



S&P BSE SENSEX Valuation Report

As on June 30, 2023

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1. Introduction

1.1 Background

- Sensex is the index of top 30 companies in India in terms of Market Capitalization (Free- Float) which are listed on the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE).
- The index was Established in 1875 by cotton merchant Premchand Roychand
- Sensex is one of the Asia's oldest & most tracked index in Indian stock market along with the S&P BSE Sensex.
- The Index is a diversified one comprising 13 sectors of the economy.

1.2 Key Stats

- As on July 9, 2022, the Sensex Index represents about 62% of the free float market capitalization of the stocks listed on NSE.
- The total traded value of Sensex index constituents for the last six months ending September 2022 is approximately 41% of the traded value of all stocks on the NSE.
- The Average historical CAGR returns provided by the Index for various periods are:
 - a) 15 years CAGR Return- 8.79%
 - b) 10 Years CAGR Return- 12.12%
 - c) 5 Years CAGR Return- 11.57%
 - d) 3 Years CAGR Return- 14.70

1. Introduction

1.3 Composition of Sensex

- Sensex Index has stocks of 30 Companies.
- Few Notable companies are- Reliance Industries Ltd, TCS, HDFC Bank, ICICI Bank, HUL, ITC, Infosys, SBI, HDFC, Bharti Airtel, Bajaj Finance, LIC India, Kotak Mahindra, L&T, Asian Paints, Axis Bank, Maruti Suzuki, Sun Pharma and so on.
- The index comprises wide range of sectors such as Conglomerates, Financial Services, Information Technology, Energy, Telecom, Metals, Infrastructure, Automotive to name a few

1.3 Sector wise contribution in Sensex

Sector	Weightage (%)
Banks	30.91%
IT Consulting & Software	14.55%
Integrated Oil & Gas	12.02%
Personal Products	6.96%
Cigarettes, Tobacco Products	5.53%
Construction & Engineering	4.09%
Cars & Utility Vehicles	3.60%
FMCG	3.32%
Telecom Services	2.97%

Sector	Weightage (%)
Holding Companies	2.63%
Electric Utilities	2.44%
Pharmaceuticals	2.33%
Speciality Chemicals	2.05%
Other Apparels & Accessories	1.74%
Cement & Cement Products	1.32%
Iron & Steel/Interm.Products	1.26%
Finance (including NBFCs)	1.14%
Packaged Foods	1.13%

2. Context of Valuation

2.1 Context

- The FY 2022-23 entailed lot of uncertain events posing economic risks to almost all parts of the globe ranging from tightening Interest rates to Russia-Ukraine crisis.
- The global uncertainties posed its repercussion on Indian Equity markets largely where the S&P BSE Sensex appreciated by meagre 0.72% and Nifty 50 appreciated by 1.37% for the FY 22-23.
- The top movers on the Nifty 50 Index were ITC, M&M, Britannia, NTPC and HUL. Whereas, the top losers were Bajaj FinServ, Tech Mahindra, Hindalco Industries, Divi's Labs and Wipro.
- The Valuation report aims to determine the valuation of the Index in the above context.
- The Index has been valued considering the dividends paid, buyback yield, Future Earnings Growth, Equity Risk Premium and India's 10 Year Government Bond Yield which serves as a appropriate proxy for Risk Free Rate. The valuation of the index is based on the methodology used by Prof. Aswath Damodaran (Dean of Valuation- NYU Stern) and his pronouncements on the Discounted Cash Flow approach. However, certain aspects of the methodology have been modified to suit the Indian capital markets and general macroeconomic scenario.
- The Report is prepared using assumptions. Thus, the interpretation of results shall be subjective and based on the users' requirements. The report provides a broader idea on whether the Nifty index is Overvalued, Undervalued or Fairly valued which are derived primarily from the cash flows (Dividends and Buy Backs) in the hands of investors/shareholders.
- The index's valuation date shall be "31st March, 2023" and all the data used for the purpose of valuation are till 31st March, 2023.

