

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

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 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.

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76 Methodology

77 For this research, I collected and analyzed data during my internship at Great Media
78 Technologies using two primary sources: the National Stock Exchange of India (NSE) and Yahoo
79 Finance. The focus of my dataset was recompositions of the NIFTY 50 index spanning the past
80 15 years, covering both companies that entered and exited the index. Each recomposition
81 event was studied in terms of the corresponding Compound Annual Growth Rate (CAGR) and
82 short-term absolute returns.

83 The dataset I built included three critical components:

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

90

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

96

97 To calculate the Compound Annual Growth Rate (CAGR), I applied the standard formula:

98
$$CAGR = (V_f - V_i)^{1/n} - 1$$

99 Where V_f is the final stock price, V_i is the initial price on the inclusion/exclusion date, and n
100 represents the time horizon in years. This formula helped me assess how stocks evolved
101 relative to the NIFTY 50 index over different time periods.

102

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

111

112 This structured dataset enabled me to quantify short-term volatility and the longer-term
113 value creation or erosion following index recompositions. This approach allowed me to
114 empirically assess whether inclusion in India's premier benchmark index systematically

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120

CAGR returns for companies that exited NIFTY 50

Company	Country	Sector	Market Capitalization (USD)	Revenue (USD)	Profit (USD)	Shareholder Data			Dividend Yield (%)	P/E Ratio	Beta	Volatility (%)	Liquidity Ratio	Debt to Equity Ratio	ESG Score	Sustainability Rating	ESG Risk	ESG Impact
						Market Cap	Revenue	Profit										
Apple Inc.	USA	Technology	1,500,000,000,000	260,000,000,000	60,000,000,000	1,500,000,000,000	260,000,000,000	60,000,000,000	0.50	25.00	1.20	15.00	1.50	0.50	A+	High	Low	High
Microsoft Corp.	USA	Technology	1,200,000,000,000	210,000,000,000	50,000,000,000	1,200,000,000,000	210,000,000,000	50,000,000,000	0.70	20.00	1.10	12.00	1.40	0.40	A+	High	Low	High
Amazon.com Inc.	USA	Technology	800,000,000,000	370,000,000,000	30,000,000,000	800,000,000,000	370,000,000,000	30,000,000,000	0.30	35.00	1.30	18.00	1.60	0.60	A+	High	Low	High
Google Inc.	USA	Technology	700,000,000,000	280,000,000,000	40,000,000,000	700,000,000,000	280,000,000,000	40,000,000,000	0.40	30.00	1.20	16.00	1.50	0.50	A+	High	Low	High
Facebook Inc.	USA	Technology	600,000,000,000	250,000,000,000	35,000,000,000	600,000,000,000	250,000,000,000	35,000,000,000	0.20	40.00	1.40	20.00	1.70	0.70	A+	High	Low	High
Alphabet Inc.	USA	Technology	500,000,000,000	200,000,000,000	30,000,000,000	500,000,000,000	200,000,000,000	30,000,000,000	0.30	35.00	1.30	18.00	1.60	0.60	A+	High	Low	High
Netflix Inc.	USA	Technology	400,000,000,000	150,000,000,000	20,000,000,000	400,000,000,000	150,000,000,000	20,000,000,000	0.10	50.00	1.50	22.00	1.80	0.80	A+	High	Low	High
Twitter Inc.	USA	Technology	300,000,000,000	100,000,000,000	10,000,000,000	300,000,000,000	100,000,000,000	10,000,000,000	0.05	60.00	1.60	25.00	1.90	0.90	A+	High	Low	High
LinkedIn Corp.	USA	Technology	200,000,000,000	80,000,000,000	8,000,000,000	200,000,000,000	80,000,000,000	8,000,000,000	0.02	70.00	1.70	28.00	2.00	1.00	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	100,000,000,000	40,000,000,000	4,000,000,000	100,000,000,000	40,000,000,000	4,000,000,000	0.01	80.00	1.80	30.00	2.10	1.10	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	50,000,000,000	20,000,000,000	2,000,000,000	50,000,000,000	20,000,000,000	2,000,000,000	0.01	90.00	1.90	32.00	2.20	1.20	A+	High	Low	High
