Valuing S&P BSE SENSEX

Approach and Methodology Paper

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Contents

Context

1.	Context
2.	Approach and Methodology
3.	Valuations
4.	Source and Disclaimer

Context

1.1 Introduction

India's benchmark index Sensex crossed the 72,000 points mark for the first time since December last year, led by gains in Tata Motors, HCL Tech and ICICI Bank, among others. Overall, financial services, Auto and IT stocks, helped Sensex begin FY24 on a positive note with gains of 5.52% in the last one month. Amongst the top gainers in the last two month are Bajaj Finance, Nestle India, ICICI Bank, Tata Motors and Bajaj Auto, with 1 month returns ranging between 11% to 15%. Robust buying by foreign institutional investors (FII) in Dec and Jan till date have aided the rally in Sensex and Nifty. While FIIs bought equities worth ₹18,470 crore in Feb, their buying in March stands at ₹19,826 crore till date.

This calls for revisiting the valuation of SENSEX. This whitepaper discusses approach and methodology for valuing the index by considering dividends, buybacks, earning growth of the SENSEX sector, equity risk premium, and 10 years Indian government yield. The valuation of SENSEX in this deck is based on the methodology used by Prof. Aswanth Damodaran (Dean of Valuation – NYU) and his teachings on the Discounted Cash Flow (DCF) method. This said methodology has been improvised to calculate value of the index in the context of Indian capital market practices.

 Alike other valuation, this paper used assumptions and understanding, which makes it subjective for interpretation and it should be used to gauge broader ideas on under/overvaluation of the index and should not be used as investment/disinvestment rationale due to two reasons. Firstly, lack of stable Equity Risk Premium (ERP) in emerging economies like India. Secondly, merely 30 companies as constituents for SENSEX can create upheaval in the index if any company's fate goes wrong.

# Contents

Approach & Methodology

2.1 Expected Dividend and Buyback:

In DCF, Valuation is derived by discounting Free Cash Flow to Equity (FCFE) at an appropriate discount rate. However, it is tedious to calculate the FCFE of each company of SENSEX to calculate its value. So that expected dividends and buybacks of historical data have been estimated as it is synonymous with FCFE.

While historical data of dividends are readily available on the BSE Website, it is very rare for SENSEX companies to buyback stocks. Therefore buyback data consolidated by Professor Damodaran was analysed to calculate buyback yields on total earnings and dividends yields. However, since buyback yield in emerging markets like India is very minuscule, it would not affect very much.

Years	Dividend yield	Buyback yield	Total yield
20 Years	1.31%	0.19%	1.5%
10 Years	1.20%	0.17%	1.38%
7 Years	1.13%	0.17%	1.30%
5 Years	1.10%	0.16%	1.26%
3 Years	1.28%	0.16%	1.28%

