

IMPACT OF OIL PRICES ON STOCK RETURNS: EVIDENCE FROM PAKISTAN'S STOCK MARKET

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Abstract

Very few studies have investigated the movement in stock returns that result due to changes in oil prices. In recent years due to cooling down of China, unveiled oil reserves of Iran, decreasing demand worldwide and discovery of shale gases the world has experienced a large fall in the oil prices. These changes are also affecting performance of manufacturing and other associated companies in countries all over the world. Pakistan has also been affected by these changes in many ways. Especially, the returns on stock markets have been affected a lot by the variations in the oil prices. This paper using monthly data set from years 2014 to 2016 of the non-financial firms operated in Pakistan Stock Exchange (PSX), investigates the effect of variation in oil prices on returns on stock. Results from the panel data analysis indicate a negative relationship between the variables. Since, Pakistan is an oil importing, movement in the prices contribute towards affecting the production cost in a positive manner which in turn affects the execution of the enterprises as well as returns of the stocks negatively.

JEL Classifications:

Q41;G12; Q43; O14

Keywords: Oil prices, stock returns, manufacturing sector, demand, import, enterprises

Introduction

Economic growth of the oil dependent country may get affected by variations in oil prices. After a stable period between 1986 and 2006, the oil prices have had a very volatile movement. They rose from \$60 to \$145 between 2007 and 2009 and then the world witnessed unprecedented fall of oil prices, which took it to the price of mere \$30 a barrel. There are many factors that were responsible for that fall in oil prices. For instance, increase in supply of crude oil due to the production of shale gas and excessive production of oil in Middle East. Iraq and Libya kept their oil production up regardless of their political shakiness. Saudi Arabia did not reduce its productions due to the economic and political reasons. Another important reason was that China saw corrections in its growth rate, there was recession in Japan, and European countries like Germany faced serious economic downturn. These were the factors that are deemed responsible for fall

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of demand of oil all over the world. Along with the supply and demand dynamics, the world also learned to live more efficiently and environment friendly. Now the oil has been replaced with more environment friendly fuels like bio fuels, etc.

Historically, changes in oil prices have caused much of the economic turbulence during the last few years. A very small literature is available that investigates the effect of change in oil price on economic factors and stock return of the companies that are directly or indirectly influenced by the movements in oil prices. Research related to oil price changes and returns on stock have shown diverse results for on oil importing countries from oil exporting countries. In case of oil importing countries oil price volatility directly affects the economic activity of the country (see Hamilton (1983)¹, Ferson and Harvey (1995)²). A large literature shows that there is a great importance of the price of crude oil on stock market return (see Jones and Kaul (1996)³; Abel and Bernanke (2001)⁴). There is even smaller literature available showing linkage between oil price movement and stock return for net oil importing countries see for example, Jordan and Lebanon^{5,6}. Similarly, very limited research is available on sectoral level. Most of the available studies have used the data of US stock market to investigate (Broadstock and Filis, 2014⁷) in Europe (Arouri et al., 2012⁸) in Jordan (Bouri et al. 2016⁹) and in Pakistan impact of changes in oil and gas prices on stock returns of energy incentive industries had been investigated previously.¹⁰

Theoretically, changes in oil prices affect the stock returns. The cash flows are directly or indirectly affected by changes in oil prices. Especially, if a country is an oil importing an increase in oil prices leads to increase in cost of productions and thus, reduces cash flows of the companies. Recent literature available in Pakistan only determines the effect of changes in oil price on stock return for only oil and gas sector on quarterly data (see for example Arshad and Bashir, 2015¹¹).

¹Hamilton, James D. "Oil and the macroeconomy since World War II." *Journal of political economy* 91, no. 2 (1983): 228-248.

²Ferson, Wayne E., and Campbell R. Harvey. "Predictability and time-varying risk in world equity markets." *Research in Finance* 13 (1995): 25-88.

³Jones, Charles M., and Gautam Kaul. "Oil and the stock markets." *The journal of Finance* 51, no. 2 (1996): 463-491.

