

ANALYSIS OF EQUITY DERIVATIVE MARKET (NSE)

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Abstract

This study indicate the relationship between cash turnover, derivative turnover and total turnover of NSE all have a positive relationship with each other. The study also examines the index futures, index options, stock futures and stock options. Ten year data collected from the NSE and SEBI hand book for this analysis and correlation analysis done for finding the relationship between cash turnover and derivative turnover and total turnover.

Keywords: cash turnover, derivative turnover, index futures, stock futures, index options and stock options, Correlation.

Introduction

Derivative is a safety wherein fee is primarily based on 'one or extra' underlying belongings. Derivative is settlement between two or extra than events whose well worth is predict via version within the underlying asset. The overall 'underlying property' consists of bonds, stocks, commodities, interest charges, currencies, and so on. Derivatives are of types:

- Financial derivatives.
- Commodity derivatives.

In 'financial derivatives' ('underlying assets' are bond currencies and interest bearing securities and in commodities derivatives 'underling assets' are wheat, gold, silver and all agriculture commodities. The scope of the study is confined only to monetary by-product)(kaur karamjeet (2022)).

History of derivative market

By-product market in India has been in life in a single form or the opposite for a long time. In 1875, 'the Bombay cotton trade association' began prospect buying and selling manner opposite then. The authorities of India disqualified alternatives trading and cash agreement.

In 1995, the advent of financial derivative buying and selling in India became spread on options in securities legal guidelines law. It affords for withdrawal of prohibition on choice in securities.

Spinoff trading began in India in June, 2000 after SEBI established the final acclaim for this impact in may, 2001 at the notion of 'L.C.Gupta' committee. SEBI allowed the by-product segments in 2 inventory exchanges NSE and BSE and their clearing house/ company to start buying and selling and settlement in approval spinoff contracts.

Whereas the value of the NSE coins markets turned into only Rs. 5055913Cr. If one compares the buying and selling figures of NSE and BSE, overall performance of BSE isn't encouraging both in terms of volumes and numbers of bond traded in all styles of product category.

In conjunction with all the goods deal on NSE in 'F& O section', 'single inventory futures' also referred to as 'equity futures', are most sought after in phrases of variety and volumes of bond traded, observed through index futures with turnover stocks of fifty two percent and 31 percentage, respectively.

Derivatives market

Trading in derivatives of securities commenced in June 2000 with the enactment of enabling legislation in early 2000. Derivatives are formally defined to include:

- A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security
- Contract which derives its value from the prices, or index of prices, or underlying securities. Derivatives trading in India are legal and valid only if such contracts are traded on a recognised stock exchange, thus precluding OTC derivatives. Derivatives trading commenced in India in June 2000 after SEBI granted the approval to this effect in May 2000. SEBI permitted the derivative segment of two stock exchanges, i.e. NSE and BSE, and their clearing house/corporation to commence trading and settlement in approved derivative contracts.

2. Literature reviews

Dr. Kaur Karamjit at all (2022): the researcher examined that the analysis of equity derivative market in India (NSE). The researcher found that relationship between cash turnover, derivative turnover and total turnover of NSE all have a positive relationship with each other. In NSE, cash market turnover and derivative turnover have a positive relationship when the both, cash turnover and derivative turnover change with same direction.

Tom Adharsh (2021): The researcher obtained that analysed the important Indian stock market (NSE and BSE) with respect to their market capitalisation, year effect, risk and return from 2000 to 2020. The study also includes the much more data regarding the history and functioning of BSE and NSE.

Pandey Shivam (2021): The researcher studied on Indian stock market. The researcher found that the Stock prices are changed due to supply and demand. There are as many as factors that influencing prices, the most

important are earnings. There is no concurrence as to why stock prices move. For buy the stocks you must either use a brokerage or a dividend reinvestment plan (DRIP).

Dr. Durga S. (2020): the researcher analysed stock futures and stock Options with reference to NSE and BSE. He found that NSE & BSE different from each other in terms of volume traded. The present paper also revealed that there exists a weak relation between both which signifies they trade uniquely and differently.

