of firms, CEOs & CFOs. since BM ratio is linked with insider trading, therefore whenever insider trading will increase, it will also affect the BM ratios and firm size accordingly. We will employ the variable of leverage in our analysis to control the limitations of acquiring funds to expand the capacity of firms.

4.3.2 Association between earnings inflation and subsequent insider selling

Table 4.3.2.1: Cement Industry Two Way Relationship Test

Dependent Variable: Earning Inflation *Method: Panel Least Squares.* *Sample: 1 100* *Cross-sections included: 15* *Total panel (unbalanced) observations: 100*					*Dependent Variable: Insider Trading* *Method: Panel Least Squares.* *Sample: 1 100* *Cross-sections included: 15* *Total panel (unbalanced) observations: 100*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	2.9785	0.2436	12.2275	0.0000	*C*	-5.0250	0.6425	-7.8204	0.0000
Insider Trading	0.1851	0.0410	4.5176	0.0000	*EI*	0.7974	0.1857	4.2937	0.0001
BM	0.4435	0.2370	1.8713	0.0650	*BM*	0.2056	0.0341	6.0322	0.0000
Leverage	-0.0150	0.0058	-2.6052	0.0091	*Leverage*	-0.0012	0.0148	-0.0808	0.9357
Equity Issuance	0.9920	0.7912	1.2537	0.2136	*Equity issuance*	0.2172	0.1039	2.0900	0.0398
Size	-0.2969	0.0597	-4.9744	0.0000	*Size*	0.8621	0.2237	3.8537	0.0001
Effects Specification *Cross-section fixed (dummy variables)*									
R-squared.	0.6582	*Mean dependent var.*	1.7544		*R-squared.*	0.7694	*Mean dependent var.*	0.2727	
Adjusted R-squared.	0.5760	*S.D. dependent var.*	0.1772		*Adjusted R-squared.*	0.7140	*S.D. dependent var.*	0.4476	
S.E. of regression.	0.1153	*Akaike info criterion.*	-1.3034		*S.E. of regression.*	0.2394	*Akaike info criterion.*	0.1570	
Sum squared resid.	1.0510	*Schwarz criterion.*	-0.7792		*Sum squared resid.*	4.5275	*Schwarz criterion.*	0.6812	
Log likelihood.	84.5195	*Hannan-Quinn criterion.*	-1.0913		*Log likelihood.*	72.2306	*Hannan-Quinn criterion.*	0.3691	
F-statistic.	8.0079	*Durbin-Watson stat.*	1.6582		*F-statistic.*	13.8756	*Durbin-Watson stat.*	1.5417	
Prob(F-statistic).	0.0000				*Prob(F-statistic).*	0.0000			

P-value =0.05, 0.03** & 0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

The values mentioned in the above-captioned table show that insider trading possesses a +ve relationship with EI whose coefficient is 18.5 percent, its T-stat is 4 which is more than 1.96, Hence it is +vely far away from its origin. Therefore, a deviation of one percent in EI will fetch 79.7 times effect on insider trading. Net equity issuance possesses a +ve relationship with EI whose coefficient is 0.9919, its T-stat is 1.25 which is less than 1.96, hence it is close to its origin. Leverage possesses a -ve relationship with EI whose coefficient is -1.5 percent & its T-stat is -2 which is more than -1.96, hence is negatively far away from its origin. Therefore, a deviation of one percent in EI will fetch a -1.5 percent effect of Leverage. BM possesses a +ve relationship with EI whose coefficient is 44.3 percent, its T-stat is 1.871 which is partially significant and +vely slightly away from its origin. Therefore, a deviation of one percent in EI will fetch 44.3 times the effect of BM. Size possesses a -ve relationship with EI whose coefficient is -29.6 times, its T-stat is -4 which is more than -1.96, hence -vely far away from its origin. Therefore, a deviation of one percent in EI will fetch -106 percent effect of Size. The R square is 46, S.D is equal to 0.174 and the F statistic model is 98. Similarly in Model Pooled regression analysis, the numeric value of R square is 0.6582 and the value of standard deviation is 0.17715. This indicates that 65.82 percent variations of Y values about the mean & can be explained by X values. In the Second model of two-way relationship model show that insider trading possesses a +ve relationship with EI whose coefficient is 79.7 percent, its T-stat is 4 which is more than 1.96, Hence +vely far away from its origin. Therefore, a deviation of one percent in EI will fetch 79.7 times the effect of insider trading. Net Equity Issuance possesses a +ve relationship with insider trading whose coefficient is 21 percent and its T-stat is 2.08 which is more than 1.96, hence +vely away from its origin. Therefore, a deviation of one percent in insider trading will fetch 21 times effect on net equity issuance. Leverage possesses a -ve relationship with insider trading whose coefficient is 0.1percent, its T-stat is insignificant. BM possesses a +ve relationship with Insider trading whose coefficient is 20.55 percent and its T-stat is significant. Size possesses a +ve relationship with Insider Trading whose coefficient is 86.211 percent and its T-stat is significant. The R square is 76.94, S.D is more than 0.86 and the F statistic model is 13. It indicates that 76.94 percent of variations of Y values about the mean can be explained by X values.

Table 4.3.2.2: Cement Industry Abnormal Return Models

Overall Abnormal Return Model (BHAR) *Dependent Variable: BHAR* *Method: Panel Least Squares.* *Sample: 1 100* *Cross-sections included: 15* *Total panel (unbalanced) observations: 85*					*Pre bubble Abnormal Return Model* *Dependent Variable: BHAR* *Method: Panel Least Squares.* *Sample: 1 100* *Cross-sections included: 15* *Total panel (unbalanced) observations: 100*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-2.3826	4.8994	-0.4863	0.6284	*C*	4.0632	0.3785	10.7352	0.0000
Insider Trading	2.1835	0.7200	3.0325	0.0035	*Insider Trading*	0.5709	0.1547	3.6912	0.0005
EI	0.4323	0.1482	2.9178	0.0049	*BM*	0.2113	0.0860	2.4559	0.0140
BM	0.8128	0.2009	4.0459	0.0001	*Levrage*	-0.0265	0.0140	-1.8926	0.0629
Levrage	-0.1520	0.0861	-1.7652	0.0824	*Equity Issuance*	5.0432	1.0754	4.6898	0.0000
Equity Issuance	0.1175	0.1126	1.0443	0.3004	*Size*	-0.9399	0.1973	-4.7629	0.0000
Size	-1.2516	0.7857	-1.5930	0.1162					
BHAR(-1)	-0.3098	0.0860	-3.6017	0.0006					
Effects Specification *Cross-section fixed (dummy variables)*									
R-squared.	0.5607	*Mean dependent var.*	0.1679		*R-squared.*	0.6993	*Mean dependent var.*	0.3294	
Adjusted R-squared.	0.4142	*S.D. dependent var.*	1.5993		*Adjusted R-squared.*	0.6114	*S.D. dependent var.*	0.4728	
S.E. of regression.	1.2240	*Akaike info criterion.*	3.4603		*S.E. of regression.*	0.2947	*Akaike info criterion.*	0.5967	
Sum squared resid.	94.3895	*Schwarz criterion.*	4.0925		*Sum squared resid.*	5.6457	*Schwarz criterion.*	1.1715	
Log likelihood.	-125.0630	*Hannan-Quinn criter.*	3.7146		*Log likelihood.*	-53.6035	*Hannan-Quinn criter.*	0.8279	
F-statistic.	3.8285	*Durbin-Watson stat.*	2.3397		*F-statistic.*	7.9566	*Durbin-Watson stat.*	2.6517	

P-value =0.05, 0.03** &0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to the market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + --+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

The values mentioned in the above-captioned table show that Insider Trading possesses a +ve relationship with BHAR whose coefficient is 21.83 percent. Its T Stat is significant. Net Equity Issuance possesses a +ve relationship with BHAR whose coefficient is 11.754 Percent, its T-stat is insignificant. Leverage possesses a -ve relationship with BHAR whose coefficient is -15.1 percent & its T-stat is -1.76 which is slightly less than -1.96, hence negatively slightly away from its origin. Therefore, a deviation of one percent in EI will fetch a -15 percent effect of Leverage. BM possesses a +ve relationship with BHAR whose coefficient is 81.2 percent, its T-stat is 4 which is more than 1.96, hence +vely close from its origin. Therefore, a deviation of one percent in BHAR will fetch an 81.2 percent effect of BM. Size possesses a -ve relationship with EI whose coefficient is -125 percent, its T-stat is insignificant. The R square is 56, S.D is equal to 1.67941 and the F statistic model is 3. The numeric value indicated that 56 percent variations of Y values about the mean can be explained by X values.

In Pre Bubble Model, Insider Trading possesses a +ve relationship with BHAR whose coefficient is 57.1 percent. Its T Stat is significant.Leverage possesses a -ve relationship with BHAR whose coefficient is -2.64 Percent, its T-stat is -1.89, which is slightly less than -1.96, hence negatively slightly away from its origin. Therefore, a deviation of one percent in BHAR will fetch a -2.64 percent effect of leverage. Equity issuance possesses a +ve relationship with BHAR whose coefficient is -50.43 percent but its T-stat is insignificant. BM possesses a +ve relationship with BHAR whose coefficient is 21 percent, its T-stat is 2.4 which is more than 1.96, hence +vely close from its origin. Therefore, a deviation of one percent in EI will fetch a 21 percent effect of BM. Size possesses a -ve relationship with BHAR whose coefficient is -93 percent, its T-stat is -4. Therefore, a deviation of one percent in EI will fetch a 93 percent effect of BM. The Model R square is 69, S.D is equal to 0.472 and the F statistic model is 7.95. The numeric value indicated that 69 percent variations of y values about the mean can be explained by X.

Table 4.3.2.3: Abnormal Return Model during Bubble Period (BHAR)

Bubble period
Dependent Variable: BHAR
Method: Panel Least Squares.
Sample: 1 100
Cross-sections included: 15

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	7.7357	2.7578	2.8050	0.0067
Insider Trading	-0.9649	0.3270	-2.9506	0.0044
BM	-0.7440	0.1515	-4.9111	0.0000
Levrage	-0.1716	0.0677	-2.5332	0.0138
Equity issuance	-10.4055	12.3699	-0.8412	0.4034
Size	-1.6585	0.6468	-2.5642	0.0127
BHAR(-1)	-0.3580	0.0819	-4.3691	0.0000
	Effects Specification			
	Cross-section fixed (dummy variables)			
R-squared.	0.4475	*Mean dependent var.*		0.7315
Adjusted R-squared.	0.2749	*S.D. dependent var.*		1.3552
S.E. of regression.	1.1540	*Akaike info criterion.*		3.3346
Sum squared resid.	85.2245	*Schwarz criterion.*		3.9381
Log-likelihood.	-120.7221	*Hannan-Quinn criterion.*		3.5774
F-statistic.	2.5922	*Durbin-Watson stat.*		2.3931
Prob(F-statistic).	0.0021			

P-value =0.05, 0.03** & 0.01***;*

Eocnometric Model:

$$Bubble\ Peak\ ABRET_i = \alpha_o + \beta_1 Earnings\ Inflation + \beta_2 INSS_{it} + \beta_3 BM_{it} + \beta_4 Leverage_{it_1} + \beta_5\ Size_{it} + \beta_6\ Equity\ Issuance_{it} + - + \mathrm{e}_{it}$$

Regressions Analysis:

In Bubble Model, insider trading possesses a -ve relationship with BHAR whose coefficient is -96.64 percent. Its T Stat is -2. Therefore, a deviation of one percent in BHAR will fetch a -96.64 percent effect of Insider Trading. Net Equity Issuance possesses a -ve relationship with BHAR whose coefficient is -10.40 Percent but its T-stat is insignificant. Leverage possesses a -ve relationship with BHAR whose coefficient is -17.16 percent but its T-stat is -2.53. Therefore, a deviation of one percent in BHAR will fetch a -17.2 percent effect of Leverage. BM possesses a -ve relationship with BHAR whose coefficient is -74.3 percent, its T-stat is -4.9 which is more than -1.96, hence -vely away from its origin. Therefore, a deviation of one percent in EI will fetch -74 percent effect of BM. Size possesses a -ve relationship with BHAR whose coefficient is -16.5 percent, its T-stat is -2.56. Therefore, a deviation of one percent in BHAR will fetch a -16.5 percent effect of size. The Model R square is 44.75, S.D is equal to 1.3 and the F statistic model is 2. The numeric value indicated that 44.75 percent variations of y values about the mean can be explained by X values.

4.3.3 Chemical & Pharmaceutical Industry of Pakistan:

Table 4.3.3.1: Chemical & Pharmaceutical Two way Relationship

Dependent Variable: EI *Method: Panel Least Squares.* *Sample: 1 196* *Periods included: 6* *Cross-sections included: 33* *Total panel (unbalanced) observations: 155*					*Dependent Variable: Insider Selling* *Method: Panel Least Squares.* *Sample: 1 196* *Periods included: 6* *Cross-sections included: 33* *Total panel (unbalanced) observations: 155*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	1.1387	0.4015	2.8360	0.0054	*C*	0.0739	0.2143	0.3450	0.7307
insider Trading(S)	0.1034	0.0470	2.2008	0.0298	*EI(-1)*	0.5155	0.2627	1.9623	0.0521
B_M(-1)	0.3173	0.1863	1.7032	0.0913	*BM*	0.7558	0.2413	3.1316	0.0022
Levrage	0.5560	0.3276	1.6970	0.0925	*Levrage*	0.0122	0.0192	0.6378	0.5249
Net equity issuance	0.5116	0.1128	4.5376	0.0000	*Equity Issuance*	-0.0164	0.0132	-1.2456	0.2154
Size	0.0790	0.1171	0.6742	0.5016	*Size*	-0.0662	0.0546	-1.2123	0.2279
Effects Specification *Cross-section fixed (dummy variables)*									
R-squared.	0.6010	*Mean dependent var.*		1.5129	*R-squared.*	0.7154	*Mean dependent var.*		0.1667
Adjusted R-squared.	0.4514	*S.D. dependent var.*		0.3260	*Adjusted R-squared.*	0.6253	*S.D. dependent var.*		0.1971
S.E. of regression.	0.2415	*Akaike info criterion.*		0.2263	*S.E. of regression.*	0.1206	*Akaike info criterion.*		-1.1833
Sum squared resid.	6.5335	*Schwarz criterion.*		1.0705	*Sum squared resid.*	11.7022	*Schwarz criterion.*		-0.4371
Log-likelihood.	25.4674	*Hannan-Quinn criteria.*		0.5692	*Log-likelihood.*	129.7059	*Hannan-Quinn criteria.*		-0.8802
F-statistic.	4.0168	*Durbin-Watson stat.*		2.6314	*F-statistic.*	7.9469	*Durbin-Watson stat.*		2.3566
Prob(F-statistic).	0.0000				*Prob(F-statistic).*	0.0000			

P-value =0.05, 0.03** &0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to the market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + --+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

This research has been primarily conducted in the scenario of PSX, where chemical and pharmaceutical industries have been combined under one heading. Therefore, combined cross-sections have been taken to find out the relationship. Moreover, there is no limit to cross-sections in PANEL data. The values mentioned in the above-captioned table show that Insider Trading possesses a +ve relationship with EI whose coefficient is 10.3 percent, its T-stat is 2.2 which is more than 1.96, Hence it +vely far away from its origin. Therefore, a deviation of one percent in EI will fetch a 10.3 percent effect on Insider Trading. Net Equity Issuance possesses a +ve relationship with EI whose coefficient is 51.1 percent, its T-stat is 4 which is more than 1.96, hence +vely away from its origin. Leverage possesses a +ve relationship with EI whose coefficient is -5 percent & its T-stat is insignificant. BM(-1) possesses a +ve relationship with EI whose coefficient is 3.1 percent, its T-stat is 1.70 which is partially significant and +vely slightly away from its origin. Therefore, a deviation of one percent in EI will fetch 3.1 times the effect of BM. Size possesses a +ve relationship with EI whose coefficient is 7 percent but its T-stat is insignificant. The R square is 60, S.D is equal to 0.32 and the F statistic model is 4. The numeric value of R square indicated that 60 percent variations of y values about the mean can be explained by X values. The Second model of two-way relationship model shows that Insider Trading (-1) possesses a +ve relationship with EI whose coefficient is 51.55 percent, its T-stat is 1.96 which is more than 1.96, Hence +vely far away from its origin. Therefore, a deviation of one percent in Insider Trading will fetch 55 times the effect of EI. Net Equity Issuance & Size possess a -ve relationship with Insider Trading but the relationship is insignificant. BM possesses a +ve relationship with Insider trading whose coefficient is 75.57 percent and its T-stat is significant. Therefore, a deviation of one percent in Insider Trading will fetch a 75.57 percent effect of BM. The numeric value of R square is 71.53 percent, S.D is more than 0.197 and the F statistic model is 7. The numeric value of R square indicated that 71.53 percent variations of y values about the mean can be explained by X values.

Table *4.3.3.2*: *Chemical & Pharmaceutical industries Abnormal Return Models*

Abnormal Return Model (BHAR) *Dependent Variable: BHAR* *Method: Panel Least Squares.* *Sample: 1 196* *Periods included: 6* *Cross-sections included: 33* *Total panel (unbalanced) observations: 155*					*Pre-Bubble Abnormal Return Model (BHAR)* *Dependent Variable: BHAR* *Method: Panel Least Squares.* *Sample: 1 196* *Periods included: 6* *Cross-sections included: 33* *Total panel (unbalanced) observations: 155*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-3.7469	0.7903	-4.7409	0.0000	*C*	-0.4465	0.4381	-1.0193	0.3103
*Insider Trading*B_M(-1)*	0.1087	0.0451	2.4123	0.0175	*Insider Trading*B_M(-1)*	0.1355	0.0351	3.8601	0.0002
EI	0.2216	0.0905	2.4476	0.0141	*Leverage*	-0.1417	0.0397	-3.5658	0.0005
Leverage	-0.2542	0.0688	-3.6967	0.0003	*Equity Issuance*	0.0402	0.0254	1.5836	0.1161
Equity Issuance	0.0892	0.0190	4.6995	0.0000	*Size*	0.0996	0.1253	0.7947	0.4284
Size	-0.9760	0.2233	-4.3707	0.0000					
Effects Specification *Cross-section fixed (dummy variables)*									
R-squared.	0.5464	*Mean dependent var.*		0.6036	*R-squared.*	0.6574	*Mean dependent var.*		0.2341
Adjusted R-squared.	0.3819	*S.D. dependent var.*		0.6975	*Adjusted R-squared.*	0.5331	*S.D. dependent var.*		0.5186
S.E. of regression.	0.5484	*Akaike info criterion.*		1.8621	*S.E. of regression.*	0.3543	*Akaike info criterion.*		0.9888
Sum squared resid.	33.9790	*Schwarz criterion.*		2.6868	*Sum squared resid.*	14.1876	*Schwarz criterion.*		1.8134
Log likelihood.	-102.3150	*Hannan-Quinn criterion.*		2.1971	*Log likelihood.*	-134.6288	*Hannan-Quinn criterion.*		1.3237
F-statistic.	3.3206	*Durbin-Watson stat.*		2.2075	*F-statistic.*	5.2887	*Durbin-Watson stat.*		2.1702
Prob(F-statistic).	0.0000				*Prob(F-statistic).*	0.0000			

P-value =0.05, 0.03** &0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to the market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + --+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

The values mentioned in the above captioned table show that Insider Trading*BM(-1) possesses a +ve relationship with BHAR whose coefficient is 10.8 percent. Its T Stat is 2 . Therefore, a deviation of one percent in BHAR will fetch 10.8 percent effect of Insider Trading*BM(-1). Net Equity Issuance possesses a +ve relationship with BHAR whose coefficient is 8.9 Percent, its T-stat 4. Therefore, a deviation of one percent in BHAR will fetch 8.9 percent effect of equity issuance. Leverage possesses a -ve relationship with BHAR whose coefficient is -25.42 percent & its T-stat is -3.69 which is more than -1.96, hence negatively away from its origin. Therefore, a deviation of one percent in BHAR will fetch -25.42 percent effect of Leverage. Size possesses a -ve relationship with BHAR whose coefficient is 97.5 percent, its T-stat is -4 which is more than 1.96, hence -vely close from its origin. Therefore, a deviation of one percent in BHAR will fetch 97.5 percent effect of size. The R square is 54.6, S.D is equal to 0.69 and the F statistic model is 3.3. The numeric value indicated that 54.6 percent variations of y values about the mean can be explained by X values.

In Pre Bubble Model, the Insider Trading*BM (-1) possesses a +ve relationship with BHAR whose coefficient is 13 percent. Its T Stat is significant. Net Equity Issuance & size have insignificant relationship with BHAR. Leverage possesses a -ve relationship with BHAR whose coefficient is -14.71 percent but its T-stat is -3. Therefore, a deviation of one percent in BHAR will fetch -14.71 percent effect of Leverage. The Model R square is 65.74, S.D is equal to 0.51 and the F statistic model is 5.28. The numeric value indicated that 65.74 percent variations of y values about the mean can be explained by X values.

Table 4.3.3.3: Abnormal Return Model during Bubble Period (BHAR)

Dependent Variable: BHAR
Method: Panel Least Squares.
Sample: 1 196
Periods included: 6
Cross-sections included: 33
Total panel (unbalanced) observations: 155

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.5702	0.7352	-3.4962	0.0007
(Insider Selling)(B_M(-1))*	-0.0520	0.0223	-2.3278	0.0217
Leverage	0.0177	0.0453	0.3901	0.6972
Net equity Issuance	0.0440	0.0084	5.2393	0.0000
Size	0.6472	0.2071	3.1258	0.0023

Effects Specification
Cross-section fixed (dummy variables)

R-squared.	0.4584	*Mean dependent var.*	0.3150
Adjusted R-squared.	0.2619	*S.D. dependent var.*	0.5407
S.E.of regression.	0.4645	*Akaike info criterion.*	1.5303
Sum squared resid.	24.3826	*Schwarz criterion.*	2.3549
Log-likelihood.	-176.5951	*Hannan-Quinn criter.*	1.8652
F-statistic.	4.3327	*Durbin-Watson stat.*	2.4675
Prob(F-statistic).	0.0002		

P-value =0.05, 0.03** & 0.01***;*

Eocnometric Model:

$$Bubble\ Peak\ ABRET_i = \alpha_o + \beta_1 Earnings\ Inflation + \beta_2 INSS_{it} + \beta_3 BM_{it} + \beta_4 Leverage_{it_1} + \beta_5\ Size_{it} + \beta_6\ Equity\ Issuance_{it} + - + e_{it}$$

Regression Results

In Bubble Model, the Insider Trading* BM(-1) possesses a -ve relationship with BHAR whose coefficient is -5 percent. Its T Stat is -2. Therefore, a deviation of one percent in BHAR will fetch -5.2 percent effect of Insider Trading*BM(-1). Leverage possess +ve relationship with BHAR but its T-stat is insignificant. Equity issuance possesses a +ve relationship with BHAR whose coefficient is 4.4 percent, its T-stat is 5 which is more than 1.96, hence +vely away from its origin. Therefore, a deviation of one percent in BHAR will fetch -74 percent effect of equity issuance. Size possesses a + ve relationship with BHAR whose coefficient is 64 percent, its T-stat is 3. Therefore, a deviation of one percent in BHAR will fetch 64 percent effect of size. The Model R square is 45.84, S.D is equal to 0.54 and the F statistic model is 2. The numeric value indicated that 45.84 percent variations of y values about the mean can be explained by X values.

4.3.4. Textile Industry of Pakistan:

Table 4.3.4.1: Textile Industry Two Way Relationship Test

Dependent Variable: EI *Method: Panel Least Squares.* *Sample: 1 277* *Periods included: 7* *Cross-sections included: 46* *Total panel (unbalanced) observations: 277*					*Dependent Variable: Insider selling* *Method: Panel Least Squares.* *Sample: 1 277* *Periods included: 7* *Cross-sections included: 46* *Total panel (unbalanced) observations: 277*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	1.9547	0.3400	5.7487	0.0000	*C*	0.0174	0.0117	1.4893	0.1381
Insider trading	4.4067	2.2323	1.9741	0.0498	*EI*	0.0045	0.0023	1.9741	0.0498
BM	0.1229	0.0698	1.7619	0.0797	*BM*	0.2426	0.0737	3.2896	0.0008
Leverage	-0.0045	0.0026	-1.7700	0.0783	*Leverage*	-0.0001	0.0001	-0.8695	0.3857
Equity Issuance	0.0095	0.0182	0.5214	0.6027	*Equity Issuance*	-0.0001	0.0006	-0.1151	0.9084
Size	-0.1210	0.1169	-1.0351	0.3019	*Size*	-0.0082	0.0037	-2.2123	0.0281
Effects Specification Cross-section fixed (dummy variables)									
R-squared.	0.4948	*Mean dependent var.*		1.5847	*R-squared.*	0.7329	*Mean dependent var.*		0.0027
Adjusted R-squared.	0.3475	*S.D. dependent var.*		0.3744	*Adjusted R-squared.*	0.6550	*S.D. dependent var.*		0.1648
S.E. of regression.	0.3024	*Akaike info criterion.*		0.6432	*S.E. of regression.*	0.0097	*Akaike info criterion.*		-6.2399
Sum squared resid.	25.1913	*Schwarz criterion.*		1.4482	*Sum squared resid.*	0.0180	*Schwarz criterion.*		-5.4347
Log-likelihood.	-123.1511	*Hannan-Quinn criteria.*		0.9679	*Log-likelihood.*	233.8641	*Hannan-Quinn criterion.*		-5.9158
F-statistic.	3.3581	*Durbin-Watson stat.*		2.3255	*F-statistic.*	9.4074	*Durbin-Watson stat.*		1.9071
Prob(F-statistic).	0.0000				*Prob(F-statistic).*	0.0000			

P-value =0.05, 0.03** &0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to the market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + --+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

The values mentioned in the above-captioned table show that Insider Trading possesses a +ve relationship with EI whose coefficient is 4.4 times, its T-stat is 1.97 which is more than 1.96, Hence it +vely far away from its origin. Therefore, a deviation of one percent in EI will fetch a 4.4 percent effect on Insider Trading. Net Equity Issuance &size possess +ve relationship with EI but T-stat is insignificant. Leverage possesses a -ve relationship with EI whose coefficient is 4.5 percent & its T-stat is -1.76 which is partially significant. BM possesses a +ve relationship with EI whose coefficient is 12.2 percent, its T-stat is 1.76 which is partially significant and +vely slightly away from its origin. Therefore, a deviation of one percent in EI will fetch 12.2 times the effect of BM. The R square is 49.84, S.D is equal to 0.374 and the F statistic model is 3.3. The numeric value of R square indicated that 49.84 percent variations of y values about the mean can be explained by X values. In Second model of the two-way relationship model show that Insider Trading possesses a +ve relationship with EI whose coefficient is 0.45 percent, its T-stat is 1.97 which is more than 1.96, Hence +vely far away from its origin. Therefore, a deviation of one percent in Insider Trading will fetch 45 times the effect of EI. Net Equity Issuance, leverage & Size possess a -ve relationship with Insider Trading but the relationship is insignificant. BM possesses a +ve relationship with Insider trading whose coefficient is 24.4 percent and its T-stat is significant. Therefore, a deviation of one percent in Insider Trading will fetch a 24.4 percent effect of BM. The numeric value of R square is 73.2 percent, S.D is more than 1.64 and the F statistic model is 9.40. The numeric value of R square indicated that 71.53 percent variations of y values about the mean can be explained by X values.

