

PERFORMANCE OF SELECTED INDIAN STOCK RETURNS - A COMPARATIVE STUDY

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Abstract: *The concept of risk and return plays a crucial role in the process of selecting a stock by an average investor. This Paper examines the stock returns of five sectors, by analyzing the Return, Risk (Standard Deviation), Skewness, Kurtosis and the correlation among the returns has been calculated. A period of ten years is taken for this study ranging from April 1, 2005 to March 31, 2015. The Correlation performance shows that, there is a high positive correlation between BSE S&P PSU and BSE S&P Oil & Gas.*

Key Words: *Risk and Return, Correlation*

I. INTRODUCTION

“The history of the stock and bond markets shows that risk and reward are inextricably intertwined. Do not expect high returns without high risk. Do not expect safety without correspondingly low returns.” -William Bernstein, “The Four Pillars of Investing” (2002). Investment research studies throughout the years have confirmed that the general investing public, or non-professional investors, have a pronounced tendency to focus on an investment’s return. While risk is not necessarily ignored, it certainly seems to play second fiddle to return in most individual investors’ decision-making processes. It is important to calculate the Return, Risk and Correlation among the Securities/Stocks and Indices to manage risk efficiently and for efficient portfolio construction. Stock analysts, Market participants and Academicians have used different methods to calculate the return and risk of Securities/Stocks. This paper estimates the Return, Risk, and Correlation of five Stock Indices on Bombay Stock Exchange (BSE), India for ten years from 1st April 2005 to March 31st 2015. The five stock indices taken for this are BSE S&P Health Care, BSE S&P Information Technology, BSE S&P Oil & gas, BSE S&P FMCG and BSE S&P PSU.

II. LITERATURE REVIEW

Juhi Ahuja (2012) presents a review of Indian Capital Market & its structure. In last decade or so, it has been observed that there has been a paradigm shift in

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Indian capital market. The application of many reforms & developments in Indian capital market has made the Indian capital market comparable with the international capital markets. Now, the market features a developed regulatory mechanism and a modern market infrastructure with growing market capitalization, market liquidity, and mobilization of resources. The emergence of Private Corporate Debt market is also a good innovation replacing the banking mode of corporate finance. However, the market has witnessed its worst time with the recent global financial crisis that originated from the US sub-prime mortgage market and spread over to the entire world as a contagion. The capital market of India delivered a sluggish performance. Andersen, T *et al.* (2006) examined the current industry of market risk management practices by using one of two respective approaches historical simulation or Risk Metrics. The results suggest that better results may be obtained by separately measuring and modeling the part of the realized volatility attributable to “jumps” in the price process through so-called realized bi-power variation measures. Banz and Rolf W. (1981) examine the empirical relationship between the return and the total market value of NYSE common stocks. They found that smaller firms have had higher risk adjusted returns, on average, than larger firms. This ‘size effect’ has been in existence for at least forty years and is evidenced that the capital asset pricing model is mispriced. The size effect is not linear in the market value; the main effect occurs for very small firms while there is little difference in return between average sized and large firms. Cumby, R. E and J. D. Glen (1990) examined the performance of fifteen U.S based internationally diversified mutual funds between 1982 to 1988 using two performance measures the Jensen measure and the positive period weighting measures and concluded that there is no evidence that the funds, either individually or as a whole, provide investor with performance that surpasses that of a broad, international equity index over this sample period. Amromin et al (2005) studied the stock market beliefs and portfolio choices of individual investors. He concluded that the overall results lend support to the equity valuations are lower during recessions and subsequent returns are higher because of undue pessimism about future returns, rather than high risk aversion.

III. OBJECTIVES

The objective of this paper is to know the performance of Stock Indices based on Volatility, Correlation and trend analysis.

- Calculating the daily return, risk, Skewness, and Kurtosis for ten years.
- Calculating the Correlation among the five sectors using ten years daily returns
- Calculation of trend analysis using time series for the ten years daily returns

IV. METHODOLOGY

Data & Sample

The required sample data of five stock indices have been collected from the Bombay Stock Exchange and Internet/Web sources. The daily adjusted closing prices for ten years (01-04-2005 to 31-03-2015) of each Stock Indices from Bombay Stock Exchange have been used for this study.

(I) Mean and Standard Deviation: Ben Graham in his first edition of *Security Analysis* in 1934, argues against measures of risk based upon past prices (such as volatility), noting that price declines can be temporary and not reflective of a company's true value. He argued that risk comes from paying too high a price for a security, relative to its value and that investors should maintain a "margin of safety" by buying securities for less than their true worth. This is an argument that value investors from the Graham school, including Warren Buffett, continue to make to this day. Kohers, N. et al (2005) examined the changes in stock price fluctuations in the world's emerging stock markets over the period from 1988 through June 2004. They concluded that the emerging stock markets exhibit some common notable trends over time. Given the diverse nature of emerging stock markets, the common risk/return relationships found for many of these markets overtime is notable. Specifically, volatility for most country indices remained relatively steady from 1988 through 1996. In contrast, from 1997 through June 30, 2004, market variances have increased noticeably for the majority of emerging markets. Furthermore, the mean percentage daily returns for more emerging market indices were consistently lower during the 1997 through June 2004 time frame. Among the five stock indices taken for the study, BSE S&P FMCG and BSE S&P Health Care Returns has got highest returns of 0.00090 and 0.00084 respectively, while BSE S&P Health Care has also got lowest deviation from returns of 0.01183.

