Chapter 2
Pricing of Forward and Futures

Introduction:

Derivatives are instruments or contract whose value depends on the value of some underlying assets. The underlying asset can be commodity, stock, stock index, interest rate, currency etc. The classic economic rationale for the derivatives market is that these markets facilitate the hedging of risk. The forward and future prices indicate price expectation and direction of the economy in the short run. The uniform future value for commodities also created through forward and futures trading.

Finance academics and practitioners have long been interested in understanding the relative pricing of forward and future contracts. According to Richard and Sundaresan (1981), a futures contract can be regarded as a series of intraday forward contracts, where the profits or loss is realized each day and a new contract is written at the current future price, or at the price that sets the value of the contract equal to zero. The futures and forward prices will be equal only when the interest rate is non-stochastic. If the interest rate is stochastic and is positively or negatively correlated with the spot price of the underlying asset, the futures price will be greater or less than the forward price.


Traditionally the pricing of forward and futures contracts has been based upon the Cost-of-Carry or Theory of Storage Hypothesis. This model is popularized by Kaldor (1939), to explain the inter-temporal price relationship between spot and futures prices. Working (1949) viewed the returns to storage as being determined by the supply and demand for storage. Thus when wheat stocks are large, the demand for storage is large and the price of storage is expected to be relatively large. However, if wheat stocks are low, then the economic benefits/returns of storing wheat is small. Furthermore, the theory of the price of storage only holds for highly storable and continuous inventory commodities such as wheat (Brennan, 1958).

The theory of the price of storage includes two different arguments. The first argument explains the difference between the spot and futures prices in terms of interest forgone in storing a commodity, physical storage costs, and convenience yield on inventory. This argument was shown in the works of Kaldor (1939), Brennan (1958, 1991); and Telser (1958). Under the second argument, Cootner (1960); Dusak (1973); Breeden (1980); and Hazuka (1984) show that the theory of the price of storage can be explained by dividing
the futures prices into an expected risk premium and predicted future spot price (Fama and French, 1987).

This chapter is organized as follows. Section 2.1 discusses the pricing of forward contract. Section 2.2 describes the futures contracts and its pricing. Section 2.3 deals with the margin system of futures. Section 2.4 provides a discussion on basis and its trend in Indian stock market and the concluding section sums up the major findings of the chapter.

2.1 Pricing of Forward Contract:

Forward contract is a simplest form of financial derivative. It is an agreement between two counterparties to buy or sell an asset at a certain future time at a certain pre agreed price. A forward contract is traded in over-the-counter market—usually between two financial institutions or between a financial institution and one of its clients. The most crucial advantage of forward contract is that the contract can be tailor-made i.e., meeting requirements of the two counterparties by negotiating details of the contract. However, the disadvantages are:

a) **Low marketability**: obligations of counterparty cannot be easily transferred to a third party.

b) **Counterparty risk**: The risk to each party of a contract that the counterparty will not live up to its contractual obligations. This risk as a risk to both parties and should be considered when evaluating a contract. Counterparty risk is also known as “default risk”.

To illustrate the formula of pricing of forward contracts, let us assume

i) There is no transactions cost for trading positions of the market participants.

ii) The market participants are subject to the same tax rate on all net trading profits.

iii) The market participants can borrow and lend money at the same risk-free rate of interest.

iv) The market participants take advantage of arbitrage opportunities as they occur.

The relationship between forward and spot price of an investment asset that provides no income is

\[ F_0 = S_0 e^{rT} \]

where

- \( S_0 \): Current price of the underlying asset
- \( F_0 \): Today’s forward price of the underlying asset
- \( r \): Risk-free rate of interest per annum (continuous compounding)
- \( T \): Time to maturity
Market dynamics:

i) If $F_0 > S_0 e^{rT}$:

Buy the asset today at $S_0$ and short forward contracts on the asset at $F_0$. The net profit on delivery date would be $(F_0 - S_0 e^{rT})$.

ii) If $F_0 < S_0 e^{rT}$:

Short the asset today after borrowing it from the market at price $S_0$ and go long on forward contracts on the asset at $F_0$. The net profits on delivery date would be $(S_0 e^{rT} - F_0)$.

iii) If $F_0 = S_0 e^{rT}$: No arbitrage opportunity available in the market.

