CRUDE OIL PRICES AND ITS IMPACT ON STOCK MARKET RETURNS

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Abstract

The present study focuses on the Crude oil prices and their impact on Nifty 50. For this study the data is taken for ten years i.e from 2008 to 2018. The Crude oil prices are ever fluctuating and this very reason has impacted lot on the stock returns for Nifty 50 companies.The Daily closing stock prices of Nifty 50 are taken into consideration and VAR model of co integration is applied to see the integration between the two variables but the results show there is no long term integration between the variables and there is also weak correlation between the two variable which is calculated as - 0.217 which may be due to constant fluctuations in the crude oil prices. The findings of this research may be helpful to the corporate managers, policy makers as well as investors for drawing some conclusions which are fruitful for stock market operations.

Key words: Nifty 50, crude oil prices, Co – integration

Introduction

It is well known fact that India is a net importer of Oil and also oil prices are ever fluctuating with the every fall in oil prices our economy will be benefitted and with a positive impact on current account deficit and also inflation will be reduced to some extent. The crude oil prices which is very important commodity and its effects can be seen in the stock market which constitutes the Foreign Institutional Investors (FII) and Foreign Direct Investment (FDI).A positive impact on India as a oil importing company will be seen when there is decline in crude oil prices which in turn will be negative will be oil exporting companies. The study is attempting to fill the gap between Indian Stock market (Nifty 50) in terms of its crude oil prices.

Review of Literature

Bhunia 2012, showed using Johansen Integration test and VECM that the indices of BSE and crude oil prices are correlated and there is a one way causality from all the indices.
Ghosh and Kanjilal, 2014 founded that there movement of International crude oil prices has effect on stock prices.The study explored the non linear co integration between international crude oil prices and Stock market of India .
Seth and Siddiqui, 2015 founded the weak co-relation between stock prices and crude oil, the Johansen co integration test is also applied and it was concluded that there is no long term integration between variables.
Najaf R and Najaf K, 2016 founded that there exists a positive relationship between oil prices and inflation rate.
Perry Sadorsky examined the impact of crude oil on the Stock market of France and by applying ECM model he found there is no positive relationship between the two variables.
Bairagi and Rai 2014 concluded that there is a weak relationship between oil prices and stock market. The study indicates that oil prices generally follow demand and supply principles in long run.
Degiannakis S, Filis G, Arora V 2017 explored that higher oil prices result in lower stock market returns in oil-importing countries and the higher stock market returns in oil-exporting countries and the oil price volatility resulted in stock market voltality.

Sharma A,Giri S et.al 2018 explored that there is absence of long run relationship between crude oil prices and stock market indices. ADF test and Philips Perron unit root test reveals that time series is non stationary at level and stationary at first difference.

Babatunde M, Adenikinju O 2013 revealed that stock market exhibit insignificant positive response to oil price shock .Stock market indices returns depresses with the volatility of crude oil prices.

Sources of Data and Research Methodology

The average monthly prices of stock returns from April 2008 to March 2018 are taken from historical prices available on Nifty 50 website and the crude oil prices are taken from the PPAC (Petroleum Planning and Analysis Cell) website.

The method applied here are correlation,co-integration and futher for checking casualities between crude oil prices and Stock market returns. The software used for deriving the results is gretl.

The tools used for statistical testing are as follows:

1) Correlation test – To test the correlation between nifty 50 index returns.
2) Unit root Test – To check the stationarity of index prices.
3) Granger Casuality Effect: To check the casuality among index prices.
4) Johansen Cointegration test: To check the cointegration among index prices

