Unveiling Risk-Return Dynamic: A Five-Year Daily Comparison of Nifty 50, Nifty Financial Services and Nifty Bank

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Abstract

This research looks at the risk-return profiles over the last five years (2018–2023) for three significant Indian stock market indices: Nifty 50, Nifty Financial Services, and Nifty Bank. Key metrics will be computed using daily return data. The core tendency for gains in each index will be shown by the average return. The standard deviation will emphasize volatility by quantifying daily return changes. We'll use Value at Risk (VaR) to evaluate any possible downside risk. It calculates the maximum loss over a specified period within a particular confidence level. For investors to comprehend worst-case scenarios, this is an essential tool. In addition, the Treynor and Sharpe ratios will be used to compute the risk-adjusted returns. The study attempts to determine differences in risk-reward features among the indexes by examining these parameters. The outcomes will demonstrate which index provides the most appealing ratio of possible gains to possible losses. Investors with different levels of risk tolerance will find this information useful. In the end, this study aims to offer insightful information to investors so they may make knowledgeable choices about portfolio allocation and diversification in the Indian stock market. Comprehending the risk-return characteristics of these notable indices can enable investors to build portfolios that are in line with their investment objectives and risk tolerance.

Introduction

The Indian stock market provides a vibrant environment for investors, with numerous prospects for wealth generation (**Sikarwar, R 2018**). Navigating this dynamic market, however, necessitates a deep comprehension of the different factors influencing investment decisions **(Haidari, M, 2023)**. In this context, stock market indices are essential since they are useful instruments for assessing market performance and pinpointing possible investment opportunities. To better understand the risk-return characteristics of these three well-known indices and enable investors to allocate their portfolios with knowledge, this study will concentrate on Nifty 50, Nifty Financial Services, and Nifty Bank.

Known as the "pulse of the Indian stock market," the Nifty 50 is a benchmark index that follows the performance of the 50 biggest and most liquid businesses in a range of industries. It offers a thorough analysis of the state of the market as a whole and is a useful resource for investors evaluating general market trends. Investor portfolios are directly impacted by fluctuations in the Nifty 50. Studies have also investigated how investor portfolios are affected by Nifty 50 swings. According to **Kamath, A. N (2024),**

the Nifty 500 and other sectoral indexes in Indiaare heavily influenced by investor mood. This emphasizes how feelings can influence investingchoices based on changes in the market. Furthermore, **Natarajan, P. (2012)** looked at the connection between portfolio risk and Nifty 50 volatility. According to their findings, investorsmay find it extremely helpful to comprehend the Nifty 50's volatility when building diversified portfolios and controlling risk.

Investors looking for a more targeted strategy within a particular industry might benefit from the insights provided by Nifty Financial Services and Nifty Bank. Prominent banks, insuranceproviders, and non-banking financial institutions (NBFCs) are included in the Nifty Financial Services index. In the Indian economy, this sector is an essential cog that facilitates investments, mobilizes money and propels economic progress **Basha, M., Reddy, K (2023).** Investors looking to gain exposure to the financial services business can learn a lot from Nifty Financial Services, which tracks the performance of this sector. In a similar vein, the Nifty Bank only pays attention to India's top 12 public and private banks. This index providesa focused perspective on the banking sector, which is an important engine of economic growthand a predictor of the health of the financial system. Investors can evaluate the possible advantages and hazards of investing in these important areas of the Indian economy by examining the risk-return profiles of these sector-specific indices.

Making wise investing decisions, however, requires more than just comprehending the make-up and movement of these indices. Investors must also consider the inherent risk that comes with changes in the market. This study explores the field of risk-return analysis and uses a variety of techniques to protect investors in this ever-changing landscape. We may learn moreabout the possible benefits and hazards connected with each index by computing measures likeaverage return, which shows the central trend of an index's gains, and standard deviation, whichmeasures the volatility or variability in daily returns. For investors of all risk tolerances, it is critical to comprehend the dynamics of risk-return. Value at Risk (VaR) is one of the many ways this study will use to explore this idea **(Adamko2015)**. VaR is a statistical metric that quantifies the maximum possible loss, with a given degreeof confidence, that an investment portfolio might incur over a given period. This study attemptsto give a more nuanced view of the possible downside risk associated with each index by combining VaR with conventional risk indicators like standard deviation.

Additionally, risk-averse investors can learn a lot from risk-adjusted return ratios like the Treynor and Sharpe ratios. The excess return (return over the risk-free rate) per unit of risk (volatility) is measured by the Sharpe Ratio **Sharpe, W. F. (1998)**. Better risk-adjusted performance is indicated by a higher Sharpe Ratio, which means an investor gets more return for the risk they incur. Conversely, the relationship between excess return and systematic risk (market risk) is the main emphasis of the Treynor Ratio **Hubner, G (2005).** It aids indetermining the amount of increased profit an investor might anticipate in exchange for assuming market risk.

The purpose of this study is to find any possible variations in the risk-reward characteristics ofthe Nifty 50, Nifty Financial Services, and Nifty Bank indexes by examining these parameters. The outcomes will demonstrate which index provides the most attractive ratio of possible gainsto possible losses. Those investors with different risk tolerances will find this information especially helpful. Higher average return indexes, even in the face of higher volatility, may bepreferred by investors looking for bigger returns. Investors who are risk-cautious, on the other hand, can give preference to indexes that have lower volatility and possibly lower average returns.