Table 4.3.4.2: Textile Industry Abnormal Return Models

Dependent Variable: BHAR *Method: Panel Least Squares.* *Sample: 1 277* *Periods included: 7* *Cross-sections included: 46* *Total panel (unbalanced) observations: 277*					*Dependent Variable: BHAR* *Method: Panel Least Squares.* *Sample: 1 277* *Periods included: 7* *Cross-sections included: 46* *Total panel (unbalanced) observations: 277*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	3.0967	0.5758	5.3783	0.0000	*C*	4.4732	0.774	5.7791	0.0000
Insider Trading	7.3799	2.7938	2.6415	0.0091	*Insider trading*	0.456	0.2054	2.2198	0.0279
EI	0.3159	0.1046	3.0204	0.0000	*BM*	0.1817	0.0766	2.3729	0.0189
BM	1.83E+08	7.12E+07	2.5712	*0.0111*	*Leverage*	-0.0039	0.0056	-0.6957	0.4876
Leverage	-0.0002	0.0037	-0.0413	0.9671	*Equity Issuance*	0	0.0106	0.0036	0.9971
Equity Issuance	-0.003	0.0246	-0.1222	0.9029	*Size*	-1.395	0.2635	-5.2936	0.0000
Size	-0.9446	0.1955	-4.832	0.0000					
Effects Specification *Cross-section fixed (dummy variables)*									
R-squared.	0.6582	*Mean dependent var*		0.3794	*R-squared.*	0.6375	*Mean dependent var.*		0.4464
Adjusted R-squared.	0.5346	*S.D. dependent var*		0.5894	*Adjusted R-squared.*	0.5063	*S.D. dependent var.*		0.6092
S.E.of regression.	0.4021	*Akaike info criterion*		1.2405	*S.E. of regression.*	0.428	*Akaike info criterion.*		1.3655
Sum squared resid.	24.5748	*Schwarz criterion*		2.1391	*Sum squared resid.*	27.8459	*Schwarz criterion.*		2.2641
Log-likelihood.	-73.0142	*Hannan-Quinn criter.*		1.6039	*Log likelihood.*	-86.0107	*Hannan-Quinn criterion.*		1.7288
F-statistic.	5.3227	*Durbin-Watson stat*		2.2695	*F-statistic.*	4.86	*Durbin-Watson stat.*		1.968
Prob(F-statistic).	0				*Prob(F-statistic).*	0			

P-value =0.05, 0.03** &0.01****

Description of variables & Econometric models

Net Equity Issuance $= \left(\frac{Cash\ for\ New\ shares - cash\ for\ shares\ REPURCHASE}{bEG - of\ period\ MVE}\right) * 100$, *Net Insider Trading*$= \left(\frac{share\ Purchased - Share\ Sold)}{Outstanding}\right)$, *Abn Acc or EI*$= \frac{Total\ Acc_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}}\right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$, *BM = Ratio of common book equity to the market value of equity, Buying Hold Abnormal Returns= (1+ Firms Return)- (1+ Market Return KSE), Size = Log of total Market Capitalization or Log of Total Asset, Leverage* $= \left(\frac{Total\ Liabilities - Current\ Liabilities}{Total\ Asset}\right)$. $\frac{P}{E}\ ratio = \left(\frac{Market\ value\ of\ common\ stock}{Annual\ Earnings\ before\ other\ extra\ ordinary\ items}\right)$

Econometric Model: Two-way relationship model

- $Abnomal\ Acc\ or\ EI_{it} = \alpha_o + \beta_1 Insider\ Selling_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + --+ e_{it}$
- $Insider\ SELLING_{it} = \alpha_o + \beta_1 Earnings\ Inflation_{it} + \beta_2 BM_{it} + \beta_3 Leverage_{it_1} + \beta_4\ Size_{it} + \beta_4\ Equity\ Issuance_{it} + ---+ e_{it}$

Regression Analysis:

The values mentioned in the above-captioned table show that Insider Trading possesses a +ve relationship with BHAR whose coefficient is 73 percent. Its T Stat is 2. Therefore, a deviation of one percent in BHAR will fetch a 73 percent effect of Insider Trading. Net Equity Issuance, size and leverage possess a -ve insignificant relationship with BHAR. Size possesses a -ve relationship with BHAR whose coefficient is -94 percent, its T-stat is -4 which is more than 1.96, hence -vely away from its origin. Therefore, a deviation of one percent in BHAR will fetch a -94 percent effect of size. The R square is 54.6, S.D is equal to 0.69 and the F statistic model is 3.3. The numeric value indicated that 54.6 percent variations of y values about the mean can be explained by X values.

In Pre Bubble Model, insider trading possesses a +ve relationship with BHAR whose coefficient is 45.6 percent. Its T Stat is significant. Net Equity Issuance & leverage have an insignificant relationship with BHAR. Size possesses a -ve relationship with BHAR whose coefficient is -13.9 percent but its T-stat is -5. Therefore, a deviation of one percent in BHAR will fetch a -14.71 percent effect of Leverage. The Model R square is 63.7, S.D is equal to 0.60 and the F statistic model is 4.8. The numeric value indicated that 63.7 percent variations of y values about the mean can be explained by X values.

Table 4.3.4.3: Abnormal Return Model during Bubble Period (BHAR)

Dependent Variable: BHAR
Method: Panel Least Squares.
Sample: 1 277
Periods included: 6
Cross-sections included: 46
Total panel (unbalanced) observations: 277

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	3.9708	0.4470	8.8834	0.0000
Insider Trading	-7.6195	2.1690	-3.5130	0.0006
BM	1.9746	0.5517	3.5791	0.0005
LEVRAGE	-0.0081	0.0028	-2.8662	0.0047
Net Equity Issuance	0.0083	0.0191	0.4343	0.6647
Size	-1.1957	0.1518	-7.8784	0.0000

Effects Specification
Cross-section fixed (dummy variables)

R-squared.	0.7884	*Mean dependent var.*	0.4792
Adjusted R-squared.	0.7118	*S.D. dependent var.*	0.5815
S.E. of regression.	0.3122	*Akaike info criterion.*	0.7342
Sum squared resid.	14.8113	*Schwarz criterion.*	1.6328
Log likelihood.	-220.3556	*Hannan-Quinn criterion.*	1.0975

F-statistic.	10.2971	*Durbin-Watson stat.*	2.4276
Prob(F-statistic).	0.0000		

P-value =0.05*, 0.03** & 0.01;**

Eocnometric Model:

$$Bubble\ Peak\ ABRET_i = \alpha_o + \beta_1 Earnings\ Inflation + \beta_2 INSS_{it} + \beta_3 BM_{it} + \beta_4 Leverage_{it_1} + \beta_5\ Size_{it} + \beta_6\ Equity\ Issuance_{it} + - + \mathrm{e}_{it}$$

Regression Analysis:

In Bubble Model, insider trading possesses a -ve relationship with BHAR whose coefficient is -7.61 times. Its T Stat is -3.512 Therefore, a deviation of one percent in BHAR will fetch -7.61 times the effect of Insider Trading. In Bubble Model, the BM possesses a +ve relationship with BHAR whose coefficient is 1.97 times. Its T Stat is 3.5. Therefore, a deviation of one percent in BHAR will fetch 19.7 times the effect of Insider Trading. Leverage possesses a +ve relationship with BHAR whose coefficient is -0.008305 T-stat is-2.86. Therefore, a deviation of one percent in BHAR will fetch -0.008305 times the effect of leverage. Equity issuance possesses an insignificant relationship with BHAR. Size possesses a -ve relationship with BHAR whose coefficient is -1.19, its T-stat is -7. Therefore, a deviation of one percent in BHAR will fetch -1.19 times the effect of size. The Model R square is 78.8, S.D is equal to 0.58 and the F statistic is 10. The numeric value indicated that 45.84 percent variations of y values about the mean can be explained by X values.

Results & Discussion:

During the overall bubble period, earnings inflation possesses a positive relationship with insider trading, equity issuance of firms, and BM ratio, while it possesses a negative relationship with the size of the firm and the leverage. The results also confirmed that during the bubble period managerial stock-based compensation, insider trading and E's M persist in the firms which inflate prices of their shares. Whereas, after the burst of the bubble, insider trading of the firms is curtailed but the managerial compensations are continued by the firms. In the study of insider trading, interesting phenomena of illegal insider trading were observed. It is very hard to detect insider trading in the stock market since no appropriate technique has been developed so far for the detection of insider trading. Up till now, the old proxies were being used for the purpose which is needed to be developed for optimum results. The regression results indicate that in PSX, illegal insider trading is being practiced freely because insider trading possesses a positive relationship with the abnormal returns model in all phases of the bubble. The same stance has also been

proved in Chapter 5, which says that it is due to incomplete legislation on insider trading laws. The results are symmetrical to empirical studies that had taken place in the USA. Furthermore, the reason for this is that in the USA & PSX SEC legislation is being practiced. The details have been explaining in Chapter 2, "2.6.1. Stock Market Mechanism & Policy".

In the association between insider Selling and earnings inflation model of every industry i.e Cement, Chemicals and pharmaceuticals and textile industries a strong relationship between insider selling and earnings inflation has been found. In this model, earnings inflation possesses a linear relationship with the BM ratio. The BM is a controlling variable and may possess a positive or negative relationship with earnings management. If the earnings inflation has an inverse relationship with BM ratio, the earnings inflation will support the price equity of the firm (Beneish & Vargus 2002). If the BM ratio possesses a positive relationship with earnings inflation, then the firm managers would prefer to sell their shares when the earnings inflation is high (Ali et al., 2011 Beneish & Vargus 2002 and Beneish 1999). BM ratio represents the stock-based compensation, managerial incentives and earnings management. In the light of the second condition, the managers continue earnings inflation and trading of their securities during all stages of the bubble to dictate the prices of the firms. The same condition has also been proved in PSX. This indicates that stock-based compensations, managerial incentives and earnings inflation are carried excessively in the PSX during all stages of the bubble. Leverage and size have –ve relationship with earnings inflation during all stages of the bubble. This predicates that the capital structure of firms gets changed during all stages of the bubble and the Pakistani firms become risk-taking to earn returns and incentives.

During the overall bubble and pre-bubble periods models, insider trading possesses a positive relationship with abnormal returns. This indicates that practicing illegal insider trading continues during all stages of the bubble. This also predicates that either the check on insider trading in PSX has been weak or inadequate legislation on insider trading. But this relationship is negative in bubble-peak period model. At this point, the stock-based compensations, insider trading and earnings inflation gets automatically controlled. Moreover, insider trading is generally carried out during the pre-bubble period, whereas during the peak bubble period it gets curtailed due to rise in share prices and the fourth

coming bubble crash period. It is also clarified that these are the insiders only who know about the new future projects which are being launched in the market. As such they are in a better position to predict the bubble periods in PSX.

Leverage and size results of overall bubble, pre-bubble and bubble peak models periods indicate that the firm's capital structure keeps on changing during all stages of the bubble and the Pakistani firms become risk-taking to earn returns and incentives.

The regression results of the afore-mentioned industries show that earnings inflation and insider trading possess a linear relationship throughout the bubble period. As a result, the managerial incentives were also increased because BM ratio of all industries was increased due to earnings inflation and insider trading. Firms always use earnings inflation and insider trading to raise their equity prices. Due to insider trading and earnings inflation, the capital structure of the companies is also changed.

The results also confirm that smaller firms carry out more equity issuance and insider trading as compare to the larger firms in PSX. The previous research findings also showed similar results hence proving the preceding statement. The results also verify that during the peak bubble period illegal insider trading does not take place in PSX since the values of the shares have already increased to the maximum and thereafter those have to fall. In PSX the firms resort to insider trading and E'sM to inflate the share prices of the firms, increase wealth maximization of investors etc. During the bubble period in a stock market, managerial stock-based compensation, insider trading and earnings management increase. This is done to inflate the prices of shares and to earn maximum benefits to the firms. As manager also holds inside information, therefore, they understand the stock market dynamics with reference to the position of the respective firm and thus earn profits during the bubble period. Furthermore, after the bubble burst, insider trading activities are curtailed or discouraged as the managers holding the firm's shares are less likely to invest in a bubble burst phase of the stock market. However, managerial compensation continues as managers are offered firm's shares at reduced prices in the post-bubble burst phase. The incentive in such acquisition is that after the bubble burst, the firm's shares are not likely to fall further and investment at this time is more likely to yield profits in the next bubble phase of the stock market or whenever share prices rally again in the stock market after some time.

4.4.1 Model 3: What role do the M&A & profitable firms play towards bubble creation & their impact on the stock market during the Bubble period.

In this segment, it has been endeavored to analyze the impact of pre-bubble, bubble, Post bubble, and bubble crash periods on M&A and profitable firms. Earlier researches also indicate that according to various phases of a bubble, the transaction multiples also get varied. These transaction multiples represent the actual Firm value of M&A firms and profitable firms. As the bubble increases, accordingly the transaction multiples also get increased. Similarly, the investors also tend to invest in those firm securities which they expect that their transaction values shall be enhanced with time. The firm's financial information & Investor's dispersion of beliefs during the bubble period play a vital role in enhancing the volatility of Transaction multiples (Yosef et al., (2010), Bhojraj and Lee (2002), De Franco and Jin (2008), Plenborg et al., (2017), Lie and Lie (2002) and Liu et al. (2002).

The other model used in the analysis is the firm's economic condition model, which explains how M&A and profitable firm's economic conditions have been affected during the four stages of the bubble. This model provides information about firms accounting manipulations and value relevance accounting. The investors mostly prefer to invest during bubble periods in those firms which entail better earnings, whereas after the bubble burst their preference of investment switches over to those firms which possess better cash flows. In this analysis, two models have been used in the price regression model. Furthermore, price regression models deflated by BV have been applied (for reduction of hetroscadicity and multicollinearity issues). Data of only positive values have been used in these models. The results indicate that the economic conditions of M&A and profitable firms contribute to enhance the values of equity from their fundamental values. The results of the empirical analysis also indicate that E'sM of M&A and profitable firms create manipulation in the STK MKT (Ohlson 1995; Yosef et al., (2010) and Collins et al., 1997).

Table 4.4.1.1: Descriptive Statistic of Model3: What role do the M&A & profitable firms play towards bubble creation & their impact on the stock market during Bubble Periods. (Scaled & Un scaled Financial Variables)

	S/EV	*E/P*	*ROE*	*PM*	*LEVRAGE*	*EV/S*	*P/E*	*Total Acc*	*-ve Earnings*
Mean	0.0458	0.6957	-0.3949	0.2216	-0.7916	0.0473	0.7730	-0.3563	0.1647
Median	0.0000	0.7551	-0.3896	0.2303	-0.6418	0.0000	0.8390	-0.2956	0.0000
Maximum	1.7132	3.0879	1.0061	0.9023	0.1036	2.2343	3.4310	0.1350	1.0000
Minimum	-2.2343	-1.0742	-1.7173	0.0909	-3.8721	-1.9895	-1.1935	-5.5787	0.0000
Std. Dev.	0.4951	0.5207	0.3054	0.1462	0.6590	0.4968	0.5785	0.3921	0.3711
Skewness	-0.2651	0.1068	-0.4127	0.3341	-1.6402	0.1979	0.1187	-0.7113	1.8082
Kurtosis	5.2828	3.4225	4.9185	4.8199	6.8922	5.4312	3.8028	4.0354	4.2696

	Size	*Pre-bubble*	*Bubble*	*Crash*	*POST-Bubble*	*LOSS*Total Acc/BV*	*SALESCH/BV*	*CFO/BV*	*CFO LOSS*
Mean	3.4406	0.2542	0.3520	0.2601	0.2959	-5.1063	0.7223	3.7361	121.0851
Median	3.7688	0.0000	0.0000	0.0000	0.0000	0.0000	0.7713	4.2146	0.0000
Maximum	5.7975	1.0000	1.0000	1.0000	1.0000	31.6890	3.7808	7.1453	15191.1200
Minimum	0.0000	0.0000	0.0000	0.0000	0.0000	-7.7880	-2.6395	0.2192	0.0000
Std. Dev.	1.4499	0.4357	0.4779	0.4390	0.4567	36.2728	0.7632	1.8073	744.8904
Skewness	-1.4891	1.1292	0.6196	1.0935	0.8941	-13.4122	-0.1205	-0.9230	13.5718
Kurtosis	4.2969	2.2751	1.3840	2.1957	1.7994	11.6541	4.0867	2.9532	13.1036

	P/e	*ROA*	*PM*	*B/p*	*1/BV*	*SALESCH/BV*	*Earnings/BV*	*Sales Growth*
Mean	0.7730	-0.8452	0.2216	0.1362	1.3578	0.7301	0.0381	-0.6369
Median	0.8390	-0.8473	0.2303	0.0230	1.5460	0.7855	0.0430	-0.6237
Maximum	3.4310	0.0000	0.9023	1.6868	3.1496	3.7808	0.0732	2.0077
Minimum	-1.1935	-3.5930	0.0909	0.0240	-1.3588	-2.6395	0.0000	-3.2620
Std. Dev.	0.5785	0.5305	0.1462	0.4194	0.7372	0.7636	0.1851	0.6294
Skewness	0.1187	-0.8731	0.3341	1.1195	0.7262	-0.1430	0.2162	0.0579
	3.8028	5.7679	4.8199	6.9305	2.8402	4.1189	2.6500	4.5883

Note *The analysis of descriptive statistics of Model 3, indicates that it's all variables are away from their origin and all the conditions i.e. S.D, Skewness and Kurtosis related to them are satisfied. Furthermore, the data is not normally distributed.*

Descriptive Statistic

The above-stated descriptive statistics consist of S/EV, E/P, ROE, PM, Levrage, EV/S, P/E, Total Acc and -ve Earnings. The results have been based on different ranges of data like Mean, Median, maximum & Minimum. The analysis of lag Length criterion & descriptive statistics indicates that all variables are satisfying the various conditions like lag length criterion & descriptive statistics (i.e. S.D, skewness and kurtosis related to them are satisfied). As it is evident from the table of S/EV that its mean is equal to 0.0458, the median is equal to 0.0000, S.D is equal to 0.4951, Skewness is equal to -0.2651 and kurtosis is equal to 5.2828. The data used for the purpose contains 1892 observations. Similarly, the descriptive statistics of E/P is that its mean is equal to 0.6957, the median is equal to 0.7551, S.D is equal to 0.5207, Skewness is equal to 0.1068 and kurtosis is equal to 3.4225. In ROE its mean is equal to -0.3949, the median is equal to -0.3896, S.D is equal to 0.3054, Skewness is equal to -0.4127 and kurtosis is equal to 4.9185. In PM its mean is equal to 0.2216, the median is equal to 0.2303, S.D is equal to 0.1462, Skewness is equal to 0.3341 and kurtosis is equal to 4.8199. In Levrage its mean is equal to -0.7916, the median is equal to -0.6418, S.D is equal to 0.6590, Skewness is equal to -1.6402 and kurtosis is equal to 6.8922. In EV/S its mean is equal to 0.0473, the median is equal to 0.0000, S.D is equal to 0.4968, Skewness is equal to 0.1979 and kurtosis is equal to 5.4312. In P/E its mean is equal to 0.7730, the median is equal to 0.8390, S.D is equal to 0.5785, Skewness is equal to 0.1187 and kurtosis is equal to 3.8028. In Total Acc its mean is equal to -0.3563, the median is equal to -0.2956, S.D is equal to 0.3921, Skewness is equal to -0.7113 and kurtosis is equal to 4.0354. In -ve Earnings its mean is equal to 0.1647, the median is equal to 0.0000, S.D is equal to 1.4499, Skewness is equal to 1.8082 and kurtosis is equal to 4.2696. In Size its mean is equal to 3.4406, the median is equal to 3.7688, S.D is equal to 0.7632, Skewness is equal to -1.4891 and kurtosis is equal to 4.2969. In Pre-Bubble its mean is equal to 0.2542, the median is equal to 0.0000, S.D is equal to 0.4357, Skewness is equal to 1.1292 and kurtosis is equal to 2.2751. In Bubble its mean is equal to 0.3520, the median is equal to 0.0000, S.D is equal to 0.4779, Skewness is equal to 0.6196 and kurtosis is equal to 1.3840. In Crash its mean is equal to 0.2601, the median is equal to 0.0000, S.D is equal to 0.4390, Skewness is equal to 1.0935 and kurtosis is equal to 2.1957. In Post Bubble its mean is equal to 0.2959, the median is equal to 0.0000, S.D is equal to 0.4567, Skewness is equal to 0.8941 and kurtosis is equal to 1.7994. In Post Bubble its mean is equal to 0.2959, the median is equal to 0.0000, S.D is equal to 0.4567, Skewness is equal to 0.8941 and

kurtosis is equal to 1.7994. In Loss * Total Acc/BV its mean is equal to -5.1063, the median is equal to 0.0000, S.D is equal to 36.2728, Skewness is equal to -13.4122 and kurtosis is equal to 11.6541. In Sales CH/BV its mean is equal to 0.7223, the median is equal to 0.7713, S.D is equal to -0.1205, Skewness is equal to -0.1205 and kurtosis is equal to 4.0867. In CFO/BV its mean is equal to 3.7361, the median is equal to 4.2146, S.D is equal to 1.8073, Skewness is equal to --0.9230 and kurtosis is equal to 2.9532. In CFO Loss its mean is equal to 121.0851, the median is equal to 0.0000, S.D is equal to 744.8904, Skewness is equal to 13.5718 and kurtosis is equal to 4.2696. In P/E its mean is equal to 0.7730, the median is equal to 0.8390 S.D is equal to 0.5785 and Skewness is equal to 0.1187. In ROA its mean is equal to -0.8452, the median is equal to -0.8473 S.D is equal to 0.5305 and Skewness is equal to -0.8731. In PM its mean is equal to 0.2216, the median is equal to 0.2303 S.D is equal to 0.1462 and Skewness is equal to 0.3341. In B/P its mean is equal to 0.1362, the median is equal to 0.0230 S.D is equal to 0.4194 and Skewness is equal to 1.1195. In I/BV its mean is equal to 1.3578, the median is equal to 1.5460 S.D is equal to 0.7372 and Skewness is equal to 1.1195. In Sales CH/BV its mean is equal to 0.7301, the median is equal to 0.7855 S.D is equal to 0.7636 and Skewness is equal to -0.1430. In Earnings/BV its mean is equal to 0.0381, the median is equal to 0.0430 S.D is equal to 0.1851 and Skewness is equal to 0.2162. In Sales Growth its mean is equal to -0.6369, the median is equal to -0.6237 S.D is equal to 0.6294 and Skewness is equal to 0.0579.

Table 4.4.1.2: Cement Industry Transaction Multiples

Dependent Variable: EV/S *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14*					*Dependent Variable: P/E* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14*					*Dependent Variable: P/S* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.7862	0.3114	-2.5250	0.0122	*C*	3.4882	0.7300	4.7787	0.0000	*C*	1.3576	0.2166	6.2683	0.0000
POST	-2.9626	0.7636	-3.8800	0.0001	*POST*	-0.1421	0.0765	-1.8583	0.0649	*POST*	-0.5499	0.2589	-2.1239	0.0312
PRE	0.0583	0.0790	0.7388	0.4608	*PRE*	0.0953	0.0834	1.1431	0.2546	*PRE*	0.2838	0.2442	1.1620	0.2468
BUBBLE	0.2942	0.0917	3.2069	0.0015	*BUBBLE*	0.3316	0.0848	3.9086	0.0001	*BUBBLE*	0.4910	0.2475	1.9834	0.0488
CRASHES	0.2894	0.1205	2.4013	0.0171	*CRASHES*	0.1007	0.0399	2.5212	0.0127	*CRASHES*	0.1323	0.2372	0.5575	0.5779
					Effects Specification Cross-section fixed (dummy variables)									
R-squared	0.3497	*Mean dependent var*		0.8770	*R-squared*	0.7871	*Mean dependent var*		3.6549	*R-squared*	0.1087	*Mean dependent var*		2.1875
Adjusted R-	0.3199	*S.D. dependent var*		0.5316	*Adjusted R-squared*	0.7435	*S.D. dependent var*		0.7889	*Adjusted R-squared*	0.0998	*S.D. dependent var*		1.1864
S.E. of	2.8135	*Akaike info criterion*		3.0687	*S.E. of regression*	0.3996	*Akaike info criterion*		1.1602	*S.E. of regression*	1.5008	*Akaike info criterion*		3.7351
Sum squared	18.1555	*Schwarz criterion*		3.7301	*Sum squared resid*	26.5061	*Schwarz criterion*		1.7354	*Sum squared resid*	12.1731	*Schwarz criterion*		3.0309
Log likelihood	-167.8978	*Hannan-Quinn criter.*		3.3338	*Log likelihood*	-181.6005	*Hannan-Quinn criter.*		1.3930	*Log likelihood*	-135.3796	*Hannan-Quinn criter.*		3.8548
F-statistic	15.4634	*Durbin-Watson stat*		1.6577	*F-statistic*	18.0470	*Durbin-Watson stat*		1.1812	*F-statistic*	2.3037	*Durbin-Watson stat*		1.1682
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0035			

Table 4.4.1.3: Cement Industry Inverse Transaction Multiple Analysis

Dependent Variable: E/P *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14* *Total panel (unbalanced) observations: 201*					*Dependent Variable: S/EV* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14* *Total panel (unbalanced) observations: 201*					*Dependent Variable: S/P* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14* *Total panel (unbalanced) observations: 201*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-1.7695	1.0002	-1.7692	0.0788	*C*	-2.4225	0.4008	-6.0436	0.0000	*C*	-19.7680	7.3985	-2.6719	0.0083
ROE	-0.5575	0.1638	-3.4035	0.0008	*ROE*	-0.0011	0.0669	-0.0167	0.9867	*ROE*	1.2128	0.9323	1.3008	0.1952
Profit Margin	-0.0218	0.0875	-0.2493	0.8035	*Profit Margin*	0.0901	0.0653	1.3787	0.1697	*Profit Margin*	0.8139	0.7611	1.0693	0.2865
Sales Growth	-0.0024	0.0032	-0.7397	0.4606	*Sales Growth*	-0.0051	0.0027	-1.9310	0.0543	*Sales Growth*	-0.0028	0.0502	-0.0552	0.9561
Size	-0.4977	0.2774	-1.7939	0.0747	*Size*	-0.3570	0.0934	-3.8236	0.0002	*Size*	5.7809	1.9541	2.9583	0.0036
Leverage	-1.2766	0.5843	-2.1850	0.0303	*Leverage*	-0.6311	0.1730	-3.6483	0.0003	*Leverage*	-4.7511	1.8974	-2.5039	0.0133
Post	-0.0486	0.0608	-0.8005	0.4246	*Post*	0.1648	0.0795	2.0733	0.0396	*Post*	0.5574	0.2873	1.9400	0.0541
Pre	-0.1327	0.0555	-2.3906	0.0180	*Pre*	-0.1396	0.0572	-2.4416	0.0156	*Pre*	-0.8671	0.3155	-2.7481	0.0067
Bubble	-0.0973	0.0499	-1.9505	0.0542	*Bubble*	-0.2287	0.0621	-3.6849	0.0003	*Bubble*	-1.0981	0.4246	-2.5861	0.0106
Crashes	0.0040	0.0546	0.0732	0.9418	*Crashes*	-0.0449	0.0649	-0.6917	0.4900	*Crashes*	-0.7468	0.4139	-1.8040	0.0731
					Effects Specification									
R-squared	0.4771	*Mean dependent var*		-0.0141	*R-squared*	0.5678	*Mean dependent var*		0.7270	*R-squared*	0.3754	*Mean dependent var*		1.5459
Adjusted R-squared	0.3496	*S.D. dependent var*		0.4376	*Adjusted R-squared*	0.5138	*S.D. dependent var*		0.5696	*Adjusted R-squared*	0.2232	*S.D. dependent var*		2.7143
S.E. of regression	0.3529	*Akaike info criterion*		0.9315	*S.E. of regression*	0.3972	*Akaike info criterion*		1.0994	*S.E. of regression*	2.3922	*Akaike info criterion*		4.7592
Sum squared resid	19.9233	*Schwarz criterion*		1.5911	*Sum squared resid*	27.7634	*Schwarz criterion*		1.4801	*Sum squared resid*	35.6571	*Schwarz criterion*		5.4189
Log likelihood	-53.1450	*Hannan-Quinn*		1.1984	*Log likelihood*	-86.3948	*Hannan-Quinn criter.*		1.2535	*Log likelihood*	-63.9202	*Hannan-Quinn criter.*		5.0262
F-statistic	3.7430	*Durbin-Watson stat*		1.5866	*F-statistic*	10.5111	*Durbin-Watson stat*		1.2544	*F-statistic*	2.4661	*Durbin-Watson stat*		1.2844
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.1.4: Cash Flow Vs Accruals (Judging Cement Industry investor's financial knowledge, risk perception awareness & financial intelligence)

