Trading with Futures

Dr. D. Raghunatha Reddy [1]

This paper examines investments through Futures trading, which involves speculating on the price of a security going up or down in the future. The study is based on Index Futures and Stock Futures. Changes in Stock market prices, interest rates, & exchange rates can have great significance on financial risk of the firms. Therefore financial instruments for the management of such risk are developed. This paper attempts on such instruments, which are called as financial derivatives. This paper also focuses on increase in the futures price along with increase in the open interest confirms an uptrend, and decrease in the open interest represents liquidation or profit booking. The present paper also contains a hypothesis " the change in future price is in direct relationship with the moment in open interest" Hypothesis is empirically tested in case of Stocks of ONGC, Reliance, Satyam, SBI, Tata Motors, Tisco, Tata Power, Maruti and Mahindra & Mahindra.

Introduction

Futures Trading is a form of investment, which involves speculating on the price of a security going up or down in the future. A security could be a stock (RIL, TISCO, etc), stock index (NSE Nifty Index), commodity (Gold, Silver, etc), currency, etc.

A futures contract is a standardized, transferable, exchange-traded contract that requires delivery of a commodity, bond, currency, or stock index, at a specified price, on a specified future date. Unlike options, futures contracts convey an obligation to buy. The risk to the holder is unlimited. Because the payoff pattern is symmetrical, the risk to the seller is unlimited as well. Money lost and gained by each party on a futures contract is equal and opposite. In other words, Futures trading is a zero-sum proposition.

In this paper we investigate the price-open interest relationship for stock index futures. Open interest is the total number of futures contracts that have not been 'closed out'. It is often used to confirm trends and trend reversals for futures contracts. The open interest position is reported each day and represents the increase or decrease in the number of contracts for that day. By monitoring the changes in the open interest figures at the

1. Associate Professor, School of Management Studies, JNT University, Hyderabad-500 072

end of each trading day, some conclusions about the day's activity can be drawn. Increasing open interest means that new money is flowing into the market place, while declining open interest means that the market is liquidating and implies that the prevailing price trend is coming to an end. So, knowledge of open interest can prove useful toward the end of major market moves.

Objectives of the Study

- ❖ To study the players in Stock Futures Market
- ❖ To study various Trading Strategies.
- ❖ To study the impact of Open Interest on the Futures Price

Sample

The study is based on Index Futures and Stock Futures, where in NIFTY Futures is considered for the purpose of Index Futures and the top nine highly traded futures contract on individual securities are considered for the purpose of Stock Futures

Period of study

The study was conducted for a period of approximately one and a half years starting from April 2004 to Sep 2005.

Data base

The data that is used for analysis is mainly secondary data and the source of data is the official website of National Stock Exchange (http://www.nse-india.com) which includes data relating to the Futures Price and Open Interest information of the contracts on the Derivatives segment of the website. The other secondary sources of data are books on the topic, journals, articles and other websites.

Hypothesis

The changes in futures price is in direct relationship with the movement in Open Interest.

Methodology

Co-movement of Open interest and Futures price is analysed to study the impact of Open interest on Futures Price. Various situations (Bullish trend, Bearish trend) in the market are used to arrive at different Trading Strategies that can be used at that phase of the market.

Review of Literature

Futures trading is a vast area and previous studies and contributions and management practices enlightens the prospective researches to understand the roots of further research in this field. Some of the findings of the previous studies are mentioned here. The price (or volatility)-open interest relation on financial futures markets continues to be of empirical interest. Open interest is an important indicator for hedging (Kamara, 1993; Chen et al., 1995) and market depth (Bessembinder and Seguin,1993). Previous empirical studies show evidence of strong correlations between price volatility and open interest. Bessembinder and Seguin (1993) study this relationship for eight

