Abstract

Many of the participants in futures markets are hedgers. This risk might relate to fluctuations in the price of oil, a foreign exchange rate, the level of the stock market, or some other variable. A perfect hedge is one that completely eliminates the risk. For the most part, therefore, a study of hedging using futures contracts is a study of the ways in which hedges can be constructed so that they perform as close to perfect as possible. This comparative study is on hedging the risk of futures in IT Sector (Infosys, TCS, Wipro, Tech Mahindra and HCL Technologies) and FMCG sector (Hindustan Uniliver, Pidilite Limited, Godrej, Dabur, Britannia). Data of each company has been analysed with the help of Beta which reflects the sensitivity of the movement of scrip relative to the movement of the index.

I. INTRODUCTION

A derivative instrument, broadly, is a financial contract whose payoff structure is determined by the value of an underlying commodity, security, interest rate, share price index, exchange rate, oil price, and the like. Derivatives are specialized contracts which are employed for a variety of purposes including reduction of funding costs by borrowers, enhancing the yield on assets, modifying the payment structure of assets to correspond to
the investor’s market view, etc. However, the most important use of derivatives is in transferring market risk, called hedging, which a protection against losses is resulting from unforeseen price or volatility changes.

A future contract is a standardized contract between two parties commits to sell, and the other to buy, a stipulated quantity (and quantity, where applicable) of a commodity, currency, security, index or some other specified item at an agreed price on a given date in the future. Hedging is the prime reason for development of future contracts. Stock index futures can be effectively used for hedging purposes. They can be used while taking a long or short position on a stock and for portfolio hedging against unfavourable price movements.

A short hedge is a hedge that involves a short position in futures contract. It is appropriate when the hedger already owns an asset and expects to sell it at some time in the future. Hedges that involve taking a long position in a futures contract are known as long hedges. A long hedge is appropriate when a company knows it will have to purchase a certain asset in the future and wants to lock in a price now.

II. REVIEW OF LITERATURE

In the Indian context, Naik and Jain (2002) examine prices from the older regional exchanges, and show that information flows from the futures market to the spot markets. Kumar et al. (2008) analysed the hedging properties of the Indian commodity futures using data for both agricultural and non-agricultural commodities for the period from 2004 to 2008. They find that the effectiveness of the futures contracts to hedge risk was low. They also find that hedging effectiveness is lower for non-agricultural commodity futures compared to agricultural commodity futures.

Hedging in the spot market is particularly useful in case of any long-term requirement for which the prices have to be confirmed to quote a sale price but to avoid buying the physical commodity immediately to prevent blocking of funds and incurring large holding costs (Tomek and Peterson, 2001). Switzer and El-Khoury (2007) investigate the efficiency of the New York Mercantile Exchange (NYMEX) Division light sweet crude oil futures contract market for the recent periods of extreme conditional volatility. Crude oil futures contract prices are found to be unbiased predictors of future spot prices. Both futures and spot prices exhibit asymmetric volatility characteristics. Hedging performance is improved when asymmetries are accounted for.

In financial parlance, risk is any variation from an expected outcome. So, for an investor, risk includes an outcome when one may not receive the expected return (Stein, 1961). Traditionally, hedging has been motivated by the desire to reduce risk by taking a position opposite to the exposure. The quest for better hedge has been the motive for sophisticated risk management and hedging techniques. Derivatives are used as a tool to transfer risk, i.e., for hedgers (Bodla and Jindal, 2006) and, therefore, they are extensively used as hedging instruments worldwide, including emerging markets like Malaysian, Italian and Portuguese equity markets. However, hedging one’s stock position through futures and options is still the road less travelled in India. Even when it is done, the techniques used have been too
naïve and primitive. Lack of suitable hedging models for the Indian market is a challenge to the risk management system of participants and regulators. It is also a deterrent for attaining greater market depth, and may severely affect the stability of Indian markets. Further, availability of high frequency data in the recent past will help validate such models empirically.

III. STUDY DESIGN

3.1 STATEMENT OF PROBLEM

- To what extent the existing futures contract are suitable for hedging?
- What is the extent of risk involved in FMCG and IT sector?

3.2 NEED FOR THE STUDY

Stock index futures contracts can be used to manage investment exposure and control the risk related to movements in equity market in a well-diversified portfolio of stocks through the use of hedging strategies, thus the study is based on hedging the risk of futures in IT sector and FMCG sector, which would in turn enable the investors in the futures market to be aware of the risk involved in these sectors and mitigate the same.

3.3 OBJECTIVES OF THE STUDY

- To analyse the hedging effectiveness of futures market.
- To examine the market efficiency of futures market.
- To hedge the risk involved in the future market.

3.4 SCOPE

The study is confined to FMCG and IT sector. The study uses hedge ratio model. The study is done in order to minimize the risk involved in futures market. Further the study could explore the relationship between future returns and volume of trade.