Dependent Variable: P/BV *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14* *Total panel (unbalanced) observations: 201*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 14* *Total panel (unbalanced) observations: 201*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 201* *Periods included: 18* *Cross-sections included: 17* *Total panel (unbalanced) observations: 201*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	3.6306	0.0617	58.8132	0.0000	*C*	3.3450	0.1158	28.8873	0.0000	*C*	3.1702	0.1019	31.1155	0.0000
1/BV	-16.6169	2.7676	-6.0041	0.0000	*1/BV*	1.9967	0.7668	2.6041	0.0089	*1/BV*	1.3246	0.5902	2.2441	0.0258
Earnings /BV	7.0105	1.1527	6.0819	0.0000	*Total Acc/BV*	0.3060	0.0568	5.3840	0.0000	*Total Acc/BV*	2.1973	0.4881	4.5020	0.0000
Negative Earnings/BV	-1.5469	0.2859	-5.4114	0.0000	*(loss*Total Acc/BV)*	8.1236	7.4786	1.0863	0.2788	*(loss*Total Acc/BV)*	-1.3742	0.6180	-2.2238	0.0272
Sales Growth/BV	0.0838	0.1202	0.6977	0.4862	*CFO/BV*	0.1302	0.0264	4.9295	0.0000	*ABN/BV*	0.8228	0.3975	2.0701	0.0396
					*(Loss*CFO)/BV*	-0.2007	0.0417	-4.8186	0.0000	*ABN*loss/BV*	3.3913	2.2657	1.4968	0.1358
										CFO/BV	0.1402	0.0259	5.4191	0.0000
										*CFO*LOSS/BV*	-0.2165	0.0369	-5.8632	0.0000
										Sales Growth/BV	0.0000	0.0109	0.0035	0.9972
Effects Specification *Cross-section fixed (dummy variables)*														
R-squared	0.4858	*Mean dependent var*	3.6549		*R-squared*	0.5766	*Mean dependent var*	3.6549		*R-squared*	0.6290	*Mean dependent var*	3.4781	
Adjusted R-squared	0.4380	*S.D. dependent var*	0.7889		*Adjusted R-squared*	0.5347	*S.D. dependent var*	0.7889		*Adjusted R-squared*	0.5894	*S.D. dependent var*	0.8991	
S.E. of regression	0.5914	*Akaike info criterion*	1.8728		*S.E. of regression*	0.5382	*Akaike info criterion*	1.6885		*S.E. of regression*	0.5761	*Akaike info criterion*	1.8296	
Sum squared resid	64.0138	*Schwarz criterion*	2.1686		*Sum squared resid*	52.7121	*Schwarz criterion*	2.0007		*Sum squared resid*	74.6798	*Schwarz criterion*	2.1818	
Log likelihood	-170.2139	*Hannan-Quinn*	1.9925		*Log likelihood*	-150.6914	*Hannan-Quinn criter.*	1.8148		*Log likelihood*	-203.7032	*Hannan-Quinn criter.*	1.9714	
F-statistic	10.1686	*Durbin-Watson stat*	0.7968		*F-statistic*	13.7669	*Durbin-Watson stat*	0.9155		*F-statistic*	15.8944	*Durbin-Watson stat*	0.9619	
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Econometric models:

Transaction Multiple models: $EV/s_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\ Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$; *Transaction Multiple models:* $EV/s_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\ Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$;

Results and Discussion

The analysis of the transaction multiples model of the cement Sector indicates that the results of all transaction multiples i.e. P/E, EV/S & P/S have been found to have a positive relationship during pre-bubble, bubble & crash periods less post-bubble period where the relationship is significantly negative. The above results indicate that the arbitraging activities of the cement industry have increased during all stages of the bubble, whereas it has dropped during the post-bubble period. The results also confirm that in the cement industry the financial stability, operational activity, short selling & cost of capital have enhanced during all stages of the bubble less post-bubble period. The impact of transaction multiples has not been found in the USA, whereas it has been found in PSX.

The regression results of the inverse transaction multiples indicate that the share demand of the cement industry has increased during the pre-bubble & bubble period inside & outside of the exchange. The crash period results show that since it is a profitable industry therefore the investors give importance to trading its shares even in a bubble crash period. The results of ROE, PM & sales growth indicate that firm's annual growth, profitability, revenue & financial stability has grown up. While the size & leverage indicate that during pre-bubble & bubble period the investment and risk-taking activities have grown.

In price regression models, the value of 1/BV is –ve which indicates that the firm's economic condition & managerial incentives concerning revenue have increased. The two models use in the price regression model are "Accrual vs Cash flow and unexpected accruals vs cash flow" which indicates that the PSX investors lack financial knowledge and risk distress management because of the coefficient values of accruals & unexpected accruals have been greater than the coefficient value cash flows. This also predicates the fact that investors of the cement industry prefer manipulations by the firms for discounting. It has further been observed that price regression results of the USA and PSX have been identical.

Table 4.4.2.1: Chemical & Pharmaceutical Industry Transaction Multiples

Dependent Variable: EV/S Method: Panel Least Squares *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable: P/E Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable: P/S Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*				
Variables	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	5.3247	0.6102	8.7268	0.0000	*C*	2.8736	0.0715	40.2081	0.0000	*C*	0.8664	0.0606	14.3032	0.0000
POST	-1.9699	0.9811	-2.0078	0.0541	*POST*	-0.2490	0.0750	-3.3192	0.0010	*POST*	-0.1780	0.0684	-2.6045	0.0096
PRE	-0.0829	0.6872	-0.1206	0.9041	*PRE*	-0.1043	0.0612	-1.7047	0.0888	*PRE*	-0.0899	0.0576	-1.5599	0.1197
BUBBLE	2.8079	1.3896	2.0206	0.0438	*BUBBLE*	0.3268	0.0724	4.5115	0.0000	*BUBBLE*	0.2434	0.0644	3.7805	0.0002
CRASHES	1.1794	1.2639	0.9332	0.3511	*CRASHES*	0.2049	0.0656	3.1264	0.0019	*CRASHES*	0.1811	0.0681	2.6602	0.0082
					Effects Specification *Cross-section fixed (dummy variables)*									
R-squared	0.1803	*Mean dependent var*		0.5728	*R-squared*	0.6420	*Mean dependent var*		0.3125	*R-squared*	0.4440	*Mean dependent var*		1.0525
Adjusted R-squared	0.0858	*S.D. dependent var*		1.4111	*Adjusted R-squared*	0.6131	*S.D. dependent var*		0.1270	*Adjusted R-*	0.3939	*S.D. dependent var*		0.7237
S.E. of regression	1.4919	*Akaike info criterion*		3.1410	*S.E. of regression*	0.7898	*Akaike info criterion*		2.4390	*S.E. of regression*	0.5634	*Akaike info criterion*		1.7717
Sum squared resid	96.2944	*Schwarz criterion*		3.6007	*Sum squared resid*	34.0567	*Schwarz criterion*		2.7726	*Sum squared*	105.7030	*Schwarz criterion*		2.1036
Log likelihood	-234.3678	*Hannan-Quinn criter.*		3.3201	*Log likelihood*	-123.7122	*Hannan-Quinn criter.*		2.5689	*Log likelihood*	-291.4469	*Hannan-Quinn criter.*		1.9036
F-statistic	1.9080	*Durbin-Watson stat*		1.9861	*F-statistic*	22.2530	*Durbin-Watson stat*		0.6153	*F-statistic*	8.8640	*Durbin-Watson stat*		0.6919
Prob(F-statistic)	0.0001				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.2.2: Chemical & pharmaceutical Industry Inverse Transaction Multiples

Dependent Variable: E/P *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable: S/EV* *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable:S/P* *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.9796	0.1889	5.1871	0.0000	*C*	0.8702	0.5915	1.4711	0.1420	*C*	8.5591	16.2223	0.5276	0.5981
ROE	-0.0027	0.0015	-1.8616	0.0633	*ROE*	-0.1166	0.0154	-7.5920	0.0000	*ROE*	-0.2438	0.0870	-2.8031	0.0065
Profit Margin	-0.0042	0.0016	-2.6429	0.0079	*Profit Margin*	-0.0473	0.0068	-6.9322	0.0000	*Profit Margin*	-0.5068	0.1966	-2.5777	0.0127
Sales Growth	-0.0003	8.55E-05	-3.4079	0.0007	*Sales Growth*	-0.0011	0.0003	-4.0089	0.0001	*Sales Growth*	-0.0074	0.0030	-2.4686	0.0141
Size	-0.0394	0.0314	-1.2519	0.2108	*Size*	-0.0195	0.1719	-0.1134	0.9098	*Size*	-0.7470	4.4568	-0.1676	0.8671
Leverage	-0.5929	1.2789	-0.4636	0.6432	*Leverage*	-0.1848	0.1997	-0.9252	0.3553	*Leverage*	-0.2854	0.2961	-0.9637	0.3384
Post	0.0042	0.0042	1.0124	0.3119	*Post*	0.1941	0.0548	3.5390	0.0004	*Post*	2.8739	2.0954	1.3715	0.1708
Pre	0.0011	0.0038	0.2928	0.7698	*Pre*	0.0132	0.0425	0.3118	0.7553	*Pre*	-2.7272	2.8247	-0.9655	0.3348
Bubble	-0.0109	0.0039	-2.8122	0.0051	*Bubble*	-0.1124	0.0507	-2.2187	0.0273	*Bubble*	0.0716	0.0179	3.9945	0.0001
Crashes	-0.0062	0.0038	-1.6611	0.0973	*Crashes*	-0.1412	0.3762	-0.3752	0.7078	*Crashes*	-0.6704	1.3825	-0.4849	0.6279
					Effects Specification Cross-section fixed (dummy variables)									
R-squared	0.8659	*Mean dependent var*		0.3168	*R-squared*	0.5320	*Mean dependent var*		0.7369	R-squared	0.1994	*Mean dependent var*		4.9469
Adjusted R-squared	0.8525	*S.D. dependent var*		0.1013	*Adjusted R-squared*	0.4649	*S.D. dependent var*		0.5988	Adjusted R-squared	0.0958	*S.D. dependent var*		33.5333
S.E. of regression	0.3892	*Akaike info criterion*		-3.5670	*S.E. of regression*	0.4380	*Akaike info criterion*		1.3053	S.E. of regression	0.3189	*Akaike info criterion*		9.8710
Sum squared resid	7.7436	*Schwarz criterion*		-3.1702	*Sum squared resid*	88.2644	*Schwarz criterion*		1.8478	Sum squared resid	51.8541	*Schwarz criterion*		10.3771
Log likelihood	101.4875	*Hannan-Quinn criter.*		-3.4118	*Log likelihood*	-276.9419	*Hannan-Quinn criter.*		1.5177	Log likelihood	-278.0796	*Hannan-Quinn criter.*		10.0684
F-statistic	64.7087	*Durbin-Watson stat*		0.9132	*F-statistic*	7.9236	*Durbin-Watson stat*		1.4473	F-statistic	1.9247	*Durbin-Watson stat*		0.9541
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				Prob(F-statistic)	0.0001			

Table 4.4.2.3: Cash Flow Vs Accruals (Judging chemical & pharmacuetial invetors financial knowledge, risk perception awareness & financial intelligence)

Dependent Variable: P/BV *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 591* *Periods included: 18* *Cross-sections included: 41* *Total panel (unbalanced) observations: 591*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.3076	0.0302	10.1726	0.0000	*C*	3.1198	0.0998	31.2451	0.0000	*C*	2.8667	0.0925	30.9952	0.0000
1/BV	-0.3816	0.2065	-1.8481	0.0651	*_1_BV*	1.7471	0.5602	3.1185	0.0021	*1/BV*	-0.3871	0.2394	-1.6174	0.1064
Earnings /BV	0.6819	0.2347	2.9054	0.0038	*Total Acc/BV*	2.1853	0.4913	4.4481	0.0000	*Total Acc/BV*	0.0765	0.1595	0.4796	0.6317
Negative Earnings/BV	-0.6104	0.2711	-2.2516	0.0248	*Loss*Tacc/BV*	7.8521	5.5372	1.4181	0.1575	*(loss*Total Acc/BV)*	3.4690	2.0006	1.7339	0.0835
Sales Growth/BV	0.0727	0.0907	0.8017	0.4231	*CFO_BV*	0.1469	0.0259	5.6779	0.0000	*ABN/BV*	0.6027	0.1788	3.3706	0.0008
					*CFO*LOSS/BV*	-0.2053	0.0369	-5.5663	0.0000	*ABN*loss/BV*	-2.9965	1.5818	-1.8943	0.0587
					Sales Growth/BV	0.0014	0.0109	0.1256	0.9002	*CFO/BV*	0.0964	0.0252	3.8259	0.0001
										*CFO*LOSS/BV*	-0.0045	0.0361	-0.1254	0.9003
										Sales Growth	-0.0017	0.0004	-4.8222	0.0000
Effects Specification Cross-section fixed (dummy variables)														
R-squared	0.8221	*Mean dependent var*		3.1255	*R-squared*	0.6201	*Mean dependent var*		3.4781	*R-squared*	0.6461	*Mean dependent var*		3.1255
Adjusted R-squared	0.8016	*S.D. dependent var*		1.2698	*Adjusted R-squared*	0.5832	*S.D. dependent var*		0.8991	*Adjusted R-squared*	0.6148	*S.D. dependent var*		1.2698
S.E. of regression	0.5656	*Akaike info criterion*		1.7970	*S.E. of regression*	0.5804	*Akaike info criterion*		1.8374	*S.E. of regression*	0.7881	*Akaike info criterion*		2.4410
Sum squared resid	169.2088	*Schwarz criterion*		2.2567	*Sum squared resid*	76.4780	*Schwarz criterion*		2.1614	*Sum squared resid*	33.6695	*Schwarz criterion*		2.8043
Log likelihood	-469.0160	*Hannan-Quinn criter.*		1.9761	*Log likelihood*	-206.7750	*Hannan-Quinn criter.*		1.9678	*Log likelihood*	-267.3106	*Hannan-Quinn criter.*		2.5825
F-statistic	40.0831	*Durbin-Watson stat*		0.9432	*F-statistic*	16.8396	*Durbin-Watson stat*		0.9032	*F-statistic*	20.6144	*Durbin-Watson stat*		0.6258
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Econometric models:

Transaction Multiple models: $EV/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\, Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$; *Transaction Multiple models:* $EV/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\, Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$;

Results and Discussion

The analysis of the transaction multiples model of the chemical & pharmaceutical Industry Sector indicates that the results of all transaction multiples i.e. P/E, EV/S & P/S have been found to have a positive relationship during bubble period & crash periods less post-bubble period where the relationship is significantly negative. The above results indicate that the arbitraging activities of the chemical & pharmaceutical industry have increased during all stages of the bubble, whereas it has dropped during the post-bubble period. The results also confirm that in the chemical & pharmaceutical industry the financial stability, operational activity, short selling & cost of capital have enhanced during all stages of the bubble less post-bubble period. The impact of transaction multiples has not been found in the USA, whereas it has been found in PSX.

The regression results of the inverse transaction multiples indicate that the share demand of the chemical & pharmaceutical industry has increased during the pre-bubble & bubble period inside & outside of the exchange. The crash period results show that since it is a profitable industry therefore the investors give importance to trading its shares even in a bubble crash period. The results of ROE, PM & sales growth indicate that firm's annual growth, profitability, revenue & financial stability has grown up. While the size & leverage indicate that during pre-bubble & bubble period the investment and risk-taking activities have grown.

In price regression models, the value of 1/BV is –ve which indicates that the firm's economic condition & managerial incentives to revenue have increased. The two models use in the price regression model are "Accrual vs Cash flow and unexpected accruals vs cash flow" which indicates that the PSX investors lack financial knowledge and risk distress management because of the coefficient values of accruals & unexpected accruals have been greater than the coefficient value cash flows. This also predicates the fact that investors of chemical & pharmaceutical industries prefer manipulations by the firms for discounting. It has further been observed that price regression results of the USA and PSX have been identical.

Table 4.4.3.1: Textile Sector Transaction Multiples

Dependent Variable: EV/S Method: Panel Least Squares *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110*					*Dependent Variable: P/E Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110*					*Dependent Variable:P/S Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110*			
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.0797	0.1825	0.4371	0.6628	*C*	-1.4431	1.1484	-1.2566	0.2152	*C*	-0.0855	0.3230	-0.2646	0.7918
POST	-0.2488	0.1049	-2.3716	0.0192	*POST*	-0.0242	0.0100	-2.4141	0.0161	*POST*	0.1477	0.1246	1.1854	0.2383
PRE	-0.3112	0.1164	-2.6739	0.0085	*PRE*	-0.0366	0.0081	-4.5316	0.0000	*PRE*	0.0002	0.0005	0.3365	0.7371
BUBBLE	0.6398	0.1202	5.3225	0.0000	*BUBBLE*	0.8484	0.3384	2.5070	0.0158	*BUBBLE*	0.5064	0.2384	2.1237	0.0359
CRASHES	-0.6446	0.2386	-2.7018	0.0081	*CRASHES*	-0.1066	0.0484	-2.2035	0.0280	*CRASHES*	-0.0259	0.0324	-0.7998	0.4239
					Effects Specification *Cross-section fixed (dummy variables)*									
R-squared	0.3502	*Mean dependent var*		0.5222	R-squared	0.3308	*Mean dependent var*		0.5049	*R-squared*	0.5702	*Mean dependent var*		0.7119
Adjusted R-squared	0.3294	*S.D. dependent var*		0.5521	Adjusted R-squared	0.2033	*S.D. dependent var*		0.3533	*Adjusted R-squared*	0.5136	*S.D. dependent var*		0.5931
S.E. of regression	0.3801	*Akaike info criterion*		1.0857	S.E. of regression	0.3154	*Akaike info criterion*		0.6765	*S.E. of regression*	0.4136	*Akaike info criterion*		1.1870
Sum squared resid	14.8789	*Schwarz criterion*		1.6812	Sum squared resid	52.2091	*Schwarz criterion*		1.3927	*Sum squared resid*	19.5025	*Schwarz criterion*		1.5400
Log likelihood	-143.5687	*Hannan-Quinn criter.*		1.3277	Log likelihood	-110.7340	*Hannan-Quinn criter.*		0.9548	*Log likelihood*	-161.1576	*Hannan-Quinn criter.*		1.3304
F-statistic	8.1188	*Durbin-Watson stat*		1.0904	F-statistic	2.5949	*Durbin-Watson stat*		0.8114	*F-statistic*	10.0812	*Durbin-Watson stat*		1.2295
Prob(F-statistic)	0.0000				Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.3.2: Textile Inverse Transaction Multiples

Dependent Variable: S/EV *Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 107* *Total panel (unbalanced) observations: 1461*					*Dependent Variable:E/P* *Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110* *Total panel (unbalanced) observations: 1461*					*Dependent Variable: S/P* *Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110* *Total panel (unbalanced) observations: 1461*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	6.5281	2.3721	2.7520	0.0068	*C*	-7.8622	3.1137	-2.5250	0.0122	*C*	-12.5466	5.6115	-2.2359	0.0259
ROE	-0.1494	0.0759	-1.9680	0.0493	*ROE*	-2.9419	0.9174	-3.2069	0.0015	*ROE*	-0.0720	0.0463	-1.5558	0.1207
Profit Margin	-12.5466	5.6115	-2.2359	0.0259	*Profit Margin*	-2.9626	0.7636	-3.8800	0.0001	*Profit Margin*	-0.3008	0.1795	-1.6763	0.0947
Sales Growth	-0.0698	0.0641	-1.0891	0.2764	*Sales Growth*	0.2633	0.1294	2.0352	0.0427	*Sales Growth*	0.0103	0.0409	0.2517	0.8014
Size	-1.4378	0.6555	-2.1934	0.0285	*Size*	-4.1608	0.8639	-4.8162	0.0000	*Size*	-2.4289	1.2878	-1.8861	0.0602
Leverage	3.2751	2.9377	1.1148	0.2652	*Leverage*	0.0813	0.0879	0.9240	0.3562	*Leverage*	-7.6523	5.7498	-1.3258	0.1858
Post	-0.2114	0.7506	-0.2817	0.7782	*Post*	-4.1181	4.2802	-0.9621	0.3367	*Post*	-0.0134	0.4557	-0.0293	0.9766
Pre	-0.1814	0.6194	-0.2929	0.7697	*Pre*	3.4585	3.8030	0.9094	0.3638	*Pre*	-0.4520	0.3526	-1.2822	0.2007
Bubble	-0.1780	0.0684	-2.6045	0.0096	*Bubble*	-0.1494	0.0759	-1.9680	0.0493	*Bubble*	-0.6418	0.3273	-1.9609	0.0508
Crashes	-0.9352	0.5870	-1.5931	0.1115	*Crashes*	2.6555	3.0129	0.8814	0.3787	*Crashes*	0.7638	0.4078	1.8728	0.0620
					Effects Specification *Cross-section fixed (dummy variables)*									
R-squared	0.7850	*Mean dependent var*		2.2618	*R-squared*	0.4222	*Mean dependent var*		0.3467	*R-squared*	0.4778	*Mean dependent var*		0.3862
Adjusted R-squared	0.7598	*S.D. dependent var*		19.9130	*Adjusted R-squared*	0.3714	*S.D. dependent var*		0.2099	*Adjusted R-squared*	0.3872	*S.D. dependent var*		3.9491
S.E. of regression	0.9759	*Akaike info criterion*		7.4939	*S.E. of regression*	0.1664	*Akaike info criterion*		-0.6705	*S.E. of regression*	0.3091	*Akaike info criterion*		5.2326
Sum squared resid	93.5255	*Schwarz criterion*		8.0223	*Sum squared resid*	37.1441	*Schwarz criterion*		-0.2396	*Sum squared resid*	30.8669	*Schwarz criterion*		5.8236
Log likelihood	-399.8159	*Hannan-Quinn criter.*		7.6938	*Log likelihood*	160.8462	*Hannan-Quinn criter.*		-0.5098	*Log likelihood*	-193.7186	*Hannan-Quinn criter.*		5.4671
F-statistic	31.1767	*Durbin-Watson stat*		2.0050	*F-statistic*	8.3047	*Durbin-Watson stat*		0.7485	*F-statistic*	5.2770	*Durbin-Watson stat*		1.0000
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.3.3: Cash Flow Vs Accruals (Judging Textiles investor's financial knowledge, risk perception awareness & financial intelligence)

Dependent Variable: P/BV Method: Panel Least Squares *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110* *Total panel (unbalanced) observations: 1461*					*Dependent Variable: P/BV Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110* *Total panel (unbalanced) observations: 1461*					*Dependent Variable: P/BV Method: Panel Least Squares* *Sample: 1 1461* *Periods included: 18* *Cross-sections included: 110* *Total panel (unbalanced) observations: 1461*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.0208	0.0404	-0.5142	0.6072	*Std. Error*	t-Statistic	0.0315	2.6944	0.0072	*C*	0.2983	0.0655	4.5521	0.0000
1/BV	0.0396	0.0362	1.0934	0.2744	*_1_BV*	-0.0948	0.0412	-2.3018	0.0216	*1/BV*	-0.0738	0.0329	-2.2432	0.0252
Earnings /BV	5.7772	1.5998	3.6111	0.0003	*Total Acc/BV*	0.1248	0.0419	2.9790	0.0031	*Total Acc/BV*	0.1012	0.0429	2.3620	0.0184
Negative	0.0396	0.0362	1.0934	0.2744	*Loss*Tacc/BV*	-0.5865	0.2865	-2.0470	0.0411	*(loss*Total Acc/BV)*	-0.1763	0.0657	-2.6841	0.0074
Sales Growth/BV	0.1832	0.1328	1.3792	0.1681	*CFO_BV*	0.0948	0.0394	2.4051	0.0164	*ABN/BV*	0.1127	0.0512	2.2037	0.0279
					*CFO*LOSS/BV*	-0.0587	0.0231	-2.5421	0.0112	*ABN*loss/BV*	-0.3734	0.1017	-3.6698	0.0003
					Sales Growth/BV	0.1248	0.0525	2.3757	0.0178	*CFO/BV*	0.0113	0.0044	2.5585	0.0107
										*CFO*LOSS/BV*	-0.0717	0.0435	-1.6482	0.0997
										Sales Growth	-0.0976	0.0399	-2.4477	0.0146
Effects Specification Cross-section fixed (dummy variables)														
R-squared	0.6970	*Mean dependent var*		0.7215	*R-squared*	0.4080	*Mean dependent var*		0.7813	*R-squared*	0.2996	*Mean dependent var*		0.7997
Adj R-squared	0.6607	*S.D. dependent var*		0.7772	*Adj R-squared*	0.3688	*S.D. dependent var*		0.5760	*Adj R-squared*	0.2503	*S.D. dependent var*		0.5737
S.E. of regression	0.4527	*Akaike info criterion*		1.3542	*S.E. of regression*	0.4576	*Akaike info criterion*		1.3356	*S.E. of regression*	0.4967	*Akaike info criterion*		1.5030
Sum squared resid	131.9717	*Schwarz criterion*		1.9421	*Sum squared resid*	164.3908	*Schwarz criterion*		1.6348	*Sum squared resid*	182.0788	*Schwarz criterion*		1.8162
Log likelihood	-385.9890	*Hannan-Quinn criter.*		1.5715	*Log likelihood*	-506.6151	*Hannan-Quinn criter.*		1.4503	*Log likelihood*	-541.4469	*Hannan-Quinn criter.*		1.6234
F-statistic	19.1892	*Durbin-Watson stat*		1.5593	*F-statistic*	10.4042	*Durbin-Watson stat*		1.3542	*F-statistic*	6.0712	*Durbin-Watson stat*		1.5086
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0170				*Prob(F-statistic)*	0.0000			

Econometric models:

Transaction Multiple models: $EV/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\, Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$; *Transaction Multiple models:* $EV/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1\, Post\ Bubble_{it} + \beta_2\, Pre\ Bubble_{it} + \beta_3\, Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + \beta_6\, Post\ Bubble_{it} + \beta_7\, Bubble\ period_{it} + \beta_2\, crash_{it} - -+e_{it}$; $S/EV_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; $P/E_{it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\, Lev_{it} + \beta_5\, Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\, Bubble\ period_{it} + \beta_7\, crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$;

Results and Discussion

The analysis of the transaction multiples model of the textile Sector indicates that the results of all transaction multiples i.e. P/E, EV/S & P/S have been found to have a positive relationship during the bubble peak period less pre bubble& post-bubble period where the relationship is significantly negative. The above results indicate that the arbitraging activities of the textile industry have increased during all bubble peak periods, whereas it has dropped during post & pre-bubble periods. The results also confirm that in the textile industry the financial stability, operational activity, short selling & cost of capital have enhanced during the bubble peak period less post & pre-bubble period. The impact of transaction multiples has not been found in the USA, whereas it has been found in PSX.

The regression results of the inverse transaction multiples indicate that the share demand of the cement industry has increased during the bubble period inside & outside of the exchange. The results of ROE, PM & sales growth indicate that firm's annual growth, profitability, revenue & financial stability has grown up. While the size & leverage indicate that during pre-bubble & bubble period the investment and risk-taking activities have grown.

