

Volume No. 1

Issue No. 2

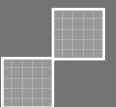
Month: December 2013

e- ISSN: 2347 - 5587

CKPIM BUSINESS REVIEW



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Performance of Indian Oil and Gas Sector with reference to NSE

V. R. Ilango*

ABSTRACT

This paper examines the effect of oil prices movements on the stock price of Oil and Gas companies in National Stock Exchange. Using daily data; the dynamic interaction between Oil and Gas sector price and CNX nifty is investigated. The results suggest that there exists significant relationship between oil price and stock exchange indeed with high level of volatility. Through the unit root analysis researcher can suggested that series is stationary at 2nd difference so it can be identified that the trend predicted after two working days.

Key Words: Oil and Gas, Correlation, Unit Root, Volatility

INTRODUCTION

Energy is part of people's lives from cars to computers, agricultural produce to home appliances, pharmaceuticals to clothing and air conditioning to water heating. Energy benefits extend far beyond what people use individually at home, at work and on the road. A range of essential activities, including manufacturing, transportation, construction, commercial activities and health and social services depend on access to modern energy.

After liberalisation in 1990s, India witnessed an unforeseen economic growth, which was majorly driven by demographic changes, rapid industrialisation and a robust, service-oriented business environment.

India's Oil and Gas sector is a promising one as there is a huge untapped potential basin while many large blocks offshore are unexplored. India's total hydrocarbon reserves are projected to be around 2 billion metric tonne of Oil Equivalent (bmtoe). Also, the reserves-to-production ratio for the country works out to be 25 years with the current oil production level of around 815,000 barrels per day (bpd) and estimated reserves of 1.2 billion metric tonne (bmt). Analysts foresee a bright future for the gas sector as well wherein reserves-to-production ratio is over 30 years (the current production level being around 40 billion cubic metres [bcm] per annum on an estimated reserves base of around 1,500 bcm).

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People's dependence on energy is increasing everywhere in the world. There is very straight between economic growth and the demand for energy, and the availability of energy sources is essential to maintain economic growth and improve people's lives.

The biggest driver of energy demand is the human desire to improve the standard of living for ourselves, our families and our communities. On the one hand, population and economic growth will drive demand higher but on the other hand, the world will use energy more efficiently and shift toward lower carbon fuels.

There are many studies and reports on the energy supply and demand on a global scale, but at the national level, countries should take into consideration many factors that influence their needs and interests.

The Indian oil and gas sector is one of the six core industries in India and has very significant forward linkages with the entire economy. India has been growing at a decent rate annually and is committed to accelerate the growth momentum in the years to come. This would translate into India's energy needs growing many times in the years to come. Hence, there is an emphasized need for wider and more intensive exploration for new finds, more efficient and effective recovery, a more

rational and optimally balanced global price regime - as against the rather wide upward fluctuations of recent times, and a spirit of equitable common benefit in global energy cooperation.

The Indian oil and gas sector is of strategic importance and plays a predominantly pivotal role in influencing decisions in all other spheres of the economy. The annual growth has been commendable and will accelerate in future consequently encouraging all round growth and development. This has necessitated the need for a wider intensified search for new fields, evolving better methods of extraction, refining and distribution, the constitution of a national price mechanism - keeping in mind the alarming price fluctuation in the recent past and evolving a spirit of equitable global cooperation.

The transportation sector constitutes a major energy consumer. The proliferation of hybrid and other advanced vehicles along with improvements to conventional vehicle efficiency will result in flattening demand for personal transportation even as the number of personal vehicles in the world double. In contrast, demand for liquid fuel for commercial transportation trucks, airplanes, trains and ships will continue to rise sharply. The demand for diesel which is the most popular fuel for heavy duty vehicles will rise by 85% by

2040, while gasoline demand will fall by about 10%. About 80% of the growth in commercial demand will come from developing countries, and it is forecasted that 90% of global transportation will run on liquid petroleum based fuels compared to 95% today.

