AN EMPERICAL STUDY ON INTER-LINKAGES OF DEVELOPED AND EMERGING STOCK MARKETS WITH KSE

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A thesis submitted in partial fulfillment of the requirements for the Degree of Master of Philosophy/Science in Management with specialization in Finance at

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In the name of Allah, the most merciful and beneficent

DEDICATION

I dedicate this thesis to my parents, grandparents and my supervisor whose support has enabled me

to complete this research study successfully.

(Acceptance by the Viva Voice Committee)

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ABSTRACT

This empirical study is conducted to examine the dynamic inter-linkages between developed and emerging stock markets with KSE. Whether they are integrated with long-run or short-run? At what speed the shocks occur in any market can be adjusted? Data collected from 1st January 2001 – 31st December, 2013 to carve out research problem. The hypotheses of the study are tested by applying various techniques like Descriptive Statistics, Correlation Analysis, Unit root Test, Co-integration Test, Vector Error Correction Model, Granger Causality Test and Impulse Response Test. Co-Integration method illustrate that KSE-100 is not long-term co-integrated with developed and emerging stock- markets except china. However, financial crises of 2008 depicted that KSE is integrated with China stock-exchange only. Finally, VECM is exercised to test the degree of short-term association between these stock-exchanges. Results illustrate that equity markets of BSE, SCI, SET and SNP are short- run integrated with KSE. Furthermore, this research also pointed out that whether correlation of these indices seriously hamper by different economic factors? Two economic variables are selected to study the closeness of this linkage. Results indicate that only Inflation rate differentials causes integration among these sock-markets. Beside it, impending study could conduct to observe the reason of this inter-linkage by using other economic factors i.e GDP, FDI, Interest rate differentials.

Key words: Karachi Stock Exchange, Inflation, Exchange rate.

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DECLARATION

I hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared that I have prepared this thesis entirely on the basis of my personal effort made under the sincere guidance of my supervisor and colleagues. No portion of work, presented in this thesis has been submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

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Ms. Umm-e-Hani

LIST OF ABBREVIATIONS

SAARC	South Asian association of Regional cooperation
OECD	Organization for Economic Co-operation and Development
EU	European Union
ASEAN	The Association of Southeast Asian Nations
MENA	Middle East North America
GNP	Gross National Product
GDP	Gross Domestic Product
ADF	Augmented Dickey Fuller
PP	Phillip Perron
VAR	Vector Auto Regression
VECM	Vector Error Correction Model
ADRL	Auto Regressive Decomposition Lag Test
MSCI	Morgan Stanley Composite Index
AIC	Akaike Information Criterion
UK	United Kingdom
US	United States of America
IDR	Indonesian Ruphia
PKR	Pakistani Rupee
BRL	Brazilian Real
KSE	Karachi Stock Exchange

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Chapter No 1

INTRODUCTION

1.1 Background and Purpose of the Study

A stock exchange is a place where buyers and sellers meet and trading of financial instruments (bond, equity) takes place. It acts as medium for transferring the resources from surplus and lavish areas to dearth. Stock-exchange provides assistance and support to the national investors by providing the centre for mobilization of resources across borders, leading towards the growth and advancement in the field of industry, trade and commerce. Moreover, for promoting smooth and stable economic growth stock- markets are essential.

As for as the world is becoming global village and, its fruits are spreading all around the world, accordingly many developed and emerging companies are transferring its resources, capital and funds outside the national boundary to take investment and arbitrage opportunities and to overcome the limitations of regional market (Grubel 1968). Foreign direct investment in domestic financial securities at different sectors of economy is also amplifying. Consequentially, innovative financial structures and new globalized policies are implementing and adopted by these economies.

The last 20 years have been witnessed the significant and momentous revolution in financial-market of Pakistan, like development and introduction of advance technology, removal of regulatory trade barriers and trade liberalization, eradication of capital constraint, technological advancement,

nurturing investment institutions, labor mobility, technological innovations, promotion of innovative products, fostering means of communication and increasing inclination towards globalization. The current businesses environment offers various portfolio opportunities to the consumers, business organizations and investors. Being an important ingredient of investment avenues the financial markets are now restructuring it and growing rapidly.

The investors/sellers (like insurance companies, banks, mutual funds, credit unions etc) are able to achieve healthier returns. The Capital seekers/ buyers are now looking outside their national boundary for valuable funds. It may leads towards globally integrated stock-markets. Such revolutionary modification may have boosted the linkages process of Pakistani stock-markets, resulting in minimization of portfolio benefits. Because, if financial markets are perfectly correlated, all financial assets bearing similar risk gives similar returns (Campbell and Hamao, 1992). Therefore, diversification objectives cannot be achieved in this respect.

The concept of inter-linkages between financial markets has been supported by **Portfolio selection theory** especially for those financial assets bearing identical risk. According to this theory stock-markets should not be integrated with each other. If financial- markets are strongly correlated with each other volatility in one economy transferred hurriedly to closest economies. Shocks in the equity market of one country can seriously affect the stock markets of other country. The potential benefit associated with diversification will no longer be beneficial in this respect. Investors may get similar return due to this correlation. However, if equity-markets are not perfectly correlated, different returns for identical assets are offered to investors (Adjouté, Danthine, 2003),

(Baele et al., 2004), (Bekaert, Harvey, 1997). It is because sources and price of risk may differ in these markets (Kucukcolak, 2008).

Financial crises correlate negatively with the growth of capital markets because in these circumstances investors show risk aversion approach in the market. Financial disaster of 2007-08 in Unites Sate distressed equity markets globally. But Pakistani markets show resistance to these turmoil to greater extent.

Furthermore, owing to the, removal of regulatory trade barriers and increasing the proportion of foreign direct investment in Pakistan, KSE has become more liberalized. Now, Karachi stock exchange plays a significant role in the global network of financial-markets. Therefore, Karachi Stock exchange of Pakistan is used as testing ground in this study to evaluate, the impact of major event like financial crises of 2008, on the short and long-run linkages of KSE with developed and emerging stock markets.

Literature indicated that Stock-market integration is persuaded by number of macroeconomic- variables consequently causing volatility in stock-return (Khalid and Rajaguru, 2006). An attempt has been made in this study to investigate the factors that lead to the stock-markets integration. The study tries to scrutinize the other reasons of integration for thirteen financial-markets under the study. Motivation is drawn from theory and from empirical work to choose those domestic variables that might suppose to strongly affect the stock returns. For this purpose, two economic variables (Inflation and Exchange rate) are selected to analysis the closeness of this linkage.

Hence, the objective of the study is twofold. The study tries to determine the (1) existing level of correlation of KSE with developed and emerging markets, (2) whether the inter-linkages of these stock-markets is growing, constant or declining by using precise set of measures. The motive is also to examine the reasons of integration among these stock- markets. By constructing a Standard methodological framework, and testing measures like Bi-variate and Multi-variate Co-Integration are used to drive out conclusion.

1.2 Problem Statement

Investment securities include different types of systematic as well as unsystematic risks. As, the removal of systematic risk associated with these securities is impractical in nature. But, unsystematic risk can be minimized to some extent. One method through which risk can minimize is Portfolio diversification. Holding of suitable combination of different instruments in portfolio gives higher return at lower risk as compare to investment in individual security only.

Due to globalization investors prefer to transfer their financial resources outside the national boundary and invest them in these productive economies. Where, they can avail the opportunity of investment with the help of portfolio diversification. Moreover, emerging markets also provides greater diversification opportunities to fund's managers.

Various studies have conducting to analyze the interlink ages of regional stock markets with national stock markets not only in emerging economies but also in developed countries. However, there is scarcity in literature focusing the integration between developed, emerging and Karachi stock exchange

combine. Generally Literature identifies the impact of economic factors on the correlation of only emerging stock-markets (Masih and Masih, 1999), (Jang and Sul, 2002).

So, the purpose of this cram is to enhance the existing literature with recent data. This empirical study examines the existing status of inter-linkages between developed \ and emerging stock markets with KSE. Whether they are integrated with long-run or short-run? At what speed the shocks occur in any market can be adjusted? Whether correlation of these indices seriously hamper by different economic factors? Two economic variables Inflation and Exchange rate) are selected to study the closeness of this linkage. If the reasons of integration identified, then side affect of integration could be minimize by taken priori action.

1.3 Contribution of the study

This empirical study contributes to the existing literature in various ways. Firstly, beside in investigating and summarizing the long-run and short-run inter-linkages of Karachi Stock exchange with other markets, this cram also tries to examine if and how much KSE has been persuaded by Developed and emerging stock markets.

Secondly, as Bekaert and Harvey (1995) witnessed the globally integrated markets show different behavior at different time period. Therefore, the Correlation and interlink-ages between Developed stock markets with KSE is studied for different time horizon. Likewise, Lamba (2005) pointed out that after terrorist attacks 'September 11, 2001 'developed-countries such as Japan, UK along with United States cause significant affect on Indian markets. However, Pakistani markets are not reliant with developed countries. The

affect of these major events especially the depression of 2008 has been studied in detail.

Generally Literature awarded this credit to the international trade for this linkage. Like, Darrat and Zhong (2005) underscore that process of stock-markets inter-linkages is strongly influenced by trade. Whereas, Phylaktis and Ravazzolo (2002) report stresses that not only international trade but also other economic factors has significant impact in escalating the association of equity-markets. Results indicated that the potential factors, (1) exchange-rate volatility, (2) money-market interlinks and (3) equity-market volatility significantly determine the association of different stock-markets across the nation. With respect to existing literature the other factors that are accountable for international linkages of stock-markets have been studied identically. The study seeks to enhance the existing literature by investigating the direct effect of Inflation and Exchange rate on the inter-linkages of developed and emerging stock markets with KSE.

Fourthly, this study also attempts to arrive at conclusion regarding which economic factor's impact on stock-market linkages around the globe must be further analyzed.

1.4 Theoretical Foundation

Portfolio Selection Theory

The portfolio selection theory introduced by Harry Markowitz and James Tobin (1952) states that diversification could eliminate risk if returns are not correlated. This theory states that (all else being constant) if equity returns are not correlated diversification could minimize the risk. However, if returns are

highly correlated with each other exposure of risk elimination by portfolio diversification will start decreasing. In perfectly correlated-markets capital cost reduces due to the elimination of trade barriers. Because, the national as well as foreign agents of associated markets allocates risk exposure among them equally.

By carefully addition of handsome assets with different fraction in portfolio, this theory tries to maximize the intensity of return at given risk level or reduces the amount of equity risk at given stage of anticipated returns. Portfolio theory pointed out that investors should hold suitable combination of different assets that gives higher return at lower risk as compare to investment in individual security only. It is because; different assets may change its value at exclusively different manners as compare to others. For example, prices in bond market changes differently than prices of stock market, the accumulation of both kinds of securities faces lower risk as compare to individually. However, investor will achieved the desired objectives from portfolio diversification if, equity returns show negative integration than positive correlation.

By holding suitable combination of diversified instruments in portfolio, investor can minimize risk burden only if equity returns are not correlated. Diversification may reduce systematic risks if and only if, it belongs to same portfolio. This idea was first time introduced by Harry Markowitz and James Tobin. The term diversification is turning out to be more attractive in investment decision. It's significant and scope is increasing day by day not only in developed economies but also in emerging economies. Having

increased dynamic linkages among national markets, investors are able to make suitable combination of foreign assets into their stocks, so that portfolio works effectively and efficiently.

The investment scenario has been transformed from simple to modernized due to introduction of developed and advance technology, services proliferation, competition, globalization, financial innovation, harmonization, removal of trade barriers, trade liberalization and homogenizations. Now financiers are moving towards some productive economies for higher returns. They believe on the authenticity of verb that investment should be safe either regional plus/ or national. The combination of risk and return has been critical issue for any international portfolio diversification.

1.5 Significance of the study

Understanding the correlation and integration between various markets, policy-makers as well as funds managers take important decisions and can manage their risk efficiently. If policy-makers unable to addressed carefully, crisis may caused dilemma like Social instability and political crisis (Geetha et al., 2011).

The dynamic linkages of macroeconomic as well as its connected forces collision on stock returns provide some practical indication. This study is equally constructive for policy makers, current and prospective investors, Nation leaders, analysts, people, researchers, multinational companies, state and education.

Policy makers

The study of stock-markets integration can pave the way for stabilization of economy. Policy makers always seem for linearity of economic variables to design monetary policies, so that timely adjustment of KSE might be possible (Haroon, 2013). The study of markets integration assists policy makers in designing those strategies which alleviate the economy in long run (Chee, 2006). By understanding the correlation and integration between these markets, policy makers as well as funds managers can minimize their risk efficiently (Abas, 2004).

Existing investors

The difficulty in forecasting of return volatility is being faced by every institutional as well as retail investor, and is important dynamic issue that leads towards decreasing stock-return. This phenomenon takes place due to non availability or/ wrong information about economic variables. Therefore, many investors are unable to avail opportunities, and they are not capable to minimize the risk burden. To investigate the collision of macroeconomic as well as its related forces on markets linkages provides indication for future research (Jamil, 2013).

Prospective Investors

Information about stock markets integration is very crucial and helpful for prospective investors. They are able to generate lot of benefit from such type of information, such as provide knowledge regarding present and potential stock markets pattern, can hedge risk exposure, can maximize their profit by diversifying investment, how to behave differently with causal as well as

dynamic transactions of equity markets (Abas, 2004). Having the opportunity and capability to invest across the countries, value of institutional depositors is increasing day by day. They are in position to predict Potential performance of company can safeguard their investment and can find out stock price movements accurately in future (Chee, 2006). Therefore, the study of integration between different market's return is significant for resource allocation among these markets to minimize the risk.

Nation leaders and other researchers

The findings of this paper may give knowledge with pragmatic evidence to the economists, analysts, nation leaders and people. By using advance and precise variables with specific dataset, together extra procedures, there is high chances to get more accurate results. This study will assist investigators about important aspect, how linkage mechanism among different stock markets may affected by macroeconomic variables if any variable may change in particular direction (Haroon, 2013).

Multinational companies

Multinational companies are performing their businesses all over the world. In order to minimize the risk burden multinational companies invest in those markets that are not correlated with each other. For this purpose they carve out financial strategy so that risk exposure may reduce for expected return. So, this study is very helpful for designing those financial strategies that gives higher and smoothing return to the investors with diversification.

To State

This study not only determines the linkages between stock-markets but also provide some serious implication with respect to portfolio-diversification and concerned economic policies adaptation by different economies (Bose, 2005). This study provides information about portfolio diversification to state from which they can generate higher profits and can lessen the risk. Government can also make trade connections with those markets which are helpful for the economy.

To Economy

The stock-markets integration is beneficial for an economy because it (1) Encourages domestic savings, global investments as well as economic growth, (2) increasing competition and improving efficiency of mediators (Trichet, 2005), (3) promoting access to advance technology and managing cost effective payment systems for institutions, corporations, public and economies alike (Giannetti *et al.*, 2002), (4) fostering market regulation and cultivating necessary environmental condition for promoting financial sector (Reddy, 2003), (5) inducing the composition of economy's financial segments in attracting foreign capital and accumulating intensive reserves (Kose *et al*, 2006, 2006a), and Finally, managing the robust structure of markets (Pauer (2005). Additionally, financial development as well as economic growth in an economy is also achieved through financial integration.