In price regression models, the value of 1/BV is –ve which indicates that the firm's economic condition & managerial incentives to revenue have increased. The two models use in the price regression model are "Accrual vs Cash flow and unexpected accruals vs cash flow" which indicates that the PSX investors lack financial knowledge and risk distress management because of the coefficient values of accruals & unexpected accruals have been greater than the coefficient value cash flows. This also predicates the fact that investors of the textile industry prefer manipulations by the firms for discounting. It has further been observed that price regression results of the USA and PSX have been identical.

4.4.4Merger & Acquisition Firms: Table 4.4.4.1 Transaction Valuation Multiples

Dependent Variable: P/E Method: Panel Least Squares *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: P/B Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: EV/S Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.0219	0.0147	-1.4891	0.1369	*C*	-0.0095	0.0285	-0.3323	0.7397	*C*	-0.0486	0.0302	-1.6113	0.1075
PRE_BUBBLE	0.0211	0.0176	1.1974	0.2315	*PRE_BUBBLE*	0.0599	0.0341	1.7569	0.0793	*PRE_BUBBLE*	0.1156	0.0361	3.2000	0.0014
BUBBLE	-0.0708	0.0166	-4.2708	0.0000	*BUBBLE*	0.1347	0.0321	4.1918	0.0000	*BUBBLE*	0.0584	0.0340	1.7187	0.0861
CRASH	-0.0734	0.0183	-4.0075	0.0001	*CRASH*	-0.1286	0.0355	-3.6221	0.0003	*CRASH*	-0.0966	0.0376	-2.5717	0.0103
POST_BUBBLE	0.0382	0.0131	2.9076	0.0037	*POST_BUBBLE*	0.0686	0.0255	2.6928	0.0072	*POST_BUBBLE*	0.0525	0.0269	1.9501	0.0515
					Effects Specification									
					Cross-section fixed (dummy variables)									
R-squared	0.4786	*Mean dependent var*		-0.0493	*R-squared*	0.4392	*Mean dependent var*		-0.0548	*R-squared*	0.5662	*Mean dependent var*		-0.0478
Adj R-squared	0.4454	*S.D. dependent var*		0.2221	*Adj R-squared*	0.4036	*S.D. dependent var*		0.4153	*Adj R-squared*	0.5386	*S.D. dependent var*		0.4995
S.E. of regression	0.1654	*Akaike info criterion*		-0.7019	*S.E. of regression*	0.3207	*Akaike info criterion*		0.6224	*S.E. of regression*	0.3393	*Akaike info criterion*		0.7349
Sum squared resid	21.5318	*Schwarz criterion*		-0.4140	*Sum squared resid*	80.9472	*Schwarz criterion*		0.9103	*Sum squared resid*	90.5878	*Schwarz criterion*		1.0228
Log likelihood	345.0927	*Hannan-Quinn*		-0.5915	*Log likelihood*	-209.7750	*Hannan-Quinn criter.*		0.7327	*Log likelihood*	-256.9220	*Hannan-Quinn criter.*		0.8453
F-statistic	14.4450	*Durbin-Watson stat*		1.9959	*F-statistic*	12.3283	*Durbin-Watson stat*		1.1669	*F-statistic*	20.5416	*Durbin-Watson stat*		1.8588
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.4.2: Inverse Transaction Multiples

Dependent Variable: E/P Method: Panel Least Squares *Sample: 1 847* *Periods included: 17* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: B/P Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: S/EV Method: Panel Least Squares* *Sample: 1 847* *Periods included: 17* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.0451	0.0426	-1.0590	0.2899	*C*	-0.0141	0.0378	-0.3738	0.7086	*C*	0.0033	0.0360	0.0926	0.9263
ROE	-0.2574	0.1021	-2.5203	0.0119	*ROE*	-0.3297	0.0907	-3.6344	0.0003	*ROE*	-0.1827	0.0864	-2.1150	0.0347
PM	-0.1535	0.0422	-3.6336	0.0003	*PM*	-0.0762	0.0375	-2.0316	0.0425	*PM*	-0.1508	0.0359	-4.2052	0.0000
LEVRAGE	-0.0495	0.0324	-1.5297	0.1265	*LEVRAGE*	-0.0356	0.0288	-1.2372	0.2164	*LEVRAGE*	-0.1494	0.0329	4.5446	0.0000
SALESGROWTH	0.0271	0.0228	1.1915	0.2338	*SALESGROWTH*	0.0313	0.0202	1.5496	0.1216	*SALESGROWTH*	0.0230	0.0192	1.1939	0.2329
SIZE	-0.0613	0.0213	-2.8753	0.0041	*SIZE*	-0.0371	0.0190	-1.9595	0.0504	*SIZE*	-0.0724	0.0180	-4.0139	0.0001
PRE_BUBBLE	-0.0235	0.0458	-0.5134	0.6078	*PRE BUBBLE*	0.0660	0.0407	1.6229	0.1051	*PRE BUBBLE*	0.0092	0.0387	0.2364	0.8132
BUBBLE	-0.1294	0.0517	-2.5015	0.0126	*BUBBLE*	-0.1427	0.0459	-3.1064	0.0021	*BUBBLE*	-0.1487	0.0437	-3.3994	0.0007
CRASH	0.1602	0.0548	2.9204	0.0036	*CRASH*	-0.1315	0.0487	-2.6984	0.0071	*CRASH*	0.1759	0.0464	3.7942	0.0002
POST_BUBBLE	-0.0719	0.0325	-2.2117	0.0273	*POST BUBBLE*	-0.0599	0.0289	-2.0736	0.0384	*POST BUBBLE*	-0.0015	0.0275	-0.0549	0.9563
					Effects Specification									
R-squared	0.3216	*Mean dependent var*		-0.1361	*R-squared*	0.4538	*Mean dependent var*		-0.5248	*R-squared*	0.6518	*Mean dependent var*		-0.4583
Adjusted R-squared	0.2839	*S.D. dependent var*		0.4195	*Adjusted R-squared*	0.4154	*S.D. dependent var*		0.4153	*Adjusted R-squared*	0.6273	*S.D. dependent var*		0.4951
S.E. of regression	0.3574	*Akaike info criterion*		0.8448	*S.E. of regression*	0.3175	*Akaike info criterion*		0.6079	*S.E. of regression*	0.3022	*Akaike info criterion*		0.5092
Sum squared resid	99.9143	*Schwarz criterion*		1.1610	*Sum squared resid*	78.8390	*Schwarz criterion*		0.9240	*Sum squared resid*	71.4280	*Schwarz criterion*		0.8254
Log likelihood	-297.9810	*Hannan-Quinn criter.*		0.9660	*Log likelihood*	-198.7180	*Hannan-Quinn*		0.7291	*Log likelihood*	-157.3550	*Hannan-Quinn criterion*		0.6304
F-statistic	6.7406	*Durbin-Watson stat*		1.0981	*F-statistic*	11.8144	*Durbin-Watson stat*		1.0166	*F-statistic*	20.6151	*Durbin-Watson stat*		0.9351
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Table 4.4.4.3: CashFlow Vs Accruals (Judging investors financial knowledge, risk perception awareness & financial intelligence)

Dependent Variable: P/BV *Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*					*Dependent Variable: P/BV* *Method: Panel Least Squares* *Sample: 1 847* *Periods included: 18* *Cross-sections included: 50* *Total panel (unbalanced) observations: 847*				
Variable	*Coefficient*	*S.E*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*S.E*	*t-Statistic*	*Prob.*	*Variable*	*Coefficient*	*S.E*	*t-Statistic*	*Prob.*
C	0.1594	0.0493	3.2322	0.0013	*C*	0.1085	0.0520	2.0853	0.0374	*C*	0.1768	0.0609	2.9013	0.0038
1/BV	-1.1209	0.1653	-6.7809	0.0000	*1/BV*	-0.3734	0.1017	-3.6698	0.0003	*1/BV*	0.2394	0.0758	3.1575	0.0017
Sales Ch/BV	0.0774	0.0297	2.6057	0.0093	*TACC/BV*	-0.1500	0.0332	-4.5137	0.0000	*ACC/BV*	0.0716	0.0179	3.9945	0.0001
Earnings/BV	0.2005	0.0211	9.5051	0.0000	*CFO/BV*	0.0828	0.0246	3.3610	0.0008	*ABN_ACC/BV*	0.1341	0.0523	2.5644	0.0105
Negative Earnings/BV	-0.3207	0.0529	-6.0630	0.0000	*CFO_LOSS/BV*	-0.0001	0.0000	-2.6373	0.0085	*loss*ABN_ACC/BV*	-0.7872	0.1743	-4.5153	0.0000
					*LOSS*TACC/BV*	-0.0011	0.0006	-1.8842	0.0599	*Loss ACC/BV*	0.0000	0.0000	-4.7144	0.0000
					Sales Change/BV	0.0079	0.0311	0.2544	0.7993	*CFO/BV*	0.6472	0.2546	2.5420	0.0112
										CFO_LOSS/BV	0.0000	0.0000	-1.1413	0.2541
Effects Specification *Cross-section fixed (dummy variables)*														
R-squared	0.4139	*Mean dependent var*		0.7813	*R-squared*	0.4010	*Mean dependent var*		0.7813	*R-squared*	0.4004	*Mean dependent var*		0.7813
Adjusted R-squared	0.3766	*S.D. dependent var*		0.5760	*Adjusted R-squared*	0.3614	*S.D. dependent var*		0.5760	*Adjusted R-squared*	0.3535	*S.D. dependent var*		0.5760
S.E. of regression	0.4548	*Akaike info criterion*		1.3209	*S.E. of regression*	0.4603	*Akaike info criterion*		1.3473	*S.E. of regression*	0.4562	*Akaike info criterion*		1.3395
Sum squared resid	162.7632	*Schwarz criterion*		1.6088	*Sum squared resid*	166.3231	*Schwarz criterion*		1.6460	*Sum squared resid*	143.4186	*Schwarz criterion*		1.6804
Log likelihood	-502.4460	*Hannan-Quinn criter.*		1.4312	*Log likelihood*	-511.5110	*Hannan-Quinn criter.*		1.4620	*Log likelihood*	-443.2770	*Hannan-Quinn criterion*		1.4709
F-statistic	11.1138	*Durbin-Watson stat*		1.3576	*F-statistic*	10.1079	*Durbin-Watson stat*		1.4036	*F-statistic*	8.5218	*Durbin-Watson stat*		1.4601
Prob(F-statistic)	0.0000				*Prob(F-statistic)*	0.0000				*Prob(F-statistic)*	0.0000			

Econometric models:

Transaction Multiple models: $EV/s_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + \beta_6\ Post\ Bubble_{it} + \beta_7\ Bubble\ period_{it} + \beta_2\ crash_{it} - -+e_{it}$; $S/EV_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\ crash_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\ crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$; *Transaction Multiple models:* $EV/s_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/s_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1\ Post\ Bubble_{it} + \beta_2\ Pre\ Bubble_{it} + \beta_3\ Bubble\ period_{it} + \beta_4 crash\ period_{it} - -+e_{it}$; *Inverse Transaction Multiple Models:* $S/P_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + \beta_6\ Post\ Bubble_{it} + \beta_7\ Bubble\ period_{it} + \beta_2\ crash_{it} - -+e_{it}$; $S/EV_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\ crash_{it} - -+e_{it}$; $P/E_{\ it} = \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4\ Lev_{it} + \beta_5\ Pre\ Bubble_{it} + Post\ Bubble_{it} + \beta_6\ Bubble\ period_{it} + \beta_7\ crash_{it} - -+e_{it}$; *Ohlson Model:* $P_{\frac{it}{BV_{it}}} = \alpha_o\left(\frac{1}{BV_{it}}\right) + \beta_1\left(\frac{BV_{it}}{BV_{it}}\right) + \beta_2\left(\frac{E_{it}}{BV_{it}}\right) + \beta_3\left(\frac{neg\ E_{it}}{BV_{it}}\right) + \beta_4\left(\frac{SalesCh_{it}}{BV_{it}}\right) + - - -+e_{it}$;

Regression results:

The analysis of the transaction multiples model of M&A firms indicates that the results of all transaction multiples i.e. P/E, EV/S & P/S have been found to have a positive relationship during pre-bubble, bubble & crash periods less post-bubble period where the relationship is significantly negative. The above results indicate that the arbitraging activities of M&A firms have increased during all stages of the bubble, whereas it has dropped during the post-bubble period. The results also confirm that in M&A firms the financial stability, operational activity, short selling & cost of capital have enhanced during all stages of the bubble less post-bubble period. The impact of transaction multiples has not been found in the USA, whereas it has been found in PSX.

The regression results of the inverse transaction multiples indicate that the share demand of M&A firms has increased during the pre-bubble & bubble period inside & outside of the exchange. The crash period results show that since it is a profitable industry therefore the investors give importance to trading its shares even in a bubble crash period. The results of ROE, PM & sales growth indicate that firm's annual growth, profitability, revenue & financial stability has grown up. While the size & leverage indicate that during pre-bubble & bubble period the investment and risk-taking activities have grown.

In price regression models, the value of 1/BV is –ve which indicates that the firm's economic condition & managerial incentives to revenue have increased. The two models use in the price regression model are "Accrual vs Cash flow and unexpected accruals vs cash flow" which indicates that the PSX investors lack financial knowledge and risk distress management because of the coefficient values of accruals & unexpected accruals have been greater than the coefficient value cash flows. This also predicates the fact that investors of M&A firms prefer manipulations by the firms for discounting. It has further been observed that price regression results of the USA and PSX have been identical.

4.5.1 Model 4: How do the firm's relevance & non-relevance of accounting information contribute towards Stock Market Bubble

First Bubble: Total R sq = EPS/P (R1 sq) + Delta EPS/P (R2sq) = 0.11851 = 0.10275+ 0.011045

Table 4.5.1.1: Relevance Accounting w.r.t Return

Dependent Variable: RETURN
Method: Panel EGLS (Cross-section random effects).

Sample: 1 415
Periods included: 5
Cross-sections included: 110
Total panel (unbalanced) observations: 415

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	0.1432	0.0537	2.6663	0.0085
EPS/P	0.4097	0.0512	8.0067	0.0000
DELTA EPS/P	-0.0051	0.0014	-3.6655	0.0004
Effects Specification			S.D.	Rho
Cross-section random			0.2416	0.0573
Idiosyncratic random			0.9803	0.9427
	Weighted Statistics			
R-squared.	0.1228	*Mean dep var.*		0.1615
Adj R-squared.	0.1185	*S.D. dep var.*		1.1547
S.E. of reg.	1.0839	*Sum squ resid.*		483.9927
F-statistic.	28.8285	*Durbin-Watson stat.*		1.7746
Prob(F-statistic).	0.0000			
	Unweighted Statistics			
R-squared.	0.1256	*Mean dep var.*		0.1778
Sum squ resid.	106.3660	*Durbin-Watson stat.*		1.7864

T-stat 1.92, 1.96**, 2****

First Bubble: EPS/P (t-1)Adjusted R1

Dependent Variable: RETURN
Method: Panel EGLS (Cross-section random effects).
Sample: 1 415
Periods included: 5
Cross-sections included: 110
Total panel (unbalanced) observations: 415

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	0.1512	0.0536	2.8182	0.0065
EPS/P	0.3770	0.0532	7.0938	0.0000
Effects Specification		S.D.		Rho
Cross-section random		0.5444		0.0017
Idiosyncratic random		1.0865		0.9983
	Weighted Statistics			
R-squared.	0.1028	*Mean dep var.*		0.1772
Adj R-squared.	0.1006	*S.D. dep var.*		1.1818
S.E. of reg.	1.1208	*Sum squ resid.*		518.7668
F-statistic.	47.2964	*Durbin-Watson stat.*		1.8927
	Unweighted Statistics			
R-squared.	0.1028	*Mean dep var.*		0.1778
Sum squ resid.	519.5269	*Durbin-Watson stat.*		1.8927

T-stat 1.92, 1.96**, 2****

First Bubble: EPS/P (t-1) Adjusted R2

Sample: 1 415
Periods included: 5
Cross-sections included: 110
Total panel (unbalanced) observations: 415

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	0.1763	0.0617	2.8599	0.0056
DELTA_EPS/P	-0.0034	0.0016	-2.1513	0.0360
Effects Specification		S.D.		Rho
Cross-section random		0.2534		0.0462
Idiosyncratic random		1.1516		0.9538
	Weighted Statistics			
R-squared.	0.0110	*Mean dep var.*		0.1644
Adj R-squared.	0.0087	*S.D. dep var.*		1.1596
S.E. of reg.	1.1544	*Sum squ resid.*		550.3385
F-statistic.	4.6125	*Durbin-Watson stat.*		1.0863
Prob(F-statistic).	0.0323			
	Unweighted Statistics			
R-squared.	0.0108	*Mean dep var.*		0.1778
Sum squ resid.	572.8364	*Durbin-Watson stat.*		0.9596

T-stat 1.92*, 1.96**, 2***

Second Bubble: Total R sq = EPS/P (R1 sq) + Delta EPS/P (R2sq) = 0.304 = 0.302 + 0.0001

Second Bubble
Dependent Variable: RETURN
Method: Panel EGLS (Cross-section random effects).
Sample: 1 239
Periods included: 3
Cross-sections included: 79
Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	-0.2022	0.1031	-1.9611	0.0400
EPS/P	8.8566	1.3063	6.7798	0.0000
DELTA EPS/P	0.0555	0.0996	0.5571	
Effects Specification		S.D	Rho	
Cross-section random		1.4158	0.5231	
Idiosyncratic random		1.8650	0.9769	
	Weighted Statistics			
R-squared.	0.3044	*Mean Dependent var.*	-0.1175	
Adjusted R-squared.	0.2954	*S.D. dependent var.*	1.2605	
S.E. of regression.	1.0581	*Sum squared resid.*	174.6436	
F-statistic.	34.1279	*Durbin-Watson stat.*	2.9271	
	Unweighted Statistics			
R-squared.	0.3044	*Mean dependent var.*	-0.1175	
Sum squared resid.	174.6436	*Durbin-Watson stat.*	2.9271	

T-stat 1.92, 1.96**, 2****

Secomd Bubble R1
Dependent Variable: Rrturns
Method: Panel EGLS (Cross-section random effects).
Sample: 1 239
Periods included: 3
Cross-sections included: 79
Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	-0.2045	0.1026	-1.9931	0.0413
EPS/P	8.8097	1.2978	6.7882	0.0000
Effects Specification		S.D.	Rho	
Cross-section random		0.4684	1.6247	
Idiosyncratic random		1.2834	1.9357	

Weighted Statistics			
R-squared.	0.3023	*Mean dependent var.*	-0.1175
Adjusted R-squared.	0.2979	*S.D. dependent var.*	1.2605
S.E. of regression.	1.0563	*Sum squared resid.*	175.1594
F-statistic.	68.0286	*Durbin-Watson stat.*	2.9285
Prob(F-statistic).	0.0000		

Unweighted Statistics			
R-squared.	0.3023	*Mean dependent var.*	-0.1175
Sum squared resid.	175.1594	*Durbin-Watson stat.*	2.9285

T-stat 1.92*, 1.96**, 2***

Secomd Bubble R2
Dependent Variable: Returns
Method: Panel EGLS (Cross-section random effects).
Sample: 1 239
Periods included: 3
Cross-sections included: 79
Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	-0.1169	0.1191	-0.9813	0.3266
DELTA EPS/P	0.0120	0.1157	0.1035	0.9160
Effects Specification		S.D.	Rho	
Cross-section random		0.3036	0.7383	
Idiosyncratic random		1.5007	1.0000	

Weighted Statistics			
R-squared.	0.0097	*Mean dependent var.*	-0.1175
Adjusted R-squared.	-0.0063	*S.D. dependent var.*	1.2605
S.E. of regression.	1.2645	*Sum squared resid.*	251.0324
F-statistic.	0.0151	*Durbin-Watson stat.*	1.0873
Prob(F-statistic).	0.9024		

Unweighted Statistics			
R-squared.	0.0097	*Mean dependent var.*	-0.1175
Sum squared resid.	251.0324	*Durbin-Watson stat.*	0.9372

T-stat 1.92, 1.96**, 2****

First -Second Bubble: Total R sq = EPS/P (R1 sq) + Delta EPS/ P (R2sq)= 0.066 = 0.0501 - 0. 001

First –Second Bubble
Dependent Variable: RETURN
Method: Panel EGLS (Cross-section random effects).
Sample: 1 443
Periods included: 5
Cross-sections included: 110
Total panel (unbalanced) observations: 443

Variable	*Cofficient*	*Std. Error*	*t-Stat*	*Prob*
C	0.2383	0.0540	4.4164	0.0000
EPS/P	0.7591	0.1355	5.6023	0.0000
DELTA EPS/P	-0.0275	0.0104	-2.6482	0.0085
Effects Specification		S.D.		Rho
Cross-section random		0.2444		0.0615
Idiosyncratic random		0.9546		0.9385
	Weighted Statistics			
R-squared.	0.0665	*Mean dep var.*		0.2998
Adj R-squared.	0.0622	*S.D. dep var.*		0.9907
S.E. of regression.	0.9594	*Sum squ resid.*		404.9970
F-statistic.	15.6621	*Durbin-Watson stat.*		1.5738
Prob(F-statistic)	0.0000			
	Unweighted Statistics			
R-squared.	0.0779	*Mean dep var.*		0.3369
Sum squared resid.	431.3564	*Durbin-Watson stat.*		1.4777

T-stat 1.92*, 1.96**, 2***

First -Second Bubble R2

Dependent Variable: RETURN

Method: Panel EGLS (Cross-section random effects).

Sample: 1 443

Periods included: 5

Cross-sections included: 110

Total panel (unbalanced) observations: 443

Variable	*Coefficient*	*Std. Error*	*t-Stat*	*Prob*
C	0.3371	0.0584	5.7722	0.0000
DELTA_EPS/P	-0.0047	0.0098	-0.4762	0.7377
Effects Specification		S.D.		Rho
Cross-section random		0.3838		0.1384
Idiosyncratic random		0.9575		0.8616
	Weighted Statistics			
R-squared.	0.0052	*Mean dependent var.*		0.2626
Adjusted R-squared.	-0.0018	*S.D. dependent var.*		0.9559
S.E. of regression.	0.9567	*Sum squared resid.*		403.6330

F-statistic.	0.2272	*Durbin-Watson stat.*	1.5511
	Unweighted Statistics		
R-squared.	0.0054	*Mean dependent var.*	0.3369
Sum squared resid.	467.5246	*Durbin-Watson stat.*	1.3391

T-stat 1.92*, 1.96**, 2***

Results & Discussion

The analysis of the value relevance accounting model shows that the investors focus more on EPS rather than Change in EPS itself. It is for this reason that investors do not possess amicable knowledge about the financial health of firms. EPS being of value relevance brings abnormal returns in the Pakistani market which creates a bubble in PSX. Its impact has been more pronounced during the second bubble i.e. 2012 to 2016, where R square rose to 30.4 percent. Moreover, the Firm's accounting information also contributes towards the creation of a Bubble because the explanatory power of R square during a bubble exceeds 30.40 percent. However, if the investors are provided comprehensive knowledge about the firm's accounting information, the creation of a bubble due relevance of accounting information can be controlled. The first and second bubbles were detected on the basis of P/E ratio and market capitalization. The period of the first bubble is from "2003 to 2006" and that of the second bubble is from 2012 to 2017".

Model 1
Return= EPS/p + Delta EPS/p
First Bubble Total R sq = EPS/P (R1 sq) + Delta EPS/P (R2sq)
0.019859 = 0.015426 + 0.000496
Second Bubble Total R sq = EPS/P (R1 sq) + Delta EPS/P (R2sq)
0.304366 = 0.302311 + 0.000096
First -Second Bubble Total R sq = EPS/P (R1 sq) + Delta EPS/ P (R2sq)
0.06646 = 0.050158 + 0.000515

Table 4.5.1.2 Model 4 a: How Relevance Accounting Effect Pakistan's Stock market in the light of Ohlson' Price regression Model during Post Bubble, Pre Bubble, Bubble & Crash

Balance sheet Vs Income Statement

First Bubble Total R sq =BVS (R1 sq) + EPS (R2sq) = 0.153726 = 0.06024+ 0.049359

First Bubble

Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 221
Periods included: 4
Cross-sections included: 78
Total panel (unbalanced) observations: 221

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	2.7080	0.1998	13.5554	0.0000
BV	0.4629	0.1207	3.8367	0.0001
EPS	-0.2873	0.0980	-2.9330	0.0036
Effects Specification		S.D.	Rho	
Cross-section random		0.5990	0.8890	
Idiosyncratic random		0.2117	0.1110	
	Weighted Statistics			
R-squared.	0.1096	*Mean dependent var.*		0.6994
Adjusted R-squared.	0.0981	*S.D. dependent var.*		0.2182
S.E. of regression.	0.2101	*Sum squared resid.*		9.6259
F-statistic.	9.0427	*Durbin-Watson stat.*		1.9726
Prob(F-statistic).	0.0002			
	Unweighted Statistics			
R-squared.	0.1537	*Mean dependent var.*		3.4373
Sum squared resid.	86.8951	*Durbin-Watson stat.*		0.9339

T-stat 1.92, 1.96**, 2****

First Bubble R1
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 221
Periods included: 4
Cross-sections included: 78
Total panel (unbalanced) observations: 221

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
BV	0.3477	0.1150	3.0231	0.0027
C	2.8609	0.1944	14.7166	0.0000
Effects Specification		S.D.	Rho	
Cross-section random		0.6020	0.8868	
Idiosyncratic random		0.2151	0.1132	
	Weighted Statistics			
R-squared.	0.0602	*Mean dependent var.*		0.7069
Adjusted R-squared.	0.0559	*S.D. dependent var.*		0.2190
S.E. of regression.	0.2146	*Sum squared resid.*		10.0838
F-statistic.	9.1835	*Durbin-Watson stat.*		1.9720
Prob(F-statistic).	0.0027			
	Unweighted Statistics			
R-squared.	0.1205	*Mean dependent var.*		3.4373
Sum squared resid.	89.1975	*Durbin-Watson stat.*		0.2229

T-stat 1.92, 1.96**, 2****

First Bubble R2

Dependent Variable: MV

Method: Panel EGLS (Cross-section random effects).

Sample: 1 221

Periods included: 4

Cross-sections included: 78

Total panel (unbalanced) observations: 221

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	3.4257	0.0749	45.7222	0.0000
EPS	-0.1635	0.0932	-1.7538	0.0831
Effects Specification			S.D.	Rho
Cross-section random			0.643391	0.9011
Idiosyncratic random			0.213136	0.0989
	Weighted Statistics			
R-squared.	0.0493	*Mean dep var.*		0.6573
Adjusted R-squared.	0.0393	*S.D. dependent var.*		0.2135
S.E. of regression.	0.2119	*Sum squared resid.*		9.8385
F-statistic.	3.1100	*Durbin-Watson stat.*		1.97702

T-stat 1.92, 1.96**, 2****

Second Bubble Total R sq =BVS (R1 sq) + EPS (R2sq) = 0.218786= 0.123224 - 0.095562

Second Bubble

Dependent Variable: MV

Method: Panel EGLS (Cross-section random effects).