India is the second largest contributor to oil demand growth, and it is expected to account for 33% of the global increase between now and 2035 and comes second after China which accounts for 48% of the global increase. Oil demand in India is expected to increase by 4-5% annually from current level of 3.6 mbpd driven mainly by transport sector.

All these areas of oil and gas field developments from exploration to drilling, well servicing, pipelines and tank farms construction to export terminals in addition large refinery and petrochemical projects are open to Indian companies as contractors or investors. We are delighted that Indian steel manufacturers are among the major suppliers of large diameter pipelines to Iraq, and some of your big companies have shown interest in refinery and petrochemical projects, but there is room for much larger participation in Iraq's flourishing market.

Factors affecting the Indian Oil and Gas sector

Some key factors affecting the Indian oil and gas industry are the following:

Dominated by state controlled enterprises: The sector is primarily dominated by state controlled enterprises, with only a few foreign players. The primary reason for this could be the country's regulatory framework, where ventures involving foreign players take longer to get the required approvals. Further, the participation of foreign players has been limited during the nine rounds of bidding for exploration rights through the NELP, while the participation of state owned players has been high.

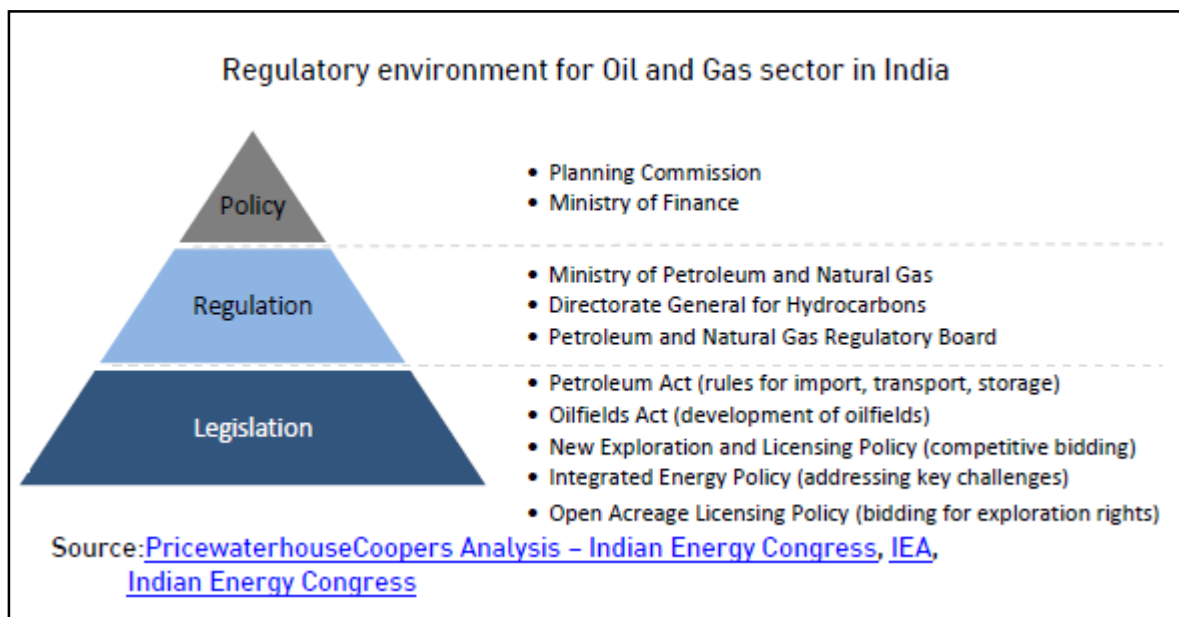
Subsidies on Oil and Gas products: Eliminating subsidies on oil and gas products is proving to be a major challenge for the government, due to political pressure. These subsidies have led to large scale under recoveries in the Indian oil and gas sector.

Environmental issues: Offshore mining of oil and gas and deep water exploration poses significant threats to the environment in terms of potential threats of water contamination. Further particulate emissions of refineries and production plants could have an adverse impact on the environment as well.

