Valuation Report

S&P 500

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1. Introduction

1.1 Background

- Though the S&P 500 we know today came later, its roots trace back to 1923 when Standard Statistics launched a stock market index with 233 U.S. companies.
- The current S&P 500 was introduced in 1957. It included 500 companies and was designed to be a more comprehensive measure of the U.S. stock market.
- The S&P 500 tracks large-cap companies across various sectors, representing about 80% of the total market value of U.S. publicly traded companies.

1.2 Key Statistics

- The Index includes 500 leading companies and cover approximately 80% of available market caps.
- The Average historical CAGR returns provided by the index of various period are:

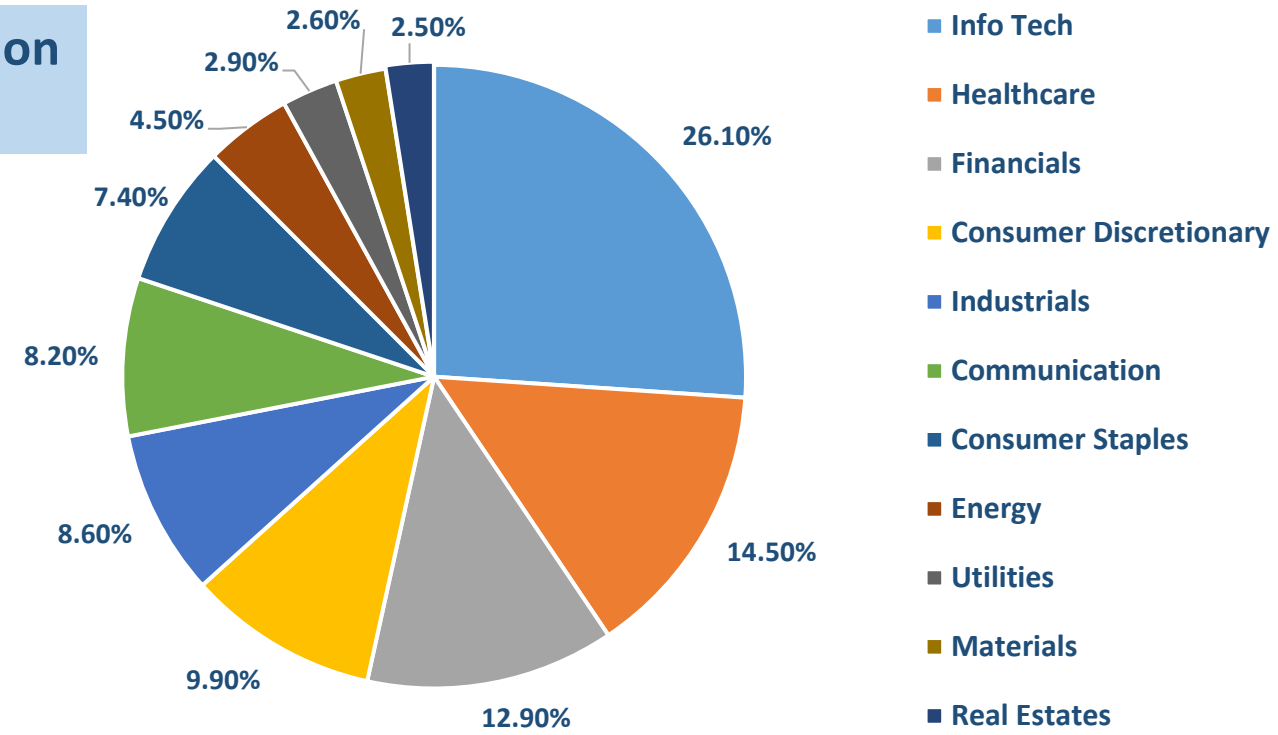
1.	CAGR S&P 500 Returns 20 Years -	7.43%
2.	CAGR S&P 500 Returns 15 Years -	10.51%
3.	CAGR S&P 500 Returns 7 Years -	9.18%
4.	CAGR S&P 500 Returns 5 Years -	9.50%

1. Introduction

1.3 Composition of S&P 500 Index

- S&P 500 Index has stocks of top 503 companies.
- Few Notable Companies are Apply, Microsoft, Alphabets, Visa, Netflix and so on.
- The S&P 500 cover a broad spectrum of industries, this includes information technology, Healthcare, Consumer Discretionary, Material, Real Estate, Financials, Energy, Consumer Staples, Industrials, Telecommunication Services, and Utilities.

