www.irmbrjournal.com December 2014
International Review of Management and Business Research Vol. 3 Issue.4

Oil Price and Stock Market Fluctuations: Emerging Markets (A Comparative Study of Pakistan and China)

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Abstract

The main purpose of this study is to investigate the volatility of international oil prices and stock market of emerging markets. Emerging markets of Asia has been investigated and evidence is taken from China and Pakistan. The data is collected from 1st January 1998 to 31st December 2013. The monthly data is used for Brent oil prices, stock market (KSE and SSE), CPI and exchange rate of respective countries. Multivariate Cointegration Analysis is being applied along with Vector Error Correction Model. For the sake of analysis, firstly, OLS regression is being applied to test the immediate effects. On second step, unit root test is applied to check the stationarity of data. The results shows that all the variables are integrated at first difference i.e. I(1). When variable are non-stationary and became stationary a differencing then cointegration analysis applied which suggests cointegration equation which further leads the analysis to Granger causality the variables are granger causes each other. Then the VECM model is applied which shows that oil prices negatively impact the stock markets in emerging markets as these countries are oil importing countries. Lastly Impulse Response and Variance Decomposition which forecast the impact of oil effect on stock markets. After that asymmetric effects have been observed in the stock markets.

Key Words: *Strategic Oil Prices, Stock Exchange, Emerging Markets, Vector Error Correction, Impulse Response, VAR, Variance Decomposition*.

Introduction

Oil is considered to be the most important source of energy in all over the world and gaining immense importance as a tool for security and survival of developed countries. Due to a biggest need of every country each change in the price of oil brings effect on the financial environment of developed and developing countries. Now a day's oil price took the importance as the gold price. World's largest commodity market is crude oil market and effects of price change in crude oil are not just direct impact but change in oil price also have indirect impact on economy not to mention international stability is predicting through oil price changes and vice versa. So, oil price change besides affecting production and consumption like other commodities can also be cause of change in behavior of investors and stock prices.

Emerging economies act as an important engine in the process of global economy recovery. Between 2008 and 2013, emerging markets have contributed to approximately 80% of the world economic growth. Along with the pace of increased flow of capital worldwide, expectation of local currency appreciation and uncertainties of developed economies, more and more investors turn their eyes to emerging markets.

If it the trend of international crude oil prices observed then it is mentioned and also supported by literature that the prices of oil in the era of 1990s was traded between $18 to $ 23. But it crossed the limit of $40 in 2004 and rose steadily and reaches on $60 in 2005. While in the middle of 2007, it is priced $70 and crossed the highest limit of 178$ in middle of 2008. These shocks have great and immense importance for oil importing countries like Pakistan, China, India etc. literature argued that these shocks shows negative impact on the economy of oil importing countries. These pass-through effects firstly petroleum and petroleum goods. These in return affect the productivity downfall, which leads to adverse affects different economic factors along with stock market capitalization.

Oil price shocks can lead to inflation, especially to those oil-importing countries. Thus policy makers may face the pressure to increase the interest rate which makes stock market less attractive. Raising oil costs decrease the cash flows of companies and expectation of increasing interest rate also reduce the value of stocks. Therefore, oil price booming becomes an important risk to stock markets. Compared to developed economies, emerging economies are more vulnerable to oil price shocks. On one hand, increasing demand and lack of energy efficiency lead to a high oil intensity. On the other hand, lack of experiences in overseas oil investment and hedging oil price risk in international financial market makes emerging markets have few instruments to eliminate the negative effects of oil shocks.

The first goal of this paper is to provide a systematic investigation of the impact of oil price changes on the Pakistani and Chinese stock market. Furthermore investigate the intensity of this relationship. It is also try to review the possible consequences and challenges presented by high oil prices for Pakistan and China. As Basher &Sadorsky (2006) whenever oil price shock occur the countries who import oil lessen their disposable income in result of that they have less income to spend on goods and services therefore they must find alternative energy sources. They also suggested that non oil producing countries also face high cost and risk of uncertainty which affect stock markets and in result lesser investment. While oil exporting countries have opposite and positive effect of oil price change studied by Le & Chang (2011).

On the strength of prior studies, this paper is adding some quality work in literature. therefore the fundamental idea of this study is to examine oil price and stock price volatility in emerging markets so the evidence is taken from Pakistan and China over the period of 1998M1-2013M12. So the problem statement is: "an investigation of the impact of oil price changes on the Pakistani and Chinese stock market. Furthermore investigate the intensity of this relationship.

It is no doubt that effect of oil prices are a burning questions from last few decades therefore it grabs the attention of researchers to assess the effects of oil prices on the economy. Hamilton (1983) was first who studied this relationship, while Jones and Kaul (1996) studied this effect on stock market. But still there is very little research to analyses the relationship and forecast it. A lot of researches are made for data of UK or USA countries while the studied on BRIC and GCC countries are also found. But only one or two paper discuses the relationship in Asian stock markets and that is also in panel data. So there is a gap in literature that emerging markets of Asia have not studied and observed for said relationship. This study will cover this gap and considered two countries i.e. Pakistan and China. By using this phenomenon our first hypothesis leads to

Hypothesis: The stock market reacts negatively to oil price changes in Pakistan and China.

Park and Ratti (2008), Cong et al. (2008) and Ono (2011) studied and supported that oil prices shocks and stock market have asymmetric relationship. On the basis of this evidences it is also tested that whether Pakistan and China market react asymmetrically against oil prices shocks.

Hypothesis: Asymmetric oil price shocks have an impact on stock markets in Pakistan and China.

Literature Review

The fist study was conducted by Chen et al. (1986) to investigate the macroeconomic advancements on stock returns. They stated that industrial production, interest rates, bond yield spread, and inflation rates impact stock market very strongly. But they didn't find any impact of oil prices on stock return. While study conducted by Hamilton (1983) on the economy of USA found the oil prices shocks effects on economy. He studied the relationship in recession period after World War II by using VAR model and concluded negative relationship of oil shocks with financial markets and economy. He found significant results that oil price shocks contribute in recession.

Jones and Kaul (1996) investigated the relationship of stock market and oil prices by taking evidence from US, Japan, UK and Canada. They used cash flow evaluation dividend model by taking data quarterly data from 1947 – 1991. They suggested that in Japan and UK stock markets are strongly affected from oil prices although catering no of financial variables. While for Canada and USA results were contradictory and suggested that the stock market reaction did not affected by oil prices rather than oil shocks had affected cash flows of industrial production.

One of the important study conducted by Sadorsky (1999), which examined the volatility of oil prices and its impact on stock exchange returns. He used VAR model in which he catered USA industrial index, interest rate, and industrial production and oil prices over the monthly period of 1947-1996. The results shown significant results and negative impact had been observed on stock market. Moreover he also examined asymmetric relation of oil price and results suggested that positive change in oil price had larger impact on economy and financial market. Moreover it was also found that this effect developed after 1986. It is also concluded that the stated effects expand after 1986. Afterward Sadrosky (2001) expanded his research to Canada and found that Canadian market also sensitive to oil price and interest rate risk. In this he used multifactor arbitrage pricing theory approach.

After conducting extensive study on US and Canadian stock market, Basher and Sadorsky (2006) also focused on emerging and developing markets. They investigated 21 emerging stock market returns, in which India and Pakistan was also included. On the first time Pakistan was focused for this study by using daily, weekly and monthly data (1992-2005) using CAPM multifactor model. The results showed statistically significant results that oil prices influence the emerging markets. And also the evidence provided about the asymmetric effects.