IV. RESEARCH METHODOLOGY

4.1 TYPE OF RESEARCH

The study is based on the analytical research method.

4.2 TYPE OF DATA COLLECTION

Data required for hedging the risk of futures study is secondary data which are collected from various resources from official website of NSE, Wikipedia and textbooks to collect information.

4.3 SAMPLE USED IN THE STUDY

The sample used for the study are FMCG Future price and Index price of Hindustan Uniliver, Pidilite Limited, Godrej, Dabur, Britannia. Samples of IT sector Future price and Index price are Infosys, TCS, Wipro, Tech Mahindra and HCL Technologies, for the period of 1 month that is 25\textsuperscript{th} July 2016 to 19\textsuperscript{th} August 2016.

4.4 LIMITATIONS OF THE STUDY

The analysis is limited to 1 month that is 25 July 2016 to 19\textsuperscript{th} August 2016. It would have been better if the analysis is based on various hedge ratio models.
V. DATA ANALYSIS & INTERPRETATIONS

5.1 IT SECTOR

Table 1: The Value Of Beta And Alpha

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>BETA</th>
<th>ALPHA</th>
<th>REGRESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFOSYS</td>
<td>0.82</td>
<td>0.12</td>
<td>Y=0.12+0.82X</td>
</tr>
<tr>
<td>TCS</td>
<td>0.91</td>
<td>-0.01</td>
<td>Y=-0.01+0.91X</td>
</tr>
<tr>
<td>WIPRO</td>
<td>0.99</td>
<td>0.26</td>
<td>Y=0.26+0.99X</td>
</tr>
<tr>
<td>TECH MAHINDRA</td>
<td>0.74</td>
<td>0.34</td>
<td>Y=0.34+0.74X</td>
</tr>
<tr>
<td>HCL</td>
<td>1.38</td>
<td>2.48</td>
<td>Y=2.48+1.38X</td>
</tr>
<tr>
<td>PORTFOLIO</td>
<td>0.97</td>
<td>0.64</td>
<td>Y=0.64+0.97X</td>
</tr>
</tbody>
</table>

Graph 1: Chart Showing The Changes In Beta Value Of IT Sector

INTERPRETATION:

- The systematic risk of Infosys is 0.82, the stock and the market move in the same direction; however, the stock is relatively less risky. A move of 1% in the market influences the stock to move up by 0.82%. In order to hedge the risk, for an instance of 100 contracts, 82 contracts must be hedged. The unsystematic risk of INFOSYS is 0.12. The regression of the company is Y= 0.12+0.82X, for instance if the investor gets a return of 2% in the market then the investor would earn a return of 1.76% in the futures market.

- The systematic risk of TCS is 0.91, the stock and the market move in the same direction; however, the stock is relatively less risky. A move of 1% in the market influences the stock to move up by 0.91%. In order to hedge the risk of TCS, for an instance of 100 contracts 91 contracts must be hedged. The regression of the company is Y= -0.01+0.91X, for instance if the investor gets a return of 2% in the market then the investor would earn a return of 1.81% in the futures market.
The systematic risk of WIPRO is 0.99 which is very close to the standard condition of \( \beta=1 \), which moves according to the market. A move of 1% in the market influences the stock to move up by 0.99%. In order to hedge the risk, for an instance of 100 contracts, 99 contracts must be hedged. The unsystematic risk of WIPRO is 0.26. The regression of the company is \( Y=0.26+0.99X \), for instance if the investor gets 2% returns in the market then the investor would earn a return of 2.24% in the futures market.

The systematic risk of TECH MAHINDRA is 0.74, which is relatively less risky. A move of 1% in the market influences the stock to move up by 0.74%. In order to hedge the risk, for an instance of 100 contracts, 74 contracts must be hedged. The unsystematic risk of TECH MAHINDRA is 0.34. The regression of the company is \( Y=0.34+0.74X \), for instance if the investor gets 2% returns in the market then the investor would earn a return of 1.4% in the futures market.

The systematic risk of HCL is 1.38 it means the stock moves in the same direction as the markets; however, the stock tends to move 38% more than the market. In order to reduce the risk of HCL, for an instance of 100 contracts 138 contracts must be hedged. The unsystematic risk of HCL is 2.48. The regression of the company is \( Y=2.48+1.38X \), for instance if the investor gets 2% returns in the market then the investor would earn a return of 5.24% in the futures market.

