



## INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE AND MANAGEMENT

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**BSE AND SECTORAL INDICES: A COMPARITIVE STUDY****M.MADHAVI****ASSOCIATE PROFESSOR AND HEAD  
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DEPARTMENT OF BUSINESS ADMINISTRATION  
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HYDERABAD****ABSTRACT**

*The global economic meltdown has influenced all the sectors of the Indian economy. Its impact is more visible on the capital market and the indices. The indices are falling down and the markets are following the same trend. The BSE SENSEX has been the worst hit among the Indian stock market indices. The other sectoral indices are also following the SENSEX until a revival in the last quarter. Because of the declining trends in the capital markets, the investors are in a dilemma whether their investments will be safe or not. Even though the situation has stabilized a little bit now, still there is an ambiguity among the investors about the performance of the indices. In this backdrop, an attempt was made to study the performance of the sectoral indices in comparison with SENSEX. The author has taken the data of the last financial year and studied the correlation coefficients to establish the relationship between the selected sectoral indices and BSE. Six leading sectoral indices were taken for the analysis, which have a significant impact on the total economic situation of the country.*

**INTRODUCTION**

Indian financial market has been going through a fascinating change and it opened up excellent business and investment opportunities in the financial sector. The growth and evolution of the financial market led to the development of well-structured capital markets with attractive investment opportunities for the individuals. The development of capital markets have led to the development of regulatory bodies and development of various indices in order to provide authentic information to the investors. Financial deregulation and innovations have changed the whole structure and functioning of the financial markets of many industrialized countries since 1990s. Initially the stock market index was formed and later on the sectoral indices were developed and these are comprehensively providing the necessary information to the investors to invest their funds for productive utilization of the country. Understanding the importance of the stock market indices, a study has been initialized to establish a relationship between the leading stock market index of the country, the SENSEX, and six significant sectoral indices, which are of prime importance to the overall performance of the economy. The relation of SENSEX with these indices has been computed with the help of the statistical tool, correlation coefficient. Further, the study has taken the financial year April, 2008-2009, as this has been the period which has witnessed the impact of global financial crisis.

**BOMBAY STOCK EXCHANGE**

The Bombay Stock Exchange is the first and leading stock exchange of India, which obtained permanent recognition in 1956 from the Government of India under the Securities Contracts (Regulation) Act 1956. BSE's pivotal and pre-eminent role in the development of the Indian capital market is widely recognized throughout the country. BSE provides an efficient and transparent market for trading in equity, debt instruments and derivatives. It has a nation-wide reach with its mark in more than 359 cities and towns of India. BSE has always been on par with the international standards. Keeping in view the larger interests of the investors, the systems and processes are designed to safeguard market integrity and enhance transparency in operations. BSE is the first exchange in India and the second in the world to obtain ISO 9001:2000 certification. It is also the first exchange in the country and second in the world to receive Information Security Management System Standard BS 7799-2-2002 certification for its On-line Trading System popularly known among the markets as BOLT.

**SENSEX**

The BSE's Index, SENSEX, is India's first stock market index that enjoys a specific identity and is tracked worldwide. It is an index of leading 30 stocks representing 12 major sectors. The SENSEX is constructed on a 'free-float' methodology, and is sensitive to market sentiments and market realities. Apart from the SENSEX, BSE offers 21 indices, including 12 sectoral indices. The SENSEX is the guide to all the investors of the country. In one way it regulates the inflow and outflow of funds into the companies listed in the exchange.

**CALCULATION METHODOLOGY**

SENSEX is calculated using the "Free-float Market Capitalization" methodology, wherein; the level of index at any point of time reflects the free-float market value of 30 component stocks relative to a base period. The full market capitalization of a company is determined by multiplying the price of its stock by the number of shares issued by the company. This market capitalization is further multiplied by the free-float factor to determine the free-float market capitalization. Initially the index calculation was based on full market capitalization, later on to give more realistic version of the trading activities, the free-float methodology has been adopted by the stock exchange.

