

Executive Summary

India is the fourth largest importer of LNG to cater to its energy requirements and energy security. Qatar has been the largest exporter and source for the LNG with the natural gas prices indexed with crude oil prices. With crude oil prices touching more than 100 USD/barrel, Asian countries have been looking for other sources of LNG. India has invested in Shale gas in USA and is planning to import from the year 2018 through Gas Authority of India. The prices in USA are indexed with Henry Hub gas prices. Keeping in view, the pressures from the environmental concerns, Natural Gas has been having highest growth over other fuels and is most widely preferred next to crude oil. However, there has been universal common index price for natural gas where every region has been following its own pricing index based various pricing mechanisms. The LNG trade has been increasing over a period and is most widely used method of transport of natural next to Pipelines. This needs huge investment in specialised LNG ships, Liquefaction terminals and Regasification terminals. Hence, the projects would need huge financial support which in turn would look for long term fuel contracts to support the project. Therefore, Long term fuel supply agreements for LNG supply is required where the prices of natural gas are indexed based on various pricing mechanisms. Owing to various factors these prices have been volatile due to indexing and thus countries like India and Japan have been paying high prices for energy and loss foreign exchange. Keeping in view, the options for India to import from Qatar based on Japanese Crude cocktail prices and from USA based on Henry Hub prices, GARCH models have been used to study the volatility in both the index prices.

There more than 400 LNG ships in the active fleet and many more to come. With countries like USA turning out to be net exporter from importer of natural gas and Australia planning to start exporting natural gas from 2018, the shipping miles are set to increase. The LNG ships order book also seems to be promising with large number of ships being delivered in the next three years. But over past three years the Charter rates of these Ships have been on the downward trend

and volatility of these Long Term and Short Term Charter rates has been studied in this context using GARCH models.

Even though, there has been not much apparent impact of the Charter rates on New Ship building prices for LNG have been fluctuating over a period. With countries like India, planning to buy the LNG ships to support the supply chain and huge capital investment, there is need to study the volatility in New Ship Building prices.

From the Literature review, it is also evident that limited study has been done in LNG shipping volatility and GARCH models have not been used in this area. Hence, the study was made to study the volatility in LNG index prices, Ship Charter rates and New Ship Build prices using appropriate GARCH models in Time series data and thereby giving suggestions to opt for minimal risks.