Literature Review

Adamko (2015) explores the concepts and background of VaR in **The History and Ideas behind VaR**. VaR is a well-liked and frequently used risk management tool that is praised forbeing simple to calculate. VaR is renowned for its adaptability as well because it may be computed in several ways. Furthermore, VaR's universal applicability across asset classesis emphasized. On the other hand, VaR is also criticized. It is stated that the quality of the inputsand assumptions employed determines how successful VaR is. It is also stated that results fromVaR calculation techniques can differ. VaR is also criticized for having a propensity to minimize worst-case possibilities, which could give rise to a false sense of security.

According to **"The Persistence of Volatility in Nifty 50" (Vevek, 2022),** volatility shocks areshown to be relatively substantial and to persist throughout the study period. The studyalso reveals that, in comparison to new or positive information, negative information affects market movements more. Therefore, secondary market participants can obtain insights regarding the caliber of news influencing the market by evaluating the degree of volatility persistence in the Nifty 50, a sensitive indicator of the National Stock Exchange (NSE). According to the study, there is a fundamental relationship between volatility and the stock market, with negative volatility lasting longer than positive volatility.

According to **Study on comparative performance of Nifty Bank Index and Nifty PSU BankIndex by (Reddy, 2022)** private banks did better than public sector banks (PSBs). Analysis ofratios including asset liquidity, capital sufficiency, management, and liquidity backed up this result. The Nifty Bank Index generated a return of 3677.6 crores in 2021, compared to the NiftyPSU Bank Index's 314.691 crores. The analysis discovered a considerable discrepancy in returns. The analysis concludes that investing in the Nifty Bank Index may be a better option if you're looking for larger returns.

According to **Sinha (2022)** In **Stock Return and Volatility Evidence: Empirical Analysis with special reference to NSE,** the post-COVID era has had a major detrimental effect on theIndian industrial industry. This is demonstrated by the fact that India's GDP grew slowly throughout the world's upheaval and that the Manufacturing (%) Index of Industrial Production(IIP) decreased between 2017–18 and 2020–21. The decline in exports and domestic demand is the reason for the slowdown. Furthermore, the slower rate of industrial expansion is said to have been caused by issues related to global instability.

According to **Sagar (2023)** in **Indian Stock Market Analysis – Nifty 50 Versus Bank Nifty**the significant drops in the Nifty 50 and Bank Nifty indices in March 2020 were a sign of the COVID-19 pandemic's negative effects. After that, though, there was a market rebound, and in2022 both indices hit all-time highs. This resurgence is ascribed to elements including robust business operations, government assistance initiatives, and a heightened emphasis on internet usage. Promising growth potential in the digital and other economic areas are highlighted, as is the Indian stock market's resiliency during the pandemic.

Do Banking and Financial Services Sectors Show Herding Behaviour in Indian Stock Market Amid COVID-19 Pandemic? by (Mishra, 2023) was predicated on two theories: first, that investors' anxiety over the abrupt rise in COVID-19 confirmed cases leads to volatility in sector-level stock returns; and second, that investors' psychological disorders prevent them from relying on information and lead them to follow other investors' decisions, particularly during periods of extreme market conditions during the pandemic. Based on the empirical results, the first hypothesis—that the COVID-19 outbreak increased stock return volatility at the sectoral level—is validated. Using all the market return data, the study was unable to find any evidence of herding behavior. However, under the epidemic's bull marketconditions,

herding behavior was seen at high quantiles (90%) in the public sector banking and financial services. One possible explanation is that due to their information and views, investors with weaker emotions are reluctant to make decisions about their investments duringthe high-return phase. They might therefore be following the crowd to shield themselves froman unexpected decline in earnings.

A study of growth, performance, and relationship of Nifty50, Auto Index, Pharma Index,Bank Index, and FMCG Index by (Vevek S, 2023) Understanding sectoral index growth, trends, and correlations between the indices was the aim of the study effort. There exists a favorable correlation between certain indices and the sectoral indices that follow them. The Nifty 50 expanded in 2022 at the slowest rate (2.721) and in 2021 at the fastest rate (23.79%).The FMCG Index increased in 2022 at the quickest pace (17.458) and in 2019 at the weakest rate (-0.911). The Pharma Index increased at the two slowest rates in 2022 (-11.011) and the fastest (60.504) in 2020. 2021 saw the fastest growth rate (17.95) for the Automobile Index, while 2018 saw the slowest growth rate (-22.328). The Bank Index increased in 2020 (-2.613)at the slowest pace and in 2022 (18.024) at the fastest rate. Therefore, investors may concludefrom this analysis that there is ongoing market volatility and interconnectedness among the various businesses. Hence, investors need to stay aware of the market and fresh information tomake better judgments.

Impact of Russia-Ukraine War on Returns of Banking Stocks in India by (Tiwari, 2022) indicated that the stock market, and more especially the benchmark Nifty 50, saw a significantnegative impact during the first 75 trading days of the Russia-Ukraine war. The stock market'sbenchmark represents the overall impact of the economy. The banking industry is essential to the industry. The financial sector will become increasingly stressed because of negative consequences on the industry. It was found that the Nifty Bank sectors index was significantlyharmed by the Russia-Ukraine war.