On the other hand Zarour (2006) investigated the oil shocks and stock markets of five countries which are widely known as Gulf Cooperation Council (i.e. Saudi Arabia, Bahrain, Oman, Abu Dhabi & Kuwait). By using daily data from 2001-2005 and applying VAR. as during the sample period the oil prices had been doubled so these markets had huge excess of cash and therefore affected the market performance positively.

Similarly Maghyereh and Al-Kandari (2007) also studied same relationship GCC countries. But he studied this relationship in context of non-linearity by employing rank test of non linear cointegration analysis which was newly developed. All the previous studied suggested that oil price and GCC stock markets are not related therefore he argued that it could be resulted that only linear relationship have been studied. While his study concluded that oil price affected GCC counties in non linear relation.

While Maghyereh (2004) in his another study considered 22 emerging markets for the similar relationship by applying Vector Autoregression (VAR) model. They carried the analysis on daily data for the period 1998-2004 but he did not find any significant relationship in those countries so their study didn't support Basher (2006) but the data showed very little forecast error variance. They also found that as the monthly lags included the relationship became stronger.

Similarly, Driesprong, Jacobsen, & Maat (2008) had also studied this said relation widely in fifty stock markets of developed and emerging countries. He took emerging markets as out of sample testing. They found strongly significant ability of oil prices to predict stock market reaction. They used monthly and weekly data for thirty years and analysis on basic regression model consisting oil price and stock market return and monthly lagged values. They also found the under reaction of investor in this relation and they argued that the countries having high oil consumption per capita had strong impact than others. Moreover they argued as the lags increases the said relation became stronger and their findings support the findings of Maghyereh (2004) and Hong & Stien (1999).

Another recent research in this context had published by Park &Ratti (2008). They investigated the impact of oil prices fluctuations on stock return. They studied this relationship in USA and other 13 European countries by using vector auto regression model on monthly data from 1986 to 2005. In their model they had also catered industrial production, interest rates, stock return and oil prices. They found statistically significant results that oil importing countries had negative impact of oil prices with one month lag on stock market, except Norway, which is an exporting country that's why positive effect had.

Nonlinear linkage was also tested by Ciner (2001), he took the data of daily closing prices of oil futures contracts and S&P 500 stock index and applied linear and nonlinear Granger causality test in the context of VAR. They didn't found any linear causality in oil and stock returns but they found evidence for non linear causality in US stock market. Odusami (2008) also studied the same non linear association in US market by using daily data from 1996-2005 and applying GARCH model. And he found non linear relationship in US stock market has existed. And the stock market had been negatively affected by its lagged value and oil price.

In the same time period Reboredo (2008) also considered and tested nonlinear effects that oil price shocks have on stock returns by using Markov-switching models, study, from a set of international stock indexes advocates that an increase in oil prices has a negative and significant impact on stock prices in one state of the economy, whereas this effect is significantly dampened in another state of the economy.

Faff &Brailsford (1999) investigated oil price effect in Australia stock market. They used industry index returns and evaluate oil risk in each industry from 1983-1996. They argued that generally oil price impact the cost of many industries. They found positive affect in oil companies while in Paper and Packaging industry and Transport and Banking industry had negative effect. They suggested that financial markets offer hedging against oil price risk and supported by Nandha& Faff (2008).

Following to Faff &Brailsford (1999), Cong, Wie, Jiao and Fan (2008) had studied the similar relationship in China stock market (Stock Exchange and Shenzhen Stock Exchange) by applying VAR and orthogonal impulse response. They also used monthly data from 1996-2007. Their variables were industrial production, interest rates, stock returns and oil price. They studied whole market latter focused on each industry in China stock market. They found significant results in manufacturing industry, mining, petrochemical and 2 oil companies. They also found asymmetric relationship in manufacturing industry only.

The abovementioned association had also investigated by Nandha and Faff (2008) in their study, in which they took sample of 35 Data Stream global industry indices form the period of 1983 to 2005. They argued that when there is an increase in oil prices it leads to negative impact on indices return of all the sectors except of oil and gas industry and mining industry. These results were consistent with prior literature and theory. Moreover a little evidence of asymmetric was also found.

Killian & Park (2009) also investigated the US stock market for the relationship of stock market affects of change in oil prices due to demand and supply. They suggested that these oil shocks whether by demand side or supply side jointly affect the stock market 22% in long run. Miller and Ratti (2009) found long run

relationship between oil and world market indices of OECD countries. He used VECM model and catered monthly data for the period of 1971-2008. The results suggested negative relationship between said variables but he argued that this association became weak after 1999 period.

Constantin and Gruici (2010) examined impact of oil prices on the energy sector and observed the results especially in the context of current economic crisis. They used daily data and apply cointegration test for the data of tow benchmarks for international oil prices. They took WTI and Brent oil prices both for this analysis and for the All Country World Energy Index, an MSCI index that tracks the performance of the energy sector.

Narayan & Narayan (2009) also studied oil prices impact on stock prices of Vietnam market. They used daily data from 2000-08 and took exchange rate as additional determinant of stock market. They found that all the variables are cointegrated and oil prices have positive and statistically significant impact on stock market.

Mohanty et al. (2012) examined the uneven impact of oil price changes on equity returns, market betas, oil betas; return variances, and trading volumes for the US oil and gas industry. The study indicated returns of oil and gas firm and the whole market beta and return variance reacts asymmetric to oil price changes. It was also found that relative changes in oil prices along with firm specific dynamics for example firm size, ROA, leverage, market-to-book ratio (MBR) are important in determining the effects of oil price changes on oil and gas firms' returns, risks, and trading volumes.

Parallel relationship is also examined by Antonakakis and Filis (2013) in 5 stock markets. Data was taken from both oil-importing (US, UK and Germany) and oil exporting economies (Canada and Norway) and sample was measured for the time of 1988-2011. By using the DCC-GARCH structure they found that the volatility of stock market and oil prices are not constant over time and it strongly depends upon the economy structure and status it was also found that Aggregate demand shocks and defensive demand shocks be likely to put into a negative result on stock market relationship, while no outcome from the supply-side oil price shocks can be reported.

The study to examined this relationship in Ghana and Nigeria by Aliyu (2012) by applying GARCH using monthly time series data of both countries and found Nigeria showed weak support bad news affect negatively on stock return as compare to good news while in Ghana this effects are vice versa. And in Taiwan Chang and Che (2011) studied spot oil price and Taiwan stock prices relationship and found that disclosure of significant differences between oil shocks across time and companies. While Soucek and Todorova (2013) has studied the China and Russian stock markets in perspective of oil prices effect and found trading rule out the stock markets of Russia and China in requisites of risk and return. And also found that oil price volatility strongly contribute to the risk profile of trading strategy.

Papapetrou (2001) study established the relationship of oil price impact on stock market in Greece. He researched Greek stock market by founding the negative effects on stock market. He used monthly frequency for data of oil prices, stock return, industrial employment, industrial production and interest rate from 1989-1999. While Le & Chang (2011) studied the said relationship in the stock markets of Singapore, Japan, Korea and Malaysia by applying VAR model and forecasting IRF and VDC for the data of 1986M1-2011M2. They found significant relationship in stock markets and oil prices in these countries.

