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Assessing Stock Valuation Using Capital Asset Pricing Model: A Case Study of BSE-Listed Companies

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Abstract
Risk and return must be carefully balanced when making investment decisions, and this can be assessed using organized financial frameworks. This study ascertains whether some equity shares exhibited priceinefficiencies or followed market equilibrium. The primary objective is, use the Capital Asset Pricing Model (CAPM) to examine and contrast the risk-adjusted performance of three different equities listed on the BSE Sensex. Market beta was used to compute expected returns, which were then contrasted with the assets' actual average returns. Significant variations in risk and performance among the chosen assets areshown by the empirical results. These findings support the recommendations that investors should purchase cheap equities, such as JSW Steel, in order to maximize risk-adjusted gains. On the other hand, in order to shield their portfolios from unrewarded market volatility, investors should steer clear of or sell overpriced equities like HDFC Bank and Infosys.

Keywords: Capital Asset Pricing Model (CAPM), Bombay Stock Exchange (BSE) Sensex, HDFC Bank, JSW Steel, Infosys.

1. Introduction

Millions of investors enter the financial market every day, motivated by the same age–old question: Is the potential return on investment really worth the risk of losing my hard-earned money? Higher financial risks should ideally always result in corresponding higher benefits. However, this anticipation is often dashed by the stock market's chaotic reality, forcing many investors to rely more on prior reputations or emotional biases than on objective data. Finance uses formal frameworks that are intended to see past market noise and reveal the actual, objective link between risk and return in order to navigate this uncertainty. Investing is fundamentally the decision to sacrifice a current resource, such as time, money, or effort, with the obvious hope of producing a greater value in the future. This is done in the financial industry to benefit from assets. These returns can come in a variety of ways, including recurring dividends, interest payments, and capital gains from the sale of an asset for a profit, or even foreign currency profits from changes in global markets. Diversification, or distributing capital across a variety of investment kinds, is the fundamental principle for creating a secure and stable portfolio since high – risk assets may result in significant losses just as easily as large profits.

1.1 Investment Options and Security Analysis:

Securities: These are tradable financial instruments used by corporations or governments to raise capital

in public or private markets. They represent a financial value, ownership, or a debt relationship.

Real estate: Real estate is a tangible physical property consisting of land and any permanent, tangible improvements attached to it, whether natural or manmade.

Bank deposits: Bankdeposits are funds placed directly into banking institutions for safekeeping, transactions, or to earn interest. These represent a liability for the bank.

Post office deposit schemes: Post Office Deposit Schemes are safe, government-backed savings initiatives offered through India Post, designed for conservative investors seeking fixed, reliable returns.

Among these, Securities tradable&Financial Assets are generally considered riskier compared to other investment options. Due to this higher risk, careful evaluations and analysis are essential. The systematic study of these financial instruments is known as **security analysis;**its main goal is to determine the true intrinsic value of securities like, stocks and bonds. Security analysis employs several approaches and models; one of the most relevant is the **Capital Asset Pricing Model (CAPM),** whichhelps in assessing the relationship between risk and expected return. Investors sometimes find it difficult to determine if the actual return on a stock requires the risk assumed. The purpose of the study is to determine whether three different investment-grade companies from the BSE Sensex display Alpha (abnormal returns), indicating inefficiencies, or whether they follow the CAPM equilibrium.

These are the three companies listed in the BSE Indexthat were selected on the basis of securities performance in the market.

HDFC Bank: The largest private sector bank in India, HDFC Bank, is a fundamental component of the country's economy. With a loan book of more than 29.6 lakh crore as of early 2026, the bank has transformed into a financial giant following its historic merger with HDFC Ltd. It is a high-quality investment-grade stock from a CAPM standpoint, frequently acting as a "proxy" for the state of the Indian banking industry. With a network of more than 9,700 locations, its business strategy is based on a strong corporate lending arm and a high-granularity retail franchise. With gross non –performing assets (GNAs) continuously low at 1.15%, the bank maintains asset quality that leads the industry. For your undertaking

Infosys: Infosys has its headquarters in Bangalore, a leading international consulting and IT services company. Digital transformation, cloud services, and AI-powered automation (via its topaz platform) are areas of expertise in Infosys. The company generated over $20 billion in sales annually. With a large share coming from the North American and European markets. Its stock price is susceptible to both currency swings and global macroeconomic trends due to its global exposure. Infosys usually has a moderate beta (close to 1.0), which indicates that it moves in tandem with the market. It is a crucial addition because it demonstrates how a fundamentally sound firm can nonetheless bear systemic risk because of its connectivity with the global economy(Naseem 2025).

JSW Steel: One of the top integrated steel producers in India, JSW Steel is the flagship business of the JSW group.JSW Steel works in the cyclical and high –volatility commodities industry, as opposed to the banking or IT industries. Due to ambitious capacity expansions at its Vijayanagar and Salem plants, the business has increased its production of crude steel to over 30 million tonnes as of the 2026 fiscal year. Steel demand is extremely susceptible to economic booms and recessions since it is closely linked to industrial cycles and infrastructure expansion. This made it an aggressive stock for this research, with a high beta (≥1.5), as an example of how Capital-intensive, cyclical(Vadhavkar 2026).

2. Statement of the Problem

Investors in the Indian capital market face the critical challenge of determining whether a stock's financial returns sufficiently compensate for the systematic risk assumed. Pricing distortions are frequently introduced by market inefficiencies, structural changes, and sectoral dynamics, despite established frameworks dictating that more risk requires large compensation. Because of this, it is challenging to determine with objectivity whether blue-chip securities are performing with mispriced irregularities or operating in equilibrium. Instead of using data-driven methods, many investors largely depend on past success or emotional biases. As a result, capital is held captive in overpriced assets that either provide insufficient returns or lose out on cheap deals, resulting in suboptimal asset allocation. Furthermore, a strict, methodological strategy is needed to assess cross-sectional stock risk across many industries, including technology, finance, and cyclical commodities. In order to solve the issue, this study assesses HDFC Bank, Infosys, and JSW Steel on the BSE Sensex using the Capital Asset Pricing Model (CAPM). In order to provide empirical recommendations for risk – adjusted portfolio optimization, it aims to determine if these well – known stocks exhibit actionable overvaluation or undervaluation distortions over short – term windows or plot appropriately along the Security Market Line (SML).

