

STUDY OF BEHAVIOUR OF STOCK PRICES BEFORE AND POST ADDITION IN INDEX IN INDIA

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ABSTRACT

When a stock is added to a major market index like NIFTY, it instantly attracts attention and trading interest from Index Funds, Exchange Traded Funds (ETFs) and other institutional investors. They add that particular stock to realign their portfolio with index for benchmarking purpose. This study investigates the index inclusion effect on the stocks in the Indian stock market. Researcher has found out that 69% of total stocks added in index since 2001-2017 have given positive returns one month prior to actual addition into index and 70% of total stocks have give positive returns one month post actual addition into index. On an average, stocks have given 4% and 6% return 1 month prior and 1 month post actual addition into index respectively. The results are consistent with the trading behavior of Index Funds, ETF's and other institutional investors.

Keywords: Index Inclusion, Positive Return, Negative Return

Introduction

The NIFTY 50 is a flagship index on the National Stock Exchange of India Ltd (NSE). It is a diversified stock index includes 50 of the approximately 1600 companies listed on the NSE accounting for 12 sectors of the economy. It captures approximately 63% of the free float market capitalization of the stocks listed on NSE as on March 31, 2017. The total traded value of NIFTY 50 index

constituents for the last six months ending March 2017 is approximately 43.8% of the traded value of all stocks on the NSE

The Index tracks the behavior of the largest and most liquid Indian securities. It is most widely followed benchmark used for a variety of purposes such as benchmarking fund portfolios, index funds, ETFs and index based derivatives etc.

NSE regularly introduces changes to the NIFTY (addition / deletion) based on two main criteria's a) Free Float Market Capitalization (average free-float market capitalization should be at least 1.5 times that of average free-float market capitalization of the smallest constituent in the index) and b) Liquidity (the stock should needs to be traded at an average impact cost of 0.50 % or less during the last 6 months for 90% of the observations for a portfolio of Rs100mn)

The index is reviewed semi-annually by NSE and a four week notice is given to the market participants before making any changes to the index constituents.

During the stock addition in index, NSE compiles complete list of eligible securities. After that, the liquidity (impact cost) and float adjustment filters are applied to them, respectively. The top ranking companies from the replacement pool are then identified for inclusion in the index. The smallest existing constituents are dropped in favor of the new additions.

Significance of study

NSE has more than 50 equity related Indices. However Nifty remains to be one of the most widely tracked Index in India. While the number of stocks in index remains a constant, the stocks in the Index

changes over time due to free float market Capitalization and Liquidity criteria. Since 1996, its inception, Nifty has witnessed 86 stocks replacements.

Generally index is used for benchmarking fund portfolios, index based derivative, ETF's and index funds. Therefore, inclusion of stocks in index is tracked by a large number of investor's especially institutional investors.

When a stock is added to the index, index funds and exchange traded funds (ETFs) add that particular stock in their portfolio to rebalance and match their portfolio with index for benchmarking. Also other market participants like mutual funds, insurance companies and FII's assess the stock to realign their portfolio with index. Most of these index related adjustments are completed during the period, beginning from announcement of addition i.e. one month before actual addition to over 12 month post addition. This makes a compelling case to study stock price behavior during this period.

Literature Review

Following segment provides a brief summary of some of the studies that have dealt with the subject of stocks inclusion in an index and their returns.

**Maria Kasch and Asani Sarkar
(February 2011) : Is there an S&P 500
Index Effect?**

Through this study, researchers have concluded that the firms included in the S&P 500 index are characterized by large increases in earnings, appreciation in market value and positive price momentum in the period proceeding to their index inclusion. However contrary to the consensus in the literature, their results indicate that after accounting for the firms extraordinary pre-inclusion performance, the index inclusion has no permanent effect on their value.

**Sandra Bankoviča and Jānis Pranevičs
(March 2007) : How does inclusion in an
index affect stock prices? Cee evidences**

In this study researchers have revealed that a stock's inclusion in an index is associated with significant abnormal returns in Central and Eastern Europe region. The results show that significant abnormal returns are present on the announcement day and investments in these stocks would earn on average 5.1% over the subsequent month.