Methods and Material

For the sake of this paper data stream is using from 1998M01 to 2013M12. Monthly frequency of data is used. The biggest issue of emerging markets is the lack of historical data availability, therefore data time stream can't be extended more and daily and weekly data is also not available for this time series. All the data have been taken in the log return form. The main variables are international crude oil prices and

returns of stock indices of Pakistan and China equity markets. While some previous researches alike Chen et al. (1986), Sadorsky (2001) and Roll et al. (2003) suggest the following macroeconomic factors may have systematic effects on stock market: world market return, interest rate or inflation rate, money supply, and foreign exchange rate and energy price. According to Fama (1981) clearly mention that particularly inflation rate and interest rate have essential role in analysis of stock market performance. Therefore in this research CPI as a proxy of inflation rate is used. Eventually exchange rate also, has paramount importance and direct influence the relationship between stock return and oil price volatility, being used.

In this paper Brent crude oil price used as a substitute of international crude oil price. Data of Brent oil price is retrieved and available at "EIA (Energy Information Administration)". For Pakistan KSE 100 index returns are used while for China SSE Composite Index is being used. For Both countries, data is collected from the website of "Yahoo Finance". As a substitute of inflation rate, for this study, Consumer price index is being used. There is a lot of research available to study the relationship of inflation rate and stock return and found very significant results. It also is important that it has also a relationship with oil prices. As oil prices increases the inflation in country also increases. The data of CPI for Pakistan is collected from the website of "State Bank of Pakistan". While for China CPI index is collected from "OCED Database".

Chen, Roll and Ross (1986), Maysami et al.(2004), Mohammad et al. (2009), Maysami and Koh (2000) and also tested the relationship of exchange rate and stock returns and found significant evidences. The data of US $ exchange rate for Pakistan is collected from the website of "State Bank of Pakistan". While for China US $ exchange rate is retrieved from "OCED Database". To test the asymmetric effect dummy variable also included in this study this thesis will follow Shwarby and Selim (2012) and use a dummy variable which value 1 if oil prices are decreasing and its value will be 0 if oil prices are positive. This dummy variable will be used in VECM in multiplicative form with the oil prices. If the coefficients of variables are negative or if the sum of all the coefficients of oil prices and dummy variables is positive then it will be considered that there is asymmetric effect is present in oil price effect on stock market. The dummy variable will be used in form of

Dum= 1 (if Δoil > 0) and vice versa.
Dum*loil will be used in model.

In this paper firstly the unit root test will be employed on the data of Pakistani and Chinese stock market from 1M1998 to12M2013. Stationarity is checked using test of unit root that are Augmented Dickey Fuller Test, Phillip Perron, and Kwiatkowski Phillips Schmidt Shin (KPSS). Then the study tests the long term and short term connection between stock market and oil price return. For this purpose basically cointegration analysis will be applied, to forecast the results through impulse response and variance decomposition within the structure of VAR/VECM. This methodology is also applied by Sadrosky (1999), Faff &Brailsford (1999), Papapetrou (2001), Maghyereh (2004), Zarour (2006), Park and Ratti (2008) and Miller &Ratti (2009).

For applying Johansen Cointegration test the appropriate lag length is selected through VAR model. It is normally expected that the financial time series are non stationary, and became stationary after differencing, i.e. integrated I(1). If there are two variables that are integrated after differencing, mean they are non stationary (i.e. $\Delta Yt \sim I(0)$ and $\Delta Xt \sim I(0)$) then it would be expected that the linear combination of them also be nonstationary (i.e. $\Delta Yt = \alpha + \beta \Delta Xt + \Delta\mu t$). The nonstationary in both series cancels each other and the error term become stationary (Asteriou& Hall, 2007). According to Veerbek (2008) when two variables are cointegrated then the relationship will show long term stability.Johansen cointegration test results are purposes to statistics; one is trace test and second is max Eigen value test. Both tests are presented in Eviews software.

For testing casual relationship Granger Causality is employed which lead the analysis to Vector Error Correction model. To help the Johansen Cointegration test and to test short term dynamic and long term

equilibrium thesis employed VECM model. VAR model is developed by Sims (1981) to cater the economic variables relationship on their own lags. According to Asteriou& Hall (2007) as $\Delta\mu t \sim I(0)$ then the ECM relation can be specified as

Equation 2……. $\Delta Yt = \alpha + \beta \Delta Xt - \pi\mu t\text{-}1 + Yt$

Where β shows the short run effect, as we say impact multiplier, which estimates the immediate effect that is change in Y have on X. while π shows feedback effect which shows how much of the disequilibrium of preceding time period is being corrected and adjusted now in Y (Asteriou& Hall, 2007). Then for further analysis of Impulse response and Variance decomposition will apply. Impulse response and variance decomposition also used to forecast the effect. As Brooks (2008) explains Variance Decomposition as the rate of change in dependant variable that are due to their own shocks as compared to other variables. The main difference in impulse response and variance decomposition is that IRF shows the effects of shock of a variable on other one while variance decomposition shows the rate of forecast error variance explained by shocks to each explanatory variable.

Results and Discussions

In Table-1 below, descriptive statistics for Pakistan is presented. The average monthly return of KSE is 1.9%. The maximum return within one month is 2.38% and minimum loss is -0.48%. While the average inflation rate is 0.02% and average change in US exchange rate is 0.04%. The average change in oil prices are 1.002% monthly. Maximum increase in the oil prices are 1.08% while minimum decrease is 0.92%.

Table-1: Descriptive Statistics

	RKSE	RCPI	RXR	ROIL
Mean	0.019069	0.002464	0.004653	1.002973
Median	0.025706	-0.008447	0.000984	1.005596
Maximum	0.238730	0.478596	0.081353	1.084707
Minimum	-0.484372	-0.465071	-0.035576	0.927191
Std. Dev.	0.093915	0.143783	0.013363	0.026272
Skewness	-1.416022	0.079226	2.497867	-0.376176
Kurtosis	8.852704	3.862889	13.29800	4.186360
Jarque-Bera	336.4355	6.125401	1042.591	15.78786
Probability	0.000000	0.046761	0.000000	0.000373
Sum	3.642236	0.470576	0.888681	1.986728
Sum Sq. Dev.	1.675802	3.927960	0.033926	1.585154
Observations	192	192	192	192

Table-2: Descriptive Statistics

	RSSE	RCPI	RXR	ROIL
Mean	1.000459	1.000025	0.999197	1.002973
Median	1.000824	1.000000	0.999976	1.005596
Maximum	1.038867	1.004204	1.001927	1.084707
Minimum	0.963456	0.994349	0.991486	0.927191
Std. Dev.	0.010415	0.001344	0.001641	0.026272
Skewness	-0.121388	-0.345608	-2.119729	-0.376176
Kurtosis	4.599612	4.419388	7.856156	4.186360
Jarque-Bera	20.94158	19.93953	332.4420	15.78786
Probability	0.000028	0.000047	0.000000	0.000373
Sum	192.0880	192.0049	191.8458	1.986728
Sum Sq. Dev.	0.020717	0.000345	0.000514	1.585154

Table-2 above present's descriptive statistics for China, the average monthly return of SSE is 0.004% and its maximum return is 0.38%. The average inflation rate is 0.00025% and average increase in US exchange rate for China is 9.99% while the average changes in oil prices are 1.002% monthly. Maximum increase in the oil prices are 1.08% while minimum decrease is 0.92%.

