CAPITAL UNIVERSITY OF SCIENCE AND
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Do Industries Lead Stock Market in Pakistan?

by

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This thesis is dedicated to the sake of Allah, my creator and my master, my great teacher and messenger, Muhammed (May Allah bless and grant him), who taught us the purpose of life, My homeland Pakistan, the warmest womb; The great martyrs and prisoners, the symbol of sacrifice and my second magnificent home Capital University of Science & Technology; My Supervisor and my Parents who never stop giving of themselves in countless ways. Many thanks for your faith in me.

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Abstract

The purpose of this study is to determine the lead-lag relationship between industry returns and stock market developments. In Pakistan, a significant number of industry returns, including refinery, paper board, investment bank, oil exploration, leasing industry, food and personal care, technology and communication can predict the stock market movements on monthly basis. Later, these findings recommended stock market respond with a delay in information obtained from industry, the basics of the information are reported and the information continually diffuses across the industry sectors. In VAR analyses, the information from 2000 to 2017, anticipated the dynamic reactions of the market structure to these variables (Exchange rate, interest rate, inflation rate, money supply and market volatility. Later, this study found that returns of 20 industry can predict market returns for one month. The findings of this study demonstrate that industrial sector returns have strong power in clarifying the developments of market returns. A number of study focused the unidirectional relationship between industry and stock market returns and produced divergent findings whereas, a few studies discussed their bi-relationships. This study has been alienated into parts. Chapter 1, discussed about introduction, theoretical framework, problem statement, research objective, research questions and significance of study. Chapter 2, discussed the literature review. Chapter 3, covers the data and methodology section. Whereas, Chapter 4 includes discussions and results. Whereas, Chapter 5, gives recommendations at the end.

Key words:

Inflation Rate, Interest rate, Market Volatility, Money Supply, Exchange Rate

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Abbreviations

REF	Refinery
PB	Paper Board
IB	Investment Bank
GC	Glass and Ceramics
FPC	Food and Personal Care
ENG	Engineering
CHMS	Chemicals
TC	Technology and Communication
CI	Cement Industry
TC	Textile Composite
VAI	Vanaspati and Allied Industries
PI	Pharmaceutical Industries
PG	Power Generation
OE	Oil Exploration Industries
CEMF	Close End Mutual Fund
LC	Leasing Companies
CE	Cable and Electric Industries
AA	Automobile Assembler
AAP	Automobile Assembler and Parts
TW	Textile Weaving
VAR	Vector Auto Regression Model
CAPM	Capital assets pricing model theory
APT	Arbitrage Pricing Theory
PSX	Pakistan Stock Market

Chapter 1

Introduction

1.1 Introduction

This study investigates the relationship between industry and market in order to determine which industries lead the market and which follow the market. This study also examines the industries returns and market returns that can predict stock market movements in Pakistan. Furthermore, it discussed the regular fluctuations that are mainly due to the innovations and developments of new opportunities in stock market. Tessitore and Usmen (2005) compared various industries and found that the Investment and telecommunications industries were dominant to explain the stock market returns (Peng and Xiong, 2002)ascertained that industries can lead the stock market because the government support specific industries. (i) Industry leading the market hypothesis means that industry returns exert uni - directional leading effect on market returns. ii) Market leads the industry means which industry returns are determined by market returns (rising or declining in industry returns preceded to change in industry return). iii) Neutral hypothesis means that no pivotal link exists between industry returns and market returns. iv) Bi - directional casual means that are collectively determined casual connections between the industry and market returns. A number of studies contemplate the industrys unidirectional relationship and stock market returns that produced divergent findings. However, some studies concentrated on relationship between

stock markets and industry. The objective of this study is to explore the lead-lag link between large equity holdings and small industrial equity holdings explained by (Legrenzi et al., 1993). There are plenty of evidences that favors industries follow stock market. Whereas, many evidence go in negation of this argument. The improvement in the stock market contributed in advance economic progress by generating additional income, increasing capital accumulation and diversifying risks. Industry-level information gives its origin by (Sharpe and Cooper, 1972). as the source of country economic growth. More specifically, the analytical capability of twenty industries representing important divisions of Pakistan's economy. for example, Refinery, Paper board, Investment banks, Oil exploration, Glass and Ceramics, Engineering, Food and personal care, Chemical, Technology and Communications, Cement industry, Leasing and Pharmaceutical industries etc. These sectors have a massive impact on stock market in Pakistan. This study further examines the factors influencing the presence of these variables (i-e inflation rate, exchange rate, interest rate, market volatility and money supply) that forecasts stock market movements. The stock market predictions are more important to determine its lead-lag connection between stock market and industries by utilizing Capital assets pricing model and arbitrage pricing theory (APT). These theories assume that investors have unlimited capacities for processing information until they are bounded rational. However, these assumptions are not correct. They have developed dynamic model of a single asset that gradually diffuses information among investors. As a result, the price of the asset under reacts to the information contained. Due to this reaction, stock markets are more predictable and one can make a prediction as to share price movements (Kawaller et al., 1987). As Campbell and Shiller (1988), Carlson and Sargent (1997) and Shiller (2000) indicated that, since 1990, different elements are more responsible for sharp changes in the Asian market. This affects stock market and trading in stock market heavily, as do skyrocketing prices for specific goods or services. Furthermore, this study highlights different groups of industries to examine the PSX for the period 2000 - 2017. For this purpose, it inspects at the capability of these sectors predict the market in comparison of medium, for example, inflation, interest rate, dividend yield to

discover comparable anticipating power. This study also finds a strong positive connection between the stock market developments of the country with the size of its high - tech industry sector. **?** founded large companies leading small companies within the same sector. This outcome is mainly obsessed by the sluggish response of small firms to negative news about large firms. These findings are strengthened by stock holder assessing behavior and their information. Another aim of this study is to explain the causal link between industries and market. An industry's propensity to estimate the market is linked to its tendency to forecast different indicators of economic activity. These findings indicate that the stock market reacts with the delay in the information controlled in industry returns and then disseminates information gradually across markets. However, some contrary imperative indications between stock market and industries are also observed. This study also examines the returns of industry portfolios that can predict the movements in the stock market. An industry's analytical ability is categorically correlated with its tendency to forecast economic indicators. The study shows that the market incorporates information containing industry returns with lags as information slowly diffuses throughout the stock market. Solnik (1993) distinguished the lead-lag link among industry returns and market returns. The consistency of market performance is not only important for trader to invest in stock market but also important for institutions to comprehend the myths of these markets. The effective market hypothesis expressed, forecasting is not possible because the asset price is a perfect reflection of all market information. Consequently, it is not possible to capitalize the assets either undervalued or overvalued. During the 1990s there were various studies related with strong connection of lead lag equity markets abounded. Whereas, few research studies on behavioral finance disseminated the information and forecast the stock prices movements. The response to shows information a significant role in lead-lag effect. However, few studies explained the stock market disproportionate action and existence of lead-lag patterns positively and negatively. Jorgenson and Nomura (2005) proposed another hypothesis of steady data dispersal in which valuable information from the industrial sector tends to lead both the stock market and economic activity. This hypothesis has

been tested for the Spanish and other European equity markets. From the above analysis, it would be as important to determine the predictive ability of 20 industries. Regressions analysis had done for each sample period from year 2000 to 2017. Two lags for excess returns of each industry were included in all regressions and normal inaccuracies are being calculated by using the hetroscedasticity correction method. The VAR model includes all variables that are non-stationary with linear combinations whereas, co-integrated variables are stationary. Therefore, after adjustment of unreported unit root test results, this study use growth rate to ascertain that macroeconomic variables are stationary. This analysis is based on sample size of 20-industries from year 2000 to 2017. This study begins by documenting the broad connection between industry and the stock market. This study also contributes in literature by two other ways. The first, which begins in a single resource, can only be obtained by financial experts in different markets. The second assumption is to control the information from the source in which stock investor are not working with. This study further investigate industries returns to forecast the stock market. These indicators are money supply, interest rates, exchange rate and market volatility that can find a comparable forecasting power.

1.2 Theoretical Background

1.2.1 Stock Market Analysis

Stock market trades in shares and stock where buyers and sellers interact with one another in an open market for the purpose of trading and shares are being issued by companies. According to Campbell and Shiller (1988). stock prices fluctuates with the movement of market as regulated by the demand and supply. If the demand of stock is high, ultimately prices will move upward. In other words, if there are greater number of people who wants to sell their stock instead of buying then market will experience extra supply (sellers) than demand (buyers). The effect of this trend will definitely drive down the prices of stock and market are being forces to operate freely. Binswanger (2004a) develops a dynamic stock model

in which information is disseminated gradually to the public and investors cannot meet rational expectations by obtaining price information. As a consequence, prices react on the basis of information and returns on stock can easily predictable. However, the basic problem involves with causal relationship between stock market and industry which was later explained by Binswanger (2004b).