⁴Abel, Andrew B., and Ben S. Bernanke. "Macroeconomics, 4.bs." *Boston, San Francisco*, (New York: Addison Willey Longman inc., 2001), pp.634-670

⁵Bouri, Elie. a "Return and volatility linkages between oil prices and the Lebanese stock market in crisis periods." *Energy* 89 (2015): 365-371

⁶Bouri, Elie. b "A broadened causality in variance approach to assess the risk dynamics between crude oil prices and the Jordanian stock market." *Energy Policy* 85 (2015): 271-279.

⁷Broadstock, David C., and George Filis. "Oil price shocks and stock market returns: New evidence from the United States and China." *Journal of International Financial Markets, Institutions and Money* 33 (2014): 417-433.

⁸Arouri, Mohamed El Hedi, Jamel Jouini, and Duc Khuong Nguyen. "On the impacts of oil price fluctuations on European equity markets: Volatility spillover and hedging effectiveness." *Energy Economics* 34, no. 2 (2012): 611-617.

⁹Bouri, Elie, Basel Awartani, and Aktham Maghyereh. "Crude oil prices and sectoral stock returns in Jordan around the Arab uprisings of 2010." *Energy Economics* 56 (2016): 205-214

¹⁰Arshad, RABIA., and ADNAN. Bashir. "Impact of oil and gas prices on stock returns: Evidence from Pakistan's energy intensive industries." *International Review of Social Sciences* 3, No. 4 (2015): 156-168

¹¹ *Ibid.*

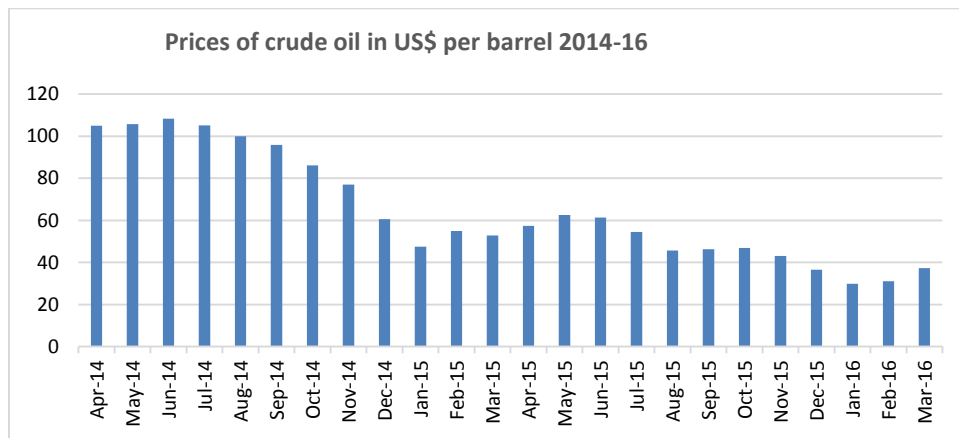
Importance of crude oil in Pakistan

Pakistan heavily relies on oil and gas resources. Variations of oil prices, therefore, affect performance of Pakistan's economy. In Pakistan, oil import is 33% of Pakistan's aggregate imports. A variation in oil cost has always an impact on national exchequer. For example, fall in the oil prices derives down the bill of imports and therefore, improves balance of payment conditions. In 2014-15, the bill of oil import came down from \$15.36 billion in 2013-14 to \$11.86 billion (Economic survey of Pakistan 2014-15¹²), a 22.8% decrease. This caused decline in the current account deficit and put a positive impact on availability of foreign exchange savings.

Low worldwide crude oil prices are the restrictive motivating factors for the upstream oil sectors (see Fig 1), which result in the fall of exploration of oil. This cause fall in investment in local oil production. Low crude oil prices from 2014 to 2016 have adversely affected the price of PSO share. In like manner, the offer cost of OGDCL declined by 63 percent during the period between 2014-2016 (OGRA Annual Report 2015-16¹³).

Thus Pakistan needs to import vast amount of oil and oil based items from Middle East nations particularly from Saudi Arabia. In financial year 2015-16 consumption of different oil products increases by 5.2 percent during the year 2014-15 (OGRA Annual Report 2015-16¹⁴).

Figure-1 Prices of crude oil



Source: OGRA¹⁵

¹²“Economic Survey of Pakistan 2014-15.” *Islamabad: Government of Pakistan* (2015).

http://www.finance.gov.pk/survey_1617.html (accessed July 14, 2017).