**Faiza Farhat (2016) : Effect of changes
in Index re-composition on stock prices
and volume: Study of Pakistani stock
markets**

The findings of this study shows that there is a positive and significant average abnormal return of 0.52% for KSE-100 index and 1.176% for LSE-25 index observed on announcement day of inclusion.

**Srikanth Parthasarathy (2010): Price
and volume effects associated with index
additions: Evidence from the Indian
stock market**

This study investigates the price and volume effect of index additions to the benchmark Nifty index for the period 1999-2010 in the Indian stock market. This study evidences significant and positive abnormal returns around the index announcement and inclusion. But the evidence for permanent abnormal volume is limited unlike the developed markets.

**S S S Kumar (2005) : Price and volume
effects of S & P CNX Nifty index
reorganizations**

This study has analyzed the effects of the changes (both inclusions and exclusions) in the composition of the Nifty and Junior Nifty index for the period 1996-2003. The study finds no significant price effects on the announcement day. However price effects were observed only for the Nifty index on the effective day. For the Junior Nifty, no price effects were observed either on announcement day or on the

effective day for both inclusions as well as exclusions. Also the study finds no significant changes in the liquidity of the stocks that were included or excluded to the Nifty.

R. Kaptein (2016) : The effect of index inclusion

This thesis investigates the index inclusion effect in the Dutch stock market. The researcher has found out that for the index inclusions stock, an upward price movement of 5.64% is observed during the 50 days before the inclusion. This is followed by a full price reversal: the return on the inclusion day was -0.99% and during the 50 days after the event a cumulative abnormal return of -7.13% was found. The results are consistent with the trading behaviour of index funds and the anticipation of investors but can also be linked to other several hypotheses.

Eric Lin and John Kensinger (December 2007) : Impact of inclusion in the S&P 500 Index on a stock's trading volume and return volatility

Researchers have presented the evidence of a significant increase in both trading volume and return volatility on the effective date of inclusion. Despite these impacts, they find no evidence of a statistically significant change in Beta, or

of abnormal returns associated with the announcement date or the effective date.

Objective of Study

The objectives of this study are as follows:

- 1) To study the market reaction to stock inclusion announcements in the NIFTY i.e. to study the stock returns during one month before the actual addition of the stock in Index.
- 2) To examine the stock returns post one month of actual addition in the NIFTY index.

Research design

In our study, we examine the effect of stocks inclusion in an index on returns in Indian market. The time period chosen is from January 1, 2000 to December 31, 2017. This study is based on secondary data collected from NSE. We have selected the NIFTY index and its reconstitutes for the study purpose as NIFTY is most widely used and tracked benchmark index in the country. As this study is based on a standard event i.e. addition of company stock in index and its impact on the behavior of the stock, we have examined and analyzed this event for three month prior addition and 12 month post addition period.

Data collection and Sampling

To carry out this study, we have gathered three data sets which includes a) Name of the stocks included in the NIFTY since 2001 b) index reconstitution dates i.e. date on which stock was included in the index and c) data set containing daily closing prices of companies whose shares have been included in the index for the period of 15 months (one month prior addition and one month- three month-one year post addition). Since 2002, the Nifty has witnessed 61 stocks additions. We have considered all these cases for the study without exception. Therefore the final sample comprises 61 stock additions, 244 stock return period data points spread over 15 years. This information is obtained from NSE website.

Data Analysis and Findings

We considered 61 stock additions in the NIFTY over 2002-20017. We calculated their returns across four horizons, namely a) One month prior to actual addition b) one month post addition c) three month post addition and d) 12 month post addition. We have identified how many stocks have given positive returns over each time frame and average return by stocks during same time frame.

