



Is Beta an Effective Risk Controller? A Study of BSE 30 Shares”

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ABSTRACT

The unsystematic risk of the portfolio can be reduced with the help of diversification. But to mitigate the systematic risk, it is important to quantify it. Beta is one of the tools through which the risk can be measured. In the present study the researcher had studied the effectiveness of beta in risk controlling. The 30 scrips included in SENSEX had been taken as sample of the study. The analysis of beta, actual returns and beta adjusted returns had been made. To test the hypothesis of the study paired t-test had been used. The researcher had also used the charts to analyze data graphically. This study emerges logic of having beta values per security to balance the risk effectively.

Keywords : Unsystematic Risk, Systematic Risk, Beta, Beta adjusted returns

Introduction

"Risk comes from not knowing what you're doing."

- Warren Buffet

Risk can be defined as deviations of the actual results from the expected. Most of the people would like to live in a world of certainty and want to eliminate the risk. However it is not possible to eliminate the risk completely but by taking certain steps we can mitigate or balance the risk to a considerable extent certainly.

The measures to mitigate risk are determined by the combined impact of the probability and magnitude of loss. On these bases the management of risk is viewed in two ways:

Category-1 Risk of small losses with high probability

Category-2 Risk of high losses with low probability

The category-1 includes the risk involved in changes in stock prices where the changes are small but occur frequently. In the category-2 there are earthquakes, tsunami, thefts which cause huge losses but probability of their occurrence is far lower.

The basic objective of investment is always safety of principal. Experienced investors, while choosing securities to invest, aim to keep this objective intact. So, investors do not choose the securities that promise great returns but, the securities that promise optimization of risk and return. Risk in this regard, becomes the crucial element to measure.

Investors like the return but not the risk. With the aim of minimizing the risk of portfolio, one needs to quantify it. The total risk of the securities consists of two different types: (1) systematic risk and (2) unsystematic risk. Several tools are available to quantify such risks in different contexts. According to William Sharpe in his index model that, the unsystematic risk can be reduced by diversification, so investors must concentrate on systematic risk. Beta is widely accepted mean for measuring systematic risk.

Significance of Beta in Risk Balancing/ Controlling Process

Security returns are affected by several factors in the market. These can be changes in technological factors, political conditions, monetary policies, legal scenario, economic

conditions, EXIM policy, international surroundings, etc. make huge impact on returns. These all factors are known as systematic factors, and potential adverse impact of such factors on returns is known as systematic risk. Portfolio managers extensively emphasize upon systematic risk because of its vulnerability. Standard deviation, coefficient of variation, coefficient of determination and beta are the major tools use to quantify risks in different regards. The study of beta component helps portfolio managers to assess systematic risk and manage the portfolio accordingly.

Beta symbolizes the quantum of security response to the market forces. For example SENSEX consists scrips of 30 companies. A security with 1.8 beta, will increase by 1.8% if the market increases by 1% and will correct by 1.8% if the market corrects by 1%. Investors have different appetites for risk. Considering beta, in above framework, investors can seek to construct a balanced portfolio by blending high beta securities with low betas securities. Through this investors can trade off by handling risk effectively in their portfolio. In this case beta can be calculated as under:

Beta = $\frac{\text{Co-variance}(\text{SENSEX, Stock})}{\text{Variance}(\text{SENSEX})}$

Review of Literature

According to Fant and Peterson Size and book-to-market equity are shown to transcend beta in explaining stock returns. One possible explanation of the book-to-market equity effect is overreaction. They investigated the effect of size, book-to-market equity, prior returns, and beta on stock returns. They found a strong positive relation between returns and prior returns for February through December.

Singh (2009) researched on topic The Dynamics of BSX & FUTODX Nifty: Volatility, Liquidity and Regulatory Framework. He analyzed the influence of growth opportunities on the post offering earnings performance of BSX and FUTODX firms that made seasoned equity offerings. He found deterioration in the performance of growth firms following a seasoned equity offering.

Wu (2001) examines the stock price behavior of firms offering seasoned equity around their issue date. An analysis of a sample of 5180 seasoned offerings of firms listed on American Stock Exchange (AMEX), the NASDAQ, and the New York Stock Exchange (NYSE) during the period 1986-1998 finds that the SEOs are underpriced.

Research Methodology

Objectives of the study

The objectives of the present research are:

1. To analyze the impact of beta value on security returns in market.
2. To discover the need of betas for market.
3. To analyze the significance of difference between actual returns and beta adjusted returns.

Scope and Sample

The researcher concentrated on the recent scenario of the stock market. Bombay Stock Exchange (BSE) is the oldest and one of the prime stock exchanges in India. The index of BSE 30 shares are known as SENSEX. In the present study the researcher had studied the betas, actual returns and beta adjusted returns of 30 companies consisted by SENSEX for the time period January 2011 to December 2011. And 30 companies consisted by SENSEX is the sample for the study.

Research Type

The present research aims to study the effectiveness of betas in risk balancing. So it can be called an exploratory research. In present research the data analyzed through statistical techniques on this base it can be known as analytical one too.

Data Collection and Analysis

Since the all sample scrips are taken from BSE and price movements of these scrips are also compared with movements of SENSEX, the data is exclusively collected from the web-site of BSE i.e. www.bseindia.com.