The base period of SENSEX is 1978-79 and the base value is 100 index points. The notation indicates that 1978-79=100. The calculation of SENSEX involves dividing the free-float market capitalization of 30 companies in the Index by a number called the Index Divisor. The Divisor is the only link to the original base period value of the SENSEX. It keeps the Index comparable over time and is the adjustment point for all Index adjustments arising out of corporate actions, replacement of scrips etc. During market hours, prices of the index scrips, at which latest trades are executed, are used by the trading system to calculate SENSEX on a continuous basis.

#### SENSEX - SCRIP SELECTION CRITERIA

There are certain guidelines for the selection of scrips to constitute the index. The general guidelines for selection are as follows:

- History of Listing:** The scrip should have a listing history of at least 3 months with BSE. However, there may be certain exceptions for the companies ranked among the top 10 of newly listed companies. Similarly those, which may be listed due to mergers, amalgamations and other corporate alliances, are exempted from the past history of listing.
- Trading Frequency:** The scrip should have been traded on each and every trading day in the last three months at BSE. Exceptions can be made for extreme reasons like suspension of the scrip by the exchange for trading etc.
- Final Rank:** The scrip should figure among the top 100 companies listed by final rank. The final rank is arrived at by assigning 75% weightage to the rank on the basis of three-month average full market capitalization and 25% weightage to the liquidity rank based on three-month average daily turnover & three-month average impact cost.
- Market Capitalization Weight age:** The weight age for each scrip of SENSEX should be at least 0.5% of the Index, based on three-month average free-float market capitalization
- Industry/Sector Representation:** Scrip selection would generally take into account a balanced representation of the listed companies in the universe of BSE.
- Track Record:** The Company should possess a good track record of its operations as per the norms and expectations of the members of the BSE committee.

#### FREE FLOAT METHODOLOGY

Free-float methodology refers to an index construction methodology that takes into consideration only the free-float market capitalization of a company for the purpose of index calculation and assigning weight to stocks in the index. Free-float market capitalization takes into consideration only those shares issued by the company that are readily available for trading in the market. It excludes promoters' holding, government holding, strategic holding and other locked-in shares that will not come into the market for trading in the normal course. In other words, the market capitalization of each company in a free-float index is reduced to the extent of its readily available shares in the market for trading.

#### DETERMINING FREE-FLOAT FACTORS OF COMPANIES

BSE has designed a Free-float format, which is filled and submitted by all index companies on a quarterly basis. BSE determines the Free-float factor for each company based on the detailed information submitted by the companies in the prescribed format. Free-float factor is a multiple with which the total market capitalization of a company is adjusted to arrive at the Free-float market capitalization. Once the Free-float of a company is determined, it is rounded-off to the higher multiple of 5 and each company is categorized into one of the 20 bands given below. A Free-float factor of say 0.55 means that only 55% of the market capitalization of the company will be considered for index calculation. The following table gives an idea of free float factors.

Table: 1 Free-float Band

% Free-Float	Free-Float Factor	% Free-Float	Free-Float Factor
>0 – 5%	0.05	>50 – 55%	0.55
>5 – 10%	0.10	>55 – 60%	0.60
>10 – 15%	0.15	>60 – 65%	0.65
>15 – 20%	0.20	>65 – 70%	0.70
>20 – 25%	0.25	>70 – 75%	0.75
>25 – 30%	0.30	>75 – 80%	0.80
>30 – 35%	0.35	>80 – 85%	0.85
>35 – 40%	0.40	>85 – 90%	0.90
>40 – 45%	0.45	>90 – 95%	0.95
>45 – 50%	0.50	>95 – 100%	1.00

#### SECTORAL INDICES

In order to equip the investors with more comprehensive and reliable information, the BSE has launched various sectoral indices, which reflect the performance of that particular sector. To construct indices, the scrips of the companies working in the particular sector will be selected on the basis of various factors like trading frequency, market capitalization etc.