Impact of Macroeconomic Variables on Islamic Stock Market Returns: Evidence from Nifty 50 Shariah Index by (Habib, 2017)

The current stock price, according to the efficient market theory, represents all the information currently available on changes in the macroeconomic factors. The data included inthe analysis covers the period from February 2007 to June 2016, although the Nifty Shariah index was launched earlier. The possible importance of macroeconomic factors in explaining fluctuations in Islamic stock performance has been examined using ordinary least squares regression. The results of the study show that exchange rates are the only factor that adverselyand statistically significantly impacts the performance of the Islamic stock market. The study had only looked at five macroeconomic factors, and only for a period that was less than ten years.

(Jain, 2018) Investigated on **Analysis and prediction of individual stock prices of financialsector companies in Nifty50**. This study examined how macroeconomic factors affect NIFTY50 banking company stock prices. The goal was to create a reliable stock price prediction model. The study can help purchasers make sensible decisions and develop well-balanced portfolios by examining these issues in detail. Evidence shows the model accurately predictedequities in real-time. Sellers, investors, and others benefit from this outcome. In the end, this work shows what individuals mean by improved investment approaches and making the greatest money.

(Raval, 2020) A comparative study between Nifty 50 with Financial Services and Pharmaceutical Sector. This study focused on how the Nifty 50 index's relationship between financial services and pharmaceuticals is examined using 2008–2018 data. Correcting correlations and district t-tests reveal both sectors significantly affect Nifty 50. While more profitable than benchmark indexes, their standard deviations increase volatility and risk. Attention draws high-risk investments here. Pharmaceuticals are more connected with Nifty 50, Pharmaceuticals affect medical, while financial services affect finance more.

(Jain K. &., 2019) Classification and Predictive Analysis of the Stocks Listed with NIFTY50. This study examines the 50 NIFTY 50 stocks, a major Indian stock market index. These stocks return, risk, and beta were examined. The study divided 50 NIFTY50 stocks intofive clusters based on beta, return, and risk. This study developed yield forecasts. The results show that the constituent stocks have unusual variance and similar returns and beta factors. Noevidence links beta, risk, and stock returns.

(Balachandru) Investigating the Causal Relationship among Returns of NIFTY50 Stocksin Nine Industries Using High-frequency Data. This study is about Granger causality testingbetween industries of stock returns, within Nifty50 stocks traded on the NSE of July 2014 to the end of June 2015. Using 5-minute smart data, it utilizes a two-way Granger causalitymodel to discover a causality relationship. Studies found a bidirectional, direct, or no causalityrelationship, thus the efficient market hypothesis would not hold in some cases. This study enhances the understanding of market prediction and the relationship between the stock returnperformance of the stock and among industry peers.

(Rohith, U. J. ,2017) A study on the volatility and return with reference to stocks of BankNifty: This research compared the NIFTY index to examine the volatility of banking companies in India's developing economy. It draws attention to how risky investment in bank shares may be, particularly considering their heightened volatility during financial crises. Understanding the risk-return trade-offs related to market volatility was the goal of theresearch, which should assist investors in making wise decisions. Based on several market andeconomic variables, the performance of banking stocks is assessed.

(Zakamouline, V., & Koekebakker, S.,2009) Portfolio performance evaluation with generalized Sharpe ratios: The Generalized Sharpe Ratio (GSR), a portfolio performance metric that takes higher moments of distribution into account, is presented in the paper. It tackles the drawbacks of the Sharpe ratio, which is limited to quadratic preferences or regularlydistributed returns. Portfolios with modified Sharpe ratios can have their actual performance revealed and contradictions resolved by using the GSR. The study also examines otherperformance metrics that have been proposed in the literature, such the Omega ratio and Stutzerindex, but it points out that most of them have weak theoretical foundations and undervalue the possibility of upside returns. The examination of hedge fund performance is used to illustrate the GSR.

(Hung, K. K., Cheung, C. C., & Xu, L.,2000) New Sharpe-ratio-related methods for portfolio selection: In this paper, portfolio selection strategies for investors with varying perspectives on the return-risk trade-off. The goal function was established by including two new concepts, "upside volatility" and "diversification," in addition to the Sharpe ratio (Sharpe, 1966) and downside risk (Fishburn, 1977). To arrive at appropriate weights, maximizing the goal function WRT the portfolio weights. Additionally, workable strategies formaximizing anticipated return while limiting risk and regulating expected return. Experiments demonstrated that the suggested approaches produced fruitful outcomes.

(Atmaca, M. E.,2022) Portfolio management and performance improvement with Sharpeand Treynor ratios in electricity market: This paper presented a generalization of the Treynor ratio in a multi-index setup. This work presented the simplest measure that maintainsthe fundamental geometric and analytical

aspects of the original single index measure and Treynor's original interpretation of the ratio of anomalous excess return (Jensen's alpha) to systematic risk exposure (the beta). The anomalous return of a portfolio per unit of weighted- average systematic risk is defined as the Generalized Treynor ratio, with each risk loading having a weight equal to the associated risk premium.

(Bednarek, Z., Firsov, O., & Patel, P.,2017) A strong case to calculate the treynor ratio using log-returns: The expected return and the portfolio beta, depend on the investment horizon. Naturally, how can two portfolios be compared using TR over different horizons, Priorresearch indicated that a ranking reversal may occur. A portfolio could appear appealing for ashort period, but not over a longer one. The compounding of simple returns is the causeof the ranking reversal. Rather than utilizing simple returns.