1.2.2 Correlation between Stock Market and Industries

The indications to forecast the coefficient of industries made some economic sense. For example the lag value of petroleum and pharmaceutical industries have negative correlation with the stock market returns for next phase as explained by (Menzly and Ozbas, 2006). In contrast to that when cement and textile industries are booming, generally shows the signs of thriving economy Hou (2007). These indications are consistent with perception. However, industry in relation to macroeconomic predictive model captured the gentle response of industry information to broad market index as mentioned by (Chakravarty et al., 2004)

1.2.3 Lead-Lag Relationship between Industries and Market

The literature pertaining to leading-lagging relationship among stock market and industries incorporated by the findings of (Binswanger, 2004a) that large stock lead small industries. These findings are also rationalized in a number of studies (Legrenzi et al., 1993) These examinations typically find that stocks for the most part are less liquid stocks. However, Raju and Melo (2003) argued that lead-lag relationship are mainly because of industry auto-correlation and contemporaneous correlation between industries. In other words, large industries do not significantly lead small industries if the value of lag return has included in model. Previously, no studies has been conducted in this regard. While this study first, focused on lead lags link between stock market and industries. However, the papers we studied for literature focused on predicting the aggregate stock market leading to or lagging one another. This can enable us to link this information with industrial production

growth. Moreover, stock prices reacted more sensitively to the macroeconomic factors but do not anticipated accurately by other research theories.

1.2.4 Capital Assets Price Model (CAPM)

The single-time frame capital resource evaluating model proposes a straightforward direct connection between stock market risk and expected returns on securities. The CAPM presented this theory by (Cogley, 2005), (Chen et al., 2001) and Monther and Kaothar (2010). This theory expresses the relationship between stock return and risk. Investors can diversify its risk but cannot totally avoid the risk related to their investment because systematic risk (market risk) is common for the whole market. This single factor is criticized by too many researchers and states that CAPM cant better explain the relationship of risk and return.

1.2.5 Arbitrage Pricing Theory (APT)

The theory of arbitration pricing by (Hong et al., 2007) stated, a number of components on which the return on shares depends. Theoretically this anomaly challenges the (CAPM) model. The empirical studies indicate that there is not a single factor affecting the return of securities. The results of direct tests have been unsatisfying, current evidences from studies explores the presence of additional factors, which are applicable for asset pricing of the securities. According to the evidence presented in Banz (1981) study shows that the pricing model for capital assets is miss-specified. Furthermore, this hypothesis has been tested by many researchers and found the presence of additional factors but this does not allocate the problem of portfolio efficiency. The APT theory has been empirically tested in numerous markets of the world but this does not identified the factors associated to the stock returns variations. For this purpose various studies have been adopted in all part of the world in order to manipulate these factors. This study offers some new climaxes which was previously mentioned by (Hong et al., 2007) analyzed OECD countries and obtained comparative outcomes for large and developed markets. This study consider ten asian markets to investigate the industry return nexus in

comparative societies and economies is unique, which could decrease the extensive difference between the different capital markets. A few studies have been persuaded by the financial achievements of a few Asian markets by (Brennan et al., 1993), (Ibbotson, 1975) and (Cox and Ross, 1976). The study is persuaded by investor that investigate the suggestions at resource costs of constrained data handling limit with regards to resource costs. Many economist have long perceived that investor are better described as limited targets Campbell and Shiller (1988) than as limitless preparation limits. The causal connection between few traders can pay attention and provide information that are less logical than their effect on assets prices.

1.3 Problem Statement

A key inquiry has been emerged for leading and lagging relationship between stock market and industries. In recent decades, a critical section of both descriptive and applied research has focused on dynamic link between industry returns and stock market returns. As shown, the stock market provides information to the investor for investment in various stock by Badrinath et al. (1995) The fact of financial investor are certain possibility, what they had as and when they tried to get major incentive from investment to guaranteed the portability of surplus units (SPUs) and shortage units (DSUs). Stock markets provides information to share among investors, to evaluate the companys records. Therefore, this study further examines the market-industry relationship.

1.4 Research Questions

a. Does any link exist between industry returns and market returns?

b. What industry leads the market or market leads the industry?

c. Is relationship contemporaneous in nature?

1.5 Research Objectives

The key objective to study is to determine the lead-lag relationship between industry and market. There are stocks industries that favor sectors take after the stock market. Whereas, many endorsement go in negation of this study while stock market development accomplishes higher monetary development by giving additional wage, expanding capital collection and broadening dangers. Industry-level information gives the wellspring of nation financial development to its industry origins. All the more particularly, our investigation expands on different Stocks where investors have data on a set number of stocks and exchange only those about which they have data. This study additionally examines a dynamic model of each organization in securities exchange in which data steadily diffuses and influence the returns of industry or market.

This study has following objectives.

a. To explain lead-lag relationship between industry and market.

b. To identify the industries that leads the market;

c. To identify the industries that follows the market.

d. To investigate the possibly of contemporaneous effect.

1.6 Significance of Study

Investment in stock is attracting people in Pakistan. People are more interested in stock that may earn high return on it. The predictability of return on stock is dependent on many factors. However, many of these factors have not been discovered yet. Therefore, this study will help to find the gap whether industries return lead the market returns changes in the return of industries precede either by rising or declining market returns. This study, further discuss which industry follows the market and their bi-directional causal relationship depending upon Pakistan stock market. Certainly, stock market played an important role in consolidating the developing industry in particular. In developing countries like Pakistan in order to

promote capital formation through effective savings mobilization and investment security, stock exchanges play a key role. It is one of the most dynamic and organized component of capital market that has observed financial globalization with expanded cross-capital flows over the last decade interferes between stock markets and great presence of foreign investment. This globalization trend led to increase activities in PSX (Pakistan stock market). Various stocks have efficient markets and there will be a perfect relationship at the same time. Notwithstanding, because of market imperfections, one market may reflect information quicker than the other. As a result of that lead-lag relationship exists. Many economists have recognized for some time that investors, rather than possessing unlimited processing capacity, are better characterized as being only bounded rational (Shiller, 2000; Sims, 2001). Even from casual observation, few traders can pay attention to all sources of information, much less understand their impact on the prices of the assets that they trade. Indeed, a large literature in psychology documents the extent to which even attention is a precious cognitive resource (Kahneman, 1973; Nisbett and Ross, 1980). A relevant issue which has to be considered when studying relationship between two markets and presence of arbitrage opportunities. A numerous empirical studies suggest that the lead-lag relationship is an important stylized fact at high frequency data; nevertheless, it vanishes when the frequency of observations decreases (Boudoukh et al., 1994). Monther and Kaothar (2010) show evidence that frequency is crucial to test pricing dynamics between markets which are co integrated. Industry returns, money markets and a few essential factors are all the while inspected for the Pakistan from 2000 to 2017. The outcomes end to energy of industry approach to numerous indicators of monetary movement including the share trading system. Each step of investigation pertaining to industries securities exchange returns linkages uncovered the specific industries (Oil and Financials) gave steady data administration to different businesses. Erstwhile investigations usually focused on the uni-directional effect of industry driving market, this examination looks the bi-directional relationship among industry returns and stock market returns. Therefore, a portfolio joining past industry returns can incite a higher sharp ratio than a strategy of holding the market.

1.7 Plan of Study

Chapter 1 discuss about the introduction and review of this study then in the next phase it discuss theoretical problem, problem statement, research question, research objective, significance of study and then plan of study. This study further discuss all previous investigations that focused on unidirectional impact of industry returns on the bi-directional unique connection between industry returns and securities exchange returns, considered the twenty-year breakdown period 2000-2017. The plan of this study was to determine either stock market is leading in Pakistan or industry is following the market. For that purpose this study created index of industry parallel to the stock market index and then find their returns by applying formula of log on both sides then regress the two equations on e-views and apply OLS regression method. In Chapter 2, the study discusses literature review, which further discusses the relationship between business and market criticism, but in a strongly controlled economy, the impact of the rules of the share trading system. Chapter 3, discuss about the data and methodology we apply and used to get desire results. Chapter 4, discuss results and explain trends of each industry. In the end we conclude by giving recommendations and suggestions for future implications.

Chapter 2

Literature Review

2.1 Investor Behavior towards Market

The literature on investor behavior suggests that stock market reacts with delay of information, which therefore, causes the explanation of predictability. The delay is one of the reason why industry returns is one of the primary reasons why industry returns can lead stock market. The policy maker and financial investor are generally keen in this regard and pay close attention to establish link between stock market and industry to explain the market dynamics. Therefore, an explanation of link is important for planning and executing the industries strategies by deciding risk management strategies to alleviate the adverse effect of stock prices on industries.