3. Objectives of the Study

- To analyze the market risk of selected stocks with the help of the CAPM model.
- To compare the selected stocks based on CAPM analysis.

4. Literature Review

Joss (2006)argued that the caseinterpreting past returns as conditional rather than independent data might enhance investment forecasts, option pricing, and CAPM beta estimations. The study demonstrated that the conventional method, which made use of arithmetic means, frequently exaggerates predicted returns and volatility, resulting in projections that diverge significantly from actual market results. The study explained the significance of the risk-free rate and put-call parity and offered a revised stock option pricing model that more closely matched market option prices than Black-Scholes. The author concluded that conditional probability provided a more precise framework for computing CAPM beta, assessing risk premia, and forecasting returns.

(Finance 2015) explained that the introduction of single stock futures (SSFs) at the Karachi stock exchange (KSE) did not have a destabilizing effect on the underlying spot market. Contrary to the common perception that future trading increases market risk and volatility—especially followed the KSE crashes of 2005 and 2008—the empirical evidence using the dynamic CAPM and GJR-GARCH model suggested that SSFs had no significant impact on either price volatility or market efficiency. The authors attribute this neutrality to the stringent regulatory framework and conservative oversight maintained by the Securities and Exchange Commission of Pakistan (SECP). Ultimately, the research indicates that SSFs serve as a neutral financial instrument in the Pakistani context rather than a source of market instability. The paper recommends that regulators avoid unnecessary restrictions on future trading, as these instruments did not inherently compromise market integrity and can exist without negatively affecting the operational efficiency of the spot market.

(Shetty and Souza 2019) Analyzed, the CAPM explained the connection between risk and return for 30 BSE stocks from January 2009 to December 2018. Using beta and the difference between projected and

actual returns, the researchers created portfolios to determine which stocks were overpriced and undervalued. The author concluded that performance across industries was inconsistent, and pharmaceuticals, chemicals, mining oil, construction, telecom, and steel were among the industries with the majority of undervalued companies in their portfolios, while information technology and automobiles had the most of overvalued stocks. Theresearcher found that ONGC performed the worst, while Bajaj Finance recorded the highest return. The study concluded that CAPM should not be the sole foundation for investment decisions because beta cannot explain stock returns on its own.

(Souparnika and College 2019) Thestudy used weekly data from 2018-2019, which assessed the validity of CAPM for 5 Indian IT stocks: Infosys, Wipro, TCS, Tech Mahindra, and HCL. It determined if the stocks were overvalued or undervalued by estimating predicted returns from beta, risk-free rate, and market return and comparing them with actual returns. The study demonstrated that all 5 companies had positive alpha and actual returns greater than projected returns, suggested that they were cheap and possibly worthwhile purchases. The CAPM risk-return relationship was supported by Tech Mahindra and TCS, which had the greatest betas and projected returns. The study concluded that while other variables neededto be taken into account when choosing stocks, CAPM was helpful for investment decisions in the Indian IT sector.

(Kumar and Misra 2019) concludes that liquidity is a multidimensional and critical factor in determining cross-sectional stock returns in the Indian market. The researcher demonstrated that both systematic and idiosyncratic liquidity risk were significant by testing the liquidity-adjusted capital asset pricing model (LCAPM) on theNational Stock Exchange (NSE) midcap stock. Commonality in liquidity and a lack of liquidity response to market returns were two ways that systematic liquidity risk affects returns. Furthermore, idiosyncratic risk –specifically the covariance between an individual stock's return and its own liquidity –serves as a powerful explanatory factor for return variation. The LCAPM, when augmented with these idiosyncratic factors, proved more robust and provided superior explanatory power compared to the traditional CAPM. Ultimately, the findings suggested that investors must incorporate diverse liquidity risk dimensions into their models to make informed investment decisions in emerging markets.

(Wijaya and Ferrari 2020) assessed the banking equities traded on the Indonesia Stock Exchange using the Capital Asset Pricing Model (CAPM). Researchers used purposive sampling and chose forty financial firms to examine their performance between August 2016 and July 2018. According to the results, 9 stocks had negative average returns, indicating inefficiency, whereas 31 stocks had positive average returns that exceeded the expected returns. This implied that during the study period, the majority of shares in the banking industry offered good returns in relation to risk. The paper proposed more research on advanced models like CCAPM and liquidity-adjusted CAPM and found that CAPM can assist investors in identifying efficient stocks.

(Wahyuny and Gunarsih 2020) analyzed that if it related to forecasting stock returns in Indonesia's manufacturing sector, 2015 and 2018, the capital asset pricing model was more accurate instrument than the arbitrage pricing theory (APT). By utilizing the mean absolute deviation (MAD) method, researchers determined that CAPM (MAD 0.1096) significantly outperformed APT (MAD 0.3631) in predictive. Since APT took into account several macroeconomic variables, including inflation and exchange rates, the findings showed that in this particular situation, these variables did not improve accuracy over the single variable market risk strategy of CAPM. Therefore, for investors and financial analysis focusing on Indonesian manufacturing stock, CAPM remains the superior and more reliable

model for estimating expected returns and assessing asset risk. The findings validate the hypothesis that a simpler, market- focused model can provide more practical utility in certain emerging market sectors than more complex multi- factor models.