As these indices present a picture of the independent sector, it was decided to analyze the sectoral indices. The leading sectors of the Indian economy like IT, FMCG, OIL & GAS, BANKEX, METAL AND REALTY sectors have been taken for the study. The sectoral indices for last financial year April2008-March 2009 has been taken for the study, as this has been the most turbulent time for the stock markets. All the indices were presently working with a free float methodology of calculation only even though some of them were initially launched with full market capitalization methodology. The following table shows a comprehensive picture of the specifications of indices selected for the analysis.

Table:2 Index Specifications

Index	Base Period	Base Index Value	Date of Launch	Method of Calculation
BSE IT	01 February, 1999	1000	09 August, 1999	Launched on full market capitalization method,

				shifted to free-float market capitalization
<b>BSE FMCG</b>	01 February, 1999	1000	09 August, 1999	Launched on full market capitalization method, shifted to free-float market capitalization
<b>BSE Oil &amp; Gas</b>	01 February, 1999	1000	23 August, 2004	Free-float market capitalization
<b>BSE BANKEX</b>	01 January, 2002	1000	23 June, 2003	Free-float market capitalization
<b>BSE Metal</b>	01 February, 1999	1000	23 August, 2004	Free-float market capitalization
<b>BSE Realty</b>	2005	1000	09 July, 2007	Free-float market capitalization

#### MAINTENANCE OF BSE INDICES

One of the important aspects of maintaining continuity with the past is to update the base year average. The base year value adjustment ensures that replacement of stocks in Index, additional issue of capital and other corporate announcements like 'rights issue' etc. do not destroy the historical value of the index. The beauty of maintenance lies in the fact that adjustments for corporate actions in the Index should not per se affect the index values.

The BSE Index Cell does the day-to-day maintenance of the index within the broad index policy framework set by the BSE Index Committee. The BSE Index Cell ensures that all BSE Indices maintain their benchmark properties by striking a delicate balance between frequent replacements in index and maintaining its historical continuity. The BSE Index Committee comprises capital market expert, fund managers, market participants, and members of BSE Governing Board.

#### ON - LINE COMPUTATION OF THE INDEX

During trading hours, value of the indices is calculated and disseminated on real time basis. This is done automatically on the basis of prices at which trades in index constituents are executed.

To analyze the performance of the indices in relation with the SENSEX, the correlation coefficients of the sectors with the SENSEX have been computed for the selected time period. The following table presents the closing values of the indices along with SENSEX.

**Table: 3 Values of BSE SENSEX and Sectoral Indices**

Sl. No.	Month	SENSEX	IT	FMCG	OIL&GAS	BANKEX	METAL	REALTY
1	April 2008	17,287.31	4,261.93	2,461.38	11,505.79	8,819.68	16,914.63	8,505.49
2	May 2008	16,415.57	4,643.79	2,427.76	10,396.85	7,714.59	13,207.30	7,008.66
3	June 2008	13,461.60	4,019.82	2,080.33	9,009.16	5,915.98	12,912.61	4,543.47
4	July 2008	14,355.75	3,689.57	2,139.18	9,729.48	6,516.41	12,348.02	5,079.01
5	August 2008	14,564.53	3,966.75	2,215.60	9,659.46	7,009.69	8,992.06	4,995.25
6	September 2008	12,860.43	3,095.08	2,160.76	9,039.28	6,478.85	5,367.60	3,508.77
7	October 2008	9,788.06	2,861.94	1,799.83	6,195.62	5,011.24	4,383.38	1,978.24
8	November 2008	9,092.72	2,558.94	1,936.60	5,618.16	4,645.40	5,214.35	1,561.01
9	December 2008	9,647.31	2,227.96	1,987.38	6,050.04	5,454.54	5,100.14	2,274.13
10	January 2009	9,424.24	2,236.51	2,032.69	6,252.46	4,900.06	4,690.97	1,668.08
11	February 2009	8,891.61	2,096.17	2,043.26	6,064.11	4,240.10	5,795.07	1,413.19
12	March 2009	9,708.50	2,285.68	2,036.24	7,053.04	4,490.97	5,795.07	1,560.83

After taking the values of the indices for a period of one year the individual correlation coefficients are calculated with SENSEX as correlation represents the relationship between two variables effectively. The following table shows the computation of correlation between BSE-IT with SENSEX.