Dinakar Prabhu (2020) the researcher originated that Assessing the Impact of Equity Derivatives Introduction in National Stock Exchange (NSE), India. The researcher found that result on price effect shows significant positive abnormal returns on few days around the event. While, the result on liquidity indicate a general improvement in the level of liquidity post introduction and this is persistent even after controlling for the expiration day effect.

Nayak Deepti Raavi (2020): the researcher examined that technical analysis of selected securities from NSE India. The researcher found that the investors are commonly employed in the fundamental and technical analyses when collecting stocks. However, financial literacy is critical for fundamental research, few people have it. Very few people financial literacy is not necessary for technological study. Investors should be able to interpret and interpret graphs.

3. Research methodology

In this chapter we discussed the objective of the study, database, data sources, the techniques that are used, and the scope of the study.

3.1. Objective of the study

- To find the cash turnover and derivative turnover.
- To analyze the relationship between derivative turnover and cash turnover.

3.2. Data base:

Data is based on NSE stock exchange from 2010-11 to 2020-2021

3.3. Data sources:

Secondary data is collect from website of NSE SEBI handbook.

3.4 Research technique:

The gather data has been examined with the aid of suitable tables, graphs and charts to draw the inference. “Correlation Coefficient” was used to discover the relationship between cash market turnover and derivative market.

$$r = \frac{\sum(X-\bar{X})(Y-\bar{Y})}{\sqrt{\sum(X-\bar{X})^2}\sqrt{\sum(Y-\bar{Y})^2}}$$

Where, \bar{X} = mean of X variable
 \bar{Y} = mean of Y variable

3.5 Scope:

This study is limited to only the financial derivatives.

- computation of % change in Cash & derivative Turnover is Current Year turnover –Previous year turnover/ Current year turnover *100.
- Calculation of total turnover is Derivative turnover + Cash turnover.
- Calculation of % Total market cash turnover and total market derivative turnover Total market cash turnover/total turnover *100 Total market derivative turnover/ total turnover *100

3.6 limitation of the study

- The study has a limited work.
- The study focuses only on NSE (National Stock Exchange) ignores BSE (Bombay Stock Exchange).
- The study concentrates only on equity derivatives.

Data analysis

In this chapter we discussed the cash turnover and derivative turnover as well as calculated total turnover. Moreover, find out the percentage change in cash turnover and derivative turnover and find out the percentage of cash market to total market, percentage of derivative market to total market. Correlation has also conducted in this chapter. Index future turnover, stock future turnover, index option turnover and stock options turnover also found. The percentage of turnover of index futures, stock futures, index options and stock options has also obtained in this chapter.

Table 1: Business growth in CM segment

Financial year	cash market turnover	derivative market turnover(Rs in Cr)	Total turnover(Rs in Cr)
2011-12	2810893	31349732	34160625
2012-13	2708279	31533004	34241283
2013-14	2808488	38211408	41019896
2014-15	4329655	55606453	59936108
2015-16	4236983	64825834	69062817
2016-17	5055913	94370302	99426215
2017-18	7234825	164984859	172219685
2018-19	7949004	237590924	245539978
2019-20	8998811	345391355	354390166
2020-21	15397908	643618108	559016016

Sources: SEBI handbook

The above table shows cash market turnover and derivative market turnover and total of cash market turnover and derivatives market turnover.

In the year 2011-12, the cash market turnover was 2810893 and derivative market turnover was 31349732. And the total of cash market turnover and derivative market turnover was 34160625.

After that in the year 2012-13, the cash market turnover was 2708279 and the derivative market turnover was 31533004. The total market turnover was 34241283. It was increased by 80658.

And in the year 2013-14, the cash market turnover was 2808488 and derivative market turnover was 38211408 and the total of these two turnovers was 41019896. And it was grown by 6778613 from the last year.

In the year 2014-15 the cash market turnover was 4329655 and derivative market turnover was 55606453. The total of these turnovers was 59936308. It was rise by 18916412 from the year 2013-14.

After that in the year 2015-16 the cash market turnover was 4236983 and the derivative market turnover was 64825834 the total market turnover was 69062817. And the total market turnover of the year 2015-16 was increased by 9126509 from the last year.