Sample: 1 239

Periods included: 4

Cross-sections included: 80

Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	2.9094	0.2199	13.2309	0.0000
BV	0.6179	0.1128	5.4790	0.0000
EPS	1.0989	0.2213	4.9653	0.0000
	Effects Specification			
			SD	Rho
Cross-section random.			0.6836	0.9300
Idiosyncratic random.			0.1875	0.0700
	Weighted Statistics			
R-squared.	0.2188	*Mean dept var.*		0.6172
Adjusted R-squared.	0.2119	*S.D. dept var.*		0.2116
S.E. of regression.	0.1871	*Sum squared resid.*		8.2596
F-statistic.	27.4610	*Durbin-Watson stat.*		1.3673
	Unweighted Statistics			
R-squared.	0.1407	*Mean dependent var..*		3.9390
Sum squared resid.	116.4526	*Durbin-Watson stat*		0.2970

T-stat 1.92, 1.96**, 2****

Second BubbleR1
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 239
Periods included: 4
Cross-sections included: 80
Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	2.844516	0.224687	12.65988	0
BV	0.607156	0.115992	5.234468	0
Effects Specification.			*S.D*	*Rho*
Cross-section random.			0.681758	0.9208
Idiosyncratic random.			0.199877	0.0792

Weighted Statistics

R-squared.	0.123224	*Mean dependent var.*	0.658519
Adjusted R-squared.	0.119441	*S.D. dependent var.*	0.216334
S.E. of regression.	0.200314	*Sum squared resid.*	9.509825
F-statistic.	27.28015	*Durbin-Watson stat.*	1.324629

Unweighted Statistics

R-squared.	0.109926	*Mean dependent var.*	3.938991
Sum squared resid.	119.1705	*Durbin-Watson stat.*	0.105706

T-stat 1.92*, 1.96**, 2***

Second Bubble R2
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 239
Periods included: 4
Cross-sections included: 80
Total panel (unbalanced) observations: 239

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	4.0332	0.0835	48.3184	0.0000
EPS	-1.0983	0.2337	-4.6993	0.0000
Effects Specification			S.D.	Rho
Cross-section random			0.7199	0.9296
Idiosyncratic random			0.1981	0.0704

Weighted Statistics

R-squared.	0.0956	*Mean dependent var.*	0.6190
Adjusted R-squared.	0.0925	*S.D. dependent var.*	0.2118
S.E. of regression.	0.1984	*Sum squared resid.*	9.3328
F-statistic.	21.9972	*Durbin-Watson stat.*	1.2538
Prob(F-statistic).	0.0000		

Unweighted Statistics

R-squared.	0.1407	*Mean dependent var.*	3.9390
Sum squared resid.	116.4526	*Durbin-Watson stat.*	0.2970

T-stat 1.92, 1.96**, 2****

First – Second Bubble= Total R sq =BVS (R1 sq) + EPS (R2sq) = 0.05494= 0.035204+ 0.030402

First Bubble _second Bubble
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 321
Periods included: 5
Cross-sections included: 80
Total panel (unbalanced) observations: 321

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	3.1109	0.1230	25.2989	0.0000
BVS	0.1902	0.0576	3.3035	0.0010
EPS	0.1498	0.0428	3.4996	0.0005
Effects Specification			S.D	Rho
Cross-section random			0.6905	0.9347
Idiosyncratic random			0.1825	0.0653
	Weighted Statistics			
R-squared.	0.0549	*Mean dependent var.*		0.4499
Adjusted R-squared.	0.0491	*S.D. dependent var.*		0.1910
S.E. of regression.	0.1841	*Sum squared resid.*		10.7728
F-statistic.	12.8807	*Durbin-Watson stat.*		1.6063
	Unweighted Statistics			
R-squared	0.0489	*Mean dependent var.*		3.4394
Sum squared resid	170.8026	*Durbin-Watson stat.*		0.1013

T-stat 1.92*, 1.96**, 2***

First Bubble -second Bubble R1
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 321
Periods included: 5
Cross-sections included: 80
Total panel (unbalanced) observations: 321

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	3.4249	0.0837	40.9391	0.0000
EPS	0.1666	0.0429	3.8829	0.0002
	Effects Specification			
			S.D.	Rho
Cross-section random			0.7418	0.9420
Idiosyncratic random			0.1840	0.0580
	Weighted Statistics			
R-squared.	0.0352	*Mean dependent var.*		0.4228
Adjusted R-squared.	0.0322	*S.D. dependent var.*		0.1881
S.E. of regression.	0.1839	*Sum squared resid.*		10.7848
F-statistic.	15.1027	*Durbin-Watson stat.*		1.5831

Prob(F-statistic).	0.0001			

T-stat 1.92, 1.96**, 2****

First Bubble _second Bubble R2
Dependent Variable: MV
Method: Panel EGLS (Cross-section random effects).
Sample: 1 321
Periods included: 5
Cross-sections included: 80
Total panel (unbalanced) observations: 321

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob*
C	3.0827	0.1246	24.7412	0.0000
BVS	0.2155	0.0585	3.6858	0.0004
	Effects Specification			
			S.D.	Rho
Cross-section random			0.6927	0.9320
Idiosyncratic random			0.1872	0.0680
	Weighted Statistics			
R-squared.	0.0304	*Mean dependent var.*		0.4598
Adjusted R-squared.	0.0274	*S.D. dependent var.*		0.1921
S.E. of regression.	0.1882	*Sum squared resid.*		11.3033
F-statistic.	13.4309	*Durbin-Watson stat.*		1.5540
Prob(F-statistic).	0.0003			
	Unweighted Statistics			
R-squared.	0.0694	*Mean dependent var.*		3.4394
Sum squared resid.	168.8763	*Durbin-Watson stat.*		0.1040

T-stat 1.92, 1.96**, 2****

Balance Sheet Vs Income Statement

The analysis of value relevance accounting model 2 A shows that the investors focus more on firms Income statements rather than the firm's balance sheet. The results of value relevance indicate that total value relevance had significantly increased during the bubble period. As a result, the explanatory power of BVS & NI has also increased substantially. This predicates that investors accord more importance to Firms balance Sheet & BVS accounting information during the bubble period. The results also concluded that in the last bubble value relevance of accounting, firms BVS & NI have been the main contributing factors towards the creation of a bubble in the PSX. Results showed that the balance sheet & income Statement, Play an essential role in contributing to the development of bubbles in the bubble period. Furthermore, both balance sheet & income statement play an essential role in contributing to the development of bubbles in the bubble period. FGLS is used to address serial correlation issues in the analysis .

1	**First Bubble**
	Total R sq =BVS (R1 sq) + EPS (R2sq)
	0.153726 = 0.06024+ 0.049359
2	**Second Bubble**
	Total R sq =BVS (R1 sq) + EPS (R2sq)
	0.218786= 0.123224 - 0.095562
3	**First – Second Bubble**
	Total R sq =BVS (R1 sq) + EPS (R2sq)
	0.05494= 0.035204+ 0.030402

Results and Discussion:

Results showed that the balance sheet & income Statement, Play an essential role in contributing to the development of the bubble in the bubble period. Furthermore, Both the non-relevance of accounting & Relevance of accounting plays an essential role in contributing in the development of bubble in bubble period and Ohlson model fully all type of accounting information.

Table 4.5.1.3 : Relevance Accounting Vs Non-Relevance Accounting w.r.t IPO's

First Bubble *Periods included: 3* *Cross-sections included: 35* *Total panel (unbalanced) observations: 105*					*Second Bubble* *Periods included: 4* *Cross-sections included: 36* *Total panel (unbalanced) observations: 109*				
Variable	*Coefficient*	*Std. Error*	*t-Stat*	*Prob*	*Variable*	*Coefficient*	*Std. Error*	*t-Stat*	*Prob*
C	-4.6492	1.6476	-2.8218	0.0060	*C*	-4.9048	1.5942	-3.0767	0.0024
Hot Issue Market	2.1642	0.4149	5.2169	0.0000	*Hot issue Market*	1.6377	0.4343	3.7713	0.0004
NI	-0.9987	0.2850	-3.5046	0.0004	*NI*	-0.0336	0.1484	-0.2263	0.8298
R-squared.	0.6632	*Mean dependent var.*		0.6053	*R-squared.*	0.4209	*Mean dependent var.*		1.1310
Adjusted R-squared.	0.4850	*S.D. dependent var.*		0.9018	*Adjusted R-squared.*	0.4091	*S.D. dependent var.*		0.3892
S.E. of regression.	0.6472	*Akaike info criterion.*		2.2379	*S.E. of regression.*	0.3653	*Akaike info criterion.*		1.0924
Sum squared resid.	28.4818	*Schwarz criterion.*		3.1732	*Sum squared resid.*	9.4747	*Schwarz criterion.*		2.0307
Log likelihood.	-80.4921	*Hannan-Quinn criter.*		2.6169	*Log likelihood.*	-21.5361	*Hannan-Quinn criterion.*		1.4729
F-statistic.	3.7201	*Durbin-Watson stat.*		2.5920	*F-statistic.*	1.3945	*Durbin-Watson stat.*		2.1479
Prob(F-statistic).	0.0000				*Prob(F-statistic).*	0.1146			

Difference First Bubble -2nd Bubble
Periods included: 7
Cross-sections included: 36
Total panel (unbalanced) observations: 148

Variable	*Coefficient*	*Std. Error*	*t-Stat*	*Prob*
C	-6.4776	1.1089	-5.8415	0.0000
Hot issue Market	2.1551	0.3203	6.7275	0.0000
NI	0.0044	0.1150	0.0380	0.8792
R-squared.	0.1340	*Mean dependent var.*		1.1356
Adjusted R-squared.	0.1377	*S.D. dependent var.*		0.7988
S.E. of regression.	0.6304	*Akaike info criterion.*		2.1318
Sum squared resid.	43.7106	*Schwarz criterion.*		2.9013
Log-likelihood.	-119.7510	*Hannan-Quinn criterion.*		2.4444
F-statistic.	3.4062	*Durbin-Watson stat.*		1.7891
Prob(F-statistic).	0.0000			

Regression Analysis:

The analysis of value relevance accounting model 3 shows that the investors focus more on the firm's non-relevance of accounting rather than the relevance of accounting. The results of value relevance indicate that total non-value relevance had significantly increased during the bubble period. As a result, the explanatory powers of hot issue & NI have increased substantially in the first bubble. However, in the second bubble, the value of non-relevance accounting has increased tremendously than net income. This predicates that investors accord more importance to Firms balance Sheet accounting information during the bubble period.

Results & discussion

Relevance accounting information plays an important role in shaping investor perception in the bubble period. During the bubble period, firms display positive accounting information to attract investors. Moreover, value relevance accounting information is market information oriented. The analysis of the value relevance accounting model shows that the investors focus more on EPS rather than Change in EPS itself. It is for this reason that investors do not possess amicable knowledge about the financial health of firms. EPS being of value relevance brings abnormal returns in the Pakistani market which creates a bubble in PSX. Its impact has been more pronounced during the second bubble i.e. 2012 to 2016, where R square rose to 30.4 percent. Moreover, the firm's accounting information also contributes towards the creation of a bubble because the explanatory power of R square during the bubble period exceeds 30.40 percent. However, if the investors are provided comprehensive knowledge about the firm's accounting information, the creation of a bubble due to the value relevance of accounting information can be controlled. The results show that PSX investors prefer the balance sheet more as compare to the income statement. Similarly, PSX investors focus more on non-value relevance of accounting rather than value relevance accounting, because PSX investors prefer to invest in new projects & IPO's in comparison with old projects.

Hypothesis		Status
Model 1: Bubble Effect on Stock Market		
H1:	A surge in the stock market bubble leads to heterogeneity of investor beliefs which further leads to escalation in speculative practices thereby resulting in miscalculated assessment of stock prices and inflated share prices culminating further in short selling of shares. Due to which additional investment and financing activities are also generated in the speculative market.	Accepted (Positive Significant Relationship). Create Speculative Bubble in the Stock Market
H2:	An increase in a bubble leads to equity issuance which increases the firm's Cost of capital & thus enhances the investment, short sellings & financial activities of the firms.	Accepted (Positive Significant).
H3:	Issuance of equity reduces the bubble effect temporarily. However, in an efficient market, the equity issuance temporarily controls the equity and asset prices, whereas in the speculative markets it causes short selling and inflates share prices.	Accepted
H4:	The investment opportunity in the respective Stock market positively affects the firm's investment activities.	Accepted (Negative Significant).
H5:	Dispersion of investor's belief possess a linear relationship with MPK in bubble period. However, both of these variables directly affect the market investment opportunities, firms investing activities and equity issuance.	Accepted
H6:	Rising trend in stock market mispricing and dispersion of investors belief leads to reduction in the respective firm's cost of capital thereby resulting in expansion of investment in the firm's shares and enhanced financial gains.	Accepted (Positive Significant). Create Speculative Bubble in the Stock Market
Model 2: Impact of Insider Trading And Earning's Management		
H7:	Insider trading & managerial Incentives hold a positive relationship with earnings inflation during the bubble period.	Accepted (Positive Significant).
H8:	Legal Insider trading possesses a negative relationship with abnormal returns during all stages of the bubble period. In an efficient market due to the possession of equal information by the investors, an individual investor can not change the market dynamics without taking the risk.	Accepted (Significant)
H9:	Illegal Insider Trading possesses a positive relationship with stock returns during all stages of the bubble periods.	Accepted (Significant) Overall existence of Illegal Insider trading

H10:	Insider trading holds a negative relationship with the firm's capital structure.	Accepted (Negative Insignificant).
H11:	Insider trading and E'sM possess a negative relationship with the stock market crash. However, insider trading and earnings management are done prior to financial events.	Accepted (Positive Significant)
Model3: Firms Relevance of Accounting		
H12:	The firm's accounting information affects the BVS & Earnings during the bubble period which leads to gross variations in stock prices.	Accepted (Positive Significant)
H13:	The BVE of firms increases during the bubble period & decreases on the bubble crash.	Accepted
H14:	The firm's accounting information has a positive relationship with the stock market bubble.	Accepted (Negative Insignificant). Investors have less Financial Knowledge
H15:	The firm's non-accounting information possesses a positive relationship with the stock market bubble.	Accepted (Positive Significant). The investor has less Financial Knowledge
H16:	Firms Relevance of accounting information in terms of balance sheet & Income Statement information contribute towards variations in stock prices during the bubble Period.	Accepted
Model 4: Effect of M&A's and Profitable firms on Stock Market Bubble		
H17:	Managerial-based incentives of M&A & profitable firms have a significant positive relationship with earnings management & firm's earnings manipulation during Bubble Periods.	Accepted "Positive Significant" increase Managerial & Executive Compensations
H18:	M & A and profitable firms Transaction valuations increase dramatically during the bubble periods.	Accepted (Positive Significant). Increase in Buying & Selling of Firms Equity at the Market Place
H19:	M&A & profitable firm's economic condition improves dramatically during the bubble periods.	Accepted (Positive Significant). Firms Economic condition Has Improved During Bubble Period
H20:	The investors of Profitable and M&A firms like manipulation by these firms and prefer to invest in them.	Accepted (investors prefer Abn Accruals and total accruals rather than cash flows

CHAPTER 05

CONCLUSION, RECOMMENDATION AND SUGGESTED POLICIES

5.1.1 Conclusion

1. What are the determinants that influence the STK MKT bubble in PSX and how do these determinants affect investment and investors during different stages of a bubble?

The salient determinants that affect the PSX bubble are the dispersion of investors beliefs, firms additional investment and financing activities, insider trading, illegal insider trading, earnings management, firms manipulations, the firm's value relevance of accounting information, issue of IPO's by the firms during bubble periods, an increase of share trading by the profitable and M&A firms and the legislation relating to the insider trading. The firms by insider trading, financial and accounting manipulations and through tactics of short selling inflate/ deflate their equity prices which affect the PSX investors. On the creation of a PSX bubble, the investment gets declined in the stock market. Similarly, the investors also stop arbitraging and investment activities since the returns are negative during the bubble period.

2. How do the market manipulation techniques employed by firms affect the investor's investment decision (Yosef et al., 2010) in PSX during different phases of the STK MKT bubble?

Firms earnings management, cash flows vs accruals and the value relevance of accounting information create accounting manipulation by positive accounting theory in the PSX. These manipulations have been applied in the pre-bubble periods for stock-based compensations, managerial & firms incentives. In the accruals vs cash flows model. It indicates that during the bubble period the market investors of profitable firms prefer market manipulations for earnings share premiums. Apart from this firms issue new equities, projects, IPO's and perform M&A activities to inflate their shares prices. All these factors affect the PSX investor's investment decisions.

3. How do the firm's investing and financing activities affect the PSX bubble and what measures may be taken to minimize its impact on common investors of PSX?

In the dispersion of investor's beliefs and additional investment and financing activities model, it is noticed that during the bubble period firms carry out equity issuance against new projects. But in detailed market analysis, it is observed that the firms that issue equities in the bubble period have weak instrumental value. To address this issue in the PSX, SECP should introduce a financial institution that studies the financial plans of the equity issuance to minimize the effect on investor's investment activities.

4. What is the role of legislation on insider trading in curtailing the STK MKT bubble & what measures may be taken to minimize its impact on PSX investors?

Illegal insider trading was detected in PSX in model 2. After this, a study and qualitative analysis on insider trading laws of SECP were carried out and the weaknesses observed in the legislation were criteria of short selling and stock-based compensation, absence of legislation on benami accounts and vague definition of tippees, tipsters and tippers. Through efficient legislation on the aforementioned anomalies, we can save the PSX investors from financial losses in the stock market.

5. How does the STK MKT bubble affect the investors and the investment in Pakistan?

6. Do the Pakistani investors possess knowledge of risk management and financial knowledge to keep pace with the STK MKT?

Due to the creation of a bubble in the PSX, speculations are increased in the stock market. As a result, the investors start investing in over-valued projects due to which the share values of the firms get increased. Whereas returns decline in the long run. The value relevance of the accounting and accruals vs cash flows models indicate that PSX common investors have less knowledge of market and firm's investments.

Sector-wise Findings

Model 1(Effect of firm's investment & financing activities and investor's dispersion Of beliefs on the stock market bubble). In this model analysis of 12 industrial sectors has been carried out. It has been observed that in cement industry effect of MPK is more pronounced than the dispersion of investors' beliefs. In this industry, the main cause of speculations is the firm's additional investment and financing activities. This leads to an increase in the firm's equity issuance, investing activities and investment opportunities for the market investors. In the Chemical & Pharmaceutical industries, the dispersion of investor's beliefs affects a firm's investment and financing activities, equity issuance and

market opportunities. The results indicate that this industry is highly speculative and firms carry out investment and equity issuance based on investor's beliefs. Similar results have also been observed in corporations of Pakistan, however, they are more speculative as compare to the Chemical & Pharmaceutical industries and affect the corporation's additional investment and financing activities. The results of Food, Electrical Machinery & Apparatus, IT & Petroleum Sectors Of Pakistan are also alike the Chemical & Pharmaceutical industries. The main difference is that MPK does not affect other variables in this industry. The results of the sugar industry are also in line with the Chemical & Pharmaceutical industries, however, they are less speculative than the Chemical & Pharmaceutical industries. In this industry, the impact of MPK is more pronounced than in the Chemical & Pharmaceutical industries. The results of the mineral, automobile and textile industries show that these markets are highly speculative and the speculations are created due to the firm's additional investment and financing activities.

Model 2 (The effect of earnings management and insider trading on the stock market bubble). In this model analysis of four profitable industries has been carried out. The model starts with the association between insider Selling and earnings inflation of every industry i.e Cement, Chemicals, pharmaceuticals and textile industries a strong relationship between insider selling and earnings inflation has been found. In this model, earnings inflation possesses a linear relationship with the BM ratio. The BM is a controlling variable and may possess a positive or negative relationship with earnings management. If the earnings inflation has an inverse relationship with the BM ratio, the earnings inflation will support the price equity of the firm (Beneish & Vargus 2002). If the BM ratio possesses a positive relationship with earnings inflation, then the firm managers would prefer to sell their shares when the earnings inflation is high (Ali et al., 2011 Beneish & Vargus 2002 and Beneish 1999). BM ratio represents the stock-based compensation, managerial incentives and earnings management. In the light of the second condition, the managers continue earnings inflation and trading of their securities during all stages of the bubble to dictate the prices of the firms. The same condition has also been proved in PSX. This indicates that stock-based compensations, managerial incentives and earnings inflation are carried excessively in the PSX during all stages of the bubble. Leverage and size have –ve relationship with earnings inflation during all stages of the bubble. This predicates that the

capital structure of firms gets changed during all stages of the bubble and the Pakistani firms become risk-taking to earn returns and incentives.

Model 3 (The role of M&A & Profitable Firms Play towards Bubble Creation). In this model analysis of four profitable industries and M&A firms have been carried out. The model starts with the transaction of multiple models. This model provides information about firm shares trading inside and outside the exchange. The cement industry results indicate that trading of shares inside and outside of the exchanges continued during all the stages of the bubble less post- bubble stages. The results of the Chemical and pharmaceuticals industries indicate that no effect of trading of shares could be observed during all the stages of the bubble less bubble peak period where trading of shares was increased inside and outside the exchange. The results of the textile industry indicate that the trading of shares declined during all stages of the bubble except the bubble peak period, where it increased. The results of M&A firms show that the trading of shares enhanced during all stages of the bubble less the bubble crash period, where it declined.

The results of the inverse transaction multiple model for the cement industry indicate that the profitability, risk, revenue, financial stability and growth have increased during all phases of the bubble less post-bubble phase where it declined. The results of the Chemical and pharmaceutical industry show that the profitability, risk, revenue, financial stability and growth have increased in the bubble peak and crash periods. The results of the textile industry indicate that the profitability, risk, revenue, financial stability and growth have increased in the bubble peak period but declined in other stages of the bubble. The results of M&A firms show that the profitability, risk, revenue, financial stability and growth were increased during all stages of the bubble. The results of the accrual vs cash flow model dictate that the market investors invest in profitable and M&A firms based on their manipulations rather than their investments during all stages of the bubble.

Miscellaneous Findings:

In the present research sincere have been made to explore the causes of bubble creation in PSX and their impact on investors and other related factors like insider trading, the role of dispersion of investor's belief, the impact of firm's accounting information, firm's EsM and M&A & profitable firms on it during & after bubble periods.

The above-mentioned models provide very useful information about PSX. The first model expresses how the firms do additional investment & financing activities and how the Investor's dispersion of belief affects the STK MKT during the bubble period. For this purpose, we have used 1892 observations from the study of eleven sectors. The findings indicate that dispersion of investor's belief & MPK possesses a linear relationship with the Firm's investment, market opportunities (Tobin's q) & equity issuance. Furthermore, the firm's additional investment (MPK) in the stock market enjoys comparatively a stronger relationship with all the variables in relation to the investor's dispersion of belief. The analysis of different industrial sectors of Pakistan suggests that mostly the firms depend upon external financing rather than internal financing. The results also indicate that MPK & dispersion create a bubble in the PSX. The increase in a bubble in PSX also increases dispersion & MPK which positively affects investment, equity issuance & market opportunities (Tobin's Q). One of the important outcomes of this model is that as a result of an increase in dispersion of investor's belief the short-selling & arbitraging activities also get increased because the base of investor's dispersion of belief rests on short selling. Therefore, it can be conveniently said that the STK MKT bubble in Pakistani STK MKT mainly occurs due to short selling i.e. selling over a shorter period of time for smaller gains. Subsequently, another issue arises due to short selling which is equity issuance by the firms in PSX wherein, the firms give an impression to their investors that it is starting a new project for additional investment and financing activities. This information is disclosed by the firms through their quarterly unaudited reports. This exercise of equity issuance is carried out to enhance profits in the short term, on speculations. Which results in temporary gains to the firms. However, an ordinary investor may suffer due to a lack of understanding of these tactics by the Pakistani firms. There are two kinds of investors in the stock market which play their role in the creation of the speculative STK MKT bubble. These are over–confident investors (firm managers and market manipulators) and pessimistic investors (ordinary/simple market investors). The overconfident investors willfully create a speculative environment in the market through manipulative strategy. By doing so they convince the pessimistic investors to invest in the share of respective firms based on such information, which may not be true. However, the pessimistic investors fail to foresee the truth of the argument put forward by the over-confident investors. This ultimately disturbs

the entire market and it behaves unnaturally and resultantly, an STK MKT bubble is created. In the advanced or first world countries, the official market regulators restrict the short selling, equity issuance and additional investment in the market by the firms to prevent speculative tendencies.

However, in PSX, such regulations are hardly exercised thereby making it speculative in character. There is a positive and a negative side to the speculative strategies adopted by the firms. In case, when the market is down, such speculative strategies may lead to bringing the respective STK MKT out of the bearish trend. However in case, when the market is already performing in a very bullish manner, such speculative strategies result in the creation of a bubble thereby deteriorating or misbalancing the STK MKT which is harmful in the long run.

Furthermore, Pakistani firms in collaboration with the political elite, resort to earnings inflation strategy by inflating their revenues and financing which mostly goes unchecked, causing loss to the ordinary investors in most cases. The way out of this situation with special reference to PSX is the application of an effective and authentic information providing system to the investors in the STK MKT i.e. any information being provided by the respective firms has to be audited and verified. Failing which, the respective firms may be proceeded against for breach of trust, just like the system in the stock markets of advanced countries. In the USA, Goldman Sachs and Stanley Morgan closely monitor the financing and investment plans laid out by the firms in US STK MKT and subsequently issue authentic information to the investors based on their study of the respective firms.

It was concluded that due to the heterogeneous belief of inventors the bubble is created in the PSX, as a result, the companies invest more during the bubble period, therefore the financial activities of the companies are enhanced during the bubble period. A similar trend persists in the STK MKT during Short & long runs. The results also indicate that the relationship between investment and STK MKT is negative in the short run, whereas becomes positive in the long run. The impulse response model also displays that heterogeneous beliefs of investors create a bubble in the market, hence it results in enhancement of investment actives in the STK MKT by the firms and accordingly the finances of the companies also get increased. Our results also substantiate the results of

Gilchrist et al., (2005). Whenever the firm's share prices exceed the value of their fundamental prices in the STK MKT, the COC of the firm's securities get increases. Resultantly, net equity issuance is increased which cast a positive impact on the firms financing activities. The analysis of PSX indicates that whenever firms carry out equity issuance the stock prices get declined temporarily. Whereas in the long run they again inflate the share prices thus resulting in the creation of a bubble.

After a detailed analysis of the STK MKT bubble phenomenon with reference to Pakistan and other countries, it has been observed that in different phases of the STK MKT bubble especially in the pre-bubble and during bubble periods, the firm's recorded investment activities were increased. We have used the term "unrecorded" as in the case of Pakistani investors and firms, they managed to increase the prices of their respective shares throughout the SEC framework regarding their respective STK MKT operations i.e. the respective firms buy their own shares indirectly in the pre-bubble and during bubble periods, thereby inflating the prices of their respective shares manifold. This value of share due to indirect acquisition of shares in bulk amount leads to an appreciation of the share value far beyond its fundamental value. During the bubble period, the cost of capital increases on shares and the par value of the shares/securities/ equities increase. This is also an investment on part of the firm but it is being termed as "unrecorded" here. However, as for the official record, new investments are hard to come by in the firm's infrastructure or in terms of new projects primarily due to the reason that firms focus on reaping the benefits of the STK MKT bubble by diverting their financial resources and energies. Furthermore, the profits earned are adjusted through means such as inflating their incomes and expenses from existing resources/projects. In this way, new investments are rarely made during pre-bubble and bubble periods.

Another option that can be exercised for containing the bubble is the alternate investment opportunities in the respective country. In this way, the bubble burst phenomenon can be contained i.e. money from the STK MKT will be slowly withdrawn and invested in other profitable ventures by the investors. In the case of Pakistan, STK MKT, the bubble phenomenon is frequent as the investors or the firms do not have adequate alternatives available for investment in new projects, primarily due to a less conducive business atmosphere owing to increased production costs and low rate of returns on other

businesses and projects. In such a case, investment in STK MKT leading to a bubble offers an opportunity to reap higher amounts of profits from the stock market.

The stock market bubble also offers a positive outcome in the events after the bubble burst. Due to the bubble burst, major players of the stock market are the winners in contrast to the small investors, who lose big time. The firms on account of their abnormal profits after the bubble bust in stock markets, divert their newly found abnormal wealth towards other projects which increase the investments by firms in the post STK MKT crash or post-bubble bust period.