Table-3: Correlation Matrix (For Pakistan)

	KSE	CPI	XR	OIL
KSE	1.000000	-0.055073	-0.061781	0.122173
CPI	-0.055073	1.000000	-0.020998	0.090091
XR	-0.061781	-0.020998	1.000000	-0.082711
OIL	0.122173	0.090091	-0.082711	1.000000

Table-4: Correlation Matrix (For China)

	SSE	CPI	XR	OIL
SSE	1.000000	0.169840	0.035463	0.113006
CPI	0.169840	1.000000	-0.080392	0.121639
XR	0.035463	-0.080392	1.000000	-0.122313
OIL	0.113006	0.121639	-0.122313	1.000000

Table-3 and Table-4 above are given shows the correlation matrix for Pakistan and China respectively. Weak correlation is observed in said variables in both countries which minimize the problem of Multicollinearity it is also observed that CPI (inflation) and exchange rate is negatively correlated with KSE returns. While exchange rate is also negatively correlated with oil price change that is if oil price changes it impact negatively on exchange rate in Pakistan. But changes shows positive change in stock return, it is may be due to the one time effect is checked, while this thesis observe these effects in lags. These results are consistent with theory.

Although Correlation is not a very strong analysis, but is used to get the idea about the casual relationship among variables. Therefore to test casual long term relationship between Stock return and oil price in Pakistan and China multivariate cointegration is employed. Multivariate cointegration test shows the long run relationship. To employ this test there are two steps to be followed: first one to check the level of integration among variables. The entire variable should be integrated on same level. Then next step should be the selection of appropriate lag length. After these step the cointegration will be tested.

Table-5: Unit Root Test (For Pakistan)

Variables	ADF		PP		KPSS	
	level	1st difference	level	1st difference	level	1st difference
LKSE	0.020814 (0.9585)	-13.78503 (0.0000)	0.096508 (0.9647)	-13.81375 (0.0000)	1.618978	0.104492
LCPI	-1.10060 (0.7154)	-6.203848 (0.0000)	-1.755874 (0.4016)	-12.95496 (0.0000)	1.010730	0.064922
LXR	-0.099453 (0.9467)	-9.118382 (0.0000)	-0.000736 (0.9566)	-9.118188 (0.0000)	1.516115	0.135863
LOIL	-1.46462 (0.5577)	-11.49889 (0.0000)	-1.316719 (0.6217)	-11.49889 (0.0000)	1.571017	0.040266
Test Critical Values						
1% level	-3.464643		-3.464643		0.739000	
5% level	-2.876515		-2.876515		0.463000	
10% level	-2.574831		-2.574831		0.347000	

Table-6: Unit Root Test (For China)

Variables	ADF		PP		KPSS	
	level	1st difference	level	1st difference	level	1st difference
LSSE	-1.758367 (0.4003)	-12.79423 (0.0000)	-2.15213 (0.2248)	-13.16262 (0.0000)	0.755600	0.068785
LCPI	-2.23658 (0.1942)	-5.841350 (0.0000)	-2.4279 (0.1354)	-13.03627 (0.0000)	0.797176	0.036811
LXR	0.53463 (0.9875)	-3.69755 (0.0049)	1.336319 (0.9988)	-8.774661 (0.0000)	1.518781	0.544526
LOIL	-1.46462 (0.5577)	-11.49889 (0.0000)	-1.316719 (0.6217)	-11.49889 (0.0000)	1.571017	0.040266
Test Critical Values						
1% level	-3.464643		-3.464643		0.739000	
5% level	-2.876515		-2.876515		0.463000	
10% level	-2.574831		-2.574831		0.347000	

As tables 5 & table 6 above shows that for Pakistan and China the null hypothesis of ADF and PP can't be rejected as the p-values are not significant and KPSS test verify the results of ADF and PP test by accepting the null hypothesis. So it can be stated that log values of all variables are not stationary at level. Therefore we have to test these variables on first difference and the results suggested that, for Pakistan and China both, null hypothesis of unit root has been rejected on first difference by ADF and PP at 5% level of significance and the absolute t-statistics on first difference is greater than test critical values. So on the above evidence it is concluded that all the variables are stationary at first difference i.e. all variables are on same level and integrated on first difference i.e. I(1). As first requirement has been fulfilled or cointegration i.e. all the variables are integrated on first difference.

Table-7: Multivariate Cointegration Test (For Pakistan)

Sample (adjusted): 1998M04 2013M12
Included observations: 189 after adjustments
Trend assumption: Linear deterministic trend
Series: LKSE LCPI LXR LOIL
Lags interval (in first differences): 1 to 2
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.121413	47.89398	47.85613	0.0496
At most 1	0.086206	23.42985	29.79707	0.2256
At most 2	0.032724	6.391409	15.49471	0.6493
At most 3	0.000545	0.103089	3.841466	0.7481

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

From Table-7 and table-8 results it clearly stated that for Pakistan Table-7 fails to reject null hypothesis and reported one cointegration equation. While for China Table-8 also fails to reject null hypothesis and reported 2 cointegration equations. These hypotheses are accepted at 5% level of significance. So it is concluded from given evidence that is long run relationship exist between oil price return and stock return in Pakistan and China equity markets. It also should be notice that Johansen cointegration test do not account for structural breaks.

Table-8: Multivariate Cointegration Test (For China)

Sample (adjusted): 1998M04 2013M12
Included observations: 189 after adjustments
Trend assumption: Linear deterministic trend
Series: LSSE LCPI LXR LOIL
Lags interval (in first differences): 1 to 2
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.163044	64.85362	47.85613	0.0006
At most 1 *	0.122211	31.21472	29.79707	0.0341
At most 2	0.034207	6.578778	15.49471	0.6271
At most 3	2.17E-06	0.000410	3.841466	0.9857

Trace test indicates 2 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table-9: Granger Causality Test (For Pakistan)

Pairwise Granger Causality Tests
Sample: 1998M01 2013M12
Lags: 12

Null Hypothesis:	Obs	F-Statistic	Prob.
LCPI does not Granger Cause LKSE	180	2.13263	0.0177
LKSE does not Granger Cause LCPI		2.51011	0.0048
LXR does not Granger Cause LKSE	180	1.74597	0.0621
LKSE does not Granger Cause LXR		2.37675	0.0077
LOIL does not Granger Cause LKSE	180	1.09522	0.3679
LKSE does not Granger Cause LOIL		2.95324	0.0010
LXR does not Granger Cause LCPI	180	0.94434	0.5047
LCPI does not Granger Cause LXR		1.01565	0.4372
LOIL does not Granger Cause LCPI	180	1.57911	0.1028
LCPI does not Granger Cause LOIL		0.72005	0.7303
LOIL does not Granger Cause LXR	180	1.73988	0.0633
LXR does not Granger Cause LOIL		3.96551	2.E-05

The table-9 is showing the results of Granger Causality in Pakistan. The null hypothesis is rejected as there is bidirectional relationship exists between CPI and KSE returns. The null hypothesis for exchange rate and KSE also rejects while return on KSE and Oil price return also have unidirectional relationship. These entire null hypotheses are rejected on 5% level of significance. These results lead to variance decomposition analysis. Because these result do not shows for how much a variable causes other one.