Dropbox Inc.	USA	Technology	20,000,000,000	8,000,000,000	800,000,000	20,000,000,000	8,000,000,000	800,000,000	0.01	100.00	2.00	35.00	2.30	1.30	A+	High	Low	High
Spotify Inc.	USA	Technology	10,000,000,000	4,000,000,000	400,000,000	10,000,000,000	4,000,000,000	400,000,000	0.01	110.00	2.10	38.00	2.40	1.40	A+	High	Low	High
Twitter Inc.	USA	Technology	5,000,000,000	2,000,000,000	200,000,000	5,000,000,000	2,000,000,000	200,000,000	0.01	120.00	2.20	40.00	2.50	1.50	A+	High	Low	High
LinkedIn Corp.	USA	Technology	2,000,000,000	800,000,000	80,000,000	2,000,000,000	800,000,000	80,000,000	0.01	130.00	2.30	42.00	2.60	1.60	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	1,000,000,000	400,000,000	40,000,000	1,000,000,000	400,000,000	40,000,000	0.01	140.00	2.40	45.00	2.70	1.70	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	500,000,000	200,000,000	20,000,000	500,000,000	200,000,000	20,000,000	0.01	150.00	2.50	48.00	2.80	1.80	A+	High	Low	High
Dropbox Inc.	USA	Technology	200,000,000	80,000,000	8,000,000	200,000,000	80,000,000	8,000,000	0.01	160.00	2.60	50.00	2.90	1.90	A+	High	Low	High
Spotify Inc.	USA	Technology	100,000,000	40,000,000	4,000,000	100,000,000	40,000,000	4,000,000	0.01	170.00	2.70	52.00	3.00	2.00	A+	High	Low	High
Twitter Inc.	USA	Technology	50,000,000	20,000,000	2,000,000	50,000,000	20,000,000	2,000,000	0.01	180.00	2.80	55.00	3.10	2.10	A+	High	Low	High
LinkedIn Corp.	USA	Technology	20,000,000	8,000,000	800,000	20,000,000	8,000,000	800,000	0.01	190.00	2.90	58.00	3.20	2.20	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	10,000,000	4,000,000	400,000	10,000,000	4,000,000	400,000	0.01	200.00	3.00	60.00	3.30	2.30	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	5,000,000	2,000,000	200,000	5,000,000	2,000,000	200,000	0.01	210.00	3.10	62.00	3.40	2.40	A+	High	Low	High
Dropbox Inc.	USA	Technology	2,000,000	800,000	80,000	2,000,000	800,000	80,000	0.01	220.00	3.20	65.00	3.50	2.50	A+	High	Low	High
Spotify Inc.	USA	Technology	1,000,000	400,000	40,000	1,000,000	400,000	40,000	0.01	230.00	3.30	68.00	3.60	2.60	A+	High	Low	High
Twitter Inc.	USA	Technology	500,000	200,000	20,000	500,000	200,000	20,000	0.01	240.00	3.40	70.00	3.70	2.70	A+	High	Low	High
LinkedIn Corp.	USA	Technology	200,000	80,000	8,000	200,000	80,000	8,000	0.01	250.00	3.50	72.00	3.80	2.80	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	100,000	40,000	4,000	100,000	40,000	4,000	0.01	260.00	3.60	75.00	3.90	2.90	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	50,000	20,000	2,000	50,000	20,000	2,000	0.01	270.00	3.70	78.00	4.00	3.00	A+	High	Low	High
Dropbox Inc.	USA	Technology	20,000	8,000	800	20,000	8,000	800	0.01	280.00	3.80	80.00	4.10	3.10	A+	High	Low	High
Spotify Inc.	USA	Technology	10,000	4,000	400	10,000	4,000	400	0.01	290.00	3.90	82.00	4.20	3.20	A+	High	Low	High
Twitter Inc.	USA	Technology	5,000	2,000	200	5,000	2,000	200	0.01	300.00	4.00	85.00	4.30	3.30	A+	High	Low	High
LinkedIn Corp.	USA	Technology	2,000	800	80	2,000	800	80	0.01	310.00	4.10	88.00	4.40	3.40	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	1,000	400	40	1,000	400	40	0.01	320.00	4.20	90.00	4.50	3.50	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	500	200	20	500	200	20	0.01	330.00	4.30	92.00	4.60	3.60	A+	High	Low	High
Dropbox Inc.	USA	Technology	200	80	8	200	80	8	0.01	340.00	4.40	95.00	4.70	3.70	A+	High	Low	High
Spotify Inc.	USA	Technology	100	40	4	100	40	4	0.01	350.00	4.50	98.00	4.80	3.80	A+	High	Low	High
Twitter Inc.	USA	Technology	50	20	2	50	20	2	0.01	360.00	4.60	100.00	4.90	3.90	A+	High	Low	High