Example: Consider a three month forward contract of 10 gram gold. Assume that the current price of 10 gram gold is Rs 30,000 and the three-month risk-free interest rate is 8% per annum. Suppose that the forward price of 10 gram gold is relatively high at Rs 32,000. An arbitrageur can borrow Rs 30,000 at the risk-free interest rate of 8% per annum to buy 10 gram of gold and short a forward contract to sell 10 gram gold in three months. At the end of the three months, the arbitrageur delivers the gold and receives Rs 32,000. The sum of money required to pay off the loan is $30000 \times e^{0.08*1/4} = Rs. 30,606$. By doing this strategy, the arbitrageur earns a profit of Rs $(32000 - 30606) = Rs. 1,394$ at the end of the three month period.

Now suppose that the forward price is relatively low at Rs 28,000. An arbitrageur can short 10 gram gold at current market price of Rs. 30,000 and invest the proceeds of the short sale at 8% per annum for three months, and initiate a long position in a three-month forward contract. After three month his money of the short sale grows to Rs 30,606. At the end of the three months, the arbitrageur pays Rs 28,000, takes delivery of the gold under the terms of the forward contract, and uses it to close out the short position. At the end of three months the arbitrageur realized a profit of Rs. $(30606 - 28000) = Rs 2,606$. However, the arbitrageur would not get any arbitrage opportunity if three months forward contract of 10 gram gold is trading at Rs 30,606.

2.2 Futures Contract:

A futures contract is a contract between two parties to exchange assets or services at a specified time in the future at a price agreed upon at the time of the contract. The futures contracts are standardized and exchange traded. To facilitate liquidity in the futures contracts, the exchange specifies certain standard features of the contract. It is a standardized contract with standard underlying instrument, a standard quantity and quality of the underlying instrument that can be delivered, (or which can be used for reference purposes in settlement) and a standard timing of such settlement. In most conventionally traded futures contracts, one party agrees to deliver a commodity or
security at some time in the future, in return for an agreement from the other party to pay an agreed upon price on delivery. The former is the seller of the futures contract, while the latter is the buyer.

2.2.1 Terminology of futures contract:

**Spot price:** The price at which an underlying asset trades in the spot market.

**Futures price:** The price that is agreed upon at the time of the contract for the delivery of an asset at a specific future date.

**Contract cycle:** It is the period over which a contract trades. The index futures contracts on the NSE have one-month, two-month and three-month expiry cycles which expire on the last Thursday of the month. Thus an April expiration contract expires on the last Thursday of April and a May expiration contract ceases trading on the last Thursday of May. On the Friday following the last Thursday, a new contract having a three-month expiry is introduced for trading.

**Expiry date:** This is the date on which the final settlement of the contract takes place.

**Contract size:** The amount of asset that has to be delivered in one contract. This is also called as the lot size.

**Basis:** Basis is defined as the cash market price less the nearby futures market price at the same time. In a normal market, basis will be negative. This reflects that futures prices normally exceed spot prices. The arbitrage profit can be made by using the basis in two ways as discussed below:

i) When basis is significantly negative just prior to the delivery date, the arbitrageur can make profit by selling futures contracts and buying asset in the spot market.

ii) When basis is significantly positive just prior to the delivery date, the arbitrage profit can be earn by buying futures contracts and selling the goods in the spot market.

**Cost of carry:** Measures the storage cost plus the interest that is paid to finance the asset less the income earned on the asset.

2.2.2 Pay-off from Futures Contract:

There are two parties involved in a futures contract - one is buyer and other is the seller of the contract. The seller agrees to deliver the asset at the specified time in the future, and the buyer agrees to pay a fixed price and take delivery of the asset at the expiry date of the contract. A futures contract may be used for hedging or speculative purpose. The
price changes in the asset after the futures contract agreement is made provide gains to one party at the expense of the other. If the price of the underlying asset increases after the agreement is made, the buyer gains at the expense of the seller. If the price of the asset drops, the seller gains at the expense of the buyer. So the futures contracts have linear or symmetrical payoffs. It implies that the losses as well as profits for the buyer and the seller of a futures contract are unlimited. This is shown in chart 2.1

**Chart 2.1: Pay-off from the Futures Contract**

### Example:
Let us assume that a speculator buys a one-month Nifty index futures contract at Rs 5,500. The underlying asset in this case is the Nifty portfolio. When the index moves above Rs 5,500, the long futures position starts making profits, and when the index moves down below Rs 5,500 it starts making losses. However in case of short positions, when the index moves down below Rs 5,500 the short futures position starts making profits, and when the index moves up above Rs 5,500, it starts making losses. In both the cases, the buyer or seller has a potentially unlimited upside as well as a potentially unlimited downside.