¹³OGRA-Oil and Gas Regulating Authority (2016). Annual Report (2015-16). <https://www.ogra.org.pk/ogra-annual-reports> (accessed July 20, 2017).

¹⁴ *Ibid.*

¹⁵ *Ibid.*

The rest of the paper is structured as follows: Section 2 presents the literature review; Section 3 contains data and methodology. Section 4 presents the findings. Conclusion is presented in the section 5.

Review of related literature

The link between oil price and stock returns has great significance for net oil exporting and net oil importing countries. There are two strands of literature related to the oil price movement and stock returns. The first measures changes in oil price on the returns of the stock of individual companies and the other strand relates this movement to the industry returns.

However, for oil exporting countries, movement in oil prices have theoretically and empirically positive impact on stock returns. Basher and Sadorsky (2006)¹⁶ using a multifactor model showed that risk of the oil prices influenced the returns of the stock market of the different emerging economies. Park and Ratti (2008)¹⁷ found positive as well as significant association between movement of oil prices and stock return in Norway. They negative relationship for the other various European countries. The main problem with the previous different studies is that all those studies have just studied the behavior of stock market as whole and did not focused the behavior of individual sectors of the stock market on the economy.

The available literature shows that economic activity as well as real stock returns of the countries that are dependent on oil are mostly affected by the adjustments in the prices of oil see Sadorsky (1999)¹⁸. Similarly, there are various sectors operating in the stock market and all of them have different exposure to the risk of oil prices (see Ghoilpour, 2011¹⁹). The result of Faff and Brailsford (1999)²⁰ for 24 different industries of Australia for the period of years 1983 to 1996. They found a positive and significant impact of prices of oil on stock returns. On the other hand, Hammoudeh and Li (2005)²¹ observed the relationship between the returns of stock market of two industries that are oil sensitive enterprises including oil and transportation as well as two countries that export oil including Mexico and Norway with the prices of oil and capital market of the world. Finding of this paper suggest negative relationship between capital market of the world and growth in the oil price.

However, the literature related to the impact of oil prices on stock return for oil importing countries shows inverse relationship between oil prices and stock returns. For instance

¹⁶Basher, Syed A., and Perry Sadorsky. "Oil price risk and emerging stock markets." *Global finance journal* 17, No. 2 (2006): 224-251

¹⁷Park, Jungwook, and Ronald A. Ratti. "Oil price shocks and stock markets in the US and 13 European countries." *Energy economics* 30, no. 5 (2008): 2587-2608

¹⁸Sadorsky, Perry. "Oil price shocks and stock market activity." *Energy economics* 21, no. 5 (1999): 449-469

¹⁹Ghoilpour, Hassan Fereidouni. "The Effect of Energy Prices on Iranian Industry Stock Returns." *Review of Middle East Economics and Finance* 7, no. 1 (2011): 32-51

²⁰Faff, Robert W., and Timothy J. Brailsford. "Oil price risk and the Australian stock market." *Journal of Energy Finance & Development* 4, no. 1 (1999): 69-87.

²¹Hammoudeh, Shawkat, and Huimin Li. "Oil sensitivity and systematic risk in oil-sensitive stock indices." *Journal of Economics and Business* 57, no. 1 (2005): 1-21.

Huang et al. (1996)²² observed the negative relationship between returns of the stock market and oil prices. Henriques and Sadorsky (2008)²³ in their research they studied about the use of alternative energy sources and technology of the firms for the period of January 2001 to May 2007 and according to the results of this research study changes in the valued of the stock of technology firms had a very large impact on the prices of the stock of the alternative firms of the energy as compare to the oil prices.

Moreover, results of the various research studies indicate that shocks of the oil prices have a very significant affect in order to determine the returns of the stock Market indices of the China but rather they did for the index of the manufacturing and some of the oil firms. According to the McSweeney and Worthington (2008)²⁴, stock market can be defined as the systematic risk that contributed towards providing the information about the different behavior of the prices of stock. The researchers had utilized a multifactor model and observed that returns of the stock as the most dominant factor as compare to the prices of oil in order to explain the stock returns of the industries of an Australian economy.