Historical Dividends and Buyback
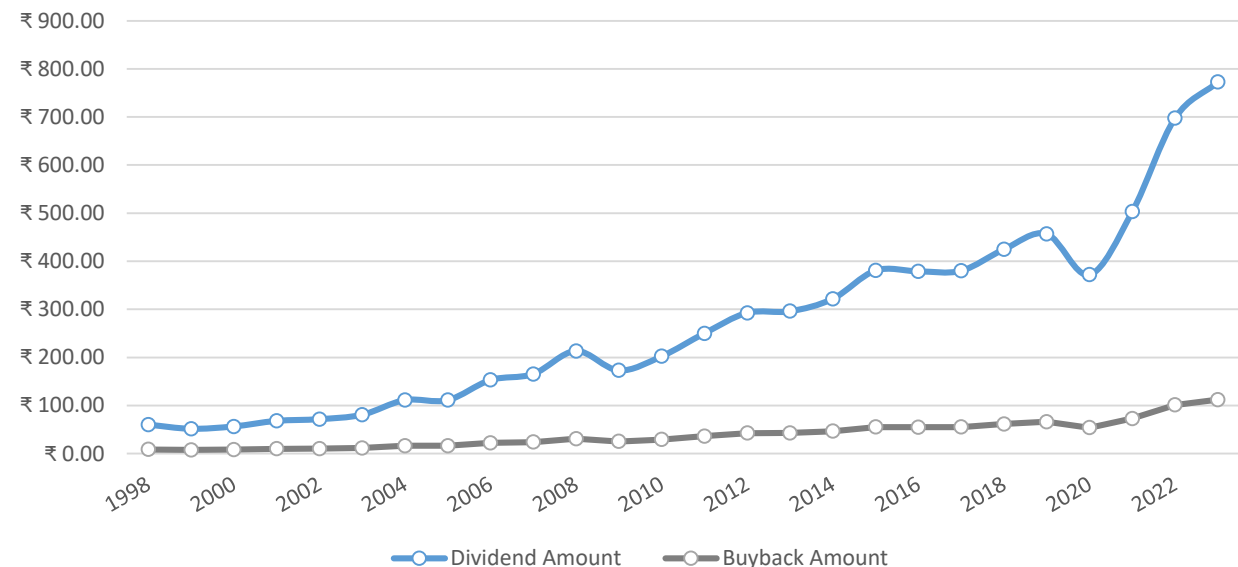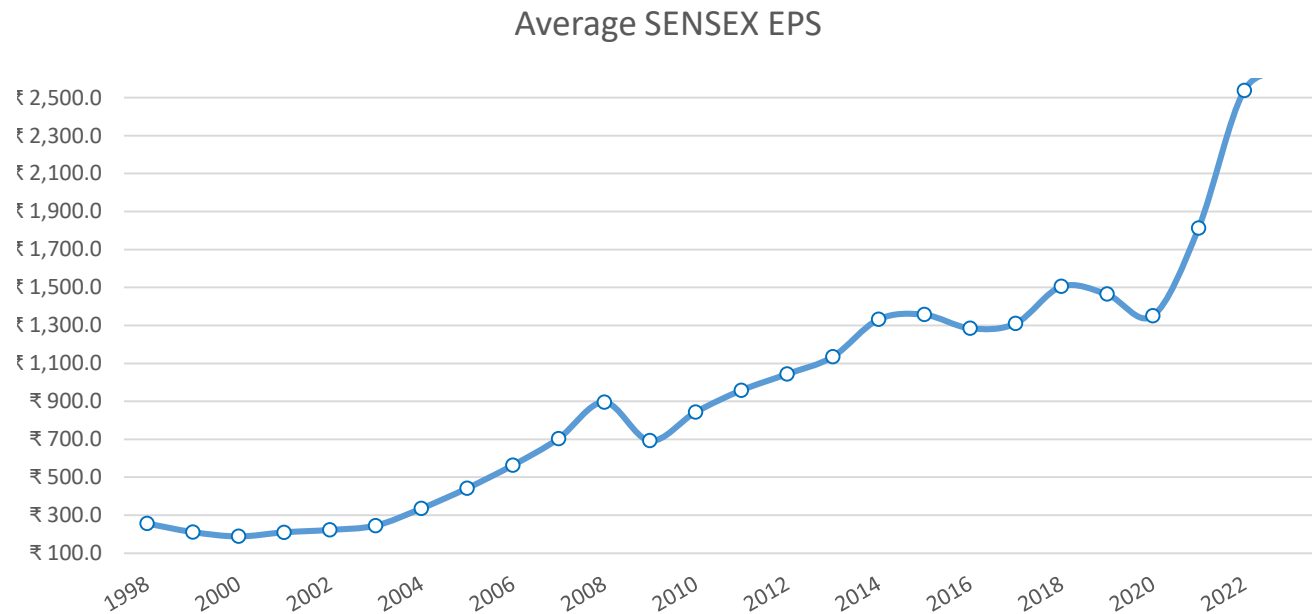
Approach & Methodology

2.2 Expected Growth in SENSEX Earnings

Earning of SENSEX can be derived by dividing the PE ratio of an index with its absolute level.

PE ratio and index levels are obtained from the BSE website and with minimal analysis, earning and growth can be obtained.