Bubble in STK MKT can be contained in Pakistan if the equity issuance procedures are streamlined through such institutions which can guide the investor after studying the investment plans of respective firms that intend to issue equity in the market. This can be explained in the case of investment banks such as Goldman Sachs and Morgan Stanley in the USA. The job of such institutes is to act as intermediaries between the firms issuing equity in STK MKT and the investors. This is done through the study of financial plans and projects for which the respective firms intend to issue equity and based on the feasibility of firms plans, investment banks recommend to investors, whether to invest in the respective equity or not along with proposing a reasonable price per share for which the shares or stock can be bought by the investors. In the case of Pakistan, the same approach is needed in which the firm that intends to issue equity should first put an elaborate plan regarding any project for which the respective firm intends to raise capital through equity issuance. This should be followed by periodic reports that should inform the investors about the progress of the project of the firm for which the capital was raised through equity issuance to investors. Another innovation can be made when the stock market is at boom or the share price has increased considerably e.g. if a share price has increased 5-10 times of its IPO price, then an investment bank or any like institution should direct the firm to issue business plan regarding the investment of capital that has been raised instead of holding it in their coffers. This approach will reduce the effect of the bubble and also increase the level of investment by ensuring that investment in the stock market will be linked to investment in projects in other sectors of the economy.

According to Model 2, how do the earnings management and insider trading by the firms contribute towards the STK MKT bubble? In this model, we have used 1458

observations from the study of four sectors i.e (cement, Textile & Pharmaceutical & Chemical Industry). During the bubble period, the earnings inflation possesses a positive relationship with insider trading, equity issuance of firms and BM ratio, while it possesses a negative relationship with the size of the firms and the leverage. The results also confirmed that during the bubble period, managerial stock-based compensations, insider trading and EsM persist in the firms which inflate prices of their shares. Whereas, after the burst of the bubble insider trading of the firms is curtailed but the managerial compensations are continued by the firms. In the study of insider trading, an interesting phenomenon of illegal insider trading was observed. It is very hard to detect insider trading in the stock market since no appropriate technique has been developed so far. Up till now, the old proxies were being used for the purpose, which is needed to be developed for optimum results. The research indicates that in PSX, illegal insider trading is being practiced which is evident from the fact that abnormal returns have a positive relationship with insider trading during all phases of the bubble. The problems created in the PSX are also due to illegal insider trading in which owners through their front men invest in the STK MKT causing an artificial rise in the stock prices and then resort to profit-taking, which in turn decreases the price of shares causing loss to ordinary investors. There is no comprehensive law preventing illegal insider trading in the Securities Act 1969, Companies Ordinance 1984. Moreover, to counter illegal insider trading no criteria of Short sellings, tippees, tipsters & tippers laws & benami accounts have been defined in the prevailing laws. Furthermore, there are no laws on benami accounts, modified short selling of shares criteria and tippers. It is pertinent to mention that the USA has proper safety checks for the prevention of insider trading in their laws such as SA 1933, SEA 1934, SEC 2001.

EsM, earning inflation, insider trading and managerial stock-based compensations cause inflation in the share prices in the STK MKT, which results in the creation of the STK MKT bubble. Moreover, In the USA market, Managers of firms, CEO's & CFO's focus too much on stock-based compensations & Earnings Manipulation Mechanisms, to obtain abnormal returns on their securities in the short as well as in the long runs. Equity or Managerial based compensations are carried out mainly for the two reasons i.e. share prices are inflated through EsM with financial manipulation and managers concentrate on

those stocks which they think that may form part of future managerial and equity-based compensation. Most of the researches also reveal that whenever a STK MKT bubble has created the bonds between Earnings inflation and insider trading get stronger as have been the case in the US tech Bubble of the late 1990s (De Long et al., 1990 and Brunnermeier and Nagel 2004). These prospects generate speculations among the investors which invoke arbitrageur behavior in them. The empirical findings also revealed that a –ve relationship between abnormal accruals and abnormal returns have always resulted due to Net insider Sellers of the firm's Managers, CEO's & CFO's. Since the BM ratio is linked with insider trading, therefore whenever insider trading will increase, it will also affect the BM ratios and Firm Size accordingly. We will apply the variable of leverage in our analysis to control the limitations of acquiring funds to expand the capacity of firms. The analysis indicates that BM ratio possesses a positive relation with abnormal return models throughout the bubble stages in PSX. This predicates the existence of stock-based compensation activities during all stages of the bubble in the stock market. this result has also been discussed in the analytical portion of Chapter 5 and observed that criteria of stock-based compensation has not been well defined in the company's ordinance 1984.

It has been observed that earnings inflation and EsM in respective firms, bear a positive relationship with insider trading, equity issuance by firms and book to market value. i.e. in case a firm experiences EsM practices during the pre-bubble and bubble phases, then it is mainly due to insider trading & managerial-based compensations by the firms, especially with reference to PSX. Similarly, the more the equity issuance by firms, the more will be the EsM practices to show inflated earnings in periodic financial reports by the management of respective firms, which result in increased investment in respective firm's shares giving rise to bubble in the stock market. Also, the book to market ratio increases with the increase in earnings of the firm during the bubble period in the stock markets i.e. book to market ratio >1 signifies overvaluation through EsM which is precisely what happens to the shares during the bubble phase which results in inflated earnings. Moreover, small-sized firms practice more EsM practices as they intend to multiply the value of their respective shares in a short span of time and thus increase their earnings. Whereas, large-sized firms are less likely to practice earnings inflation as they take longer to double or triple their prices of shares and market capitalization. Furthermore, leverage

which is practiced to increase the number of shares acquired and also to hold diverse types of shares which have a negative relationship with earnings inflation i.e. the risk of diversifying of shares being acquired by investors through employing leverage is less, whereas the risk is greater in case the investors or investment firms holding the single type of shares or expensive shares with fewer numbers. Therefore, the lesser the leverage, the more will be the earnings inflation and Es M by respective firms.

When a bubble burst happens in the STK MKT, relationships between different variables change e.g. the earnings inflation holds the negative relationship with insider trading because when the bubble burst happens, EsM is increased to control the falling trends in share prices. Similarly, when equity issuance is reduced by the firms, EsM increases. Also, when Es M increases in the bubble burst period, leverage reduces. Furthermore, larger companies have a positive relationship with earnings inflation i.e. larger the size of the firms, the more will be the earnings inflation of the firms and vice versa. It is done to minimize the losses to larger firms as they have larger market capitalization and are likely to lose more in the bubble burst period than smaller firms. Similarly, firms that have overvalued shares having larger BM ratios are less likely to resort to EsM. Whereas firms having undervalued shares are more likely to resort to EsM, in order to cut the losses and prevent the shares of firms from nose dive as a result of a bubble burst in the STK MKT.

The illegal insider trading has been detected in the PSX since it possesses a positive relationship with abnormal return models. However, certain weaknesses observed in the company's ordinance 1984 are the absence of criteria of short selling, Benami accounts and whistle-blowing policy. Moreover, the definitions of insider trading, tippees, tippers & tipsters and criteria of stock-based compensations are not well defined. For details visit Chapter 5.

In this research solemn efforts have been made to establish how M & A and profitable firms contribute towards the STK MKT bubble in PSX. For this purpose, we have used 3111 observations. The regression analysis of "transaction multiples" and "inverse transaction multiples" show that the arbitraging activities, transactions of the securities & profitability of M&A & profitable firms were increased in the bubble period except for the crash period. It has also been disclosed by the regression analysis that PSX

investors possess a “weak financial & financial risk distress management Knowledge”, therefore they prefer “market manipulations” for discounting. Hence, are adversely affected by manipulations while trading equities in the stock exchange. In the process, COC of profitable and M&A firms also get escalated due to relevance of accounting, E’sM, investing & financing activities. Equity holders of those firms, follow equity price directions for future returns because as equity price is increased they invest more for high discounting in the market. Regression analysis of present research indicates that the bubble in PSX would be curtailed by improving the financial knowledge of market arbitrageurs.

In PSX during the bubble period, as per the transaction multiple and inverse transaction multiple models. The volume of share transactions both inside and outside of the stock market increase. This indicates that during the bubble period, there is increased activity in terms of short selling, equity issuance and arbitraging of shares. Furthermore, to ascertain the financial knowledge and risk distress management of the common investors of the PSX, we have used cash flow vs accruals models. These models state that the Pakistani investors approve the manipulative practices of the respective firms, thereby ignoring their original accounting information and investment activities, as long as it remains beneficial for the investors.

The relevance of accounting information plays an important role in shaping the investor's perception in bubble periods. During the bubble periods, firms display positive accounting information to attract investors. Moreover, the relevance of accounting information is market-oriented. The analysis of value relevance accounting models shows that the investors focus more on EPS (relevance Accounting) rather than Change in EPS (non-Relevance of accounting) itself. It is for this reason that investors do not possess amicable knowledge about the financial health of firms. EPS being of value relevance brings abnormal returns in the Pakistani market which creates a bubble in PSX. Its impact has been more pronounced during the second phase of the bubble i.e. 2012 to 2016, where R square rose to 30.4 percent. The firm’s accounting information also contributes towards the creation of a bubble because the explanatory power of R square during a bubble exceeds 30.40 percent. However, if the investors are provided comprehensive knowledge about the firm’s accounting information, the creation of a bubble due to the relevance of accounting information can be controlled. The analysis of value relevance accounting model 2 A

shows that the investors focus more on Firms BVS (Balance Sheet) rather than the firm's NI (Income Statement). The results of value relevance indicate that total value relevance had significantly increased during the bubble period. As a result the explanatory power of BVS & NI also increased substantially. This predicates that investors accord more importance to Firms balance Sheet & BVS accounting information during the bubble period. The results also concluded that in the last bubble value relevance of accounting, firms BVS & NI have been the main contributing factors towards the creation of a bubble in the PSX. The analysis of non-value relevance accounting w.r.t to issuing IPO's Model 3 shows that the investors also focus on the firm's non-relevance of accounting especially in the case of Pakistani IPOs. The results of value relevance indicate that total non-value relevance had significantly increased during the bubble period. As a result, the explanatory powers of the hot market issue & NI have increased substantially in the first phase of the bubble. However, in the second phase of the bubble, the value of non-relevance accounting has increased tremendously than net income. This predicates that non-relevance of accounting in terms of change in EPS do not affect stock market bubble whereas non-relevance of accounting in term of IPO's increase stock market bubble.

In the value relevance model, Pakistani investors prefer the firm's non-accounting information as compared to the firm's accounting information. This predicates on a poor knowledge of Pakistani investors about finance and accounting. Furthermore, it also speaks of the ignorance of investors about the prospects of projects launched by the firms whether those will be beneficial or harmful in the long run. That is why the bubble and crashes have become a regular phenomenon of PSX.

It can infer that to contain the stock market bubble in the case of PSX, firms need to provide accurate information to the investors. This measure of accuracy is even more important in the case of smaller firms as the tendency to give more than positive or exaggerated information for their good financial health is more among smaller firms as compared to larger firms. Effective criteria in this regard can help in preventing the bubble phenomenon and will increase investor confidence which will augur their will for safe and increased investment in the stock markets.

5.1.2 Recommendations and Suggested Policies for PSX

5.1.2.1 Recommendations

A three-pronged relationship prevails between insider trading, asymmetric information & Earning Management. The greater the asymmetry of information, the higher will be insider trading which will lead to higher earnings management. The results of the research indicate that a strong relationship between insider trading & earnings management exists. In the light of literature and research analysis, E's M rises during the pre-bubble period, whereas insider trading increases during the bubble period which also gives rise to stock-based compensations to the top managers who inflate share prices to benefit respective firms whereby damaging the interest of market shareholders. The research results also show that the existence of +ve significant relationship between abnormal returns and insider trading is ample evidence of the fact that illegal insider trading by the firms does exist in the stock market due to poor implementation of existing Laws. However, it was observed that illegal insider trading mostly prevailed during pre-bubble & bubble period periods. Whereas legal insider trading generally existed during bubble crashes & post-bubble periods. Furthermore, firms grossly manipulate their financial statements, therefore in order to have an effective check on the firms, SECP must employ efficient integral auditors for the scrutiny of the firm's financial reports. It is therefore suggested that for controlling insider trading and saving the shareholders from uncalled-for losses, corporate governance must be improved. SECP must be approached to carry out effective legislation and ruthless implementation of rules & regulations to control insider trading & earnings management.

The stock market bubble can be controlled in Pakistan by providing first hand & accurate financial information to the common investors, as it is done by the SEC in the USA, which provides the minutest details of even sensitive information about the firms on their inventory. Even they upload the data of firms involved in insider trading on their websites. Similarly, SECP must organize workshops and seminars to educate and counsel common market investors. This will assist in creating a behavioral mechanism that may help in controlling bubbles in the stock market.

Bubble in stock markets can be contained in Pakistan if the equity issuance procedure is streamlined through such institutions which can guide the investor after

studying the investment plans of respective firms that intend to issue equity or shares in the market. This can be explained in the case of investment banks such as Goldman Sachs and Morgan Stanley in the USA. The job of these institutes is to act as intermediaries between the firms issuing equity in the stock market and the investors. This is done through the studying of financial plans and projects for which the respective firm intends to issue equity and based on the feasibility of the firm's plan, such investment banks recommend investors whether to invest in the respective equity or not along with proposing a reasonable price per share for which the shares or stock can be bought by the investors. In case of Pakistan, the same approach is needed in which the firm that intends to issue equity should first put an elaborate plan regarding any project for which the respective firm intends to raise capital through equity issuance. This should be followed by periodic reports that should inform the investors about the progress of the project of the firm for which the capital was raised through equity issuance to investors. Another innovation can be made when the stock market is at boom or the share price has increased considerably e.g. if a share price has increased 5-10 times of its IPO price, then an investment bank or any like institution should direct the firm to issue business plan regarding the investment of capital that has been raised instead of holding it in their coffers. This approach will reduce the effect of the bubble and also increase the level of investment by ensuring that investment in the stock market will be linked to investment in projects in other sectors of the economy.

SECP must hire a dedicated Panel of efficient financial analysts, who should monitor stock market activities round the clock and must be ready with viable remedial plans at all times to counter the creation of a bubble right from the outset. Moreover, SECP should also formulate a body of legal experts who must ensure implementation of SCEP laws & policies in letter & spirit & impose penalties on the defaulters.

For controlling bubble in PSX, SECP must employ qualified and dedicated legal and financial experts and implement its rules and regualtions ruthlessly.

SECP must evolve an effective audit mechanism to check earnings manipulations by the firms to save market investors from the loses.

SECP must organize workshops and seminars to educate and improve the financial knowledge and the market wisdom of the investors to protect them from the uncalled for losses.

For controlling the bubble in PSX, SECP must employ qualified and dedicated legal and financial experts and implement its rules and regulations ruthlessly.

SECP must evolve an effective audit mechanism to check earnings manipulations by the firms to save market investors from the loses.

SECP must organize workshops and seminars to educate and improve the financial knowledge and the market wisdom of the investors to protect them from the uncalled-for losses.

5.1.2.2. Suggested Policies implications for PSX in the light of research

a. It has been observed that no criteria of short selling have so far been defined in SECP & PSX regulations. Currently, the world is moving to implement SHO 2010 regulations which amply covers the aspect of short sellings, whereas in Pakistan we are still thinking to implement SEC US uptick rule 1938, which does not meet the sole requirement of controlling short sellings. It is pertinent to mention that as per the US & UK laws absence of short selling criteria is the main determinant of illegal insider trading.
b. Since criteria of short selling have not been defined in PSX & SECP laws, hence the criteria of legal/illegal short selling also stand ignored for which legislation is deemed essential.
c. It has also been observed that the tippers, tippees & tipsters have also not been explicitly defined in SECP & PSX regulations, which give rise to illegal insider trading as well. These terms have been adequately defined in US & UK Laws.
d. Similarly, the criteria of stock-based compensations have also not been defined under PSX & SECP laws, which adversely affect the process of legal insider trading and legal short selling.
e. Since US SEC laws contain many loopholes and escape routes for the defaulters, it is therefore suggested that in Pakistan we should follow UK FSA Laws & EU directives. Moreover, all the SRO's must be merged into SECP as like UK FSA laws and EU directives.
f. Similarly, no legislation on Benami Accounts as well has been carried out in PSX. Whereas, this has been amply covered vide Whistleblowing Policy of Sarbanes Oxley law 2002 of USA.

g. Managerial & firms incentives have not been well defined in PSX & SECP legislations, as done in Whistleblowing Policy of Sarbanes Oxley law 2002 in the USA.

h. It is suggested that SECP & PSX must organize workshops and Seminars to educate the common market investors, to improve their financial knowledge. It will not only help investors merely to invest for the sake of discounting rather they must base their investments on comprehensive market knowledge to avoid loss to their investments and in turn also to avert the chances of spoiling the market index.

5.1.2.3. Financial Typology

i. SECP and PSX should introduce automated financial typology data base that monitors firms financial reporting, shares trading and other financial activities. It will help the market investors to obtain first-hand information about the financial health and activities of firms listed on the PSX inventory and make their investment decisions.

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Appendix I

1. Dispersion of investors beliefs

The logarithm of the fiscal year average of the monthly standard deviation of Moving Avg forecasts of earnings per share times the number of shares, divided by the book value of total assets. That is,

$$d_t = \sum_{j=1}^{12} \frac{N_{t-j}\sigma_{t-j}/12}{Total\ Assets}$$

where Nt−j is the number of shares outstanding, and σt−j is the variance of earnings forecasts for all analysts making verified forecasts for the month.

Reason

In Pakistan Investors in the stock market do not rely on the analyst forecast reports as in the United States of America rather they prefer the EPS of Companies. Moreover, in Pakistan, the specialist of Analyst forecasts are almost non-existent. That is why in this research EPS 3 year moving avg Forecast has been used. The respected amendment has also been used by various Scholars i.e. Eckel (1982), Ghelli et al., (1999). Ritter (2005) , Newbold et al., (1981), Chang et al., (2009), Kross & Schroeder (1984), Thomas et al., (1998), Shiller (1980), Shroff (1999), Barro and (1990), Abarbanell & Lehavy (2003). Schmitt et al., (1974).

2. Marginal Profit of Capital

Marginal profit of capital (MPK) is the logarithm of a standardized ratio of sales divided by the lagged book value of property, plant and equipment (end-of-fiscal-year values). Before taking logs, the sales-to-capital is divided by the industry average ratio (computed on a sample trimmed at the one percent tails), and then multiplied by 0.2. This standardization accommodates cross-industry differences in the fixed capital share of production, and reduces the

chance of misclassifying ratios in low-capital industries as “outliers.” In steady-state, MPK should equal the long-run cost of capital, r + δ. Normalizing the scaled ratio by r + δ = 0.2 thus centers the sample average of MPK at a reasonable value, but does not affect the statistical properties of our estimates. For details, see Gilchrist and Himmelberg (1998).

US SEC Laws

Insider Trading Laws

The SEC promulgated rule 10b-5 *to implement the above section. This rule states that: "It shall be unlawful for any person, directly or indirectly . . ., (a) to employ any device, scheme, or artifice to defraud, (b) to make any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading, or (c) to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of a security".*

"Securities and Exchange Act 1934, Section 16(b)*: "Profits from purchase and sale of security within six months". For the purpose of preventing the unfair use of information which may have been obtained by such beneficial owner, director, or officer by reason of his relationship to the issuer, any profit realized by him from any purchase and sale, or any sale and purchase, of any equity security of such issuer…involving any such equity security within any period of less than six months,…shall inure to and be recoverable by the issuer, … Suit to recover such profit may be instituted at law or in equity in any court of competent jurisdiction by the issuer, or by the owner of any security of the issuer in the name and in behalf of the issuer … "*

"Rule 14e-3 "Transactions in Securities on the Basis of Material, Nonpublic Information in the Context of Tender Offers".

"If any person has taken a substantial step or steps to commence, or has commenced, a tender offer (the "offering person"), it shall constitute a fraudulent, deceptive or manipulative act or practice within the meaning of section 14(e) of the Act for any other person who is in possession of material information relating to such tender offer which information he knows or has reason to know is nonpublic and which he knows or has reason to know has been acquired directly or indirectly from: The offering person, The issuer of the securities sought or to be sought by such tender offer, or Any officer, director, partner or employee or any other person acting on behalf of the offering person or such issuer, to purchase or sell or cause to be purchased or sold any of such securities or any securities convertible into or exchangeable for any such securities or any option or right to obtain or to dispose of any of the foregoing securities, unless within a reasonable time prior to any purchase or sale such information and its source are publicly disclosed by press release or otherwise"

"Rule 10b5(1) *"Trading "on the Basis of" Material Nonpublic Information in Insider Trading Cases". Preliminary Note to Rule 10b5-1: This provision defines when a purchase or sale constitutes trading "on the basis of" material nonpublic information in insider trading cases brought under Section 10(b) of the Act and*

Rule 10b-5 *thereunder. The law of insider trading is otherwise defined by judicial opinions construing Rule 10b-5, and Rule 10b5-1 does not modify the scope of insider trading law in any other respect. a. General. The "manipulative and deceptive devices" prohibited by Section 10(b) of the Act and Rule 10b-5 thereunder include, among other things, the purchase or sale of a security of any issuer, on the basis of material nonpublic information about that security or issuer, in breach of a duty of trust or confidence that is owed directly, indirectly, or derivatively, to the issuer of that security or the shareholders of that issuer, or to any other person who is the source of the material nonpublic information. b. Definition of "on the basis of." Subject to the affirmative defenses in paragraph (c) of this section, purchase or sale of a security of an issuer is "on the basis of" material nonpublic information about that security or issuer if the person making the purchase or sale was aware of the material nonpublic information when the person made the purchase or sale. …"*

Tippees Law

241 Rule 10b5-2: "Duties of Trust or Confidence in Misappropriation Insider Trading Cases".

Preliminary Note to § 240.10b5-2: This section provides a non-exclusive definition of circumstances in which a person has a duty of trust or confidence for purposes of the "misappropriation" theory of insider trading under Section 10(b) of the Act and Rule 10b-5. The law of insider trading is otherwise defined by judicial opinions construing Rule 10b-5, and Rule 10b5-2 does not modify the scope of insider trading law in any other respect. a. Scope of Rule. This section shall apply to any violation of Section 10(b) of the Act and Rule 10b-5 thereunder that is based on the purchase or sale of securities on the basis of, or the communication of, material nonpublic information misappropriated in breach of a duty of trust or confidence. b. Enumerated "duties of trust or confidence." For purposes of this section, a "duty of trust or confidence" exists in the following circumstances, among others: 1. Whenever a person agrees to maintain

information in confidence; 2. Whenever the person communicating the material nonpublic information and the person to whom it is communicated have a history, pattern, or practice of sharing confidences, such that the recipient of the information knows or reasonably should know that the person communicating the material nonpublic information expects that the recipient will maintain its confidentiality; or 3. Whenever a person receives or obtains material nonpublic information from his or her spouse, parent, child, or sibling; provided, however, that the person receiving or obtaining the information may demonstrate that no duty of trust or confidence existed with respect to the information, by establishing that he or she neither knew nor reasonably should have known that the person who was the source of the information expected that the person would keep the information confidential, because of the parties' history, pattern, or practice of sharing and maintaining confidences, and because there was no agreement or understanding to maintain the confidentiality of the information."

FRAUDULENT INTERSTATE TRANSACTIONS SEC. 17*. ø77q¿ (a) It shall be unlawful for any person in the offer or sale of any securities (including security-based swaps) or any security-based swap agreement (as defined in section 3(a)(78)*

of the Securities Exchange Act27) by the use of any means or instruments of transportation or communication in interstate commerce or by use of the mails, directly or indirectly— (1) to employ any device, scheme, or artifice to defraud, or (2) to obtain money or property by means of any untrue statement of a material fact or any omission to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; or (3) to engage in any transaction, practice, or course of business which operates or would operate as a fraud or deceit upon the purchaser. (b) It shall be unlawful for any person, by the use of any means or instruments of transportation or communication in interstate commerce or by the use of the mails, to publish, give publicity to, or circulate any notice, circular, advertisement, newspaper, article, letter, investment service, or communication which, though not purporting to offer a security for sale, describes such security for a consideration received or to be received, directly or indirectly, from an issuer, underwriter, or dealer, without fully disclosing the receipt, whether past or prospective, of such consideration and the amount thereof. (c) The exemptions provided in section 3 shall not apply to the provisions of this section. (d) The authority of the Commission under this section with respect to security-based swap agreements (as defined in section 3(a)(78) of the Securities Exchange Act of 1934) shall be subject to the restrictions and limitations of section 2A(b) of this title.

US Short Selling Law

Old Uptick rule 1938

REGULATION OF THE USE OF MANIPULATIVE AND DECEPTIVE DEVICES SEC. 10*.*

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange— (a)(1) To effect a short sale, or to use or employ any stoploss order in connection with the purchase or sale, of any security other than a government security, in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors

US SHO 2010 Short Selling Law

Rule 201 includes the following features:

- *Short Sale-Related Circuit Breaker: The circuit breaker would be triggered for a security any day in which the price declines by 10 percent or more from the prior day's closing price.*
- *Duration of Price Test Restriction: Once the circuit breaker has been triggered, the alternative uptick rule would apply to short sale orders in that security for the remainder of the day as well as the following day.*
- *Securities Covered by Price Test Restriction: The rule generally applies to all equity securities that are listed on a national securities exchange, whether traded on an exchange or in the over-the-counter market.*
- *Implementation: The rule requires trading centers to establish, maintain, and enforce written policies and procedures that are reasonably designed to prevent the execution or display of a prohibited short sale.*

The rule will become effective 60 days after the date of publication of the release in the Federal Register, and then market participants will have six months to comply with the requirements.

Appendix III

UK Insider Dealing Laws

Section 1(1) of the Company Securities (Insider Dealing) Act 1985*: "Subject to section 3, an individual who is, or at any time in the preceding 6 months has been, knowingly connected with a company*

shall not deal on a recognised stock exchange in securities of that company if he has information which- (a) he holds by virtue of being connected with the company (b) it would be reasonable to expect a person so connected, and in the position by virtue of which he is so connected, not to disclose except for the proper performance of the functions attaching to that position, and (c) he knows is unpublished price sensitive information in relation to those securities." Section 9 of the Company Securities (Insider Dealing) Act 1985: "For purposes of this Act an individual is connected with a company if, but only if- (a) he is a director of that company or a related company, or (b) he occupies a position as an officer (other than a director) or employee of that company or a related company or a position involving a professional or business relationship between himself (or his employer or a company of which he is a director) and the first company or a related company which in either case may reasonably be expected to give him access to information which, in relation to securities of either company, is unpublished price sensitive information and which it would be reasonable to expect a person in his position not to disclose except for the proper performance of his functions."

CJA 1993 Part V Also the part of FSMA 2000

The most important provisions are in the following sections: 52- The offence. (1) An individual who has information as an insider is guilty of insider dealing if, in the circumstances mentioned in subsection (3), he deals in securities that are price-affected securities in relation to the information. (2) An individual who has information as an insider is also guilty of insider dealing if- (a) he encourages another person to deal in securities that are (whether or not that other knows it) price-affected securities in relation to the information, knowing or having reasonable cause to believe that the dealing would take place in the circumstances mentioned in subsection (3); or (b) he discloses the information, otherwise than in the proper performance of the functions of his employment, office or profession, to another person.

(3) The circumstances referred to above are that the acquisition or disposal in question occurs on a regulated market, or that the person dealing relies on a professional intermediary or is himself acting as a professional intermediary. (4) This section has effect subject to section 53 "Defences".