### 5.2 FMCG SECTOR

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>BETA</th>
<th>ALPHA</th>
<th>REGRESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUL</td>
<td>0.99</td>
<td>0.02</td>
<td>( Y=0.02+0.99X )</td>
</tr>
<tr>
<td>PIDILITE</td>
<td>1.04</td>
<td>0.02</td>
<td>( Y=0.02+1.04X )</td>
</tr>
<tr>
<td>GODREJ</td>
<td>0.96</td>
<td>0.01</td>
<td>( Y=0.01+0.96X )</td>
</tr>
<tr>
<td>DABUR</td>
<td>0.96</td>
<td>0.02</td>
<td>( Y=0.02+0.96X )</td>
</tr>
<tr>
<td>BRITANNIA</td>
<td>1</td>
<td>-0.01</td>
<td>( Y=-0.01+X )</td>
</tr>
<tr>
<td>PORTFOLIO</td>
<td>0.99</td>
<td>0.06</td>
<td>( Y=0.06+0.99X )</td>
</tr>
</tbody>
</table>

Graph 2: The Changes In Beta Of FMCG Sector
The systematic risk of HUL is 0.99 which is very close to the standard condition of $\beta=1$, which moves according to the market. A move of 1% in the market influences the stock to move up by 0.99%. In order to hedge the risk, for an instance of 100 contracts, 99 contracts must be hedged. The unsystematic risk of HUL is 0.02. The regression of the company is $Y=0.02+0.99X$, for instance if the investor gets 2% returns in the market then the investor would earn a return of 2% in the futures market.

- The systematic risk of PIDILITE is 1.04 it means the stock moves in the same direction as the markets; however, the stock tends to move 40% more than the market. In order to hedge the risk, for an instance of 100 contracts, 104 contracts must be hedged. The unsystematic risk of PIDILITE is 0.02. The regression of the company is $Y=0.02+1.04X$, for instance if the investor gets 2% returns in the market then the investor would earn a return of 2.1% in the futures market.

- The systematic risk of GODREJ is 0.96 it means the stock and the market move in the same direction; however, the stock is relatively less risky. A move of 1% in the market influences the stock to move up by 0.96%. In order to hedge the risk, for an instance of 100 contracts, the investor has to hedge 96 contracts. The unsystematic risk of GODREJ is 0.01. The regression of the company is $Y=0.01+0.96X$, for instance if the investor gets 2% returns in the market then the investor would earn a return of 1.93% in the futures market.

- The systematic risk of DABUR is 0.96 it means a move of 1% in the market influences the stock to move up by 0.96%. In order to hedge the risk, for an instance of 100 contracts, the investor has to hedge 96 contracts. The unsystematic risk of the company is 0.02. The regression equation of the company is $Y=0.02+0.96X$, for an instance if the investor gets 2% returns in the market then the investor would earn a return of 1.94% in the future market.

- The systematic risk of BRITANNIA is 1 that means it moving according to the market, 1% in the market influences the stock to move up by 1%. In order to hedge the risk, for an instance of 100 contracts, the investor has to hedge 100 contracts. The unsystematic risk of the company is -0.01. The regression equation of the company is $y=-0.01+X$ for an instance if the investor gets 2% return in the market then the investor would earn a return of 1.99% in the future market.

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>BETA(IT)</th>
<th>BETA(FMCG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.968333</td>
<td>0.99</td>
</tr>
<tr>
<td>Variance</td>
<td>0.049497</td>
<td>0.00088</td>
</tr>
<tr>
<td>Observations</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Hypothesis Mean</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>t stat</td>
<td>-0.23646</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t)</td>
<td>0.822459</td>
<td></td>
</tr>
<tr>
<td>T critical two-tail</td>
<td>2.570582</td>
<td></td>
</tr>
</tbody>
</table>
H0: There is no significant difference in the beta value of IT and FMCG sector
H1: There is significant difference in the beta value of IT and FMCG sector.

The calculated value = -0.23646 and the critical value = 2.570582.
Since, the calculated value is less than the critical value we accept the null hypothesis that is H0 and we infer that there is no significant difference between the beta values of IT and FMCG sector.

VI. FINDINGS

- The risk involved in IT sector is moderate, except HUL which is highly risky, since the beta is greater than 1.
- In the FMCG sector the risk is more towards PIDILITE and BRITANNIA companies, since their beta value is much higher than the standard norm which is 1.
- In order to mitigate the risk, the investor has to hedge only 97 contracts against 100 contracts in IT sector, whereas in FMCG sector the investor has to hedge 99 contracts over 100 contracts, thus IT sector would be optimal to reduce the risk.
- After calculating t-test, we infer that the portfolio beta has no significant difference between the IT and FMCG sector.

VII. SUGGESTIONS

- If the investor is a risk taker and wants a higher return, then it is optimal to invest in FMCG sector rather than investing in IT sector and in turn hedge the risk involved in the futures market.
- The investor of futures market has to hedge the risk involved in HCL, HUL, PIDILITE companies where the systematic risk is relatively high.

VIII. CONCLUSION

This study enables the investors to analyse the risk involved and the volume of contracts to be hedged in the IT and FMCG sector. It facilitates the investors to have an optimal portfolio, considering the systematic and unsystematic risk prevailing in these sectors. The analysis shows that there is high risk involved in HUL, HCL, PIDILITE companies which equally give high returns. Since, there is no significant difference in beta of IT and FMCG sector, the investor has to analyse the individual performance of the companies in these sectors.

IX. REFERENCES


To Cite This Article