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A study on performance and growth of Nifty 50 in India

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Abstract

This study investigates the volatility and return characteristics of the Nifty 50 Index over the five-year period from April 01, 2019 to March 31, 2024. It also studies the market pre-COVID and post-COVID using the daily high and low prices of the two years from 2019-2021. The main objective is to study the performance and growth of Nifty 50 over the last five years in India. Utilizing daily closing prices sourced from NSE website we calculate the average daily return, standard deviation of daily returns and their annualized equivalents to provide a comprehensive analysis of the index's performance and risk profile. The findings reveal an average daily return of 0.053% indicating a steady growth in the index while the standard deviation of daily returns at 1.21% reflects the short-term volatility experienced by investors. When annualized, the average return of 14.26% and median return of 11.82% underscores strong market performance suggesting healthy growth in the Indian stock market over the analysed period. The annualized standard deviation of 19.03% highlights the associated risk reflecting significant deviation from the annual returns. This study provides valuable insights for investors, portfolio managers, and policymakers seeking to understand the dynamics, risk and return of the Nifty 50 Index.

Keyword: Nifty 50, Volatility, NSE, performance and growth of stock market, Nifty 50 and COVID-19

Introduction

Nifty 50

The Nifty 50 is a diversified 50 stock index accounting for 15 sectors of the economy. The Nifty 50 index was launched on 22 April 1996 with a base date of 3 November 1995 and with 1000 as its base value and a base capital of Rs.2.06 trillion. It is used for a variety of purposes such as benchmarking fund portfolios, index-based derivatives and index funds. Nifty 50 is owned and managed by NSE Indices Limited (formerly known as India Index Services & Products Limited) (NSE Indices). NSE Indices is India's specialised company focused upon the index as a core product.

- The Nifty 50 Index represents about 54% of the free float market capitalization of the stocks listed on NSE as on September 30, 2024.
- The total traded value of Nifty 50 index constituents for the last six months ending September 2024 is approximately 27% of the traded value of all stocks on the NSE.
- Nifty 50 is ideal for derivatives trading.

Performance Indicator

The Nifty 50 is a benchmark that helps investors and market participants evaluate the performance of the Indian stock market and track the performance of the top 50 companies in the country. These enterprises are picked based on their liquidity and market capitalization. They span sectors like finances, energy, consumer goods, health care, etc.

Review of Literature

Various studies have been done in the past to predict the relationship between stock market movement and macroeconomic variables. But in the changing scenario, whether there is a relationship between stock market and macroeconomic variables exist or not should be tested.

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- Chen *et al.* (1986) ^[11] found that equity returns in developed countries are significantly influenced by macroeconomic variables, including industrial production growth, risk premium changes, yield curve twists, and inflation-related factors.
- Ravi (2020) ^[12] analysed the Indian stock market before and during COVID-19, highlighting that in early January, the NSE and BSE were at record highs of 12,362 and 42,273, respectively. However, the outbreak caused a sharp decline, with BSE Sensex and NSE Nifty falling by 38%, leading to a 27.31% market loss. The hospitality, tourism, and entertainment sectors suffered over a 40% drop due to transport restrictions.
- Bhargavkumar R Paghadal (2018) ^[13] examined the performance of Nifty 50 and Nifty Next 50. His study concluded that Nifty 50 is less volatile and risky but has a negative alpha, while Nifty Next 50 is more volatile yet outperforms the benchmark.
- Investors willing to take calculated risks can achieve higher returns with Nifty Next 50. Over the long term, both indices can beat inflation and generate positive returns.
- Raval and Mehta (2020) ^[14], as referenced by Dr. Bhuvaneshwari D, found a strong positive correlation between Nifty 50 and the financial services and pharmaceutical sectors from 2008 to 2018. Similarly, Singh and Kumar (2020) ^[15] reported that the financial services sector outperformed other major indices in India.
- Hari Prasad Rao *et al.* (2024) ^[16] assessed the Nifty 50 and nine sectoral indices over ten years, revealing that the sectoral average return outperformed Nifty 50 in six of those years.
- Ram Prasath M (2024) ^[8] studied the volatility and return characteristics of Nifty 50 from May 2019 to

May 2024. Using Yahoo Finance data, he analyzed daily and annualized returns and standard deviations to provide insights into the index's performance and risk profile.