(Wihartati and Efendi 2021) concludes that the implementation of a decision support system (DSS) used the capital asset pricing model (CAPM) significantly streamlines the stock selection process for investors. By automating the calculation of individual returns, market returns, and systematic risk (beta), the system provides a clear binary recommendation: invest in an efficient stock ($R_i > ER_i$)OR "BUY" and avoid inefficient ones ($R_i < ER_i$) or "sell"). The research demonstrates that this computer – based approach – developed using PHP and MYSQL – reduces the complexity of manual financial ratio analysis, making it particularly accessible for the millennial generation. While the system's current limitation wasthat it focuses solely on market risk, it successfully provides a structured framework for managing investment portfolio and minimizing potential losses. Ultimately, the integration of CAPM into a digital decision – making tool empowers investors to make more rational, data –driven choices in the volatile capital market.

(Suhandi 2024)concludes that the capital asset pricing model (CAPM) was a useful method for determining the best investments within the IDX30 Index. The study verified that a linear link between systematic risk (β) and expected profits by examining 16 companies from 2020 to 2023. The analyzed stock generally exhibited high systematic risk, with an average beta of 1.146. Based on the efficiency criterion ($R_i > E(R_i)$, the study identified 7 efficient stocks –ADRO, ANTM, BBCA, BBNI, BBRI, BMRI, and UNTR- which are recommended as "buy" opportunities because their actual returns justify the risks taken. Conversely, 9 stocks (including ASII, TLKM, and UNVR) were deemed inefficient, as their returns were inadequate relative to their risk levels, leading to a "sell" recommendation. Ultimately, these findings provide strategic for investors to maximize returns through disciplined portfolio diversification.

(Ramli and Anwar 2024) investigated that the capital asset pricing model (CAPM) was a vital tool for making informed investment decisions within the JAKARTA Islamic index 70 (JII70). The study analyzed the relationship between systematic risk and expected returns. The researcher identified which Sharia-compliant stocks were "efficient" and which were "inefficient." The findings indicate that efficient stocks—those where the actual return exceeds the expected return based on their risk level—provide an optimal balance for investors seeking to maximize gains while managing market exposure. Conversely, inefficient stocks should be avoided as their returns do not justify their risk. Ultimately, the application of CAPM allows Sharia investors to move beyond emotional decision-making toward a more scientific, data-driven strategy. This objective framework is essential for building a robust Islamic stock portfolio that aligns with both financial goals and systematic risk tolerance on the Indonesian stock exchange.

5. Research Methodology

Secondary data is used in this study. The CAPM model is used for security and portfolio analysis. The expected return was calculated and compared with actual returns to determine whether securities are efficient, overvalued and undervalued.

5.1 Selection of Companies: A total of 3 companies listed in the BSE Sensex are selected.

5.1.1 DFC Bank: Represents the Aggressive/High-Beta tier, providing a benchmark for capital stability in the banking sector.

5.1.2 Infosys: Represents the Market-Aligned/Growth tier, reflecting the systematic risk of the technology sector and global economic exposure.

5.1.3 JSW Steel: Represents the Defensive/cyclical tier, shows high sensitivity of the metals sector to market volatility.

5.2 Time period: For security analysis, data from one month (1st April 2026 to 1 May 2026) is used.

5.3 Tools and Techniques: The formula of CAPM was used. The expected return of is calculated using the Capita Asset Pricing Model.

Formula of CAPM –

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

$\boldsymbol{ER_i}$ = Expected return of security

$\boldsymbol{R_f}$ = Risk-free rate (e.g., government bonds)

Beta = Systematic market risk

$\boldsymbol{ER_m}$ = Expected return on the market portfolio

$\boldsymbol{ER_m - R_f}$= Market risk premium.

Calculation of Beta: Beta is calculated using the covariance method: it measures the relationship between returns and market returns. This method is widely used for estimating systematic risk.

Capital Assets Pricing Model

The capital assets pricing model is used for the analysis of stocks as well as portfolios. A framework called CAPM makes it possible to determine how risk and expected return relate to various investing strategies. William Sharpe, Jack Treynor, Jan Lintner,and Jan Mossin created this model in the 1960s.

The CAPM model classifies the investmentavenues into two types.

Risk-Free Assets: These assets represent the first avenue and include government securities like Treasury bills or bonds. They offer a guaranteed return with zero systematic risk (beta=0), serving as the foundation for all investment calculations. Investors use risk-free assets as a safe component in their portfolios.

Risky Assets: This second avenue consists of all risky securities combined into a fully diversified market (such as the BSE Sensex). With beta = 1, it captures systematic market risk. Investors combine the portfolio with risk-free assets based on their risk tolerance, moving along the Capital Market Line.

Types of Risk in CAPM

CAPM categorized investment risk into two types that determine expected returns.

Systematic Risk: This non-diversified risk affects the entire market through economy-wide factors like inflation, recessions, or interest rate changes. Measured by beta (β).It can't be eliminated through diversification and commands higher expected returns as compensation.

Unsystematic Risk: This diversifiable risk is unique to individual companies, such as management failures or product issues. Through portfolio diversification across multiple securities, unsystematic risk approaches zero, so CAPM ignores it when pricing expected return. Only systematic risk matters for securities plotted on the security market line.

Assumptions of the CAPM

The following are the main assumptions of CAPM

Investors were risk–averse: In general, investors are adverse; therefore, diversification is important to lower their risk. Investors prefer lower risk and higher returns. They require compensation to accept higher systematic risk, as measured by beta.

Maximization of terminal wealth utility:

An investor aims to maximize the utility of his resources rather than concentrating on money or profits. The differences in individual preferences are referred to as utility. Every successive level of wealth is valued less than the one before it since it contributes less to fulfilling a person's basic needs. Consequently, the diminishing marginal utility is most significant when one is wealthy. There are several more types of utility functions. Some investors have a tendency to take more risks since their marginal utility for wealth is increasing. In these situations, the individual's wealth increases with each increase. Any rise in wealth is equally compelling to a risk – neutral investor. To put it another way, the investor has to gain equally from each increment (Vaidyanathan n.d.).