1.4 Sector wise Contribution in S&P 500



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2. Context of the Valuation

- After a brutal 2022, 2023 made a solid comeback with S&P500 soaring by 24.23%, While Dow gained 13.25% and Nasdaq sky rocketing by 43.45%.
- Investors entered 2023 with worry of inflation and recession but rather inflation has been in control and economy has remained solid, thanks to timely quantitative tightening by the Fed.
- 2023 also marked a comeback for all the FAANG stock after a disappointing 2022 where none of he stock could beat the market return. This rally was the primary reason of market soaring in 2023.
- The objective of the valuation report is to asserting the value of index within the context describe above.
- The valuation of the index took into account factor such as dividend payouts, the yield from repurchase, projected growth in earnings, the premium of equity risk, and bond yield, which is used as reliable indicator of risk free rate.
- The report has been crafted based on certain assumptions, leading to interpretation that may vary according to the specific need of the user, It offers an overview of the S&P500 index's valuation status –whether it is overvalued, undervalued, or fairly valued.
- The valuation's effective date is set as March 31st, 2024, with all pertinent data considered up to this date for the valuation exercise.

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3. Approach and Methodology

3.1 key Components pf the valuation

- The methodology employed to evaluate the S&P500 index relies on the Discounted Cash Flow (DCF) model, Which is built upon several critical components:
  a) Free cash flow to equity (FCFE)
  b) Growth in earnings
  c) The risk free rate
  d) The Equity risk premium

3.2 Free Cash flow to Equity Holders

- The methodology employed to evaluate the S&P500 Index relies on the Discounted Cash Flow (DCF) model, which is built upon several critical components: a) Free Cash Flow to Equity (FCFE), b) Growth in Earnings, c) the Risk-Free Rate, and d) the Equity Risk Premium.
- Cash flows are a key component in DCF valuation, indicating the rights of equity holders to the company's cash, specifically referred to as Free Cash Flows to Equity (FCFE).
- Calculating FCFE for every company in the index is challenging, thus dividends and buybacks are used as simpler proxies for FCFE.
- This approach is based on the premise that all cash generated by a company will eventually be distributed to its shareholders, either through dividends or buybacks, upon liquidation or as the company matures.
- All the data is sourced from the Prof. Aswath Damodaran's website.

