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Comparative Study of Stocks' characteristics that move in or out of the CNX NIFTY Index

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Abstract: *Lot of strategies are adopted by investors when trading in stocks listed on the exchange. Along with information available from brokerage houses and media alike, investors are known to refer to the data published by the exchanges and tend to follow them and carry out self-analysis. In such cases, it is essentially then becomes a game of pricing available versus the budgetary limitations of an investor. In such a scenario, it is highly likely for an investor to rely more on those factors, such as pricing and volume, for their decision making, which in reality, may or may not be relevant at the point in time.*

Attempt has been made, first, to narrow down the focus of the study for those investors who go by published information from the exchanges, and second, to then see from that published information, what significant information can be deciphered, especially when the index undergoes reconstitution and subsequently, can the investor, knowing well in advance that this activity will repeat, atleast try to predict inclusion or exclusion of some stocks in the next reconstitution.

The paper deals with information on the CNX NIFTY and its constituent stocks along with a comparative analysis of technically classified groups and some of their parameters such as volatility %, beta, impact cost, average monthly returns, etc.

The paper utilizes statistical methods to conduct a comparative evaluation of grouped stocks i.e. stocks being grouped as included stocks, excluded stocks, and the residual constituent stocks of the CNX NIFTY over a period of 46 months to try and see if there are significant differences on the basis of aforesaid parameters within the groups and if so, can the investor leverage this information for their own prediction regarding index reconstitution and use it to their own advantage.

JEL Code: *E44, E52*

Keywords: *CNX NIFTY, Index Reconstitution*

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I. Introduction

A stock exchange of a nation acts as an exchange platform providing trading services for stock brokers and traders alike Apart from trading, other services offered are facilitated issue of securities, dividend payments, pooled investment products such as mutual funds, hedging instruments such as derivatives, securities lending & borrowing, etc. The platform offered is, more often than not, electronic in nature. Stock exchanges have become a vital source of mobilization of funds in economies leading to a lot of crests and troughs and cyclical impacts on exchange indices and investment perception of the common man. They are also called as "barometers of an Economy". Companies, through acquisitions and buybacks on the exchanges, alter their capital structure as well as restructure their portfolios to drive growth.

Major stock exchanges existing in the world are NYSE, NASDAQ, Tokyo Stock Exchange, LSE, Euronext, etc as well as from other nations such as Korea, India, Brazil, China, Spain, South Africa, Russia, Singapore and Taiwan.

Some of the stock exchanges based in India are at operating in major cities such as Ahmedabad, Bangalore, Mumbai, Bhubaneswar, Kolkata, Delhi, Vadodara, Pune, etc.

The two main exchanges operating in India are the Bombay Stock Exchange, abbreviated as BSE, and the National Stock Exchange, abbreviated as NSE. These exchanges are typically related to trading of stocks from 20+ sectors such as Banking & Financial Services, Engineering, FMCG, Information Technology, Manufacturing, Media & Entertainment, Petrochemicals, Pharmaceuticals, Services, Telecommunications, Cements, Metals, etc. Entities investing in stocks through these exchanges typically comprise of High Net worth Individuals (HNIs), mid to small size retail clients, brokers and traders, Financial institutions, Foreign institutional Investors, Corporate houses, etc.

The broad market indices available on the NIFTY exchange are the CNX NIFTY, CNX NIFTY Junior, LIX 15, INDIA VIX, CNX 100, CNX 500, CNX MIDCAP, NIFTY MIDCAP 50, CNX SMALLCAP, and CNX 200.

The management of the index comprising of top 50 stocks, i.e. CNX Nifty, is currently done by IISL which is a joint venture of NSE and Crisil. Since its inception in the 90s', the index with a base value of 1000 and base capital of Rs. 2.06 trillion, the NSE index has since inclusion and exclusions of many company stocks such as SIEMENS, WIPRO, Lupin, Zee Entertainment, Bank of Baroda, etc.
The index has specific eligibility criteria to include or exclude a specific stock in its portfolio. The important parameters among them are:

1. Float-adjusted Market Capitalization: companies eligible to have at least 10% of its stock available to investors.
2. Liquidity (Impact cost): computed on the basis of the bid-ask spread. Basically, higher the spread, higher is the stock being less liquid and larger will be the impact cost associated with its transaction.
3. Investible Weight Factors: Unit of floating stock expressed in terms of a number available for trading and which is not held by the entities having strategic interest in a company.
4. Domicile i.e. the origin and current trading market of the stock.
5. Index review: Done semiannually with a six week notice to the market before changing index constituents. All index-related announcements are posted on the NSE Web site. Changes impacting the constituent list are also posted on the Web site.