For analysis the following methodology is used:

1. Actual returns for all 30 sample scrips are taken from the website of BSE for the period of study.
2. Return of securities as per beta (SENSEX returns for the period multiplied by beta value of security) is calculated for period of the study.
3. Deviations in above (returns as per beta minus actual returns) are observed and taken as X1 and X2.

For the purpose of evidencing significance of deviations paired T-test is used to authenticate research further as it is used to compare two related samples.

Data Analysis and Interpretation

Chart I Beta values of SENSEX Constituents

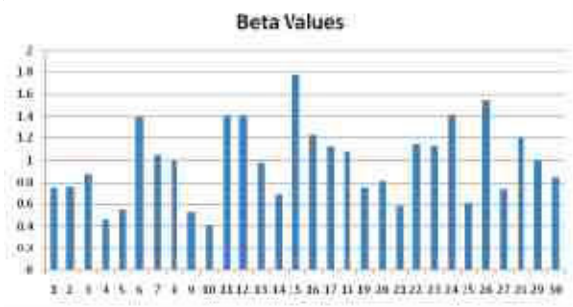


Table 1 : Beta, Actual Returns, Returns as per betas and deviations in returns of SENSEX Scrips for One Year Period (Jan 2011 to Dec 2011)

Sr. no. Scrips	Company	Beta Values	Actual Returns X ₂	Returns as per beta X ₁	Deviations in Returns (X ₁ -X ₂)
1	Bajaj Auto Ltd.	0.74	3.33%	-18.23%	-21.56%
2	Bharti Airtel Ltd.	0.75	-4.32%	-18.48%	-14.16%
3	Bharat Heavy Electricals Ltd.	0.88	-48.60%	-21.68%	26.92%
4	Cipla Ltd.	0.46	-13.61%	-11.33%	2.28%
5	Coal India Ltd.	0.55	-4.34%	-13.55%	-9.21%
6	DLF Ltd.	1.4	-37.30%	-34.50%	2.80%
7	Housing Development Finance Corp.Lt	1.05	-10.78%	-25.87%	-15.09%
8	HDFC Bank Ltd.	1	-9.00%	-24.64%	-15.64%
9	Hero MotoCORP Ltd.	0.53	-4.07%	-13.06%	-8.99%
10	Hindustan Unilever Ltd.	0.41	30.58%	-10.10%	-40.68%
11	Hindalco Industries Ltd.	1.41	-52.95%	-34.74%	18.21%
12	ICICI Bank Ltd.	1.41	-40.19%	-34.74%	5.45%
13	Infosys Ltd.	0.98	-19.74%	-24.15%	-4.41%
14	ITC Ltd.	0.68	15.36%	-16.76%	-32.12%
15	Jaiprakash Associates Ltd.	1.77	-50.52%	-43.61%	6.91%
16	Jindal Steel & Power Ltd.	1.22	-36.47%	-30.06%	6.41%
17	Larsen & Toubro Ltd.	1.12	-49.72%	-27.60%	22.12%
18	Mahindra & Mahindra Ltd.	1.08	-12.15%	-26.61%	-14.46%
19	Maruti Suzuki India Ltd.	0.74	-35.24%	-18.23%	17.01%
20	NTPC Ltd.	0.82	-19.94%	-20.20%	-0.26%
21	Oil And Natural Gas Corporation Ltd	0.58	-20.54%	-14.29%	6.25%
22	Reliance Industries Ltd.	1.14	-34.52%	-28.09%	6.43%
23	State Bank Of India.	1.13	-42.39%	-27.84%	14.55%
24	Sterlite Industries (India) Ltd.	1.42	-51.98%	-34.99%	16.99%
25	Sun Pharmaceutical Industries Ltd.	0.61	2.52%	-15.03%	-17.55%
26	Tata Motors Ltd.	1.55	-31.72%	-38.19%	-6.47%
27	Tata Power Co. Ltd.	0.73	-36.11%	-17.99%	18.12%
28	Tata Steel Ltd.	1.2	-50.62%	-29.57%	21.05%
29	Tata Consultancy Services Ltd.	1	-0.33%	-24.64%	-24.31%
30	Wipro Ltd.	0.85	-18.65%	-20.94%	-2.29%
	SENSEX	1	-24.64%		

Chart II Deviations in returns in sample scrips (Differences in beta adjusted returns and actual returns)



Hypothesis Testing

Paired t-test

Ho: Deviations in security returns (i.e. difference between actual returns and beta

adjusted returns) are not significant. [Beta is effective to forecast the actual returns.]

Ha: Deviations in security returns (i.e. difference between actual returns and beta

adjusted returns) are significant. [Beta is not effective to forecast the actual returns.]

Calculated $t = 0.7050$

Table value @ 5% level of significance = 2.045

 $T_{cal} < T_{ttv}$

Result: Accept Null Hypothesis

Finding: Deviations in security returns (i.e. difference between actual returns and beta adjusted returns) are not significant. [Beta is effective to forecast the actual returns.]

Limitations of the Study

1. The present study represent of one year time period.
2. The similar results cannot be surely applicable to other group of scrips, Indices and time period.

Conclusion

In today's markets the investors are being more "risk conscious" and getting more knowledge about the balancing the risk. They understand and recognize need of computing and considering risk element in their portfolio. Beta is one of the most widely used tools for quantifying systematic risk. This study proves that beta will enable investors and portfolio managers to assess security risk in better manner.

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