(Verma, M., & Hirpara, M. J. R.,2016) Performance evaluation of the portfolio using theSharpe, Jensen and Treynor methods: This paper suggested that the type of portfolio that investors hold determines the significance of two key performance metrics for multi-index models: the information ratio and the alpha. The quality of the rankings produced by these criteria compared them to the generalized Treynor ratio (GT R). Using different criteria, aprecise metric produces comparable rankings. Stable measures do not alter ranks whenmodel assumptions change. The results show the kinds of abilities that portfolio managers value.

(Thappa, S.,2022). A study on the performance in NSE sectoral indices of India: This studyexamined the relationship between the CNX Nifty index and sectoral indices' volatility and correlation between January 2013 and June 2014. Many of the indexes show a strong link, except for CNX Metal, Pharma, PSU Bank, and Realty. Notably, the Nifty is more heavily influenced by the CNX Pharma and PSU Bank indexes. These results provide insightful information for lowering portfolio risk and increasing return.

(Gahlot, R.,2019) An analytical study on effect of FIIs and DIIs on Indian stock market. This study examined the actions of domestic and foreign institutional investors, or FIIs andDIIs, affect the volatility of the Indian stock market. The study evaluates causal links andmarket volatility using the Ganger Causality test and TGARCH model, using the Nifty, Nifty Next 50, BSE Sensex, and BSE 100 as representations. The results improve investors' decision-making process by providing useful forecasting tools, especially for certain indexes.

(MANIGANDAN, P., 2020) A study on technical analysis on selected sector in NIFTY 50during COVID period: Using a variety of indicators, this research performed a technical analysis of a subset of the NSE Nifty Fifty equities to pinpoint buying and selling signals. It assesses the performance of industries and businesses, concentrating on the top metrics for each. According to the study, technical analysis—specifically, the application of line charts and RSI—helps investors manage their investment positions, make well-informed decisions, and maybe even make significant gains.

(Tripathi, V., & Aggarwal, S.,2008) Estimating the accuracy of value-at-risk in measuringrisk in equity investment in India: This study uses data from 30 equities and two main indexes to assess the value-at-risk (VaR) accuracy in estimating equity investment risk in India. According to the study, VaR typically overestimates loss, which may be related to returns' non-normal distribution. It implies that assessing portfolio risk using the portfolio-normal approachof VaR computation is more accurate than calculating risk using individual stocks.

(Suresh, A. S.,2018) Study on comparison of Risk-return analysis of public and private sector banks listed on BANK NIFTY: The performance of twelve nationalized banks in Indiais examined in this research with an emphasis on beta, risk, and return. It measures portfolio performance by sector and benchmarks against the Bank Nifty Index. According to the report,Axis Bank, Bank of Baroda, and Bank of India had

negative returns, while Yes Bank and Federal Bank produced good returns. A higher beta value for a stock indicates a higher level of market risk.

Dheyvendhren (2021) investigated on **Impact of Covid-19 on The Financial Sector Indices**.This paper examines the effects of Covid-19 and the driving lockdown on the Nifty sectoral indices, especially emphasizing the group of financial sector indices due to their economic importance. Granger Causality, Impulse Response Function, and OLS Regression analysis wereused to examine future reactions of Nifty 50 to a few sectoral indices. It is noted that Covid-19 had severe implications on the financial sector indices in India during this coronavirus period.

Safwan (2022). Performance evaluation sectoral indices during covid 19 pandemic period. This study analyses the performance of sectoral indices in NSE amidst Covid-19 covid using risk-adjusted return measures. It shows that the drug sector took the lead in beats with the realty, media, and financial services sectors behind the competition. The Nifty50 worsened with underperformance of financial services that account for 33% of the index. Financial services, petroleum and gas industry, and IT industries constitute the largest market capitalization components of the benchmark index.

Prabhu (2018). Risk & return analysis of nifty stock in Indian capital market. This studyexplores the banking sector's risks and returns in comparison with the Nifty Index benchmark. It compares the performance of the top 50 stocks listed on the NSE to show the significance of the banking industry in the Indian economy. It performs the evaluation and determines the rateof return and risk of individual stocks considering the market status for the purpose of guidinginvestors in handling the high-risk proposition of NSE shares.

Sen and Dutta (2022). A comparative study of hierarchical risk parity portfolio and eigenportfolio on the nifty 50 stocks. This study determines portfolio optimization by the hierarchical risk parity (HRP) technique and eigen portfolio method across seven sectors of theIndian stock market. This historical data from January 2016 to December 2020 is applied for the portfolio construction and the performance is examined on test data from January 2021 to November 2021. Results indicated that HRP portfolio exceeds in performance of Eigen acrossmost sectors, proving that HRP is better in portfolio optimization than Eigen.

Singh and Kumar (2020). Dynamic linkage between nifty-fifty and sectorial indices of NSE. This study analyses the features of Nifty50 and its links with sectoral indices of the NSE. For its part, unit root and Granger-causality tests are used to confirm the causal consistency between these indices. Data show the Financial Services & Banking sector majorsamong others whereas the Pharma and Realty sectors lag. Another key point is that the Nifty50had less volatility relative to sectoral indices than realty stocks which were the most volatile.