***56- "Inside information",** etc. (1) For the purposes of this section and section 57, "inside information" means information which- (a) relates to particular securities or to a particular issuer of securities or to particular issuers of securities and not to securities generally or to issuers of securities generally; (b) is specific or precise; (c) has not been made public; and (d) if it were made public would be likely to have a significant effect on the price of any securities. (2) For the purposes of this Part, securities are "price-affected securities" in relation to inside information, and inside information is "price-sensitive information" in relation to securities, if and only if the information would, if made public, be likely to have a significant effect on the price of the securities. (3) For the purposes of this section "price" includes value.*

***57- "Insiders".** (1) For the purposes of this Part, a person has information as an insider if and only if- (a) it is, and he knows that it is, inside information, and (b) he has it, and knows that he has it, from an inside source. (2) For the purposes of subsection (1), a person has information from an inside source if and only if- (a) he has it through- (i) being a director, employee or shareholder of an issuer of securities; or (ii) having access to the information by virtue of his employment, office or profession; or (b) the direct or indirect source of his information is a person within paragraph (a).*

***58- Information "made public".** (1) For the purposes of section 56, "made public", in relation to information, shall be construed in accordance with the following provisions of this section; but those provisions are not exhaustive as to the meaning of that expression. (2) Information is made public if- (a) it is published in accordance with the rules of a regulated market for the purpose of informing investors and their professional advisers; (b) it is contained in records which by virtue of any enactment are open to inspection by the public; (c) it can be readily acquired by those likely to deal in any securities- (i) to which the information relates, or (ii) of an issuer to which the information relates; or (d) it is derived from information which has been made public. (3) Information may be treated as made public even though- (a) it can be acquired only by persons exercising diligence or expertise; (b) it is communicated to a section of the public and not to the public at large; (c) it can be acquired only by observation; (d) it is communicated only on payment of a fee; or (e) it is published only outside the United Kingdom.*

***Section 118. – (1)** For the purposes of this Act, market abuse is behaviour (whether by one person alone or by two or more persons jointly or in concert)- (a) which occurs in relation to qualifying investments traded on a market to which this section applies; (b) which satisfies any one or more of the conditions set out in subsection (2); and (c) which is likely to be regarded by a regular user of that market who is aware of the behaviour as a failure on the part of the person or persons concerned to observe the standard of behaviour reasonably expected of a person in his or their position in relation to the market. (2) The conditions are that-*

(a) the behaviour is based on information which is not generally available to those using the market but which, if available to a regular user of the market, would or would be likely to

The new section 118 of the FSMA 2000 *determines behaviour amounting to insider dealing and market abuse as; 118 Market abuse (1) For the purposes of this Act, market abuse is behaviour (whether by one person alone or by two or more persons jointly or in concert) which- (a) occurs in relation to- (i) qualifying investments admitted to trading on a prescribed market, (ii) qualifying investments in respect of which a request for admission to trading on such a market has been made, or (iii) in the case of subsection (2) or (3) behaviour, investments which are related investments in relation to such qualifying investments, and (b) falls within any one or more of the types of behaviour set out in subsections (2) to (8).*

(2) The first type of behaviour is where an insider deals, or attempts to deal, in a qualifying investment or related investment on the basis of inside information relating to the investment in question. (3) The second is where an insider discloses inside information to another person, otherwise than in the proper course of the exercise of his employment, profession or duties. (4) The third is where the behaviour (not falling within subsection (2) or (3)):– (a) is based on information which is not generally available to those using the market but which, if available to a regular user of the market, would be, or would be likely to be, regarded by him as relevant when deciding the terms on which transactions in qualifying investments should be effected; and (b) is likely to be regarded by a regular user of the market as a failure on the part of the person concerned to observe the standard of behavior reasonably expected of a person in his position in relation to the market. (5) The fourth is where the behavior consists of effecting transactions or orders to trade (otherwise than for legitimate reasons and in conformity with accepted market practices on the relevant market) which:– (a) give, or are likely to give, a false or misleading impression as to the supply of, or demand for, or as to the price of, one or more qualifying investments; or (b) secure the price of one or more such investments at an abnormal or artificial level. (6) The fifth is where the behavior consists of effecting transactions or orders to trade that employ fictitious devices or any other form of deception or contrivance. (7) The sixth is where the behavior consists of the dissemination of information by any means which gives, or is likely to give, a false or misleading impression as to a qualifying investment by a person who knew or could reasonably be expected to have known that the information was false or misleading. (8) The seventh is where the behavior (not falling within subsection (5), (6) or (7)) :– (a) is likely to give a regular user of the market a false or misleading impression as to the supply of, demand for or price or value of, qualifying investments; or (b) would be, or would be likely to be, regarded by a regular user of the market as behavior that would distort, or would be likely to distort, the market in such an investment, and the behavior is likely to be regarded by a regular user of the market as a failure on the part of the person concerned to observe the standard of behavior reasonably expected of a person in his position in relation to the market. (9) Subsections (4) and (8) and the definition of "regular user" in section 130A(3) cease to have an effect on 30 June 2008 and subsection (1)(b) is then to be read as no longer referring to those subsections.

Traditional Insider Uk Laws- (Primary Insider Trading)

UK CJA 1993*, Section 57(2)(a)(i) …a person has information from an inside source if and only if-*
(a) he has it through- (i) being a director, employee or shareholder of an issuer of securities

FSMA 2000*, Section 118B(a) and (b) …an insider is any person who has inside information- (a) as a result of his membership of an administrative, management or supervisory body of an issuer of qualifying investments, (b) as a result of his holding in the capital of an issuer of qualifying investments,*

Access Insider Laws UK – (Primary Insider Trading)

UK CJA 1993*, Section 57(2)(a)(ii) …a person has information from an inside source if and only if-*
(a) he has it through- … (ii) having access to the information by virtue of his employment, office or profession;

UK FSMA 2000*,*

Section 118B(c) and (d) *…an insider is any person who has inside information- … (c) as a result of having access to the information through the exercise of his employment, profession or duties, (d) as a result of his criminal activities, or*

*"**Market Abuse Directive, Article 2(1)**… The first subparagraph shall apply to any person who possesses that information: (a) by virtue of his membership of the administrative, management or supervisory bodies of the issuer; or (b) by virtue of his holding in the capital of the issuer; or (c) by virtue of his having access to the information through the exercise of his employment, profession or duties; or (d) by virtue of his criminal activities.*

Secondary insiders (tippees)

UK CJA 1993, *Section 57(2)(b) …a person has information from an inside source if and only if- (b) the direct or indirect source of his information is a person within paragraph*

UK FSMA 2000, Section 118B(e) *…an insider is any person who has inside information- (e) which he has obtained by other means and which he knows, or could reasonably be expected to know, is inside information.*

UK CJA 1993, Section 56 *"Inside information", etc. (1) For the purposes of this section and Section 57, 'inside information' means information which- (a) relates to particular securities or to a particular issuer of securities or to particular issuers of securities and not to securities generally or to issuers of securities generally; (b) is specific or precise; (c) has not been made public; and (d) if it were made public would be likely to have a significant effect on the price of any securities. (2) For the purposes of this Part, securities are 'price-affected securities' in relation to inside information, and inside information is 'price-sensitive information' in relation to securities, if and only if the information would, if made public, be likely to have a significant effect on the price of the securities. (3) For the purposes of this section 'price' includes value*

FSMA 2000, Section 118C *Inside information (1) This section defines 'inside information' for the purposes of this Part. (2) In relation to qualifying investments, or related investments, which are not commodity derivatives, inside information is information of a precise nature which- (a) is not generally available, (b) relates, directly or indirectly, to one or more issuers of the qualifying investments or to one or more of the qualifying investments, and*

(c) would, if generally available, be likely to have a significant effect on the price of the qualifying investments or on the price of related investments. (3) In relation to qualifying investments or related investments which are commodity derivatives, inside information is information of a precise nature which- (a) is not generally available, (b) relates, directly or indirectly, to one or more such derivatives, and (c) users of markets on which the derivatives are traded would expect to receive in accordance with any accepted market practices on those markets. (4) In relation to a person charged with the execution of orders concerning any qualifying investments or related investments, inside information includes information conveyed by a client and related to the client's pending orders which- (a) is of a precise nature, (b) is not generally available, (c) relates, directly or indirectly, to one or more issuers of qualifying investments or to one or more qualifying investments, and (d) would, if generally available, be likely to have a significant effect on the price of those qualifying investments or the price of related investments. (5) Information is precise if it- (a) indicates circumstances that exist or may reasonably be expected to come into existence or an event that has occurred or may reasonably be expected to occur, and (b) is specific enough to enable a conclusion to be drawn as to the possible effect of those circumstances or that event on the price of qualifying investments or related investments. (6) Information would be likely to have a significant effect on price if and only if it is information of a kind which a reasonable investor would be likely to use as part of the basis of his investment decisions.

Annexure IV

Pakistani Insider Trading Laws

Insider Trading Laws Securities Act 2015

127. Application of this Part.—The provisions of this Part shall apply to listed securities traded by listed companies and insiders described in section 130.

128. Prohibition of insider trading.— (1) No person shall indulge in insider trading and any contravention of this section shall be an offense.

(2) Insider trading shall include, (a) an insider person transacting any deal, directly or indirectly, using inside information involving listed securities to which the inside information pertains or using others to transact such deals; (b) any other person to whom inside information has been passed or disclosed by an insider person transacting any deal, directly or indirectly, using inside information involving listed securities to which the inside information pertains or using others to transact such deals; (c) transaction by any person as specified in clauses (a) and (b) or any other person who knows or ought to have known under normal and reasonable circumstances, that the information possessed and used for transacting any deal is inside information; or (d) an insider person passing on inside information to any other person, or suggesting or recommending to another person to engage in or dealing in such listed securities with or without the inside information being disclosed to the person who has dealt in such securities. (3) The following shall not be deemed as insider trading: (a) any transaction performed under an agreement that was concluded before the time of gaining access to inside information, or (b) the disclosure of inside information by an insider person as required under law. (4) No contract shall be void or unenforceable by reason only of an offence under this section.

129. Inside information.—*For the purposes of this Part the expression "inside information" means—*

(a) information which has not been made public, relating, directly or indirectly, to one or more issuers of listed securities or to one or more listed securities and which, if it were made public, would be likely to have an effect on the prices of those listed securities or on the price of related listed securities; (b) in relation to derivatives on commodities, information which has not been made public, relating, directly or indirectly, to one or more such derivatives and which are traded in accordance with accepted market practices on those markets; (c) in relation to persons responsible for the execution of orders concerning listed securities, information which is conveyed by a client to such person and related to the client's pending orders; or (d) information regarding decision or intentions of a person to transact any trade-in listed securities. 130. Insiders.-—Insiders shall include— (a) any sponsor, executive officer or director of an issuer of listed securities; (b) any sponsor, executive officer, director or partners of a legal person or unincorporated business association, in which the issuer holds a share or voting rights, directly or indirectly, of twenty-five per cent or more; (c) any sponsor, executive officer director or partner of a legal person or unincorporated business association who holds, directly or indirectly, a share or voting rights of twenty per cent or more in an issuer of listed securities; (d) any sponsor, executive officer or director of an organization that has been engaged in the placement of securities or the public offer of securities, as well as any employee of the issuer or an organization participating in the issuing and marketing of such securities who has had access to insider information during his employment, for a period of one year after leaving employment; (e) any person holding a share, directly or indirectly, which enables him to appoint director on the board, or ten per cent or more shares of an issuer of listed securities; (f) any sponsor, executive officer or director of a credit institution in which the issuer of listed securities has an account; (g) any person obtaining inside information as part of his employment or when discharging his usual duties in an official capacity or in any other way relating to work performed under contract of employment or otherwise; (h) any person obtaining inside information through unlawful means; (i) spouse, lineal ascendant or descendant including step children partner or nominee of a person referred to in clauses (a) to (h); and (j) any person obtaining information or advice to trade in a security from any person referred to in clauses (a) to (i).

131. Listed companies' responsibilities to disclose inside information.—(1) Whenever a listed company or a person acting on their behalf, discloses any inside information to any third party in the normal exercise of employment, profession or duties, complete and effective public disclosure of that information must be made simultaneously:

Provided that the provisions shall not apply if the person receiving the information owes a duty of confidentiality, regardless of whether such duty is based on a law, regulations, articles of association or contract.

(2) Listed companies or persons acting on their behalf, shall maintain a list of persons employed, under contract or otherwise in the prescribed manner, who have access to inside information and such companies and persons acting on their behalf shall regularly update this list and send it to the Commission whenever required by the Commission.

(3) Listed company shall in the list of persons that have access to insider information state that the persons listed have acknowledged the requirements of this Part related to the prohibition to conclude transactions with the use of inside information and to advise the persons to whom they provide inside information.

(4) Any person who contravenes the provisions of this section and regulations made hereunder shall commit an offence

Securities act 2015 Other Market Abuse

132. False trading and market rigging transactions.—(1) No person shall create or cause to be created or do anything that is calculated to create a false or misleading appearance of active trading in securities on a securities market or a false or misleading appearance with respect to the price of securities on the securities market and any contravention of this section shall be an offence.

(2) Without limiting the general nature of what constitutes a false or misleading appearance of active trading under sub-section (1), a false or misleading appearance of active trading in securities is created for the purpose of this section if a person—

(a) enters into or carries out, directly or indirectly, any transaction for the sale or purchase of securities that does not involve a change in the beneficial ownership of them or offers to do so;

(b) offers to sell securities at a price that is substantially the same as the price at which he has made or proposes to make or knows that an associate of his has made or proposes to make, an offer to buy the same or substantially the same, number of them; or

(c) offers to buy the securities at a price that is substantially the same as the price at which he has made or proposes to make or knows that an associate of his has made or proposes to make, an offer to sell the same or substantially the same, number of them.

133. Market manipulation.—(1) A person shall commit an offense, if—

(a) he places an order, enters into or carries out, directly or indirectly any transactions, in the listed securities of a company that by themselves or in conjunction with any other transaction (i) increase or are likely to increase, their price with the intention of inducing another person

to purchase or subscribe for or to refrain from selling securities issued by the same company or a related company;

(ii) reduce or are likely to reduce, their price with the intention of inducing another person to sell or to refrain from purchasing, securities issued by the same company or a related company;

(iii) stabilize or are likely to stabilize, their price with the intention of inducing another person to sell, purchase or subscribe for or to refrain from selling, purchasing or subscribing for, securities issued by the same company or by a related company; or

(iv) has the effect of misleading investors who trade in securities on the basis of closing prices.

(b) he, for the purposes of inducing, dissuading, effecting, preventing or in any manner influencing or turning to his advantage the sale or purchase of any security, directly or indirectly, does any act or practice or engage in a course of business, or omit to do any act which operates or would operate as a fraud, deceit or manipulation upon any person, in particular-

(i) makes any fictitious quotation;

(ii) creates a false and misleading appearance of active trading in any security;

(iii) effects any transaction in such security which involves no change in its beneficial ownership;

(iv) enters into an order or orders for the purchase and sale of security which will ultimately cancel out each other and will not result in any change in the beneficial ownership of such security;

(v) directly or indirectly, effects a series of transactions in any security creating the appearance of active trading therein or of raising of price for the purpose of inducing its purchase by others or depressing its price for the purpose of inducing its sale by others;

(vi) being a director or an officer of the issuer of a listed equity security or a beneficial owner of not less than ten per cent of such security who is in possession of material facts, omits to disclose to the public through securities exchange any such facts while buying or selling such security. 134. Fraudulently inducing trading in securities.—A person shall commit an offence, if he induces or attempts to induce another person to subscribe for, sell or purchase securities (a) by making or publishing any statement, promise or forecast or giving any investment advice that is false, misleading or deceptive;

(b) by any concealment of material facts; or

(c) by recording or storing in or by means of, any mechanical, electrical or other

device, information that is false or misleading in a material particular.

135. Employment of fraudulent or deceptive devices.—A person shall commit an offence if he, directly or indirectly, in connection with any transaction with any other person involving the subscription for the purchase or sale of securities,— (a) employs any device, scheme or artifice to defraud that other person;

(b) engages in any act, practice or course of business which operates as a fraud or deception or is likely to operate as a fraud or deception, on that other person; or

(c) makes any untrue statement of a matter of fact or omits to state a material fact necessary in order to make the statements made in the light of the circumstances under which they were made, not misleading.

136. False or misleading statement inducing securities transactions.—(1) A person shall commit an offence, if he, directly or indirectly, for the purpose of inducing the subscription for, sale or purchase of securities by others, of any listed company or to maintain, increase, reduce or stabilise the price of its securities, makes with respect to those securities or with respect to the operations or the past or future performance of the company—

(a) any statement or disseminates information through the media which is, at the time and in light of the circumstances in which it is made, false or misleading with respect to any material fact and which he knows or has reasonable grounds to believe to be false or misleading; or

(b) any statement or disseminates information through the media which is, by reason of the omission of a material fact, rendered false or misleading and which he knows or has reasonable grounds to believe is rendered false or misleading by reason of omission of that fact.

(2) A person commits an offence if he, directly or indirectly, takes advantage of occasional or regular access to the traditional or electronic media by voicing an opinion about securities while having previously taken

positions on that securities, without having simultaneously disclosed that conflict of interest to the public in a proper and effective way.

Securities and exchange ordinance 1969

Main Points of Insider trading Laws

The statute that directly prohibits trading of securities predicated on inside information is found in Section 17 of the Securities and Exchange Ordinance, 1969 which is relevant part states:

No person shall, for the purpose of inducing, dissuading, effecting or preventing in any manner influencing or turning to his advantage, the sale or purchase of any security, directly or indirectly—

(a) to (d) omitted. (e) do any act or practice or engage in a course of business, or omit to do any act which operates or would operate as a fraud, deceit or manipulation upon any person, in particular— (i) To (v) omitted.

(vi) being a director or an officer of the issuer of a listed equity security or a beneficial owner of not less than ten percent of such security who is in possession of material facts omit to disclose any such facts while buying or selling such security.

Criticism of Pakistani Laws

Securities and exchange ordinance 1969

15-A. Prohibition on stock exchange deals by insiders.- No person who is, or has been, at any time during the preceding six months, associated with a company shall, directly or indirectly, deal on a stock exchange in any listed securities of that or any other company or cause any other person to deal in securities of such company, if he has information whicha) is not generally available; b) would, if it were so available, be likely to materially affect the price of those securities; or c) relates to any transaction (actual or contemplated) involving such company. Explanation.- For the purpose of this section, the expression "associated with" shall mean a person associated with a company, if he- (i) is an officer or employee of that company or an associated company; or (ii) occupies a position which gives him access thereto by reason of any professional or business relationship between him or his employer or a company or associated company of which he is a director.

15 B. Liability for contravention of section 15A.- (1) Where a person contravenes the provisions of section 15A, the Authority may, by a notice in writing, ask such person to show cause for compensating any person who has suffered loss for such contravention and initiating prosecution against him. (2) Where a person to whom a notice has been issued under sub-section (1) satisfy the Authorit

(a) any dealing on stock exchange or communication of any information was not made with the intent of making any profit or causing a loss to any person or company; or (b) the dealing on stock exchange or any information was communicated in good faith in discharge of his legal responsibilities. the Authority may withdraw such notice. (3) Where the Authority is not satisfied with the explanation of the person given in response to the show cause notice served upon him under sub-section (1), it may direct him to pay any other person who has suffered loss for any contravention of section 15A, compensation which shall not be less than the amount of loss sustained by any other person as a result of such dealing or communication of information: Provided that where the person who has suffered any loss for any contravention of section 15A is not determined, the amount of compensation equivalent to the gain accrued or the loss avoided by such contravention, shall be payable to the

(4) In addition to compensation payable under sub-section (3), a person contravening the provisions of section 15A shall be punishable with imprisonment for a term which may extend to three years, or with fine which may extend to three times the amount of gain accrued or loss avoided by such contravention, or with both. (5) Any compensation payable under this section shall be recoverable as arrear of land revenue.

*17**. Prohibition of fraudulent acts**, etc._ No person shall, for the purpose of inducing, dissuading, effecting, preventing or in any manner influencing or turning to his advantage, the sale or purchase of any security, directly or indirectly,- (a) employ any device, scheme or artifice, or engage in any act, practice or course of business, which operates or is intended or calculated to operate as a fraud or deceit upon any person; or (b) make any suggestion or statement as a fact of that which he does not believe to be true; or (c) omit to state or actively conceal a material34 fact having knowledge or belief of such fact; or (d) induce any person by deceiving him to do or omit to do any thing which he would not do or omit if he were not so deceived; or (e) do any act or practice or engage in a course of business, or omit to do any act which operates or would operate as a fraud, deceit or manipulation upon any person, in particular- make any fictitious quotation; (ii) create a false and misleading appearance of active trading in any security; (iii) effect any transaction in such security which involves no change in its beneficial ownership; (iv) enter into an order or orders for the purchase and sale of security which will ultimately cancel out each other and will not result in any change*

in the beneficial ownership of such security; (v) directly or indirectly effect a series of transactions in any security creating the appearance of active trading therein or of raising of price for the purpose of inducing its purchase by others or depressing its price for the purpose of inducing its sale by others; (vi) being a director or an officer of the issuer of a listed equity security or a beneficial owner of not less than ten per cent of such security who is in possession of material facts omit to disclose any such facts while buying or selling such security.

***18. Prohibition of false statements**, etc.- No person shall, in any document, paper, accounts, information or explanation which he is, by or under this Ordinance, required to furnish , or in any application made under this Ordinance, make any statement or give any information which he knows or has reasonable cause to believe to be false or incorrect in any material particular.*

18-A. Prohibition of making fictitious and multiple applications for new issues .- (1) No person or any other person on his behalf shall make a fictitious application or submit more than one application for share of companies offered to the public. (2) In case of contravention of the provisions of sub-section (1), the application money shall be liable to confiscation: Provided that no action under this sub-section shall be taken without giving the applicant an opportunity of being heard.

***19. Maintenance of secrecy**.- No person shall, except with the permission of the 36[Commission] , communicate or otherwise disclose to any person not legally entitled thereto any information which has been entrusted to him or which he has obtained or to which he had access in the course of the performance of any functions under this Ordinance.*

***20. Prohibitory orders.-** (1) Where the 36[Commission] is of opinion that any person is engaged or is about to be engaged in any act or practice which constitutes or is calculated to constitute a contravention of the provisions of this Ordinance or of any rules made thereunder, or that any person has neglected, or is not likely, to do an act the omission or failure to do which constitutes such contravention, it may, by order in writing, direct such person to abstain from doing the act or committing the practice which constitutes or is calculated to constitute such contravention, or to do the act, the omission or failure to do which constitutes such contravention.*

Securities act 2015 Short Selling Laws: Section 77

(1) Except in accordance with regulations , a person shall not sell any listed securities that he or his principal does not own either for his own account or for the account of another person.

(2) For the purposes of sub-section (1), a person who sells securities includes a person who (a) sells the securities; (b) purports to sell the securities; (c) offers to sell the securities; (d) holds himself out as entitled to sell the securities; or

(e) instructs a securities broker to sell the securities.

(3) For the purposes of sub-section (1), a person is treated as owning securities only if (a) he or his agent is legally entitled to the securities;

(b) he has purchased the securities or has entered into an unconditional contract to purchase the securities, even if he does not yet have title to them;

(c) he owns other securities convertible into or exchangeable for the securities and has tendered the other securities for conversion or exchange;

(d) he has an option to acquire the securities and has exercised the option; or

(e) he has rights or warrants to subscribe to the securities and has exercised the rights or warrants.

SECP Companies Ordinance 1984

***220. Register of directors' shareholdings, etc.** - (1) Every listed company shall keep a register showing as respects each director, chief executive, managing agent, chief accountant, secretary or auditor of the company, and every other person holding not less than ten per cent of the beneficial interest in the company, the number, description and amount of any shares in, or debentures of, the company or any other body corporate, being the company's subsidiary or holding company, or a subsidiary of the company's holding company, which are held by or in trust for him, or of which he has a right to become holder, whether on payment or not.*

(2) Where any shares or debentures have to be recorded in the said register or to be omitted therefrom or any particulars changed in relation to any director or other person as aforesaid by reason of a transaction entered into after the commencement of this Ordinance and while he occupies that position or holds such interest, the register shall also show the date of, and the price or other consideration for, the transaction:

Provided that, where there is an interval between the agreement for any such transaction and the completion thereof, the date so shown shall be that of the agreement.

(3) The nature and extent of any position or interest or right in or over any shares or debentures recorded in relation to a director or other person in the said register shall, if he so requires, be indicated in the register.

(4) The company shall not, by virtue of anything done for the purposes of this section, be affected with notice of, or put upon inquiry as to the rights of any person in relation to any shares or debentures.

(5) The said register shall, subject to the provisions of this section, be kept at the registered office of the company and shall be open to inspection during business hours as follows, subject to such reasonable restrictions as the company may by its articles or in general meeting impose, so that no less than two hours in each day are allowed for inspection, —

(a) during the period beginning fourteen days before the date of the annual general meeting of the company and ending three days after the date of its conclusion, it shall be open to the inspection of any member or holder of debentures of the company; and

(b) during that or any other period, it shall be open to the inspection of any person acting on behalf of the Commission.

(6) Without prejudice to the rights conferred by sub-section (5), the Commission and the registrar may at any time require a certified copy of the said register or any part thereof.

(7) The said register shall also be produced at the commencement of the annual general meeting of the company and remain open and accessible during the continuance of the meeting to any person attending the meeting.

(8) If defaults is made in complying with sub-section (7), the company and every officer of the company who is knowingly and wilfully in default shall be liable to a fine which may extend to one thousand rupees, and if default is made in complying with sub-section (1) or sub-section (2), or if any inspection required under this section is refused or and copy required thereunder is not sent within a reasonable time, the company and every officer of the company who is knowingly and wilfully in default shall be liable to a fine which may extend to ten thousand rupees. (9) Without prejudice to the provisions of sub-section (8), the registrar may, in the case of any refusal to allow inspection of register or supply of a copy thereof under sub-section (5) or sub-section (6), direct immediate inspection of such register or supply of a copy thereof.

***221. Duty of directors, etc., to make disclosure of shareholdings, etc**. - (1) Every director, officer and such other person as is referred to in sub-section (1) of section 220 shall give notice to the company of such matters relating to himself as may be necessary for the purpose of enabling the company to comply with the provisions of section 220.*

(2) The notice referred to in sub-section (1) shall be given in writing within fifteen days of each requisition or change of interest or right, as the case may be, referred to in sub-section (1) of section 220 or date of agreement referred to in sub-section (2) of that section.

(3) Any person who knowingly and wilfully fails to comply with sub-section (1) or sub-section (2) shall be punishable with imprisonment for a term which may extend to two years, or with fine which may extend to five thousand rupees, or with both.

***222. Submission of statements of beneficial owners of listed securities**. - (1) Every director, chief executive, managing agent, chief accountant, secretary or auditor of a listed company who is or has been the beneficial owner of any of its equity securities, and every person who is directly or indirectly the beneficial owner of more than ten per cent of such securities, shall submit to the registrar and the Commission a return in the prescribed form containing the prescribed particulars pertaining to the beneficial ownership of such securities and notify in the prescribed form the particulars of any change in the interest aforesaid.*

(2) The period within which the said return is to be submitted to the registrar and the Commission shall be —

(a) where the person occupies the position or office specified in sub-section (1), or is a person whose interest as beneficial owner of securities requiring submission of the return as stated in the said sub-section subsists on the commencement of this Ordinance, within thirty days from such commencement;

in any other case, including a case where the company is listed on the stock exchange after the commencement of this Ordinance or after the person has occupied the position or office specified in sub-section (1) or has acquired interest as beneficial owner of securities as aforesaid, within thirty days of occupying the office in the company or acquisition of interest as beneficial owner requiring submission of the return aforesaid or listing of the company on the stock exchange, as the case may be;

(c) where there is any change in the position or interest as aforesaid including a change in the beneficial ownership of any equity, security, within fifteen days of such change; or

(d) where the Commission by an order so requires, within such period as may be specified in such order.

223. Prohibition of short-selling. - *No* director, chief executive, man*aging agent, chief accountant, secretary or auditor of a listed company, and no person who is directly or indirectly the beneficial owner of not less than ten per cent of the listed equity securities of such company, shall practise directly or indirectly short-selling such securities.*

224. Trading by director, officers and principal shareholders. - (1) Where any director, chief executive, managing agent, chief accountant, secretary or auditor of a listed company or any person who is directly or indirectly the beneficial owner of more than ten per cent of its listed equity securities makes any gain by the purchase and sale, or the sale and purchase, of any such security, within a period of less than six months, such director, chief executive, managing agent, chief accountant, secretary or auditor or person who is beneficial owner shall make a report and tender the amount of such gain to the company and simultaneously send an intimation to this effect to the registrar and the Commission:

Provided that nothing in this sub-section shall apply to a security acquired in good faith in satisfaction of debt previously contracted.