II. Literature Review

Not much literature is available regarding characteristic studies of stocks when they get included or excluded from the NIFTY. However, some of the research happening has the following to offer.
A study conducted by Marisetty (2003) indicates that it took around 19 days for prices of stocks sampled in the study to adjust to their intrinsic values with the add on knowledge that market wide information had faster decimation vis-à-vis firm specific information.

Parthasarathy (2010) in his investigations on price and volume effects associated with index additions with evidences from the Indian stock market evidence that around index announcements and inclusions, significant as well as positive and permanent abnormal returns were observed. It primarily opines that announcement of a stock's addition to the index conveys a lot of information.

George (2009), in the study of Price Reactions to Index Reorganization announcements reveals that price differences do exist before and after an announcement, similar to the case of before and after execution dates. Important to note from the study is that stock prices of firms entering or exiting the index remain indifferent to announcement of inclusion and exclusion dates. Any corrections or changes were minor and treated as insignificant thereby propping up the semi-strong form hypothesis of the market i.e. it is not possible for an investor to beat the market.

Srinivasan (2011) in study on Nexus between Stock Market Return and selected Macroeconomic variables in India opines establishes that the index has significant direct as well as inverse relationships with factors such as money supply, interest rates, consumer supply index, US stock market rates, etc.

Sarangi and Patnaik (2007) in their research on Nifty Stocks and stocks futures state the absence of significant change in volatility in the spot market due to futures trading, however, quality of volatility does have an impact. Sathya Swaroop Debasish (2008) has also found that futures trading activity does not impact jump volatility on the NSE Nifty. Also, macroeconomic factors such as risk premium, inflation, etc bear no responsibility on stock price volatility of NSE Nifty.

Pati and Rajib (2011) in their study on intraday return dynamics and volatility spillovers between Nifty stock index and stock index futures conclude that spot prices are led by Nifty future prices and price discovery mechanism is largely aided by the futures market.

Balasubramanian & Radhakrishnan (2013) in their work opine that Investors are also known to give primary importance to self-analysis as compared to that of a broker Also, they consider market price as a better indicator. Factors such as Issue price, information availability, market price post listing as well as liquidity are key factors that improve a Common Investor's confidence in Indian Primary Market.

III. Problem Statement and Research Objective

In light of the arguments put forth in the Literature Review, the research paper aims to understand how parameters such as Impact Cost %, Volatility %, Beta, and Monthly Returns are embedded as characteristics of those stocks which typically are included or excluded from the CNX NIFTY in comparison to rest of the index constituents. Attempt is made to understand and suggest if there exists any deviations between the stocks that move in or out of the index versus those stocks existing in the index and how the same deviations can therefore help the investors in the long run.

The paper involves the following major studies:

A. To undertake a comparative study amongst the three groups of stocks i.e. Included, Excluded and the Rest of the stocks which constitute the index on the basis of parameters such as, as Impact Cost %, Volatility %, Beta, Monthly Returns etc.
B. To suggest to the investor depending upon the outcomes the relevant understanding developed which will help him or her when trading specifically on CNX NIFTY stocks keeping in mind information being broadcasted by the index.

IV. Hypothesis

4.1 Test 1: Paired T-test

Hypothesis 1:

$H0_1$:There is no significant difference in the means of the monthly impact cost % of stocks included and stocks excluded from the CNX NIFTY.

$H1_1$:There is a significant difference in the means of the monthly impact cost % of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 2:

$H0_1$:There is no significant difference in the means of the monthly impact cost % of stocks included in the CNX NIFTY and rest of the stocks of the index.

$H1_1$:There is a significant difference in the means of the monthly impact cost % of stocks included in the CNX NIFTY and rest of the stocks of the index.

