How does inclusion in the NIFTY 50 index influence company stock returns, and what does this reveal about market efficiency in India (2010-2024)?

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Abstract

My paper examines how being added to the NIFTY 50 index affects stock returns. I used existing data to study how stock returns change after inclusion. The findings show short-term gains that fade over time, revealing how investors and markets react to such changes.

Introduction

The NIFTY 50 index, introduced in 1996 by the National Stock Exchange of India (NSE), serves as a benchmark reflecting the performance of 50 of the largest and most liquid Indian companies across various sectors. As one of the most tracked equity indices in the country, it provides a reliable measure of market sentiment, investment trends, and the overall health of the Indian capital markets. Due to its free-float market capitalization-based composition, inclusion in the NIFTY 50 is often regarded as a mark of corporate and financial robustness, which can notably influence investor perception and stock price movements in both the short- and long-term.

Globally, extensive literature examines the implications of index inclusion and exclusion for stock returns, market efficiency, and investor behavior, particularly across developed economies such as the United States, the United Kingdom, and Japan (3). These studies have examined whether index reconstitutions generate abnormal returns that contradict the semi-strong form of market efficiency (5). However, in the Indian context, research of this nature remains limited (1). Despite the NIFTY 50's central role in India's financial ecosystem and regular rebalancing, very few studies have analysed the extensive implications of index inclusions or exclusions on long-term corporate performance and market efficiency (1)(2). The scarcity of such work particularly stands out when compared to the extensive research conducted in developed capital markets (3)(4).

This paper aims to close that gap by analysing the extent to which inclusion in the NIFTY 50 influences subsequent compound annual growth rate (CAGR) returns of companies using historical data, examining both short- and long-term performance patterns. I also aim to identify investor behavioral tendencies triggered by index composition changes (2)(3). The present analysis also contributes to the broader academic debate on the semi-strong form of the Efficient Market Hypothesis (EMH) by examining market participants' efficiency in responding to public information, such as index changes, in India (5). Through assessing these dynamics, the research aims to provide insight into how NIFTY 50 membership affects firm performance and whether Indian investors' responses are similar to those in more advanced markets (4)(6). These findings are expected to shed light on the evolving maturity of India's financial system and its convergence with, or divergence from, globally accepted standards of market efficiency (6).

Literature Review

In my analysis of how inclusion in the NIFTY 50 index affects subsequent returns, I reviewed three academic articles that directly address the relationship between index reconstitution, abnormal returns, and investor behaviour in the Indian stock market. The first paper I examined was "Price and Volume Effects of NIFTY 50 Index Reorganisation" from the Journal of Commerce & Accounting Research (2020). This study looked at stock price and trading volume reactions around NIFTY 50 inclusions and exclusions between 2000 and 2016 (7). I found that the authors used an event-study methodology and reported positive abnormal returns and volume spikes immediately after index inclusions, as well as adverse reactions to exclusions. However, these effects were short-lived. Stocks added to the index exhibited abnormal gains that faded within about 60 days, and the adverse impact of deletions dissipated within 10 days. The study attributed these outcomes to increased liquidity and investor awareness following index changes.

The second study I analyzed was "Impact on Stock Price by the Inclusion in and Exclusion from CNX Nifty Index" from the Smart Journal of Business Management Studies (2012) (8). The study reported significant abnormal price volatility both for inclusions and exclusions throughout the announcement window. However, the effects did not persist over the long run. This finding was consistent with the hypothesis that such excess returns in large part reflect short-term investor overreaction and speculation. Over time, prices adjusted as the market absorbed public information, illustrating only a temporary deviation from the semi-strong form of market efficiency.

Finally, I reviewed "Does Nifty Index Inclusion (Still) Convey Information? A Comprehensive Empirical Examination in the Indian Stock Market" from the Asian Journal of Finance & Accounting (2019) (9). The research showed that inclusion events generated abnormal positive returns driven by liquidity improvements and optimistic investor sentiment, but that these returns typically diminished as markets adjusted back. Indeed, the authors note that such effects have decreased in recent years due to the rise of institutional ownership and algorithmic trading, suggesting that the equity market is becoming more efficient.

In summary, the review of the three related papers on the NIFTY 50 inclusions shows that while most of the inclusions result in short-run abnormal gains or behavioral overreactions, these are merely temporary. Ultimately, evidence suggests that the Indian market, although not perfectly efficient in the short run of index changes, tends towards semi-strong efficiency in the long run.

Methodology

For this research, I collected and analyzed data during my internship at Great Media Technologies using two primary sources: the National Stock Exchange of India (NSE) and Yahoo Finance. The focus of my dataset was recompositions of the NIFTY 50 index spanning the past 15 years, covering both companies that entered and exited the index. Each recomposition event was studied in terms of the corresponding Compound Annual Growth Rate (CAGR) and short-term absolute returns.

