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A Study on Risk and Return Analysis of Stock Future and Option Derivatives Trading in India

KEYWORDS

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ABSTRACT *Future & option is the most important segment in derivatives market. Financial derivatives have emerged as one of the biggest market of the world during the past two decades. The derivatives contract is standardized contract. The derivatives contracts are available on many stock indices. In India, the BSE Sensex and S&P Nifty are the popular indices on future trading. The everyday price changes will occur on stock index futures. Some natural calamities such as weather, war, Debt, refugee displacement and land reclamation will affect the index prices. So, this study attempt to test the volatility of stock index prices in Indian Derivatives market with special reference to NSE and also this study should focus on oil manufacturing industry BPCL & ONGC in the period of April – June 2014.*

INTRODUCTION ABOUT THE STUDY

The emergence of derivative market products are forward, future and option are traded in the derivatives market. Comparing to stock market, derivatives markets are more risky. Because everything should be in a contract format. Derivatives are risk management instruments, which derive their value from an underlying asset. The underlying asset can be bullion, index, share, bonds, Currency, interest, etc., Banks, Securities firms, companies and investors to hedge risks, to gain access to cheaper money and to make profit, use derivatives. Derivatives are likely to grow even at a faster rate in future.

Global scenario of Indian derivatives market:

The global economic order that emerged after World War II was a system where many less developed countries administered prices and centrally allocated resources. Even the developed economies operated under the Bretton Woods system of fixed exchange rates.

The system of fixed prices came under stress from the 1970s onwards. High inflation and unemployment rates made interest rates more volatile. The Bretton Woods system was dismantled in 1971, freeing exchange rates to fluctuate. Less developed countries like India began opening up their economies and allowing prices to vary with market conditions.

Price fluctuations make it hard for businesses to estimate their future production costs and revenues. Derivative securities provide them a valuable set of tools for managing this risk. This article describes the evolution of Indian derivatives markets, the popular derivatives instruments, and the main users of derivatives in India. I conclude by assessing the outlook for Indian derivatives markets in the near and medium term.

DEFINITION OF DERIVATIVES:

According to the Securities Contract Regulation Act, (1956) the term "derivative" includes:

- A security derived from a debt instrument, share, loan, whether secured or unsecured, risk instrument or contract for differences or any other form of security;
- A contract which derives its value from the prices, or index of prices, of underlying securities.

TYPES OF DERIVATIVES CONTRACT:

- Forward contract
- Future Contract
- Option Contract
- Swaps

FORWARD CONTRACT:

A forward contract is a customized contract between two entities, where settlement takes place on a specific date in the future at today's pre-agreed price.

FUTURE CONTRACT:

A future contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price. Futures contracts are special types of forward contract in the sense that the former are standardized exchange-traded contracts.

OPTIONS:

An option represents the right to buy or sell a security or other asset during a given time for a specified price. Options are of two types:

- **Call option:** It gives the buyer the right but not the obligation to buy a given quantity of the underlying asset
- **Put option:** It gives the buyer the right, but not the obligation to sell a given quantity of the underlying asset.
- **American Option:** it can be exercised at any time up to the expiration date.
- **European Option:** European options are options that can be exercised only on the expiration date itself.

SWAPS:

Swaps are private agreement between two parties to exchange cash flows in the future according to a pre-arranged formula. There are two types of swap such as:

- **Interest rate swaps** - Transferring interest-related cash flows between the parties in the same currency.
- **Currency swaps** - both countries ready to transfer their currencies

EQUITY DERIVATIVES IN INDIA:

Equity derivative is a class of derivatives whose value is

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at least partly derived from one or more underlying equity securities. four major products under Equity derivatives are,

- Stock futures
- Stock options
- Index futures
- Index options

Stock Futures:
Stock futures are agreements to buy or sell a specified stock, i.e., the equity share of a specified company, in the future at a specified price. An investor, who is interested in purchasing a share, may buy the share in the stock exchange for cash.

Index Futures:
A futures contract on a stock or financial index. For each index there may be a different multiple for determining the price of the futures contract.