Decision based on Risk & Return:

Risk and return are the main factors that influence investors' decisions. Risk and returns are shown by the variance and mean of a portfolio's return. Rational investors must hedge their diversified risk, particularly unsystematic risk, according to the CAPM model. However, all that remains is the systematic risk, which varies with the security beta. The CAPM offers a set of effective frontline methods because, whereas some investors just use beta to evaluate risk, others take into account both beta and return fluctuations as possible risk and return.

Homogeneous Expectation:

CAPM assumed that all investors have homogeneous expectations & have access to the same information. They interpret information in the same way. They have identical expectations about future returns, risk and correlation. For Example, all investors expect a particular stock to give 12% return with the same level of risk (Laopodis 2021).

Implications: All investors select the same optimal portfolio (market portfolio); differences arise only due to risk preference, not expectations. In real life, investors have different opinions and information, so this assumption is unrealistic.

Same time horizon

CAPM assumes that all investors have the same investment time horizon, meaning they plan their investments over the same period. For Example, all investors may be assumed to invest for one year.

Implications: Simplifies comparison of investment option ensures consistency in decision-making. In the real market, investors have different time horizons (Short-term vs. Long-term).

Efficient capital market

CAPM assumes that capital markets are efficient, which means that all securities are fairly priced, and information is freely and instantly available to all investors. No investor can consistently outperform the market. This is closely related to the concept of market efficiency.

Implications: Prices reflect all available information. No arbitrage opportunity exists. Inreality,markets may not always be perfectly efficient due to delays and insider information.

Borrowings & Lending at Risk-free rate

CAPM assumes that investors can: Borrow money at the risk-free rate, lend (invest) money at the same risk-free rate. The risk-free rate is usually represented by government securities.

Implications: Investors can adjust their portfolio risk by borrowing or lending, which helps in the formation of the capital market line (CML). Reality: Borrowing rate is usually higher than the lending rate, so this assumption is not practical.

No taxes or transaction costs:

CAPM assumes that there are, no taxes on income or capital gains, no transaction costs such as brokerage fees or commissions. For example,if an investor earns Rs. 1000 profit, they keep the full amount without paying any tax.

Implications: Investors focus only on risk and return. It simplifies investment decisions. In real life, taxes and costs significantly affect returns.

Calculation of Expected Return

Expected return is also called future Return. Expected return is that the return which is expected to be received in the future. Expected return under CAPM is calculated by using the following formulas:

With the help of beta: $ER_i = R_f + \beta_i(ER_m - R_f)$

$\boldsymbol{ER_i}$ = Expected return of security

$\boldsymbol{R_f}$= Risk-free rate (e.g., government bonds)

Beta = Systematic market risk

$\boldsymbol{ER_m}$ = is expected to return on the market portfolio

$\boldsymbol{ER_m - R_f}$= marker risk premium.

With the help of standard deviations:

$ER_i = R_f + \left(\frac{\sigma_i}{\sigma_m}\right) \times (ER_m - R_f)$

$\boldsymbol{ER_i}$ = expected return on the security

$\boldsymbol{R_f}$ = risk-free rate

$\boldsymbol{\sigma_i}$=Standard deviations of security

$\boldsymbol{\sigma_m}$ =Standard Deviations of the market

$\boldsymbol{ER_m}$=is expected to return on the market portfolio

$\boldsymbol{R_f}$ =known as market risk premium.

Risk -free Return ($\boldsymbol{R_f}$): This is the minimum return you expect without taking risks. **Market Risk premium ($\boldsymbol{ER_m - R_f}$):**Extra return investors demand for taking market risk.

Example if: market return=12% and risk free =5% than risk premium=7%

Beta (β): Measures sensitivity of a stock to the market movements. If beta equals to 1, indicates the stock move in sync with the market, if beta is greater than 1, then the stock is more volatile than the market, and if beta is less than 1, then the stock is less volatile than the market.

Security Market Line (SML)

The security market line SML is a graphical presentation of the Capital Asset Pricing Model (CAPM).It shows the relationship between expected return and systematic risk (beta) for individual securities or portfolio analysis.

SML formula –

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

Terms;

$\boldsymbol{ER_i}$ = Expected return of security

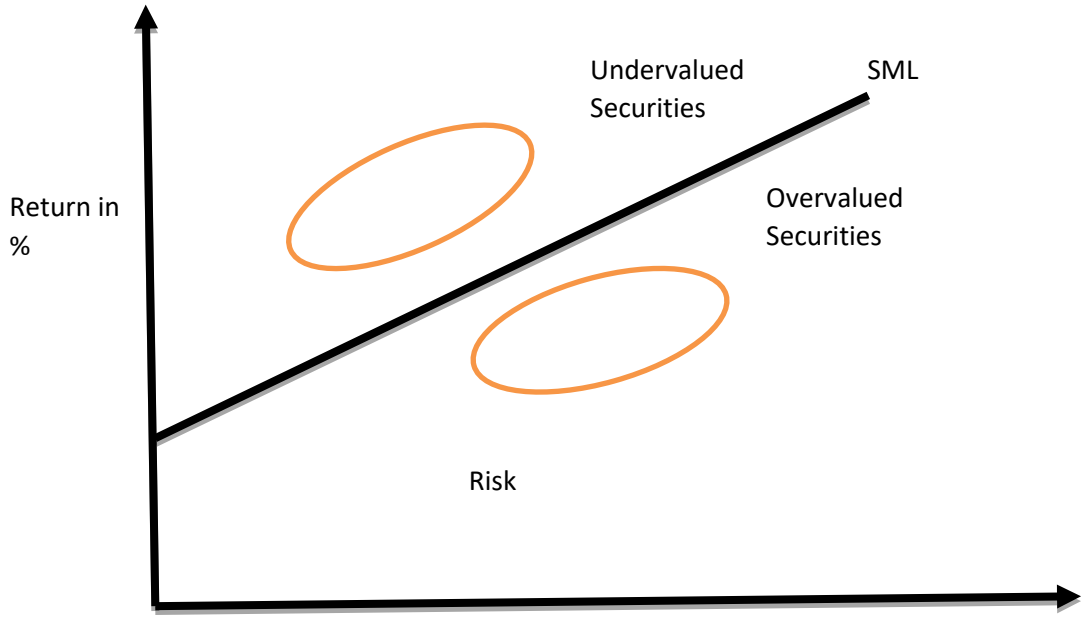
$\boldsymbol{R_f}$= Risk free rate (e.g., government bonds)

Beta = Systematic market risk

$\boldsymbol{ER_m - R_f}$= marker risk premium.