To Education

To study the market linkages is significant for academia for supporting instructors, lecturers, future researchers and students by providing useful information for deeper understanding of knowledge (Adu, 2012).

1.6 Research Questions

i. Whether Stock indices of emerging economies have relationship with developed and emerging economies?

ii. Whether the financial investors achieve objective of diversification through asset diversification in these stock indices?

1.7 Research Objectives

This study will comprises of following major objectives:

1. To study the dynamic linkages among Karachi stock exchange with emerging and developed stock-markets.
2. To investigate the direct effects of inflation and exchange rate on the integration of stock-markets.

1.8 Organization of Study

This study consists of five chapters. First chapter include background of topic, problem statement, research gap, research questions, objective of paper, and significance of study. The remaining paper proceeds as follow. The second chapter focuses on historical background of the study. The third chapter lay out data and substantiates choice of econometrics methodology. The fourth chapter incorporates the results and discussion chapter. The fifth chapter contains conclusion, recommendation, limitation and future direction of the study.

Chapter No 2

LITERATURE REVIEW

Interlink-ages of different stock-markets have been examined by various researchers in different era with different samples. There is dire need to fairly evaluate and investigate these linkages because conflicting opinions arises from literature about financial market linkages. Generally, the publish literature suggests that dynamic association exist between stock-markets. However, some documented studies oppose it. In addition, number of researchers deliberately investigated this association for developed and emerging economies, but unable to capture similar consideration. This section present some witnessed about integration of stock-markets across countries. A preview for the related literature has been explained below.

Stock-Market Linkages

The inter-linkages of capital-market have not been properly defined in literature (Campbell and Hamao, 1992). However, financial literature includes number of studies that investigates the integration of capital-markets. These studies not only determine the linkages between stock-markets but also provide some serious implication with respect to portfolio-diversification and concerned economic policies adaptation by different economies (Bose, 2005).

1.1 Inter-linkages of Financial markets

The inter-linkages of stock-markets have been studied since earlier. Grubel (1968) examined the advantages of diversification. He tested it empirically by

collecting the data of returns from 11 stock-markets. After that many studies were conducted by researchers to find out international relationship. The interest has been developed in this topic since then. Most of published studies drive out at conclusion that national stock-markets are not highly linked with global markets due to some domestic factors.

However, there are some studies that investigated this relationship for different cross section and discover limited association among them. These contain the study of Agmon (1972) argued that there is small magnitude of alliance exists between Japan, US, Germany and UK in 1691 to 1966; but Ripley (1973) discovered that only such economies are integration with each other which gives soft corner to international investors, contrary to segmented markets (Glezakos, Merika, Kaligosfiris, 2007).

Baele and Vennet *(2001)* inspected the association with respect to instability as well as return via stock prices in Europe. They hypothesize that 15 indices incorporated with each other. For this purpose they used GARCH approach. European markets are highly integrated due to decrease in currency volatility. The study conducted by Kucukcolak (2008) scrutinized the co-movements between i.e. EU stock-markets (UK, Germany, France and Greece) with Turkey. To test it empirically daily data for 2001-2005 was used. It is demonstrated that significantly alliance subsist between Greek-markets but Turkey stock-market does not show alliances with any stock market under study.

Arouri, Jawadi & Nguyen (2008) scrutinized the rapport between national market and Latin America stock-market (Venezuhis studela, Chile, Mexico, Argentina, Colombia and Brazil) on the basis of stock return. For this purpose

they used the data on monthly basis from1985-2005. The long term as well as short term association examined with the help of Co- integration and VECM approach. Results indicated that Latin America is integrated with MSCI markets in the long-run. It is also suggested that in short run increasing trend subsist.

Similarly, Abbas (2007) examined integration between Thailand and global stock markets such as Singapore, United state America, Japan, Taiwan, Indonesia, Philippines, Hong Kong, Malaysia, United Kingdom, Australia and Korea. They apply VAR, Granger causality method on the data for period December, 1987 to December, 2005. Results pointed out that Thailand Taiwan, Malaysia as well as Singapore stock returns are amalgamated. Rangvid (2001) explored the incorporation between markets of different European countries such as United Kingdom, France and Germany. It is concluded that European markets are integrated with each other and show co-movements with reference to the shocks in the market.

Another event base study was conducted by Yang, Kolari and Sutano (2004). They examined degree of interdependence amongst emerging markets of Europe (Greece), Latin America (Mexico, Chile, Venezuela, Brazil, Columbia and Argentina), USA and Asia (Korea, Thailand, Malaysia, India and Taiwan). They pointed out that prior to 1997 there exist no long-term rapport between US and other emerging markets. After 1997 when market suffers crises the picture was totally changed. US Markets does significantly affect emerging markets. Results pointed out that there are co-movements among these markets subsequent to the crises of 1997.

Singh et. al. (2009) inspected the association with respect to instability as well as return via stock prices between 15 world indices. They hypothesize that 15 indices incorporated with each other. For this purpose they used VAR approach. Asian markets highly influenced due to volatility plus return factors. While, these factors does not cause significant affect on Japan European plus US markets.

Later on Aksoy et al (2011) scrutinized the co-movements between i.e. .Egypt, Turkey plus Israel markets. Objective of this cram was to determine short-run and long-run rapport between these countries' market. To this it empirically data covers instance for 2002-2010. They used correlation along with co-integration method to verify the objectives. It is demonstrated that significantly alliance subsist between Egypt, Turkey plus Israel markets.

However, Suchismita and Pramita (2006) by using Granger Causality as well as co-integration method on daily return incorporated the connection with developing markets of Taiwan, South Korea, Hong Kong, Thailand, Malaysia, India together with Singapore and industrial markets of Japan and United States. Records cover the time commencing January, 1999 - June, 2004. Empirical results pointed out no co integration amongst industrial and developing markets. Investment decisions are base on benefits associated with those markets. Due to financial crises investors do not show grater interest for portfolio diversification.

Hoque (2007) investigated the integration between different capital markets i.e. Bangladesh and urbanized markets. By applying Johansen Juselius technique he examined stock price linkages and co-movements among

Bangladesh, India, United State and Japan. Furthermore, He also used another approach of Vector Error Correction test ranging period Jan 1990 - Dec 2000 to analyze this relationship. Results revealed that stock price of these country's stock indices demonstrate common stochastic propensity. Shocks in the equity market of one country can seriously affect the stock markets of other country. Bangladesh equity markets seriously persuaded by the shocks occur in the United States markets. Indian markets as well as Bangladesh markets show little co-integration. Similarly, Bangladesh markets are not influenced by Japanese markets.

The association among Thai and eleven equity markets such as Taiwan, Korea, Australia, Indonesia, United Kingdom, Singapore, Japan, United States, Malaysia, Hong Kong and Philippines examined by Abbas and Surachai (2008). By applying co-integration as well as error correction technique data was collected from December, 1987 up to December, 2005. Monthly data was selected for investigation of linkages between stock indices of Thai and its trading associates. Results showed that stock indices of these countries show no long-term linkages and suggested that portfolio diversification among these countries will provide a lot of benefit with minimization of risk elements. In short-term stock returns of Philippines, Hong Kong, United Kingdom and Thai stock markets confirm unidirectional relationship on the basis of Granger Causality. Granger causality among Equity markets of Indonesia as well as USA subsist and demonstrate unidirectional relationship with Thai. Furthermore, bi-directional correlation exists among Singapore, Taiwan, Thai and Malaysia.

Nother study by Alkulaib, Najand & Mashayekh (2009) inspected the inter linkages among MENA regions indices. Objective of the cram was to discovered that whether Jordon, Tunisia, Qatar, Lebanon, Turkey, Kuwait, Bahrain, Morocco, Oman, UAE, Egypt and Saudi Arabia regions are co-integrated with each other in short and long run. By using Co-Integration, Descriptive Statistics, state space technique, and Granger Causality method data collected ranging from /1 /1990 - 31 /12/ 2004. North Africa region was not selected to point out spill over influence or causality affect of one country over the stock market of other economy. Findings of the study highlighted that these markets are incorporated with each other. Similarly they also pointed out that Turkey stock indices and Lebanon markets are bi-directionally correlated. Jordan markets are integrated with any other indices. But, as for as GCC region is concerned results highlighted the assimilation and strengthen the rapport among these market except NA as well as Levant regions.

Johnson and Soenen (2003) scrutinized the degree of organization between equity marketplaces of US and Chile, Canada, Brazil, Argentina and Brazil covering time period starting 1988-1999. They also inspected the motive of linkages by means of Co variance, Co integration procedure and Granger method between Venezuela, Columbia and US for the era 1993-1999. High degree of trade between these countries strengthens the relationship while deviations in exchange rate weaken the linkages between equity markets.

The study of Janakiramanan and Lamba (1998) explored the connection between Pacific Basin areas stock markets. Data was collected from time period 1988-1996. They concluded that owing to regional financial and other elements US strongly influence Stock markets of Australia. This shows close

connection between these markets. Roca (1999) by applying co integration technique discover the interrelatedness between Singapore, Hong Kong, UK, Australia, Japan, US, Japan and Taiwan. Results indicated that these markets are interdependent on one another and only Australian markets significantly affected by markets of United State and Unite Kingdom. Economies having strong economical link as well as geographically located in same/ close region are strongly interlinked with each other. These markets have strong impact on one other. Similarly, Stock-markets that close early in day may strongly affect on stock-markets that close later.

Aktan et al. (2009) conduct study to observe the interdependence between US and Argentina, India, Brazil, China and Russia equity markets. They used VAR, Impulse response along with Granger causality approach on the data covering time era since January 2002 to February 2009. Amongst BRICA Russia is strongly interrelated with Brazil. While, Argentina is faintly co-relate with China. It is also examined that United State causes momentum affect on BRICA markets. Granger Causality approach showed that BRICA markets inclined to Russia. Likewise, Chinese markets strongly cause impact not only on Argentina but also on Russia. Impulse response scrutiny indicated that Entire markets under study will healthier from market shocks after 1 week.

Tan and Tse (2002) conduct event base cram to find out the affiliation between 7 Asian markets including Singapore, Thailand, Philippines and Malaysia with Japan as well as United States. They pointed out that post crises show significant association subsequent to crises. While, these markets weakly interconnected with each other prior to crises. After crises Japan as well as United State cause least granger on Malaysia. Likewise, Owing to structural,

geographic and economic closeness there is fragile association establish among Malaysia along with Singapore.

Likewise, Golaka et al. (2003) by applying different procedures such as multivariate as well as bivariate co-integration investigated the correlation among 3 markets of South Asia. Observations covered time period starting January, 1994 to November, 2002 of stock indices such as Taiwan (Taiex), India (NSE- Nifty) as well as Singapore (STI). Consequently, it is explore that 3 Asian markets are not associated in long run.

1.2 Inter-linkages between KSE & Emerging Stock-Markets

The correlation between East Asian (South Korea, Pakistan, Japan and China.) and KSE markets was scrutinized by Hussain et al. (2012). For this purpose they applied descriptive statistics tool, correlation test, unit root method, co-integration formula, granger causality approach, Impulse response technique and variance decomposition method on the data covering the era from January, 2000 to December, 2010. Outcome shows that there is no alliance exists between Pakistan and East-Asian markets due to geographical as well as trade relations among these economies. Pakistan is dearest friend of China and strongly integrated with each other but, trade parameter is not the basis of this relationship.

Sharma (2010) reviewd the existing literature and scrutinized the degree of organization between equity marketplaces of Asian countries. A comprehensive study was conducted in this respect by including the summary of all papers that was published in 1988-2008. This qualitative study pointed out that these stock-markets shows that different studies generate different

results. However, there are only few studies that give the reason of inter-linkages among these stock indices. Hussian and sadi (2000) studied the linkages among emerging market (Pakistan) and international markets. In order to determine the strength of linkages Stock prices data was collected commencing 1983-1993. Findings of the study highlighted the weaken rapport among Pakistani markets and international markets.

Subhani et al (2011) explored the extent of association between different stock markets such as Nepal, Bangladesh, India and Pakistan. Data regarding stock prices was collected for period May, 1995- May, 2011. By applying the "Augmented dickey fuller test" and "co integration approach" they pointed out that there is long term association exist among Indian and Pakistani stock markets but show no correlation among Nepal markets and Indian markets. Because Pakistan and India stocks markets are highly developed, and economies of these countries dominant in the region. They pointed out that Dhaka and Karachi stock markets integrated with one another. Consequently, by investing in KSE investors can get lot of benefit in terms of return and profit. Co-integration may not be found by regression because only 6 companies are selected for representation of Dhaka stock-index.

Similarly, integration between Sri Lanka, India and Pakistan stock markets was examined by Sharma and Bodla (2011). They apply VAR, Granger causality method as well as Variance decomposition on the data for period January 2003 - December 2002. It is find that Pakistan as well as Sri Lanka granger caused by India. Holding of different securities by investors may cause different index level and returns from different stock-indices. Similarly

for future investment and calculation of prices and returns for one country, investors always consider past data related to another country.

Paresh et al. (2003) ascertained the association between south Asian markets. They selected the four countries Sri Lanka, India, Pakistan and Bangladesh in this respect. To test it empirically data containing time starts from 1995 - 2001. An observation consists on day end stock prices. Using co-integration method they investigated interdependence between specified markets. Moreover, granger causality suggested that India and Pakistan stock prices cause only unidirectional granger. There is no restriction and barriers for movement of funds in between these countries therefore funds move easily in one country to another country easily. Consequently, there is only unidirectional relationship finds in these stock-exchanges. There is market capitalization in Bangladesh stock-market. So, it shows no linkages with other Asian markets.

The studies of Hasan and Durrani (2008) empirically examined degree of interdependence amongst emerging markets of India, Sri Lanka, Pakistan and India. They used correlation test, Variance decomposition, Granger Causality and impulse response technique, bivariate as well as multivariate co-integration method to test this liaison. Observations covered time period starting 1STJuly 1997 to 30th June 2008. Multivariate Co-integration results demonstrate that there exist long term rapport between Pakistan and other emerging markets. Moreover, Pakistani markets do not show bi-variate Co-integration with any of the markets under study. Granger causality technique investigated that Pakistani markets are not able to cause granger on other markets. Likewise, results pointed out that Karachi Stock Exchange perform

exogenously and movements in stock prices are affecting by the internal shocks of KSE. Investors can generate a lot of benefit, profits and advantages by diversification of their portfolio.

Hasan and Kashif (2011) ascertained the association between Karachi Stock Exchange with emerging markets and industrial markets using two economies factor (Bi lateral trade and exchange rate). Results reveal that Karachi stock exchange is not stable market and investors can get lot of benefit by investing in it. They also pointed out that long term association exists among KSE and Indonesia and Brazil markets. Moreover, in short run China stock exchange integrated with KSE.