Details	1 Month Prior Addition	1 Month Post Addition	3 Month Post Addition	12 Month Post Addition
Number of Stocks Given Positive Return	42 (69% of total)	43 (70% of total)	35 (57% of total)	36 (62% of total)
Number of Stocks Given Negative Return	19 (31% of total)	18 (30% of total)	26 (43% of total)	22 (38% of total)
Total Stocks	61	61	61	58

Details	1 Month Prior Addition	1 Month Post Addition	3 Month Post Addition	12 Month Post Addition
Average Return by the Stocks included in NIFTY During 2001-17	4%	6%	9%	23%

Following are the findings from the study.

- During 1 month prior to actual addition into index, 69% of total stocks have given positive returns
- During 1 month post actual addition into index, 70% of total stocks have given positive returns

- During 3 month post actual addition into index, 57% of total stocks have given positive returns
- During 12 month post actual addition into index, 62% of total stocks have given positive returns.
- On an average, stocks under considerations, have given 4% return during 1 month prior to actual addition into index, 6% return during 1 month post actual addition into index, 9% return during 3 month post actual addition into index and 12% return during 12 month post actual addition into index.

Conclusions

Researcher has found out that 69% and 70% of total stocks that were added in index during 2001-2017, have given positive returns during one month prior and one month post addition respectively. Also on an average basis, these stocks have given 4% and 6% returns during 1 month prior and 1 month post actual addition into index. These results are consistent with the trading behavior of index funds, ETF's and other institutional investors who add these particular stocks to their investment portfolio post

announcement and actual addition of the stock in the index. One apparent reason to add these stocks by the investor is to realign their portfolio with index for benchmarking purpose. Another reason could be stock's inclusion in the index indicating the investors about the quality of the particular company and expectations of increased liquidity of the stock leading to positive stock returns.

Research Gap - Limitations

- This study was conducted for a time period of 15 years. To gain better understanding, longer period may give a better picture.
- Stock return is calculated on absolute basis. However relative returns compared to index might provide the additional insights into the behaviour of stock price during index addition.
- Additional study of stocks those which have been removed from the index and their performance post exclusion can be a part of future study.
- Stock returns post and pre addition can also be analyzed based on sector basis and ownership basis (State owned companies vs Non state owned companies) etc.

References

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- Financial Management (M Y Khan, P K Jain)
- Fundamentals of Financial Management (Eugene Brigham, Joel Houston)
- The Analysis and Use of Financial Statement (Gerald White, Ashwinipaul Sondhi)
- The Dark side of Valuations(Aswath Damodaran)
- National stock Exchange (nseindia.com)

Appendix

No	Event Date	Scrip Name (Inclusion into Index)	1 Month Prior Addition	1 Month Post Addition	3M Month Post Addition	12M Month Post Addition
1	17-01-2002	Sun Pharmaceutical Industries Ltd.	18%	-9%	-3%	-12%
2	17-01-2002	Wipro Ltd.	5%	-3%	5%	-11%
3	25-01-2002	ICICI Bank Ltd.	10%	51%	20%	59%
4	31-05-2002	Videsh Sanchar Nigam Ltd.	-2%	-21%	-34%	-52%
5	10-10-2002	Shipping Corporation of India Ltd.	-5%	-22%	-16%	61%
6	28-10-2002	Bharat Petroleum Corporation Ltd.	1%	0%	3%	68%
7	28-10-2002	HCL Technologies Ltd.	-25%	14%	-4%	18%
8	02-05-2003	Gas Authority of India Limited	5%	32%	56%	175%
9	02-05-2003	National Aluminium Co. Ltd.	15%	18%	31%	104%
10	04-08-2003	Steel Authority of India Ltd.	23%	70%	97%	69%
11	01-03-2004	Bharti Tele-Ventures Ltd.	6%	14%	-3%	58%
12	01-03-2004	Maruti Udyog Limited	16%	3%	-20%	-7%
13	12-04-2004	Oil & Natural Gas Corporation Ltd.	7%	-6%	-23%	-1%
14	24-05-2004	Punjab National Bank	-28%	-5%	-11%	42%
15	10-12-2004	Larsen & Toubro Ltd.	6%	7%	21%	89%
16	25-02-2005	Tata Consultancy Services Ltd.	12%	1%	-8%	22%
17	26-09-2005	Jet Airways (India) Ltd.	-7%	-3%	6%	-39%
18	27-06-2006	Suzlon Energy Ltd.	-18%	28%	55%	87%
19	27-06-2006	Siemens Ltd.	-18%	6%	32%	72%
20	01-09-2006	Reliance Communications Ltd.	13%	16%	48%	82%
21	04-04-2007	Reliance Petroleum Ltd.	4%	18%	67%	144%
22	04-04-2007	Sterlite Industries (India) Ltd.	-5%	23%	38%	69%
23	24-09-2007	NTPC Ltd.	17%	19%	26%	-9%
24	05-10-2007	Unitech Ltd.	34%	14%	54%	-67%
25	12-12-2007	Idea Cellular Ltd.	11%	5%	-25%	-60%
26	12-12-2007	Caim India Ltd.	0%	13%	17%	-28%
27	14-03-2008	DLF Ltd.	-26%	-1%	-19%	-75%
28	14-03-2008	Power Grid Corporation of India Ltd.	-6%	10%	-4%	6%
29	10-09-2008	Reliance Power Ltd.	0%	-27%	-33%	-4%
30	12-01-2009	Reliance Capital Ltd.	-2%	-13%	-2%	85%
31	27-03-2009	Axis Bank Ltd.	22%	32%	94%	183%
32	17-06-2009	Jindal Steel & Power Ltd.	35%	0%	45%	52%