futures markets and report a negative impact of expected open interest to volatility. They suggest that variations in open interest reflect changes in market depth, while greater market depth leads to lower volatility. Ragunathan and Peker (1997) show that positive open interests shocks have an impact on volatility than negative shocks. This also leads to the conclusion that market depth does have an effect on volatility. Watanabe (2001) shows that there is a significant negative relation between volatility and expected open interest for the Nikkei 225 stock index futures. However, their results provide evidence that the relation may vary with the regulation. On the other hand, Ferris *et al*. (2002) find that open interest is not directly affected by the increase in volatility. Accordingly, "*open interest in the S&P 500 index futures is a useful proxy for examining the flow of capital into or out of the market, given pricing error information shocks*" (Ferris *et al*., p. 371). Recently, Yang *et al*. (2004) examine the long-run information role of open interest in futures markets. Their results show that there is a long-run relation between open interest and futures prices. This suggests that futures price is a primary source of open interest, while open interest does not cause futures prices in the long run.

Limitations of the study

- ❖ Factors affecting the stock prices are not considered.
- ❖ The period of study is limited to a period of one and a half years.

Futures Contract

A futures contract is a type of derivative instrument, or financial contract, in which two parties agree to transact a set of financial instruments or physical commodities for future delivery at a particular price. Positions in futures markets can be taken much more quickly and much more cheaply (in terms of transaction costs) than positions in the underlying spot markets.

The construction of a balanced portfolio of stocks would take much longer and be more costly in terms of commissions and spreads.

For these reasons, futures markets tend to be more efficient than the underlying spot markets; futures prices respond to new information more quickly. So futures have a second economic function, which might be termed price discovery.

The futures contract on financial instruments came into existence in India with the introduction of index futures in June 2000 and futures contract on individual stocks were launched in November 2001.

Some of the inherent advantages of trading futures over other alternatives such as savings account, stocks, bonds, options, real estate and collectibles are High leverage, profit in bear and bull markets, lower transaction costs and high liquidity.

Contract Specification for futures on S&P CNX Nifty

Item	Specification
Security Description	N FUDITX NIFTY
Underlying unit	S&P CNX Nifty index
Contract Size	200 or multiples thereof
Price Steps	Re .05
Price Bands	not applicable
Trading cycle	A maximum of three month trading cycle –near month (one), the next month (two) and the far month (three) .New contracts is introduced on the next trading day following the expiry of near month contract.
Expiration day	The last Thursday of the expiry month or the preceding day if the last Thursday is a trading holiday
Settlement	In cash on t+1 basis
Final Settlement Price	Index closing price of the last trading day
Daily settlement price	Closing price of the futures contract
Settlement day	Last trading day
Trading hours	9.55 am to 3.30 pm
Margins	Upfront initial margin on daily basis

On the last day, the futures closing price for each Nifty futures contract is computed by taking the weighted average price for the half-an-hours trade.

Players in the Futures Market

- Hedgers - Operators, who want to transfer a risk component of their portfolio
- Speculators - Operators, who intentionally take the risk from hedgers in pursuit of profit
- Arbitrageurs - Operators who operate in the different markets simulta neously, in pursuit of profit and eliminate mis-pricing.

Trading Strategies

There are six basic modes of trading on the index futures market:

Hedging

1. Long security, short Nifty futures
2. Short security, long Nifty futures
3. Have portfolio, short Nifty futures
4. Have funds, long Nifty futures

Speculation

1. Bullish index, long Nifty futures

2. Bearish index, short Nifty futures

Modes of trading on Stock futures market:

Hedging

1. Long securities, sell futures

Speculation

1. Bullish security, buy futures

2. Bearish securities, sell futures

Hedging:

Hedging using index futures

- Long security, short Nifty future

  Every time one adopts a long position on a security, he should sell some amount of Nifty futures. This offsets the hidden Nifty exposure that is inside every long security-position. Once this is done the investor will have a position that is purely about the performance of the security.

- Short security, Long Nifty futures

  Every time one adopts a short position on a security, he should buy some amount of Nifty futures. This offsets the hidden Nifty exposure that is inside every short security-position. Once this is done the investor will have a position that is purely about the performance of the security.