H_1 : Equity markets of emerging economies are not long-run integrated With KSE

H_2 : Equity markets of emerging economies are not short- run integrated With KSE

1.3 Inter-linkages between KSE & Developed Stock-Markets

The linkages among developed sock-markets with KSE were studied by Arshad et al. (2008). In order to determine the strength of linkages Stock prices data was collected commencing 2000 - 2006. Findings of the study highlighted that industrial markets are interconnected with KSE. Pair-wise Co-integration test shows different results as compare to co-integration method. KSE does not integrated with "US, UK, Germany, Canada, Italy and Australia" markets. But, KSE shows the strong rapport with emerging regions markets i.e. Japan as well as France. Long term rapport exists within these

markets. Only US stock-markets and UK stock-exchanges have some impact on KSE. Otherwise, KSE does not influenced by any other stock-markets.

Similarly, Lamba, (2005) inspected the inter linkages among south Asian (India, Pakistan and Sri Lanka) and industrial markets. Objective of the cram was to discovered that whether industrial as well developing regions are co-integrated with each other in short-run and long-run. By using Co-Integration method data collected ranging from July, 1997 to December, 2003. Lamba pointed out that after terrorist attacks 'September 11, 2001 'developed-countries such as Japan, UK along with United States cause significant affect on Indian markets. However, Pakistani markets are not reliant with developed countries. Moreover, there is no linkage between urbanized markets and Sri Lanka countries markets.

Tahir et al. (2013) conduct study to observe the interdependence between developed markets as well as South Asian market and its influence on KSE market. Researchers used Unit root, Correlation, Co-integration along with Granger causality approach on the data covering time era since July 1999 to June 2011. South Asian equity markets as well as developed markets show no correlation United State is strongly correlated with India. While, Argentina is faintly co-relate with China. It is also examined that United State causes momentum affect on BRICA markets. Granger Causality approach showed that KSE markets inclined to CSE and in returns CSE markets inclined to KSE. Likewise, South Asian markets show no integration with developed markets.

By applying different instruments Hasan et.al (2008) investigated the correlation among KSE and stock-markets of developed countries. Observations covered time period starting 2000-2006 Consequently, it is explore that these markets are connected and show alliance in long run. Investors are unable to get benefit by investing in these stock exchanges. Shocks/ bubbles generated in one market can strongly penetrate to other market and affect it.

Aslam et al. (2010) examined the association among KSE market and developed stock markets. Monthly data was selected for investigation of linkages between stock indices of KSE market and developed stock markets. Results revealed that stock indices of these countries show no long term linkages and suggested that portfolio diversification among these countries will provide a lot of benefit with minimization of risk elements. No co-integration exists among these markets. Stock returns of KSE cause granger on France, London, US, stock markets on the basis of Granger Causality

Narayan et al. (2004) examined intensity of correlation among South Asian stock markets. Narayan et al. are of the view that in long run stock prices of India, Bangladesh as well as Sri lanka show no co relation with Pakistan markets. Though, in short run Pakistani markets affect Indian and Sri Lankan markets. Similarly, Indian markets were influenced by Sri Lanka. As these markets are small in size and lower in market capitalization as well as other markets in the world therefore these markets are integrated in short-run only.

The link between urbanized equity markets (US, China, India, U.K, and Germany) with KSE of Pakistan in long run was explored by Sulaiman (2011).

Output show that found that Karachi stock exchange is not connected with US and European countries. These regions do not consistency with Pakistan each other. Therefore any external shock generated from these countries could not affect Pakistani markets. As correlation technique is very weak therefore co-integration method was employed to arrive at conclusion. Results indicated that long term affiliation subsists between KSE and America stock exchanges.

Hasan, Saleem & Abdullah (2008) studied relationship among Pakistani equity indices with 9 urbanized equity markets. These equity markets include Italy, France, Japan, Australia, Germany, Australia, USA, Canada and UK. Results indicated that there is no association among Pakistan, USA, Australia, Canada, UK, Italy and Germany. But show significant relationship among France as well as Japan equity market. The study also reveals that Pakistani equity indices shows low level of association with United Kingdom and United States.

Later on Iqbal et al. (2011) studied the linkages among 2 Asian markets (such as Pakistan as well as India) and developed market (such as USA). In order to determine the strength of linkages Stock prices data was collected commencing January, 2003 to December, 2009. Results indicated that emerging markets are not integrated with USA.

H_3 : Equity markets of developed economies are not long-run integrated With KSE

H_4 : Equity markets of developed economies are not short-run integrated With KSE

Chapter No 3

Data and Methodology

3.1 Data

After reviewing previous literature different instruments and testing measures are used at this step to analyze whether the hypothesis of the study are accept or reject as declare at first chapter. This chapter elaborates the data description. Data sources, population nature of data and the instruments used in this study are also explain here.

Research Design

This empirical study examines the existing status of inter-linkages between developed and emerging stock markets with KSE. Time-series design use because study carries 13 stock-exchanges for different time horizon (January 2001 - December, 2013) like (Hussain & Sohail, 2011), (Ataullah, 2001) and (Nishat & Shaheen, 2004).

Data Sources

This research is quantitative in nature. Secondary data employed in order to determine the strength of linkages among Karachi Stock Exchange (KSE), emerging and developed stock exchange. Data collected, demonstrated, evaluated, and discussed in the paper collect from Google, Yahoo Finance, State bank website, Open doors, Oanda.com internet, bulletin, journals, books and official publications. There are multiple reasons on the basis of which this

time period is selected. Firstly, market players and investors have shown greater interest in portfolio diversification with in these markets. Secondly, because there is considerable and momentum economic growth remained in these indices for selected time period. Thirdly, Karachi stock exchange show both bullish and bearish trend within selected time period. Both lackluster as well as alarming activities were articulated during this time horizon. Accordingly the macroeconomic affects on stock-markets integration can be captured in all situations. Fourthly, Availability of data is a key criterion that will considered while selecting the sample of firms. So, the population size and duration for this study is selected on the basis of availability of data.

Population and Sample

This study comprises of 13 stock indices. 9 emerging/developing stock markets and 4 developed/urbanized markets that are selected to carve out research problem. As emerging-markets exhibit different features compare to developed-markets like" access of international capitals, infrastructure, riskiness, market liquidity and agent's supervision", therefore it is better to scrutinize the combine affect of these markets on KSE These stock-markets are selected on the basis of high-capitalization.

Following 9 stock markets of developing countries are chosen for analysis of data.

1. Karachi Stock Exchange, KSE-100 index (Pakistan)
2. Bombay Stock Exchange, BSE SENSEX (India)
3. Shanghai Composite Index, SCI (China)
4. Hang Seng Index, HSI (Hong Kong)

5. Stock Exchange Thailand, SET Index (Thailand)
6. Kuala Lumpur Stock Exchange, KLSE (Malaysia)
7. Jakarta Composite Index, JCI (Indonesia)
8. ISE-Istanbul National - 100 Index (Turkey)
9. BOVESPA Composite index, BCI (Brazil)

Similarly, 4 stock markets of developed countries have been selected in current study for desired objectives.

1. Nikkei- 225 Index (Japan)
2. Cotation Assistee en Continue CAC- 40 Index (France)
3. Standard and Poor 500 index, S&P 500 Index (US)
4. Financial Times Stock Exchange 100 index, FTSE-100 index (England)

Variable Construction

Return

Following formula is applied for calculating and computing continuous compounding-returns.

$$\text{Return} = R_t = ln(SP_t/SP_{t-1})$$

R_t= Return on month `t`

ln= Natural Log

SP_t= Index closing prices on month `t`

SP_{t-1}= Index closing prices on month `t-1`

3.2 Methodology

Statistical Tools

Interdependence between different stock-markets has been estimated and computed with the help of various techniques. Following equations and models are used in the study to investigate correlation between these stock-markets.

1. Descriptive Statistics
2. Correlation Analysis
3. Unit root Test
4. Co-integration Test
5. Vector Error Correction Model
6. Impulse Response Test

3.2.1 Descriptive Statistics

In order to measure trends and their behaviors for stock-returns descriptive statistic employed. Descriptive statistics consists of Mean, Minimum, Median, Maximum, Kurtosis, Standard Deviation, Skewness, and Variance values.

3.2.2 Correlation Analysis

Correlation matrix computed the degree of inter-linkages between stock-markets. It may take any one form from these three such as negative correlation, positive correlation and no correlation. Since, cause as well as effect relationship is not demonstrated by it. Therefore, this method is regard as weak method for measurement of correlation.

3.2.3 Unit Root Test

Investigating time series stationary is very important step before moving towards further test. Unit root analysis is applied at this stage. For this purpose following equations and test supports to verify this factor. Time series stationary is verified by Augmented Dickey Fuller Test 1981" (ADF)" along with Phillip-Parren Test (1988) "PP". Following econometric parameters are used.

Augmented Dickey Fuller Test (ADF)

Degree of linkages and association is determined with the help of this test. This model provides help for selection of appropriate test and identifying long run association.

Auto regressive having order (1) is as follow.

$$Y_t = \beta_1 Y_{t-1} + \mu_t$$

Y_t= variable of interest having time period "t"

$\mu_{t=}$ Error term

β= Coefficient

$H_O = \alpha = 0$. When values of β_1 is equal to 1.

If Regression formula will design again, then construction of formula will as follow.

$$Y_t - Y_{t-1} = \beta_1 . Y_{t-1} - Y_{t-1} + \mu_t$$

$$\Delta Y_t = (\beta_1 - 1) Y_{t-1} + \mu_t$$

$$\Delta y_t = \alpha . Y_{t-1} + \mu_t$$

ΔY_t = Variable at first difference

$\mu_{t=}$ Error term

β= Coefficient

The presence of unit root model ($= zero$) will confirm and validate by using above test.

Phillip-Parren Test

Due to presence of strict assumptions in ADF model like, observations should be independent, and should be statistically as well as identically distributed Phillip-Parren Test (1988) may be recommend and used for this motive. Phillip-Parren Test enlightens as follow.

$$Y_t = \beta_0 + \beta_1 Y_{t-1+} \beta_t[t - T/2] + \varepsilon_t$$

If series will integrated at order 1 then,

$$Y_t = Y_{t-1} + \varepsilon_t$$

Y_t= variable of interest having time period "t"

$\varepsilon_{t=}$ Error term

β= Coefficient

3.2.4 Co-integration Test

Long term integration among variables is enlightened by Johansen (1988-1991) equation. Moreover, in co-integration formula Error correction is computed via Eangle-Granger (1987) test. Johansen and Juselius Multivariate Co- Integration analysis explains as follow.

Johansen and Juselius Multivariate Co- Integration

Multivariate co-integration parameter computes long run integration among more than two variables as well as in financial series.

Multivariate Co- Integration equation is enlightened as follow.

$$\Delta Y_t = \beta_O + \sum_{t=1}^{m-1} \gamma_t \Delta Y_{t-1} + \varphi_t Y_{t-1} + e_t$$

Y_t = Variable of interest Φ, γ= coefficients

e_t= error term β_0= constant

Δ= Difference operator m = Lag length measurment

Maximum Eigen Value Test

There are two feasible likelihood ratio is determine by Johansen and Juselius which is use to verify co-integration among vectors. "Maximal Eigen value method" will pertain and check the null hypothesis. It will also show the likelihood of presence of k co-integration as well as H_O of k+1 co-integrated vectors.

$$\omega_{maximum} = T \ln(1 - \omega k + 1)$$

Trace Statistics

Co-integration among variables of vectors having k numbers will investigate and testify with the help of another method known as Trace Statistics. "K co-integrated vectors against having k or further co-integrated factor" will also compute by trace statistics.

$$\omega_{trace} = -T \sum \ln (1 - \omega_i)$$

Bi- Variate Co-Integration Test

As for as association among two time series is concern Bi- Variate Co-Integration method is used. This method is applied on the format of autoregressive.

Bi- Variate formula show following pattern

$$V_t = a_o + \sum_{t=1}^{m} a_i V_{t-1} + \sum_{t=1}^{m} \delta_i w_{t-1} + e_t$$

$$W_t = b_o + \sum_{t=1}^{m} b_i V_{t-1} + \sum_{t=1}^{m} \pi_i W_{t-i} + e_t$$

V_t, W_t = Stationary Series $a_{0=}$ Constant

$b_{0=}$ Constant $a_i, b_i, \delta_i, \pi_i$ = Coefficient

m = Positive integer i = Number of Values

$e_{t=}$ Error term

This test is applicable only for stationary series only or for series which become stationary at first difference only.

3.2.5 Vector Error Correction Model

Long term integration among variables explains by Johansen (1988-1991) equation. However, for measurement of short-run integration another equation constructed to show the relationship. Error correction approach is exercises to

computes the short term relation among stock indices. Symmetric values of stock indices series are its base.

$$\Delta V_t = a_0 + \sum_{i=1}^{m} a_i \Delta V_{t-i} + \sum_{i=1}^{m} \delta_i \Delta W_{t-i} + \gamma ECT_{i=1} + e_t$$

$$\Delta W_t = b_0 + \sum_{i=1}^{m} b_i V_{t-i} + \sum_{i=1}^{m} \pi_i W_{t-i} + \emptyset ECT_{i=1} + \varepsilon_t$$

V_t , W_t = Stationary Series $a_{0=}$ Constant

$b_{0=}$ Constant $a_i, b_i, \delta_i, \pi_i$ = Coefficient

m = Positive integer i = Number of Values

e_t, ε_t = Error term $\gamma ECT_{i=1}$ = Error Correction term

$\gamma, \emptyset$ = Error Correction term Coefficients

3.2.5 Impulse Response Test

Sometimes independent variable does not affected by only explanatory variables. There are some exogenous shocks which affect this relationship. In order to check this dynamic relationship Impulse response technique is use in this respect. This technique investigates that what are the effects of exogenous shocks on the pattern of market return and how it affects the innovation pattern of other markets. This test also determines that how other markets respond to impulse response condition.

$$Y_{1,t} = \alpha_{11} Y_{1,t-1} + \alpha_{12} Y_{2,t-1} + \varepsilon_{1,t}$$

$$Y_{2,t} = \alpha_{21} Y_{1,t-1} + \alpha_{22} Y_{2,t-1} + \varepsilon_{2,t}$$

Chapter No 4

Results and Discussion

The application of different statistical tools and their results are elaborated presented and discussed in this chapter. Hypothesis of the study are tested by utilizing all prescribe instruments.

4.1 Descriptive Statistics

Table 4.1 illustrates the descriptive statistics for monthly returns of 13 stock indices under the period 1STJanuary 2001- 31STDecember 2013. Monthly price index is converted into return form so that desired results might be achieved. Calculated values of Mean, median, standard deviation, skewness, kurtosis and Jarque-Bera (JB) are distributed in this table.

Table 1. Descriptive statistics of emerging and developed equity markets.