2.2 Using of Granger Causality Test

The study anticipated the dynamic connection among industry and market returns through Granger causality tests. The other objective of this study is whether industries returns lead stock markets. The information about fundamental is reflected through the re-assessment of stock prices. A twenty industries portfolio has been tested in order to gauge the results over the seventeen years period. When looking for price setting guidance. Wong et al. (2007) argued that institutional

investors can mitigate the impacts of market segment costs and investor specialization, both leading to slow dissemination of information across the market, when building portfolios based on leading industries, rather than large, information-free firms. A few studies recorded the dominance of certain industries over stock market. The first examination by Roll (1992) determined the capital goods industry is essential for Germany while the merchandised produces are important for South Africa. This implies the industry' effect are restricted by country resources and intensified by national interests. Brennan et al. (1993) demonstrate that the impact of IT industry on stock markets clearly dominates the other industries. Wong et al. (2007) showed the significance of the IT industry returns has declined and prominent contributors of telecommunications industry are being effected. The consequence of the industry returns with stock market returns are still inconclusive. Moreover, the use of control variables i-e exchange rate, inflation and interest rate are also important to determine market trend.Earlier, research has been conducted by(In et al., 2011) to distinguish the effect of oil industry on stock market and its impact on market instability. Second the contemporaneous effect between industries over market. Huth and Abergel (2014) However, few theories addressed the link among industries and market but do not examine the lead lag relationship between them. Therefore, this study fills the gap in this domain of literature. Firstly, our study is relevant to the theoretical and empirical efforts to understand the causal links between industry and the market and, secondly, to the contemporary effect of Harris (1995), Shleifer and Vishny (2003) and Barberis and Thaler (2003) between industries on the market. The findings support the link between the stock market and industrial growth highlighted in these literatures, but this study focused the key role of the stock market in Pakistan by industries. In fact, it is hypothetically tested.

2.3 Industries Lead Stock Market

H1: Perception of politics is significantly and positively associated with employee career success. The hypothesis that support our study either industries follows stock market with gradual diffusion of data ultimately lead stock market return predictability. Beginning from the 1960s, the finance theory that may be the factors influencing the (CAPM) model, presented by Ibbotson (1975) expanding on French (2003) mean fluctuations in industry returns model and then later developed by Friedman and Roberts (1966), Spittlehouse and Black (1980); and afterward the models of Merton (1976), Binmore et al. (1986) lastly likely the most well-known model, the Arbitrage Pricing Theory (APT) of Cox et al. (1979). At present the best two hypotheses providing theories based on rigorous foundation estimating trade-off between risk and return are the CAPM and APT Djankov et al. (2008). A CAPM takes out risk factor into consideration and based on mean-variance analysis. The CAPM goes for broke factor into thought and its premise is mean-difference examination. The sarcasm against the CAPM are depend upon unrealistic assumptions. During the 1970s other investors fill the gap as Mahani and Poteshman (2008), Chang et al. (2009), Grossman and Shiller (1982), Gonedes and Dopuch (1974), Elton and Gruber (1988) and Lim (1989) develop the model. Regardless, the model retain an important role in the thoughts of scholars and investors related various theories, for instance, Grauer et al. (1990), Kraus and Litzenberger (1976) and Roll and Ross (1977) affirm a couple of studies associated with the model. Volatility in stock return has always been a worry for stock market over the world. High unpredictability of stock return is owing to high hazard as most of financial specialists are unwilling to take high market risk because of vulnerability in expected returns. High market unpredictability builds un-good market hazard premium. Thus, it is necessary for speculators to lessen money markets instability and upgrade economy strength with a specific goal to enhance the viability of the advantage portion choices (Chordia et al., 2000). Griffin and Karolyi (1998) on the Components affecting stock costs for firms recorded in the Nairobi stock trade discovered that conversion scale fluctuation affects stock return instability. Likewise, he discovered that financing cost additionally had a

critical negative effect on the stock costs. At the point when the loan cost rises, sparing turns out to be more alluring, bringing about a portion of the cash stream being diverted far from money markets to bank stores. At the point when cash supply is diminished, financing costs increment, henceforth speculators will spare their cash and decrease their want for contributing, lessening interest for stocks bringing about discouraged stock costs Sadorsky (1999) the impact of large integrated scale financial aspects on stock occurance unpredictability in the Nairobi stock market, south Africa discovered that the stock returns are symmetric and are not ordinarily disseminated. The instabilities in stock prices and the tendency of deviations are always in the interest of the capital market because they affect the stability of the stock market and investor strategies by (Amtiran et al., 2017). The variables selected will provide rational to investors with accurate and current information and be ready to follow general and explicit elements having a direction in their speculations instruments. The Pakistani stock market is an emerging market described by high risks and high returns that are frequently disposed towards exchange and outside speculations which has essentially given chances to remote financial specialists Mayers (1976), Gonedes et al. (1976) and Rubinstein (1976). This investigation utilizes the monetary factors as featured by (Chan et al., 1992) alongside different factors for instance, interest rate, exchange rate, money supply, inflation and market volatility shows unpredictability. These macroeconomic factors give top to bottom knowledge on the connection between industries unpredictability and market instability with financial exercises. The examination is fortified by speculations that explore the ramifications of limited information planning capacity to choose the lead-lag relationship. Numerous financial specialists have perceived boundless preparing better and described as just rationally bound Kraus and Litzenberger (1976). Another examination pertaining to this study is linked with Merton 1987 and Hong and Stein 1999 recent work. It is acknowledged that speculators in various territories have information about their own business sectors and after that objectively misuse it. Be that as it may, on what data on the business sectors these financial specialists don't take an interest to break down full scale economy pointers and the share trading system? Well

there are three distinct articulations exists to answer this inquiry. Second, investors can't process the data exuding from different markets, which may happen on the grounds that financial investors have restricted capacities in handling the data Lee and Elgammal (2007) or on the grounds that there is excessively data to be prepared. Subsequently, such speculators take an interest in a fixed quantity of business sectors, as first noted by Maysami and Sim (2001), and this produced an enormous writing on portioned markets and constrained financial specialist support. Third, speculators just overlook news from different markets maybe in light of the fact that they trust is unimportant or feel that it doesn't impact their own businesses or the general economy. The general theory of this examination is present the exchanging framework centers around money related rudiments and the limit of an industry's profits to anticipate the share trading system condition upon the business' ability to clarify full scale monetary factors. There are sufficient proof that exists to depict the connections between the basics and the stock exchange however the ends are blended. For Roll (1977) itemized that securities trade and a couple of monetary components, for instance, expected cash streams, markdown rates and certifiable theory illuminated future improvements in stock returns in the Germany. Kadirvelu et al. (2001) argued that macroeconomic fundamentals couldn't sufficient elucidate esteem returns. In addition, Kang et al. (2015) cleared up only a little bit of the arrangement in confirmed stock returns in the US, Japan, and the European economy amidst the 1990s as to the 1970s. By far most of the surviving composition focused on cross-firm return consistency and that firm stock-return data, disperses all around requested into the market as it may depict lead lag relationship among industry returns and stock markets returns. The examination constructs expands to explore whether the execution of specific enterprises can foresee showcase returns caused by a postponement in transmission of industry-particular data to the more extensive markets. In addition, Long and Driscoll (2008) investigated the cross - country impact of market openings and declarations on high returns for Germany, and the United States around the October 1987 season and the exchange crash of securities in contrast, this investigation breaks down lead-lag connections on a bi-monthly basis and

also examines the writing on the consistency of stock returns with relevance to Pakistan. This study investigates bi- monthly stock returns for companies that delayed market returns. Engle and Rangel (2008) examine whether industry factors in exchanges of securities have a substantial impact on the external market relationship. Whereas, Ferson and Harvey (1991) focus on the phenomenon of strong industry co-movement on stock markets, relationship mechanics for a particular industry are not well documented. Liu and Zhang (2015) investigate the healthcare sector with a view to calculating industry returns and their impact on stock market returns. In view of the increasing demand for stock markets for stable and high returns from international investors, the co-movement phenomenon in the returns of the healthcare sector warrants attention. More importantly, it is essential to track the stock prices of the healthcare sector, because it helps us to better understand the links between decisions aimed at maximizing the value of shareholders and those aimed at guaranteeing high quality healthcare. The movement of values in the health sector can have a dramatic effect on the growth of human health development. Liu and Zhang (2015) also examines the gold effect on equity markets, using various Copula techniques to capture complex interdependencies between equity markets and gold price. Gold is always regarded as a reliable investment path for long - term savings and investment portfolios. Risk-inhibiting investors always rely on gold as a safe commodity that mitigates the effects of financial crises. The interest in gold impedes the effect of swelling and cash deterioration and it additionally fills in as an elective wellspring of interest in case of unpredictable securities exchange. Lo and MacKinlay (1990) examine the effect on securities exchange improvement and market productivity of 13 European nations, from 1999 to 2014, of the benefits of the annuity subsidizes put resources into values. Pension funds are institutional investors that have a significant influence on the stock markets. Some authors argue that financial markets depend on investments in pension funds and pension provisions depend on market performance in some countries by (Jorgenson and Nomura, 2005). In addition, industry- level data gives its industry origins the source of country economic