- Have portfolio, short Nifty futures

  Every portfolio contains a hidden index exposure. In the case of portfolios, most of the portfolio risk is accounted for by index fluctuations. Hence a position Long portfolio + short Nifty can often become less risky as the Long portfolio position. The investor should adopt this strategy only for the short periods of time where (a) the market volatility that the investor anticipates makes him uncomfortable, or (b) when his financial planning involves selling shares at a future date and would be affected if Nifty drops.

- Have funds, buy Nifty futures

  Consider a situation where an investor has funds, which need to get invested in equity. So far there have been two alternative strategies which the investor could adopt: to but securities in a hurry or to suffer the risk of staying in cash. With Nifty futures, another alternative is available: the investor would obtain the desired equity exposure by buying index futures, immediately. Later the investor can gradually acquire securities and as shares are obtained one could scale down the long Nifty position correspondingly.

Hedging using Stock futures

- Long Security, Sell futures

  Stock futures can be used as an effective risk management tool. With security futures the investor can minimize the price risk, all that he

has to do is enter into an offsetting stock future position as compared to his position in the spot market.

Speculation

Speculation using index futures

- Bullish index, long nifty futures

  A trading strategy to benefit the upward movement in the index can be implemented following any of the two choices stated below:

1. Buy selected liquid securities, which move with the index, and sell them at a later date or,

2. Buy the entire index portfolio and sell it at a later date

   A better and less expensive strategy would be taking a position on the index using the index futures market. Using index futures the investor can buy or sell the entire index by trading on one single security.

- Bearish index, short Nifty futures

  A trading strategy to benefit the downward movement in the index can be implemented following any of the two choices stated below:

1. Sell selected liquid securities, which move with the index, and buy them at a later date or,

2. Sell the entire index portfolio and buy it at a later date

   A better and less expensive strategy would be taking a position on the index using the index futures market. Using index futures the investor can buy or sell the entire index by trading on one single security. Once a person is short Nifty using the futures market, he gains if the index falls and looses if the index gains.

Speculation using stock futures

- Bullish securities, Buy futures

  A speculator believes that a particular security that trades at say Rs.1000 is undervalued and expects the price to move up in the near future. Suppose his hunch proves correct and some time later the security closes at Rs.1010. If he invested in 100 shares, he makes a profit of Rs.1000, which works to an annual return of 6 percent.

  The speculator can do the same using futures contract. The security trades at Rs.100 and the two-month futures trades at Rs.1006. He buys 100 security futures for which he pays a margin of Rs.20000. Two months later the security closes at Rs.1010. On the day of expiration the futures price converges to the spot price and he makes a profit ofRs.400 on the investment of Rs.20000. This works out to an annual return of 12 percent. Due to the leverage they provide, security futures are an attractive option for speculators.

- Bearish security, Sell futures

  A speculator who believes that a particular security is over valued and is likely to see a fall in the price can

use stock futures. Take the case of a trader who expects to see a fall in the price of a particular security. He sells one two-month contract of futures of security at Rs.240 (each contract of 100 underlying shares). He pays a small margin on the same. Two months later when the futures contract expires, the stock closes at Rs.220. on the day of expiration the spot and the futures prices converge. He has made a clean profit of Rs.20 per share. For the one contract he brought it works out to be Rs.2000.

Open Interest

Open Interest (OI) means the number of outstanding contracts at any point in time. Open interest equals the amount that those with short positions are currently obligated to deliver; it also equals the amount that those with short positions are obliged to receive. It may be noted that the open interest does not increase with every contract traded. In fact it may increase decrease or remain the same depending on the existing positions of the parties involved. If one of the parties to the contract holds no earlier position as in the contract under consideration, while the other holds a position opposite to the one held in this contract, then the open interest would not change. Thus, if A and B already hold long positions in the contract and in the new contract A takes long and B takes short position, then the new contract would lead to a cancellation of one contract for B. In this case, the net open position would not change.