Equity markets	Country	Mean	Median	Maximum	Minimum	S.D.	Skewness	Kurtosis	Variance	Jarque-Bera	Probability	Obs.
KSE-100	Pakistan	0.0182	0.02	0.2411	-0.4487	0.081	-1.2606	9.6109	0.0065	21.5744	0.00	156
BSE	India	0.0101	0.0102	0.2488	-0.2729	0.0724	-0.5135	4.5911	0.0053	23.314	0.00	156
SCI	China	0.0008	0.0024	0.2425	-0.2827	0.0808	-0.4759	4.4646	0.0065	19.8348	0.00	156
HSI	Hong Kong	0.0023	0.0103	0.1576	-0.2544	0.0635	-0.684	4.5322	0.0041	27.4245	0.00	156
SET	Thailand	-0.008	0.0142	0.2099	-2.8003	0.2396	-10.241	4.4984	0.0574	23.6296	0.00	156
KLSE	Malaysia	0.006	0.011	0.127	-0.1651	0.0431	-0.5649	4.7561	0.0018	28.3429	0.00	156
JCI	Indonesia	0.0147	0.0264	0.1834	-0.3771	0.0696	-1.2718	8.4221	0.0048	29.8572	0.00	156
ISE	Turkey	0.0132	0.0088	0.4314	-0.2318	0.1031	0.3692	4.1068	0.0106	11.5083	0.00	156
BCI	Brazil	0.0079	0.0103	0.163	-0.2847	0.0727	-0.5494	4.0279	0.0053	14.71871	0.00	156
S&P-500	US	0.0019	0.0096	0.1023	-0.1856	0.0454	-0.8299	4.4488	0.0021	31.555	0.00	156
FTSE-100	England	0.0004	0.0062	0.083	-0.1395	0.0423	-0.7117	3.7062	0.0017	16.4155	0.00	156
NIKKEI-225	Japan	0.001	0.0024	0.1208	-0.2722	0.0586	-0.8017	5.0223	0.0034	43.2989	0.00	156
CAC-40	France	-0.001	0.0101	0.1312	-0.1845	0.058	-0.6403	3.3989	0.0034	11.6964	0.00	156

Results indicate that all stock- indices under study grant very low return. However, KSE-100, JCI, ISE provides high returns contrary to other stock exchanges. From all stock indices under study Karachi stock exchange provides higher returns at higher surface of risk than other stock indices. Intensity of its revisit is 1.82% having standard deviation 8.11%. However, SCI is at second position, bearing high risk but generate less return as compare to KSE. Return of Shanghai Composite Index is 0.00% while it contains 8.08 % risk. For instance BCI is also providing lower turns holding third position contrary to other stock indices at definite risk surface. Intensity of return is 1.01% for SCI with volatility is 7.24%. Eleven stock indices under study generate average positive returns except SET and CAC-40. Risk level is 23.9% for SET whereas return surface is -.08 %. Correspondingly, CAC-40 has intensity of risk is 5.8% at -0.1% return level. Among all stock indices Stock Exchange Thailand, SET Index (Thailand) bearing higher risk surface. Likewise, FTSE gives lower return 0.0045 containing 4.23% standard deviation.

As for as returns volatility of KSE-100 index is concerned it range from 18.04% to -11.16%. Volatility of Indian stock market is 11.34% to -8.63% while it ranges 14023% to -2406% in case of SCI stock exchange. However, volatility in monthly returns of HSI stock indices ranges from15.76% to -15.46%. Similarly, in case of SET it ranges 18.65% to -21.95% and return volatility of KLSE is 12.70% to -6.78%. Volatility in monthly returns of JCI is 46% to -18.43%. ISE Stock indices returns are volatile from 23.08% to -16.16%. Likewise, Volatility in returns of BCI ranges from 26.23% to -11.03% and it ranges 10.23 to -11.64% for S&P-500 stock exchange.

Correspondingly, FTSE-100 stock exchange volatile for returns ranges from 8.11% to -80.1% and NIKKEI-225 stock exchanges volatile from 12.08% to -12.39%. In the same way CAC-40 stock indices ranges from20.13% to -13.81%.

Skewness elucidates the shape of distribution. Absolute values of Table 4.1 demonstrate the skewness information about developed and emerging stock exchanges. Descriptive statistics shows that all developed and emerging markets under study are negatively skewed. Only ISE is positively skewed and its values lie on right side of graph in its distribution.

Height and sharpness of central peak on graph as well as longer or shorter tail is described through kurtosis. The distributed values of all emerging and developed stock indices on graph pointed out that all the values are greater than 3 having higher peak and longer tails. So, these are leptokurtic in nature

4.2 Correlation Matrix

To what extent Karachi stock exchange integrated with other stock indices is computed by using Correlation matrix on monthly stock return of 13 stock indices. Table 2 empirically signifies the degree of correlation between Karachi Stock Exchange, developed and emerging stock exchange.

Table 2. Correlation matrix of emerging and developed markets.

Equity market	KSE-100	BSE	SCI	HSI	SET	KLSE	JCI	ISE	BCI	S&P-500	FTSE-100	NIKKEI-225	CAC-40
KSE-100	1												
BSE	0.24	1											
SCI	-0.15	0.05	1										
HSI	0.15	0.70*	0.03	1									
SET	0.01	0.04	-0.1	0	1								
KLSE	0.15	0.52*	0.01	0.56*	0.07	1							
JCI	0.14	0.64*	0.04	0.57*	0.26*	0.59*	1						

ISE	0.1	0.26*	0.11	0.14	0.18	0.22	0.34*	1					
BCI	-0.01	0.19	0.12	0.13	0.19	0.21	0.34*	0.49*	1				
S&P-500	0.22	0.60*	0.09	0.73*	0.05	0.47*	0.53*	0.19	0.11	1			
FTSE-100	0.23	0.60*	0.14	0.70*	0	0.44*	0.51*	0.19	0.09	0.87*	1		
NIKKEI-225	0.19	0.55*	-0.09	0.61*	-0.01	0.34*	0.47*	0.07	0.14	0.64*	0.62*	1	
CAC-40	0.1	0.2	0	0.18	0.06	0.27*	0.29	0.55*	0.66*	0.18	0.11	0.21	1

Table 2 clearly demonstrates the correlation of KSE-100 with developed and emerging stock exchanges. It is found that there subsist weak correlation among KSE-100 and other stock indices under study. Only BSE, FTSE-100 and S&P show partial correlation with KSE-100. Correlation of Karachi Stock exchange with India, United State and England is 0.246, 0.221 and 0.23. KSE-100 is negatively correlated with SCI and BCI stock indices. Graphically association among FTSE-100, S&P and KSE-100 is presented in figure1. Furthermore, trends in market returns of other stock exchanges with KSE-100 are describe in APPENDIA A. Correlation among KSE-100 and other emerging stock indices is separately describe in Table 2a. However, moderate correlation exists between HSI and S&P markets having its value is 0.73.

Table 2a. Correlation matrix of KSE-100 with emerging markets.

Equity market	KSE-100	BSE	SCI	HSI	SET	KLSE	JCI	ISE	BCI
KSE-100	1								
BSE	0.24	1							
SCI	-0.15	0.05	1						
HIS	0.15	0.70*	0.03	1					
SET	0.01	0.04	-0.1	0	1				
KLSE	0.15	0.52*	0.01	0.56*	0.07	1			
JCI	0.14	0.64*	0.04	0.57*	0.26*	0.59*	1		
ISE	0.1	0.26	0.11	0.14	0.18	0.22	0.34*	1	
BCI	-0.01	0.19	0.12	0.13	0.19	0.21	0.34*	0.49*	1

Table 2a signifies the mutual inter-linkages among different emerging indices under study. Values of correlation always lie between +1.0 to -1.0. It also

elaborates empirically the position of Pakistan with respect to connection among these exchanges. Whether association persists between Pakistan and these indices or not? Whether there is weak or considerable associated with other indices? Weak correlation finds between Pakistan (KSE-100) stock exchanges and other emerging markets. KSE-100 and SET are weakly associated with each other having 0.01. Besides it ISE integration with KSE-100 is 0.10 which is also very weak. While correlation of SET and HSI stock indices to KSE-100 is 0.01 and 0.15 respectively. However, association of BSE and KSE-100 is moderately strong contrary to other stock exchanges and that subsists to 0.24. Outcome shows that there is no alliance exists between these markets. Indian stock exchange is also weakly correlated with remaining stock exchanges.

Furthermore, Inter-linkage among BSE with SCI, SET and BCI is comparatively low with respect to other stock indices i.e. 0.05, 0.04, 0.09 respectively. But, Correlation of, HSI, KLSE, JCI and ISE markets with BSE are moderate like 0.70, 0.52, 0.64 and 0.26 respectively. SCI show positively weak integration with other indices except SET. SCI relationship with KLSE, ISE and BCI is 0.01, 0.11 and 0.12. Similarly, moderate correlation exists between JCI and SET and KLSE markets. Inter-linkages of Indonesia stock markets with turkey and Malaysia is 0.26 and 0.29. It is concluded that European markets are moderately integrated with each other.

Similarly SCI returns show negatively low integration - 0.15 with KSE-100. In the same way BCI is negatively associated with KSE-100 up to - 0.01.Correlation between KSE and other emerging economies is positively weak. However, negatively weak integration ascertains between Thailand s

and China stock market that is -0.10. Negative integration demonstrated that negative stream of cash flow can be generated owing to invest within these stock exchanges. Pakistani markets show no integration with emerging markets and show no co- movements with reference to the shocks in any market. Security diversification will generate desired results not only for regional but also for global financiers.

Table 2b. Correlation matrix of KSE-100 with developed markets

Equity market	KSE-100	S&P-500	FTSE-100	NIKKEI-225	CAC-40
KSE-100	1				
S&P-500	0.22	1			
FTSE-100	0.23	0.87*	1		
NIKKEI-225	0.19	0.64*	0.62*	1	
CAC-40	0.1	0.18	0.11	0.21	1

Integration among KSE and developed economies is presented in Table no 2b. Tabulated Results indicate that correlation between KSE and developed economies is positively weak. Like correlation of KSE with NIKKEI-225 and CAC-40 is 0.19 and 0.10. Similarly positively partial Integration discovers between United State and England stock markets with Karachi stock exchange that is 0.22 and 0.23. Positive association described that constructive stream of cash flow can be generated owing to invest within these stock exchanges. Empirical results pointed out no co integration exist amongst KSE and developed markets. An external shock does not affect the output generating by securities investing in this market.

Correlation of NIKKEI with S&P and FTSE is 0.64 and 0.62 respectively exhibit partial relationship between these stock indices. However, strong

Integration ascertains between United States and England stock markets i.e. 0.87. It is pointed out that long term association exists among these stock markets. Furthermore, CAC-40 positively correlated with S&P and FTSE-100. Association of France with S&P and FTSE-100 is 0.18 and 0.11. Integration of NIKKEI market with CAC-40 stock market is 0.21 because moderate association exists between them. Results revealed that stock indices of these countries show no long term linkages and suggested that portfolio diversification among these countries will provide a lot of benefit with minimization of risk elements.

4.3 Unit root test.

Investigating time series stationary is very important step before moving towards further test. Stationary of the variables are determined with the help of unit root. For this purpose Augmented Dickey Fuller Test (ADF) and Phillip-Parren Test (1988) are used to verify this factor. These models provide help for identifying whether variables under study are stationary at level or first difference.

Table 3. Unit root test

Equity market	Augmented Dicky-Fuller Test at level	Augmented Dicky Fuller Test at 1st difference	Phillip –Perron Test at level	Phillip-Perron Test at 1st difference
KSE-100	1.171427	-11.56259	1.105754	-11.5699
BSE	-0.65496	-12.23368	-0.74156	-12.2607
SCI	-2.1459	-6.540616	-2.21082	-12.8952
HIS	-1.23124	-11.24905	-1.48828	-11.2937
SET	-1.34063	-13.20704	-1.40597	-13.1795
KLSE	0.277656	-10.9405	-0.06134	-11.0408
JCI	-0.12278	-10.64258	-0.26436	-10.6426
ISE	-0.76685	-12.96649	-0.76685	-12.9665
BCI	-1.28211	-10.22679	-1.35245	-10.2644
S&P-500	-0.1151	-10.37908	-0.72028	-10.4347
FTSE-100	-1.44684	-12.14005	-1.71916	-12.1725
NIKKEI-225	-1.46202	-10.01629	-1.64985	-10.1581
CAC-40	-2.25092	-10.72384	-2.43043	-10.7343

Table 3a. Critical values.

Probability	1 (%)	5 (%)	10 (%)
ADF at level	-3.47281	-2.88009	-2.57674
ADF at first difference	-3.473096	-2.880211	-2.576805
PP at level	-3.47281	-2.88009	-2.57674
PP at first difference	-3.4731	-2.88021	-2.57681

Table 3 demonstrates the output of the Augmented Dickey Fuller Test (ADF) and Phillip-Parren Test (1988) applied for this purpose. It is revealed that all the variables (stock prices) of 13 stock-exchanges are not stationary at level because ADF and PP statistic values less then critical value at 5%. However, ADF and PP statistic value exceeds critical value at 5% significance therefore all the variables are stationary at 1st difference. These are integrated at order 1.

4.4.1 Co-Integration

Multivariate Co-integration Test

Long term integration among variables is enlightened by Johansen (1988-1991) equation and bi-variate cointegration. These methods investigate the integration among variables. It determines whether 13 stock indices under study are co-integrated with each other or not. For identifying strong Co-integration association among variables and to decrease the Akaike Criterion 1 to 4 lags are used. There are two feasible likelihood ratio is determine by Johansen and Juselius "Maximal Eigen value method" and Trace Statistics which are used to verify co-integration among vectors. Trace Statistics values are distributed in Table 4a. 7 co-integrations vectors are finds at 5%. However,

Eigen values are screened in Table 4b. It is pointed out that long-run association subsists among these stock indices.

Table 4a. Multivariate co-integration test-trace statistics.

Equity market	Hypothesis	Eigen Value	Trace statistics	Critical value at 0.05 level	Remark
KSE-100	None	0.462266	593.6609	NA	Trace statistics provides results that there exists seven co-integrating equations at 0.05 critical value level
BSE	At most 1 *	0.445035	499.9817	334.9837	
SCI	At most 2 *	0.416623	411.0653	285.1425	
HIS	At most 3 *	0.379445	329.6882	239.2354	
SET	At most 4 *	0.357825	257.6399	197.3709	
KLSE	At most 5 *	0.259968	190.7629	159.5297	
JCI	At most 6 *	0.232726	145.3026	125.6154	
ISE	At most 7 *	0.212632	105.3010	95.75366	
BCI	At most 8	0.153317	69.20298	69.81889	
S&P-500	At most 9	0.128464	44.07225	47.85613	
FTSE-100	At most 10	0.080355	23.31001	29.79707	
NIKKEI-225	At most 11	0.068141	10.66106	15.49471	
CAC-40	At most 12	2.93E-05	0.004430	3.841466	

Table 4b. Multivariate co-integration test maximum eigenvalue statistics.