Research Methodology

A) Research Problem

This study will address the performance and growth of Nifty 50 in India in last 5 years from 2019-20 to 2023-24. It will also address the sectoral contribution in Nifty 50.

B) Objectives of the study

To study the performance and growth of Nifty 50 Index in India.

C) Data Collection

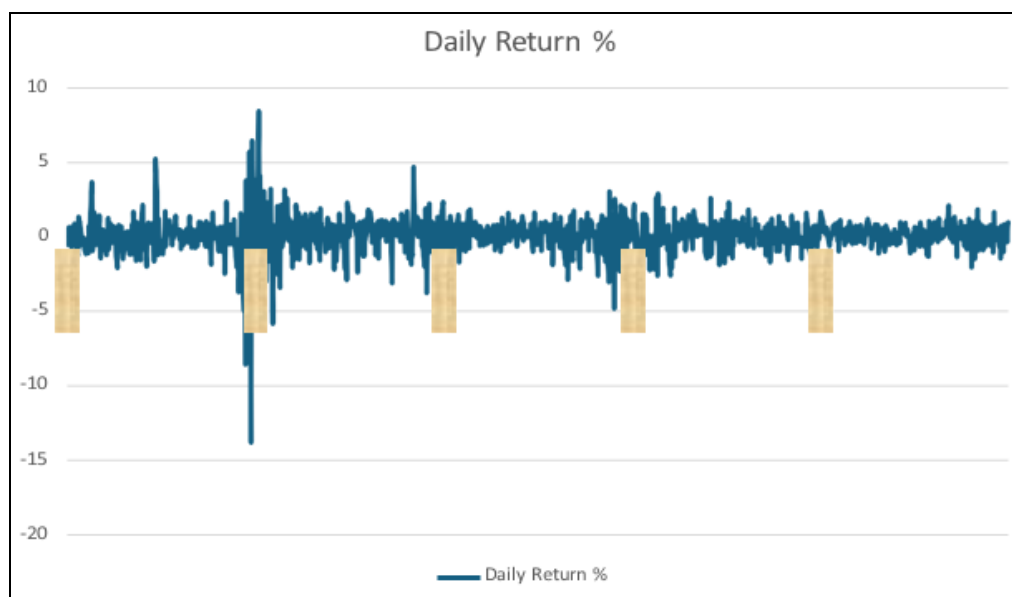
For the present study secondary data is used by the researcher from Nifty 50, NSE and other published reports from 2019-20 to 2023-24 such as historical data report, sectoral composition report, volatility assessment (Daily Returns and Standard Deviation) and others.

D) Limitations of the study

- Access to detailed data or internal reports might be restricted, limiting the scope of analysis.
- There is lack of research time resulting in erroneous report.
- There can be biasness due to the secondary data collection.
- There is no scope for interaction to the authorized person.

Analysis and Interpretation

1. Volatility and Risk Assessment



Graph 1: Showing Daily Return,%

Data Analysis

- Calculate daily returns.
- Find the average daily return and standard deviation of returns for the entire five-year period.
- Annualize the average daily return and standard deviation to provide a clearer perspective.
- Utilize Excel for data manipulation and calculations.

1. Average Daily Return

Formula: $\text{Return} = \text{LN}(\text{Ending Price}/\text{Beginning Price})$, also known as “Log Returns”. Then, $\text{Average Daily Return} = \text{Sum of Daily Log Returns}/1234$.

Where 1234 is number of trading days from 1st April 2019 to 31st March 2024.