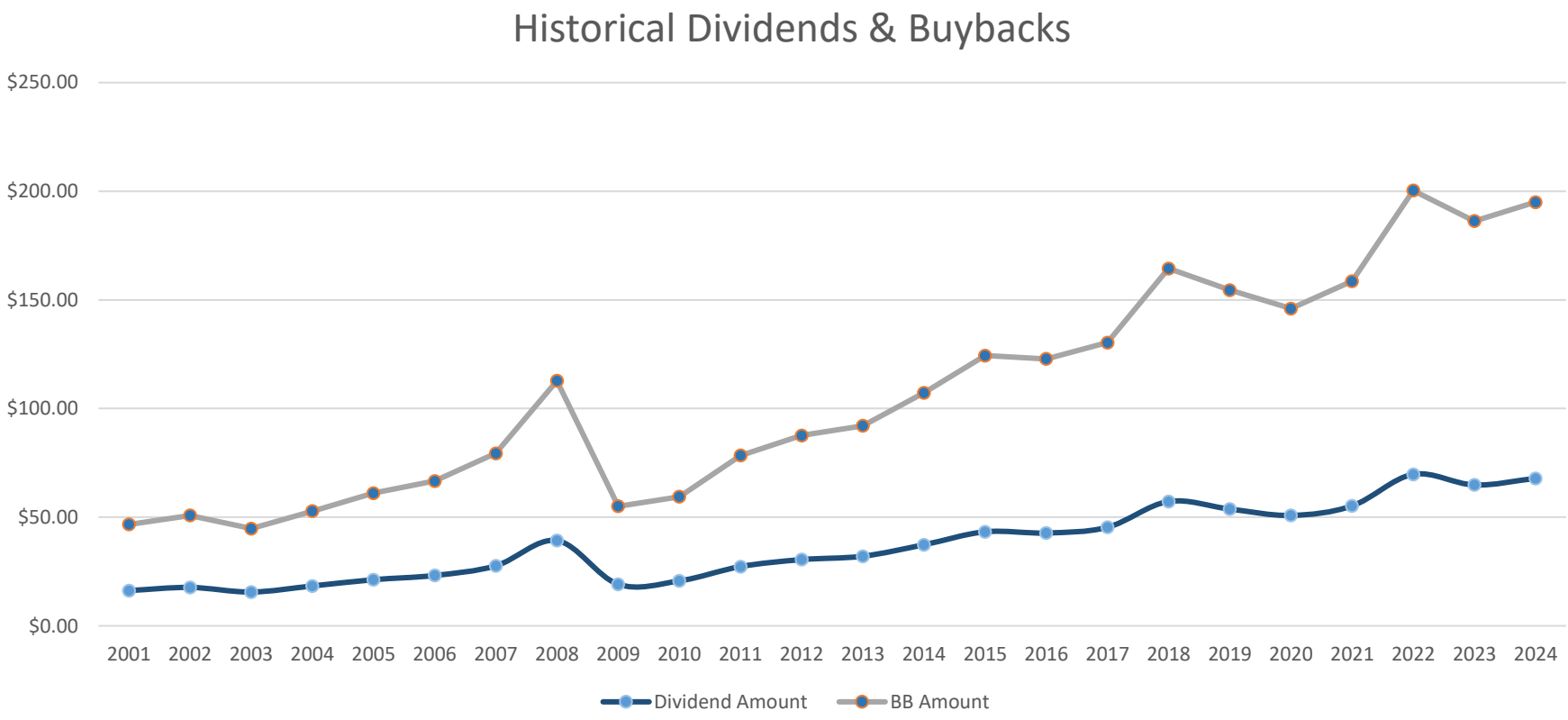
3. Approach and Methodology

3.3 Earnings Growth

- The earnings of S&P 500 companies are determined by the index's earnings per share (EPS) and its price.
- Data for the S&P's earnings yield is obtained from the Prof Aswath Damodaran website.
- Compound Annual Growth Rates (CAGRs) for earnings over 3, 5, 10, and 15 years were computed, the average of these rates were used for final growth projections.
- For future cash flow projections, the 'Average Earnings CAGR 3Y' is preferred over 5Y, 10Y, and 15Y periods, as it closely reflects recent market trends and accounts for various disruptions, including the COVID-19 pandemic, geopolitical tensions, and supply chain issues.

Average S&P 500	20 Years	5.46%
Average S&P 500	15 Years	5.24%
Average S&P 500	10 Years	4.98%
Average S&P 500	7 Years	4.65%
Average S&P 500	5 Years	4.26%
Average S&P 500	3 Years	4.36%