Skewness: The skewness in stocks' returns distribution, is defined as the third moment of returns, quantifies to what extent the distribution is asymmetric – compared to a normal distribution that is symmetric with zero skewness. Positive skewness is intuitively thought of as a distribution with a longer right tail with higher probability for extreme high gains. In contrast, negative skewness is a distribution with a longer left tail with higher probability of extreme high losses. Many studies have focused on asymmetric volatility as an explanation for negative skewness in aggregate stock returns. Black (1976) and Christie (1982) posit the existence of a leverage effect, whereby a low price leads to increased market leverage, which in turn leads to high volatility (see also Veronesi, 1999). Pindyck (1984), French *et al.* (1987), Campbell and Hentschel (1992), Bekaert and Wu (2000), Wu (2001), and Veronesi (2004) further propose the existence of a volatility feedback effect, whereby high volatility is associated with a high risk premium and a low

price. Blanchard and Watson (1982) show that negative skewness can result from the bursting of stock price bubbles. Hong and Stein (2003) hypothesize that short sales constraints limit the market's ability to incorporate bad news. According to their model, when more bad news arrives in the market, the price responds to the cumulative effect of news and falls at a time when volatility may be high (see also Bris *et al.*, 2007). This paper shows positive skewness for BSE S&P Information Technology Returns (0.03885), BSE S&P Oil & gas (0.04409) and BSE S&P PSU (0.16287), while negative skewness for BSE S&P Health Care Returns (-0.49666) and BSE S&P FMCG (-0.10930).

Table 1
Performance of Stock Indices

<i>Descriptive Statistics</i>	<i>BSE S&P Health Care Returns</i>	<i>BSE S&P Information Technology Returns</i>	<i>BSE S&P Oil & gas</i>	<i>BSE S&P FMCG</i>	<i>BSE S&P PSU</i>
Mean	0.00084	0.00073	0.00061	0.00090	0.00036
Standard Deviation	0.01183	0.01774	0.01832	0.01365	0.01597
Sample Variance	0.00014	0.00031	0.00034	0.00019	0.00025
Kurtosis	5.09219	4.32565	9.48275	2.81721	8.04888
Skewness	-0.49666	0.03885	0.04409	-0.10930	0.16287
Minimum	-0.08255	-0.11094	-0.14965	-0.07962	-0.10669
Maximum	0.08058	0.11386	0.19106	0.07209	0.16415
Sum	2.07535	1.82455	1.50627	2.22316	0.88172
Count	2483	2483	2483	2483	2483
Confidence Level (95.0%)	0.00047	0.00070	0.00072	0.00054	0.00063

(II) Correlation: Kelly, Martins and Carlson (1998) is one of the few studies to focus on the relationship between stock and bond returns. They reveal that there are greater degrees of co-movement in emerging markets than in mature financial markets because country risk in emerging economies makes domestic bond returns more 'equity like'. The intra-market stock-bond correlation is reinforced by Erb, Harvey and Viskanta (1999) in using institutional investor ratings. More recently, Li and Zou (2008) have captured the asymmetric responses in stock bond correlations to recent government policy decisions in China. In addition, Boyer, Kumagai and Yuan (2006) briefly examine correlations between stock and government bond returns during the financial crises as a part of their broader study on how they spread. They show that it happens through investible stocks in emerging markets. This paper shows that, there is a high positive correlation between BSE S&P PSU and BSE S&P Oil & Gas (0.83).

Table 2
Correlation between Stock Returns

Sectors	BSE S&P Health Care Returns	BSE S&P Information Technology Returns	BSE S&P Oil & gas	BSE S&P FMCG	BSE S&P PSU
BSE S&P Health Care Returns	1.00				
BSE S&P Information Technology Returns	0.51	1.00			
BSE S&P Oil & gas	0.60	0.52	1.00		
BSE S&P FMCG	0.58	0.43	0.53	1.00	
BSE S&P PSU	0.65	0.48	0.83	0.57	1.00

(III) Trend Analysis Using Time Series: Dacorogna *et al.* (2001) and Gençay *et al.* (2002, 2003a, c) argue that conventional time series analysis, focusing exclusively on a time series at a given scale, lacks the ability to explain the nature of the data generating process. A process equation that successfully explains daily price changes, for example, is unable to characterize the nature of hourly price changes. On the other hand, statistical properties of monthly price changes are often not fully covered by a model based on daily price changes. Lynch and Zumbach (2003) similarly emphasize the importance of a multiscale framework in the analysis of absolute price changes to accommodate the underlying heterogeneity with intraday, daily, weekly and monthly components. Therefore, a comprehensive multi-scale approach is needed to elaborate the market dynamics across time scales in which economic agents operate. This paper shows little volatility among the five sectors and the causes for volatility in the stock market may be due to factors like change in economy fundamentals, corporate earnings, and change in social and political events.

V. CONCLUSION

This paper helps in analyzing the performance of five stock indices in India, based on risk and return. Thus, a volatile financial environment not only affects the investor but also has some impact on the economy as a whole that results in uncertainty and thereby shaking the investor's confidence. However, it also has a positive side; it provides the policy makers a tool to gauge the sentiments of the market thereby predicting and taking a position just when the market becomes vulnerable. It also helps investors to estimate the intrinsic value of a particular stock by considering the public sentiments, which helps him take the right decision just when it is needed. Thus, the estimation of volatility has become almost a mandatory part of forecasting the prices of stocks. It provides an opportunity to risk managers to advise investors to take technically correct decisions not only at the individual level but also helps economies to set the right course for the future path of the nation.

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