To sum up, whenever one of the parties to a transaction in a contract takes an offsetting position, there shall be no increase in the open interest, and when both the parties take offsetting positions, the open interest would fall by unity for each transaction of one contract. However, when none of the parties in the contract are taking an offsetting position, then the open interest increases. Thus, initiating trades will raise open interest and squaring-up trades will lower it.

Long (Buyer)	Short (Seller)	Open Interest
Initiating	Initiating	Rises
Initiating Change	Squaring	No
Squaring Change	Initiating	No
Squaring	Squaring	Falls

- An increase in the futures price along with an increase in the OI confirms an up trend.
- An increase in the futures price with a decrease in the OI represents liquidation or profit booking.
- A decrease in the futures price along with a decrease in the OI represents a downtrend.
- A decrease in the futures price with an increase in the OI may be attributed to short selling or buying happening at lower levels.

Co movement of changes in Open Interest and changes in Futures Price

Under normal market conditions the movement in the Open Interest mostly

influences the futures price movement. A rise in the Open Interest on any given day is immediately reflected in the Futures Price (wherein the Futures Price also increases). Similarly a fall in the Open Interest on any given day results in the fall in the Futures Price on the same day or on the following day. This is because Open Interest indicates the level of interest investors have in that particular stock or futures contract. A higher Open Interest indicates a high interest in the stock or that particular futures contract, which in turn implies higher demand resulting in a rise in the price.

The quantitative approach that has been used to explain the price-open interest relationship is the correlation analysis. This analysis tests the degree of correlation between the movements in open interest to the corresponding movements in the futures closing prices.

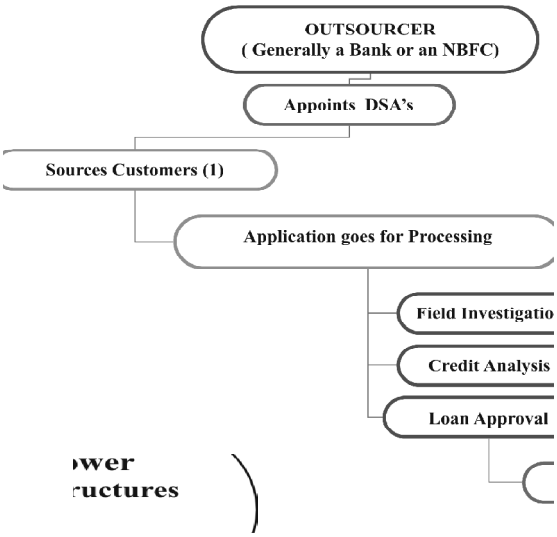
The table shows that the empirical data that has been obtained from the correlation analysis

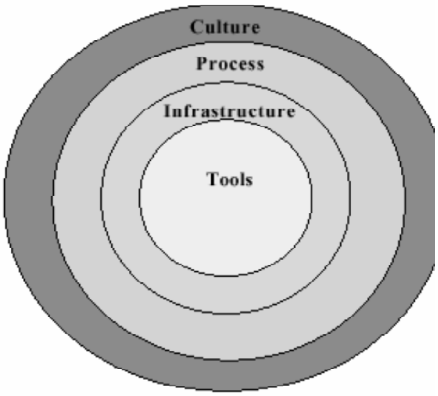
S.No.	Company	Correlation coefficient
1.	Satyam	-0.1502
2.	SBI	+0.4336
3.	Tata Motors	+0.2601
4.	Tata Power	+0. 2294
5.	Maruti	-0.2290
6.	ONGC	+0.2600
7.	Mahindra & Mahindra	+0.3420
8.	Reliance	-0.1939
9.	Tisco	+0.0870