Equity market	Hypothesis	Eigenvalue	Trace statistics	Critical value at 0.05 level	Remark
KSE-100	None	0.462266	93.67920	NA	NA
BSE	At most 1 *	0.445035	88.91632	76.57843	0.0027
SCI	At most 2 *	0.416623	81.37713	70.53513	0.0037
HIS	At most 3 *	0.379445	72.04832	64.50472	0.0082
SET	At most 4 *	0.357825	66.87697	58.43354	0.0060
KLSE	At most 5	0.259968	45.46033	52.36261	0.2137
JCI	At most 6	0.232726	40.00162	46.23142	0.1993
ISE	At most 7	0.212632	36.09800	40.07757	0.1313
BCI	At most 8	0.153317	25.13073	33.87687	0.3762
S&P-500	At most 9	0.128464	20.76224	27.58434	0.2909
FTSE-100	At most 10	0.080355	12.64895	21.13162	0.4850
NIKKEI-225	At most 11	0.068141	10.65663	14.26460	0.1723
CAC-40	At most 12	2.93E-05	0.004430	3.841466	0.9461

Tabulated results of multi-variate co-integration are distributed in Table 4.b. There exist 4 co-integrated vectors according to multi-variate co-integration result. H_0 Has been rejected with reference to the hypothesis 1and acceptH_A for developed-markets. Results pointed out that equity markets of developed economies are not long run integrated with KSE. However, opposite results achieves when association of KSE with emerging-markets tests with co-integration approach. H_0 Has been accepted according to the results of multi-variate co-integration and rejectH_A. It confirms that equity markets of emerging economies are long run integrated with KSE.

However, as for as association among two time series is concern Bi- Variate Co-Integration method is use. This test not only measure relationship between financial series but also evaluates long run correlation among 2time series. This method applies on the format of autoregressive. Trace statistics for bi-Variate Co-Integration elucidates in Table 5. Lag length 1- 4 is selected for this purpose.

4.4.2 Bi-Variate Co-Integration

Table 5. Bi-variate co-integration test- trace statistics.

Variable	Hypothesis	Eigenvalue	Trace statistics	Critical value at 0.05 level	Remark
KSE-100—BSE	None	0.021484	5.250456	15.49471	No existence of Co-integration
	At most 1	0.012968	1.970947	3.841466	
KSE-100—SCI	None *	0.130096	21.47401	15.49471	Existence of 1 Co-integration
	At most 1	0.002836	0.428838	3.841466	
KSE-100—HIS	None	0.076757	13.48835	15.49471	No existence of Co-integration
	At most 1	0.009419	1.429017	3.841466	
KSE-100—SET	None	0.054157	10.68099	15.49471	No existence of Co-integration
	At most 1	0.014944	2.273572	3.841466	
KSE-100—KLSE	None	0.021394	3.393585	15.49471	No existence of

	At most 1	0.000848	0.12804	3.841466	Co-integration
KSE-100—JCI	None	0.016917	2.908937	15.49471	No existence of
	At most 1	0.002201	0.33265	3.841466	Co-integration
KSE-100—ISE	None	0.031146	4.795773	15.49471	No existence of
	At most 1	0.000119	0.017931	3.841466	Co-integration
KSE-100—BCI	None	0.03167	7.318742	15.49471	No existence of
	At most 1	0.016154	2.459235	3.841466	Co-integration
KSE-100- S&P500	None	0.072038	11.63607	15.49471	No existence of
	At most 1	0.002293	0.346711	3.841466	Co-integration
KSE-100—FTSE	None	0.069304	11.19717	15.49471	No existence of
	At most 1	0.002328	0.351968	3.841466	Co-integration
KSE-100—NIKKEI	None	0.036497	5.829919	15.49471	No existence of
	At most 1	0.001428	0.215839	3.841466	Co-integration
KSE-100—CAC-40	None	0.05014	8.015204	15.49471	No existence of
	At most 1	0.001638	0.247585	3.841466	Co-integration

Results indicates that there is just 1 co-integration vector subsists between KSE and emerging-markets but finds no co-integration vector between KSE and developed stock- markets under study. Equity markets of developed and emerging-economies are not long run integrated with KSE, except Shanghai Composite Index, SCI (China) that is integrated with KSE in long-run. SCI stock-market provides greater opportunity of diversification to Brazil, India, Turkey, Indonesia, Hong Kong, England, France, Malaysia, Japan, Thailand and US.

Long-run Association of KSE with emerging-markets has been proved through co-integration approach. H_0 Has been rejected with reference to the hypothesis 1and acceptH_1. It confirms that equity markets of emerging-economies are not long run integrated with KSE. Results are similar Arshad et al. (2008), Lamba, (2005), Aslam et al. (2010), Hasan, Saleem & Abdullah

(2008) empirically examine this relationship and proved that no long term linkages between these stock-indices and suggested that portfolio diversification among these countries will provide a lot of benefit with minimization of risk elements.

However, H_0 has been accepted contrary to other emerging-markets according to the results of multi-variate co-integration for SCI and rejectH_1 for hypothesis 1. It confirms that equity markets of SCI market is long-run integrated with KSE. Furthermore, H_0 has been rejected with reference to the hypothesis 1and accept H_A for hypothesis 1. Results pointed out that equity markets of developed economies are not long run integrated with KSE.

Long term integration among variables is explained by Johansen (1988-1991) equation. In order to calculate short-term correlation among variables error correction approach is used. VECM method also computes speed of adjustment. Table 6 demonstrates the short-run integration of KSE with developed and emerging stock-markets.

4.5 Is KSE Integrated After Financial Crisis of 2008?

Sharp fall was faced by Karachi Stock Exchange in 2008 due to surprisingly high interest rate declared by State Bank of Pakistan, political situation were not stable, financial insecurity, crises of energy, battle against violence, pressure by foreign countries and declining trend in exports. Investors show aggression to this turmoil's. There was large stream of funds flotation outside the national boundary of Pakistan. Pakistani stock-markets were significantly affected by different social as well as economic factors. The economic growth

of the country was seriously affected by these factors. The current status of KSE linkages with other countries, after the great disaster of 2008 is determined with the latest data. For this purpose the inter-linkages between developed and emerging stock markets with KSE is investigated for the period 2009 to 2013. The integration of KSE with other economies is tested by using correlation analysis. Co-integration and Granger causality test.

4.5.1 Correlation Matrix

The correlation analysis for period 2009 to 2013 on the basis of monthly return for 13 stock indices is calculated to gauge the association weaknesses or strength among these stock markets. Simple correlation for emerging and developed economies under study is explained in table 6. The statistical values range from positive 1 to negative1 for correlation coefficients.

Table 6. Correlation matrix of emerging and developed markets

Equity Markets	KSE	BSE	SCI	HIS	SET	KLSE	JCI	ISE	BCI	SNP	FTSE	NIKKEI	CAC
KSE	1												
BSE	0.31	1											
SCI	0.11	0.28	1										
HIS	0.29*	0.7	0.51*	1									
SET	0.10	0.66*	0.28*	0.68*	1								
KLSE	0.24	0.49*	0.34*	0.55*	0.45*	1							
JCI	0.32*	0.69*	0.29*	0.63*	0.73*	0.61*	1						
ISE	0.08	0.19	0.02	0.3	0.3	0.22	0.26	1					
BCI	-0.00	0.09	0.2	0.11	0.25	0.22	0.14	0.46*	1				
SNP	0.46*	0.59*	0.28*	0.71	0.58*	0.46*	0.63*	0.19	-0.00	1			
FTSE	0.46*	0.59*	0.26	0.69*	0.61*	0.48*	0.61*	0.24	-0.00	0.89*	1		
NIKKEI	0.40*	0.41*	0.2	0.53*	0.4	0.31	0.43*	0.12	0.13	0.63*	0.6	1	
CAC	-0.14	0.07	-0.1	0.12	0.19	0.2	0.12	0.58*	0.67	0.09	0.1	0.15	1

It is pointed out that most of the values lies - 0.00 to 0.46. It is observed that Karachi Stock exchange is not strongly linked with any market under study.

Weak correlation exists among KSE and other emerging economies. Correlation strength among KSE with BCI is - 0.00 and that is very poor. But, Indonesia and Hong Kong returns show moderate association i.e. 0.32 and 0.29.This association is relatively high as compare to other connection between KSE and emerging economies.

Correlation of KLSE, JCI, ISE and BCI markets with SET is 0.03, 0.21, and 0.38 respectively. Positive as well as moderate association exists between Pakistani and BSE, KLSE, stock markets. Conversely, Very weak connection discovers between KSE and remaining 3 markets. Inter-linkages among KSE with China, Thailand and Turkey is 0.11, 0.10, 0.01 and 0.08 respectively. Correlation between KSE and emerging economies is positively weak except BCI. Inter-linkage of KSE with Brazil is negatively weak (-0.00). Poor or weak correlation depicted that portfolio opportunities exist for rational investors. Results revealed that stock indices of KSE with emerging countries show no long term linkages and suggested that portfolio diversification among these countries will provide a lot of benefit with minimization of risk elements.

Correlation coefficient between KSE and all other developed economies is moderate. Integration of Karachi stock exchange with S&P, FTSE and NIKKEI is 0.46, 0.46 and 0.40 respectively. CAC-40 is negatively integrated (-0.14) with KSE. Due to poor integration of Karachi Stock Exchange with other countries investors can get stream of advantage of portfolio diversification. Foreign as well as national investors can be attracted by this stock market to get higher return with minimum volatility.

4.5.2 Bi- Variate Co-Integration

Integration of KSE with other 12 stock-indices is calculated with the help of Bi- Variate Co-Integration. Results indicates that there is just 1 co-integration vector subsists between KSE and emerging-markets and KSE and developed stock- markets under study. Equity markets of developed and emerging-economies are not long run integrated with KSE, except Jakarta Composite Index, JCI (Indonesia) and Cotation Assistee en Continue CAC- 40 Index (France) that is integrated with KSE in long-run. JCI and CAC stock-market provides greater opportunity of diversification to Brazil, India, Turkey, China, Hong Kong, England, Malaysia, Japan, Thailand and US.

Table 7. Bi-variate co-integration test- trace statistics.

	Hypothesis	Eigen value	Trace statistics	Critical value at 0.05 level	Remark
KSE-100 — BSE	None At most 1	0.159412 0.000972	10.12828 0.056392	15.49471 3.841466	No existence of CO-Integration
KSE-100 — SCI	None At most 1	0.110821 0.037902	9.053549 2.241077	15.49471 3.841466	No existence of CO-Integration
KSE-100 — HIS	None At most 1	0.133006 0.005588	8.602963 0.324991	15.49471 3.841466	No existence of CO-Integration
KSE-100 — SET	None At most 1	0.199255 0.009559	13.44545 0.557092	15.49471 3.841466	No existence of CO-Integration
KSE-100 — KLSE	None At most 1	0.177238 0.013105	12.08028 0.765131	15.49471 3.841466	No existence of CO-Integration
KSE-100 — JCI	None * At most 1	0.245419 3.42E-05	16.33437 0.001985	15.49471 3.841466	Existence of 1 CO-Integration
KSE-100 — ISE	None At most 1	0.186743 0.014916	12.86072 0.871661	15.49471 3.841466	No existence of CO-Integration
KSE-100 — BCI	None At most 1	0.154825 0.000371	9.777804 0.021537	15.49471 3.841466	No existence of CO-Integration
KSE-100 — S&P	None At most 1	0.157081 0.04082	12.32849 2.417226	15.49471 3.841466	No existence of CO-Integration

KSE-100 — FTSE	None At most 1	0.172012 0.016792	11.93012 0.982225	15.49471 3.841466	No existence of CO-Integration
KSE-100 —NIKKEI	None At most 1	0.14639 0.034082	11.19153 2.011228	15.49471 3.841466	No existence of CO-Integration
KSE-100 — CAC	None At most 1 *	0.13145 0.099328	14.24162 6.067647	15.49471 3.841466	Existence of 1 CO-Integration

Results pointed out that equity-market of emerging economies are not long-run integrated with KSE. Therefore, H_0 has been rejected for these stock-exchanges except JCI reference to hypothesis-1. Only JCI show long-run integration with KSE. Likewise, H_A for hypothesis-1 has been accepted when association of KSE with developed -markets tests through co-integration approach. Equity markets of developed economies are not long-run integrated with KSE. However, co-integration table discovers that CAC-40 show long-run integration with KSE. H_0 Is accepted for CAC-40 with reference to the hypothesis- 2.

4.6 Vector Error Correction Model.

Table 10 empirically signifies the degree of short-term association between developed and emerging stock-markets with Karachi Stock Exchange. Findings of the study highlighted the rapport among Bombay Stock Exchange, BSE SENSEX (India) and Karachi Stock Exchange, KSE-100 index (Pakistan) in short-run at lag 1. SCI (China) not only integrated with KSE in long-run but also strongly affects the Karachi Stock Exchange in short run at lag 2. Table 10 displays that significantly alliance subsists between SET Index (Thailand) and KSE at lag-1.