Requirement of advanced technology for upstream segment: The industry faces a shortage of skilled labour for the mining of

unconventional assets such as shale gas and Coal Bed Methane (CBM), which offer a huge potential in terms of ensuring sustainability.

From the below figure we can identified the regulatory environment of Oil and Gas sector in India.



The objective is to examine the effects of oil prices on the oil stocks in National Stock Exchange. Specifically, the dynamic interaction between oil prices and stock prices is investigated in the presence of economic variables like interest rates and industrial productions. This paper will also concentrate on the effects of volatility of crude oil prices on the oil stocks using daily data. The scope of this study extends to six oil companies from National Stock Exchange of India. The results of the study should be useful to the various oil companies who are engaged in different phases of this industry and whose shares are traded on those stock exchanges. They

should be of interest to the individual investors, policy makers, hedgers, arbitrageurs who buy the shares of these companies and analysts who wish to understand how the stocks of the different companies react to changes in the level and volatility of the oil prices.

Effect of Oil Prices on Oil Stocks

Researchers in International Finance have focused on the sensitivity of the world's oil industry stocks and oil-sensitive industries stock to the oil price growth. Some researchers (e.g., Strong, 1991) have examined how well investors are able to hedge oil price risk using oil equity portfolios. Others, such as Miller and

Upton (1985a, 1985b) and Crain and Jamal (1991), have investigated how well Hotelling's valuation principle applies to oil and gas companies. Malliaris and Urrutia (1995) provided evidence of a negative reaction of share prices to the Persian Gulf crisis. Nandha and Faff (2007) examined whether and to what extent the adverse effect of oil price shocks impacts stock market returns. They analyzed 35 DataStream global industry indices for the period from April 1983 to September 2005. Their results show that oil price rises have a negative impact on equity returns for all sectors except mining, and oil and gas industries.

Hamilton (1983, 1986) conducted detailed analysis on oil price changes in US and concluded that particular timing of changes in the nominal crude oil prices reflects largely exogenous developments specifically to petroleum sector. Jimmy and Albert (1984) studied the economic performance of 4 major oil (Exxon, Mobil, Texaco, Standard Oil of California) and 4 major automobile companies in the US for the period 1970-1979, when oil prices were rising rapidly. They measured the compound yields and risk-adjusted yields on common stock for equity performance. Their results show that Oil firms' compound yields were higher than auto firms' and world oil prices were significantly related to changes in

shareholders' wealth. US gasoline prices, the indicator of which most consumers are aware, did not satisfactorily explain the yields of either oil or auto firms. The impact of world oil spot prices was not significantly impounded in general yield proxies such as value weighted stock market or Treasury bill yields. In another industry focused study, Faff and Brailsford (1999) investigated the sensitivity of Australian industry equity returns to an oil price factor over the period 1983–1996. They report significant positive oil price sensitivity of Australian oil and gas, and diversified resources industries. In contrast, industries like paper and packaging, banks and transport appear to demonstrate significant negative sensitivity to oil price hikes. A firm-specific study by Al-Mudhaf and Goodwin (1993) examines the returns from 29 oil companies listed on the New York Stock Exchange. Their findings suggest a positive impact of oil price shocks on ex post returns for firms with significant assets in domestic oil production. Huang et al. (1996) conclude that the returns of the petroleum stock index and the three oil stocks (Chevron, Exxon and Mobil) are significantly correlated with current and lag one oil futures returns.

The oil and gas sector is fairly well developed in India, and is poised to contribute a large share to India's energy

basket over the next 15–20 years. A conservative estimate of 7 per cent growth in the Indian economy is expected to approximately double India's per capita energy consumption over the next 20 years. Since energy demand and economic growth are almost interlinked, the Indian oil and gas sector, which provides the country with a significant portion of its energy requirements, has been identified as a key metric that will drive future GDP growth.