3. Approaches & Methodology

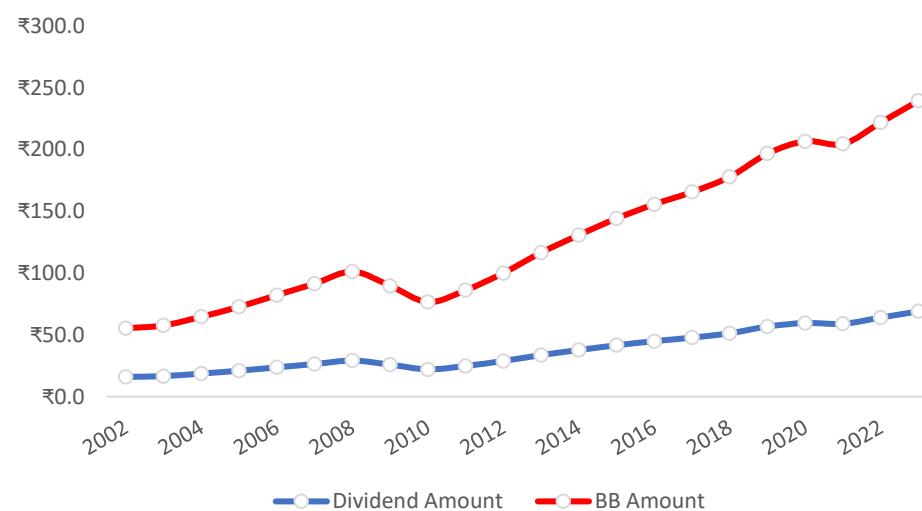
3.1 Free Cash Flow to Equity Holders

- Cash flows being one of the key ingredients in DCF valuation implies the extent of the equity holders' right on the cash flows. Cash flows implies Free Cash Flows to Equity holders i.e. FCFE.
- However, it becomes a laborious task to derive FCFE of all the companies in the index and hence, a convenient and effective approach has been followed where the Dividend pay-outs and Buybacks are substituted for FCFE being the ultimate cash flows in the hands of shareholders.
- The rationale behind the above consideration is that whatever the cash a firm generates, it shall be ultimately paid to the shareholders in the long run either on liquidation or after the firm has attained maturity in its business verticals either through dividends or buybacks.
- The dividend yield has been sourced from NSE Website and since the buybacks in emerging economies are miniscule, they are not readily available.
- Hence, the Buyback data has been sourced from Prof. Aswath Damodaran's website which has been consolidated based on the sectoral buybacks conducted.
- As buybacks do not contribute a big chunk of Cash flows, using the sectoral Buyback yield doesn't cause a major fluctuations in the valuation results.

Historical average yields of Sensex

Years	Dividend Yield (%)	Buyback yield (%)	Total Yield (%)
20 Years	1.92%	6.66%	8.58%
15 Years	1.94%	6.71%	8.65%
10 Years	1.95%	6.23%	8.18%
5 Years	1.96%	5.55%	7.50%
2023	1.97%	5.48%	7.45%