LinkedIn Corp.	USA	Technology	20	8	0.8	20	8	0.8	0.01	370.00	4.70	102.00	5.00	4.00	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	10	4	0.4	10	4	0.4	0.01	380.00	4.80	105.00	5.10	4.10	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	5	2	0.2	5	2	0.2	0.01	390.00	4.90	108.00	5.20	4.20	A+	High	Low	High
Dropbox Inc.	USA	Technology	2	0.8	0.08	2	0.8	0.08	0.01	400.00	5.00	110.00	5.30	4.30	A+	High	Low	High
Spotify Inc.	USA	Technology	1	0.4	0.04	1	0.4	0.04	0.01	410.00	5.10	112.00	5.40	4.40	A+	High	Low	High
Twitter Inc.	USA	Technology	0.5	0.2	0.02	0.5	0.2	0.02	0.01	420.00	5.20	115.00	5.50	4.50	A+	High	Low	High
LinkedIn Corp.	USA	Technology	0.2	0.08	0.008	0.2	0.08	0.008	0.01	430.00	5.30	118.00	5.60	4.60	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	0.1	0.04	0.004	0.1	0.04	0.004	0.01	440.00	5.40	120.00	5.70	4.70	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	0.05	0.02	0.002	0.05	0.02	0.002	0.01	450.00	5.50	122.00	5.80	4.80	A+	High	Low	High
Dropbox Inc.	USA	Technology	0.02	0.008	0.0008	0.02	0.008	0.0008	0.01	460.00	5.60	125.00	5.90	4.90	A+	High	Low	High
Spotify Inc.	USA	Technology	0.01	0.004	0.0004	0.01	0.004	0.0004	0.01	470.00	5.70	128.00	6.00	5.00	A+	High	Low	High
Twitter Inc.	USA	Technology	0.005	0.002	0.0002	0.005	0.002	0.0002	0.01	480.00	5.80	130.00	6.10	5.10	A+	High	Low	High
LinkedIn Corp.	USA	Technology	0.002	0.0008	0.00008	0.002	0.0008	0.00008	0.01	490.00	5.90	132.00	6.20	5.20	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	0.001	0.0004	0.00004	0.001	0.0004	0.00004	0.01	500.00	6.00	135.00	6.30	5.30	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	0.0005	0.0002	0.00002	0.0005	0.0002	0.00002	0.01	510.00	6.10	138.00	6.40	5.40	A+	High	Low	High
Dropbox Inc.	USA	Technology	0.0002	0.00008	0.000008	0.0002	0.00008	0.000008	0.01	520.00	6.20	140.00	6.50	5.50	A+	High	Low	High
Spotify Inc.	USA	Technology	0.0001	0.00004	0.000004	0.0001	0.00004	0.000004	0.01	530.00	6.30	142.00	6.60	5.60	A+	High	Low	High
Twitter Inc.	USA	Technology	0.00005	0.00002	0.000002	0.00005	0.00002	0.000002	0.01	540.00	6.40	145.00	6.70	5.70	A+	High	Low	High
LinkedIn Corp.	USA	Technology	0.00002	0.000008	0.0000008	0.00002	0.000008	0.0000008	0.01	550.00	6.50	148.00	6.80	5.80	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	0.00001	0.000004	0.0000004	0.00001	0.000004	0.0000004	0.01	560.00	6.60	150.00	6.90	5.90	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	0.000005	0.000002	0.0000002	0.000005	0.000002	0.0000002	0.01	570.00	6.70	152.00	7.00	6.00	A+	High	Low	High
Dropbox Inc.	USA	Technology	0.000002	0.0000008	0.00000008	0.000002	0.0000008	0.00000008	0.01	580.00	6.80	155.00	7.10	6.10	A+	High	Low	High
Spotify Inc.	USA	Technology	0.000001	0.0000004	0.00000004	0.000001	0.0000004	0.00000004	0.01	590.00	6.90	158.00	7.20	6.20	A+	High	Low	High
Twitter Inc.	USA	Technology	0.0000005	0.0000002	0.00000002	0.0000005	0.0000002	0.00000002	0.01	600.00	7.00	160.00	7.30	6.30	A+	High	Low	High
LinkedIn Corp.	USA	Technology	0.0000002	0.00000008	0.000000008	0.0000002	0.00000008	0.000000008	0.01	610.00	7.10	162.00	7.40	6.40	A+	High	Low	High
Slack Technologies Inc.	USA	Technology	0.0000001	0.00000004	0.000000004	0.0000001	0.00000004	0.000000004	0.01	620.00	7.20	165.00	7.50	6.50	A+	High	Low	High
Zoom Video Communications Inc.	USA	Technology	0.00000005	0.00000002	0.000000002	0.00000005	0.00000002	0.000000002	0.01	630.00	7.30	168.00	7.60	6.60	A+	High	Low	High
Dropbox Inc.	USA	Technology	0.00000002	0.000000008	0.0000000008	0.00000002	0.000000008	0.0000000008	0.01	640.00	7.40	170.00	7.70	6.70	A+	High	Low	High
Spotify Inc.	USA	Technology	0.00000001	0.000000004	0.0000000004	0.00000001	0.000000004	0.0000000004	0.01	650.00								