A stock market index is a method of measuring a section of the stock market and a broad-base index represents the performance of a whole stock market. The time series of composite stock price index is one of the best data reflecting economic conditions. The index data is used to analyze and predict the perspective of markets. Jensen and Meckling (1976), page 485 argue that “the existence of a well-organized market in which corporate claims are continuously assessed is perhaps the single most important control mechanism affecting managerial behavior in modern industrial economies”. Morck et al. (1990) examine whether the stock market has an influence on investment beyond forecasting future fundamentals and they find that there is a statistically significant relation. Okyu Kwon and Jae-Suk Yang (2007) investigated the strength and the direction of information transfer in

the US stock market between the composite stock price index of stock market and prices of individual stocks using the transfer entropy. The results of their study indicate that there is a stronger flow of information from the stock index to the individual stocks.

Ross (1989) argues that the volatility of price changes can be an accurate measure of the rate of information flow in a financial market. It is possible that no significant lead or lag cross-correlations are observable in the returns but that price volatility - the rate of information flow - in one market leads volatility in the others. Evidence that volatility is correlated across markets would imply dependence in the information processes. The expected market risk premium (the expected return on a stock portfolio minus the Treasury bill yield) is positively related to the predictable volatility of stock returns. There is also evidence that unexpected stock market returns are negatively related to the unexpected change in the volatility of stock returns. This negative relation provides indirect evidence of a positive relation between expected risk premiums and volatility (Schwert and Stambaugh, 1987).

Data and Methodology

NSE is a Mumbai-based stock exchange. It is the largest stock exchange in India in

terms of daily turnover and number of trades, for both equities and derivative trading. Though a number of other exchanges exist, NSE and the Bombay Stock Exchange are the two most significant stock exchanges in India and between them are responsible for the vast majority of share transactions.

The seven oil and gas companies viz., HPCL, BPCL, OIL, IOCL, RIL, EOL and ONGC from national stock exchanges were chosen. The selection of the oil companies was based on the performance and thus those having the high Return on Equity (ROE) based on five years average ROE were selected.

The empirical analysis has been carried out using the daily data for the period of January 01, 2010 to November 30, 2013.

The correlation of variables will be tested. Other method was used to test whether the series are stationary or not by using unit root analysis. The purpose of testing unit

root analysis is to generalize the result. The other way to measure the performance is to analysis volatility through graphical representation for all the variables.

Result Analysis

For the analysis researcher has used three methods to measure the performance of the oil and gas sector company. Methods like, unit root analysis to generalize the results as well as to identify the trends, correlation to measure the relationship between index and oil and gas Sector Company and graphical representation of volatility between the day to measure next position and to judge the future prospect of the market.

Unit Root Test

$H_0:P_0=0$ (it means that presence of unit root in the series) $H_1:P_0\neq 0$ (it means that absence of unit root in the series)

Rejection of the null hypothesis said to be that series is Stationary and it can be use for further analysis.

Variable	ADF Test	Critical Value	R-Square	DW Stat	F-stat	P-Value
CNX Nifty	-24.53601	-2.8649	0.79	2.06	722.65	0.0000
BPCL	-24.2762	-2.8649	0.81	2.05	821.24	0.0000
RIL	-25.4520	-2.8649	0.80	2.06	786.24	0.0000
ONGC	-23.1340	-2.8649	0.80	2.04	778.41	0.0000
HPCL	-23.2785	-2.8649	0.80	2.06	788.51	0.0000
OIL	-24.0307	-2.8649	0.78	2.04	809.84	0.0000
EOL	-23.5333	-2.8649	0.80	2.05	746.21	0.0000
IOCL	-22.3798	-2.8649	0.79	2.05	716.10	0.0000

The table reveals that the result of performing a unit roots test on the 2nd difference with 4 lags and intercept of different company of oil and gas sector as well as CNX Nifty.

The coefficients of all the variables are presented in the above table with ADF test and p-value, allowing the null hypothesis of stationarity to be rejected at the 5% level (critical value -2.8649). This result also supports the value of DW statistics, which is suggested that value of d_{cal} is near to 2 so it indicates that there is no auto

correlation in the series in all the variables and the effect of disturbance of occurring at any period does not carry over into another period.