Table 8. Vector error correction model

Error Correction:	D(KSE)	D(BSE)	D(SCI)	D(HSI)	D(SET)	D(KLSE)	D(JCI)	D(ISE)	D(BCI)	D(SNP)	D(FTSE)	D(NIKKEI)	D(CAC)
CointEq1	-0.0012	0.000572	0.003323	0.01284	-0.0007	0.000107	0.000246	-0.00775	-0.00843	0.0000	0.001784	-0.0003	-0.0012
	-0.0026	-0.00313	-0.00094	-0.0046	-0.0002	-0.00018	-0.0005	-0.01125	-0.00713	-0.0002	-0.00085	-0.00267	-0.0004
	[-0.4475	[0.1827]	[3.5311]	[2.8086]	[-2.791]	[0.6049]	[0.4951]	[-0.6890]	[-1.1828]	[0.2161]	[2.0992]	[-0.1132]	[-2.902]
D(KSE(-1))	-0.0531	0.049666	-0.01921	0.16751	-0.0092	0.001133	-0.0024	0.0341	0.3780	0.0091	0.0350	0.20632	-0.0143
	-0.0848	-0.09932	-0.02986	-0.1451	-0.0083	-0.00562	-0.01578	-0.35696	-0.22617	-0.00641	-0.02696	-0.08484	-0.0131
	[-0.6257]	[0.5000]	[-0.6434]	[1.1543]	[-1.110]	[0.2016]	[-0.1562]	[0.0956]	[1.6714]	[1.4252]	[1.3000]	[2.4317]	[-1.090]
D(KSE(-2))	-0.1024	0.065302	-0.02938	0.1028	-0.0059	0.002578	0.00634	-0.21006	-0.19001	0.010712	0.036054	0.12125	0.00696
	-0.0793	-0.09286	-0.02792	-0.1357	-0.007	-0.00525	-0.01475	-0.33376	-0.21147	-0.006	-0.02521	-0.07933	-0.0122
	[-1.2906]	[0.7032]	[-1.0521]	[0.7576]	[-0.766]	[0.4907]	[0.4298]	[-0.6293]	[-0.8985]	[1.7867]	[1.4300]	[1.5285]	[0.566]
D(BSE(-1))	0.2638	-0.17111	0.013618	0.1358	0.00679	0.001825	-0.00629	1.58449	0.662321	-0.00076	-0.00334	0.02689	0.02644
	-0.1025	-0.11998	-0.03608	-0.1753	-0.0100	-0.00679	-0.01906	-0.43123	-0.27323	-0.00775	-0.03257	-0.10249	-0.0158
	[2.5741]	[-1.4261]	[0.3774]	[0.7746]	[0.674]	[0.2689]	[-0.3305]	[3.6743]	[2.4240]	[-0.0983]	[-0.1025]	[0.2623]	[1.667]
D(BSE(-2))	-0.0074	-0.57697	-0.02414	-0.263	0.00617	-0.00891	-0.07143	-0.16832	-0.34578	-0.01036	-0.05433	-0.27643	0.00027
	-0.1061	-0.12419	-0.03734	-0.1815	-0.0104	-0.00702	-0.01973	-0.44635	-0.28281	-0.00802	-0.03372	-0.10609	-0.0164
	[-0.0702]	[-4.6459]	[-0.6464]	[-1.4495]	[0.591]	[-1.2689]	[-3.6211]	[-0.3771]	[-1.2227]	[-1.2925]	[-1.6112]	[-2.6057]	[0.016]
D(SCI(-1))	-0.1461	-0.58909	-0.08691	-0.4367	0.07603	-0.01366	-0.01294	-0.02828	1.285816	0.014556	-0.03891	0.40744	0.03775
	-0.2825	-0.3307	-0.09944	-0.4832	-0.0277	-0.0187	-0.05253	-1.18861	-0.75311	-0.02135	-0.08979	-0.2825	-0.0437
	[-0.5171]	[-1.7813]	[-0.8740]	[-0.9038]	[2.739]	[-0.7300]	[-0.2464]	[-0.0237]	[1.7073]	[0.6817]	[-0.4334]	[1.4422]	[0.863]
D(SCI(-2))	1.0083	1.039182	0.103781	1.21582	0.06465	0.029209	0.186474	0.023948	-0.20495	0.031918	0.154438	0.3926	0.02612
	-0.3077	-0.36028	-0.10834	-0.5264	-0.0302	-0.02038	-0.05723	-1.2949	-0.82045	-0.02326	-0.09781	-0.30776	-0.0476
	[3.2760]	[2.8844]	[0.9579]	[2.3096]	[2.138]	[1.4334]	[3.2584]	[0.0184]	[-0.2498]	[1.3722]	[1.5789]	[1.2756]	[0.548]
D(HSI(-1))	-0.1771	0.205069	0.031767	0.13553	-0.0122	0.001814	-0.00194	-0.22971	0.635139	-0.00313	0.013028	-0.09802	-0.0444
	-0.0877	-0.10275	-0.0309	-0.1501	-0.0086	-0.00581	-0.01632	-0.36931	-0.23399	-0.00663	-0.0279	-0.08778	-0.0135
	[-2.0173]	[1.9957]	[1.0281]	[0.9027]	[-1.423]	[0.3120]	[-0.1189]	[-0.6219]	[2.7143]	[-0.4713]	[0.4670]	[-1.1167]	[-3.273]
D(HSI(-2))	-0.1520	0.395908	0.054096	0.20243	-0.0195	0.011367	0.027892	0.34053	0.161002	0.004973	0.044685	0.11153	0.01289
	-0.0955	-0.11175	-0.0336	-0.1633	-0.0093	-0.00632	-0.01775	-0.40166	-0.25449	-0.00722	-0.03034	-0.09546	-0.0147
	[-1.5923]	[3.5426]	[1.6098]	[1.2396]	[-2.080]	[1.7983]	[1.5712]	[0.8478]	[0.6326]	[0.6892]	[1.4727]	[1.1683]	[0.872]
D(SET(-1))	2.6341	3.200742	0.282629	3.71785	-0.0877	0.10659	0.038114	5.220635	-3.13692	0.067699	0.457337	0.01896	0.25474
	-0.9120	-1.06765	-0.32104	-1.56	-0.0895	-0.06038	-0.16959	-3.83734	-2.43134	-0.06893	-0.28987	-0.91204	-0.1411
	[2.8881]	[2.9979]	[0.8803]	[2.3832]	[-0.980]	[1.7651]	[0.2247]	[1.3604]	[-1.2902]	[0.9821]	[1.5777]	[0.0207]	[1.804]
D(SET(-2))	-0.2697	2.519193	1.42175	2.69658	-0.0423	0.083513	0.070652	0.968947	-7.01957	0.104334	0.27693	0.40461	0.28311
	-0.8923	-1.04454	-0.31409	-1.5262	-0.0876	-0.05908	-0.16592	-3.75426	-2.3787	-0.06744	-0.28359	-0.89229	-0.1380
	[-0.3023]	[2.4117]	[4.5265]	[1.7668]	[-0.482]	[1.4136]	[0.4258]	[0.2580]	[-2.9510]	[1.5470]	[0.9765]	[0.4534]	[2.050]
D(KLSE(-1))	0.5701	3.74459	0.103477	-0.4399	0.25063	-0.03353	0.515781	2.946335	3.013823	0.098567	0.885646	1.3555	0.25581
	-1.6784	-1.96483	-0.59082	-2.8709	-0.1648	-0.11113	-0.3121	-7.06193	-4.47445	-0.12686	-0.53344	-1.67844	-0.2597
	[0.3396]	[1.9058]	[0.1751]	[-0.1532]	[1.520]	[-0.3016]	[1.6526]	[0.4172]	[0.6735]	[0.7770]	[1.6602]	[0.8076]	[0.984]
D(KLSE(-2))	1.9726	-4.02899	0.111565	-5.8154	0.09002	-0.06231	-0.23819	-19.1426	3.674827	-0.21183	-0.54839	-2.04644	-0.6157
	-1.7444	-2.04207	-0.61405	-2.9837	-0.1713	-0.1155	-0.32437	-7.33955	-4.65035	-0.13184	-0.55441	-1.74442	-0.2699
	[1.1308]	[-1.9730]	[0.1816]	[-1.9490]	[0.525]	[-0.5394]	[-0.7343]	[-2.6081]	[0.7902]	[-1.6067]	[-0.9891]	[-1.1731]	[-2.281]
D(JCI(-1))	-0.6844	-1.37496	-0.57205	-2.5631	0.12216	-0.03468	-0.00207	3.519492	1.993157	-0.05174	-0.51136	-1.41413	-0.2361
	-0.6731	-0.78794	-0.23694	-1.1513	-0.0661	-0.04456	-0.12516	-2.83201	-1.79437	-0.05087	-0.21392	-0.6731	-0.1041

	[-1.0167]	[-1.7450]	[-2.4143)	[-2.2262]	[1.847]	[-0.7781]	[-0.0165]	[1.2427]	[1.1107]	[-1.0169]	[-2.3903]	[-2.1009]	[-2.267]
D(JCI(-2))	0.5902	1.172454	-0.60348	-0.9318	0.03402	-0.00111	-0.05001	9.68838	-1.05985	0.003087	-0.14638	0.97808	0.22128
	-0.6753	-0.79059	-0.23773	-1.1552	-0.0663	-0.04471	-0.12558	-2.84153	-1.8004	-0.05104	-0.21464	-0.67536	-0.1045
	[0.8738]	[1.4830]	[-2.5385]	[-0.8066]	[0.512]	[-0.0248]	[-0.3982]	[3.4095]	[-0.5886]	[0.0604]	[-0.6819]	[1.4482]	[2.117]
D(ISE(-1))	0.0205	0.019264	0.006553	-0.0668	0.00327	-0.00095	0.003952	-0.3202	0.020512	-0.00124	-0.00778	0.00638	-0.0064
	-0.0218	-0.02558	-0.00769	-0.0374	-0.0021	-0.00145	-0.00406	-0.09194	-0.05826	-0.00165	-0.00695	-0.02185	-0.0033
	[0.9367]	[0.7530]	[0.8518]	[-1.7865]	[1.521]	[-0.6568]	[0.9726]	[-3.4824]	[0.3521]	[-0.7507]	[-1.1194]	[0.2921]	[-1.897]
D(ISE(-2))	0.0373	0.007437	-0.00667	-0.032	0.00542	0.001555	0.008645	-0.10948	0.085332	-0.00089	-0.00252	-0.04477	0.00032
	-0.0208	-0.02441	-0.00734	-0.0357	-0.0020	-0.00138	-0.00388	-0.08773	-0.05558	-0.00158	-0.00663	-0.02085	-0.0032
	[1.7922]	[0.3046]	[-0.9088]	[-0.8976]	[2.645]	[1.1268]	[2.2298]	[-1.2479]	[1.5352]	[-0.5633]	[-0.3794]	[-2.1472]	[0.099]
D(BCI(-1))	-0.0011	0.053091	0.015001	0.1376	-0.0079	0.000978	0.019464	0.235779	0.202557	0.003662	0.011307	0.02851	0.00322
	-0.03115	-0.03646	-0.01096	-0.0533	-0.0030	-0.00206	-0.00579	-0.13105	-0.08303	-0.00235	-0.0099	-0.03115	-0.0048
	[-0.0368]	[1.4560]	[1.3682]	[2.5827]	[-2.599]	[0.4741]	[3.3606]	[1.7991]	[2.4395]	[1.5556]	[1.1422]	[0.9154]	[0.668]
D(BCI(-2))	-0.00936	0.042564	0.004248	0.08945	-0.0039	0.00132	0.000403	-0.04915	-0.12376	0.004341	0.020164	0.03582	-0.0058
	-0.02702	-0.03163	-0.00951	-0.0462	-0.0026	-0.00179	-0.00502	-0.11369	-0.07203	-0.00204	-0.00859	-0.02702	-0.0041
	[-0.3465]	[1.3456]	[0.4466]	[1.9353]	[-1.489]	[0.7377]	[0.0801]	[-0.4322]	[-1.7182]	[2.1255]	[2.3480]	[1.3254]	[-1.392]
D(SNP(-1))	4.519822	-0.05134	1.539315	4.49344	-0.5783	0.182523	-0.33416	-1.64632	3.063705	0.052898	1.143753	0.44036	1.44355
	-2.45063	-2.86877	-0.86264	-4.1917	-0.2407	-0.16225	-0.45569	-10.3109	-6.53297	-0.18522	-0.77886	-2.45063	-0.3792
	[1.8443]	[-0.0178]	[1.7844]	[1.0719]	[-2.402]	[1.1249]	[-0.7333]	[-0.1596]	[0.4689]	[0.2856]	[1.4684]	[0.1796]	[3.806]
D(SNP(-2))	6.498187	-3.9898	-1.87869	-2.3816	0.18849	0.11343	-0.76513	-17.2712	-16.2060	-0.18005	-1.21324	-3.60113	-0.3977
	-2.5389	-2.9721	-0.89371	-4.3427	-0.2493	-0.1681	-0.4721	-10.6823	-6.7683	-0.19189	-0.80692	-2.5389	-0.3928
	[2.5594]	[-1.3424]	[-2.1021]	[-0.5484]	[0.755]	[0.6747]	[-1.6206]	[-1.6168]	[-2.3944]	[-0.9383]	[-1.5035]	[-1.4183]	[-1.012]
D(FTSE(-1))	-1.11047	-0.44563	0.301488	1.8895	-0.0513	0.022001	0.119015	-0.32216	1.622309	0.011805	0.059351	0.25865	0.44705
	-0.67953	-0.79548	-0.2392	-1.1623	-0.0667	-0.04499	-0.12636	-2.85909	-1.81152	-0.05136	-0.21597	-0.67953	-0.1051
	[-1.6341]	[-0.5602]	[1.2604]	[1.6256]	[-0.769]	[0.4890]	[0.9418]	[-0.1126]	[0.8955]	[0.2298]	[0.2748]	[0.3806]	[4.251]
D(FTSE(-2))	-1.26533	-0.35901	0.662503	1.22018	-0.0945	-0.05088	0.052239	-1.92674	2.791389	0.054364	0.340701	1.21919	0.01055
	-0.68991	-0.80763	-0.24285	-1.1801	-0.0677	-0.04568	-0.12829	-2.90276	-1.83919	-0.05214	-0.21927	-0.68991	-0.1067
	[-1.8340]	[-0.4445]	[2.7279]	[1.0340]	[-1.395]	[-1.1139]	[0.4072]	[-0.6637]	[1.5177]	[1.0425]	[1.5538]	[1.7671]	[0.098]
D(NIKKEI(-1))	0.21314	0.282075	0.055318	0.21016	0.00273	0.008569	0.051455	1.558445	-0.29402	0.018389	0.090465	0.18503	0.0344
	-0.11773	-0.13782	-0.04144	-0.2014	-0.0115	-0.0078	-0.02189	-0.49536	-0.31386	-0.0089	-0.03742	-0.11773	-0.0182
	[1.8103]	[2.0466]	[1.3348]	[1.0436]	[0.236]	[1.0992]	[2.3503]	[3.1461]	[-0.9368]	[2.0666]	[2.4176]	[1.5715]	[1.8901]
D(NIKKEI(-2))	-0.01210	-0.32734	0.055656	-0.1383	-0.0112	-0.01326	-0.08258	-0.54076	-0.3647	-0.00744	-0.0424	-0.01612	-0.0058
	-0.12107	-0.14172	-0.04262	-0.2071	-0.0118	-0.00802	-0.02251	-0.50938	-0.32274	-0.00915	-0.03848	-0.12107	-0.0187
	[-0.0999]	[-2.3097]	[1.3059]	[-0.6679]	[-0.942]	[-1.6542]	[-3.6682]	[-1.0616]	[-1.1302]	[-0.8126]	[-1.1018]	[-0.1331]	[-0.313]
D(CAC(-1))	-0.30869	0.727417	-0.45250	-0.8308	0.14411	0.039348	0.113489	4.737223	0.61405	-0.02961	-0.17583	-0.49518	0.0694
	-0.64513	-0.75521	-0.22709	-1.1035	-0.0633	-0.04271	-0.11996	-2.71434	-1.71981	-0.04876	-0.20504	-0.64513	-0.0998
	[-0.4784]	[0.9632]	[-1.9926]	[-0.7529]	[2.274]	[0.9212]	[0.9460]	[1.7452]	[0.3570]	[-0.6073]	[-0.8575]	[-0.7675]	[0.695]
D(CAC(-2))	0.00966	-0.42923	0.052362	-0.6832	0.07636	-0.03003	-0.02682	0.426653	0.211051	-0.02399	-0.14705	0.21089	0.0507
	-0.33704	-0.39455	-0.11864	-0.5765	-0.0331	-0.02232	-0.06267	-1.41808	-0.8985	-0.02547	-0.10712	-0.33704	-0.0521
	[0.0286]	[-1.0879]	[0.4413]	[-1.1851]	[2.306]	[-1.3458]	[-0.4280]	[0.3008]	[0.2348]	[-0.9416]	[-1.3727]	[0.6257]	[0.972]
C	101.6574	141.3973	20.85472	115.124	-2.3794	7.700821	24.20817	301.381	9.772774	3.187412	5.362822	13.3705	-5.9334
	-57.584	-67.4092	-20.27	-98.494	-5.6558	-3.81256	-10.7076	-242.281	-153.509	-4.35219	-18.3014	-57.5839	-8.9109
	[1.7653]	[2.0976]	[1.0288]	[1.1688]	[-0.420]	[2.0198]	[2.2608]	[1.2439]	[0.0636]	[0.7323]	[0.2930]	[0.2321]	[-0.665]