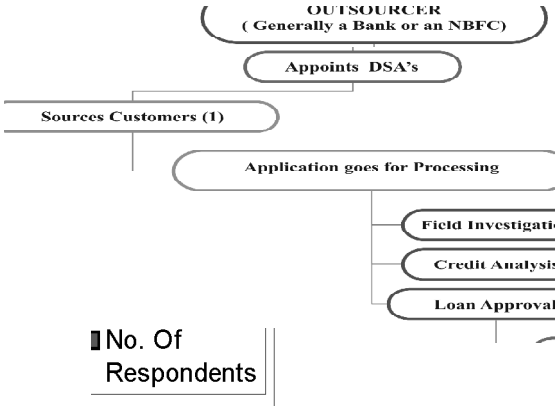
This phenomenon is reflected in most of the stocks under normal market conditions. The following graphs of Nifty Futures, Satyam and Tata Motors of one-month expiry depicts the same.

Maruti Futures for one-month expiry for the months of Dec-Feb 05

Change in Futures Prices with respect to Change in Open interest

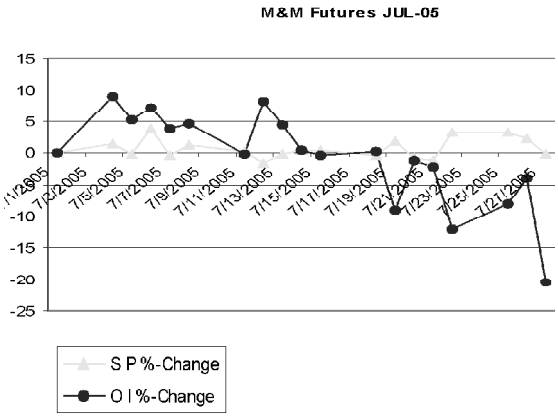


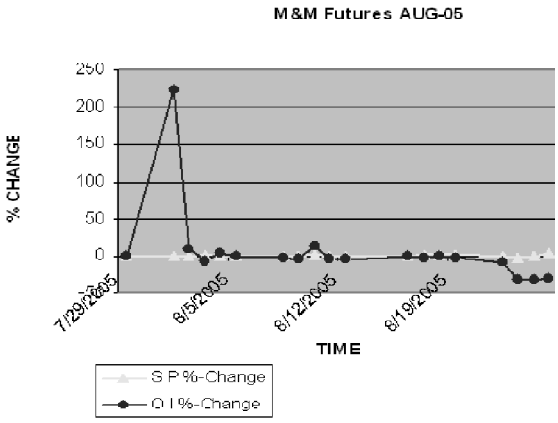


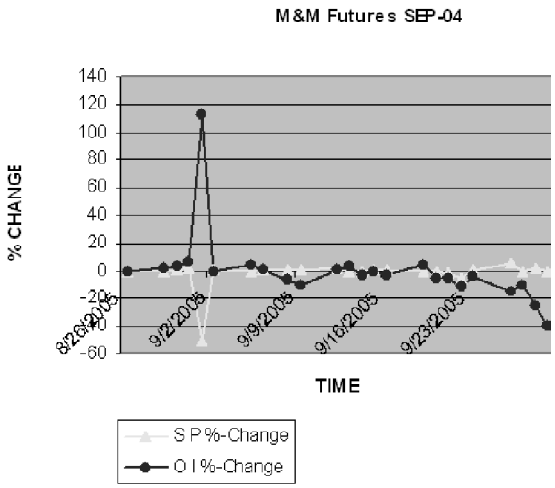


Mahindra & Mahindra Futures for one-month expiry for the months of Jan – March 05