3. Approach and Methodology



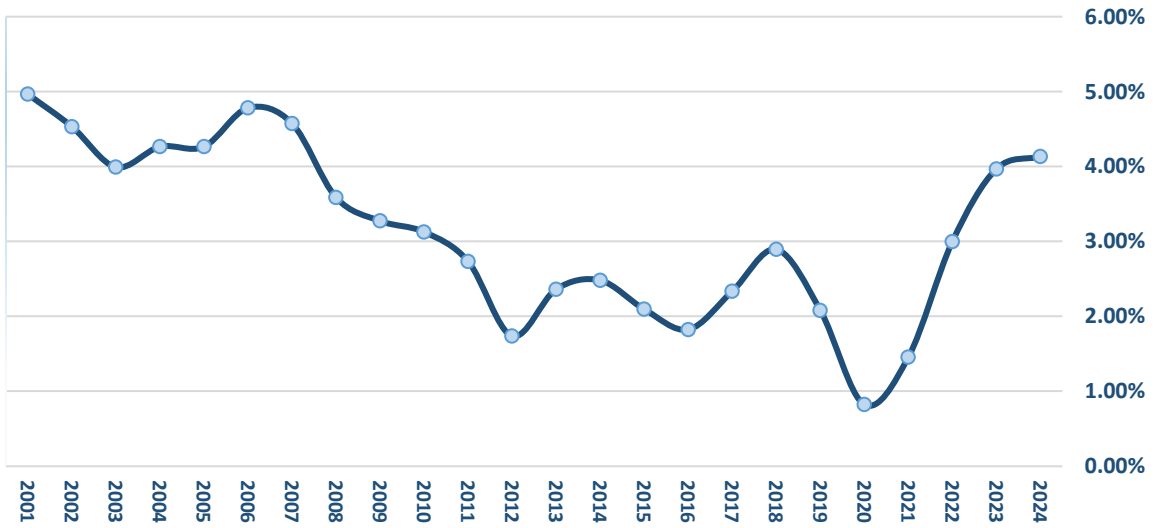
3. Approach and Methodology

3.4 Risk Free Rate

- The risk-free rate represents the minimum guaranteed return an investor expects when investing in a particular country.
- Commonly, a country's 10-year government bond yield is used as the risk-free rate in valuation practices. However, ideally, a country's default spread should be subtracted to account for the possibility of sovereign default.
- US being a matured market and having a credit rating of AAA it has default spread close to 0. Hence, we don't need to adjust for default spread while calculating risk free rate in US.
- The principles of valuation suggest us to use the most recent risk free rate. However average Bond Yield over 20, 15, 17, 5 & latest is being provided for reference.