Index Option:
These options have the index as the underlying. Some options are European while others are American. Like index futures contracts, index options contract are also cash settled.

Stock option:
Stock options are options on individual stocks. Options currently trade on over 500 stocks in the United States. A Contract gives the holder the right to buy or sell shares at the specified price.

PARTICIPANTS IN THE DERRIVATIVES MARKETS:
The following three broad categories of participants:

Hedgers:
Hedgers face risk associated with the price of an asset. They use futures or options markets to reduce or eliminate this risk.

Speculators:
Speculators wish to bet on future movements in the price of an asset. Futures and options contracts can give them an extra leverage; that is, they can increase both the potential gains and potential losses in a speculative venture.

Arbitragers:
Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets. If, for example they see the futures prices of an asset getting out of line with the cash price, they will take offsetting positions in the two markets to lock in a profit.

OBJECTIVES OF THE STUDY:
- To find out the risk and return relationship in future and option contract
- To have an in-depth knowledge about future & option derivative market in India.
- To assess risk management tools and its strategies.
- To analyze the volatility of Future and Option market.

SCOPE FOR THE FURTHER STUDY:
- The main scope of the project is to reduce the risk in derivatives and create better returns in trading.
- A derivative contract is the off-balance sheet financing so no records maintain for the future reference.
- This study should focus on Future and option segment only so some changes happing in future.
- The various participants also get good returns in derivatives contract i.e. Hedger, speculator, Arbitrageur.

LIMITATIONS:
- The study was based on secondary data and some intrinsic limitations of the secondary data would have affected the study.
- This project should focus on stock future and index future only.
- The result of the analysis may change depending on the time period.
- This analysis we have to consider only the short term decision making.*
- There is no flexible trading in future contract because it is a standardized contract.
- This study focused on particular companies only.

REVIEW OF LITERATURE:
Phil Holmes (2006), Stock index future hedging: Hedge ratio estimation, duration effects, expiration effects and Hedge ratio stability this study focused the impact of hedge duration, and the time of expiration and hedge ratio stability over the study period and it helps to find with the help of some statistical tools like OLS, ECM, Risk & Return Analysis, Descriptive Statement and GARCH models.

Antonios Antoniou and Phil Holmes (2000), Futures trading, information and spot price volatility: evidence for the FTSE-100 stock index futures contract using GARCH This paper examines the impact of trading in the FTSE-100 Stock Index Futures on the volatility of the spot market. It ensures that the relationship between information and volatility of the spot and future with the use of GARCH analysis. The results suggested that futures' trading has a more volatile than spot market.

Stock returns volatility in the Tokyo stock exchange(2002), **Y.K. Tse** This paper examines the stock returns volatility in the Tokyo Stock Exchange. Structures of returns volatility are estimated and forecasted. The model of ARCH/GARCH and exponential weighted moving average (EWMA), this three tools used to measure the volatility of stock index future. The results show that the EWMA method gives the best forecasts. These findings have implications in forecasting movements of market volatility, with applications to option pricing and control for variation margin risk in stock index futures.

DATA ANALYSIS:
- Risk (alpha & beta) and Return Analysis
- Descriptive Statement

Return Analysis:
Return table for stock future (Apr-Jun 2014)

	Stock Future	
Month	ONGC Return	BPCL Return
Apr	0.00	0.00
May	7.00	16.00
Jun	14.00	13.00

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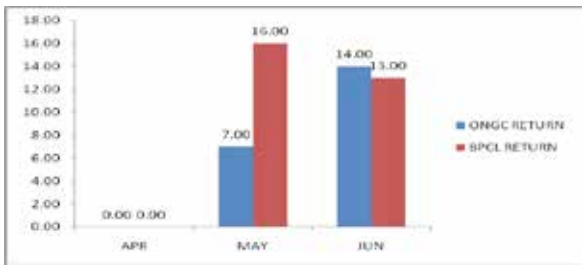
Return chart for ONGC & BPCL (Stock Future)