Characteristics of SML: -

Measures systematic Risk only: SML considersonly non-diversifiable risk (Beta). Unsystematic risk is ignored because it can be eliminated through diversification.
Intercept Equals Risk-free Rate: When beta is zero, the expected return equals the risk-free rate.
Slope equals market risk premium. The slope of SML depends on $(ER_m - R_f)$. In case of higher premium it shows steeper slope, and in case of lower premium shows flatter slope.
Represent investment opportunities cost: It shows the returns an investor sacrifices by choosing one investment over another.
Applicable to all Securities: SML includes individual stocks as well as portfolios.



Position of securities on SML
SML is very useful in identifying whether a security is correctly priced:
On the SML (fairly valued):If expected return =required return, then the price is correct, and Investors should hold the security.
Above the SML (undervalued): Expected return >required return. The Securities give a higher actual return for their risk. Investors should buy the securities.
Below the SML (overvalued): Expected return<required return, then Return is not sufficient for the risk taken. Investors should sell or avoid the securities.
Capital market line (CML)
The capital market line (CML) represents the relationship between risk and return for an efficient portfolio only. Unlike SML, it deals with total risk (standard deviations) instead of beta.
CML formula: $ERp = R_f + \left(\frac{\sigma_P}{\sigma_m}\right) \times (ER_m - R_f)$

$\boldsymbol{ER_p}$ = Portfolio return
$\boldsymbol{R_f}$ = Risk-free rate
$\boldsymbol{ER_m}$ = Market return
$\boldsymbol{\sigma_p}$ = Portfolio risk
$\boldsymbol{\sigma_m}$ = Market risk

Characteristics of Capital market line (CML)

Shows efficient portfolios only:

An efficient portfolio gives maximum return for a given level of risk portfolio below the CML is inefficient because they offer lower return for the same risk. Any portfolio on the CML is considered optimal. This means investors should always aim to invest in the CML.

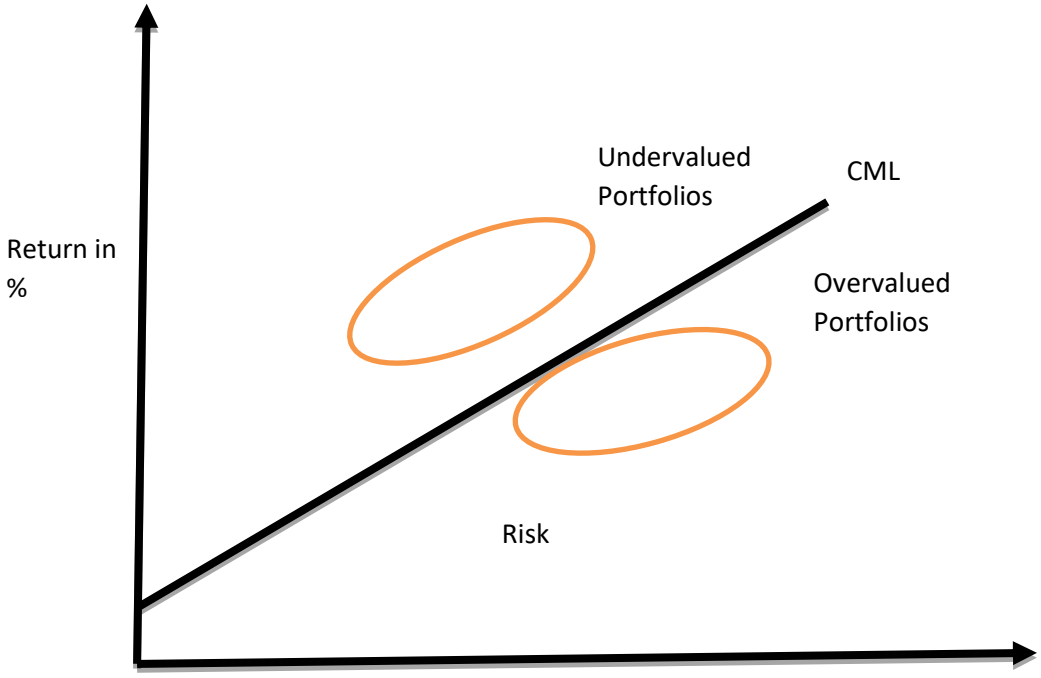
Risk measured by total risk (standard deviations): unlike the security market line, the CML uses total risk. Risk is measured using standard deviations. It includes: Systematic risk (market risk) and Unsystematic risk (diversification risk).

Supports borrowing and Lending: CMLassumes that investors can: Lend money at a risk-free rate (invest less risk) Borrow money at a risk-free rate (invest more risk). This allows investors to move along the CML and choose a risk level based on preferences.

Intercept at risk-free rate (R_f): The CML always begin at the free rate. When risk =0 and return = Rf. Represents investment in risk-free assets only (like government securities).

Includes risk-free Assets and market Portfolio: The CML is formed by combining: Risk-free assets and Market portfolio (M).

Portfolio selection tool: Investors use CML to select a portfolio based on their risk tolerance: Risk-averse investors -Choose near the risk-free point, Moderate investors -choose the middle of CML and risk-seeking investors -Choose near or beyond the market portfolio.



Portfolio position on CML

On the CML: Portfolio is efficient, offering maximum return for given risk.

Below the CML: Portfolio is inefficient, better alternatives are available.