So, null hypothesis is rejected and therefore it can be said that all the series is stationary and now it can be apply for further analysis.

Correlation:

H₀: There is no Correlation between all the variables.

H₁: There is Correlation between all the variables.

	CNX Nifty	IOCL	RIL	BPCL	HPCL	ONGC	EOL	OIL
CNX Nifty	1.00							
IOCL	0.09	1.00						
RIL	0.25	0.61	1.00					
BPCL	-0.30	0.68	0.27	1.00				
HPCL	0.02	0.95	0.51	0.73	1.00			
ONGC	0.06	0.71	0.79	0.44	0.67	1.00		
EOL	0.06	0.80	0.88	0.51	0.72	0.77	1.00	
OIL	-0.23	0.75	0.60	0.72	0.70	0.57	0.76	1.00

The table shows the relationship between all the company of Oil and Gas sector of India and CNX Nifty. Between all the company of the sector with CNX Nifty has degree of positive correlation except between CNX Nifty with BPCL and OIL has degree of negative correlation. So, null hypothesis is rejected, so, it indicates that

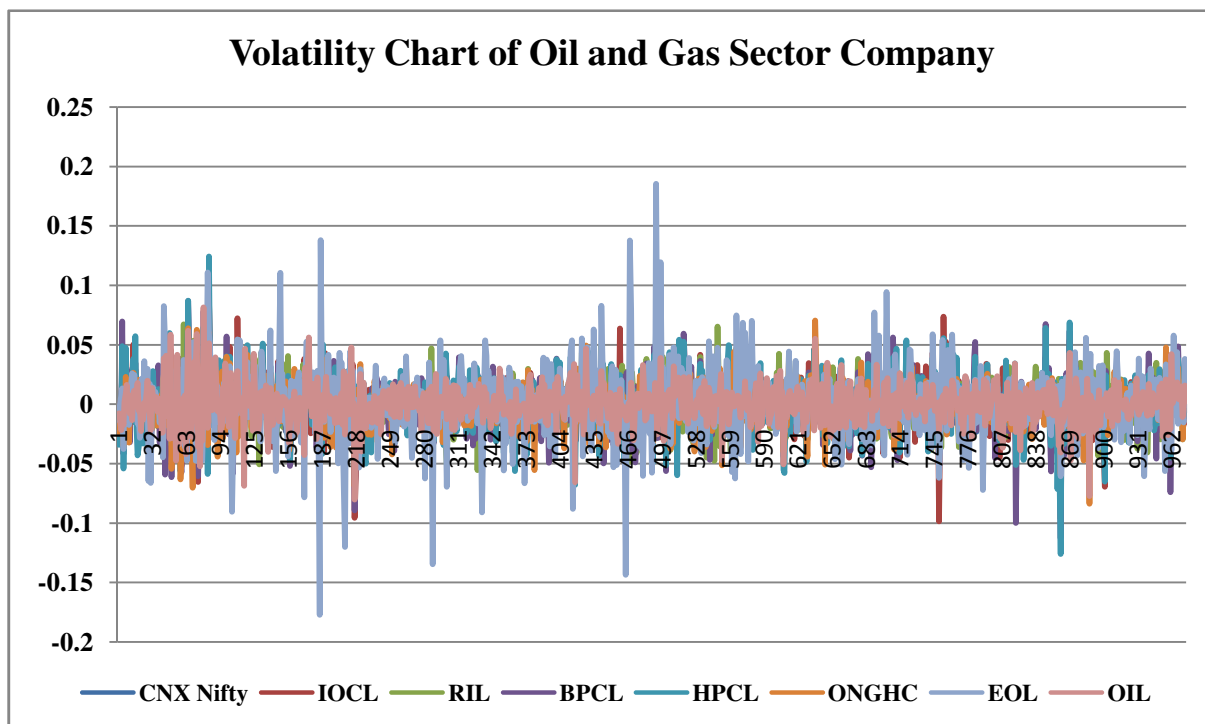
between CNX nifty and company of Oil and Gas sector has low degree of positive linear correlation because correlation while among the company has high degree of positive correlation.