R-squared	0.404667	0.458558	0.327416	0.32435	0.37494	0.260895	0.426981	0.538423	0.726199	0.266406	0.298299	0.27246	0.84256
Adj. R-squared	0.276075	0.341607	0.182137	0.17841	0.23993	0.101249	0.303209	0.438722	0.667058	0.10795	0.146731	0.11531	0.80855
Sum sq. resids	48855611	66949870	6053656	1.43E+08	471314	214163.4	1689266	8.65E+08	3.47E+08	279078.8	4934915	4.9E+07	1169939
S.E. equation	625.1759	731.8463	220.0665	1069.33	61.4045	41.39212	116.2503	2630.386	1666.615	47.25072	198.694	625.176	96.7446
F-statistic	3.146911	3.920926	2.253713	2.2225	2.77708	1.634204	3.449739	5.400394	12.2791	1.681259	1.968094	1.73375	24.7757
Log likelihood	-1186.65	-1210.76	-1026.90	-1268.8	-831.61	-771.268	-929.264	-1406.49	-1336.67	-791.522	-1011.28	-1186.65	-901.16
Akaike AIC	15.87783	16.19291	13.78963	16.9513	11.2367	10.44795	12.51326	18.75154	17.83887	10.7127	13.5853	15.8778	12.1459
Schwarz SC	16.43242	16.7475	14.34422	17.5059	11.7913	11.00254	13.06785	19.30613	18.39346	11.26729	14.13989	16.4324	12.7005
Mean dependent	156.4492	114.8124	0.02098	68.9265	-1.61811	7.970458	25.44529	428.3959	239.1373	4.496928	7.290196	21.5138	-6.8988
S.D. dependent	734.777	901.9389	243.3401	1179.74	70.4324	43.66142	139.2653	3510.998	2888.358	50.02807	215.1008	664.67	221.106

However, short-run inter-linkage subsists between S&P and KSE at lag-2. Similarly, BSE significantly influence by itself at lag-2. Furthermore, BSE integrated with SCI, HSI at lag-2 and with SET with at lag-1. It has been observed from VECM test that SCI interconnected with BSE, SCI, HSI, SET, JCI, SNP and FTSE at lag-2. Conversely, both HSI and SET integrated only with BCI in short-run at lag-1. Association finds between JCI with NIKKEI and BCI with at lag-1. Similarly, JCI correlated with BSE at lag-2. Results demonstrate that ISE influence by itself and NIKKEI at lag-1, with JCI lag-2. BCI connected with HSI at lag-1 and SET at lag-2. Inter-linkage discovers between NIKKEI and BSE at lag-2. Likewise, VECM table also elaborates that CAC integrated with HSI SNP at lag-1.

Hypothesis No: 3 of the study have been proved by applying VECM test. H_A is accepted for all emerging-markets. It confirms that these markets are not integrated with KSE in short- run. However, opposite results achieves when association of KSE with BSE SCI and SET tests with co-integration approach. H_A Rejects for BSE SCI and SET and acceptH_0. Results illustrate that equity markets of BSE SCI and SET market is short- run integrated with KSE. Hasan

and Kashif (2011) ascertained that Karachi Stock Exchange does not associate with emerging markets except china. Only China stock exchange integrated with KSE in short-run. Similarly, hypothesis No: 4 of the study has also been proved through VECM approach. Results pointed out that equity markets of developed economies are not short-run integrated with KSE except SNP. H_0 Has been accepted with reference to the hypothesis 4 for only SNP and rejected for remaining stock-exchanges under study. Likewise KSE is not affected and influenced by any market under the study period.

4.7 Impulse Response

This technique investigates the effects of exogenous shocks on the pattern of market return. Impulse response function tells us the deviation in returns of one market due to the deviation in other market returns. It also tells the future trends of these stock markets and how one stock markets return affects the innovation pattern of other markets. The results of impulse response test shows that majority of the shocks in KSE are due to its own. There is little impact of other markets in Karachi stock-exchange. The graphs are displayed in appendix C.

4.8 Why stock-markets inter-linked?

Owing to development and introduction of advance technology, increase financial interactions among international markets. Moreover, by introducing new financial instruments and having different market measures can strongly affect the movement of funds globally. Investors are now taking lot of advantage by investing their saving not only within the nation boundary but also outside the boundary that gives higher return at low risk. Due to

globalization quantity of investment in financial securities of business sectors as well as in economic sectors is amplifying in recent century. Durham (2002) explored that in regional economies stock, markets are playing crucial role for economic growth.

Although, there are various advantages of foreign direct investment but it has pointed out different dilemma like controlling and management of funds in an efficient manner. It may leads towards stock-markets integration Stock-markets Stock-market inter-linkage is very hot issue among researchers and trying to discover out its merits and demerits. In highly correlated-markets all identical securities bearing similar risk always offer equal returns to investors. (Campbell and Hamao, 1992).Therefore, diversification objectives cannot be achieved in this respect. If financial- markets are strongly correlated with each other volatility in one economy transferred hurriedly to closest economies. The activities of one equity-market seriously persuaded by the shocks occur in the aliened markets.

If the reasons of integration identified, then its side affect could be minimize by taken priori action. Literature documented that stock-markets integration are strongly influencing by parallel effect of the economic variables i.e. Interest rate, GDP, balance of payments, inflation, exchange rate, price level, unemployment rate etc. Initially, Khan (2013) scrutinized the rapport among various capital markets and suggested potential area for further research; hence, impending study could conduct to observe that whether the macroeconomic forces are source of information for cross-country cooperation or not. Different attempts were made to overcome this gap.

Similarly, Latif et al (2008) explored the economic link between Pakistan and Indian stock markets using one economic factor (Trade). Results indicated that removal of trade barriers, trade liberalization increase financial interactions among these capital markets. Besides it, the quantity of literature investigated the correlation between developed and emerging markets linkages with KSE is limited (Hasan and Kashif, 2011). However, to scrutinize the other reasons of financial-markets inter-linkages with developed and emerging markets, in one study, within same time period demanded to be further explored. Therefore, the study further takes into consideration

Together with some publish literature this attempts to scrutinize the major economic reasons of this linkages. This segment indented to examine the direct effect of Inflation (INF) and Exchange rate (ER) on the dynamic-linkages of developed and emerging stock-markets with KSE.

4.8.1 Inflation

Inflation rate differentials between two countries may cause to stock-markets integration. High inflation rate increases the cost of production. The free risk nominal rate and rate of discount also increase. Hence, expected future cash fallow as well as profits of the company decreases in return. These things directly affect the trade between countries. Less inflation rate differentials between two courtiers causes less deviation of trade which may lead towards stock-markets integration.

Table 9. Bi-variate Co-integration

	Hypothesis	Eigenvalue	Trace Statistic	Prob.**	Remarks
KSE100- CHINA	None *	0.197981	48.96587	0.0000	Co integration
	At most 1 *	0.098463	15.65187	0.0001	

Trace test indicates 2 co-integration at the 0.05 level

By employing Bi-variate co-integration test outcome reveal that co-integration vector subsists between china and Pakistani stock-markets. So, it is concluded that inflation has serious impact on the inter-linkages of these stock-markets (Chen et al, 1986) and (DeFina, 1991). The investors can get portfolio diversification benefits by investing in those countries that have high interest rate differentials.

4.8.2 Exchange Rate

The impact of exchange rate on the inter-linkages of stock-markets is tested here with the help of co-integration approach. Thus, monthly value of Exchange rate from 2001 to 2013 is selected to drive out at conclusion. If there is less interest rate differentials between two countries, the trade between two countries will be high. As a result, if the products experience elasticity, the volume of the export from that country will increase. The total export and import among them will be cheaper; flow of cash will increase in line with the profit and local stock price resulting in strong inter-linkages between stock-markets(Mukherjee and Naka, 1995), (Maysami and Koh, 2000) and (Ibrahim and Aziz,(2003).

Table 10. Bi-variate Co-integration

	Hypothesis	Eigenvalue	Trace Statistic	Prob.**	Remarks
KSE100- CHINA	None	0.061970	11.53999	0.1804	No Cointegration
	At most 1	0.012373	1.879942	0.1703	

Trace test indicate no cointegration at the 0.05 level

Tabulated result of Bi-variate co-integration is distributed in Table 10. Results reveal that inter-linkages of stock-markets are not persuaded by exchange rate because there exist no co-integrate vector among them. It confirms that equity-markets of developed and emerging economies with KSE show integration is not due to exchange rate. Inflation rate and exchange rate are directly co-related with each other. If inflation rate affects the stock-markets integration then exchange rate should also impacted this linkages. But, in this case exchange rate does not cause sock-markets integration. It is because if there is less exchange rate differentials between countries, the currency value decreases. The decrease in currency value will increase the cost of production. As a result, it increases the prices of product and the profit margin of the company. The trades between countries will automatically decreases that lead towards less co-integration between stock-markets (Ibrahim and Wan, 2001).

Chapter No 5

CONCLUSION

This empirical study ascertains the dynamic linkages among Karachi stock exchange with emerging and developed stock-markets. Whether they are integrated with long-run or short-run? At what speed the shocks occur in any market can be adjusted? Whether correlation of these indices seriously hamper by different economic factors? Two economic variables Inflation and Exchange rate) are selected to study the closeness of this linkage.

The hypotheses of the study are tested by applying different statistical tools. Firstly, correlation matrix illustrate that KSE-100 is not significantly associated with any emerging markets. Similarly, KSE has weak integration with NIKKEI, FTSE, S&P and CAC. Shocks generated in one stock exchange cannot hamper the activities of KSE. Security diversification generates desired results for regional and global financiers. The dynamic qualities of these variables can strongly influence this relationship (Phylaktis and Ravazzolo, 2002).

Multi-variate cointegration Trace Statistics identified that equity markets of emerging economies are long run integrated with KSE. However, equity markets of developed economies are not long run integrated with KSE. Furthermore, Bi- Variate Co-Integration method finds no long-term co-integration between KSE and developed stock- markets under study. These economies generates signal to market players that there are diversification opportunities accessible in these stock markets. Similarly, Equity markets of

emerging-economies are not long run integrated with KSE, except Shanghai Composite Index, SCI (China) that is integrated with KSE in long-run.

Sharp fall was faced by Karachi Stock Exchange in 2008. Pakistani stock-markets were significantly affected by different social as well as economic factors. Investors show aggression to this turmoil's. There was large stream of funds flotation outside the national boundary of Pakistan. Therefore, current status of KSE linkages with other countries, after the great disaster of 2008 is determined with the latest data. For this purpose the inter-linkages between developed and emerging stock markets with KSE is investigated for the period 2009 to 2013.

Integration of KSE with other 12 stock-indices is calculated with the help of Bi- Variate Co-Integration. Results indicates that equity-market of emerging economies are not long-run integrated with KSE except JCI. likewise, Equity markets of developed economies are not long-run integrated with KSE except CAC. Prior to 2009 KSE was co-integrated with JCI and BCI. After the financial crises in 2008 depiction are entirely changed Karachi Stock exchange is now integrated with China stock-exchange only. Finally, VECM is exercised to test the degree of short-term association between these stock-exchanges. Results illustrate that equity markets of BSE, SCI, SET and SNP are short- run integrated with KSE.

Although there are lot of advantages can be obtained due to stock markets integration but in global village it has pointed out different dilemma like if financial- markets are strongly correlated with each other volatility in one economy transferred hurriedly to closest economies, Diversification objectives

cannot be enjoyed. If the reasons of integration identified, then side affect of integration could be minimize by taken priori action. Together with some publish literature this attempts to scrutinize the major economic reasons of this linkages. This segment indented to examine the direct effect of Inflation (INF) and Exchange rate (ER) on the dynamic-linkages of developed and emerging stock-markets with KSE.

The impact of exchange rate on the inter-linkages of stock-markets is tested here with the help of co-integration approach. Results reveal that inter-linkages of stock-markets are not persuaded by exchange rate. It confirms that equity-markets of developed and emerging economies with KSE show integration is not due to exchange rate. May be there are some other factors that influence this relationship. For this purpose another economic variable inflation is chosen to find out the effectiveness. Results indicate that co-integration vector subsists by employing Bu-variate co-integration test. Outcome reveals that inflation has serious impact on the inter-linkages of these stock-markets.

Scope, Limitation and future Directions of the Study

In this study there are some constrains that limit the scope of the outcome to some extent. If these limitations removed then the benefits of the study will be twofold. This study comprises of 13 stock indices. 9 emerging/developing stock markets and 4 developed/urbanized markets are selected to carve out research problem. These stock-markets are selected on the basis of high-capitalization. The next study could be conducted to analyze the inter-linkages among those stock-markets that are closely business partners.

Secondly, the Correlation and interlink-ages between Developed and emerging stock-markets with KSE is studied for different time horizon by covering just one event of 2008 crises and its impact. Another event base study like 9/11 War etc can be conducted that determines the current status of the stock-markets integration from time to time.

Thirdly, the study tries to recognize the factors that are accountable for international linkages of stock-markets. For this purpose two economic factors Inflation and Exchange rate are selected to examine the inter-linkages of developed and emerging stock markets with KSE. Only two economic factors are selected because the monthly data available for only these factors. The study could be enhanced by getting yearly data so that impact of large number of variables could be scrutinized.

Recommendations

The dynamic linkages of macroeconomic forces collision on stock returns provide some practical indication. This study is equally constructive for policy makers, current and prospective investors, Nation leaders, analysts, people, researchers, multinational companies, state and education.

The study of markets integration assists policy makers in designing those strategies which alleviate the economy in long run (Chee, 2006). By understanding the correlation and integration between these markets, policy makers as well as funds managers can minimize their risk efficiently by availing diversification opportunities (Abas, 2004). The difficulty in forecasting of return volatility is being faced by every institutional as well as

retail investor, Therefore, many investors are unable to avail opportunities, and they are not capable to minimize the risk burden. This phenomenon takes place due to non availability or/ wrong information about economic variables. Through this study they are in position to predict Potential performance of company can safeguard their investment and can find out stock price movements accurately in future

The findings of this paper may give knowledge with pragmatic evidence to the economists, analysts, nation leaders and people. By using advance and precise variables with specific dataset, together extra procedures, there is high chances to get more accurate results. This study will assist investigators about important aspect, how linkage mechanism among different stock markets may affected by macroeconomic variables (Interest rate differentials, GDP, FDI, CPI etc) if any variable may change in particular direction (Haroon, 2013).