Table-10: Granger Causality Test (For China)

Pairwise Granger Causality Tests Sample: 1998M01 2013M12 Lags: 12			
Null Hypothesis:	Obs	F-Statistic	Prob.
LCPI does not Granger Cause LSSE	180	1.60297	0.0958
LSSE does not Granger Cause LCPI		3.16434	0.0005
LXR does not Granger Cause LSSE	180	1.79193	0.0538
LSSE does not Granger Cause LXR		1.72351	0.0665
LOIL does not Granger Cause LSSE	180	3.10864	0.0006
LSSE does not Granger Cause LOIL		1.41642	0.1636
LXR does not Granger Cause LCPI	180	1.88229	0.0404
LCPI does not Granger Cause LXR		1.18284	0.2999
LOIL does not Granger Cause LCPI	180	3.13282	0.0005
LCPI does not Granger Cause LOIL		1.38069	0.1804
LOIL does not Granger Cause LXR	180	0.67421	0.7743
LXR does not Granger Cause LOIL		1.54301	0.1143

Table-10 shows the results of causality for China. These results are also tested on 5% level of significance. The result also shows the same results as Pakistan unidirectional relationship exist between CPI and SSE. Oil price returns and Shanghai stock returns also granger causes each other.

The Table-11 shows the results of the VECM that signify that the error term is significant at $\alpha = 0.05$ and 1.3% of disequilibrium is adjusted within a lag of one month. While for short term dynamics shows oil prices lags shows significant results and their betas are negative which shows that oil prices negatively affects the stock market of Pakistan. This result accepts the alternative hypothesis at 5% of level of significance and rejects null. These results are consistent with the studies of Jones &Kaul (1996), Basher &Sadrosky (2006), Zarour (2006) Maghyereh (2004), Driesprong et al. (2008), Park &Ratti (2008), Reboredo (2008) and Faff &Brailsford (1999).

While if the coefficients of oil price on both lags have negative sign it shows and consistent with previous literature that Pakistan is an oil importing country so the stock market shows negative impact of change in oil price i.e. increase in international crude oil price brings decrease in the stock returns of Pakistani stock market on both lags. And inflation effect is also negative as the sign of CPI on both lags negative similarly change in US exchange rate devaluate Pakistani currency which lead to decrease the income of country in this case stock return.

While for China Table-12 table shows the results of the VECM that signify that the error term is significant at $\alpha = 0.05$ and 1.1% of disequilibrium is adjusted within a lag of one month. and the coefficients of bets of oil prices is positive on one month lag while negative for 2nd month lag so it can be concluded that the oil price affects negatively but not immediately in one month. And consistent with prior studied of Jones &Kaul (1996), Basher &Sadrosky (2006), Zarour (2006) Maghyereh (2004), Driesprong et al. (2008), Park &Ratti (2008), Reboredo (2008) and Faff &Brailsford (1999).

Table-11: Vector Error Correction (For Pakistan)

Vector Error Correction Estimates Sample (adjusted): 1998M04 2013M12 Included observations: 189 after adjustments Standard errors in ( ) & t-statistics in [ ]				
CointegratingEq:	CointEq1			
LKSE(-1)	1.000000			
LCPI(-1)	-1.098842 (0.23222) [-4.73195]			
LXR(-1)	-1.110151 (0.77257) [-1.43697]			
LOIL(-1)	-0.669488 (0.29106) [-2.30018]			
C	-3.382086			
Error Correction:	D(LKSE)	D(LCPI)	D(LXR)	D(LOIL)
CointEq1	0.013325 (0.01428) [0.93297]	0.084121 (0.02116) [3.97631]	-0.004256 (0.00184) [-2.30726]	0.007859 (0.01365) [0.57565]
D(LKSE(-1))	-0.042993 (0.07783) [-0.55241]	-0.262354 (0.11528) [-2.27574]	-0.017215 (0.01005) [-1.71274]	0.088941 (0.07440) [1.19550]
D(LKSE(-2))	-0.080167 (0.07883) [-1.01702]	-0.062093 (0.11676) [-0.53180]	-0.005704 (0.01018) [-0.56031]	0.141717 (0.07535) [1.88081]
D(LCPI(-1))	-0.004202 (0.04777) [-0.08797]	0.073816 (0.07076) [1.04324]	0.005704 (0.00617) [0.92458]	-0.004361 (0.04566) [-0.09552]
D(LCPI(-2))	-0.115761 (0.04795) [-2.41438]	-0.026747 (0.07102) [-0.37661]	-0.005754 (0.00619) [-0.92920]	0.068477 (0.04583) [1.49408]
D(LXR(-1))	-0.374040 (0.58064) [-0.64419]	0.850214 (0.86007) [0.98854]	0.365220 (0.07499) [4.87053]	-0.715148 (0.55504) [-1.28847]
D(LXR(-2))	-0.462629 (0.58975) [-0.78445]	0.465276 (0.87356) [0.53262]	-0.041047 (0.07616) [-0.53895]	-0.486783 (0.56374) [-0.86349]
D(LOIL(-1))	-0.044878 (0.07728) [2.58072]	0.073490 (0.11447) [0.64200]	-0.001647 (0.00998) [-0.16502]	0.127993 (0.07387) [1.73265]
D(LOIL(-2))	- 0.118669 (0.07603) [2.56077]	-0.018661 (0.11262) [-0.16569]	0.025461 (0.00982) [2.59299]	-0.028421 (0.07268) [-0.39105]
C	0.024265 (0.00769) [3.15377]	0.000294 (0.01140) [0.02575]	0.003342 (0.00099) [3.36380]	0.011384 (0.00735) [1.54786]
R-squared	0.071036	0.097335	0.238477	0.100007
Adj. R-squared	0.024329	0.051949	0.200188	0.054756
Sum sq. resids	1.547093	3.394464	0.025802	1.413654
S.E. equation	0.092968	0.137708	0.012006	0.088868
F-statistic	1.520871	2.144628	6.228365	2.210044
Log likelihood	185.9280	111.6729	572.7799	194.4519
Akaike AIC	-1.861672	-1.075904	-5.955342	-1.951872
Schwarz SC	-1.690151	-0.904383	-5.783821	-1.780351
Mean dependent	0.019459	0.001206	0.004702	0.011295
S.D. dependent	0.094120	0.141431	0.013425	0.091406
Determinant resid covariance (dof adj.)		1.76E-10		
Determinant resid covariance		1.42E-10		
Log likelihood		1070.130		
Akaike information criterion		-10.85852		
Schwarz criterion		-10.10383		

Table-12: Vector Error Correction (For China)