Historical Dividends & Buybacks



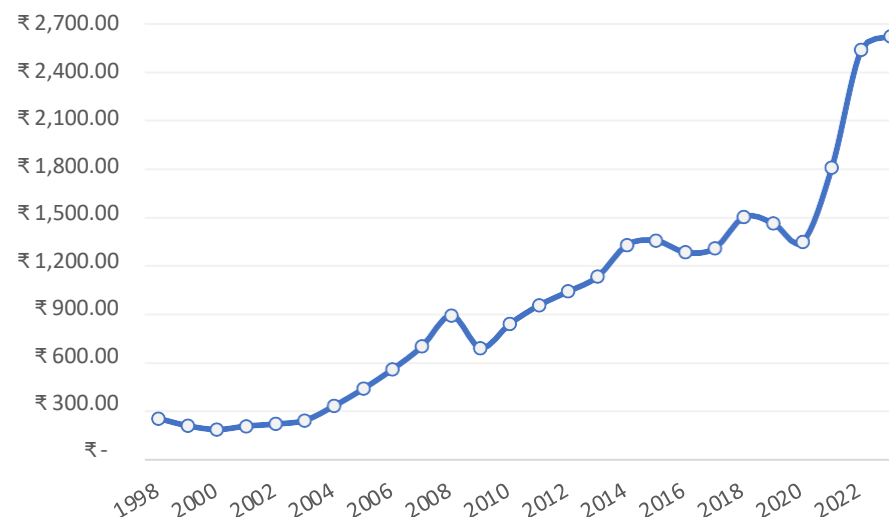
3. Approaches & Methodology

3.2 Earnings Growth

- Earnings of S&P BSE SENSEX Index companies are determined by the Index's P/E and the Index's price.
- The Sensex PE ratio and corresponding price levels are sourced from the BSE website, and the earnings are derived using this data.
- To simplify and facilitate analysis, yearly average PE ratios and yearly average Sensex price levels have been utilized.
- EPS CAGR (Compound Annual Growth Rate) for 3 years, 5 years, 10 years, and 15 years has been calculated, and the average of these growth rates is considered for the final growth figures.
- For projecting future cash flows, the "Average EPS CAGR 3Y" has been utilized over periods of 5 years, 10 years, and 15 years. The 3-year time frame is chosen to best represent current market trends while accounting for various factors like the impact of Covid-19, geopolitical tensions, and supply chain disruptions.
- Notably, there is no significant difference in the growth rates between the mentioned time frames, as demonstrated in the adjacent table.

Average EPS CAGR	Earnings Growth (%)
20 Years	11.11%
10 Years	11.00%
7 Years	11.24%
5 Years	11.12%
3 Years	11.25%

Average Sensex EPS



3. Approaches & Methodology

3.3 Risk Free Rate

- The risk free rate means the minimum guaranteed return that an investor can expect when investing in a specific country.
- In valuation practice, the 10-year government yield of an economy is commonly used as the risk-free rate. However, it is more appropriate to adjust this rate by deducting the country's default spread to account for sovereign default probabilities.
- For emerging economies like India, obtaining readily available data for default spreads is challenging. Therefore, India's 10-year government bond yield is considered as the risk-free rate for convenience.
- The 10-year government bond yield in India has shown significant variability, ranging from approximately 12% to 7%. To ensure forward-looking valuation and reflect the general economic scenario of India's economy, the most recent risk-free rate as of June, 2023, has been utilized.

Time Frame	Average Risk Free Rate
20 Years	7.38%
15 Years	7.41%
10 Years	7.15%
5 Years	6.71%
Latest	7.21%

10Y GOI Bond Rate



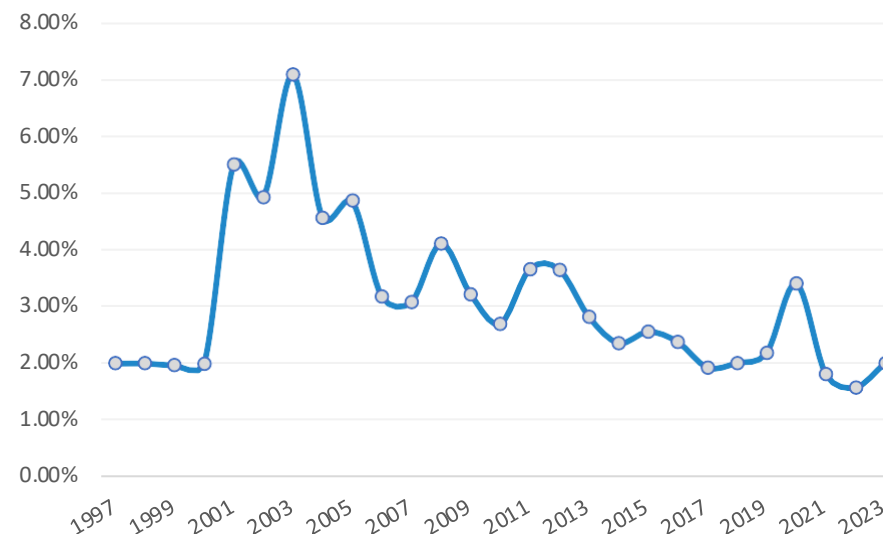
3. Approaches & Methodology

3.4 Market Risk Premium

- Market Risk Premium is the extra return that investors anticipate in addition to the Risk-Free Rate when investing in a potentially risky market.
- It represents the country-specific or market-specific risk associated with the investment.
- A higher Market Risk Premium suggests a cautious market sentiment, where investors adopt a defensive approach and expect lower-than-usual returns for investing in the market.
- This also indicates that investors are willing to pay lower prices for investments despite the presence of constant cash flows.
- The Market Risk Premium data used for valuation has been obtained from the Market Premia website.
- In our valuation process, we have incorporated the latest Market Risk Premium to account for the most recent developments in the Indian Equity markets.