Change in Futures Prices with respect to Change in Open interest

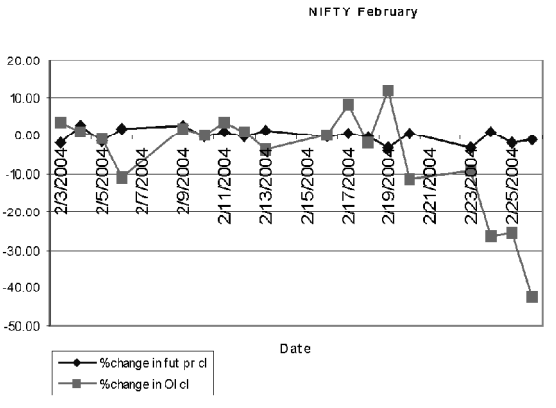




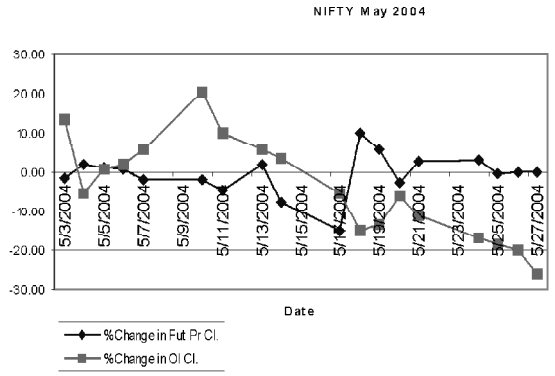


The above graph substantiates the hypothesis that change in the Futures Prices is dependent upon the change in Open Interest. But under certain conditions this may not be the case. This is proved by studying the co movement in the following situations.

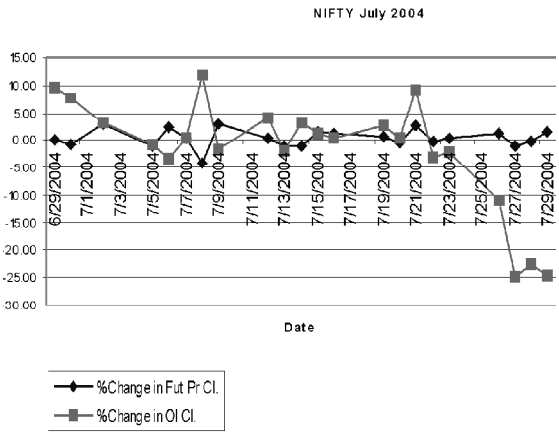
For this purpose the movement in NIFTY Futures is studied under conditions of extreme volatility. The then Central Government declared Interim Budget in the month of February. The co movement of changes in Open Interest and Futures Price can be seen in the below graph.



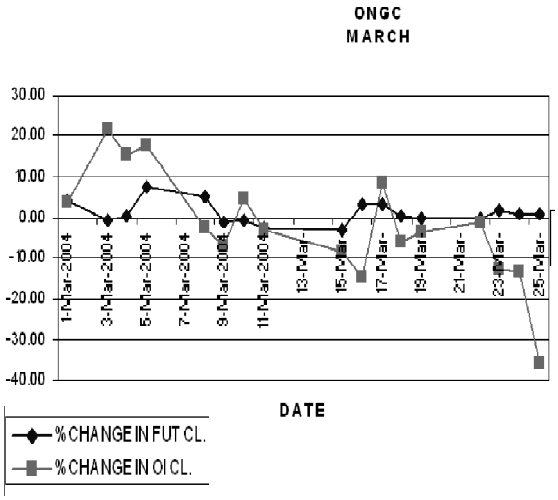
The movement in futures prices was more volatile in the month of May, that is during Elections at the Centre. The markets crashed extremely on the 17th of May, Nifty closing at 1388.75 down 12.24%. On the open interest front, Nifty futures saw a build-up in its position by 6.94%. The only place open interest has gone up is obviously in Nifty, where hedging of positions takes place.



The present UPA Government with Mr P Chidambaram as its Finance Minister declared the Union Budget in the month of July. The variation in the Nifty Futures is studied for the months of July and August 2004.



Consider the following ONGC Futures graph for one-month expiry for the month of March, where the company came out with an open issue. The change in Futures Prices with respect to change in Open interest disproves the hypothesis that the futures prices follow open interest.



It can be observed under certain conditions the movement in Futures Price is more dependant on the Socio-Economic conditions rather than the movement in Open Interest. Open Interest is also influenced by the market news which in turn influences the Futures Prices.