Rao and Banana (2016). A study of risk and return with reference to selected stocks of nifty. This study aims at comparing NSE stocks obtained from different sectors and examinesrisk, return, and liquidity for them. This topic highlights the significance of the risk/return relationship in the investment decisions and studies the nature of this trade-off using beta and standard deviation. Moreover, the purpose of this research is to raise awareness about stock return patterns to help investors make the right decisions.

Bhuvaneshwari (2021). An analytical study of nifty 50 and financial sector indices. This study investigates the correlation between Nifty 50 and Nifty financial sector indices through OLS regression, Granger Causality, and Impulse Response Function. It emphasizes variationsin the 'Nifty 50' because of changes in financial sector indices within the period of April 2019to March 2021. Research shows the direction of causality between them and a clear effect of financial sector indices on 'Nifty 50' due to their

modifications.

Foresight for stock market volatility–a study in the Indian perspective (Dixit, J. K., & Agrawal, V. 2019) The outcome of the study suggested that the P-GARCH model is most suitable to predict and forecast the stock market volatility for both markets.

A Study on Effect of Macro-Economic Variables on Indian BSE (Sensex) Stock Prices (Jegadeeshwaran, M., & Siva Thivya, R. 2017). It is looking into the connection between several macroeconomic variables and changes in the BSE Sensex, a significant index of the Indian stock market. Most likely, the study looks at the relationship between a few key macroeconomic factors and the Sensex index.

Value and contrarian investment strategies: Evidence from Indian stock market (Jagirdar, S. S., & Gupta, P. K. 2023) This study adds to the body of knowledge on stock market investing strategies by conducting an empirical comparison of value and contrarian investment methods. Because it clarifies the differences between value and contrarian investing techniques, this study is important for academics, analysts, and investors. It makes the goal of various investing strategies and the makeup of their portfolios clearer. This study has defied convention by highlighting the differences in stock composition of portfolios for value and contrarian investment strategies, as well as the strong correlation between their returns within the same market efficiency. By using a Venn diagram to make the value and contrarian investment strategies more complete, this study contributes to the body of literature on both strategies.

Comparison of linear and non-linear GARCH models for forecasting volatility of select emerging countries (Sharma, S., Aggarwal, V., & Yadav, M. P. 2021) The findings show that since leverage has less of an impact, the GARCH (1, 1) model forecasts volatility more accurately than non-linear GARCH models. China is the most volatile country, India is considered to be turbulent yet favorably biassed, and Indonesia is the least volatile. The results can help investors improve the global diversification of their portfolio and identify the best hedging opportunities.

Modelling and forecasting the volatility of NIFTY 50 using GARCH and RNN models (Mahajan, V., Thakan, S., & Malik, A. 2022). Investors purposely shorting the NIFTY 50 index futures contract is making it harder for ordinary investors to survive in the Indian stock markets because of the leverage impact. As new rules are developed, the Indian government should provide additional support to the Securities and Exchange Board of India (SEBI) and retail investors to prevent stock market manipulation in India. The Indian government should also spread knowledge about Indian stock markets so that regular investors can enter the market prepared and so that the stock markets can survive for longer periods. More studies on hybrid models could be conducted by combining econometric models with machine learning techniques. Another is to provide technical indicators with the supplied data.

Dabor et al., (2015). IMPACT OF CORPORATE GOVERNANCE ON FIRMS' PERFORMANCE. This study seeks to examine the effect corporate governance has on selected companies whose shares are listed on the Nigerian stock exchange. Via econometric analysis, it examines things like board size, independence, gender diversity, and company ownership structure. Analyzing results, there is a strong negative connection between the board size and firm performance, which shows the importance of legislation enforcing the minimum number of board members to improve the corporate governance regularity.

Pati and Rajib (2011). INTRADAY RETURN DYNAMICS AND VOLATILITY SPILLOVERS BETWEEN NSE S&P CNX NIFTY STOCK INDEX AND STOCK INDEX FUTURES. This study uses

5-minute intraday transaction prices to examine NSE SP CNX Nifty futures and spot index interdependency. The Johansen Juselius cointegration approach finds a single stochastic trend, suggesting long-term exchange rate equilibrium. In the VECM and Granger causality tests, spot market unidirectional causality is from futures. Volatility spillovers are most pronounced on the spot market due to futures market shocks. Trading methods, risk mitigation, and policymaking are supported by these studies.

Agrawal et al., (2010). A STUDY OF EXCHANGE RATES MOVEMENT AND STOCK MARKET VOLATILITY. This study focuses on the relationship between the returns on the Nifty Index with the Indian Rupee-USD exchange rate that is for the period October 2007 through March 2009 and closing indices by a daily basis. The tests like b-test shows that both distributions are non-Gaussian. This unit root test suggests that behavior at the level series is not stable. The correlation analysis illustrates the inverse relationship between Nifty returns and exchange. While Nifty returns have a significant bearing on exchange rates, it is the latter that is the cause of change.

Naseem (2020). IMPACT OF MACROECONOMIC VARIABLES ON STOCK MARKETS: AN EVIDENCE FROM EMERGING AND DEVELOPED MARKETS. This study investigates the relationship of stock markets in the leading economies to macroeconomic factors. Invoking secondary information supplied by stock markets and international financial institutions, the analysis is varied from 2003Q1 to 2018Q4. Multiple types of regression analysis identified tangible connections between the stock returns and exchange rates, interest rates, and inflation growth, while industrial growth did not show a significant association with stock returns.