Above the CML: Not possible in theory, indicates unrealistic expectations.

6 Data Analysis and Interpretation

Companies BSE Sensex: BSE Sensex Companies: The BSE Sensex, sometimes referred to as the S&P Bombay Stock Exchange Sensitive Index or just Sensex, was a weighted stock market index of 30 reputable, well-established companies that were listed on the Bombay Stock Exchange. The Sensex,

which had been published since January 1, 1986, was an indicator of the Indian domestic stock market. Its base year was 1978-1979, and its base value was set at 100 on April 1, 1979.

Table 1: Companies BSE Index

Scrip Code	COMPANY	Close Price	Scrip Code	COMPANY	Close Price
532921	ADANI PORTS AND SPECIAL ECONOM	1760.3	500510	LARSEN & TOUBRO LTD.	3973.6
500820	ASIAN PAINTS LTD.	2600.25	500520	MAHINDRA & MAHINDRA LTD.	3329.5
532215	AXIS BANK LTD.	1269.4	532500	MARUTI SUZUKI INDIA LTD.	13725.4
500034	BAJAJ FINANCE LIMITED	955.05	532555	NTPC LTD.	402.2
532978	BAJAJ FINSERV LTD.	1816.35	532898	POWER GRID CORPORATION OF INDI	313.9
500049	BHARAT ELECTRONICS LTD.	439.65	500325	RELIANCE INDUSTRIES LTD.	1435.7
532454	BHARTI AIRTEL LTD.	1834.9	500112	STATE BANK OF INDIA	1019.55
543320	Eternal Limited	256.35	524715	SUN PHARMACEUTICAL INDUSTRIES	1847.3
532281	HCL TECHNOLOGIES LTD.	1198.6	532540	TATA CONSULTANCYSERVICES LTD.	2394.85
500180	HDFC BANK LTD.	781.2	500470	TATA STEEL LTD.	214.45
500696	HINDUSTAN UNILEVER LTD.	2287.9	532755	TECH MAHINDRA LTD.	1463.05
532174	ICICI BANK LTD.	1264.8	500114	TITAN COMPANY LIMITED	4513.4
500209	INFOSYS LTD.	1179.2	500251	TRENT LTD.	4244.05
539448	Inter Globe Aviation Limited	4522.2	532538	ULTRATECH CEMENT LTD.	11948.2
500875	ITC LTD.	307.4			
500247	KOTAK MAHINDRA BANK LTD.	380.75			

Source: Comply from BSE website(BSE SENSEX Index Constituents 2026).

Table 2: Market Price of HDFC Bank

Date	Open (₹)	High (₹)	Low (₹)	Closing Price (₹)
01-04-2026	743.00	755.90	739.10	742.25
02-04-2026	752.95	755.00	748.45	751.50
06-04-2026	772.40	772.55	770.10	770.50
07-04-2026	770.30	773.00	770.30	772.40
08-04-2026	815.40	817.50	815.15	817.20
09-04-2026	798.80	800.55	797.60	798.05
10-04-2026	810.35	811.70	809.80	810.50
13-04-2026	794.25	794.70	792.30	794.70
15-04-2026	808.40	810.20	808.05	809.60
16-04-2026	794.00	794.95	792.20	794.00
17-04-2026	799.95	800.40	799.75	800.00
20-04-2026	795.25	795.40	794.50	795.20
21-04-2026	811.80	813.65	810.65	811.95
22-04-2026	800.00	800.20	798.15	799.40
23-04-2026	784.00	784.65	782.50	783.90
24-04-2026	784.70	786.20	784.65	785.15
27-04-2026	790.00	790.25	789.35	790.00
28-04-2026	781.75	782.90	778.35	782.35
29-04-2026	778.05	778.75	777.35	778.40
30-04-2026	771.55	774.80	770.35	774.50

Source: Comply from BSE website(HDFC Bank 2026)

Table 3: Calculation of Expected Return of HDFC Bank.

Date	HDFC Price (₹)	HDFC Return (%)	Market Return (%)
02-04-2026	751.50	+1.25%	+0.15%
06-04-2026	770.50	+2.53%	+1.12%
07-04-2026	772.40	+0.25%	+0.68%
08-04-2026	817.20	+5.80%	+3.78%
09-04-2026	798.05	-2.34%	-0.93%
10-04-2026	810.50	+1.56%	+1.16%
13-04-2026	794.70	-1.95%	-0.86%
15-04-2026	809.60	+1.87%	+1.63%
16-04-2026	794.00	-1.93%	-0.14%
17-04-2026	800.00	+0.76%	+0.65%
20-04-2026	795.55	-0.56%	+0.05%
21-04-2026	811.90	+2.06%	+0.87%
22-04-2026	799.85	-1.48%	-0.81%

23-04-2026	784.50	-1.92%	-0.84%
24-04-2026	785.00	+0.06%	-1.14%
27-04-2026	789.95	+0.63%	+0.81%
28-04-2026	782.70	-0.92%	-0.40%
29-04-2026	779.15	-0.45%	+0.76%
30-04-2026	771.50	-0.98%	-0.74%

Source: Calculation with the help of MS Excel.

Table 4: Calculation of average daily return, standard deviation, covariance and beta

Metric	**HDFC (Security)**	**(Market)**
Average Daily Return	0.2226%	0.3045%
Standard Deviation (Risk)	2.0147%	1.1942%
Covariance	2.1709	—
Beta (β)	1.5222	1.0000

Source: Calculation with the help of MS Excel.

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

$$E(R_i) = 6.90\% + 1.5222 \times (14.00\% - 6.90\%) = 17.71\%$$

The average return based on one month of HDFC Bank is 0.2226%, and the standard deviation is 2.0147%. The market return is 0.3045%, and the standard deviation is 1.1942%. The covariance of the security and the market is 2.1709, and the beta of the security is 1.5222. According to the CAPM, the expected return of the security is 17.71% because its actual average return is low as compared to its high systematic risk requirement, the security is overvalued.