In the year 2016-17, the cash market turnover was 5055913 and the derivative market turnover was 94370302 and the total market turnover was 99426215. And the difference was 90299706 from the year 2015-16.

In the year 2017-18 the cash market turnover was 7234825 and the derivative market turnover was 164984859. The total market turnover was 172219685 and it was increased by 72793470 than the last year.

After that in the year 2018-19 the cash market turnover was 7949004 as well as the derivative market turnover was 237590924. The total market turnover was 245539978. And it was enhanced by 733220293 from the last year.

In the year 2019-2020 the cash market turnover was 8998811 and the derivative market turnover was 345391355. The total market turnover was 354390166. And it was raised by 108850188.

After that in the year 2020-21 the cash market turnover was 15397908 and derivative market turnover was 643618108. The total market turnover was 559016106. And it was grown by 204625940.

To be concluded that the cash market turnover, derivative market turnover, and total market turnover is increasing every year.

Table 2: Correlation

	cash market	derivative market	total market
cash market	0	0.986429825	0.98498213
derivative market	0.986429825	0	0.995278442
total market	0.98498213	0.995278442	0

Sources: author own work

The above table shows the correlation between cash market turnover, derivative market turnover and total market turnover. There is a strong relationship between the cash market turnover and derivative market turnover that is 0.986429825. And also it is a positive relationship between both of these markets.

The correlation between cash market turnover and total market turnover is 0.98498213. It is also a positive and strong relationship between the cash market turnover and derivative market turnover.

In the derivative market turnover and total market turnover there is positive correlation between the derivative market turnover and total market turnover. The correlation is 0.995278442 and it is a similarly a strong correlation.

Table 3: Percentage of CM segment

Financial year	% change in cash market(Rs in Cr)	% change in derivative market	% of cash market to total market	% of derivative market to total market
2011-12	-21.42	7.18	8.228458935	91.77
2012-13	-3.65	0.58	7.90939697	92.09
2013-14	3.69	21.17	6.84664827	93.15
2014-15	54.16	45.52	7.223784033	92.77
2015-16	43.71	16.57	6.134969849	93.86
2016-17	19	45.51	5.085090486	94.91

2017-18	43.1	74.83	4.200928018	95.79
2018-19	9.81	44.01	3.237356322	96.76
2019-20	13.21	45.37	2.539238349	97.46
2020-21	71.11	86.34	2.756972496	97.46

Sources: www.nseindia.com

The above table shows the percentage of CM segment. In the year 2011-12 the percentage change in cash market turnover was -21.42. And the percentage of derivative market turnover was 7.18. The percentage of cash market to total market was 8.228458935 and the percentage of derivative market to total market was 91.77.

In the year 2012-13 the percentage change in cash market turnover was -3.65 and the percentage change in derivative market was 0.58. The percentage of cash market to total market was 7.90939697 and the percentage of derivative market to total market was 92.09.

In the year 2013-14 the percentage change in cash market turnover was 3.69 and percentage change in derivative market to total market was 21.17. The percentage of cash market to total market was 6.84664827 and the percentage of derivative market to total market was 93.15.

In the year 2014-15 the percentage change in cash market turnover was 54.16 and the percentage change in derivative market turnover was 45.52. And the percentage of cash market to total market was 7.223784033 and the percentage of derivative market to total market was 92.77.

In the year 2015-16 the percentage change of cash market turnover was 43.71 and the percentage change of derivative market turnover was 16.57. The percentage of cash market to total market was 6.134969849 and the percentage of derivative market to total market was 93.86.

In the year 2016-17 the percentage change in cash market turnover was 19 and percentage change in derivative market turnover was 45.51. The percentage of cash market to total market was 5.085090486 and the percentage of derivative market to total market was 94.91.

In the year 2017-18 the percentage change in cash market turnover was 43.1 and the percentage change in derivative market turnover was 74.83. The percentage of cash market to total market was 4.200928018 and the percentage of derivative market to total market was 95.79.

In the year 2018-19 the percentage change of cash market turnover was 9.81 and the percentage change of derivative market was 44.01. The percentage of cash market to total market was 3.237356322 and the percentage of derivative market to total market was 96.76.