Although many studies have linked the oil prices and macroeconomic variables, but still a very small literature available related to the effect of oil prices on sectorial stock returns. Especially, for the countries like Pakistan, there is dearth of studies examining the relationship between oil price movement and stock return. Few studies for example, Arshad and Bashir (2015)²⁵ using multifactor model and panel regression have determined the impact of oil prices and stock returns for energy intensive sectors of Pakistan.

Moreover, study by Oberndorfer (2009)²⁶ observed the impact of the developments of the energy market, that includes industries of crude oil, coal, gas and other energy utilities companies. The results of the study indicate a negative relationship between increased prices of the oil and returns on the stock market of energy utilities and a positive relationship was examined between oil prices and stock returns of the crude oil companies. In case of the prices of gas, no relationship was observed whereas changes in the prices of the coal have a very little impact on the prices of the stock of the European energy utilities. The study Narayan and Sharma (2011)²⁷ using the data of the firm operated in US by focusing on total 560 firms from 14 sectors of the New York Stock Exchange show that the response of the firms to the changes in the price of oil is heterogeneous and this response depends on the sector as well as on the size of the firms.

²² *Ibid.*

²³ Sadorsky, Perry, and Irene Henriques. "Multifactor risk and the stock returns of Canadian paper and forest products companies." *Forest Policy and Economics* 3, no. 3-4 (2001): 199-208.

²⁴ McSweeney, Evan J., and Andrew C. Worthington. "A comparative analysis of oil as a risk factor in Australian industry stock returns, 1980-2006." *Studies in economics and finance* 25, no. 2 (2008): 131-145.

²⁵ *Ibid.*

²⁶ Oberndorfer, U. (2009). Energy prices, volatility, and the stock market: Evidence from the Eurozone. *Energy Policy*, 37(12), 5787-5795.

²⁷ *Ibid.*

Phan et al (2015)²⁸ using top twenty listed firms from five different sectors of the United States that included consumption, truck transport, air transport, chemical manufacturing and petroleum, showed that the increase in the prices of oil resulted in the appreciation in the prices of stock of oil producer. Bouri et al.,(2016)²⁹ studied the mean and variance causality between the oil prices and sectoral equity returns in Jordan before and after the Arab uprising and finding suggest that oil shocks significantly affect the service and financial sectors and insignificant in other sector.

In view of aforementioned literature, this paper contributes as follows: Firstly, we use monthly data to compute the impact of oil price changes on stock returns, which in our view will be able to capture oil price changes better as compared to quarterly data, to investigate the effect of changing oil prices in Pakistan on stock returns. Secondly, this paper calculates the impact of changes in oil prices and their stock returns for different non-financial sectors listed in Pakistan stock exchange. Then sectoral analysis will be able to distinguish its effect on different kind of economic activities like exchange rate and interest rate. For this purpose, we have selected 27 sectors listed on Pakistan stock exchange that are directly or indirectly affected by the oil price changes.

Data and Methodology

Earlier examinations related to the causal relationship between oil price and stock exchange have depended on the conventional Granger causality in mean test. Hafner and Herwartz, (2008)³⁰ in their study used multivariate GARCH models both in mean and variance. Choi and Hammoudeh (2010)³¹ have used DCC-GARCH model to ascertain the relationship between Brent oil, WTI oil, copper, gold and silver with S&P500 index. Similarly, Filis et al. (2011)³² used DCC-GARCH-GJR approach to investigate the relationship between oil price movement and stock market movement of Canada, Mexico, Brazil, USA, Germany and Netherlands. Furthermore, Bouri et al. (2016)³³ applied CCF-GARCH approach to investigate mean and variance causality between the oil prices and sectorial returns of equity in Jordan.

In this study we use conventional multifactor model and applied pooled OLS, random effect and fixed effect regression to facilitate empirical research of share price relationship with fluctuations in oil prices on stock returns. Fluctuation is likely to impact on all industrial sector of the countries (see Sadorsky and Henriques, 2001, El-Sharif et al., 2005)³⁴.

²⁸ *Ibid.*

²⁹ *Ibid.*

³⁰ Hafner, Christian M., and Helmut Herwartz. "Testing for causality in variance using multivariate GARCH models." *Annales d'Economie et de Statistique* (2008): 215-241.