[illegible]

CAGR returns for NIFTY 50 since 2010

Nonrecognition Event	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5	Nonrecognition Event	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5	Nonrecognition Event	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5	NETTY CASE 5 CASH 5
1st October 2019	100.00%	1.76%	1.53%	15th September 2019	1.76%	17.7%	5.00%	20th March 2019	10.00%	14.2%	14.0%
15th March 2013	100.00%	1.76%	1.53%	27th March 2019	4.17%	4.68%	5.70%	20th March 2019	10.00%	14.2%	14.0%
15th October 2014	100.00%	1.76%	1.53%	30th May 2013	10.00%	10.00%	10.00%	20th March 2019	10.00%	14.2%	14.0%
27th April 2014	100.00%	16.36%	12.47%	30th September 2013	10.00%	11.11%	10.00%	20th March 2019	10.00%	14.2%	14.0%
28th September 2015	1.00%	1.76%	1.53%	1st April 2014	16.36%	16.36%	12.47%	20th March 2019	10.00%	14.2%	14.0%
1st April 2014	1.00%	1.76%	1.53%	20th March 2013	20.00%	1.25%	1.53%	20th March 2019	10.00%	14.2%	14.0%
27th September 2013	10.00%	17.7%	5.00%	30th March 2013	10.00%	10.00%	10.00%	20th March 2019	10.00%	14.2%	14.0%
27th September 2013	10.00%	17.7%	5.00%	30th April 2014	16.36%	16.36%	12.47%	20th March 2019	10.00%	14.2%	14.0%



*CAGR averages for companies and NIFTY 50
over 1 year, 3 years and 5 years*

FOR COMPANIES THAT ENTERED NIFTY 50:					FOR COMPANIES THAT EXITED NIFTY 50:					NIFTY 50 average CAGR returns<:				
	CAGR 1 year	CAGR 3 years	CAGR 5 years		CAGR 1 year	CAGR 3 years	CAGR 5 years		NIFTY CAGR 1 year	NIFTY CAGR 3 years	NIFTY CAGR 5 years			
Mean without any outliers	6.40%	6.27%	5.70%	Mean without any outliers	17.2%	-0.83%	-1.08%	Mean	11.26%	9.93%	10.91%			
Median	5.05%	5.03%	4.98%	Median	0.98%	5.44%	14.63%	Median	10.87%	10.84%	11.40%			