Hasnat (2021). INFRASTRUCTURE EQUITY AND FIRM PERFORMANCE IN INDIA. This research focuses on finding the risk-return and volatility of NSE sectoral index of India's top 30 infrastructure firms that is Nifty Infra against Nifty 50 from year 2010 to 2018. By means of CAPM and M-GARCH models, the study sees an equity performance of infrastructure a little under that of any balanced index. Also, micro-level analysis shows different cash flow and equity position, and hence, the state should intervene in the firms' activities to enhance equity trading in infrastructure and reduce the rate of volatility.

Objectives

- ✓ Evaluate each index's suitability for different risk tolerance levels among investors by implying risk-return, risk-adjusted return techniques for 3 indices Nifty 50, Nifty Financial Services & Nifty Bank.
- ✓ Examine and compare the Nifty 50, Nifty Financial Services, and Nifty Bank indices' historical risk-return profiles over the previous five years by analyzing their average returns on a daily basis & standard deviation.
- ✓ Calculate the maximum possible loss that each index could incur by implementing the VaR tool using the Parametric and Historical Approach at two confidence levels 95% and 99%.

Research Design and Methodology

Data Collection

To preserve data relevance and capture market cycles, a 5-year window (2018–2023) was selected. We gathered the Nifty 50, Nifty Bank, and Nifty Financial Services daily closing values from Yahoo Finance and the NSE (26/11/18 – 28/11/23). This pick offers comparisonsbetween sector-specific indexes (banking and financial services) and a wide market index (Nifty 50), with an emphasis on recent market performance, including the influence of COVID-19.

Statistical Analysis

- Average return of the indices has been calculated along with the standard deviation to analyze their risk-return profiles.
- To understand the risk-adjusted return, Sharpe & Treynor ratio is used to calculate the returns considering the total risk & systematic risk.
- Parametric & Historical approach of VaR is implemented to find the maximumpotential loss that each index could face on a daily basis with 95% and 99% of confidence level.

Results and Findings

Parametric Approach of Value at Risk

Confidence Level	Particulars	Nifty 50	Nifty Financial Services	Nifty Bank
95%	Average Return	0.0578%	0.0585%	0.0547%
	Standard Deviation	1.20%	1.57%	1.64%
	Alpha Level	5%	5%	5%
	Value at Risk	-1.9188%	-2.5171%	-2.6473%
99%	Average Return	0.0578%	0.0585%	0.0547%
	Standard Deviation	1.20%	1.57%	1.64%
	Alpha Level	1%	1%	1%
	Value at Risk	-2.7377%	-3.5841%	-3.7668%

- Based on daily return data from 2018 to 2023, the study computes the Value at Risk (VaR)for Nifty 50, Nifty Financial Services, and Nifty Bank using the Parametric Approach at 95% and 99% confidence levels.
- The findings show that, with VaRs of -2.6473% and -3.7668% at 95% and 99% confidence levels, respectively, Nifty Bank has the greatest VaR among the three indices. At the same confidence levels, Nifty Financial Services has the second lowest VaR (-2.5171% and - 3.5841%), followed by Nifty 50 (-1.9188% and -2.7377%).
- According to these results, the riskiest index is probably Nifty Bank, which is followed by Nifty Financial Services and Nifty 50. Further evidence of a bigger possibility for extreme losses at higher confidence levels than Nifty 50 comes from the study, which shows a largerdifference in VaR between the 95% and 99% confidence levels for Nifty Bank and Nifty Financial Services.

Historical Approach of Value at Risk

Confidence Level	Particulars	Nifty 50	Nifty Financial Services	Nifty Bank
95%	Average Return	0.0578%	0.06%	0.0547%
	Standard Deviation	1.20%	1.57%	1.64%
	Alpha Level	5%	5%	5%
	Value at Risk	-1.6538%	-2.2905%	-2.3802%
99%	Average Return	0.0578%	0.0585%	0.0547%
	Standard Deviation	1.20%	1.57%	1.64%
	Alpha Level	1%	1%	1%
	Value at Risk	-3.3320%	-4.0181%	-4.7441%

Nifty 50			
Confidence Interval	95%	Confidence Interval	99%
Total Count	1241	Total Count	1241
Term Number	62.05	Term Number	12.41
62th Term	–0.0165	12th Term	–0.0353
63th Term	–0.0165	13th Term	–0.0343
VaR	–1.6538%	VaR	–3.3320%

Nifty Financial Services				
Confidence Interval	95%	Confidence Interval	99%
Total Count	1241	Total Count	1241
Term Number	62.05	Term Number	12.41
62th Term	–0.0229	12th Term	–0.0455
63th Term	–0.0229	13th Term	–0.0428
VaR	–2.2905%	VaR	–4.0181%

Nifty Bank				
Confidence Interval	95%	Confidence Interval	99%
Total Count	1241	Total Count	1241
Term Number	62.05	Term Number	12.41
62th Term	–0.0240	12th Term	–0.0489
63th Term	–0.0239	13th Term	–0.0482
VaR	–2.3802%	VaR	–4.7441%

- Interesting insights are revealed when VaR is calculated using the Historical Approach withdaily return data from 2018 to 2023 at 95% and 99% confidence levels.
- The value at risk (VaR) for Nifty 50 is -1.6538%, Nifty Financial Services is -2.2905%, andNifty Bank is -2.3802% at a 95% confidence level. This is a 5% probability that the Nifty 50's daily return will drop below -1.6538%, the Nifty Financial Services' daily return will drop below -2.2905%, and the Nifty Bank's daily return will drop below -2.3802%.
- The VaR values rise to a higher confidence level of 99%, suggesting larger possible losses.Values are as follows: -4.7441% for Nifty Bank, -4.0181% for Nifty Financial Services, and -3.332% for Nifty 50. This implies that the probability of the daily return falling below theselevels is 1%.
- Nifty Bank continues to be the riskiest index when compared to the outcomes of the Parametric Approach, followed by Nifty Financial Services and Nifty 50.