Value: 0.00053792914 (or 0.053%)

On an average, the NSE index has grown by about 0.05% per trading day over the past five years (2019-20 to 2023-24). While this may seem like a small daily increase, it is quite normal for stock indices which grows steadily over a long period of time.

2. Standard Deviation of Daily Return (Volatility)

Formula: Formula of STDEV in Excel.

Value: 0.0121 (or 1.21%)

The standard deviation measures how much the NSE Nifty 50 index's daily returns fluctuate. A 1.21% standard deviation means that on most days, returns move within $\pm 1.21\%$ of the average. This gives an idea of the index's short-term volatility and risk.

3. Annualized Average Return

Formula: $(1 + \text{DR})^N - 1 * 100$, where DR: Daily Return

N: Time Period

Value: 0.1426 (or 14.26%)

The annualized average return of 14.26% indicates that if the daily returns are compounded over a year, the NSE index has gained approximately 14.26% per annum over the past five years. This is a relatively a good return suggesting strong growth in the index during this period.

4. Annualized Standard Deviation (Volatility)

Formula: $\text{Standard Deviation of Daily Return} * \text{SQRT}(N)$ where N: Time Period

Value: 0.19031708 (or 19.03%)

The annualized standard deviation of 19.03% reflects the annualized volatility of Nifty

50. This means that the annual returns typically fluctuate by $\pm 19.03\%$ from the average annual return. Higher volatility implies higher risk but it also indicates the potential for higher returns.