There could be an argument on which growth rate should be considered for the purpose of valuation. Since there is not much difference between 3 years and 20 years average compounding growth and valuation is forward looking and based on the current financial scenario, earning growth compounding for 7 years is used for valuation in this paper.

| Years	Earning Growth(%)
20 Years	11.11%
10 Years	11.00%
7 Years	11.25%
5 Years	11.13%
3 Years	11.27%

Average SENSEX EPS

Approach & Methodology

2.3 Risk-Free Rate – 10 years Indian Govt bond yield

The risk-free rate is the basic driver for DCF valuation and is a metric of opportunity cost. It is a convention to use 10 years of government bond yield as the risk-free rate. However, it can be further adjusted for the country risk and default risk. But since there is a lack of data for emerging markets, it is a tedious task to account for the same.

There could be an argument on which rate should be considered for the purpose of valuation. Since emerging markets had witnessed government bond yields as high as 12% in the early 90s and to ensure that valuation should be forward-looking, the most recent date is used for the purpose of valuation in this paper.

Years	Earning Growth(%)
20 Years	7.44%
15 Years	7.42%
7 Years	6.91%
5 Years	6.75%
As on April 2023	7.10%

10Y Bond Rate
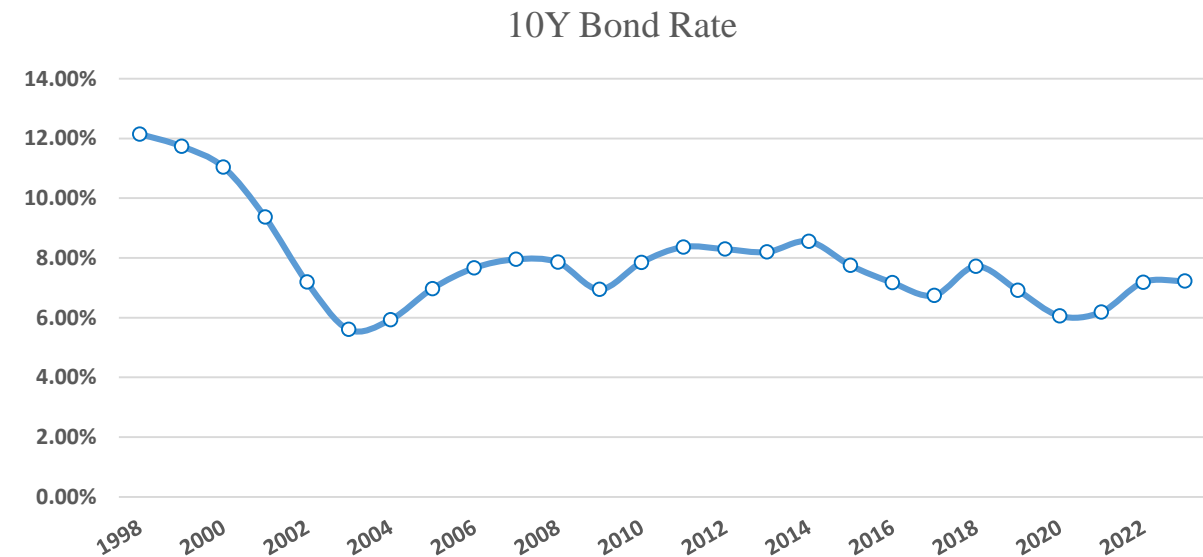
Approach & Methodology

2.4 Implied Market Risk Premium (MRP)

The MRP is the additional measure that expects returns on an index or portfolio of investments above the given risk free rate. The market risk premium is equal to the slope of the security market line (SML).
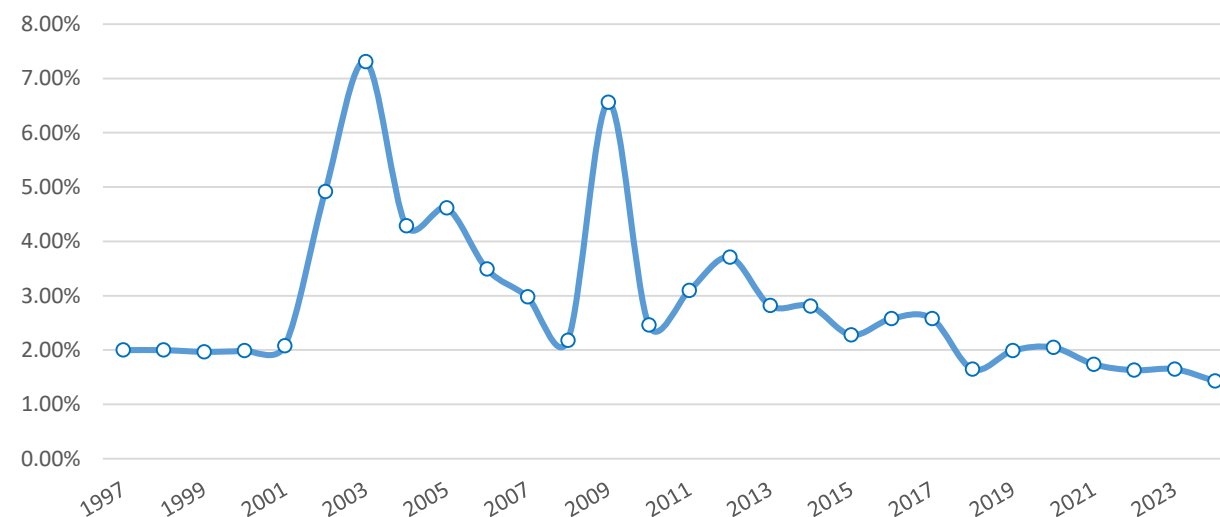
It is an incentive for assuming risk beyond government bonds over equity markets in general.

A higher MRP indicates a cautious market where the investors are defensive while investing in equities and represent their willingness to pay a lower price for the same cash flows and earnings.

Implied MRP is reverse-calculated by considering the current index value and expected FCFEs.

Years	Earning Growth(%)
20 Years	2.72%
15 Years	2.30%
7 Years	1.73%
5 Years	1.70%