Identical relationship found between the national stock exchange and stock of Oil and Gas Company. All the variables at

their second difference have significant relationship and become stationary (at 5% significance level). It should be noted that

over all oil prices have positive significant impact on the Indian oil stocks.

Volatility



From the above chart suggested that very high volatility so, it is very difficult to predict the future price of the stock. But though the correlation and unit root analysis we can identify the trend of the company price.

CONCLUSIONS

The overall results suggest that there exists correlation between oil stocks stock index and there is a significant relationship between them. It was also observed that profitability of the company seen that affect the oil stocks price and performance. This study investigates the effects of oil prices on oil stocks of three different

markets using daily data for the available period January 01, 2010 to November 30, 2013.

The empirical investigation employs unit root tests, correlation and volatility with graphical representation. The tests for the variables system indicate that these variables have relationship. According to the estimated coefficients of the structural part of the model it is noted that oil prices in US have a positive impact on the oil stocks. The results in for national stock exchange oil stocks are in agreement positive impact on the equity returns of oil and gas companies.

REFERENCES:

1. Al-Mudaf, Anwar, A, Goodwin, Thomas H. (1993). Oil shocks and Oil stocks: an evidence from 1970s. *Applied Economics*, 25, 181-190.
2. Boyer, Martin M. and Filion, Didier. (2009). Common and fundamental factors in stock returns of Canadian oil and gas companies. *Energy Economics*, 29, 428-453.
3. Ewing, Bradley T. & Thompson, Mark A. (2007). Dynamic cyclical co movements of oil price with industrial production, consumer price, unemployment and stock prices. *Energy Policy*, 35, 5535-5540.
4. Faff, Robert, Mohan, N. (2008). Does oil move equity prices? A global view. *Energy Economics*, 30, 986-997.
5. Farooq Malik, T. and Hammoudeh, S. (2007). Shock and volatility transmission in the oil, US and Gulf equity markets. *International Review of Economics and Finance*, 16, 357-368.
6. Gallegati, M. (2008). Wavelet analysis of stock returns and aggregate economic activity. *Journal of Computational Statistics and Data Analysis*, 52, 3061-3074.
7. Hammoudeh, S. & Huimin, L. (2005). Oil sensitivity and systematic risk in oil sensitive market, *Journal of Economics and Business*. 57, 1-21.
8. Hayo, B, Kutan, A. (2005). The impact of news, oil prices, and global market developments on Russian financial markets. *Economics of Transition*, Volume 13 (2), 373–393.
9. Hondroyannis, G. & Papapetrou, E. (2001). Macroeconomic influences on the stock market. *Journal of Economics and Finance*, 25 (1), 33-49.
10. Huang, Y. and Guo, F. (2007). The role of oil price shocks on China's real exchange rate. *China Economic Review*, 18, 403–416.
11. Hussain Al-Shahristani, Recent Trends in the Global Energy Economy, Deputy Prime Minister, Iraq, IISS Oberoi Lecture, Mumbai 14 Aug 2013.
12. Miller, M. and Upton, C. (1985a). A test of the Hotelling Valuation Principle. *Journal of Political Economy*. (Feb), 1–25.

13. Miller, M. and Upton, C., (1985b). The pricing of oil and gas: Some further results. *The Journal of Finance*, (Jul), 1009–1018.
14. Samad, Fazilah, Bhat, Sonal and Shaharudin, Roselee S. Performance and Volatility of Oil and Gas Stocks: A Comparative Study on Selected O&G Companies. *International Business Research*, Vol. 2, No. 4, October, 2009.
15. Strong, J.S. (1991). Using Oil Share Portfolios to Hedge Oil Price Risk, *Quarterly Review of Economics and Business*. 31, 48-63.
16. Waff, R.W. and Brailsford, T.J. (1999), Oil price risk and Australian stock market. *Journal of Energy Finance and Development*, 4, 69-87.