growth (Hacklin, 2007) . The unidirectional connection among industry and securities exchange returns centers around different outcomes and furthermore talks about the reciprocal connection among industry and the share trading system. The interest in gold impedes the effect of swelling and cash deterioration and is also an elective source of interest in the event of an unpredictable exchange of securities. Chan et al. (1992) plaid that companies can lead the share trading system on the grounds that the profits from industry portfolios, which are instructive about macroeconomic basics, appear to lead the aggregate market. Wahab and Lashgari (1993) are investigating the co-movement between oil prices and stock returns in the coal sector. Likewise, Francis (2014) study determines the bank-specific changes in bank stock returns. The examination keeps an eye on the stresses of the dynamic association between industry returns and market returns through time-game plan examination using Granger causality tests. Moreover, Dua and Tuteja (2016) archive the predominance of various industries on the general stock market returns. The primary examination by Roll (1992) highlights the acute situation of the capital stock division in Germany. While the fundamental items industry is indispensable for creators, for instance, South Africa, it is negative for shippers of unrefined materials, for instance, Hong Kong. This suggests the effects of the business are restricted by national resources and escalated by national focal points. Lestano and Kuper (2016) show that all inclusive traded items endeavors speak to a reasonably significant degree of the compensation assortment appeared differently in relation to all around traded stock endeavors. Tessitore and Usmen (2005) exhibit the effects of IT business on the stock trade seems to order the effect of standard industries sectors. display the threatening situation of the business grandstand reestablishes that have decreased, and the unquestionable supporters of industry impacts are financials and media correspondences. Thusly, the eventual outcome of the business securities trade returns nexus is so far unverifiable. Griffin and Karolyi (1998) suggests that energy price volatility, interest rate risk and market index have an impact on stock yields. The connection between securities exchanges and macroeconomic and money related factors was researched widely, Hokanson et al. (2010). The hypothetical establishments of

this relationship have been attracted by the fundamental work of Campbell (1993) that demonstrates the reliance of stock unpredictability on both large scale monetary and money related factors including the cost of raw petroleum. According to them the cost of oil is endogenous and driven by advancements to both interest and supply. This examination further stretched out by Griffin and Karolyi (1998) center around the U.S. securities exchange. While, Fedor et al. (2008) think about the European market. Ferris et al. (2002) thinks about Norway and Korea; Poon (2006) examine the effect of auxiliary oil stuns on a file of approach vulnerability. All these studies concluded that supply side innovations do not induce a significant volatility response on the contrary demand that driven oil price shocks affect both on volatility and uncertainty. But unfortunately, hardly few studies pertaining to leadlag relationships between industries returns and stock market has been found in this regard. Some important studies on lead-lag relationships has been concluded by Wiersma and Jurs (2005) and Kacmar and Carlson (1997). These examinations explore the proof of industries return consistency and stock market data that disperses progressively into the market Gan et al. (2015) reconsider nine noteworthy modern economies including US and report that monetary data from specific businesses slowly spreads into the market. The lead-lag link between stock record fates ' value developments and the fundamental money shows how fast a market reflects advances in relation to the next market and the link between the two markets. When one market responds more quickly to new information and the other market reacts later, a lead lag relationship is observed with (Chen et al., 1986). Many empirical studies conclude that when balance is disturbed, the spot price adjusts to balance. There are other studies which conclude that both markets contribute to price discovery but, generally, futures price movements lead the stock market. A substantial literature has tried to determine whether or not price discovery primarily takes place on the spot or in future markets.Chen et al. (1986) show that the co- integrated series have an error correction representation (also referred to as the speed of the adjustment coefficient) that allows for the correction of the imbalance detected in the previous period in one period. Not only does the term for error correction indicate the percentage of imbalance from one period that

is rectified in the following time frame, yet it additionally shows the general size of the changes in accordance with equalization in the two markets. The reason for the concept of co- integration is that two variables can differ from each other in the short term however, market forces bring them back together and a long-term balance therefore exists between these variables. If the term error correction is not taken into account, the model is incorrectly specified. Spot and futures prices are usually included in one order and the linear VAR correction model was used to investigate the error correction process between spot and futures prices. Judge and Bretz Jr (1994) take a gander at the intraday esteem association between S and P 500 Index and S and P 500 Futures using minute-to-minute data for all trading days in the midst of 1984 and 1985 and assume that destinies publicize lead the offer exchanging framework more than twenty to forty-five minutes, in any case advancements in the spot grandstand every so often impact prospects more than one minute. It leads at spot costs are not recognized. Frieder et al. (2016) break down the time game plan properties of 5-minute intraday returns for around 5 years of stock record and stock document destinies contract and assume that on one hand S and P500 Index and MM list destinies returns will by and large lead securities trade returns over five minutes, all around, yet once in a while 10 minutes or more. On the other hand lag stock returns have a moderate prescient effect on prospects returns, so the impact is bidirectional, yet future market has more prescient ability. Cogley (2005) studied, simultaneously, the intraday relationship between returns and returns volatility in stock market index and industry index from 1984 to 1989. Each day, trading hours are partitioned into five-minute intervals. Durai and Bhaduri (2009) used the same methodology for testing the relationship between stock prices and inflation at different time scales for the post reform period in India. They tested the relationship by decomposing inflation into expected and unexpected components. However, both the components are found to be negatively related to stock returns. After decomposing the variables using the Maximal Overlap Discrete Wavelet Transforms (MODWT) and purging expected and unexpected components of inflation, they find that only the unexpected component has a negative relationship with stock returns whereas, the expected

component is negatively related to stock returns. The wavelet analysis conducted in these studies, therefore, extend the previous works confined to only the short run and the long run. Their evidence is consistent with the hypothesis that both markets contribute to price discovery. These lines, value advancements which develop in either the stock market can anticipate the instability in the other market. The intraday time arrangement are apportioned into five-minute interims. This paper offers some new features that are not necessarily shared by the aforementioned studies. First, whereas Hong et al. (2007) analyze OECD countries and obtain similar results among them for large and developed markets, we instead consider ten adjacent eastern and southern Asia markets (one developed and nine emerging economies) to explore if the industry-market return nexus is different within similar cultures and economies, which could decrease the considerable divergence among different capital markets. The economic successes of several Asian economies and their increasingly important roles in the global financial market have lately motivated several studies (Ito, 2006; Kang & Yoon, 2006; Lee, Chen, & Hsieh, 2013a). Most of the prior related literature assesses major developed countries, except Wang et al. (2003). The study of the industry-market nexus focusing on 10 eastern and southern Asia countries has important implications for international investors as the area is now an important emerging market. Second, the majority of the related studies use cross-sectional analyses (Hong et al., 2007; Roll,1992; Serra, 2000), which are useful particularly when these relationships are stable over time. If there relationship is not necessarily stable, but instead evolves over time as several economists argue, then cross-sectional analyses may provide a limited depiction about the relationship. Time-series analyses over the debate on the dynamic associations of the industry and market returns from an alternative perspective are still scarce. To complement recent studies, we focus on time-series analyses concerning the relative importance of the industry-based versus market-based debate. Third, our sample period covers 20012010, during which there were several significant exogenous shocks: severe acute respiratory syndrome outbreak (2003), the U.S. sub prime mortgage crisis (20052006), Iraq War (20032008), and the global financial crises (20072010). We consider the effect of structural breaks

in the stock returns, because the stock market is closely correlated with an economic system, and the impact of external factors is inescapable and should attract attention.Neglecting structural break problems makes it hard to find out whether or not parameters are unstable within each of the sub-periods (Lee, 2013; Lee & Chang, 2005) that is, without considering a structural break, the causal relationship may not be clearly identified due to the effect of unusual economic events. Finally, in this paper we conduct both cross-country and cross-industry comparisons by examining different data intervals, different data frequencies, and the effect of both trading activity and the potential business cycle, as well as perform an out-of-sample performance test to compare the difference between historical mean returns and based on the predicted model. Further, we execute the logit regression analysis to identify the possible factors influencing the dominance of different hypotheses. Raju and Melo (2003) extended the study of the lead-lag relationship by applying a co integration approach to investigate the robustness of previous studies including an alternative model parameterization: the error correction model. The lead- layer relationship between price movements of stock index futures and the underlying cash market describes how quickly one market reflects innovations in relation to the other market and the relationship between the two. When one market respond faster to new information, and the other market react later a lead lag relationship is observed by (Chen et al., 2001) Whereas, numerous empirical studies conclude that when this equilibrium is perturbed it is spot price which makes the adjustment towards equilibrium. There are other studies which conclude that both markets contribute to price discovery but, generally, futures price movements lead the stock market. A significant body of the literature has attempted to determine whether price discovery takes place primarily in the spot or futures markets. Engle and Rangel (2008) demonstrates that co integrated series have an error correction term representation (also named speed of adjustment coefficient) which allows correcting in one period the disequilibrium detected in the previous one. Not only does the error correction term indicate the percentage of disequilibrium from one period that is corrected in the next period, but it also show the relative magnitude of adjustments in both markets towards equilibrium.

The reason for the concept of co- integration is that two variables can differ from each other in the short term, but market forces bring them back together and there is therefore a long- term balance between these two variables. If the error correction term is not considered, then the model is mis-specified. Usually, spot and futures prices are co integrated with an order of one and the linear vector error correction model has been used to investigate the error correction process between spot and futures prices. Ferson and Harvey (1991) examine the intraday price relationship between S&P 500 Index and S&P 500 Futures using minute-to-minute data for all trading days during 1984 and 1985 and conclude that futures market lead the stock market over twenty to forty-five minutes, however movements in the spot market rarely affect futures more than one minute.