Hypothesis 3:

$H0_1$:There is no significant difference in the means of the monthly impact cost % of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

$H1_1$:There is a significant difference in the means of the monthly impact cost % of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

Hypothesis 4:
$H0_1$:There is no significant difference in the means of the monthly Beta of stocks included and stocks excluded from the CNX NIFTY.
$H1_1$:There is a significant difference in the means of the monthly Beta of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 5:
$H0_1$:There is no significant difference in the means of the monthly Beta of stocks included in the CNX NIFTY and rest of the stocks of the index.
$H1_1$:There is a significant difference in the means of the monthly Beta of stocks included in the CNX NIFTY and rest of the stocks of the index.

Hypothesis 6:
$H0_1$:There is no significant difference in the means of the monthly Beta of stocks excluded from the CNX NIFTY and rest of the stocks of the index.
$H1_1$:There is a significant difference in the means of the monthly Beta of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

Hypothesis 7:
$H0_1$:There is no significant difference in the means of the monthly Volatility % of stocks included and stocks excluded from the CNX NIFTY.
$H1_1$:There is a significant difference in the means of the monthly Volatility % of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 8:
$H0_1$:There is no significant difference in the means of the monthly Volatility % of stocks included in the CNX NIFTY and rest of the stocks of the index.
$H1_1$:There is a significant difference in the means of the monthly Volatility % of stocks included in the CNX NIFTY and rest of the stocks of the index.

Hypothesis 9:
$H0_1$:There is no significant difference in the means of the monthly Volatility % of stocks excluded from the CNX NIFTY and rest of the stocks of the index.
$H1_1$:There is a significant difference in the means of the monthly Volatility % of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

Hypothesis 10:
$H0_1$:There is no significant difference in the means of the monthly Returns of stocks included and stocks excluded from the CNX NIFTY.
$H1_1$:There is a significant difference in the means of the monthly Returns of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 11:
$H0_1$:There is no significant difference in the means of the monthly Returns of stocks included in the CNX NIFTY and rest of the stocks of the index.
$H1_1$:There is a significant difference in the means of the monthly Returns of stocks included in the CNX NIFTY and rest of the stocks of the index.

Hypothesis 12:
$H0_1$:There is no significant difference in the means of the monthly Returns of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

$H1_1$:There is a significant difference in the means of the monthly Returns of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

V. Variables

Hypothesis No.	Variable 1	Variable 2
1	Incl. Stocks (IC): Average Impact cost % of stocks included in the CNX NIFTY.	Excl. Stocks (IC): Average Impact cost % of stocks excluded from the CNX NIFTY.
2	Incl. Stocks (IC): Average Impact cost % of stocks included in the CNX NIFTY.	Rest (IC): Average Impact cost % of remaining stocks constituting the CNX NIFTY.
3	Rest (IC): Average Impact cost % of remaining stocks constituting the CNX NIFTY.	Excl. Stocks (IC): Average Impact cost % of stocks excluded from the CNX NIFTY.
4	Incl. Stocks (B): Average Beta of stocks included in the CNX NIFTY.	Excl. Stocks (B): Average Beta of stocks excluded from the CNX NIFTY.
5	Incl. Stocks (B): Average Beta of stocks included in the CNX NIFTY.	Rest (B): Average Beta of remaining stocks constituting the CNX NIFTY.
6	Rest (B): Average Beta of remaining stocks constituting the CNX NIFTY.	Excl. Stocks (B): Average Beta of stocks excluded from the CNX NIFTY.
7	Incl. Stocks (V): Average Volatility % of stocks included in the CNX NIFTY.	Excl. Stocks (V): Average Volatility % of stocks excluded from the CNX NIFTY.
8	Incl. Stocks (V): Average Volatility % of stocks included in the CNX NIFTY.	Rest (V): Average Volatility % of remaining stocks constituting the CNX NIFTY.
9	Rest (V): Average Volatility % of remaining stocks constituting the CNX NIFTY.	Excl. Stocks (V): Average Volatility % of stocks excluded from the CNX NIFTY.
10	Incl. Stocks (MR): Average Monthly Return of stocks included in the CNX NIFTY.	Excl. Stocks (MR): Average Monthly Return of stocks excluded from the CNX NIFTY.
11	Incl. Stocks (MR): Average Monthly Return of stocks included in the CNX NIFTY.	Rest (MR): Average Monthly Return of remaining stocks constituting the CNX NIFTY.
12	Rest (MR): Average Monthly Return of remaining stocks constituting the CNX NIFTY.	Excl. Stocks (MR): Average Monthly Return of stocks excluded from the CNX NIFTY.