Vector Error Correction Estimates Sample (adjusted): 1998M04 2013M12 Included observations: 189 after adjustments Standard errors in ( ) & t-statistics in [ ]				
CointegratingEq:	CointEq1	CointEq2		
LSSE(-1)	1.000000	0.000000		
LCPI(-1)	0.000000	1.000000		
LXR(-1)	3.041348	-0.028663		
	(0.90151)	(0.03677)		
	[3.37362]	[-0.77951]		
LOIL(-1)	0.557555	-0.015286		
	(0.18007)	(0.00734)		
	[3.09636]	[-2.08123]		
C	-17.00045	-4.476134		
Error Correction:	D(LSSE)	D(LCPI)	D(LXR)	D(LOIL)
CointEq1	-0.011590	0.004192	-0.001980	-0.035495
	(0.01837)	(0.00136)	(0.00060)	(0.02080)
	[-0.63104]	[3.07135]	[-3.28352]	[-1.70662]
CointEq2	-0.982772	-0.145668	-0.025045	0.112482
	(0.43122)	(0.03205)	(0.01416)	(0.48833)
	[-2.27903]	[-4.54525]	[-1.76855]	[0.23034]
D(LSSE(-1))	-0.001816	-0.008968	0.002386	0.147947
	(0.07614)	(0.00566)	(0.00250)	(0.08623)
	[-0.02385]	[-1.58466]	[0.95437]	[1.71578]
D(LSSE(-2))	0.130330	0.001561	-0.001200	0.111535
	(0.07719)	(0.00574)	(0.00253)	(0.08741)
	[1.68853]	[0.27213]	[-0.47335]	[1.27603]
D(LCPI(-1))	1.596689	0.088295	-0.000479	2.333692
	(0.96105)	(0.07142)	(0.03156)	(1.08833)
	[1.66141]	[1.23620]	[-0.01519]	[2.14429]
D(LCPI(-2))	0.627737	0.097356	0.009110	0.395061
	(0.97630)	(0.07256)	(0.03206)	(1.10560)
	[0.64298]	[1.34176]	[0.28413]	[0.35733]
D(LXR(-1))	-2.642236	-0.149100	0.242981	-1.319243
	(2.28371)	(0.16973)	(0.07500)	(2.58616)
	[-1.15699]	[-0.87848]	[3.23988]	[-0.51012]
D(LXR(-2))	0.391281	-0.110218	0.102583	-1.897703
	(2.28334)	(0.16970)	(0.07499)	(2.58574)
	[0.17136]	[-0.64949]	[1.36804]	[-0.73391]
D(LOIL(-1))	0.050892	0.001130	0.000296	0.132207
	(0.06674)	(0.00496)	(0.00219)	(0.07558)
	[2.76252]	[0.22779]	[0.13505]	[1.74920]
D(LOIL(-2))	-0.040674	0.004074	-0.001202	-0.016549
	(0.06597)	(0.00490)	(0.00217)	(0.07471)
	[-2.61655]	[0.83092]	[-0.55486]	[-0.22151]
C	-0.001614	-0.000370	-0.001049	0.002258
	(0.00725)	(0.00054)	(0.00024)	(0.00821)
	[-0.22262]	[-0.68613]	[-4.40717]	[0.27500]
R-squared	0.100858	0.163971	0.397959	0.089708
Adj. R-squared	0.050344	0.117003	0.364137	0.038568
Sum sq. resids	1.106471	0.006112	0.001193	1.418962
S.E. equation	0.078842	0.005860	0.002589	0.089284
F-statistic	1.996640	3.491131	11.76610	1.754163
Log likelihood	217.6046	708.8864	863.2485	194.0977
Akaike AIC	-2.186292	-7.385041	-9.018503	-1.937542
Schwarz SC	-1.997619	-7.196368	-8.829830	-1.748869
Mean dependent	0.002815	9.37E-05	-0.001601	0.009694
S.D. dependent	0.080905	0.006236	0.003247	0.091058
Determinant resid covariance (dof adj.)		1.08E-14		
Determinant resid covariance		8.48E-15		
Log likelihood		1989.138		
Akaike information criterion		-20.49881		
Schwarz criterion		-19.60690		

In the case of China, oil price on 1 month lag have positive coefficient, while on 2nd month lag the coefficient of oil has negative sign. This may be shown that the sudden change in oil price doesn't bring an immediate change on stock market but on 2nd month lag it has negatively affect stock market similarly to Pakistani stock market. The negative sign is symbols that like other oil importing countries stock returns of china also response negatively in response of oil price changes.

Impulse Response Function

According to Brooks (2008), when data became stationary shocks will die away toward to zero. The impulse response will be tested or 12 period. The motivation behind this is that the research analysts argue for monthly data the maximum lags should be 12. The ordering is defined by the Cholesky method. Table-13 represents the response of exogenous variables on the KSE returns the first column shows the forecast period. The fig shows that in Pakistan the CPI has negative effect on KSE returns over the period of 12 months. And US $ exchange rate also effect the KSE negatively whole year as it also shows downward trend. These results are consistent with theory. The effect of oil price change starts from 2nd period and there is positive but slightly decreasing response is shown.

Table-13: Response of KSE to Cholesky One S.D Innovations (For Pakistan)

Period	RKSE	RCPI	RXR	ROIL
1	0.092238	0.000000	0.000000	0.000000
2	6.00E-05	-0.003372	-0.013291	0.001228
3	0.001301	-0.023725	-0.015133	0.009967
4	-0.003003	-0.003592	-0.030172	0.007258
5	0.009180	-0.004401	-0.019559	0.006394
6	0.009455	-0.010354	-0.017171	0.003481
7	0.008030	-0.007703	-0.018846	0.005956
8	0.005975	-0.007777	-0.020200	0.006567
9	0.007414	-0.008522	-0.019528	0.005330
10	0.007150	-0.007610	-0.019416	0.005603
11	0.007116	-0.008156	-0.019475	0.005917
12	0.007267	-0.008149	-0.019520	0.005620

Cholesky Ordering: RKSE RCPI RXR ROIL

Figure-1: Response of KSE to Cholesky One S.D Innovations (For Pakistan)

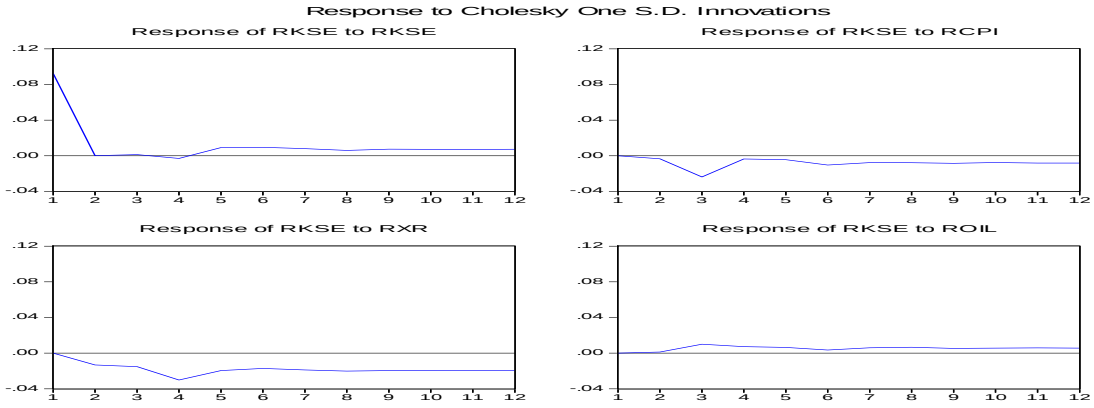
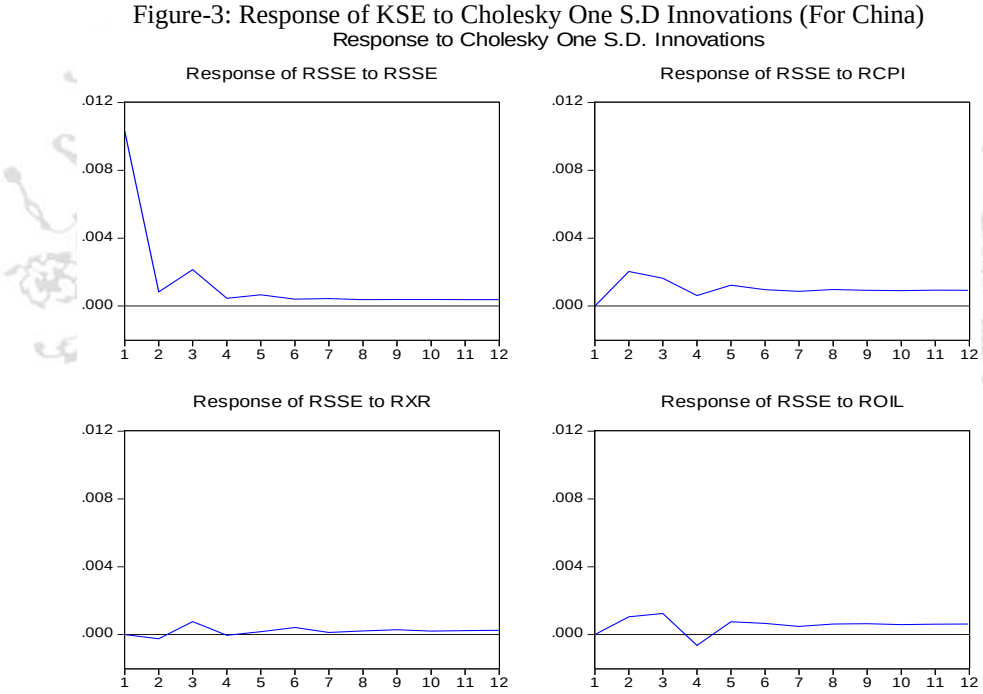