Chapter 3

Research Methodology

3.1 Data Description

This study uses monthly data from 01, Jun 2000 to 31, July 2017 for twenty industries in Pakistan which include (Refinery, Paper Board, Investment Bank, Glass & Ceramics, Food & personal care, Engineering, Chemicals, Cement Industry, Technology & communication, Textile Composite, Vanaspati and Allied industries, Pharmaceutical industries, Power Generation, Oil exploration, Close end mutual fund, Automobile Assembler, Leasing companies, Cable and Electric goods, Automobile accessories & Parts and Textile weaving to investigate the impact of the long and short term industry returns on market returns and their lead-lag impact with one another. This study develop three hypothesis either industry follow the market, industry lead the market and their bi-directional relationship exists between the two. This study test the data span covering 17 years. We collect the data from KSE-100 index on monthly basis and retrieve data for control variables (interest rate, exchange rate, inflation, market volatility, and money supply). To explain the Phenomenon, the study created index of each industry parallel to the market index and then calculated returns of each industry and stock market in Pakistan. This study further employed the granger causality causal relationship between industry returns and market returns. If lagged value has no explanatory

values then VAR test has been applied to test the relationship among variables. This results of analysis in which variables are pre- determined.

3.2 Vector Auto Regressive Model

The (VAR) model is used because of following reasons. (1) The structural equation describes the relationship between industries and market based on economic activity. However, current industrial organization theory is not enough to provide a rigorous support for the dynamic relationship between market structures and industrial structure. VAR model has solved the problems by constructing simultaneous equations including the market structure and its factors in current period and lag periods (Wiersma and Jurs, 2005). (2) Using VAR model, the dynamic effect of the market structure can be analyzed from its factors shocked by policy with impulse response function and the contribution of its factors to changes in the market structure in later periods with decomposition of variance. All arrangements are linked in logarithmic form with the exception of interest rates.

3.3 Model Specification

The ordinary least squares method (OLS) performed Granger causality tests(Granger, 1969) by testing zero restrictions on lagged parameters in each VAR model to investigate lead- lag relationships between the variables (Boudoukh et al., 1994)

$$IND_{i,t} = \omega_i + \phi_i + IND_{i,t-1} + \beta_i RM_{t-1} + C_{1,i}X_{t-1} + e_{1,it} \tag{3.1}$$

$$RM_t = \alpha_i + IND_{i,t-1} + \theta_i RM_{t-1} + C_{2,i}X_{t-1} + e_{2,it} \tag{3.2}$$

We start by examining the industry's ability to return to the market with PSX data. To see if industries can forecast the market (Hypothesis 1), for each of the 20 portfolios we estimate the following specification separately.

$$Y - t = a_1 + \sum_{i=1}^{m} \beta_{1,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{1,i} X_{t-i} + \mu_{1,t}$$

$$\sigma_{1,1} = \frac{\sum_{i=1}^{t} \mu_{1,t}^2}{N - m}$$

$$X_t = a_2 + \sum_{i=1}^{m} \beta_{2,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{2,i} X_{t-i} + \mu_{2,t}$$

$$\sigma_{2,2} = \frac{\sum_{i=1}^{t} \mu_{2,t}^2}{N - m}$$

Where Xt the excess return of the market in month t, Yt is the excess return of industry portfolio i lag for one month. The VAR system consists of a set of regression equations in which all the variables are considered to be endogenous. In VAR methodology, each endogenous variable is explained by its lagged or past values and the lagged values of all other endogenous variables included in the model. In general, there are no exogenous variables in the model. According to VAR methodology, ordering the variables in the system will give a different result. Therefore, our ordering of the variables in the multivariate study is as follows: Money supply, Exchange rate, inflation, interest rate, Market volatility. Industry (Yt) of refinery is denoted by Ref (PSX) of Stock market (Xt). The results that are determined after regressing the equation and analyzing Granger causality and applying VAR. The value of Xt is the excess return of the market in month t, Yt_i is the excess return of industry portfolio i lagged one month, and Xt_i is a vector of additional market predictors. For each of these 20 time-series regressions, we need to include a number of well-known market predictors in Xt_i to address alternative explanations for why industry returns might forecast the market. These variables are typically thought to proxy for time-varying risk. To the extent and hold the results with these predictors in the regressions, we conclude that our findings are not due to time-varying risk. Additionally, we included lagged market volatility in our set of control variables where industry returns forecast market volatility. In

previous study Kawaller et al. (1987)), we didnt find the exchange rate as control variable. Subsequently, conversion standard has been archived to foresee the market (Fama, 1990) Also, since a few businesses, for example, financials could intermediary for changes in the liquidity of the total market or be particularly touchy to money related arrangement factors. We included slacked changes to decide the impacts of our discoveries for the shorter example and in that capacity are not to change our outcomes here. The coefficients of loan fee of 20 industry portfolios foresee that the capacity of every industry portfolios drives the market. Since a considerable lot of these ventures contain profitable data about market settlements, we expect a critical number of these coefficients to zero to the degree that our steady data dispersion that holds speculation. On the other hand, we can contend that distinctive enterprises drives the market independently that at the same time incorporate 20 industry returns. The expense of doing this is the standard blunders on our evaluations will be bigger since we just have a predetermined number of perceptions thus we can't gauge the impact of every industry on future market returns absolutely. The advantage of doing this is since industry returns are contemporaneously associated. We further discuss the results when we pool all the industries into one regression. In order to capture the interactions between stock market performance and exchange rate volatility, the Granger causality effect test within the multivariate framework estimations will be utilized. Granger causality effect says that one variable helps to forecast the other variable at least in one direction. Testing for causality between two variables has been coined by 20- industries in stock market. On the off chance that the invalid theory isn't rejected, it very well may be presumed that the free factor does not cause other variable. All models are created for data in levels. Next step is to test the presence of Auto-correlation in our VAR model to make sure they are well specified. If we find auto-correlation, we try to increase lag-length to deal with this problem. For time series with the same order of integration, we can perform co-integration test. We use Johansens methodology based on our previous VAR model to see possible presence of co integration. This step provides us possible cross-check on the validity of our results after granger causality is examined. Because if two time series

are co-integrated, than there must exist granger causality between them in any direction or in both directions. But Granger causality can exists even between two non-co-integrated time series. Next phase is to create VAR model lags. Where p is a number of lags found in previous analysis and m represent maximal order of integration occurred in the process. Our analysis is based on the results of the (Granger, 1969). Later edited by Breitung and Candelon (2006), Fama and Schwert (1977) and Chatrath et al. (1995) methodology showed a brilliant exposure of the frequency-domain Granger causality by decomposing the complete interdependence between the two series into a sum of "instantaneous, "" feed forward "and "feedback "causality terms. Geweke (1982) proposed a measure of instantaneous correlation, calculated from the residual of standard Granger (1969) type causality tests that capture instantaneous feedback. This program, gweke82, quickly estimates such Geweke-type instantaneous feedback between two variables. While the Geweke (1982) method applies to any vector-valued linear function, the intuition behind the technique can be more easily seen for a system of two random variables which can be estimated using the standard VAR methodology.

$$Y_t = a_1 + \sum_{i=1}^{m} \beta_{1,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{1,i} X_{t-i} + \mu_{1,t} \tag{3.3}$$

$$\sigma_{1,1} = \frac{\sum_{i=1}^{t} \mu_{1,t}^2}{N - m}$$

$$X_t = a_2 + \sum_{i=1}^{m} \beta_{2,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{2,i} X_{t-i} + \mu_{2,t} \tag{3.4}$$

$$\sigma_{2,2} = \frac{\sum_{i=1}^{t} \mu_{2,t}^2}{N - m}$$

All coefficients for X lags are statistically significant, for example, and it is said that "X "causes "Y. "However, such estimates may left much of the correlation between X and Y unused. Specifically, if Yt is correlated with Xt after controlling of their lags, than an instantaneous correlation has been existed between them. This is the basis of the Geweke (1982) measure of instantaneous feedback. Geweke proposed

that the variance/covariance matrix of residuals from the VAR estimation be used to estimate the linear feedback between X to Y, and X to Y, and instantaneous linear feedback between X and Y. If X does not Granger-cause Y, then (1) and (2) can be written as:

$$Y_t = a_3 + \sum_{i=1}^{m} \beta_{3,i} Y_{t-i} + \mu_{3,t} \tag{3.5}$$

$$\sigma_1 = \frac{\sum_{i=1}^{t} \mu_{3,t}^2}{N - m}$$

$$X_t = a_4 + \sum_{i=1}^{m} \gamma_{4,i} Y_{t-i} + \mu_{4,t} \tag{3.6}$$

$$\sigma_2 = \frac{\sum_{i=1}^{t} \mu_{4,t}^2}{N - m}$$

Now comparing equations (1) and (3), then gives us an estimate of the impact X on Y. Finally, we estimate a model that includes contemporaneous effects between Y and X:

$$Y_t = a_5 + \sum_{i=1}^{m} \beta_{5,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{5,i} X_{t-i} + \mu_{5,t} \tag{3.7}$$

$$\sigma_{\varepsilon,1} = \frac{\sum_{i=1}^{t} \mu_{5,t}^2}{N - m}$$

$$X_t = a_6 + \sum_{i=1}^{m} \beta_{6,i} Y_{t-i} + \sum_{i=1}^{m} \beta \gamma_{6,i} X_{t-i} + \mu_{6,t} \tag{3.8}$$

$$\sigma_{\varepsilon,2} = \frac{\sum_{i=1}^{t} \mu_{6,t}^2}{N - m}$$

Specifically, Geweke (1982) proposed the following as an measure of linear feedback:

$$F_{Y\to X} = (n-m)\ln\left(\frac{\sigma_1}{\sigma_{1,1}}\right) X_m^2 \tag{3.9}$$

$$F_{X\to Y} = (n-m)\ln\left(\frac{\sigma_2}{\sigma_{2,2}}\right) X_m^2 \tag{3.10}$$