VI. Methodology:

The Research conducted is a Descriptive research with secondary data from the NSE exchange website. Monthly data involving Equity Capital, Free Float Market Cap, Beta factor, Volatility %, Average impact cost % from January 2012 to October 2015 have been utilized.

VII. Observations and Analysis:

Table 1 lists those stocks which are a part of the included group.

SR. NO.	STOCK ABBREVIATION	ORGANIZATION NAME
1	ASIANPAINT	Asian Paints
2	BANKBARODA	Bank of Baroda
3	INDUSINDBK	IndusInd Bank
4	LUPIN	Lupin Limited
5	NMDC	National Mineral Development Corporation
6	ULTRACEMCO	Ultratech Cement Limited
7	ZEEL	Zee Entertainment
8	MCDOWELL-N	United Spirits Limited
9	WIPRO	Wipro Limited
10	ADANIPORTS	Adani Ports & SEZ Limited
11	BOSCHLTD	Bosch Limited
12	IDEA	Idea Cellular Limited
13	TECHM	Tech Mahindra Limited
14	YESBANK	Yes Bank

These are those stocks which replace another stock in the CNX Nifty by virtue of their market capitalization as decided by the Index Management. This group of stocks is referred to as the included group and as such they

have entered the CNX Nifty at different points of time w.r.t. the horizon mentioned above i.e. from Jan'12 to Oct'15.

Table 2 lists those stocks which are a part of the excluded group.

SR. NO.	STOCK ABBREVIATION	ORGANIZATION NAME
1	RCOM	Reliance Communications
2	RPOWER	Reliance Power
3	SAIL	Steel Authority of India Limited
4	SIEMENS	Siemens Limited
5	WIPRO	Wipro Limited
6	DLF	DLF Limited
7	IDFC	Infrastructure Development Finance Company
8	JINDALSTEL	Jindal Steel
9	JPASSOCIAT	Jaiprakash Associates Limited
10	RANBAXY	Ranbaxy Laboratories

These are those stocks which move out of the CNX Nifty by virtue of their market capitalization as decided by the Index Management. This group of stocks is referred to as the excluded group and as such they have exited the CNX Nifty at different points of time w.r.t. the horizon mentioned above i.e. from Jan'12 to Oct'15.
For sake of computations, monthly data as mentioned above from the NSE website is collated from Jan'12 to Oct'15 (with the exception of Sep'14 data being unavailable) and accordingly, parameters such as Impact Cost %, Beta, Volatility %, Monthly Returns, etc are tracked.

VIII. Empirical analysis

Hypothesis 1: Paired T-test – Test results and outcomes

Incl. Stocks (IC)	Excl. Stocks (IC)	
0.0583	0.0787	mean
0.0098	0.0158	std. dev.
14	10	n

22	df
-0.02041	difference (Incl. Stocks (IC) - Excl. Stocks (IC))
0.00016	pooled variance
0.01260	pooled std. dev.
0.00522	standard error of difference
0	hypothesized difference
-3.911	t
.0007	p-value (two-tailed)
-0.03511	confidence interval 99.% lower
-0.00570	confidence interval 99.% upper
0.01471	margin of error

Alpha value: 0.005. p-value is 0.0007. As p is less than alpha, we reject H_0. There is a significant difference in the means of the monthly impact cost % of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 2: Paired T-test – Test results and outcomes

Incl. Stocks (IC)	Rest (IC)	
0.0583	0.0633	mean
0.0098	0.0088	std. dev.
14	41	n

53	df
-0.00495	difference (Incl. Stocks (IC) - Rest (IC))
0.00008	pooled variance
0.00905	pooled std. dev.
0.00280	standard error of difference
0	hypothesized difference
-1.765	t
.0833	p-value (two-tailed)
-0.01243	confidence interval 99.% lower
0.00254	confidence interval 99.% upper
0.00749	margin of error

Alpha value: 0.005. p-value is 0.083. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the monthly impact cost % of stocks included in the CNX NIFTY and rest of the stocks of the index.