### 2.2.3 Pricing of Futures Contract:

**The Cost-of-Carry hypothesis:**

The Cost-of-Carry hypothesis is also known as the theory of storage. This model is used to determine the fair price of forward and future contracts. It was first formalized by
Kaldor (1939) and Working (1948, 1949). This model is based on an argument that the futures price of a commodity is equal to spot price plus carrying costs (cost incurred by holding the asset such as insurance, warehouse rent, interest charge and like). Thus the futures price must be higher enough to offset the carrying cost incurred while an arbitrageur awaits delivery. If the futures price is too low, the arbitrageur could sell the holding commodity from the inventory in the spot market and buy the futures contract to avoid the carrying cost until the maturity of the future contract.

If an individual wishes to take a speculative position in an asset, he has two choices.

i) Buy a future contract of the asset  
ii) Buy the asset in spot market and store it

In either case consider an economy with no transaction cost. Let us assume that $S_t$ be the current spot price of an underlying asset, $F_t$ be the current future price of the asset, $T$ is time to maturity of the future contract, $r$ is the annual carrying cost (cost incurred by holding the asset such as insurance, storage, interest on loan), and $d$ is the annual return from holding the asset (coupons, dividends, convenience yield and like).

Suppose, an individual purchases a futures contract of an asset, the net cash flow is given by purchasing a futures contract $=-F_t$

On the other hand, if the asset is purchased on the spot market and stored, the net cash flow is given by purchased the asset in spot market $=-S_t$, incurring any costs from holding the asset including interest on borrowed funds $=-rS_tT$, earning any income from holding the asset $=dS_tT$.

No arbitrage condition implies $-F_t = -S_t - rS_tT + dS_tT$

\[ F_t + dS_tT = S_t + rS_tT \]  
\[ S_t - F_t = S_t (d-r)T \]

Basis = Carry

Equation (1) is called Cost-of-Carry formula. Any violation of the cost-of-carry formula indicates the existence of arbitrage profits that could be captured by a well designed trading strategy.

If $F_t + dS_tT > S_t + rS_tT$, it is advantageous to take a loan and buy the asset in spot market for delivering it into the futures market.

If $F_t + dS_tT < S_t + rS_tT$, it is advantageous to sell the asset in spot market and buy it back in the futures market.

**Risk Premium Hypothesis:**

According to the Risk Premium Hypothesis, the principal of risk and return relationship applicable in other financial markets may also apply for forward and futures market.
Although there are differences between futures contracts and other investment instruments, the Risk Premium approach would consider both investment asset and futures contract as equal candidates for inclusion in an investor’s portfolio.

The Risk Premium Hypothesis in future prices is a reflection of Keynes’ (1930) normal backwardation theory. Keynes argued that if hedgers are net seller and the speculators are net buyer in a commodity, the future price of the commodity will be below the expected future spot price. Symbolically,

\[ F_{n \mid t} < E_t(S_n) \]  

This is termed as normal backwardation. This situation exists because the hedgers are shifting their risk to the speculators. So the speculators want to take a premium for the risk they are bearing. Thus future prices should rise over the life of any given contract resulting in compensation to speculators for their risk-bearing service. Therefore, under a normal demand and supply condition, the current future price shows downward biased measure of the expected future spot price.

2.2.4 Pricing of Futures Contract of Perishable Commodities:

In case of perishable commodities, the pricing of the future contracts depends on the following two things.

(a) Expected spot price of the underlying commodity:

If the spot price on the underlying commodity is expected to increase before the expiration of the futures contract, the futures prices will be greater than the current spot price of the commodity. If the spot price is expected to decrease, the futures price will be lower than the spot price.