In order to minimize the risk burden multinational companies invest in those markets that are not correlated with each other. For this purpose they accept the projects of those countries that are not interlinked with each other. So, that company can generate higher profit with minimum loss.

Study about market integration provides information about portfolio diversification to state from which they can generate higher profits and can lessen the risk. Government can also make trade connections with those markets which are helpful for the economy. To study the market linkages is significant for academia for supporting instructors, lecturers, future researchers and students by providing useful information for deeper understanding of knowledge

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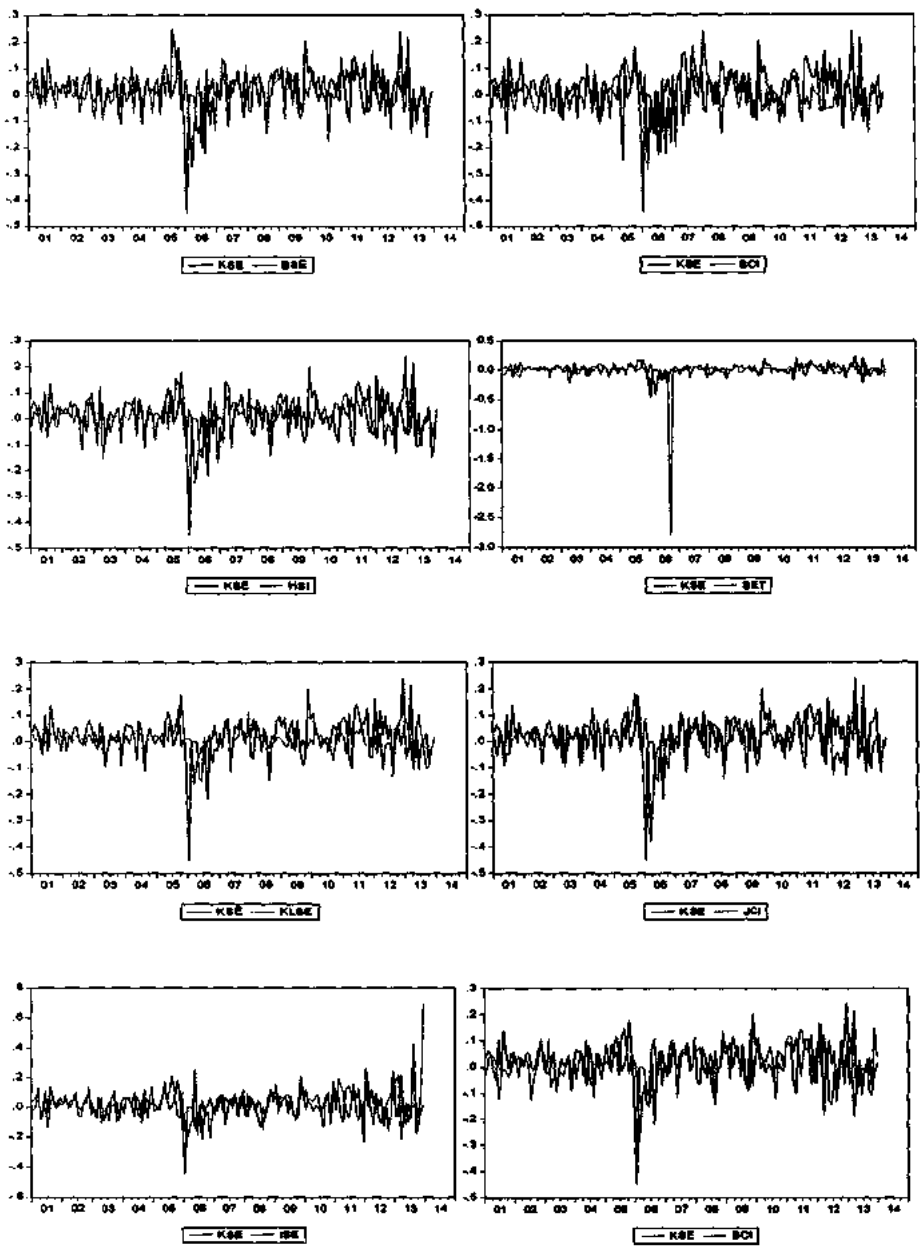
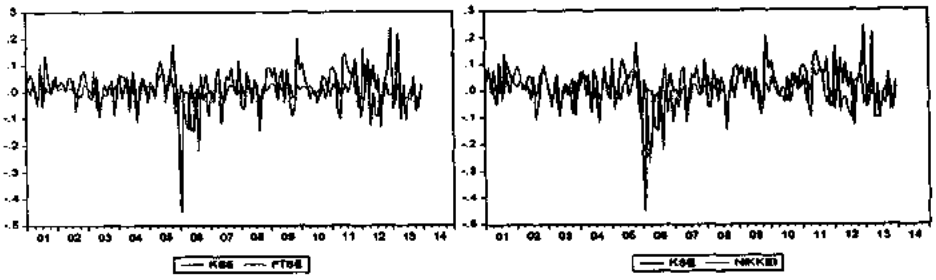
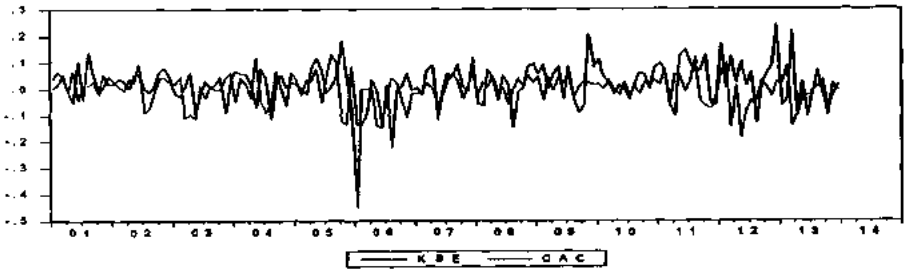
APPENDICES:

APPENDIX: A

Returns Movement of KSE-100 with Emerging and Developed Markets

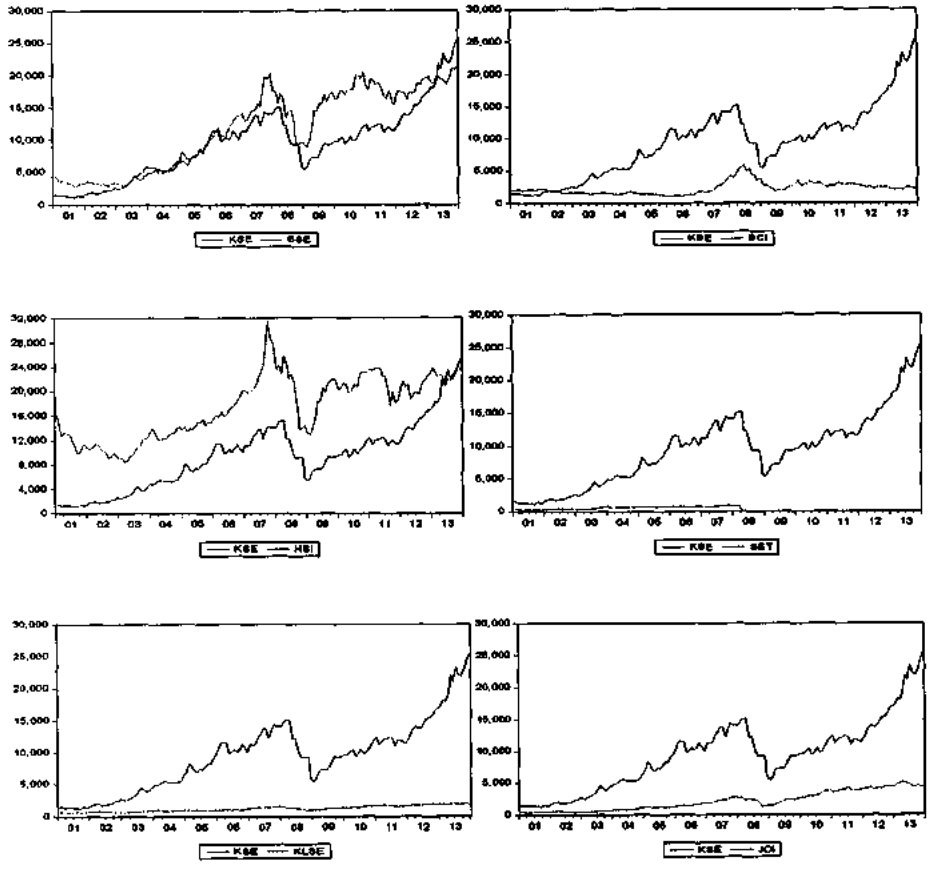


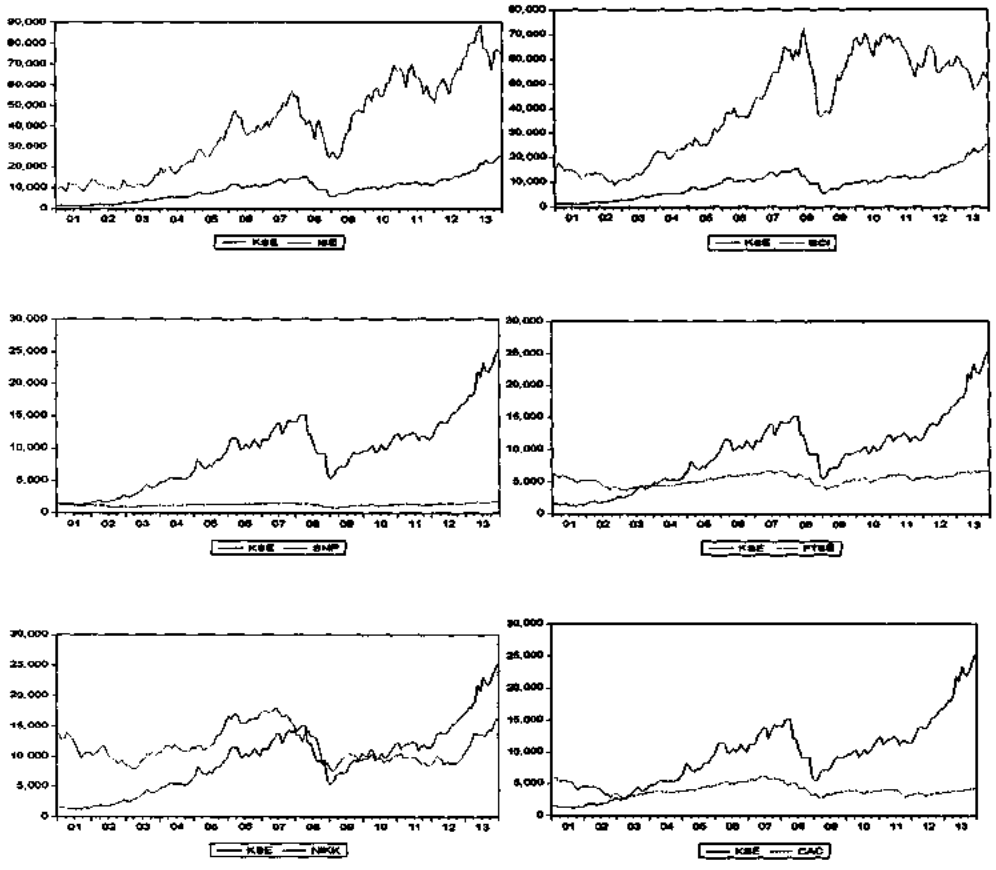




APPENDIX: B

Trends of KSE-100 with Emerging and Developed Markets




KSE
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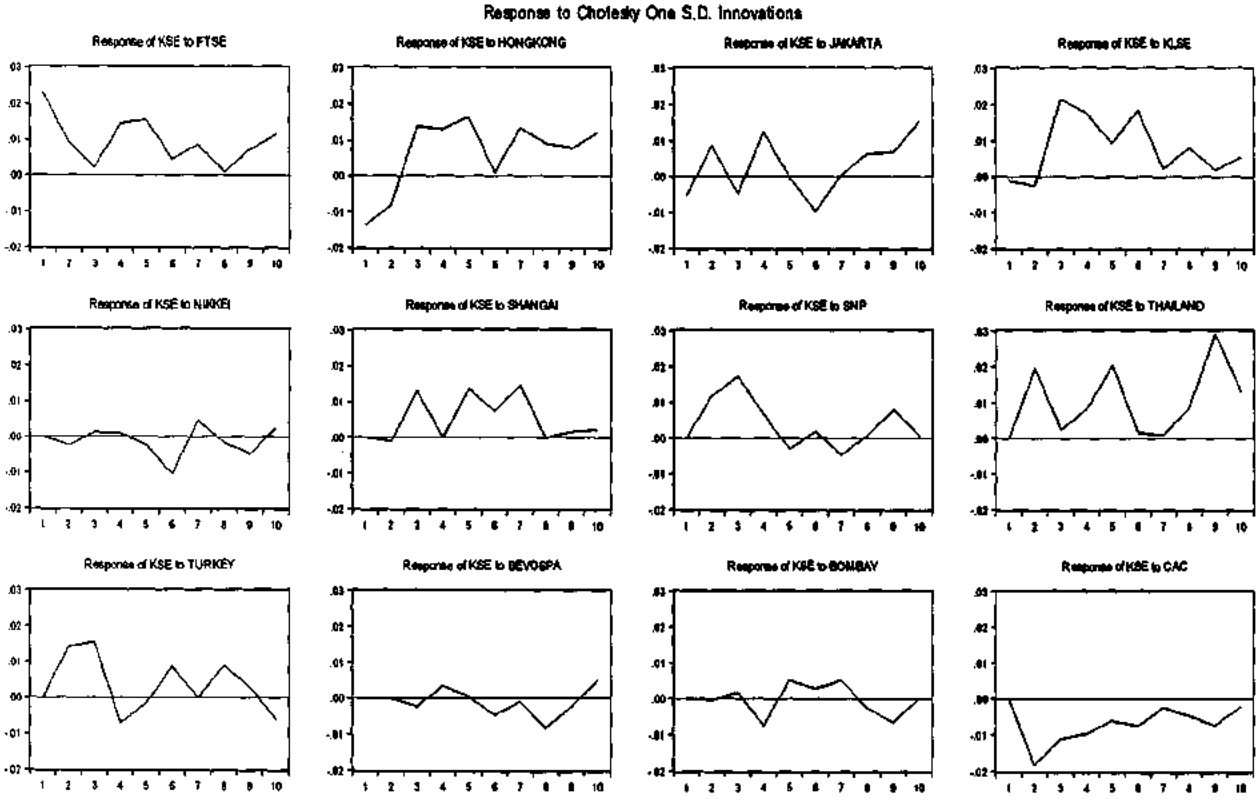
APPENDIX: C


Response to Cholesky One S.D. Innovations
Response of KSE to FTSE
Response of KSE to HONGKONG
Response of KSE to JAKARTA
Response of KSE to KLSE
Response of KSE to NIKKEI
Response of KSE to SHANGAI
Response of KSE to SNP
Response of KSE to THAILAND
Response of KSE to TURKEY
Response of KSE to BEVOSPA
Response of KSE to BOMBAY
Response of KSE to CAC