It is significant to observe that Nifty Bank consistently has the greatest VaR, signaling higherrisk than Nifty 50 and Nifty Financial Services, Since the parametric technique typically produces larger VaR values, a balanced approach that considers both the parametric and historical approaches is necessary for a thorough risk assessment. This study emphasizes howimportant it is to apply a variety of approaches to efficiently evaluate risk and make well-informed judgements in the financial markets.

Risk-Return Analysis Using Average Return, Standard Deviation & Risk adjusted Return Ratios:

Particulars	Nifty 50	Nifty Financial Services	Nifty Bank
Average Return	0.0578%	0.0585%	0.0547%
Standard Deviation	1.20%	1.57%	1.64%
Beta	*Benchmark*	1.20	1.23
Risk-Free Rate	7.05%	7.05%	7.05%
Sharpe Ratio	-5.82	-4.47	-4.26
Treynor Ratio	-	-0.058	-0.057

Risk & Return

- Off all the three indices, highest average return has been delivered by Nifty Financial Services of 0.0585% followed by Nifty 50 which is 0.0578% and then Nifty Bank 0.0547%.
- Standard Deviation tells how each value is deviated from the mean value. Along with the lowest return, Nifty Bank has the highest risk of 1.64% followed by Nifty FinancialServices 1.57% and then Nifty 50 1.20%.
- Although all the three indices offer average return in the range of 0.05% on daily basisbut if look at the risk perspective, Nifty Bank has the highest risk among all the three indices.

Beta & Risk-Free Rate

Risk-Free Rate of 7.05% has been considered as we have taken the 10 Year Government Bond's Yield as the Rf.

- Beta is a measure of Systematic Risk. It tells how much the individual stock; index willmove concerning the benchmark. Nifty 50 has been considered as the benchmark, the basis on which the beta for Nifty Financial Services and Nifty Bank has been calculated.
- Of the two Indices, Nifty Bank is more volatile with a positive Beta of 1.23 followedby Nifty Financial Services, with a beta of 1.20. A positive beta means that the index will move in the same direction as the benchmark moves.
- Nifty Bank is 23% more volatile as compared to the Nifty 50. If there is a change of 1% in returns of Nifty 50, Nifty Bank's return will also fluctuate by 1.23% either upwards or downwards.

Risk-adjusted Return Ratio

Sharpe Ratio: Sharpe Ratio is a widely used risk-adjusted return ratio that tells how much return a portfolio or index is generating over and above the risk-free rate considering the standard deviation. Standard deviation is used as it constitutes both systematic as well as unsystematic risk. Therefore, it can be used to tell for how much return is generated for a singleunit of Standard Deviation. A positive & higher Sharpe Ratio indicates better risk-adjusted performance. When the Sharpe Ratio is negative, it indicates that the return on the investmentis insufficient to cover the risk. This would essentially indicate that the investment is experiencing significant volatility and producing returns or losses below the risk-free rate.

Sharpe Ratio is calculated using the following formulae:
(Portfolio's/Index Return – Risk-Free Rate)/Standard Deviation of returns.

Nifty 50: The risk-adjusted return of the Nifty 50 index is notably negative -5.82, suggesting that the rewards produced by this index are insufficient to offset the degree of risk assumed.

Nifty Financial Services: Though marginally superior to Nifty 50, with -4.47 of Sharpe ratiothe Nifty Financial Services index likewise exhibits a negative risk-adjusted return. It still suggests, though, that the returns are insufficient considering the degree of risk.

Nifty Bank: Like Nifty Financial Services, the Nifty Bank index has a negative risk-adjusted return of -4.26. It implies that the risk assumed is not being offset by the returns from this index.

The Nifty 50, Nifty Financial Services, and Nifty Bank indexes all have negative Sharpe Ratios, which suggests that none of them are appealing investment opportunities. Nonetheless, Nifty Bank has the least negative Sharpe Ratio (-4.26) of the three indices, so if an investor is still unsure which to choose, they should give it some thought. This implies thatNifty Bank might provide marginally superior risk-adjusted returns than Nifty 50 and Nifty Financial Services.

Treynor Ratio: The Treynor reward to volatility model calculates the returns per unit of estimated market risk that are higher than what could have been made on an investment with no diversifiable risk. The Treynor ratio uses systematic risk rather than overall risk to relate excess return over the risk-free rate to the additional risk incurred. The analysis's portfolio performed better the greater the Treynor ratio.

Treynor Ratio is calculated using the formulae:
(Portfolio's/Index Return-Risk-Free rate)/Beta of Portfolio/Index

Nifty 50: Treynor ratio for Nifty 50 has not been calculated as it is a benchmark.

Nifty Financial Services: According to the negative Treynor Ratio of -0.058, investors may not have received enough returns from Nifty Financial Services to offset the systematic risk (beta) attached to this index.