(2) Where a director, chief executive, managing agent, chief accountant, secretary, auditor or person who is beneficial owner as aforesaid fails or neglects to tender, or the company fails to recover, any such gain as is mentioned in sub-section (1) within a period of six months after its accrual, or within sixty days of a demand therefor, whichever is later, such gain shall vest in the 1[Commission] and unless such gain is deposited in the prescribed account, the Commission may direct recovery of the same as an arrear of land revenue.

(3) For the purposes of sections 220 to 224, the term "auditor of the company" shall, where such auditor is a firm, include all partners of such firm.

1 Substituted ' Federal Government' by Companies (Amendment) Ordinance, 2002.

Explanation.- (a) For the purposes of this section and section 222, beneficial ownership of securities of any person shall be deemed to include the securities beneficially owned, held or controlled by him or his spouse or by any of his dependent lineal ascendants or descendants not being himself or herself a person who is required to furnish a return under section 222, and

(i) in the case where such person is a partner in a firm, shall be deemed to include the securities beneficially held by such firm; and

(ii) in the case where such person is a shareholder in a private company, shall be deemed to include the securities beneficially held by such company:

Provided that for the purposes of sub-section (1) the gain which is required to be tendered to the company by such person shall be an amount bearing to the total amount of the gain made, as the case may be, by the firm or private company the same proportion as his relative interest bears to the total interest in such firm or private company.

(b) For the purposes of this Explanation, "control", in relation to securities means the power to exercise a controlling influence over the voting power attached thereto.

(4) Whoever knowingly and wilfully contravenes or otherwise fails to comply with any provision of section 222, section 223 or section 224 shall be liable to a fine which may extend to thirty thousand rupees and in the case of a continuing contravention, non-compliance or default to a further fine which may extend to one thousand rupees for every day after the first during which such contravention, noncompliance or default continue

Model 1 Sample Firms **Appendix V**

Company Name	Company Name	Company Name	Company Name (Textile)
Cement Industries	BERGER PAINTS PAKISTAN LTD	BALOCHISTAN GLASS LTD	SAPPHIRE FIBRES LTD
CHERAT CEMENT CO LTD	BIAFO INDUSTRIES LTD	SHABBIR TILES & CERAMICS LTD	MAHMOOD TEXTILE MILLS LTD
D G KHAN CEMENT CO LTD	WAH NOBEL CHEMICALS LTD	GHANI GLASS LTD	FAISAL SPINNING MILLS LTD.
FAUJI CEMENT CO LTD	NIMIR RESINS LTD	TARIQ GLASS IND LTD	BLESSED TEXTILES LTD
GHARIBWAL CEMENT LTD	ARCHROMA PAKISTAN LTD	SAFE MIX CONCRETE LTD	SARGODHA SPINNING MILLS
MAPLE LEAF CEMENT FACTORY	BUXLY PAINTS LTD	FRONTIER CERAMICS LTD	GULISTAN SPINNING MILLS LTD
LUCKY CEMENT (PAKISTAN) LTD	FEROZSONS LABORATORIES LTD	**Corporations**	ISHAQ TEXTILE MILLS LTD
PAKCEM LTD	NIMIR INDUSTRIAL CHEMICALS	DEWAN GROUP	BHANERO TEXTILE MILLS LTD
FECTO CEMENT LTD	HIGHNOON LABORATORIES LTD	ARIF HABIB CORP LTD	SAJJAD TEXTILE MILLS LTD
ATTOCK CEMENT PAKISTAN LTD	SITARA PEROXIDE LTD	JAVED OMER VOHRA & CO LTD	KOHINOOR TEXTILE
BESTWAY CEMENT CO LTD	DESCON OXYCHEM LTD	JAHANGIR SIDDIQ CO	ARTISTIC DENIM MILLS LTD
KOHAT CEMENT CO LTD	ENGRO POLYMER & CHEMICALS	AL SHAHEER CORP	DAWOOD LAWRENCEPUR LTD
THATTA CEMENT CO LTD	OTSUKA PAKISTAN LTD	DOLMEN CITY REIT	SURAJ COTTON MILLS LTD
Power Cement Ltd	GHANI GASES LTD	Treet Corporation	MASOOD TEXTILE MILLS LTD
Poineer Cement	FATIMA FERTILIZER CO LTD	Engro Corporation	CHENAB LTD
Flying Cement	AGRITECH LTD	**Food Industry**	COLONY MILLS LTD
Chemicals & Pharmaceuticals	PAKISTAN GUM & CHEMICALS	UNI LEVER BROTHERS PAKISTAN	INDUS DYEING & MANUFACTURING
NIMIR INDUSTRIAL CHEMICALS	UNITED DISTRIBUTORS PAK LTD	MURREE BREWERY CO LTD	FAZAL TEXTILE MILLS LTD
HIGHNOON LABORATORIES LTD	AKZO NOBEL PAKISTAN LTD	RAFHAN MAIZE PRODUCTS CO LTD	ELAHI COTTON MILLS LTD

SITARA PEROXIDE LTD	ENGRO FERTILIZER LTD	SHEZAN INTERNATIONAL LTD	DS INDUSTRIES LTD
DESCON OXYCHEM LTD	**Electrical Machinery & Apparatus**	NESTLE PAKISTAN LTD	BANNU WOOLLEN MILLS
ENGRO POLYMER & CHEMICALS	SIEMENS (PAK) ENGINEERNG CO	NATIONAL FOODS	SAMIN TEXTILE MILLS LTD
OTSUKA PAKISTAN LTD	PAK ELEKTRON	UNILEVER PAKISTAN FOODS LTD	KOHAT TEXTILE MILLS
GHANI GASES LTD	PAKISTAN CABLES LTD	ENGRO FOODS LTD	D.M. TEXTILE MILLS
FATIMA FERTILIZER CO LTD	JOHNSON & PHILLIPS	ISMAIL INDUSTRIES LTD	ELLCOT SPINNING MILLS LTD
AGRITECH LTD	ADOS PAKISTAN LTD	FAUJI FOODS LTD	FAZAL CLOTH MILLS
PAKISTAN GUM & CHEMICALS	Singer Pakistan	PUNJAB OIL MILLS LTD	SANA INDUSTRIES
UNITED DISTRIBUTORS PAK LTD	MIRPURKHAS SUGAR MILLS LTD	MITCHELLS FRUIT FARMS LTD	BABRI COTTON MILLS LTD
AKZO NOBEL PAKISTAN LTD	DEWAN SUGAR MILLS LTD	QUICE FOOD INDUSTRIES LTD	ALI ASGHAR TEXTILE MILLS
ENGRO FERTILIZER LTD	SHAHMURAD SUGAR MILLS LTD	**Textile**	CRESCENT COTTON MILLS LTD
DAWOOD HERCULES CORP LTD	HASEEB WAQAS SUGAR	CRESCENT FIBRES	QUETTA TEXTILE MILLS
ENGRO CORP LTD (PAK)	ANSARI SUGAR MILLS LTD	DEWAN SALMAN FIBRE LTD	JANANA DE MALUCHO TEXTILE
FAUJI FERTILIZER BIN QASIM	BABA FARID SUGAR MILLS LTD	KOHINOOR SPINNING MILLS LTD	SALFI TEXTILE MILLS
DAWOOD HERCULES CORP LTD	FARAN SUGAR MILLS LTD	NISHAT MILLS LTD	SALLY TEXTILE MILLS LTD
ENGRO CORP LTD (PAK)	HABIB SUGAR MILLS LTD	PAKISTAN SYNTHETICS	SHADAB TEXTILE MILLS
FAUJI FERTILIZER BIN QASIM	SANGHAR SUGAR MILLS LTD	CHAKWAL SPINNING MILLS LTD	JK SPINNING MILLS LTD
GLAXOSMITHKLINE PAKISTAN LTD	SHAKARGANJ LTD	COLONY TEXTILE MILLS LTD	MAQBOOL TEXTILE MILLS LTD
ICI PAKISTAN LTD	PREMIER SUGAR MILLS	MIAN TEXTILE	NP SPINNING MILLS LTD
SITARA CHEMICALS	JAUHARABAD SUGAR MILLS LTD	NAGINA COTTON	SUNRAYS TEXTILE MILLS LTD

ABBOTT LABS LTD (PAKISTAN)	J.D.W. SUGAR MILLS LTD	SAPPHIRE TEXTILE MILLS LTD	ZEPHYR TEXTILE LTD
SEARLE CO LTD (THE)	FECTO SUGAR MILLS	THAL LTD	GHAZI FABRICS INTL LTD
FAUJI FERTILIZER CO LTD	TANDLIANWALA SUGAR MILLS	AL QADIR TEXTILE	HIRA TEXTILE MILLS LTD
DYNEA PAKISTAN LTD	AL ABBAS SUGAR MILLS	CRESCENT JUTE PRODUCTS LTD	DAR ES SALAAM TEXTILE MILLS
BERGER PAINTS PAKISTAN LTD	IMPERIAL SUGAR LTD	FEROZE1888 MILLS LTD	IDREES TEXTILE MILLS
BIAFO INDUSTRIES LTD	THAL INDUSTRIES CORP	PREMIUM TEXTILE	ARUJ INUDSTRIES LTD
WAH NOBEL CHEMICALS LTD	BAWANY SUGAR MILLS	KOHINOOR WEAVING MILLS LTD	ASHFAQ TEXTILE MILLS LTD
NIMIR RESINS LTD	SHAHTAJ SUGAR MILLS LTD	CRESCENT TEXTILE MILLS LTD	ISLAND TEXTILE MILLS
ARCHROMA PAKISTAN LTD	AL NOOR SUGAR MILL	GADOON TEXTILE	DEWAN KHALID TEXTILE MILLS
BUXLY PAINTS LTD	ADAM SUGAR MILLS	IBRAHIM FIBRES	DEWAN MUSHTAQ TEXTILE MILLS
FEROZSONS LABORATORIES LTD	NOON SUGAR MILLS LTD	KOHINOOR IND	SHAMS TEXTILE MILL LTD
GLAXOSMITHKLINE PAKISTAN LTD	MEHRAN SUGAR MILLS	NISHAT CHUNIAN LTD	SHAHZAD TEXTILE MILLS LTD
ICI PAKISTAN LTD	PANGRIO SUGAR MILLS LTD	SAIF TEXTILE MILLS	JUBILEE SPINNING & WEAVING
SITARA CHEMICALS	CHASHMA SUGAR MILLS LTD	GULAHMED TEXTILE	SARITOW SPINNING MILLS LTD
ABBOTT LABS LTD (PAKISTAN)	HUSEIN SUGAR MILLS	DEWAN TEXTILE MILLS LTD	KHALID SIRAJ TEXTILE MILLS
SEARLE CO LTD (THE)	MIRZA SUGAR MILLS LTD	BATA PAKISTAN LTD	HAJI MOHAMMAD ISMAIL MILLS
FAUJI FERTILIZER CO LTD	**Mineral Products**	DADEX ETERNIT LTD	GLAMOUR TEXTILE MILLS LTD
DYNEA PAKISTAN LTD	KARAM CERAMICS LTD	DIN TEXTILE MILLS LTD	AHMAD HASSAN TEXTILE MILLS

Information & IT Sector	**Manufacturing Sector**	**Manufacturing Sector**	**Manufacturing Sector**

PAKISTAN TELECOMMUN CORP	Century Paper and Board Mills Ltd	Zil Ltd	United Brands Ltd
TELECARD LTD	Pakistan Tobacco Co Ltd	Siddiqsons Tin Plate Ltd	Aisha Steel Mills Ltd
PAKISTAN NATIONAL SHIPPING	Cherat Papersack Ltd	Huffaz Seamless Pipes Ind Ltd	Mughal Iron & Steel Industries Ltd
PAKISTAN INTL AIRLINES CORP	Philip Morris (Pakistan) Ltd	Dost Steels Ltd	Amreli Steels Ltd
PAKISTAN DATACOM	International Industries Ltd	Khyber Tobacco Co Ltd	Hi-Tech Lubricants Ltd
PAKISTAN INTL CONTAINER TERM	Packages Ltd	Merit Packaging Ltd	Roshan Packages Ltd
NETSOL TECHNOLOGIES LTD	International Steels Ltd	Leather Up Ltd	
Manufacturing Sector	Shield Corp Ltd	Macpac Films Ltd	
Service Industries (Shoes) Ltd	Treet Corp Ltd	Ecopack Ltd	

Textile Sampling For Model 3

Sr. No	Textile	Sr. No	Textile	Sr. No	Textile	Sr. No	Textile
1	Crescent Fibres	31	Din Textile Mills Ltd	60	Ellcot Spinning Mills Ltd	90	Ashfaq Textile Mills Ltd
2	Dewan Salman Fibre Ltd	32	Sapphire Fibres Ltd	61	Prosperity Weaving Mills Ltd	91	Island Textile Mills
3	Kohinoor Spinning Mills Ltd	33	Mahmood Textile Mills Ltd	62	Fazal Cloth Mills Ltd	92	Olympia Spinning & Weaving Mills Ltd
4	Nishat Mills Ltd	34	Faisal Spinning Mills Ltd	63	Sana Industries	93	Dewan Khalid Textile Mills Ltd
5	Pakistan Synthetics Ltd	35	Blessed Textiles Ltd	64	Babri Cotton Mills Ltd	94	Dewan Mushtaq Textile Mills Ltd
6	Chakwal Spinning Mills Ltd	36	Sargodha Spinning Mills Ltd	65	Ali Asghar Textile Mills	95	Shams Textile Mills Ltd
7	Colony Textile Mills Ltd	37	Gulshan Spinning Mills Ltd	66	Crescent Cotton Mills Ltd	96	ICC Textiles Ltd
8	Mian Textile Industries Ltd	38	Ishaq Textile Mills Ltd	67	Quetta Textile Mills	97	Shahzad Textile Mills Ltd
9	Nagina Cotton Mills Ltd	39	Bhanero Textile Mills Ltd	68	Janana De Mulucho Textile Mills Ltd	98	Bilal Fibres Ltd
10	Sapphire Textile Mills Ltd	40	Sajjad Textile Mills Ltd	69	Salfi Textile Mills Ltd	99	Redco Textiles Ltd
11	Thal Jute Mills Ltd	41	Kohinoor Textiles Mills Ltd	70	Sally Textile Mills Ltd	100	Jubilee Spinning and Weaving Mills Ltd
12	Al-Qadir Textile Mills Ltd	42	Artistic Denim Mills Ltd	71	Shadab Textile Mills	101	Saritow Spinning Mills Ltd
13	Al-Abid Silk Mills Ltd	43	Dawood Lawrencepur Ltd	72	J.K. Spinning Mills Ltd	102	Khalid Siraj Textile Mills Ltd
14	Crescent Jute Products Ltd	44	Azgard Nine Ltd	73	Maqbool Textile Mills Ltd	103	Haji Mohammad Ismail Mills Ltd
15	Feroze1888 Mills Ltd	45	Suraj Cotton Mills Ltd	74	NP Spinning Mills Ltd	104	Tri Star Polyester Ltd
16	Premium Textile Mills Ltd	46	Masood Textile Mills Ltd	75	Sunrays Textile Mills Ltd	105	Brothers Textile Mills Ltd
17	Kohinoor Weaving Mills Ltd	47	Chenab Limited	76	Tata Textile Mills	106	Salman Noman Enterprises Ltd

18	The Crescent Textile Mills Ltd	48	Chenab Limited	77	Zahidjee Textile Mills Ltd	107	Mubarak Textile Mills Ltd
19	Gadoon Textile Mills Ltd	49	Colony Mills Ltd	78	Zephyr Textiles Ltd	108	Hala Enterprises
20	Ibrahim Fibres Ltd	50	Indus Dyeing & Manufacturing	79	Reliance Cotton Spinning Mills Ltd	109	International Knitwear Ltd
21	Kohinoor Industries Ltd	51	Fazal Textile Mills Ltd	80	Reliance Weaving Mills Ltd	110	Glamour Textile Mills Ltd
22	Nishat (Chunian) Ltd	52	Paramount Spinning Mills Ltd	81	Shahtaj Textile	111	Ruby Textile Mills Ltd
23	Saif Textile Mills Ltd	53	Elahi Cotton Mills Ltd	82	Ghazi Fabrics International Ltd	112	Synthetic Products Enterprises Ltd
24	Gul Ahmed Textile Mills Ltd	54	D.S. Industries Ltd	83	Hira Textile Mills Ltd	113	Ahmad Hassan Textile Mills Ltd
25	Rupali Polyester Ltd	55	Bannu Woollen Mills	84	Dar Es Salaam Textile Mills Ltd	114	
26	Dewan Textile Mills Ltd	56	Samin Textile Mills Ltd	85	Dewan Farooque Spinning Mills Ltd	115	
27	Tri Pack Film Co Ltd	57	Kohat Textile Mills	86	Ideal Spinning Mills Ltd	116	
28	Bata Pakistan Ltd	58	D.M. Textile Mills Ltd	87	Idrees Textile Mills	117	
29	Dadex Eternit Ltd	59	Amtex Ltd	88	Aruj Industries Ltd	118	

Model 2 Sampling Firms

Cement Companies	**Chemicals & Pharmaceuticals**	**Textile**
CHERAT CEMENT CO LTD	ENGRO POLYMER & CHEMICALS	FAZAL TEXTILE MILLS LTD
D G KHAN CEMENT CO LTD	OTSUKA PAKISTAN LTD	PARAMOUNT SPINNING MILLS LTD
FAUJI CEMENT CO LTD	GHANI GASES LTD	ELAHI COTTON MILLS LTD
GHARIBWAL CEMENT LTD	FATIMA FERTILIZER CO LTD	DS INDUSTRIES LTD
MAPLE LEAF CEMENT FACTORY	AGRITECH LTD	SAMIN TEXTILE MILLS LTD
LUCKY CEMENT (PAKISTAN) LTD	PAKISTAN GUM & CHEMICALS	KOHAT TEXTILE MILLS
PAKCEM LTD	UNITED DISTRIBUTORS PAK LTD	D.M. TEXTILE MILLS
POWER CEMENT LTD	LEINER PAK GELATINE LTD	CRESCENT COTTON MILLS LTD
FECTO CEMENT LTD	DATA AGRO LTD	JANANA DE MALUCHO TEXTILE
ATTOCK CEMENT PAKISTAN LTD	SARDAR CHEMICAL INDS LTD	JK SPINNING MILLS LTD
BESTWAY CEMENT CO LTD	SHAFFI CHEMICAL INDS LTD	MAQBOOL TEXTILE MILLS LTD
KOHAT CEMENT CO LTD	ENGRO FERTILIZER LTD	NP SPINNING MILLS LTD
THATTA CEMENT CO LTD	**Textile**	DEWAN FAROOQUE SPINNING
FLYING CEMENT CO LTD	CRESCENT FIBRES	DEWAN KHALID TEXTILE MILLS
Chemicals & Pharmaceuticals	DEWAN SALMAN FIBRE LTD	DEWAN MUSHTAQ TEXTILE MILLS
DAWOOD HERCULES CORP LTD	KOHINOOR SPINNING MILLS LTD	JUBILEE SPINNING & WEAVING
ENGRO CORP LTD (PAK)	NISHAT MILLS LTD	SARITOW SPINNING MILLS LTD
AKZO NOBEL PAKISTAN LTD	MIAN TEXTILE	KHALID SIRAJ TEXTILE MILLS
GATRON INDUSTRIES LTD	SAPPHIRE TEXTILE MILLS LTD	HAJI MOHAMMAD ISMAIL MILLS
ICI PAKISTAN LTD	FEROZE MILLS LTD	MUBARAK TEXTILE MILLS LTD
SITARA CHEMICALS	KOHINOOR WEAVING MILLS LTD	INDUS DYEING & MANUFACTURING
SEARLE CO LTD (THE)	CRESCENT TEXTILE MILLS LTD	IBRAHIM Fibers
FAUJI FERTILIZER CO LTD	GADOON TEXTILE	ZEPHYR TEXTILE LTD
DYNEA PAKISTAN LTD	KOHINOOR WEAVING MILLS LTD	
LOTTE CHEMICAL PAKISTAN LTD	NISHAT CHUNIAN LTD	
BERGER PAINTS PAKISTAN LTD	DEWAN TEXTILE MILLS LTD	
BIAFO INDUSTRIES LTD	SAPPHIRE FIBRES LTD	
WAH NOBEL CHEMICALS LTD	SARGODHA SPINNING MILLS	
NIMIR RESINS LTD	GULISTAN SPINNING MILLS LTD	
BUXLY PAINTS LTD	ISHAQ TEXTILE MILLS LTD	
COLGATE PALMOLIVE (PAK) LTD	BHANERO TEXTILE MILLS LTD	
FEROZSONS LABORATORIES LTD	KOHINOOR TEXTILE	
NIMIR INDUSTRIAL CHEMICALS	ARTISTIC DENIM MILLS LTD	
ITTEHAD CHEMICALS	DAWOOD LAWRENCEPUR LTD	
HIGHNOON LABORATORIES LTD	AZGARD NINE LTD	
SITARA PEROXIDE LTD	SURAJ COTTON MILLS LTD	

DESCON OXYCHEM LTD	CHENAB LTD	

Model 3: Merger & Aqusition Firms

Compnies Name					
1	Cherat Cement Co Ltd	18	Sapphire Textile Mills Ltd	34	Nishat(Chunian)Ltd
2	Crescent Fibres	19	Feroze1888 Mills Ltd	35	PakistanRefineryLtd
3	Dawood Hercules Corp Ltd	20	Kohinoor Weaving Mills Ltd	36	Hilal Food
4	Dewan Salman Fibre Ltd	21	Gadoon Textile Mills Ltd	37	DinTextileMillsLtd
5	D G Khan Cement Co Ltd	22	Ibrahim Fibres Ltd	38	NimirResinsLtd
6	Engro Corp Ltd	23	Abbott Laboratories (Pakistan) Ltd	39	BestwayCement
7	Atlas Honda	24	Rafhan Maize Products Co Ltd	40	Treet Corporation
8	Exide Pakistan Ltd	25	Pak Elektron Ltd	41	Byco
9	Glaxosmithkline Pakistan Ltd	26	Pakistan Cables Ltd	42	KohinoorTextilesMills
10	Nishat Mills Ltd	27	Pak Suzuki Motors Co Ltd	43	JDWSugarMills
11	Maple Leaf Cement Factory Ltd	28	DewanGroup	44	DawoodLawrencepurLtd
12	Nagina Cotton Mills Ltd	29	OGDCL	45	Johnson&Phillips (Pakistan)
13	Media Times Ltd	30	Ghani Glass Ltd	46	Ghandhara Nissan Ltd
14	Thal Industries Corp	31	Descon Oxychem Ltd	47	Al Abbas Sugar Mills
15	Nishat Chunian Power Ltd	32	J.K. Spinning Mills Ltd	48	Saritow Spinning Mills Ltd
16	Ghani Gases Ltd	33	Akzo Nobel Pakistan Ltd	49	Fauji fertilizer
17	Millat Tractors Limited	34	Indus Motor Company	50	Fauji Fertilizer Bin Qasim Limited.

Model 4:

Sr. No	Companies	Sr. No	Companies	Sr. No	Companies
1	Cherat Cement Co Ltd	49	Searle Co Ltd (The)	97	Highnoon Laboratories Ltd
2	Dawood Hercules Corp Ltd	50	Pakistan Tobacco Co Ltd	98	National Foods
3	D G Khan Cement Co Ltd	51	Crescent Steel Ltd	99	Otsuka Pakistan Ltd
4	Engro Corp Ltd	52	Pioneer Cement Ltd	100	Sazgar Engineering Ltd
5	Linde Pakistan Ltd	53	Fauji Fertilizer Co Ltd	101	Thatta Cement Company Ltd
6	Fauji Cement Co Ltd	54	Indus Motor Co Ltd	102	Burshane LPG (Pakistan) Ltd
7	Fauji Fertilizer Bin Qasim Ltd	55	Nestle Pakistan Ltd	103	Ghani Gases Ltd
8	Gatron Industries Ltd	56	Sui Southern Gas Co Ltd	104	Khyber Tobacco Co Ltd
9	Exide Pakistan Ltd	57	Pakistan Oilfields Ltd	105	Engro Foods Ltd

10	Glaxosmithkline Pakistan Ltd	58	Shell Pakistan Ltd	106	Sana Industries
11	Hinopak Motors Ltd	59	Fecto Cement Ltd	107	Al Noor Sugar Mills
12	Sanofi Aventis Pakistan	60	Sitara Energy Ltd	108	Tariq Glass Industries Ltd
13	Ici Pakistan Ltd	61	Bata Pakistan Ltd	109	Mitchell's Fruit Farms Ltd
14	Unilever Pakistan Ltd	62	Faran Sugar Mills Ltd	110	Flying Cement Co Ltd
15	Sui Northern Gas Pipelines Ltd	63	Habib Sugar Mills Ltd	111	Ecopack Ltd
16	Honda Atlas Cars (Pakistan) Ltd	64	Sanghar Sugar Mills Ltd	112	Shield Corp Ltd
17	Ghandhara Industries Co Ltd	65	Cherat Papersack Ltd		
18	National Refinery Ltd	66	Lotte Chemical Pakistan Ltd		
19	Nishat Mills Ltd	67	Atlas Battery Ltd		
20	Pakistan Synthetics Ltd	68	Berger Paints Pakistan Ltd		
21	Hub Power Co Ltd	69	Biafo Industries Ltd		
22	Mirpurkhas Sugar Mills Ltd	70	Wah Noble Chemicals Ltd		
23	Lucky Cement Ltd	71	Nimir Resins Ltd		
24	Mari Petroleum Company Limited	72	Attock Cement Pakistan Ltd		
25	Millat Tractors Ltd	73	Bestway Cement Co Ltd		
26	Pakistan Services Ltd	74	Oil & Gas Development Co Ltd		
27	Murree Brewery Ltd	75	Byco Petroleum Pakistan Ltd		
28	Service Industries (Shoes) Ltd	76	International Industries Ltd		
29	Feroze1888 Mills Ltd	77	Pak Intl Container Terminal Ltd		
30	Shahmurad Sugar Mills Ltd	78	JDW Sugar Mills Ltd		
31	Sitara Chemicals Industries Ltd	79	Atlas Honda Ltd		
32	Karam Ceramics Ltd	80	Kohat Cement Co Ltd		
33	General Tyres & Rubber Co of Pakistan	81	Kohat Cement Co Ltd		
34	Abbott Laboratories (Pakistan) Ltd	82	Archroma Pakistan Ltd		

35	Attock Refinery Ltd	83	Artistic Denim Mills Ltd		
36	Rafhan Maize Products Co Ltd	84	Colgate Palmolive Pakistan Ltd		
37	Siemens (Pakistan) Engineering Co Ltd	85	Dawood Lawrencepur Ltd		
38	Shezan International Ltd	86	Pakistan Petroleum Ltd		
39	Packages Ltd	87	Ferozsons Laboratories Ltd		
40	Pak Elektron Ltd	88	Treet Corp Ltd		
41	Pakistan Cables Ltd	89	Attock Petroleum Ltd		
42	Pakistan State Oil Co Ltd	90	Kot Addu Power Co Ltd		
43	Agriauto Industries Ltd	91	Al Abbas Sugar Mills		
44	Al-Ghazi Tractors Ltd	92	Nimir Industrial Chemicals		
45	ATLAS Engineering Limited	93	Singer Pakistan		
46	Pakcem Ltd	94	Ittehad Chemicals		
47	Nishat (Chunian) Ltd	95	Ghani Glass Ltd		
48	Pakistan National Shipping Corp	96	Netsol Technologies Ltd		