³¹ Choi, Kyongwook, and Shawkat Hammoudeh. "Volatility behavior of oil, industrial commodity and stock markets in a regime-switching environment." *Energy Policy* 38, no. 8 (2010): 4388-4399.

³² Filis, George, Stavros Degiannakis, and Christos Floros. "Dynamic correlation between stock market and oil prices: The case of oil-importing and oil-exporting countries." *International Review of Financial Analysis* 20, no. 3 (2011): 152-164.

³³ *Ibid.*

³⁴ *Ibid.*

Moreover, we have selected month end observation of 321 firms of 27 non- financial sectors operates in Pakistan stock market. Furthermore, we include only those firms that have at least 30 days of trading in a calendar year (see Lee and Cheong,2001)³⁵,we have selected 24 months of trading period covering from April 2014 to March 2016 Inclusive. Firstly, we calculated average monthly closing prices of the stocks of 321 firm's stock returns. Moreover, reason for selecting this time period is that crude oil price is showed drastic changes over the past two years and as an oil importing country our economy is heavily depend upon on crude oil price movement.

Moreover, average monthly crude oil prices spot of London Brent Crude Oil in US dollar used for oil price movement indication. Average of closing all Pakistan Stock exchange share index is used to find out market portfolio return, average monthly US\$ exchange rate in terms of Pakistani rupee has been used to find out exchange rate return and average monthly reorder purchase rate (REPO) used as risk free rate. All these data has been collected from websites of Pakistan stock exchange, Bloomberg and State bank of Pakistan. Similarly, expected signs of the explanatory variables with respect to dependent variable are explained in the table-2.

³⁵Lee, Jason, and H. Yi Cheong."Trade size and information-motivated trading in the options and stock markets." *Journal of Financial and Quantitative Analysis* 36, no. 4 (2001): 485-501.

Base Equation:

$$ESR_{i,t} = a_1 + a_2EMR_{i,t} + a_3Oil_{i,t} + a_4Fx_{i,t} + \varepsilon$$

Table-2: Description of Variables

VARIABLE S	VARIABLE DESCRIPTION	VARIABLE CALCULATION	TIME PERIOD	EXPECTED SIGNS	DATA SOURCE
$ESR_{i,t}$	Excess monthly stock return of security i at time t	$ESR_{i,t}=SR-OMO$ $SR=LN(Firm_t/Firm_{t-1})$ $OMO=$ Open Market Operation rate	April-2014 to March-2016	Negative	www.psx.com.pk www.sbp.org
$EMR_{i,t}$	Excess monthly market return of the all share index at time t	$EMR_{i,t}=MR-OMO$ $MR=LN(Market_{i,t}/Market_{i,t-1})$ $OMO=$ Open Market Operation rate	April-2014 to March-2016	Positive	www.psx.com.pk www.sbp.org
$Oil_{i,t}$	Brent Crude Oil WTI in US dollar	$Oil_{i,t}=LN(Oil_t/Oil_{t-1})$	April-2014 to March-2016	Negative	www.sbp.org
$Fx_{i,t}$	US\$ exchange rate in terms of PKR.	$Fx_{i,t}=LN(Fx_t/Fx_{t-1})$	April-2014 to March-2016	Negative	www.sbp.org

Source: Author's estimations

Data Analysis

This study is based on the relationship between oil prices changes and stock returns of the firms operated in Pakistan in 27 sectors of Pakistan stock exchange (PSX).

Descriptive Statistics

In Table 3 represent the descriptive statistics of the variables that has been used in our analysis of the impact of oil price on stock return. It can be observed in Table 4.1 excess monthly stock return is ranges from -170% to 172% with mean value of -0.83%, median -0.09% and standard deviation 14.55%. For examine the excess market return in the sample, it can be viewed it ranges from -10.15% to -6% with mean value is -7.8%, median -7.25% and standard deviation -1.5%.Furthermore, oil price changes is ranges

from -25.29% to 18.66% with mean value of -4.15%, median-4.12% and standard deviation 11.45% and foreign exchange is ranges from -0.99% to 2.24% with mean value of 0.34%, median 0.14% and standard deviation of 0.76% over the sample period.