To measure the instantaneous feedback):

$$F_{Y.X} = (n-m)\ln\left(\frac{\sigma_{1,1}}{\sigma_{\varepsilon,1}}\right) X_1^2 \tag{3.11}$$

$$F_{X.Y} = (n-m)\ln\left(\frac{\sigma_{2,2}}{\sigma_{\varepsilon,2}}\right) X_1^2 \tag{3.12}$$

Finally, the measure of total correlation between X and Y is:

$$F_{Y\ X} = (n-m)\ln\left(\frac{\sigma_1}{\sigma_{\varepsilon,1}}\right) X_{2m+1}^2 \tag{3.13}$$

$$F_{X\ Y} = (n-m)\ln\left(\frac{\sigma_2}{\sigma_{\varepsilon,2}}\right) X_{2m+1}^2 \tag{3.14}$$

Geweke (1982) showed that the above measurement distributions are distributed asymptotically as the F distribution. Geweke (1982) generalized the above results to include vector valued function (asymptotically measuring Chi-squared), allowed for more than two endogenous variables and valued functions for the vector, but allows for exogenous variables and more than two endogenous variables. The Geweke test results are shown in Table 21. Whereas, the Granger causality results for the multivariate VAR estimations framework in this study are presented from table 1 to table 20 as below. These results presents forecasting the industry returns in month Yt using variables at month t_i. Refinery is the return on industry portfolio. Whereas, Xt is the value weighted market portfolio return.

Chapter 4

Results and Discussions

Table 4.1: Refinery and Stock Market Analysis

	RM	***REF***
Mean	0.0168	0.0021
Standard Error	0.0055	0.0241
Median	0.0217	0.0094
Mode	0	0
Standard Deviation	0.0772	0.3364
Sample Variance	0.006	0.1131
Kurtosis	6.7392	48.8922
Skewness	-1.1822	0.0023
Range	0.6899	5.4293
Minimum	-0.4488	-2.5546
Maximum	0.2411	2.8747
Sum	3.2572	0.3987
Count	194	194
Confidence Level (95.0%)	0.0109	0.0476

Table 4.1 explains the average return of market is 0.0168% and average return of refinery is 0.0021 % percent. The maximum return for market is 0.2411 % and maximum return for industry is 2.87 percent whereas, maximum loss for market is 0.44 % and maximum loss for industry is 2.55%. Skewing of the market is negative, while skewing of the industry is positively skewed. The market kurtosis data is

6% and the industry Kurtosis data is 48%, which means that the refinery sector's kurtosis data is higher than the market. The average market risk is 0.0772%, while the average industry risk is 0.33%, which means that this industry is riskier than the market.

TABLE 4.2: Paper Board and Stock Market

	RM	**PB**
Mean	0.0168	0.0002
Standard Error	0.0055	0.0224
Median	0.0217	0.012
Mode	0	0
Standard Deviation	0.0772	0.3117
Sample Variance	0.006	0.0971
Kurtosis	6.7392	38.7715
Skewness	-1.1822	-2.4507
Range	0.6899	4.6073
Minimum	-0.4488	-2.4661
Maximum	0.2411	2.1412
Sum	3.2572	0.0391
Count	194	194
Confidence Level (95.0%)	0.0109	0.0441

Table 4.2 explains the average return of market is 0.0168% and average return of paper board is 0.00021%. The maximum return for market is 0.24% and maximum return for industry is 2.14% whereas, maximum loss for market is 0.44% and maximum loss for industry is 2.14%. Skewing of the market and industry both are negative. The market kurtosis data is 6% and the industry Kurtosis data is 38%, which means that the Paper board sector's kurtosis data is higher than the market. The average market risk is 0.0772%, while the average industry risk is 0.31%, which means that this industry is riskier than the market.

TABLE 4.3: Investment bank and Stock market

	RM	***IB***
Mean	0.0168	-0.002
Standard Error	0.0055	0.0163
Median	0.0217	-0.0187
Mode	0	0
Standard Deviation	0.0772	0.2265
Sample Variance	0.006	0.0513
Kurtosis	6.7392	5.3981
Skewness	-1.1822	0.7377
Range	0.6899	1.9934
Minimum	-0.4488	-0.9448
Maximum	0.2411	1.0486
Sum	3.2572	-0.3805
Count	194	194
Confidence Level (95.0%)	0.0109	0.0321

Table 4.3 in the next page explains the average return of market is 1.68% and average return of Investment bank is 0.020%. The maximum return for market is 0.24 percent and maximum return for industry is 1.04 percent. Whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.94 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 5.3 percent, which means that the Investment bank sector's kurtosis data is lesser than the market. The average market risk is 0.7722 percent, while the average industry risk is 23%, which means that this industry is riskier than the market.

Table 4.4 explains the average return of market is 0.0168 and average return of Glass and Ceramics is 0.0178%. The maximum return for market is 0.2411 percent and maximum return for industry is 2.18% whereas, maximum loss for market is 0.44% and maximum loss for industry is 2.17%. Skewing of the market is negative, while skewing of the industry is positively skewed. The market kurtosis data is

TABLE 4.4: Glass & Ceramics and Stock Market

	RM	***GC***
Mean	0.0168	0.0178
Standard Error	0.0055	0.0197
Median	0.0217	0.0068
Mode	0	0
Standard Deviation	0.0772	0.2739
Sample Variance	0.006	0.075
Kurtosis	6.7392	45.2684
Skewness	-1.1822	0.7584
Range	0.6899	4.3581
Minimum	-0.4488	-2.1777
Maximum	0.2411	2.1804
Sum	3.2572	3.4512
Count	194	194
Count	194	0.0388

6% and the industry Kurtosis data is 45%, which means that the refinery sector's kurtosis data is higher than the market. The average market risk is 0.0772%, while the average industry risk is 0.27%, which means that this industry is riskier than the market.

Table 4.5 in the next page explains the average return of market is 0.0168 percent and average return of food and personal care is 0.0226 percent. The maximum return for market is 0.24 percent and maximum return for industry is 1.69 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 1.71 percent. Skewness of the market and industry are negative. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 54.8 percent, which means that the food and personal care sector's kurtosis data is higher than the market. The average market risk is 0.07722 percent, while the average industry risk is 0.19 percent, which means that this industry is riskier than the market.

Table 4.5: Food and Personal Care

	RM	***FPC***
Mean	0.0168	0.0226
Standard Error	0.0055	0.0143
Median	0.0217	0.0088
Mode	0	0
Standard Deviation	0.0772	0.199
Sample Variance	0.006	0.0396
Kurtosis	6.7392	54.8787
Skewness	-1.1822	-0.2409
Range	0.6899	3.408
Minimum	-0.4488	-1.7102
Maximum	0.2411	1.6978
Sum	3.2572	4.3907
Count	194	194
Confidence Level (95.0%)	0.0109	0.0282

Table 4.6 on (Page.33) explains the average return of market is 0.0167 and average return of engineering is 0.013 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.42 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.436 percent. Skewness of the market and industry are negative. The market kurtosis data is 6.7% and the industry Kurtosis data is 2.3 percent, which means that the engineering sector's kurtosis data is lessor than the market. The average market risk is 0.07723 percent, while the average industry risk is 0.118 percent, which means that this industry is riskier than the market.

TABLE 4.6: Engineering and Stock Market

	RM	***ENG***
Mean	0.01679	0.01303
Standard Error	0.00554	0.0085
Median	0.02168	0.00981
Mode	0	0.227
Standard Deviation	0.07723	0.11836
Sample Variance	0.00596	0.01401
Kurtosis	6.73923	2.34463
Skewness	-1.18216	-0.00646
Range	0.68991	0.86665
Minimum	-0.4488	-0.43666
Maximum	0.24111	0.42999
Sum	3.25724	2.52871
Count	194	194
Confidence Level(95.0%)	0.01094	0.01676

TABLE 4.7: Chemicals and Stock Market Pakistan

	RM	***CHMS***
Mean	0.0168	0.0153
Standard Error	0.0055	0.0111
Median	0.0217	0.0008
Mode	0	0
Standard Deviation	0.0772	0.1544
Sample Variance	0.006	0.0238
Kurtosis	6.7392	30.399
Skewness	-1.1822	3.3327
Range	0.6899	1.9102
Minimum	-0.4488	-0.5472
Maximum	0.2411	1.363
Sum	3.2572	2.9608
Count	194	194
Confidence Level (95.0%)	0.0109	0.0219

Table 4.7 on (page.33) explains the average return of market is 0.0168 and average return of Chemical sector is 0.0153 percent. The maximum return for market is 0.24 percent and maximum return for industry is 1.36 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.54 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 30.3 percent, which means that the chemical sector's kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.154 percent, which means that this industry is riskier than the market.