(b) Any risk premium associated taking the futures position:

Since there is a buyer and a seller on a futures contract, the size and the direction of the risk premium will be vary from case to case and will depend upon whether the buyer is viewed as providing a service to the seller or vice versa. In an agricultural futures contract, where farmers or producers are the primary sellers of futures contracts and individual investors are the buyers, it can be argued that the latter are providing a service to the former and thus should be rewarded. In this scenario, the futures price will be lower than the expected spot price.

\[ \text{Futures price} = \text{Spot Price} - \text{Expected Risk Premium} \]

In this type of relationship between futures and spot prices, prices are said to exhibit 'normal backwardation'
2.2.5 Pricing of stock Index Futures:

A futures contract on the stock market index gives its owner the right and obligation to buy or sell the portfolio of stocks characterized by the index. Stock index futures are cash settled; there is no delivery of the underlying stocks. In their short history of trading, index futures have had a great impact on the world’s securities markets. Its existence has revolutionized the art and science of institutional equity portfolio management. The main differences between commodity and equity index futures are that:

• There are no costs of storage involved in holding equity.
• Equity comes with a dividend stream, which is a negative cost if one is long in the stock and a positive cost if one is short the stock.

Therefore, Cost of carry = Financing cost - Dividends.

Thus, a crucial aspect of dealing with equity index futures as opposed to commodity futures is an accurate forecasting of dividends. The better the forecast of dividend offered by a security, the better is the estimate of the futures price.

Example: The pricing of index futures is based on the cost-of-carry model, where the carrying cost is the cost of financing the purchase of the portfolio underlying the index, minus the present value of dividends obtained from the stocks in the index portfolio. This has been illustrated in the example below.

Nifty futures trade on NSE as one, two and three-month contracts. Money can be borrowed at a rate of 10% per annum. The price of a new two-month futures contract on Nifty is calculated as follows.

Let us assume that the ITC Limited will be declaring a dividend of Rs.10 per share after 15 days of purchasing the contract. Current value of Nifty is 5000 and Nifty trades with a multiplier of 50.

The value of the contract is 50 * 5000 = Rs.2,50,000/-.  

If ITC Limited has a weight of 10% in Nifty, its value in Nifty is Rs.25,000/-.  

If the market price of ITC Limited is Rs.250/-, then a traded unit of Nifty involves 100 shares of ITC ltd. i.e. (Rs.25,000/Rs. 250).

The amount of dividend received is Rs.1000 i.e. (100 *Rs.10)

To calculate the futures price, we need to reduce the cost-of-carry to the extent of dividend received. The dividend is received 15 days later and hence compounded only for the remaining 45 days.
To calculate the futures price we need to compute the amount of dividend received per unit of Nifty. Hence we divide the compounded dividend figure by 50. Thus, the futures price is calculated as:

\[
F = 5000 e^{0.1 \times \frac{60}{356}} - \left( 100 \times 10 e^{0.1 \times \frac{45}{365}} \right) / 50
\]

= 5062.62

**2.2.6 Pricing of Stock Futures:**

A futures contract on a stock gives its owner the right and obligation to buy or sell the stocks. Like the index futures, stock futures are also cash settled; there is no delivery of the underlying stocks. Just as in the case of index futures, the main differences between commodity and stock futures are that:

- There are no costs of storage involved in holding stock.
- Stocks come with a dividend stream, which is a negative cost if an investor is long in the stock and a positive cost if one is short in the stock.

Therefore, Cost of carry = Financing cost - Dividends.

Thus, a crucial aspect of dealing with stock futures as opposed to commodity futures is an accurate forecasting of dividends. The better the forecast of dividend offered by a security, the better is the estimate of the futures price.

**Pricing stock futures when no dividend expected:**

The pricing of stock futures is also based on the cost-of-carry model, where the carrying cost is the cost of financing the purchase of the stock minus the present value of dividends obtained from the stock. If no dividend is expected during the life of the contract, pricing of futures on that stock is

\[
F = S \times e^{r t}
\]

Example: Suppose SBI futures trade on NSE as one, two and three-month contracts. Money can be borrowed at 10% per annum. The price of a unit of new two-month futures contract on SBI will be

Let us assume that the spot price of SBI is Rs. 2,000.

Thus, futures price \( F = 2000 e^{0.1 \times \left( \frac{60}{365} \right)} = Rs. 2033.15 \)

**Pricing stock futures when dividends are expected:**

When dividends are expected during the life of the futures contract, pricing involves reducing the cost of carry to the extent of the dividends.
**Example:** Let us assume that, Reliance Industries Ltd. futures trade on NSE as one, two and three-month contracts. The price of a unit of new two-month futures contract on Reliance when dividends are expected during the two-month period will be

Let us assume that Reliance Industries Ltd will be declaring a dividend of Rs. 50 per share after 15 days of purchasing the contract. Suppose that the market price of Reliance Industries Ltd. is Rs. 800.