Table 3: Descriptive Statistics

Descriptive Statistics for multivariate analysis					
Variables	Mean	Median	Std.Dev	Max	Min
<i>ESR_{t,t}</i>	-0.0838	-0.0894	0.1455	1.7176	-1.6990
<i>EMR_{t,t}</i>	-0.0797	-0.0725	0.0152	-0.05914	-0.1015
<i>Oil_{t,t}</i>	-0.0415	-0.0412	0.1145	0.1866	-0.2529
<i>Fx_{t,t}</i>	0.0034	0.0014	0.0076	0.0224	-0.0099

Source: Author's estimations

Table 4 details the correlation matrix of the variables that has been used in regression analysis. Overall, examination of Table 4.2 discloses that nothing with respect to multicollinearity in the sample data and it's includes the representation of all the stocks selected for analysis from 27 sectors of Pakistan stock exchange (PSX).

Table 4: Correlation Matrix

	<i>ESR_{t,t}</i>	<i>EMR_{t,t}</i>	<i>Oil_{t,t}</i>	<i>Fx_{t,t}</i>
<i>ESR_{t,t}</i>	1.0000			
<i>EMR_{t,t}</i>	0.1355	1.0000		
<i>Oil_{t,t}</i>	-0.0224	0.1469	1.0000	
<i>Fx_{t,t}</i>	-0.1035	-0.2098	0.2049	1.0000

Source: Author's estimations.

Regression Analysis Results

In Table-5 for the regression output of three factor model that is our base regression model outline in eq.1 covering the period from April-2014 to March-2016 that shows a positive significant result to aggregate excess market return, and negative significant result with changes in oil prices and exchange rate at 1% significance level these finding were consistent with previous studies (Huang et al. 1996: Faff and Brailsford ,1999; Park

and Ratti, 2007; Arouriand Nguyen, 2010;Elyasiani et al., 2011; Arouri et al., 2012;Arshad and Bashir,2014; Bouri et al. 2016)³⁶.

Table 5: Regression Analysis (Base Equation)

	(Pooled Regression)	(Fixed Effect)	(Random Effect)
VARIABLES	esr	esr	esr
Emr	1.189*** (0.0936)	1.189*** (0.0936)	1.189*** (0.0936)
ln_oil_price	-0.0328*** (0.0128)	-0.0328*** (0.0128)	-0.0328*** (0.0128)
ln_exch_rate	-1.378*** (0.226)	-1.378*** (0.226)	-1.378*** (0.226)
Constant	0.0138* (0.00761)	0.0138* (0.00745)	0.0138* (0.00761)
Observations	7,383	7,383	7,383
R-squared		0.026	
Number of comp	321	321	321

Source: Author's estimations.

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Moreover, Table-6 explain sectoral analysis of the firms operated in Pakistan Stock Exchange (PSX). Out of 27 sectors 15 sectors show positive significant results for excess market return. Out of the rest of the 10 sectors are affected by the stock exchange volatility at different level of significance. Previous investigations also show that the Oil and Gas sector, and Mining sector are affected by the increase in oil prices. For example, Transportation, Manufacturing, Food, Chemicals, Pharmaceutical, Computer, Real Estate and General services. The results for the Power generation, Construction and financial sectors segments are ambiguous. It is found that there is a significant outcome of the oil prices on oil-related and oil-substitute sectors, a negative impact on oil-utilizing divisions and not a huge impact on non-oil-related segments like financial sector.(Broadstock and Filis, 2014)³⁷.

³⁶ *Ibid.*

³⁷ *Ibid.*

Table 6: Regression Analysis (Sectoral Analysis)