TABLE 4.8: Technology & Communication and Stock Market Pakistan

	RM	***TC***
Mean	0.0168	0.0045
Standard Error	0.0055	0.0119
Median	0.0217	-0.022
Mode	0	0
Standard Deviation	0.0772	0.1663
Sample Variance	0.006	0.0277
Kurtosis	6.7392	1.6435
Skewness	-1.1822	0.5671
Range	0.6899	1.1575
Minimum	-0.4488	-0.5157
Maximum	0.2411	0.6419
Sum	3.2572	0.8697
Count	194	194
Confidence Level (95.0%)	0.0109	0.0236

Table 4.8 The average return of market is 0.0168 and average return of Telecommunication is 0.0045 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.64 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.51 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis

data is 6.7 percent and the industry Kurtosis data is 1.64 percent, which means that the technology and communication sector's kurtosis data is lesser than the market. The average market risk is 0.07722 percent, while the average industry risk is 0.1663 percent, which means that this industry is riskier than the market.

TABLE 4.9: Cement Industry and Stock Market Pakistan

	RM	***RCI***
Mean	0.01679	0.02153
Standard Error	0.00554	0.00771
Median	0.02168	0.02462
Mode	0	0
Standard Deviation	0.07723	0.10739
Sample Variance	0.00596	0.01153
Kurtosis	6.73923	4.67809
Skewness	-1.18216	0.52002
Range	0.68991	0.9342
Minimum	-0.4488	-0.34029
Maximum	0.24111	0.5939
Sum	3.25724	4.17618
Count	194	194
Confidence Level (95.0%)	0.01094	0.01521

Table 4.9 explains the average return of market is 0.0168 and average return of Cement industry and stock market is 0.021 percent. The maximum return for market is 0.021 percent and maximum return for industry is 0.024 percent whereas, maximum loss for market is 0.24 percent and maximum loss for industry is 0.59 percent. Skewness of the market is negative also skewness of industry is negative too. The market kurtosis data is 7 percent and the industry Kurtosis data is 4.67 percent, which means that the cement industry sector's kurtosis data is lesser than the market. The average market risk is 7.22 percent, while the average industry risk is 10.7 percent, which means that this industry is riskier than the market.

TABLE 4.10: Textile Composite and stock market Pakistan

	RM	***RTC***
Mean	0.0168	0.0113
Standard Error	0.0055	0.0097
Median	0.0217	-0.0008
Mode	0	0
Standard Deviation	0.0772	0.1346
Sample Variance	0.006	0.0181
Kurtosis	6.7392	11.9202
Skewness	-1.1822	0.8992
Range	0.6899	1.5538
Minimum	-0.4488	-0.6952
Maximum	0.2411	0.8587
Sum	3.2572	2.1893
Count	194	194
Confidence Level (95.0%)	0.0109	0.0191

Table 4.10 explains the average return of market is 0.0168 percent and average return of Textile composite industry and stock market is 0.0113 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.85 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.69 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 11.92 percent, which means that the Textile composite industry kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.134 percent, which means that this industry is riskier than the market.

Table 4.11 explains the average return of market is 0.0168 percent and average

Table 4.11: Vanaspati & Allied Industries

	RM	***RVAI***
Mean	0.0168	0.0162
Standard Error	0.0055	0.0121
Median	0.0217	0
Mode	0	0
Standard Deviation	0.0772	0.1689
Sample Variance	0.006	0.0285
Kurtosis	6.7392	12.1799
Skewness	-1.1822	1.8038
Range	0.6899	1.7862
Minimum	-0.4488	-0.7139
Maximum	0.2411	1.0723
Sum	3.2572	3.1523
Count	194	194
Confidence Level (95.0%)	0.0109	0.0239

return of Vanaspati and Allied industry and stock market is 0.0162 percent. The maximum return for market is 0.24 percent and maximum return for industry is 1.07 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.71 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 12.17 percent, which means that the Vanaspati and Allied industry kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.168 percent, which means that this industry is riskier than the market.

TABLE 4.12: Pharmaceutical Industries and Stock Market Pakistan

	RM	***RPI***
Mean	0.0168	0.0227
Standard Error	0.0055	0.0198
Median	0.0217	0.0071
Mode	0	0
Standard Deviation	0.0772	0.2756
Sample Variance	0.006	0.076
Kurtosis	6.7392	67.2592
Skewness	-1.1822	-0.8045
Range	0.6899	4.9502
Minimum	-0.4488	-2.5381
Maximum	0.2411	2.412
Sum	3.2572	4.4073
Count	194	194
Confidence Level(95.0%)	0.0109	0.039

Table 4.12 explains the average return of market is 0.0168 percent and average return of Pharmaceutical industry and stock market is 0.0227 percent. The maximum return for market is 0.24 percent and maximum return for industry is 2.41 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 2.53 percent. Skewness of the market is negative also skewness of industry is negative too. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 67.25 percent, which means that the Pharmaceutical industry kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.27 percent, which means that this industry is riskier than the market.

Table 4.13 on (page 39) explains the average return of market is 0.0168 and average return of Power generation industry and stock market is 0.0093 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.44% whereas, maximum loss for market is 0.44 percent and maximum loss for

TABLE 4.13: Power Generation and Stock market Pakistan

	RM	***RPG***
Mean	0.0168	0.0093
Standard Error	0.0055	0.0068
Median	0.0217	0.0012
Mode	0	0
Standard Deviation	0.0772	0.0944
Sample Variance	0.006	0.0089
Kurtosis	6.7392	6.063
Skewness	-1.1822	1.4352
Range	0.6899	0.6876
Minimum	-0.4488	-0.2383
Maximum	0.2411	0.4493
Sum	3.2572	1.8103
Count	194	194
Confidence Level (95.0%)	0.0109	0.0134

industry is 0.23 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 6.06 percent, which means that the power generation kurtosis data is somehow equal to the market. The average market risk is 0.0772 percent, while the average industry risk is 0.0944 percent, which means that this industry is riskier than the market.

Table 4.14 on (Page 40) explains the average return of market is 0.0168 percent and average return of Oil exploration industry and stock market is 0.0214 percent. The maximum return for market is 0.24 percent and maximum return for industry is 1.81 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.98 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 27.49 percent, which means that the Oil exploration kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the

TABLE 4.14: Oil Exploration and Pakistan Stock Market

	RM	***ROE***
Mean	0.0168	0.0214
Standard Error	0.0055	0.0159
Median	0.0217	0.0155
Mode	0	0
Standard Deviation	0.0772	0.2214
Sample Variance	0.006	0.049
Kurtosis	6.7392	27.4923
Skewness	-1.1822	2.8088
Range	0.6899	2.8032
Minimum	-0.4488	-0.9865
Maximum	0.2411	1.8167
Sum	3.2572	4.1444
Count	194	194
Confidence Level (95.0%)	0.0109	0.0314

average industry risk is 0.2214 percent, which means that this industry is riskier than the market.

Table 4.15 on (page 41) explains the average return of market is 0.0168 and average return of close end mutual fund industry and stock market is 0.099 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.96 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.96 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 8.07 percent, which means that the close end mutual fund kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.16 percent, which means that this industry is riskier than the market.

TABLE 4.15: Close end Mutual funds and stock market Pakistan

	RM	***RCEMF***
Mean	0.0168	0.0099
Standard Error	0.0055	0.0116
Median	0.0217	0.005
Mode	0	0
Standard Deviation	0.0772	0.1617
Sample Variance	0.006	0.0261
Kurtosis	6.7392	8.0742
Skewness	-1.1822	0.5997
Range	0.6899	1.595
Minimum	-0.4488	-0.6327
Maximum	0.2411	0.9623
Sum	3.2572	1.9164
Count	194	194
Confidence Level (95.0%)	0.0109	0.0229

TABLE 4.16: Leasing Companies and Stock Market

	RM	***RLC***
Mean	0.0168	0.0067
Standard Error	0.0055	0.0069
Median	0.0217	0.0009
Mode	0	0
Standard Deviation	0.0772	0.0967
Sample Variance	0.006	0.0093
Kurtosis	6.7392	10.3601
Skewness	-1.1822	0.937
Range	0.6899	1.0818
Minimum	-0.4488	-0.4649
Maximum	0.2411	0.6169
Sum	3.2572	1.3054
Count	194	194
Confidence Level(95.0%)	0.0109	0.0137

Table 4.16 on (page 41) explains the average return of market is 0.0168 percent and average return of leasing industry is 0.0067 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.61 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.46 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 10.32 percent, which means that leasing industry kurtosis data is higher than the market. The average market risk is 0.077 percent, while the average industry risk is 0.0967 percent, which means that this industry is riskier than the market.