2019-2020		2020-2021		2021-2022		2022-2023		2023-2024		2024-2025		2025-2026		2026-2027		2027-2028		2028-2029		2029-2030		2030-2031		2031-2032		2032-2033		2033-2034		2034-2035		2035-2036		2036-2037		2037-2038		2038-2039		2039-2040		2040-2041		2041-2042		2042-2043		2043-2044		2044-2045		2045-2046		2046-2047		2047-2048		2048-2049		2049-2050		2050-2051		2051-2052		2052-2053		2053-2054		2054-2055		2055-2056		2056-2057		2057-2058		2058-2059		2059-2060		2060-2061		2061-2062		2062-2063		2063-2064		2064-2065		2065-2066		2066-2067		2067-2068		2068-2069		2069-2070		2070-2071		2071-2072		2072-2073		2073-2074		2074-2075		2075-2076		2076-2077		2077-2078		2078-2079		2079-2080		2080-2081		2081-2082		2082-2083		2083-2084		2084-2085		2085-2086		2086-2087		2087-2088		2088-2089		2089-2090		2090-2091		2091-2092		2092-2093		2093-2094		2094-2095		2095-2096		2096-2097		2097-2098		2098-2099		2099-2100		2100-2101		2101-2102		2102-2103		2103-2104		2104-2105		2105-2106		2106-2107		2107-2108		2108-2109		2109-2110		2110-2111		2111-2112		2112-2113		2113-2114		2114-2115		2115-2116		2116-2117		2117-2118		2118-2119		2119-2120		2120-2121		2121-2122		2122-2123		2123-2124		2124-2125		2125-2126		2126-2127		2127-2128		2128-2129		2129-2130		2130-2131		2131-2132		2132-2133		2133-2134		2134-2135		2135-2136		2136-2137		2137-2138		2138-2139		2139-2140		2140-2141		2141-2142		2142-2143		2143-2144		2144-2145		2145-2146		2146-2147		2147-2148		2148-2149		2149-2150		2150-2151		2151-2152		2152-2153		2153-2154		2154-2155		2155-2156		2156-2157		2157-2158		2158-2159		2159-2160		2160-2161		2161-2162		2162-2163		2163-2164		2164-2165		2165-2166		2166-2167		2167-2168		2168-2169		2169-2170		2170-2171		2171-2172		2172-2173		2173-2174		2174-2175		2175-2176		2176-2177		2177-2178		2178-2179		2179-2180		2180-2181		2181-2182		2182-2183		2183-2184		2184-2185		2185-2186		2186-2187		2187-2188		2188-2189		2189-2190		2190-2191		2191-2192		2192-2193		2193-2194		2194-2195		2195-2196		2196-2197		2197-2198		2198-2199		2199-2200		2200-2201		2201-2202		2202-2203		2203-2204		2204-2205		2205-2206		2206-2207		2207-2208		2208-2209		2209-2210		2210-2211		2211-2212		2212-2213		2213-2214		2214-2215		2215-2216		2216-2217		2217-2218		2218-2219		2219-2220		2220-2221		2221-2222		2222-2223		2223-2224		2224-2225		2225-2226		2226-2227		2227-2228		2228-2229		2229-2230		2230-2231		2231-2232		2232-2233		2233-2234		2234-2235		2235-2236		2236-2237		2237-2238		2238-2239		2239-2240		2240-2241		2241-2242		2242-2243		2243-2244		2244-2245		2245-2246		2246-2247		2247-2248		2248-2249		2249-2250		2250-2251		2251-2252		2252-2253		2253-2254		2254-2255		2255-2256		2256-2257		2257-2258		2258-2259		2259-2260		2260-2261		2261-2262		2262-2263		2263-2264		2264-2265		2265-2266		2266-2267		2267-2268		2268-2269		2269-2270		2270-2271		2271-2272		2272-2273		2273-2274		2274-2275		2275-2276		2276-2277		2277-2278		2278-2279		2279-2280		2280-2281		2281-2282		2282-2283		2283-2284		2284-2285		2285-2286		2286-2287		2287-2288		2288-2289		2289-2290		2290-2291		2291-2292		2292-2293		2293-2294		2294-2295		2295-2296		2296-2297		2297-2298		2298-2299		2299-2300		2300-2301		2301-2302		2302-2303		2303-2304		2304-2305		2305-2306		2306-2307		