33	22-10-2009	Jaiprakash Associates Ltd.	2%	-9%	-14%	-26%
34	22-10-2009	Infrastructure Development Finance Company	6%	10%	-3%	28%
35	08-04-2010	Kotak Mahindra Bank Ltd.	-2%	-10%	-4%	12%
36	01-10-2010	Sesa Goa Limited	3%	0%	0%	-39%
37	01-10-2010	Dr. Reddy's Laboratories Ltd.	6%	16%	15%	3%
38	01-10-2010	Bajaj Auto Ltd.	5%	4%	0%	4%
39	25-03-2011	Grasim Industries Ltd.	9%	1%	-14%	11%
40	10-10-2011	Coal India Ltd.	-11%	-3%	-6%	5%
41	27-04-2012	Asian Paints Ltd.	14%	8%	1%	35%
42	27-04-2012	Bank of Baroda	-3%	-12%	-15%	-9%
43	28-09-2012	Lupin Ltd.	4%	-5%	3%	43%
44	28-09-2012	UltraTech Cement Ltd.	11%	5%	1%	-6%
45	01-04-2013	IndusInd Bank Ltd.	-2%	17%	17%	23%
46	01-04-2013	NMDC Ltd.	0%	-8%	-23%	0%
47	27-09-2013	Wipro Ltd.	7%	-6%	-7%	2%
48	28-03-2014	Tech Mahindra Ltd.	1%	0%	16%	41%
49	28-03-2014	United Spirits Ltd.	13%	5%	-7%	34%
50	19-09-2014	Zee Entertainment Enterprises Ltd.	9%	5%	24%	30%
51	27-03-2015	Idea Cellular Ltd.	17%	3%	-5%	-42%
52	27-03-2015	Yes Bank Ltd.	3%	1%	6%	5%
53	29-05-2015	Bosch Ltd.	6%	-6%	2%	-5%
54	28-09-2015	Adani Ports and Special Economic Zone	-15%	3%	-14%	-12%
55	01-04-2016	Aurobindo Pharma Ltd.	13%	3%	0%	-9%
56	01-04-2016	Bharti Infratel Ltd.	5%	0%	-8%	-10%
57	01-04-2016	Eicher Motors Ltd.	-1%	7%	3%	37%
58	01-04-2016	Tata Motors Ltd DVR	22%	5%	2%	-1%
59	31-03-2017	Indiabulls Housing Finance Ltd.	14%	3%	9%	NA
60	31-03-2017	Indian Oil Corporation Ltd.	-2%	17%	2%	NA
61	26-05-2017	Vedanta Ltd.	-1%	1%	28%	NA
		Average Return	4%	6%	9%	23%

Source: NSE Website