Table 5: Market Price of JSW Steel

Date	**Open Price (₹)**	**High Price (₹)**	**Low Price (₹)**	**Close Price (₹)**
01-Apr-26	1141.90	1159.00	1134.50	1140.40
02-Apr-26	1135.00	1145.80	1106.40	1141.30
06-Apr-26	1132.00	1145.70	1115.10	1133.60
07-Apr-26	1139.00	1157.60	1122.30	1151.90
08-Apr-26	1170.00	1204.60	1170.00	1194.30
09-Apr-26	1187.20	1218.00	1185.00	1209.70
10-Apr-26	1210.00	1224.80	1203.90	1214.80
13-Apr-26	1199.10	1213.40	1189.30	1204.20
15-Apr-26	1222.90	1232.00	1210.60	1218.60
16-Apr-26	1221.20	1242.90	1211.30	1214.90
17-Apr-26	1213.00	1242.30	1198.60	1240.30
20-Apr-26	1241.10	1279.00	1233.00	1274.50

21-Apr-26	1284.40	1296.40	1273.70	1279.60
22-Apr-26	1283.00	1286.60	1258.40	1263.40
23-Apr-26	1263.40	1269.90	1251.00	1257.00
24-Apr-26	1264.00	1268.00	1246.50	1255.70
27-Apr-26	1273.00	1297.00	1268.10	1282.70
28-Apr-26	1284.00	1306.80	1275.60	1281.60
29-Apr-26	1283.00	1287.80	1257.00	1279.70
30-Apr-26	1272.50	1273.40	1250.40	1264.50

Source: Comply from BSE website(JSW Steel 2026).

Table 6: Calculation of Expected Return of JSW Steel

Date	JSW Price (₹)	JSW Return (%)	Market Return (%)
01-04-2026	1,140.40	—	—
02-04-2026	1,141.30	+0.08%	+0.15%
06-04-2026	1,133.60	-0.67%	+1.12%
07-04-2026	1,151.90	+1.61%	+0.68%
08-04-2026	1,194.30	+3.68%	+3.78%
09-04-2026	1,209.70	+1.29%	-0.93%
10-04-2026	1,214.80	+0.42%	+1.16%
13-04-2026	1,204.20	-0.87%	-0.86%
15-04-2026	1,218.60	+1.20%	+1.63%
16-04-2026	1,214.90	-0.30%	-0.14%
17-04-2026	1,235.40	+1.69%	+0.65%
20-04-2026	1,245.90	+0.85%	+0.05%
21-04-2026	1,268.30	+1.80%	+0.87%
22-04-2026	1,260.10	-0.65%	-0.81%
23-04-2026	1,257.00	-0.25%	-0.84%
24-04-2026	1,255.70	-0.10%	-1.14%
27-04-2026	1,282.70	+2.15%	+0.81%
28-04-2026	1,281.60	-0.09%	-0.40%
29-04-2026	1,279.70	-0.15%	+0.76%
30-04-2026	1,264.50	-1.19%	-0.74%

Source: Calculation with the help of MS Excel.

Table 7: Calculation of average daily return, standard deviation, covariance and beta

Metric	JSW Steel (Security)	Nifty 50 (Market)
Average Daily Return	+0.5543%	+0.3045%
Standard Deviation (Risk)	1.3939%	1.1942%
Covariance	**1.0581**	—
Beta (β)	**0.7419**	1.0000

Source: Calculation with the help of MS Excel.

$$ER_i = R_f + \beta_i(ER_m - R_f)$$
$$ER_i = 6.90\% + 0.7419(14\% - 6.90\%) = 12.17\%$$

The average return based on one month of JSW steel is 0.5543%, and the standard deviation is 1.3939%. The market return is 0.3045%, and the standard deviation is 1.1942%. The covariance of security and market is 1.0581, and the beta of the security is 0.7419. According to the CAPM, the expected return of the security is 12.17%, its actual average return is resilient relative to its defensive beta, and thus the security is undervalued.

Table 8: Market Price of Infosys Ltd.

Date	Open Price (₹)	High Price (₹)	Low Price (₹)	Close Price (₹)
01-Apr-26	1290.00	1303.00	1269.50	1275.70
02-Apr-26	1260.00	1305.40	1259.80	1300.80
06-Apr-26	1301.40	1320.00	1299.00	1306.20
07-Apr-26	1302.00	1345.10	1293.50	1339.40
08-Apr-26	1349.00	1376.90	1331.00	1346.20
09-Apr-26	1329.90	1337.50	1314.00	1331.60
10-Apr-26	1318.00	1318.90	1283.30	1292.50
13-Apr-26	1272.00	1289.00	1265.70	1276.80
15-Apr-26	1306.30	1322.50	1300.50	1305.30
16-Apr-26	1322.10	1331.00	1309.00	1319.20
17-Apr-26	1313.00	1328.30	1306.10	1318.70
20-Apr-26	1320.00	1324.90	1308.10	1312.60
21-Apr-26	1310.00	1325.00	1299.30	1313.20
22-Apr-26	1295.00	1297.70	1255.90	1268.60
23-Apr-26	1254.00	1265.70	1226.00	1240.60
24-Apr-26	1200.00	1223.90	1152.20	1154.60
27-Apr-26	1154.60	1179.90	1154.50	1170.30
28-Apr-26	1162.70	1169.40	1149.80	1152.10
29-Apr-26	1158.50	1178.20	1156.80	1167.50
30-Apr-26	1167.50	1189.80	1159.60	1181.80

Source: Comply from BSE website(Infosys Ltd. 2026).

Table 9: Calculation of Expected Return of Infosys Ltd.