Table-14: Response of SSE to Cholesky One S.D Innovations (For China)

Period	RSSE	RCPI	RXR	ROIL
1	0.010306	0.000000	0.000000	0.000000
2	0.000830	0.002037	-0.000248	0.001051
3	0.002143	0.001632	0.000766	0.001248
4	0.000451	0.000614	-4.66E-05	-0.000641
5	0.000662	0.001229	0.000173	0.000758
6	0.000405	0.000962	0.000418	0.000663
7	0.000438	0.000862	0.000130	0.000481
8	0.000379	0.000972	0.000219	0.000620
9	0.000387	0.000927	0.000288	0.000644
10	0.000382	0.000910	0.000202	0.000587
11	0.000376	0.000933	0.000229	0.000617
12	0.000378	0.000923	0.000248	0.000622
Cholesky Ordering: RSSE RCPI RXR ROIL				

Figure-3: Response of KSE to Cholesky One S.D Innovations (For China)



While for China Table-14 shows that in 2nd month CPI affect SSE 0.2%, while exchange rate effect -0.02% and oil shock present 0.15% to SSE. And similarly the figure represent that the CPI, exchange rate and Oil prices have positive but decreasing trend on SSE return index within 12 month period.

Variance Decomposition

Table-15 and Table-16 represents the Variance Decomposition of forecast error in stock return of world crude oil price after 12 months for Pakistan and China respectively. The values represents the percentage change of how much the unanticipated changes of stock returns that are explained by world oil price change over the period of 12 months.

Table-15: Variance Decomposition of RKSE (For Pakistan)

Period	S.E.	RKSE	RCPI	RXR	ROIL
1	0.092238	100.0000	0.000000	0.000000	0.000000
2	0.093260	97.82099	0.130715	2.030956	0.017340
3	0.097930	88.73108	5.987607	4.229695	1.051615
4	0.102836	80.55204	5.551905	12.44429	1.451762
5	0.105367	77.48685	5.462787	15.29931	1.751057
6	0.107730	74.89509	6.149483	17.17593	1.779503
7	0.110092	72.24815	6.377988	19.37720	1.996660
8	0.112551	69.40825	6.579865	21.76101	2.250867
9	0.114913	67.00005	6.862072	23.76345	2.374429
10	0.117143	64.84629	7.025352	25.61466	2.513692
11	0.119390	62.78377	7.230128	27.32051	2.665597
12	0.121597	60.88264	7.419168	28.91484	2.783357

Cholesky Ordering: RKSE RCPI RXR ROIL

The results in Table-15 suggest that inflation rate, exchange rate and world crude oil price are considerable sources of volatility in stock returns in Pakistani market. The role of an inflation rate shock to KSE return varies from 5% to 7% while the contribution of exchange rate is 2% to 29%. While change in world crude oil price impact the market from 1.05% to 3%. These changes have significant impact on Stock market. As per the expectation that granger causality does not shows too strong relation and week impulse response.

Table-16: Variance Decomposition of RSSE (For China)

Period	S.E.	RSSE	RCPI	RXR	ROIL
1	0.010306	100.0000	0.000000	0.000000	0.000000
2	0.010593	95.26331	3.697596	0.054973	0.984126
3	0.011028	91.67602	5.601774	0.533304	2.188901
4	0.011073	91.09920	5.863679	0.530756	2.506368
5	0.011188	89.59075	6.950446	0.543949	2.914854
6	0.011263	88.51631	7.587129	0.674096	3.222468
7	0.011316	87.84877	8.097093	0.681078	3.373060
8	0.011383	86.92908	8.730781	0.709940	3.630198
9	0.011449	86.04424	9.285501	0.765184	3.905077
10	0.011508	85.27128	9.815238	0.788248	4.125231
11	0.011571	84.45709	10.35895	0.818836	4.365127
12	0.011633	83.66165	10.87824	0.855669	4.604448

Cholesky Ordering: RSSE RCPI RXR ROIL

The results in Table-16 suggest that inflation rate, exchange rate and world crude oil price are considerable sources of volatility in stock returns in Chinese market. The role of an inflation rate shock to SSE return varies from 3% to 11% while the contribution of exchange rate is 0.05% to 0.85%. While change in world crude oil price impact the market from 1% to 5%. These changes have significant impact on Stock market.

Asymmetric Effects

To test asymmetric effects the VECM model re-estimated with the dummy variable. And dummy variable is used in multiplicative response. Here this thesis is only concerned about the sign of coefficients of dummy variable. So the detailed VECM results are presented in tables while the coefficients' are discussed here.

Table-17: Asymmetric Effect (For Pakistan)

D(DUM(-1)*LOIL(-1))	-0.002678 (0.00669) [-2.40050]	D(LOIL(-1))	0.202214 (0.11830) [1.70936]
D(DUM(-2)*LOIL(-2))	-0.009607 (0.00558) [-2.72177]	D(LOIL(-2))	0.118909 (0.07678) [1.54874]

This paper follows the methodology of Shwarby and Selim (2012) and found that there is asymmetric effect is present in Pakistan stock market as the coefficients of dummy variable is negative in both lags (Table-17). And if the sum of coefficients of oil prices and dummy is calculated then it is 0.308838 which is a positive value and affirms the asymmetric effect in Pakistan. These results support the 2nd hypothesis of thesis while it also consistent with the studies of Faff and Brailsford (1999) and Basher &Sadrosky (2006).

Table-18: Asymmetric Effect (For China)

D(DUM(-1)*LOIL(-1))	-0.007380 (0.00390) [1.89301]	D(LOIL(-1))	-0.045208 (0.10354) [-0.43664]
D(DUM(-2)*LOIL(-2))	-0.004297 (0.00321) [2.33919]	D(LOIL(-2))	-0.004812 (0.06600) [-0.07292]

Form Table-18 it is concluded that there is asymmetric effect is present in China stock market as the coefficients of dummy variable is negative in both lags. And again if the sum of coefficients of oil prices and dummy is calculated then it is -0.061697 which is not a positive value and does not affirms the asymmetric effect in China. So it can be said that in China there is not a strong support for asymmetry but still it is concluded that these results support the 2nd hypothesis as but it shows week asymmetry, while it is consistent with the studies of Faff and Brailsford (1999) and Basher &Sadrosky (2006).