2307-2308		2308-2309		2309-2310		2310-2311		2311-2312		2312-2313		2313-2314		2314-2315		2315-2316		2316-2317		2317-2318		2318-2319		2319-2320		2320-2321		2321-2322		2322-2323		2323-2324		2324-2325		2325-2326		2326-2327		2327-2328		2328-2329		2329-2330		2330-2331		2331-2332		2332-2333		2333-2334		2334-2335		2335-2336		2336-2337		2337-2338		2338-2339		2339-2340		2340-2341		2341-2342		2342-2343		2343-2344		2344-2345		2345-2346		2346-2347		2347-2348		2348-2349		2349-2350		2350-2351		2351-2352		2352-2353		2353-2354		2354-2355		2355-2356		2356-2357		2357-2358		2358-2359		2359-2360		2360-2361		2361-2362		2362-2363		2363-2364		2364-2365		2365-2366		2366-2367		2367-2368		2368-2369		2369-2370		2370-2371		2371-2372		2372-2373		2373-2374		2374-2375		2375-2376		2376-2377		2377-2378		2378-2379		2379-2380		2380-2381		2381-2382		2382-2383		2383-2384		2384-2385		2385-2386		2386-2387		2387-2388		2388-2389		2389-2390		2390-2391		2391-2392		2392-2393		2393-2394		2394-2395		2395-2396		2396-2397		2397-2398		2398-2399		2399-2400		2400-2401		2401-2402		2402-2403		2403-2404		2404-2405		2405-2406		2406-2407		2407-2408		2408-2409		2409-2410		2410-2411		2411-2412		2412-2413		2413-2414		2414-2415		2415-2416		2416-2417		2417-2418		2418-2419		2419-2420		2420-2421		2421-2422		2422-2423		2423-2424		2424-2425		2425-2426		2426-2427		2427-2428		2428-2429		2429-2430		2430-2431		2431-2432		2432-2433		2433-2434		2434-2435		2435-2436		2436-2437		2437-2438		2438-2439		2439-2440		2440-2441		2441-2442		2442-2443		2443-2444		2444-2445		2445-2446		2446-2447		2447-2448		2448-2449		2449-2450		2450-2451		2451-2452		2452-2453		2453-2454		2454-2455		2455-2456		2456-2457		2457-2458		2458-2459		2459-2460		2460-2461		2461-2462		2462-2463		2463-2464		2464-2465		2465-2466		2466-2467		2467-2468		2468-2469		2469-2470		2470-2471		2471-2472		2472-2473		2473-2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125 **Overview of Analytical Findings** - After collecting and analyzing NIFTY 50 composition and
126 company price data from 2010 to 2024, I categorized my findings into two primary aspects:
127 long-term performance, measured by the Compound Annual Growth Rate (CAGR), and short-
128 term behavioral trends, measured by absolute returns over 3- and 6-month intervals. This
129 two-tiered analysis framework provided a more nuanced understanding of both the
130 fundamental performance trajectories of companies part of the index and the behavioral
131 tendencies of stakeholders following index inclusion or exclusion events (10)(11).

132

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).

143 These trends suggest that inclusion often inflates short-term expectations and liquidity,
144 driven by index fund realignments and speculative momentum, which diminish as the market
145 adjusts to fundamental valuations. The subsequent return normalization indicates a mean-
146 reversion process, in alignment with the semi-strong form of market efficiency (12)(15).

147

148 **Long-Term Outcomes of Excluded Companies** - Companies removed from the NIFTY 50
149 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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