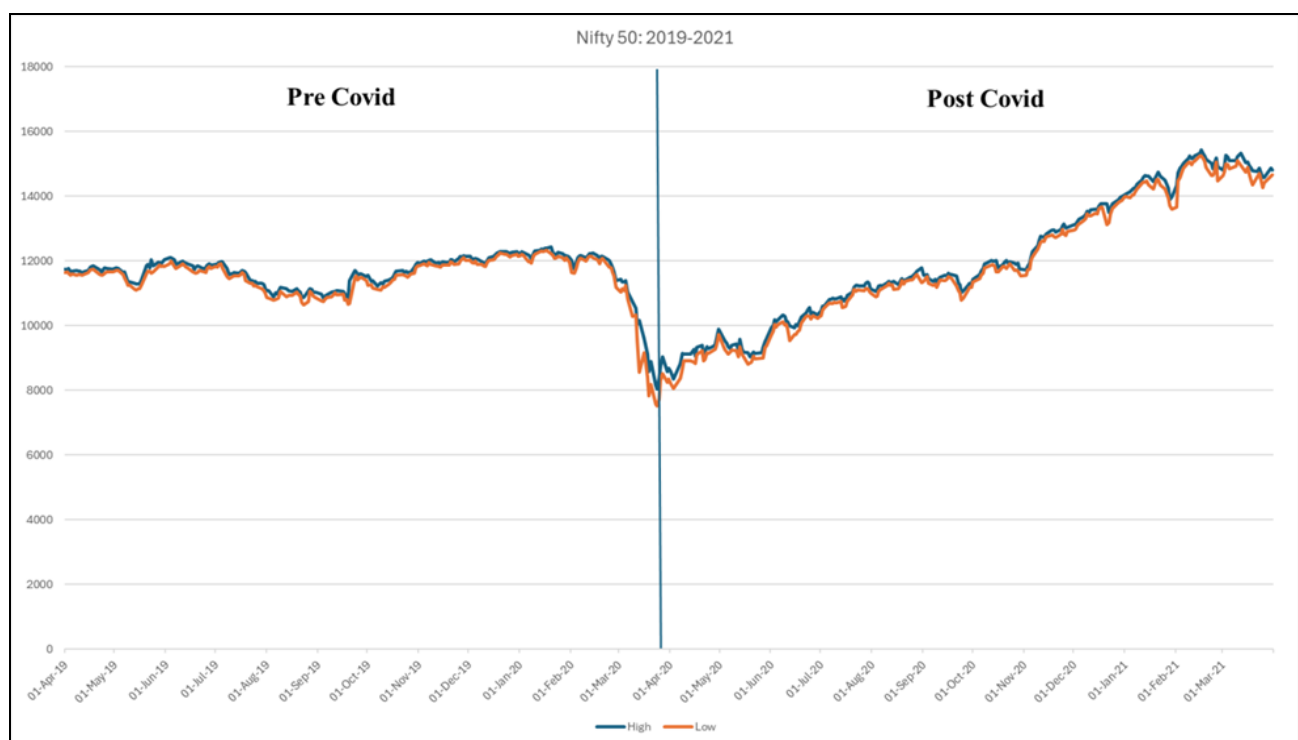
5. Annualized Median Return

Formula: Formula of MEDIAN in Excel.

Value: 0.118244627 (or 11.82%)

This annualized median return of 11.82% reflects that an average investor would have earned the return of 11.82% annually over the period from 2019-20 to 2023-24

2. Nifty-50 Pre COVID and Post COVID



Graph 2: Showing Nifty 50 Pre-COVID and Post-COVID

PRE COVID

The COVID-19 pandemic had a catastrophic effect on the global stock market, and India was no exception. Pre COVID-19, market capitalization on each major exchange in India was about \$2.16 trillion. In the start of 2020, there was overall recovery which led to both NSE and BSE traded

at their highest levels ever, hitting peaks of 12389.05 and 42,273 respectively. At the beginning of the year, there were close to 30 companies that were expected to file IPO's. The market conditions were generally favourable as they witnessed record highs in mid-January.

Post COVID

The Impact of novel corona virus (COVID-19) on the stock market is one such event which has all characteristics of a black swan (refers to an unexpected event). The stock market across the world came crashing down with the rise of Covid-19. It has brought the entire world to a halt including the world of business. The markets around the world have come crashing down to a level last seen during the financial crisis of 2008. Although the world has seen a market crash before, the impact due to COVID-19 is unusually different as the pandemic is widely spreading due to which there is a lot of uncertainty in the market. The country went into a complete lockdown for almost a period of 3 months which has taken a toll on various economic activities.

Nifty 50 plunged down 35% from index price of 12389.1 high (16-Jan-2020) to 7511.1 low (24-Mar-2020). On March 23, 2020, the Sensex and Nifty experienced one of their most significant falls dropping by over 13% and wiping out INR 13.95 lakh crore from investors' pockets from 8745.45 closing price (20-Mar-2020) to 7583.6 low (23-March-2020) due to the announcement of lockdown. The fallout was so severe that during the early trades itself, the trading halted 45 minutes after the Sensex hit the 10% lower circuit. This happened twice in ten days.

As the country started easing the lockdown and restarted the economic operations in the due end of May stock indexes started picking its speed up on the way to recovery as it can be seen in the June 2020 and the following year data. The graph went all the way up to a new peak ever at 15431.75 on 16th February 2021 for the financial year 2020-21. This implies that every dip during the rally in the Nifty 50 had been bought by investors which led to a run-up of 105.45% from 7511.1 low (24th March 2020) to 15431.75 high (16th February 2021).

Findings and Conclusion

From this study on "Performance and Growth of Nifty 50 in India", we can conclude that Nifty-50 has significantly grown both in its performance and value over the last five years from 2019-20 to 2023-24 despite the unexpected events like COVID-19 and Russia-Ukraine war. It has given an annualized average return of 14.26% which implies that on an average all the investors have earned the return of 14.26% on their investments and annualized median return of 11.82% implies that most of the investors have gained a return of 11.82% on their investments.

We can also conclude that despite of the COVID-19 crash which wiped out INR 13.95 lakh crore from investors' pockets with the drop of over 13% on March 23, 2020, NSE is standing tall at 5th position among the global stock markets with market capitalization of ₹438.9 lakh crore (US\$ 5.1 trillion), (December 2024).

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