Thus under conditions of extreme volatility, its not just the Open Interest which influences the Future Price movement, but other factors which influence the economy, have a major impact. This implies that under such conditions, the hypothesis that the movement in Open Interest mostly influences the Futures Price is disproved.

Conclusions and findings

There are many reasons that traders pay attention to price and open interest. Open interest, or the total number of open contracts, applies primarily to the futures markets. It is often used to confirm trends for futures contracts. An increase in open interest along with an increase in price is said to confirm an upward trend, while an increase in open interest along with a decrease in price confirms a downward trend. This study investigates the relationship between price and open interest using data of nine companies in the Indian futures market.

Futures markets provide several benefits to the participants and others who are related to stock markets. These markets make transactions across time easier because they allow investors in taking the decisions as buy, sell or hold the stock. Futures markets allow traders to make a low cost agreement to exchange money for shares at a futures time. By allowing hedging against unfavorable price changes, they make it possible for shifting risk from hedgers to speculators. Moreover, futures prices are informative in that they permit investors to have an efficient idea of what the future spot price is likely to be or what future demand and supply of the commodity would likely be by gauging the current futures price.

The futures on individual stocks are as useful to hedgers, speculators and arbitrageurs as any other futures contract including those on stock indices. An investor who has a long position in a particular security can obtain a hedge cover by taking a short position in the futures in case he fears that the market in general and/ or the particular security he holds is likely to witness a southward movement. Similarly, a short position in a security can be hedged with a long position in futures. It may be noted that with the stock index futures, the hedgers can remove market risk from their portfolio and have effective stock picking.

One important quote about trading comes from trading psychology expert Mark Douglas. As he points out, most of us are not as willing to take financial risks as we think: "Most people like to think of themselves as risk takers, but what they really want is a guaranteed outcome with some momentary suspense to make them feel as if the outcome had been in doubt. The momentary suspense adds the thrill factor necessary to keep our lives from getting too boring."

Another thing to understand about risk in trading is that you cannot avoid losses by careful planning or brilliant strategy. Numerous losses are part of the process. In The Elements of Successful Trading, Robert Rotella puts it this way: "Trading is a business of making and losing money. Any trade, no matter how well thought out, has a chance of becoming a loser. Many people think the best traders don't lose any money and have only winning trades. This is absolutely not true. The best traders lose a lot of money, but they eventually make even more over time."

The movement in Open Interest generally influences the Futures Price movement. This is the case under normal market conditions, but under conditions of extreme volatility the movement in futures price is not just dependent on the Open Interest movement. Other factors like socio economic conditions play a major role in influencing the futures prices. Studying the movement in Nifty futures during the budget and elections time has proved this.

Hypothesis is empirically tested positive in the case futures of the following stocks – ACC, Reliance, Satyam, SBI, Tata Motors, Tisco, Tata Power, Maruti, Mahendra & Mahendra. In case of ONGC Futures in the month of March (where in it came out with an issue) a deviation from the hypothesis is observed.

References

- Futures and Options, N D Vohra, B R Bagri, Second edition, Tata McGraw Hill Publication
- Financial Derivatives, Keith Redhead, First edition, Printice Hall Publication
- Options, Futures and other Derivatives, John C Hull, Fifth edition, Printice Hall Publication
- Investments, Sharpe, Alexander, Bailey, Sixth edition, Printice Hall Publication
- www.nseindia.com
- www.bseindia.com
- www.moneypore.com
- http://in.finance.yahoo.com/
- www.investopedia.com
- www.moneycontrol.com
- www.sharekhan.com
- http://sify.com/finance/
- www.indiainfoline.com
- www.karvy.com

Appendix

The Appendix contains the Graphs and data (using this data the correlation coefficients and the graphs have been prepared) for the future stocks of all the nine companies.

The appendix is attached as futures.zip.

Note: The value of the Previous-settlement-price and Previous open interest has been adjusted to make the closing price percentage change as well as the open interest percentage change of the first day of the month equal to zero.