Hypothesis 3: Paired T-test – Test results and outcomes

Excl. Stocks (IC)	Rest (IC)	
0.0787	0.0633	mean
0.0158	0.0088	std. dev.
10	41	n

49	df
0.01546	difference (Excl. Stocks (IC) - Rest (IC))
0.00011	pooled variance
0.01045	pooled std. dev.
0.00368	standard error of difference
0	hypothesized difference
4.196	t
.0001	p-value (two-tailed)
0.00559	confidence interval 99.% lower
0.02534	confidence interval 99.% upper
0.00988	margin of error

Alpha value: 0.005. p-value is 0.0001. As p is less than alpha, we reject H_0. There is a significant difference in the means of the monthly impact cost % of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

Hypothesis 4: Paired T-test – Test results and outcomes

Incl. Stocks (B)	Excl. Stocks (B)	
0.9137	1.3498	mean
0.3829	0.4879	std. dev.
14	10	n

22	df
-0.43602	difference (Incl. Stocks (B) - Excl. Stocks (B))
0.18403	pooled variance
0.42898	pooled std. dev.
0.17762	standard error of difference
0	hypothesized difference
-2.455	t
.0225	p-value (two-tailed)
-0.93668	confidence interval 99.% lower
0.06463	confidence interval 99.% upper
0.50065	margin of error

Alpha value : 0.005. p-value is 0.025. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the beta of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 5: Paired T-test – Test results and outcomes

Incl. Stocks (B)	Rest (B)	
0.9137	1.0093	mean
0.3829	0.3507	std. dev.
14	41	n

53	df
-0.09556	difference (Incl. Stocks (B) - Rest (B))
0.12881	pooled variance
0.35890	pooled std. dev.
0.11109	standard error of difference
0	hypothesized difference
-0.860	t
.3936	p-value (two-tailed)
-0.39238	confidence interval 99.% lower
0.20127	confidence interval 99.% upper
0.29683	margin of error

Alpha value: 0.005. p-value is 0.3936. As p value is greater than alpha, we accept H_0. There is no significant difference in the means of the beta of stocks included and rest of the stocks of the index.

Hypothesis 6: Paired T-test – Test results and outcomes

Excl. Stocks (B)	Rest (B)	
1.3498	1.0093	mean
0.4879	0.3507	std. dev.
10	41	n

49	df
0.34047	difference (Excl. Stocks (B) - Rest (B))
0.14415	pooled variance
0.37967	pooled std. dev.
0.13391	standard error of difference
0	hypothesized difference
2.543	t
.0142	p-value (two-tailed)
-0.01840	confidence interval 99.% lower
0.69933	confidence interval 99.% upper
0.35886	margin of error

Alpha value: 0.005. p-value is 0.0142. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the beta of stocks excluded from the CNX NIFTY and rest of the stocks of the index.

Hypothesis 7: Paired T-test – Test results and outcomes

Incl. Stocks (V)	Excl. Stocks (V)	
1.7950	2.3765	mean
0.2763	0.6328	std. dev.
14	10	n

22	df
-0.58152	difference (Incl. Stocks (V) - Excl. Stocks (V))
0.20895	pooled variance
0.45711	pooled std. dev.
0.18926	standard error of difference
0	hypothesized difference
-3.073	t
.0056	p-value (two-tailed)
-1.11501	confidence interval 99.% lower
-0.04803	confidence interval 99.% upper
0.53349	margin of error

Alpha value: 0.005. p-value is 0.0056.As p is slightly greater than alpha, we accept H_0. There is no significant difference in the means of the monthly Volatility % of stocks included and stocks excluded from the CNX NIFTY.

Hypothesis 8: Paired T-test – Test results and outcomes

Incl. Stocks (V)	Rest (V)	
1.7950	1.7461	mean
0.2763	0.4078	std. dev.
14	41	n

53	df
0.04883	difference (Incl. Stocks (V) - Rest (V))
0.14426	pooled variance
0.37981	pooled std. dev.
0.11757	standard error of difference
0	hypothesized difference
0.415	t
.6796	p-value (two-tailed)
-0.26530	confidence interval 99.% lower
0.36296	confidence interval 99.% upper
0.31413	margin of error

Alpha value: 0.005. p-value is 0.6796. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the monthly Volatility % of stocks included in the CNX NIFTY and the rest of the stocks of the index.