To calculate the futures price, we need to reduce the cost-of-carry to the extent of dividend received. The amount of dividend received is Rs. 50.

The futures price

\[ F = 800e^{0.1 \times \left(\frac{60}{365}\right)} - 50e^{0.1 \times \left(\frac{45}{365}\right)} \]

= Rs. 762.65

**2.2.7 Risk associated with future contract:**

Trading in futures contracts may not be suitable for all investors. It is possible to lose a substantial amount of money in a very short period of time. The risks associated with the future contract are discussed below.

**Leveraged risk:**

In case of future contract the loss is potentially unlimited and can exceed the amount originally deposited to the beneficiary’s broker. This is because trading in futures is highly leveraged, with a relatively small amount of money used to establish a position in assets having a much greater value.

**Imperfect hedging:**

Future contracts may be uses to hedge against the risk of either a rise or a fall in the underlying asset. By selling index futures an investor can protect the value of his assets portfolio and by buying index futures one can lock the purchase price of the index at a future date. The principle behind using futures to hedge is that a profit in one market, say the futures market, will offset a loss in the other market. However the success of any hedging strategy depends on its perfection.

For example, suppose a pricing of future, and risk associated with futures, margining system basis. The investor sells S&P CNX Nifty future to lock in the value of his share portfolio. Even though his portfolio may contain a number of shares in the CNX Nifty Junior Index, it is unlikely to move exactly in line with the index. The change in value in his portfolio may not be offset exactly by the change in value of the futures contract. This may work in his favour, or it may work against him.
Another consideration is the amount chosen to hedge. If the value of the asset portfolio is not an exact multiple of Index futures contracts, an investor has to choose between slightly over-hedging and slightly under-hedging of his physical position. Again, this discrepancy may work in his favour, or it may work against him, depending on how the market moves.

2.3 Margin system of futures:

In the futures markets, there is uncertainty in the movement of asset prices. This uncertainty leading to risk is sought to be addressed by margining systems. The trading in future contract requires following types of margins.

**Initial margin:** In a futures contract, there is no payment made by the buyer to the seller, nor does the seller have to show proof of physical ownership of the asset at the time of the agreement. However, both the parties are required to deposit a fund as margin to the exchange. The amount of fund is a percentage of the contract value which is set by the exchange time to time. This margin is called initial margin. Exchanges continuously monitor market conditions and risks and, as necessary, raise or reduce their initial margin requirements. An increase in market volatility is a reason for raising margins. Daily profit and loss are adjusted from the initial margin account. In case of loss or if the value of the initial margin is being eroded, the exchange will make a margin call in order to restore the amount of initial margin available.

**Maintenance margin:** Maintenance margin is a particular threshold below which the balance on the margin account is not allowed to fall.

**Variation margin:** Variation margin is an additional deposit of counterparty on his margin account that prevents the balance on the margin account to fall below the maintenance margin.

**Mark-to-market margin:** Mark to market is an accounting procedure by which the profits or losses of every day’s trading accruing to the counterparties as a result of that day’s change in the futures price have to be received or paid. By mark to market the potential loss from price changes is diluted into limited day-to-day price fluctuations and default risk is thus minimized.

Let us assume that,

\[ F_0 \] is the closing futures price at the opening day of a future contract and

\[ F_1 \] is the closing futures price of the next day of the future contract.

i) If \( F_1 > F_0 \)

The long counterparty makes profit by holding the futures contract at the end of 2\(^{nd}\) day. He could eventually close out the position or sell the contract at a higher price. So his margin account is credited with the gain of \( F_1 - F_0 \). The same amount would be debited from the margin of the short counterparty as mark-to-market loss.
ii) If $F_1 < F_0$ the short counterparty gains the money by holding the futures contract during the 2\textsuperscript{nd} day. He could eventually close out the position or buy the contract at a lower price. The short counterparty’s margin account is credited with the gain of $F_0-F_1$. This amount is debited from the long counterparty’s margin account.