	Sectors	EMR	LOG_Oil Prices	LOG_Exchange rate	Observations
1.	AUTOMOBILE ASSEMBLER	0.804 (0.547)	0.230*** (0.0527)	-3.380*** (0.667)	299
2.	AUTOMOBILE PARTS & ACCESSORIES	-1.091 (1.170)	-0.110* (0.0442)	-0.393 (1.254)	115
3.	CABLE & ELECTRICAL GOODS	2.300*** (0.482)	0.113 (0.0799)	-0.441 (0.763)	115
4.	CEMENT	1.706*** (0.344)	-0.0226 (0.0385)	-4.896*** (0.765)	437
5.	CHEMICAL	0.688** (0.277)	-0.0984*** (0.0338)	-1.541** (0.590)	575
6.	ENGINEERING	0.949* (0.523)	-0.0860* (0.0452)	0.498 (0.515)	276
7.	FERTILIZER	0.425* (0.228)	-0.0980* (0.0423)	-4.107*** (0.818)	138
8.	FOOD & PERSONAL CARE PRODUCTS	0.650 (0.437)	0.0747 (0.0457)	-2.655*** (0.880)	414
9.	GLASS & CERAMICS	2.571*** (0.588)	-0.198 (0.128)	-2.249** (0.904)	184
10.	JUTE	1.866 (1.031)	0.378* (0.123)	-0.214 (1.210)	69
11.	LEATHER & TANNERIES	0.562 (1.080)	-0.115 (0.0497)	-4.600 (4.349)	69
12.	MISCELLANEOUS	1.207 (0.792)	-0.0893* (0.0459)	0.149 (0.994)	184
13.	OIL & GAS EXPLORATION COMPANIES	-0.529 (0.468)	0.158 (0.128)	-5.307** (1.091)	92
14.	OIL & GAS MARKETING COMPANIES	1.193*** (0.281)	-0.160*** (0.0258)	-2.025** (0.651)	161
15.	PAPER & BOARD	0.654 (0.414)	-0.0572 (0.0770)	-1.614* (0.797)	184
16.	PHARMACEUTICALS	0.469 (0.498)	-0.0599 (0.0470)	-1.129 (0.968)	207
17.	POWER GENERATION & DISTRIBUTION	1.605*** (0.326)	0.0469 (0.0427)	-0.791 (0.603)	391
18.	REFINERY	0.776 (0.696)	-0.100 (0.0507)	-0.549 (1.701)	69
19.	SUGAR & ALLIED INDUSTRIES	2.175*** (0.360)	-0.0528 (0.0457)	-0.642 (0.699)	690
20.	SYNTHETIC & RAYON	2.081*** (0.514)	-0.105 (0.0916)	-1.850 (1.273)	184
21.	TEXTILE COMPOSITE	1.359*** (0.258)	-0.0942*** (0.0293)	-0.243 (0.588)	851
22.	TEXTILE SPINNING	0.865*** (0.192)	-0.0785** (0.0385)	-0.953 (0.754)	1288
23.	TEXTILE WEAVING	1.292** (0.406)	-0.0651 (0.0763)	-0.0145 (1.101)	184
24.	TOBACCO	2.672 (0.940)	0.0342 (0.0964)	-1.811 (3.812)	69
25.	TRANSPORT	2.021** (0.232)	0.0246 (0.0925)	-1.305 (2.237)	69

26.	VANASPATI & ALLIED INDUSTRIES	-0.219 (2.878)	0.315 (0.120)	7.796 (12.13)	46
27.	WOOLLEN	2.562 (0)	-0.108 (0)	-1.016 (0)	23

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

However, in 2015-16 Cotton Crop Assessment Committee (CCAC) slump the cotton production by 30% (Pakistan Strategy-2016)³⁸ and also rose in custom duty on finished polyester staple fiber from 6% to 10% (PACRA-2016)³⁹ that will be a reason insignificant effect of oil prices on woolen, synthetic and rayon and Jute sectors. Similarly, refining sectors faced challenges in 2015-16 in the shape of volatility in margins an outcome of changes in crude oil prices, introducing simpler technology and exchange rate depreciation (PACRA-2016)⁴⁰. In 2015-16 government of Pakistan raised regulatory duties on 400 luxury on items by up to 20% (Pakistan Strategy-2016)⁴¹ that mainly effect food, housing/electricity/gas, clothing & footwear, transport and tobacco sectors. Moreover, insignificant finding in power generation sector is because Pakistan is facing major challenges like rising of circular debt, expensive and unsustainable fuel mix and Tariff subsidies pressure on fiscal reserve(PACRA-2016)⁴². Similarly, Pharmaceutical sector facing some challenges like Multinational Corporation is exiting from the country because of pricing issues, high operating leverage (PACRA-2016)⁴³.