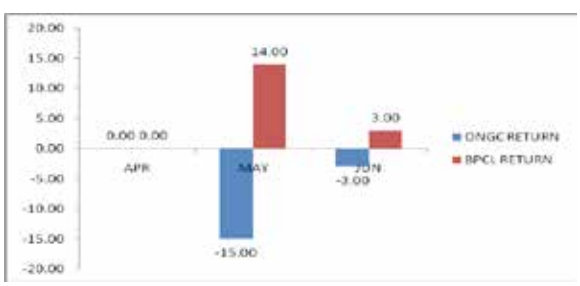


Interpretation:
The above chart indicates comparing the return percentage of two oil manufacturing industries stock future like ONGC and BPCL. This analysis indicates BPCL has maximum return in the month of May 2014 (16%) and ONGC has maximum return in the month of June 2014 (14%).

Return table for stock option (Apr-Jun 2014)

Stock option		
Month	ONGC Return	BPCL Return
Apr	0.00	0.00
May	-15.00	14.00
Jun	-3.00	3.00

Return chart for ONGC & BPCL (Stock option)

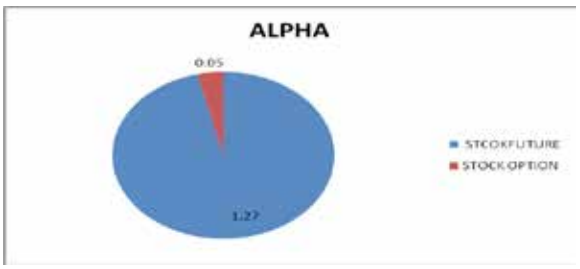


Interpretation:
The above chart indicates comparing the return percentage of two oil manufacturing industries stock option like ONGC and BPCL. This analysis indicates BPCL has maximum return in the month of May & June 2014 (14% & 3%) and ONGC has down position in the month of May & June 2014.

Risk Analysis (Alpha & Beta):

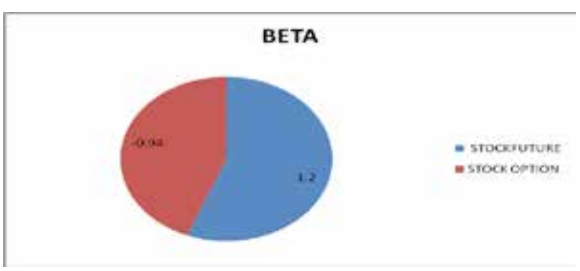
Particulars	Alpha	Beta
Stock future	1.27	1.2
Stock option	0.05	0.94

Alpha chart for ONGC & BPCL (Apr – Jun 2014):



Interpretation:
The positive alpha means the stock has over priced and the negative alpha means the stock has underpriced. Here both stock ONGC & BPCL has overpriced.

Beta chart for ONGC & BPCL (Apr – Jun 2014):



Interpretation:
A beta of less than 1 means that the security's price will be less volatile than the market. A beta of greater than 1 indicates that the security's price will be more volatile than the market. Here the beta of stock future (1.2) has more volatile than the market and the beta of stock option (-0.94) has less volatile than the market.

Descriptive Statement:
Descriptive Statement for ONGC & BPCL Stock Future (Apr – Jun 2014)

Descriptive statistics	ONGC Future	BPCL Future
S.D	36.24	71.06
Median	351.28	534.40
Skewness	0.94	-0.15
Maximum	398.85	601.91
Minimum	327.70	459.84
Mean	359.28	532.05
Range	71.15	142.07
Sample Variance	1313.54	5050.11

Interpretation:
From the above table shows the descriptive statement for two oil manufacturing industries in the month of Apr – Jun 2014. It helps to summarize the overall performance of the business.

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Descriptive statement:
Descriptive Statement for ONGC & BPCL Stock Option (Apr – Jun 2014)

Descriptive statistics	ONGC Option	BPCL Option
S.D	4.30	5.70
Median	39.08	69.38
Skewness	1.57	-1.45
Maximum	45.82	71.57
Minimum	37.83	60.78
Mean	40.91	67.24
Range	7.99	10.786
Sample Variance	18.47	32.51

Interpretation:
From the above table shows the descriptive statement for two oil manufacturing industries in the month of Apr – Jun 2014. It helps to summarize the overall performance of the business

FINDINGS OF THE STUDY

The following are the major findings of the Study.