Hypothesis 9: Paired T-test – Test results and outcomes

Excl. Stocks (V)	Rest (V)	
2.3765	1.7461	mean
0.6328	0.4078	std. dev.
10	41	n

49	df
0.63035	difference (Excl. Stocks (V) - Rest (V))
0.20933	pooled variance
0.45753	pooled std. dev.
0.16137	standard error of difference
0	hypothesized difference
3.906	t
.0003	p-value (two-tailed)
0.19790	confidence interval 99.% lower
1.06280	confidence interval 99.% upper
0.43245	margin of error

Alpha value: 0.005. p-value is 0.0003. As p is less than alpha, we reject H_0. There is a significant difference in the means of the monthly Volatility % of stocks excluded from the CNX NIFTY and the rest of the stocks of the index.

Hypothesis 10: Paired T-test – Test results and outcomes

Incl. Stocks (MR)	Excl. Stocks (MR)	
0.1353	3.2963	mean
2.8675	6.3134	std. dev.
14	10	n

22	df
-3.16099	difference (Incl. Stocks (MR) - Excl. Stocks (MR))
21.16438	pooled variance
4.60048	pooled std. dev.
1.90478	standard error of difference
0	hypothesized difference
-1.660	t
.1112	p-value (two-tailed)
-8.53009	confidence interval 99.% lower
2.20812	confidence interval 99.% upper
5.36910	margin of error

Alpha value: 0.005. p-value is 0.1112. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the monthly returns of stocks included and excluded from the CNX NIFTY.

Hypothesis 11: Paired T-test – Test results and outcomes

Incl. Stocks (MR)	Rest (MR)	
0.1353	1.0510	mean
2.8675	2.1396	std. dev.
14	41	n

53	df
-0.91567	difference (Incl. Stocks (MR) - Rest (MR))
5.47190	pooled variance
2.33921	pooled std. dev.
0.72409	standard error of difference
0	hypothesized difference
-1.265	t
.2116	p-value (two-tailed)
-2.85032	confidence interval 99.% lower
1.01897	confidence interval 99.% upper
1.93465	margin of error

Alpha value: 0.005. p-value is 0.2116. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the monthly returns of stocks included in the CNX NIFTY and those which constitute rest of the index.

Hypothesis 12: Paired T-test – Test results and outcomes

Excl. Stocks (MR)	Rest (MR)	
3.2963	1.0510	mean
6.3134	2.1396	std. dev.
10	41	n

49	df
2.24531	difference (Excl. Stocks (MR) - Rest (MR))
11.05809	pooled variance
3.32537	pooled std. dev.
1.17283	standard error of difference
0	hypothesized difference
1.914	t
.0614	p-value (two-tailed)
-0.89780	confidence interval 99.% lower
5.38843	confidence interval 99.% upper
3.14312	margin of error

Alpha value: 0.005. p-value is 0.0614. As p is greater than alpha, we accept H_0. There is no significant difference in the means of the monthly returns of stocks excluded from the CNX NIFTY and those which constitute rest of the index.

IX. Inferences

From the above statistical analysis along with observed data, we infer that:

- For consideration of means of impact cost %, significant difference is exhibited by stocks moving in to the index as compared to the stocks moving out of the index as well as by stocks moving out of the index when compared to rest of the index constituents.
- For consideration of means of monthly Beta, there is no significant difference when any of the two groups are considered at a time. This implies that the stocks included or going out tend to take on beta characteristics of stocks constituting the rest of the index.
- For consideration of means of monthly volatility, significant difference is exhibited by stocks moving out of the index as compared to the rest of the index constituents.
- For consideration of means of monthly return, there is no significant difference when any of the two groups are considered at a time. This implies that the stocks included or going out tend to take on return characteristics of those stocks constituting the rest of the index.

X. Conclusion

Largely speaking, stocks moving in and out of the index show different behavior in terms of average impact cost % when compared amongst themselves whereas stocks moving out of the index tend to show slightly different behavior on impact cost % as well as volatility % as compared to rest of the group. Stocks that come in to the index largely tend to take on the aforesaid tested characteristics of the index. Thus, from an investors' perspective, impact cost % and volatility % can be differentiating factors in terms of taking a call in the long run as to whether a stock is most likely to be excluded from the CNX NIFTY index as they show different behavior from the rest of the constituents.

XI. Limitations of the study and future scope

Given the nature of the study, it is envisaged to take one index at a time, especially, when the stocks from the CNX NIFTY to the NIFTY Junior and vice versa. Literature review suggests that during announcements of stock re-organization, price movements are not very significant and hence not considered in the study here. However, the research can play a larger role if one wants develop a predictor model based on the data sets shared by the exchange.

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