The dataset I built included three critical components:

1. CAGR analysis for companies that entered and exited NIFTY 50, measured across 1-year, 3-year, and 5-year intervals following the date of inclusion or deletion.
2. CAGR benchmarks for the NIFTY 50 index during the same periods, allowing comparison between company- and market-level performance.
3. Short-term absolute return data over 3-month and 6-month periods post-inclusion and post-exclusion to assess investor reaction immediacy.

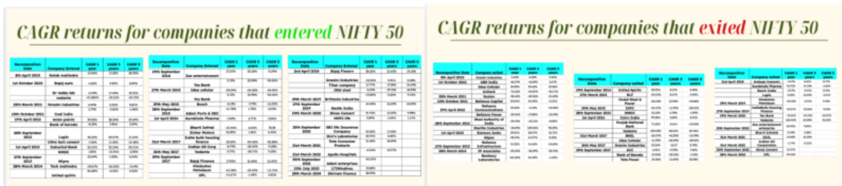
Each record includes the recomposition date, company name, entry or exit classification, and respective CAGR and short-term returns. In total, my dataset covered 44 firms that entered the index and 43 that exited it between April 2010 and March 2024. The inclusion and exclusion information was matched to historical price data downloaded directly from the NSE archives and cross-validated against Yahoo Finance's adjusted closing prices for accuracy.

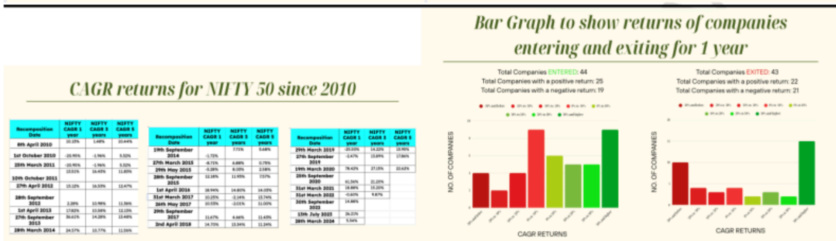
To calculate the Compound Annual Growth Rate (CAGR), I applied the standard formula:
“CAGR=(Vf-Vi)^(1/n) - 1”
Where Vf is the final stock price, Vi is the initial price on the inclusion/exclusion date, and n*n* represents the time horizon in years. This formula helped me assess how stocks evolved relative to the NIFTY 50 index over different time periods.

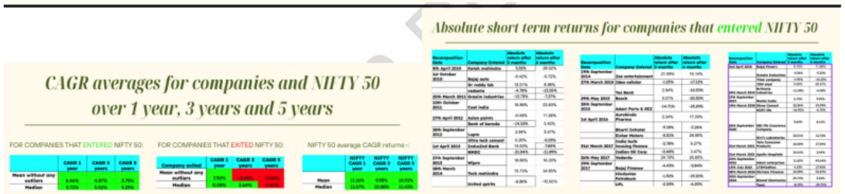
In addition to long-term performance, I considered the short-term investor response by assessing absolute returns during 3 and 6 months after the event dates. The step helped identify immediate behavioral trends: overbuying or speculative enthusiasm triggered by inclusion, and sell-offs or recoveries caused by exclusion. The final step was to compare NIFTY 50 CAGR averages with those of individual companies to assess relative performance. This comparison aligned with the testing of efficient markets and was therefore essential to determine whether post-announcement price adjustments were consistent with the semi-strong form of EMH.

This structured dataset enabled me to quantify short-term volatility and the longer-term value creation or erosion following index recompositions. This approach allowed me to empirically assess whether inclusion in India's premier benchmark index systematically benefits firms, or whether the market's initial reaction is merely a behavioral overreaction that normalizes over time.

Results







Overview of Analytical Findings - After collecting and analyzing NIFTY 50 composition and company price data from 2010 to 2024, I categorized my findings into two primary aspects: long-term performance, measured by the Compound Annual Growth Rate (CAGR), and short-term behavioral trends, measured by absolute returns over 3- and 6-month intervals. This two-tiered analysis framework provided a more nuanced understanding of both the fundamental performance trajectories of companies part of the index and the behavioral tendencies of stakeholders following index inclusion or exclusion events (10)(11).

Long-Term Performance Dynamics of Newly Included Companies - An examination of long-term returns indicated a persistent pattern of underperformance among newly included NIFTY 50 companies relative to the benchmark. In the sample of 44 additions between 2010 and 2024, only 25 recorded positive CAGR values, while 19 registered losses within one year of inclusion (10)(12). A few exceptions, such as Lupin with 43.22% and 50.57% 1- and 3-year CAGRs, respectively, and Asian Paints with a 33.56% 5-year CAGR, demonstrated exceptional growth. However, most companies experienced downturns post-entry — including Vedanta (-41.9%) and Tech Mahindra (-29.7%) — reflecting the transitory nature of the "index inclusion effect" (11)(13). When averaged collectively, the CAGR of included firms fell below NIFTY 50's own averages of 10.13% (1-year), 14.28% (3-year), and 11.83% (5-year).
These trends suggest that inclusion often inflates short-term expectations and liquidity, driven by index fund realignments and speculative momentum, which diminish as the market adjusts to fundamental valuations. The subsequent return normalization indicates a mean-reversion process, in alignment with the semi-strong form of market efficiency (12)(15).