20 Years	2.88%
15 Years	2.47%
7 Years	2.62%
5 Years	2.67%
Latest	4.13%

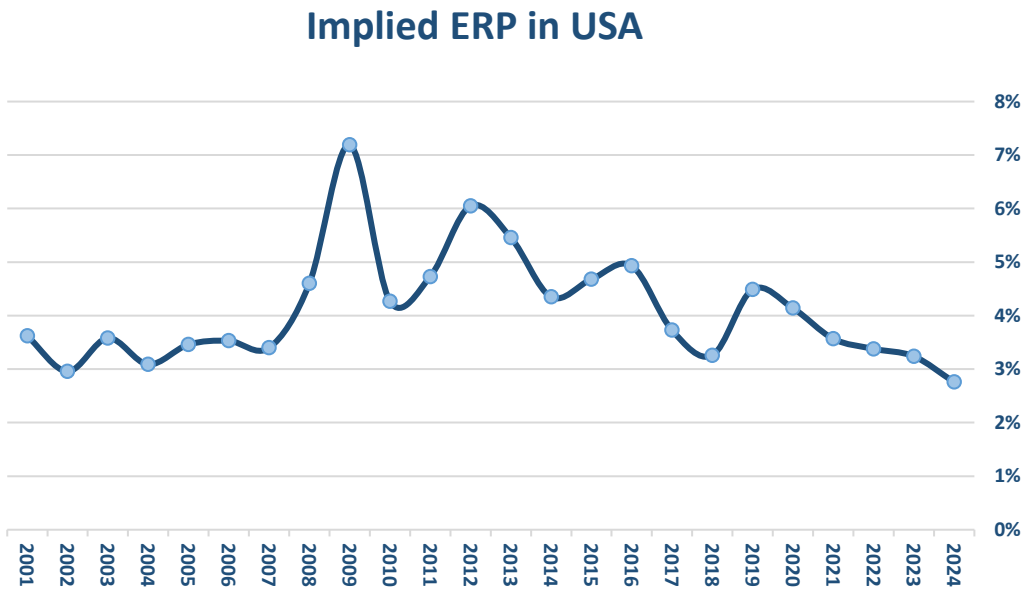
10Y Bond Average Range



3. Approach and Methodology

3.5 Market Risk Premium

- The Market Risk Premium represents the extra return investors expect beyond the risk-free rate for investing in a market perceived as risky.
- It reflects country-specific or market-specific risks.
- A higher Market Risk Premium suggests a cautious market attitude, with investors seeking higher returns for the perceived increase in risk.
- This higher premium also indicates that investors are inclined to pay lower prices for investments, even if cash flows remain stable.
- For this valuation, Market Risk Premium data was obtained from the Prof Aswath Damodaran's website.
- The most recent Market Risk Premium has been used to ensure the valuation reflects current conditions in the Indian equity market.
- Similar to Risk free rate it is advisable to use the latest risk premium but average of 20, 15, 7, 5 & latest is provided for reference.



20 Years	4.26%
15 Years	4.20%
7 Years	3.55%
5 Years	3.42%
Latest	2.76%

3. Approach and Methodology

3.6 Time Frame for the Valuation Report

- The report's valuation date is set for Mar 31st, 2024.
- Averages for various data points including the Risk-Free Rate, Market Risk Premium, historical returns of S&P 500, EPS Growth, and dividend yield have been determined for the period from 2001-2024.
- The valuation analysis involves a comparison between the S&P500 value derived from our valuation process and its closing price on Mar 31, 2024.

3.7 Beta

- Beta is a measure of a stock's or portfolio's volatility in relation to the overall market. It indicates how much the price of a security is expected to move compared to movements in the market index.
- A beta of '1' implies that the security's price moves in tandem with the market. A beta greater than '1' indicates greater volatility than the market, and a beta less than '1' suggests less volatility than the market.
- In the valuation of an index, the Beta is assumed to be '1' since the index itself broadly represents the overall market.

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4. Valuation

Valuing the S&P 500			16136.22
Key Input		Assumptions	Undervalued
Date	02-04-2024	02-04-2024	
Current S&P 500 Level	5254.35	5254.35	The market implied fair value of Sensex is 16137. The Sensex is currently trading at 5255. A 207.10% appreciation is expected from this level.
Total Yield	20 Years	5.46%	
Expected Growth	10 Years	8.46%	
Risk-free Rate	Latest	4.13%	
Equity Risk Premium	Latest	2.76%	
Cost of Equity		6.89%	

Year	Expected Dividends and Buyback	Cumulative PV Factor [Risk-free Rate + Equity Risk Premium]	Present Value of Expected Dividends and Buyback
2022	$310.92	0.9355	$290.87
2023	$337.22	0.8752	$295.13
2024	$365.75	0.8187	$299.45
2025	$396.69	0.7659	$303.84
2026	$430.24	0.7166	$308.29
2027	$466.63	0.6703	$312.80
2028	$506.11	0.6271	$317.38
2029	$548.92	0.5867	$322.03
2030	$595.35	0.5488	$326.75
2031	$645.71	0.5134	$331.53
2031 - ∞	$25,373.95	0.5134	$13,028.13

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5.1 Sources

- Aswath Damodaran Website - https://pages.stern.nyu.edu/~adamodar/
- Investing.com, Market Premia, S&P Websites
- Multpl - https://www.multpl.com

5.2 Disclaimer

- The valuations conducted are founded on numerous assumptions, which reflect the current conditions in the US economy.
- This report is intended solely for educational purposes and does not originate from a professional practice.
- The author disclaims any liability or responsibility for any financial losses that may arise from using this report as investment guidance.
- While efforts have been made to ensure the report's accuracy, users are advised not to depend on it for making investment decisions.

5.3 End Note

- I extend my gratitude to the readers for investing their time in perusing this report. Your feedback is highly valued. Should you have any questions or wish to share your thoughts, please do not hesitate to contact me at **mailboxakash2@gmail.com**.
- Also, I would like to extend my gratitude towards **Mr. Parth Verma** for guiding me to prepare the Index Valuation Report!