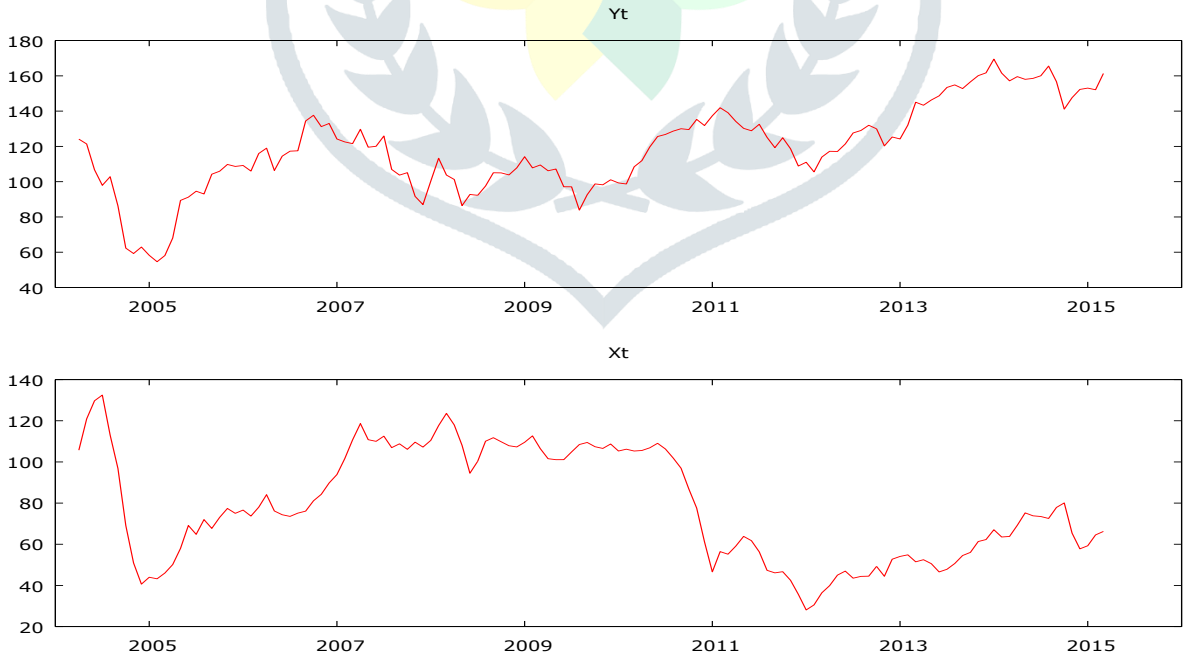
Analysis and Findings

The below table provides summary statistics about crude oil prices and stock returns namely mean, median, skewness, kurtosis and Probability.

Y_t = Nifty 50 stock prices

X_t = Crude Oil prices

	Nifty 50	Crude oil
Mean	118.5815519	78.79828
std deviation	24.90094669	26.63892
Skewness	-0.197486944	0.065451
Jarque Bera Test	0.850304	9.60945
Probability	0.65367	0.00819
Observations	132	132



Time series plot of Crude oil and Nifty 50

The oil returns are showing less mean as compared to Nifty 50 stock returns and standard deviation of crude oil is higher than Nifty 50 which shows that crude oil prices are more volatile than Nifty 50 stock returns. Both the series of crude oil and stock returns are not normal in nature as depicted by skewness figures. Jarque Bera test also confirms the same.

The correlation Matrix

The correlation between oil prices and stock returns is as follows:

	nifty 50	*crude oil*
nifty 50	1	-0.24034
crude oil	-0.24034	1

The matrix shows that there is an negative correlation among stock returns of Nifty 50 and crude oil prices which indicate that one variable is increasing and other is decreasing.

ADF Dickey Fuller Test

	At level			**At Ist Difference**		
Symbol	Lag length	P value	Test Statistic	Lag length	P value	Test Statistic
Crude Oil	0	0.5044	-1.55	0	0.0000	-7.13
Nifty 50	0	0.668	-1.21	1	0.0000	-10.26

Perron Qu Test

	At level			**At Ist Difference**		
Symbol	Lag length	P value	Test Statistic	Lag length	P value	Test Statistic
Crude Oil	0	0.504	-1.55	1	0.0018	-3.10
Nifty 50	0	0.183	-1.28	0	0.0000	-9.75

Co integration Test

The co integration test is used when two or more series are non stationary but the linear Combination of them is stationary .It basically tests the null hypothesis that there is no co integration.

Co Integration Test (Trace)

No of CEs	Eigen value	Trace test	p-value
0	0.092359	12.828	0.1216
1	0.0099476	1.1997	0.2734

Co Integration Test (Maximum Eigen Value)

No of CEs	Eigen value	Maximum Eigen Value	p-value
0	0.10302	14.676	0.2511
1	0.013484	1.6291	0.8406

Both the tests trace test and maximum eigen value test shows that there exists no co integration between nifty 50 index and crude oil prices as both p values are not less than 5% co-integrating vector. Thus results indicates that there exist no sign of co-integration between Nifty 50 and crude oil prices.

Pairwise Granger Causality Test

Granger Test is a hypothetical test in statistics used for determining whether one time series is useful in forecasting others

Null Hypothesis:	Obs	F-Statistic	Prob.
Crude Oil does not Granger Cause Nifty 50	130	3.18798	0.0446 *
Nifty 50 does not Granger Cause Crude Oil		3.80395	0.0249 *

* Represents the rejection of null hypothesis at 5% level of confidence

The null hypothesis is rejected for crude oil and index Nifty 50 series as even there is no short term causality exist between them.

Conclusion

Crude oil prices and stock market relationship is studied by various other studies too but this study resulted in showing the relationship between them through different tests namely Pearson Correlation, Unit root test, Johansen Co integration test and Granger Causality test. We can see negative correlation of -24 % between crude oil prices and Nifty 50 which means one variable is increasing while other is decreasing. While conducting the test of co intergration the basic requirement of stationarity of data is required which means performing unit root test the test signifies that there is stationarity of data at first difference and then johansen cointegration test reveals that there is no long term integration between the series.

And then Granger Causality test is also applied which shows that there is no short term causality and the series are not integrated.

The conclusion drawn by the study may be useful to the corporate researchers, investors, policy makers and portfolio managers who can further use the results in their fields to some extent as useful to them.

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