Furthermore, sugar sector is also under facing challenges in local market despite of surplus sugarcane production in Pakistan but government imposing 15% regulatory duty on export molasses, sugar prices in controlled by government (PACRA-2016)⁴⁴. Similarly, insignificant results in leather and tanners is cause by following issues like high cost of production, energy crises, environmental challenges, high borrowing cost for the sector (PITAD-2016)⁴⁵. In 2014-15 there is a decline of 1.1 percent in production of edible oil because large inventory of ghee and Vanaspati is built by the manufacturer year

³⁸Pakistan Strategy (2016). ArifHabib ltd: <http://www.arifhabib ltd.com/downloads/PakistanStrategy2016.pdf>. (accessed August 20, 2017).

³⁹PACRA-The Pakistan Credit Rating Agency Limited.(2016). Fertilizer Sector-2016. http://www.pacra.com.pk/uploads/doc_report/Fertilizer%20Company.pdf. (accessed August 25, 2017).

⁴⁰PACRA-The Pakistan Credit Rating Agency Limited.(2016). Cement Sector-2016. http://www.pacra.com.pk/uploads/doc_report/Cement%20Company.pdf. (accessed August 25, 2017).

⁴¹ *Ibid*

⁴²PACRA-The Pakistan Credit Rating Agency Limited.(2016). Pharmaceutical Sector-2016. http://www.pacra.com.pk/uploads/doc_report/Pharmaceutical%20Company.pdf. (accessed August 25, 2017).

⁴³PACRA-The Pakistan Credit Rating Agency Limited.(2016). Chemical Sector-2016. http://www.pacra.com.pk/uploads/doc_report/Chemical%20Company.pdf. (accessed August 26, 2017).

⁴⁴PACRA-The Pakistan Credit Rating Agency Limited.(2016). Refining Sector-2016. http://www.pacra.com.pk/uploads/doc_report/Refining%20Company.pdf. (accessed August 26, 2017)

⁴⁵PITAD- Pakistan Institute of Trade Development (2016). Leather sector analysis-2016 <http://www.pitad.org.pk/Publications/28-Pakistan%20Trade%20Liberalization%20Sectoral%20Study%20on%20Leather%20Sector%20in%20Pakistan.pdf> (accessed August 27, 2017).

ago to get benefit from depressed input prices which prompted the industry to reduce their production (SBP annual report-2014-15)⁴⁶.

Conclusion and policy implication

Most of the previous studies have emphasized on the effect of oil price changes on the indexes of aggregate market. This study investigates the impact of oil price movement on the stock returns related to the different sectors of the stock market. Using multifactor model on the data on Pakistan stock market's 27 sectors ranging from the period between April-2014 and March-2016 inclusive, we find positive and significant association between prices of oil and stock return. The available literature also supports our findings (see for example, Huang et al. 1996; Faff and Brailsford, 1999; Park and Ratti, 2007; Arouri and Nguyen, 2010; Elyasiani et al., 2011; Qinbin and Mohammad, 2012; Arouri et al., 2012; Arshad and Bashir, 2014; Bouri et al. 2016)⁴⁷. Results suggest that movement in oil price cause aggregate change in stock return and market return. However, regression on sectoral level reveal mixed results for different sectors.

The results show that crude oil plays a key role in the stock returns of different sectors. Oil is one of the main factors that contributed towards affecting the unpredictability of profits of the various enterprises. This study is based on investigation of oil price changes and its impact on stock returns of the oil intensive sectors. For future research there are lot more areas should be consider like more macroeconomics variables should be included to investigate the effect of oil price (defined by previous literature). Moreover, effect of oil price can also investigate by comparing Pakistan's stock market with global stock market.

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⁴⁶State Bank of Pakistan.(2015). Annual Report-2014-15.Statistics and DWH Department.State Bank of Pakistan.[http://www.sbp.org.pk/reports/annual/arFY14/Vol1/APR-FY14\(complete\).pdf](http://www.sbp.org.pk/reports/annual/arFY14/Vol1/APR-FY14(complete).pdf) (accessed September 26, 2017).

⁴⁷ *Ibid.*

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