As on April 2023	1.43%

Implied ERP in India

Contents

Valuation

Valuing the S&P BSE SENSEX			98700.06658
Key Inputs		**Assumption**	Undervalued
Date	03/04/2024	03/04/2024	The market implied fair value of Sensex is 98701. The Sensex is currently trading at 72831. A 35.52% appreciation expected from this level.
Current Sensex	72831	72831	
Total Yield	20 Years	1.50%	
Expected Growth	7 years	11.25%	
Risk-Free Rate	Latest	7.10%	
Equity Risk Premium	5 Years	1.70%	
Cost of Equity		8.80%	
Year	**Expected Dividend and Buyback**	**Cumulative PV(Risk Free Rate + Equity Risk Premium)**	**Present Value of Expected Dividend and Buyback**
2024	1218.97	0.92	1120.43
2025	1356.12	0.84	1145.72
2026	1508.69	0.78	1171.58
2027	1678.43	0.71	1198.02
2028	1867.27	0.66	1225.06
2029	2077.36	0.60	1252.71
2030	2311.08	0.55	1280.98
2031	2571.09	0.51	1309.89
2032	2860.36	0.47	1339.46
2032 - ∞	187186.80	0.47	87656.23

Contents

Sources and Disclaimer

4.1 References & Sources

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https://www.investing.com/

http://www.market-risk-premia.com/market-risk-premia.html

4.2 Disclaimer

This information is for educational purposes and is not investing recommendation nor to be representative of professional expertise, but to be used as a forum for opening discussions around trading. All examples and analyses used herein are intended for these purposes only, and of the personal opinion of the author. All examples and analyses are intended for these purposes and should not be considered as specific investment advice. The risk of loss on trading can be substantial. The user of this paper must consider all relevant risk factors including their own personal financial situation before trading. You understand and acknowledge that there is a very high degree of risk involved in trading securities. The author assumes no responsibility or liability for your trading and investment results. Further, it should be assumed that the methods, techniques, or indicators presented in these products will be profitable or that they will not result in losses.

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