### 2.4 Basis:

The relationship between the cash and futures price is known as the basis. Understanding basis makes it possible to compare futures and forward contract price quotes with cash market price quotes. Basis is most often calculated as the difference between the cash price and the nearby (closest to expiration) futures contract price ($\text{Cash Price} - \text{Futures Price} = \text{Basis at a specific point in time}$). A negative basis implies the futures price is greater than the cash price, and a positive basis implies the futures price is less than the cash price. Because basis can be either negative or positive, it is helpful to include the (-) or (+) sign when calculating or quoting basis to avoid confusion. A positive cost of carry, meaning that future price is higher than spot price. The basis is negative and this situation is known as contango. A negative cost of carry, implying a positive basis. This situation is known as backwardation or inverted market. Chart 2.2(a) and 2.2(b) summarizes the two situations and shows that at maturity futures converge to spot. At maturity, the basis converges to zero.

![Chart 2.2(a)](contango.png) ![Chart 2.2(b)](backwardation.png)

Factors that increase the basis are interest costs, storage costs, positive handling and transportation costs between the location and the futures delivery point. While factors that decrease the basis are shortage of local supply on the spot market, positive cash flows generated by the underlying asset of the futures contract. The basis may be consistent over time but in certain situations it may fluctuate considerably.

The basis risk concerns the risk associated with unexpected changes in the basis between the time a hedge is placed and the time that it is lifted. Unfortunately, hedging cannot eliminate basis risk. Entering in a trade that speculates on the cost of carry is referred to
as “basis trading”. It consists in taking the spread between the futures contract and the spot asset.

2.4.1 Trend of Basis:

To find out the trend of basis at different market scenario in India, the daily closing prices for the period 1\textsuperscript{st} January, 2007 to 31\textsuperscript{st} March, 2013 for the S&P CNX Nifty were obtained from the NSE website.

Chart 2.3: is showing the daily nearby basis for S&P CNX Nifty from the period of January 2007 to March 2013. Basis reflects the demand and supply for a particular asset relative to the future market.

According to chart 2.4(a) and 2.4(b), basis became more positive in 2007 as the Indian stock market was in boom in the particular year and the investment demand for stocks increased in the cash market.
So the cash prices of the stocks increased relative to its futures prices, causing the basis more positive.

At the beginning of 2008, the equity market crashed and an uncertainty was seen across the globe from 2008 to 2010. The Indian equity market was very volatile from 2008 to 2010 as a result the basis was also very volatile in the period.

The basis became more negative from 2011 to March 2013. The Indian equity market was traded in a narrow range in the period, so the market participants preferred
speculation rather than investment. Thus the speculative demand for stocks caused to increase the futures market price to its cash market price.

2.4.2 Basis convergence:

Basis levels generally can be predicted with more accuracy than either futures or cash price levels. One reason for this is basis convergence at the expiry date of the futures contract. Basis convergence is largely due to arbitrage, the simultaneous sell or purchase of the cash assets and the purchase or sell of the corresponding futures contract, in order to profit from price distortions. So the cash price converges to the futures price as contract maturity approaches. chart 2.5 illustrates the convergence of basis of three futures contracts (January 2013 expiry contract, February 2013 expiry contract & March 2013 expiry contract) of S&P CNX Nifty. From the chart it is clearly visible that the cash and futures prices of S&P CNX Nifty converged to each other at expiry date of the futures contract. Thus the basis level is easier to predict than the actual price, but the basis patterns in stocks tend to be more variable and somewhat harder to predict than the commodities as the stocks do not require any storage cost like commodities.

Conclusion:

In this chapter, we have analyzed the pricing of forward and futures contracts. The futures contracts have linear or symmetrical pay-offs. So the losses as well as profits for the buyer and the seller of a futures contract are unlimited. This chapter also aims to find out the trend of basis at different market scenarios in India and made an attempt to examine in the Indian context the conditions which may lead to basis convergence.

The result indicates that the basis become more positive when market is in boom. It become more negative when market is moving in a particular range and the basis become volatile with the increase in the volatility of the stock market.

This is justified by the reason that in boom market the investment demand for stocks increased in the cash market. So the cash prices of the stocks increased relative to its futures prices, causing the basis more positive. In the range bound market the market participants preferred speculation rather than investment. Thus the speculative demand for stocks caused to increase the futures market price to its cash market price and in the volatile market the market participants can’t predict the actual trend of the market. So the volatility of basis increases with increase in the volatility of the stock market.
Chart 2.5: Difference of Spot and Future closing prices of S&P CNX Nifty (From January 2013 to March 2013)

Source: Author’s calculation on the basis of data accessed from NSE website