**Table: 4 Correlation Coefficient between BSE - BSEIT**

S.No.	x-BSE	y-BSEIT	$\bar{x}$	$\bar{y}$	$(x - \bar{x}) \cdot (y - \bar{y})$	$(y - \bar{y})^2$	$(x - \bar{x})^2$
1	17287.31	4261.93	5162.51	1099.92	5678347.99	1209824.00	26651509.500
2	16415.57	4643.79	4290.77	1481.78	6357977.17	2195671.96	18410707.19
3	13461.60	4019.82	1336.80	851.81	1146720.40	735837.99	1787034.24
4	14355.75	3689.57	2230.95	521.56	1176959.98	278319.55	4977137.90
5	14564.53	3966.75	2439.73	804.74	1963348.32	647606.46	5952282.47
6	12.860.43	3095.08	735.63	-66.93	-49235.71	4479.62	541151.49
7	9788.06	2861.94	-2336.74	-300.07	701185.57	90042.00	5460353.82
8	9092.72	2558.94	-3032.08	-603.07	1828556.48	363693.42	9193509.12
9	9647.31	2227.96	-2477.49	-934.05	2314099.53	872449.40	6137956.70
10	9424.24	2236.51	-2700.56	-925.5	2499368.28	856550.25	7293024.31
11	8891.61	2096.17	-3233.19	-1065.84	3446063.22	1136014.90	10453517.57

12	9708.50	2285.68	-2416.3	-876.33	2117476.179	767954.26	5838505.69
					29180867.40	9158443.81	102696690

$$\sum \bar{x} = 145497.63 \quad \sum \bar{y} = 37944.14$$

$$\bar{x} = \frac{\sum x}{12} = \frac{145497.63}{12} = 12,124.8$$

$$\bar{y} = \frac{\sum y}{12} = \frac{37944.14}{12} = 3162.01$$

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

$$r = \frac{29180867.40}{\sqrt{1026966.90 \times 9158443.81}}$$

$$r = \frac{29180867.40}{(10133.93)(3026.29)}$$

$$r = \frac{29180867.40}{30668211.01}$$

$$r = 0.95$$

All other indices were similarly treated with the same formula to find out the relationship. The following table presents the correlation coefficients of the select sectors.

Table: 5

Sl. No	Sectoral Indices	Correlation Coefficients with BSE SENSEX
1	BSE IT	0.95
2	BSE FMCG	0.88
3	BSE Oil & Gas	0.98
4	BSE BANKEX	0.96
5	BSE Metal	0.94
6	BSE Realty	0.98

By observing the trends in the correlation coefficients, one can note that all the indices are showing a high range of positive correlation with SENSEX. This confirms the fact that the movements of the leading index of the country influence all these indices. So, the investors can follow the leading index for their investments in various sectors.

**CONCLUSION**

Financial planning is a holistic approach and it has everything to do with the success of the investments either by the individual investors or institutional investors. The principle of financial planning will provide an understanding of both long term and short-term strategies for investments in various sectors. The study re-emphasizes the fact that the stock markets are very much sensitive to the market conditions and the leading indices will always have their impact on the associated indices. To be pragmatic, a person has to take into consideration both the

fundamental parts of the company like profitability, past records and reliability, along with a close watch of the comings and goings of the markets. This is possible with continuous monitoring of the markets. Instead of depending on individual perceptions, one can rely upon the stock market indices, as these provide authentic and unbiased information on the performance of the market. To conclude we can say that a blend of fundamental and market analysis is always will be the best choice for selection of investment opportunities.

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