- Indian derivatives markets were more volatile during the study period.
- From the above analysis shows the comparative return analysis of ONGC stock future and BPCL stock future has maximum return in the month of May & June 2014 (16% & 14%)
- The comparative return analysis of ONGC & BPCL stock option the BPCL only has maximum return in the month of May & June 2014 (14% & 3%)
- The comparative risk analysis of Stock Future & option ONGC and BPCL has highest minimum risk in stock option 0.05 & less market volatility is 0.94.the maximum risk in stock future is 1.2 & more market volatility is 1.2
- Descriptive statement shows that are useful in summarizing data.

SUGGESTION

The following are major suggestions of the study

- Normally, derivatives have certain risk so the investors should not take immediate investment decision and instead they should wait and watch the market movement.
- This risk and return analysis helps the investors to take proper investment decision.
- The Descriptive statement helps the investors invest their securities in the best leading company.
- Investors should have the adequate knowledge about technical and fundamental analysis.
- The investors should invest in the public sector securities the risk will be reduced.
- Updating of market information help the investors to get maximum return.
- The investors should aware about the stock market conditions (e.g. inflation, war, social and political issues, currency fluctuation, etc.)
- The study suggests that the Regulatory Authority (SEBI) must monitor the reliability or the truth of information released by Companies.
- The present study recommends that whenever the performances of sectors declines in response to crisis announcement, the share holders should take immediate decision either to buy or sell the stocks.

Conclusion:

The Indian derivative market has achieved tremendous growth over the years, and also has a long history of trading in various derivatives products. The derivatives market has seen ups and downs. The new and innovative derivative products have emerged over the time to meet the various needs of the different types of investors. Though, the derivative market is burgeoning with its divergent products, yet there to, lack of economics of scale, tax and legal bottlenecks, increased off-balance sheet exposure of Indian banks, need for an independent regulator etc. Solution of these issues will definitely lead to boost the investors' confidence in the Indian derivative market and bring an overall development in all the segments of this market.

Books and Journals:

- M. Illueca, and J. A. Lafuente, 2003, "The effect of spot and futures trading on stock index market volatility", Volume 23, Issue 9, pages 841–858, September 2003.
- Shafiqur Rahman, 2001, "The Introduction of Derivatives on the Dow Jones Industrial Average and Their Impact on the Volatility of Component Stocks", Volume 21, Issue 7, pages 633–653, July 2001, 'journal of financial market'.
- **Ramaprasad Bhar, 2001**, "Return and Volatility Dynamics in the Spot and Futures Markets in Australia: An Intervention Analysis in a Bivariate EGARCH-X Framework", Volume 21, Issue 9, pages 833–850, September 2001.
- **Y.K. Tse, 2002,** "Stock returns volatility in the Tokyo stock exchange", 'report prepared by Tokyo stock exchange 2002'.
- **Harry M. Kat and Ronald C. Heynen,** "Volatility Prediction: A Comparison of the Stochastic Volatility, GARCH (1, 1) and EGARCH (1, 1) Models", Journal of Derivatives, Vol.2, No.2, 1994, Cass Business School Research Paper, 'journal of financial market'
- **Janchung Wang, 2009**, "Stock market volatility and the forecasting performance of stock index futures", Volume 28, Issue 4, pages 277–292, July 2009, 'journal of forecasting'.
- **R. Glen Donaldson and Mark J. Kamstra,** March 2000, "Forecasting Fundamental Stock Price Distributions", Simon Fraser University Working Paper No. 96-2, Sauder School of Business Working Paper.
- **Jean-Philippe Peters (2001)**, "Estimating and forecasting volatility of stock indices using asymmetric GARCH models and (Skewed) Student-t densities".
- **Phil Holmes (2006),** Stock index future hedging: Hedge ratio estimation, duration effects, expiration effects and Hedge ratio stability
- **Sathya Swaroop Debasish,** "An Empirical Study on Impact of index future trading on spot market in India", KCA Journal of Business Management, Vol.2, issue 2(2009).