Conclusion

The unit root test suggested that unit root exist in all variables on log level therefore are not stationary. All variables became stationary on first difference i.e. integrated on I(1). Then for applying Johansen Cointegration test the appropriate lag length is selected through VAR model. AIC suggested 2 lags for both countries. Then with 2 lags Multivariate Johansen cointegration test had reported that there is 1 cointegration relationship exists in Pakistan market while 2 cointegration equations exists in Chinese stock market. Then for further analysis of Impulse response and Variance decomposition, Vector Error Correction Model have to be applied and it shows that in Pakistan 1.3% of disequilibrium is adjusted within a lag of one month while in China 1.1% of disequilibrium is adjusted within a lag of one month. And impulse repose also shows in short term world oil price shock will represent 0.15% in China stock market and 0.12% in Pakistan stock market at 5% level of significance. While Variance Decomposition reported that change in world crude oil price impact the Pakistani stock market ranges from 1.05% to 3% and in Chinese stock market from 1% to 5%.

The results show that a very low level of reaction is being observed in stock market from the fluctuations in international oil prices. The first and foremost reason of it that the markets are not developed. And due to developing and lack of knowledge of investor the markets also inefficient which restrict the market to capture the fluctuation of oil prices. While the other major reason is which also discussed by Basher

&Sadrosky (2006) and Driesprong, Jacobsen, & Maat (2008) that both countries are oil importing. And the oil importing countries have negative impact of change in oil prices while the intensity of this relationship is too low that some time it is not captured in different studies.

The test for asymmetric also shows that there is asymmetry is present in Pakistan and China stock markets as the betas of dummy variable are negative. This result is concluded by following the methodology of Shwarby and Selim (2012) and these also consistent with the results of Faff and Brailsford (1999) and Basher &Sadrosky (2006) which this paper more strong. The asymmetric presents that when there is an increase in oil prices markets of both countries captures the effects and lower their returns while when there is any decrease in oil prices being oil importing country these markets show a very low affect of it than previous one.

This paper presents the results for oil price and stock market volatility in emerging markets by taking Pakistan and China as evidence. It also tested the asymmetric effects of oil price volatility. For further research still there is a lot area for research. Next researchers can add up more countries of Asia as these countries are not catered in literature. Moreover this thesis does not goes for non linear relationship but there is evidence presented in literature for non linearity in this relationship by Maghyereh and Al-Kandari (2007), Ciner (2001), Odusami (2008).

References

Aliyu , Shehu Usman Rano, (2012), "Does inflation have an impact on stock returns and volatility? Evidence from Nigeria and Ghana",Applied Financial Economics, 427-435.

Antonakakis, N., & Filis, G. (2013). "Oil prices and stock market correlation: a time vayring approach", International Journal of Energy and Statistics, 17-19.

Asteriou, D. & Hall, S. G. (2007), Applied econometrics: A modern approach using EViews and Microfit, Basingstoke England, Palgrave Macmillan.

Baltagi, Badi. (2003),A Companion to Theoretical Econometrics, Malden, Blackwell Publishing Ltd.

Basher, Syed A. Sadorsky, Perry. (2006),"Oil price risk and emerging stock markets",Global Finance Journal(17), 224–251.

Brooks, Chris.(2008),Introductory Econometrics for Finance, Cambridge, CAMBRIDGE UNIVERSITY PRESS.

Chang , C.-H., & Che, W. (2011),"A empirical study of changes in international crude oil spot price relationship between Taiwan stock prices",Journal of Information and Optimization Sciences, 1219-1227.

Chen, N.-F., Roll, R., & Ross, S. (1986),"Economic Forces and the Stock Market", The Journal of Business, 59(3), 383-403.

Cong , R.-G., Wei, Y.-M., & Jiao, J.-L. (2008), "Relationships between oil price shocks and stock market: An empirical analysis from China",Energy Policy, 3544– 3553.

Constantin, A.-O., & Gruici, B. (2010),"Testing the Cointegration of Oil Prices and Energy Sector Equity Indices",Economic Sciences Series, 75-82.

Driesprong, Gerben.Jacobsen, Ben. Matt, Benjamin. (2008),"Striking oil: Another puzzle?", Journal of Financial Economics, 307-327.

Engle, R. F. & Granger, C. W. J. (1987),"Cointegration and error correction: representation, estimation, and testing", Econometrica, 55, 251±276.

Faffa, Robert W. Brailsford, Timothy J. (1999), "Oil price risk and the Australian stock market", Journal of Energy Finance and Development, 69-87.

Fang, Chung-Rou.(2010),"The impact of oil price shocks on the three BRIC countries' stock prices", Working Paper,National Cheng-Chi University, Taiwan.

FERDERER, J. P. (1996),"Oil Price Volatility and the Macroeconomy",Journal of Macroeconomics, 1-26.

Granger, C. W. J. (1969),"Investigating causal relations by econometric models and cross-spectral methods", Econometrica, 37, 424±439.

Gujarati, D. N. & Porter, D. C. (2009),Basic econometrics, Boston, Mass, McGraw-Hill.
Hamilton, J. (2000), "What is an Oil Shock?" NBER Working Paper (7755).
Hamilton, J. D. (2003),"What is an oil shock?",Journal of Econometrics, 363-398.
Huang, R., Masulis, R., & Stoll, H. (1996),"Energy Shocks and Financial Markets"Working Paper,Journal of Futures Markets, 93-11.
International Monetary Fund, 2000, The Impact of Higher Oil Prices on the Global Economy, Prepared by the Research Department.
Jones, Charles M. & Kaul, Gautam. (1996),"Oil and the Stock Markets", The Journal of Finance, 463-491.
Maghyereh, Aktham. Al-Kandari, Ahmad. (2007), "Oil prices and stock markets in GCC countries: new evidence from nonlinear cointegration analysis",Managerial Finance, 449-460.
Maghyereh, Aktham. (2004),"Oil Price Shocks And Emerging Stock Markets: A Generalized Var Approach" International Journal of Applied Econometrics and Quantitative Studies.
Mussa, M. (2000),"The Impact of Higher Oil Prices on the Global Economy", International Monetary Fund.
Nandha, M., & Faff, R. (2008),"Does oil move equity prices? A global view",Energy Economics, 986–997.
Narayan , P., & Narayan, S. (2009),"Modelling the impact of oil prices on Vietnam's stock prices", Applied Energy, 356-361.
Odusami, Babatunde Olatunji. (2009),"Crude oil shocks and stock market returns",Applied Financial Economics.
Ono, S. (2011), "Oil price shocks and stock markets in BRICs", The European Journal of Comparative Economics, vol. 8, no. 1, pp. 29-45.
Papapetrou, Evangelia. (2001),"Oil price shocks, stock market, economic activity and employment in Greece",Energy Economics, 511-532.
Sadorsky, Perry. (1999),"Oil price shocks and stock market activity"Energy Economics(21), 449-469.
Shwarby, Sherine. &Selim, Hoda. (2012), "Are International Food Price Spikes the Source of Egypt's High Inflation?",The World Bank Middle East and North Africa Region Poverty Reduction and Economic Management Unit. 6177.
Sims, C. A. (1980),"Macroeconomics and reality", Econometrica, 1-48.
Soucek, Michael. Todorova, Neda. (2013),"Economic significance of oil price changes on Russian and Chinese stock markets" Applied Financial Economics, 561-571.
Verbeek, M. (2008),A guide to modern econometrics, Chichester, England, John Wiley & Sons.
Zarour, Bashar Abu. (2006),"Wild oil prices, but brave stock markets! The case of GCC Stock markets", Operational Research. An International Journal., 6, 145-162.