Nifty Bank: Likewise, Nifty Bank's negative Treynor Ratio of -0.057 suggests that investors' returns from this index fall short of covering the systematic risk (beta).

Conclusion

The risk-return profiles of Nifty 50, Nifty Financial Services, and Nifty Bank were thoroughlyexamined in this study, with important distinctions for prospective investors highlighted. A range of risk-return characteristics can be seen by analyzing the Nifty Bank, Nifty Financial Services, and Nifty 50 Indian financial indexes. The Nifty Bank has the highest level of volatility but also the largest possible gains. While Nifty 50 offers a balanced alternative witha moderate return and risk, Nifty Financial Services offers a slightly lower return but more stability. The decision between these securities ultimately comes down to the risk tolerance and investing goals of each investor.

VaR Considerations

Value at Risk (VaR) research for the Nifty Bank, Nifty Financial Services, and Nifty 50 Indianfinancial indices shows subtle variations in risk and return profiles. Although the threeinstruments' average returns appear to be similar when analyzed using parametric and historicalmethodologies, Nifty Bank's increased volatility is evident when examining the standard deviation and VaR. While investors prepared to endure greater volatility in exchange for the possibility of larger profits may find Nifty Bank more alluring, those seeking stable returns with relatively little risk may find Nifty 50 more enticing. It looks like Nifty Financial Servicesprovides a compromise since its risk-return profile falls in between the other two indices.

The investigation also shows how confidence levels affect VaR computations. The VaR valuesfor all three instruments are quite low at a 95% confidence level, indicating a high degree of trust in their performance. On the other hand, the VaR values are substantially larger at 99% confidence level, indicating a higher potential for losses. This emphasizes how crucial it is to take confidence levels into account while analyzing VaR data and choosing investments.

Suggestion for Investments

Risk-Averse Investors: The Nifty 50 is a good option if reliable returns and capital protection are top priorities. It is a good choice for long-term investments because it has the lowest volatility and a comparatively high average return.

Investors at moderate risk: Nifty Financial Services can be a wise option if a person can toleratesome volatility in exchange for possibly better rewards. It provides a respectable return with moderate risk, offering a midway ground between the other two indices.

High-risk investors: Nifty Bank may be enticing if an investor has a high tolerance for risk andis prepared to put up with considerable fluctuations in exchange for the chance to maximize returns.

Scope for Further Research

- The study's focus was on daily data. Data analyzed on a weekly or monthly basis may show distinct risk-return dynamics.
- A more complete picture of risk-adjusted performance could be obtained by including risk indicators such the Sortino Ratio and Calmar Ratio in addition to the Treynor andSharpe ratios.
- Examining the variables that contribute to Nifty Bank's increased risk relative to Nifty50 and Nifty Financial Services may provide investors with insightful information.
- To reduce risk and maybe increase returns, it may be helpful to investigate alternate investment techniques, such as portfolio diversification with assets outside of these benchmarks.
- To give investors a more comprehensive understanding of their investing options, compare the risk and return characteristics of Nifty 50, Nifty Financial Services, and Nifty Bank with those of other significant indices or asset classes.
- To find possible investment possibilities, use cross-market research to compare the risk and return profiles of the Nifty 50, Nifty Financial Services, and Nifty Bank with comparable indices in other emerging or developed markets.
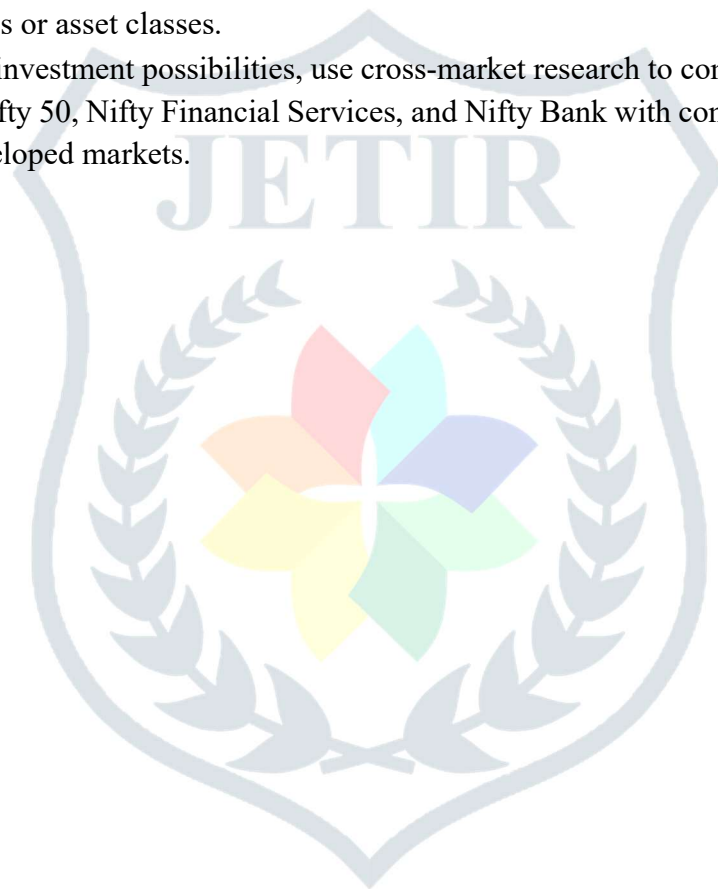
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