Time Frame (Years)	Average Implied ERP
20 Years	2.90%
15 Years	2.55%
10 Years	2.22%
05 Years	2.20%
Latest	2.01%

Implied ERP in India



4. Valuation

4.1 Original Case Valuation Results

Total Yield	Expected EPS Growth	Risk Free Rate	Equity Risk Premium	Cost of Equity	Sensex Valuation	Current Price	Result
5 Years	3 Years	Latest	Latest	9.22%	61374.24	64718.56	Fairly Valued

Valuing the S&P BSE SENSEX			61374.24
Key Inputs		Assumptions	
Date	04-07-23	04-07-23	Fairly Valued The Market implied fair value of Sensex is 61375. The Sensex is currently trading at 64719. A 5.17% Adjustment Expected from this level.
Current Sensex Level	64718.56	64718.56	
Total Yield	5 Years	1.22%	
Expected Growth	3 Years	11.25%	
Risk-free Rate	Latest	7.21%	
Equity Risk Premium	Latest	2.01%	
Cost of Equity		9.22%	
Year	Expected Dividends and Buybacks	Cumulative PV Factor (Risk-Free Rate + Equity Risk Premium)	Present Value Expected Dividends and Buybacks
2023	₹879.25	0.9156	₹805.03
2024	₹978.21	0.8383	₹820.03
2025	₹1,088.30	0.7675	₹835.31
2026	₹1,210.78	0.7028	₹850.88
2027	₹1,347.05	0.6434	₹866.74
2028	₹1,498.66	0.5891	₹882.89
2029	₹1,667.33	0.5394	₹899.34
2030	₹1,854.98	0.4939	₹916.10
2031	₹2,063.75	0.4522	₹933.17
2032	₹2,296.02	0.4140	₹950.56
2032 - ∞	₹1,27,086.10	0.4140	₹52,614.18

4. Valuation

4.2 Maximum Time Frame Case Valuation Results

Total Yield	Expected EPS Growth	Risk Free Rate	Equity Risk Premium	Cost of Equity	Sensex Valuation	Current Price	Result
20 Years	15 Years	Latest	Latest	9.22%	69193.24	64718.56	Undervalued

Valuing the S&P BSE SENSEX			69193.47
Key Inputs		Assumptions	
Date	30-06-23	30-06-23	Undervalued The Market implied fair value of Sensex is 69194. The Sensex is currently trading at 64719. A 6.91% Appreciation is expected from this level
Current Sensex Level	64718.56	64718.56	
Total Yield	20 Years	1.44%	
Expected Growth	15 Years	10.75%	
Risk-free Rate	Latest	7.21%	
Equity Risk Premium	Latest	2.01%	
Cost of Equity		9.22%	
Year	Expected Dividends and Buybacks	Cumulative PV Factor (Risk-Free Rate + Equity Risk Premium)	Present Value Expected Dividends and Buybacks
2023	₹1,033.34	0.9156	₹946.11
2024	₹1,144.47	0.8383	₹959.41
2025	₹1,267.55	0.7675	₹972.90
2026	₹1,403.87	0.7028	₹986.57
2027	₹1,554.85	0.6434	₹1,000.44
2028	₹1,722.07	0.5891	₹1,014.50
2029	₹1,907.27	0.5394	₹1,028.76
2030	₹2,112.39	0.4939	₹1,043.22
2031	₹2,339.57	0.4522	₹1,057.89
2032	₹2,591.18	0.4140	₹1,072.76
2032 - ∞	₹1,42,778.50	0.4140	₹59,110.90

5. Sources & Disclaimer

5.1 Sources

1. *Investing.com*
2. *BSE India official Website*
3. *Market Premia*
4. *Prof. Aswath Damodaran Website*

5.2 Disclaimer:

The Sensex Valuation report provided herein is intended solely for academic purposes and should not be considered as a commercial or financial advisory document. The information, analysis, and opinions expressed in this report are based on historical data and academic research.

It is important to note that the valuation calculations and conclusions presented in this report may not accurately reflect the current or future market conditions, as market dynamics are subject to constant change and unforeseen events.

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