Table 4.17: Cable and Electric and Stock Market Pakistan

	M	***CE***
Mean	0.0168	0.0024
Standard Error	0.0055	0.0072
Median	0.0217	-0.0026
Mode	0	0
Standard Deviation	0.0772	0.0998
Sample Variance	0.006	0.01
Kurtosis	6.7392	2.6265
Skewness	-1.1822	0.0077
Range	0.6899	0.7366
Minimum	-0.4488	-0.4225
Maximum	0.2411	0.3141
Sum	3.2572	0.459
Count	194	194
Confidence Level(95.0%)	0.0109	0.0141

Table 4.17 on (page 42) explains the average return of market is 0.0168 percent and average return of Cable and Electric industry is 0.0024 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.31 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.42 percent. Skewness of the market is negative whereas, skewness of industry

is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 2.62 percent, which means that the electric and cable industry kurtosis data is higher than the market. The average market risk is 0.077 percent, while the average industry risk is 0.098 percent, which means that this industry is riskier than the market.

TABLE 4.18: Auto mobile Assembler and Stock Market Pakistan

	RM	***RAA***
Mean	0.0168	0.0033
Standard Error	0.0055	0.0152
Median	0.0217	0.0066
Mode	0	0
Standard Deviation	0.0772	0.2115
Sample Variance	0.006	0.0447
Kurtosis	6.7392	111.8428
Skewness	-1.1822	-9.1033
Range	0.6899	3.073
Minimum	-0.4488	-2.5557
Maximum	0.2411	0.5174
Sum	3.2572	0.6373
Count	194	194
Confidence Level(95.0%)	0.0109	0.03

Table 4.18 explains the average return of market is 0.0168 and average return of automobile assembler industry is 0.0033 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.51 percent. Whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 2.337 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 11.48 percent, which means that the automobile assembler and parts industry kurtosis data is higher than the market. The average market risk is 0.0772 percent,

while the average industry risk is 0.21 percent, which means that this industry is riskier than the market.

TABLE 4.19: Automobile Assembler and Parts

	RM	***RAAP***
Mean	0.0168	0.0216
Standard Error	0.0055	0.0115
Median	0.0217	0.0106
Mode	0.0000	0.0000
Standard Deviation	0.0772	0.1604
Sample Variance	0.0060	0.0257
Kurtosis	6.7392	20.6496
Skewness	-1.1822	2.5123
Range	0.6899	1.8853
Minimum	-0.4488	-0.7153
Maximum	0.2411	1.1701
Sum	3.2572	4.1906
Count	194.0000	194.0000
Confidence Level(95.0%)	0.0109	0.0227

Table 4.19 explains the average return of market is 0.0168 and average return of automobile assembler and parts industry is 0.0044 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.48 percent. Whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.45 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 2.4 percent, which means that the automobile assembler and parts industry kurtosis data is higher than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.13 percent, which means that this industry is riskier than the market.

TABLE 4.20: Textile Weaving and Stock Market Pakistan

	RM	***RTW***
Mean	0.0168	0.0044
Standard Error	0.0055	0.0094
Median	0.0217	0.0001
Mode	0	0
Standard Deviation	0.0772	0.1312
Sample Variance	0.006	0.0172
Kurtosis	6.7392	2.4346
Skewness	-1.1822	0.2488
Range	0.6899	0.9443
Minimum	-0.4488	-0.4545
Maximum	0.2411	0.4898
Sum	3.2572	0.8511
Count	194	194
Confidence Level(95.0%)	0.0109	0.0186

The average return of market is 0.0168 percent and average return of Textile weaving industry is 0.0044 percent. The maximum return for market is 0.24 percent and maximum return for industry is 0.48 percent whereas, maximum loss for market is 0.44 percent and maximum loss for industry is 0.45 percent. Skewness of the market is negative whereas, skewness of industry is positive. The market kurtosis data is 6.7 percent and the industry Kurtosis data is 2.4 percent, which means that the textile weaving industry kurtosis data is lesser than the market. The average market risk is 0.0772 percent, while the average industry risk is 0.13 percent, which means that this industry is riskier than the market.

4.1 Industry and Market Analysis of Contemporaneous Effect

Table 4.21 indicates that the presence of information flow from market to various industrial sector. The significant lead-lag relationship find between refinery sector, cement industry sector, engineering sector, investment bank and cable & electric sector. The market leads and above stated factors follows the market. However, contemporaneous effect is only observed in chemical sector. The chemical sector spontaneously responded to change in market. The market does not include leading to the other sectors which includes paperboard, investment bank, glass & ceramics, food and personal care, engineering, technology and communication, textile composite, Vanaspati and allied industries, Pharmaceutical industries, power generation and oil exploration etc. Therefore, it can be concluded that movement of refinery, engineering, cement industry and cable & electric sector are significant as it can be seen in table below.

TABLE 4.21: Industry and Market Analysis of Contemporaneous Effect.

S. No.	Name of Industry	PSX	Ind	GUCF	Chi-Square
1	Refinery	6.409663	1.455625	0.00505	3.841459
2	Paper Board	1.417921	1.940554	0.089729	3.841459
3	Investment Bank	2.696042	0.030451	0.235118	3.841459
4	Glass & Ceramics	2.331144	0.409924	1.200971	3.841459
5	Food & Personal Care	1.627321	0.596378	3.376088	3.841459
6	Engineering	6.344024	0.73858	0.05049	3.841459
7	**Chemicals**	**10.92518***	**5.951205***	**18.03379***	**3.841459**
8	Technology & Communication	20.02975	0.690731	0.083719	3.841459
9	Cement Industry	208.5972	0.671382	0.015529	3.841459
10	Textile Composite	1.752019	0.511225	0.459235	3.841459
11	Vanaspati & Allied Industries	0.034763	1.802028	0.377635	3.841459
12	Pharmaceutical Industries	1.562907	6.202686	1.228348	3.841459
13	Power Generation	1.369044	22.08615	6.10E-01	3.841459
14	Oil Exploration	0.973349	6.611699	0.071106	3.841459
15	Close and Mutual fund	1.147883	0.129137	2.466898	3.841459
16	Leasing Companies	0.111211	8.064434	-93.6634	3.841459
17	Cable and Electric	1.21784	20.65863	0.01044	3.841459
18	Automobile Assembler	0.085213	13.54495	0.288188	3.841459
19	Automobile Assembler & Parts	0.531137	4.576003	0.784783	3.841459
20	Textile Weaving	1.319715	0.531729	0.970936	3.841459

Note: Asterisk sign (*) shows industry returns value and market returns value is greater than Chi-squares value it means the value of industry returns and market returns are insignificant means industry follows the equity market and also having a uni-directional relationship. The chemical sector shows the contemporaneous effect as the tabulated value of Chi-square is 3.84.

Chapter 5

Discussion and Conclusion

The connection between industry returns and stock market returns have been examined to determine the lead-lag relationship have used the Granger causality effects in a multivariate VAR framework. The purpose of this study focused on the performance of the Pakistan industry and stock market. To analyze the results of industry and market the study gathers the data of twenty portfolios from KSE-100 and created index of industry as market index is created by stock market in Pakistan. This study used two way techniques to determine the lead-lag relationship between industry and stock market. 1) Granger causality, 2) Geweke measure. The results of granger causality show the relationship concerning industry returns and market returns. According to granger causality results market is leading to various industries which include refinery, paperboard, investment bank, engineering, cement, technology and communication, textile composite, Vanaspati and allied industries, power generation, close end mutual fund, leasing company, cable and electric, textile weaving. After lead-lag relationship this study used another approach of geweke measure that identifies not only unidirectional relationship moving from industry index to marker but also finds contemporaneous effect which is only observed in chemical sector. By using monthly data that cover June 2000 to Jul 2017, this study examines the causal relationship between industry and market returns differing from Pakistan's industrial returns. For example, the industry's leading assumption in the following industries are refinery, paperboard,

glass & ceramics, investment bank, food and personal care, engineering, technology and communication, cement industry, textile composite, Vanaspati and allied industries, close end mutual fund and textile weaving industry. This suggests that returns from these industries could be used to predict total market returns in Pakistan, despite government support for specific industries or because only certain industries for a substantial proportion of the total stock market values.

5.1 Recommendations

This study finds the marketing leading relationship between market and industry. The results based on granger causality and geweke measure results that determine sometime industry leads the market and most of the time market leads the industry. So it is obvious to say this study can predict the movement of industry by observing the movement of market. This study also recommends investing in various sectors where market is leading to industry these sectors are refinery, paperboard, investment banks, engineering, cement, technology and communication, textile composite, Vanaspati & allied industries, power generation, close-end mutual fund and leasing companies. To predict the movement of industry there is need to monitor the movement of market. If market moves industry will also move. So market movements can easily predictable. It is more appreciable for the investor who believe in index taker fund investment they should be strongly recommend to monitor the movement of market so they can easily take position when industry respond.

If the industry is leading to the stock market then there is need to keep strong check on industry movement as it is leading to the market. By analyzing granger causality technique we may conclude that that market is inefficient and can easily predictable.

For contemporaneous effect this study concludes that no consistent behavior exists between industry and market. If any information is created in one sector the other will respond like if market moves industry will respond. But if industry moves then market will respond. This study conclude that in both cases vigilance is not

unidirectional instead being monitored simultaneously. Badrinath et al. (1995) found that information could slowly diffuse from option markets to stock markets, as the volume of options appears to predict stock prices. But much more work on this issue remains to be done.

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