Long-Term Outcomes of Excluded Companies - Companies removed from the NIFTY 50 displayed a more complex performance trajectory, characterized by greater variance yet

frequent recovery potential. Of the 43 listed companies, roughly half achieved positive CAGR over five years, although the overall averages actually showed underperformance (11).
A few outliers, however, showcased notable rebounds. For example, Reliance Infrastructure (51.3%) and Ranbaxy Laboratories (121.3%) showed substantial increases one year post-exit. Such companies benefited from market correction dynamics, where overreactive selling by institutional and retail investors temporarily depresses prices, only to be offset by renewed value recognition in subsequent quarters (13)(14).
This pattern indicates that while exclusions initially trigger declines due to fund withdrawals and reduced visibility, they may provide profitable opportunities for "contrarian investors" willing to exploit temporary inefficiencies.

Short-Term Market Reactions: Behavioral Indicators - The analysis of 3-month and 6-month absolute returns provided a micro-level lens into investor psychology and market sentiment.

- Among newly included companies, 25 of 46 showed positive returns at the 3-month mark, and 26 at the 6-month mark.
- Among the excluded companies, 27 of 45 recorded positive returns over 3 months, maintaining similar levels at the 6-month stage.

These findings illustrate that while inclusion announcements provoke temporary optimism and liquidity-driven surges, investor response to exclusions is often more rational and opportunistic (10)(11).
In many cases, such as Cairn India (30.54%) and Punjab National Bank (60.52%), price rebounds emerged rapidly after exclusion, as investors reassessed intrinsic value. In contrast, newly added companies such as Bosch and Adani Ports continued to lag even after half a year (12)(15).
Such patterns reveal elements of behavioral asymmetry—where inclusion is driven by herd-like euphoria, and exclusion triggers pragmatic value recognition—both of which reflect limited market efficiency (13)(15).

Performance Benchmarking Against the NIFTY 50 Index - When benchmarked against aggregate NIFTY 50 performance, both entrants and exits generally underperformed the index average. Across all timeframes, the NIFTY 50 outpaced its newly added firms, underscoring that index membership itself is not a performance guarantee (10)(12). The smaller spread in returns for excluded firms, meanwhile, reinforced the presence of post-event valuation consolidation as prices correct themselves over time (11)(13). This comparative exercise reinforces the empirical validity of the semi-strong efficiency model, in which the market reacts swiftly to public events such as index revisions, albeit often overshooting before rebalancing to realistic valuations (14)(15).

Interpretation of Results

It is pivotal to understand the financial reasons behind the results we observed. This helps explain why stocks behave the way they do when they are included or excluded from the NIFTY 50 index.

The short-term improvement in returns surrounding the inclusion of companies in the index is primarily due to 'anticipation effects' and 'liquidity changes'. In anticipation of index inclusion, investors may already begin buying stocks before the event, thereby absorbing most of the price impact. Additionally, rebalancing the portfolios of index funds and ETFs in response to demand can temporarily inflate prices through new additions. This occurs under the price-pressure hypothesis of liquidity, where abnormal returns and volume spikes result from increased trading due to inclusions (16)(17).

Over the long term, these price surges tend to reverse as the market corrects for over-optimism and relies more on fundamental factors. This aligns with the 'semi-strong efficiency hypothesis, which suggests that new information about index changes is quickly incorporated. At the same time, short-term deviations reflect 'investor overreaction' and behavioral biases such as 'herding and attention-driven trading' (18)19). Hence, despite the growing sophistication of the Indian market, psychological and structural frictions ensure transient inefficiencies.

For companies removed from the index, prices often drop first because funds sell the stock and receive less attention. But prices can bounce back in a few months as investors realize the stock is not necessarily worse, showing an overreaction correction pattern (17, 20).

Altogether, the evidence indicates that index inclusion/exclusion and firm performance are interrelated in complex ways, with liquidity dynamics and investor sentiment playing essential roles. Such findings hint that while the Indian equity market predominantly follows the semi-strong form of market efficiency through quick processing of public information on NIFTY 50 changes, behavioral anomalies and temporary market frictions result in price distortions around reconstitution events. These nuanced dynamics have significant implications for investors seeking to exploit short-term inefficiencies and for policymakers seeking to enhance market efficiency.

Conclusion

On the whole, the study found that the inclusion in the NIFTY 50 index is associated with short-run price and return increases, primarily induced by higher liquidity and investor interest. However, most of the long-term gains dissipate, and stocks tend to underperform the overall index. The pattern observed essentially reflects the fact that, while the Indian market typically demonstrates efficiency in processing public information, it is also prone to temporary investor overreactions and other behavioral biases. Knowledge of these effects can help investors make better decisions and indicate how market efficiency could be improved in India.

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