Date	Close Price (₹)	Security Return (%)	Market Return (%)
01-04-2026	1,275.70	—	—
02-04-2026	1,300.80	+1.97%	+0.15%
06-04-2026	1,306.20	+0.42%	+1.12%
07-04-2026	1,339.40	+2.54%	+0.68%
08-04-2026	1,346.20	+0.51%	+3.78%
09-04-2026	1,331.60	-1.08%	-0.93%
10-04-2026	1,292.50	-2.94%	+1.16%

13-04-2026	1,276.80	-1.21%	-0.86%
15-04-2026	1,305.30	+2.23%	+1.63%
16-04-2026	1,319.20	+1.06%	-0.14%
17-04-2026	1,318.70	-0.04%	+0.65%
20-04-2026	1,312.60	-0.46%	+0.05%
21-04-2026	1,313.20	+0.05%	+0.87%
22-04-2026	1,268.60	-3.40%	-0.81%
23-04-2026	1,240.60	-2.21%	-0.84%
24-04-2026	1,154.60	-6.93%	-1.14%
27-04-2026	1,170.30	+1.36%	+0.81%
28-04-2026	1,152.10	-1.56%	-0.40%
29-04-2026	1,167.50	+1.34%	+0.76%
30-04-2026	1,181.80	+1.22%	-0.74%

Source: Calculation with the help of MS Excel

Table 10: Calculation of average daily return, standard deviation, covariance and beta

Metric	**INFY (Security)**	**Nifty 50 (Market)**
Average Daily Return	-0.3753%	+0.3045%
Standard Deviation (Risk)	2.3299%	1.1942%
Covariance	**1.2791**	—
Beta (β)	**0.8969**	1.0000

Source: Calculation with the help of MS Excel.

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

$$ER_i = 6.90\% + 0.8969(14\% - 6.90\%) = 13.27\%$$

The average return based on one month of Infosys Ltd. is -0.3753%, and the standard deviation is 2.3299%. The market return is 0.3045%, and the standard deviation is 1.1942%. The covariance of the security and the market is 2.1791, and the beta of the security is 0.8969. According to the CAPM, the expected return of the security is 13.27%, because Infosys combined a negative actual average return with the highest overall volatility during this month, it failed to achieve its required return equilibrium, making it overvalued for investors during this timeframe.

6.1 Findings

Based on daily stock returns data collected from 1st April, 2026, to 1st May, 2026, the data areanalyzed to identify important facts about the risk and return profiles. The CAPM study of three BSE Sensex stocks (JSW Steel, Infosys, and HDFC Bank) forApril 2026 shows different risk-return profiles. Although HDFC Bank is traditionally seen as a strong leader in the banking industry, the data really reveals that it is quite aggressive during this particular month.With an average daily return of 0.2226%, the standard deviation of 2.1047, the correlation with the market of 2.1709, and the beta of 1.5222, HDFC Bank demonstrates overvaluation as its projected return of 17.71% was significantly higher than

its actual return. During this time, JSW Steel behaved as a very defensive and resilient asset, which stands in stark contrast to expectations for a heavy commodities stock. With an expected return of 12.17%, JSW Steel's higher average daily return of 0.5543%, standard deviation of 1.3939, covariance of 1.0581, and beta of 0.7419 indicate that it is undervalued since its actual returns supported its reduced systematic risk profile. The severe underperformance of Infosys is seen during this period. Infosys has the highest overall risk, according to the data. Infosys record a negative average daily return of -0.3753%, the highest standard deviation of 2.3299, covariance of 1.2791, and beta of 0.8969. Infosys produced an expected return of 13.27%, indicating that it is overvalued for conservative investors. The average daily return for the general market (BSE Sensex) shows an average daily return of 0.3045% with a standard deviation of 1.1942%. There is an obvious pricing difference when comparing each asset to this baseline. Of the three stocks, JSW Steel is the only one that genuinely rewarded investors with returns that are consistent with the risk. Due to the failure of HDFC Banks and Infosys to meet their CAPM risk thresholds, investors are left vulnerable to significant market volatility without receiving sufficient compensation.

7 Conclusion

In the context of India's dynamic BSE Sensex, this CAPM-based study on HDFC Bank, JSW Steel, and Infosys confirms the model's effectiveness in connecting systematic risk (beta) to expected returns, assisting investors in portfolio optimization. The study concludes that traditional sectoral presumptions are not always accurate in short – term. With a high beta of 1.5222, HDFC Bank isrevealed as extremely aggressive during this particular period, despite the fact that banking stocks are often regarded as safe and protective. The stock is essentially overpriced and unrewarding for the risk taken because its actual average daily return is 0.2226%, falling below its CAPM needed return of 17.71%. A significant positive surprise about JSW Steel that is left out was disclosed by the data. JSW Steel is a very defensive asset this month, even though steel businesses are part of a highly volatile and cyclical sector. It generates the highestactual average daily return of 0.5543% while having a lower return of 0.7419 and a low standard deviation of 1.3939. It stands out as the inexpensive company in the analysis and a very effective option for investors because its actual performance exceeded its CAPM return of 12.17%. Infosys (beta 0.8969) appears overvalued, reflecting pressures in the IT sector but appropriate for moderate-risk strategies. With a standard deviation of 2.3299, the data demonstrated that Infosys was the riskiest asset in terms of overall volatility. It produced a negative daily actual return average of – 0.3753% while subjecting investors to this significant risk. It is extremely overvalued and a bad option for conservative portfolios during this time frame because it totally missed its CAPM risk threshold of 13.27%.Important implications include avoiding overpriced high beta stocks to reduce losses and giving priority to undervalued low beta stocks like JSW for diversification, which is consistent with the CAPM's assumptions of risk aversion and efficient markets. Due to limitations like the short one-month horizon (1st April 2026 – 1st May 2026) and secondary BSE data, it is recommended to extend the analysis to multi-year periods for resilience and include transaction costs and taxes that are not included in the CAPM. Future studies might incorporate liquidity adjustments for developing markets like India or multi-factor models. To make data-driven decisions and maximize wealth in volatile environments, investors should combine CAPM insights with fundamental analysis.

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