In the year 2019-20 the percentage change of cash market turnover was 13.21 and the percentage change of derivative market turnover was 45.37. The percentage of cash market to total market was 2.539238349 and the percentage of derivative market to total market was 97.46.

In the year 2020-21 the percentage change in cash market turnover was 71.11 and the percentage change in derivative market turnover was 86.34. The percentage of cash market to total market was 2.756972496 and the percentage of derivative market to total market was 97.46.

Table 4: Business growth with Future segment

Fig. Cr

Year	index futures		stock futures		total
	Turnover Cr.	%	Turnover cr.	%	turnover cr.
2010-11	4356754.53	14.89	5495756.7	18.79	29248221.09
2011-12	3577998.41	11.41	4074670.73	12.99	31349731.74
2012-13	2527301.76	8.01	4223872.02	13.39	31533003.96
2013-14	3083103.23	8.06	4949281.72	12.95	38211408.05
2014-15	4107215.20	7.38	8291766.27	14.91	55606453.39
2015-16	4557113.64	7.02	7828606.00	12.07	64825834.30
2016-17	4335940.78	4.59	11129587.14	11.79	37370301.61
2017-18	4810454.34	2.91	15597519.71	9.45	164984859.1
2018-19	5568914.49	2.341	16147010.86	6.79	237590973.7
2019-20	6701072.45	1.49	14919550.78	4.31	345391355.5
2020-21	9047647.65	1.42	18098365.39	2.84	643618108.3

The above table shows the business growth in future segments. It shows index futures turnover and stock futures turnover and also shows the percentage of these turnovers.

In the year 2010-11 the turnover of index futures was 4356754.53 and its percentage was 14.89. As well as the turnover of stock futures was 5495756.7 and its percentage was 18.79. The total turnover was 29248221.09.

After that in the year 2011-12 the index futures turnover was 3577998.41 and its percentage was 11.41. The stock futures turnover was 4074670.73 and its percentage was 12.99. The total turnover was 31349731.74

In the next year 2012-13 the index futures turnover was 2527103.76 and its percentage was 8.01 as well as the turnover of stock futures was 4223872.02 and percentage was 13.39. The total turnover was 31533003.96.

In the year 2013-14 the index future turnover was 3083103.23 and its percentage was 8.06 and the turnover of stock futures was 4949281.72 and the percentage of stock futures was 12.95. The total turnover was 38211408.05.

In the year 2014-15 the turnover of index futures was 4107215.20 and the percentage of index futures was 7.38. The turnover of stock futures was 8291766.27 and its percentage was 14.91. The total turnover was 55606453.39.

In the year 2015-16 the index futures turnover was 4557113.64 and its percentage was 7.02. The turnover of stock futures was 7828606.00 and its percentage was 12.07. The total turnover was 64825834.30.

In the year 2016-17 the turnover of index futures was 4335940.78 and its percentage was 4.59. And the turnover of stock futures was 11129587.14 and its percentage was 11.79. The total turnover was 37370301.61.

In the year 2017-18 the turnover of index futures was 4810454.34 and its percentage was 2.91. The turnover of stock futures was 15597519.71 and its percentage was 9.45. The total turnover was 164984859.1.

In the year 2018-19 the turnover of index futures was 5568914.49 and its percentage was 2.34. The turnover of stock futures was 16147010.86 and its percentage was 6.79. The total turnover was 237590973.7.

In the year 2019-20 the turnover of index futures was 6701072.45 and its percentage was 1.49. The turnover of stock futures was 14919550.78 and its percentage was 4.31. The total turnover was 345391335.5.

In the year 2020-21 the turnover of index futures was 9047647.65 and its percentage was 1.12. And the turnover of stock futures was 18098365.39 and its percentage was 2.84. The total turnover was 643618108.3.

Table 6: Business growth with option segment

year	Index options		stock options		Total
	turnover	%	turnover(Rs Cr)	%	turnover Cr.
2010-11	192637.87	0.65	20474.97	0.91	29248221.09
2011-12	253068.22	0.80	19612.93	0.06	31349731.74
2012-13	184383.24	0.58	34288.56	0.12	31533003.96
2013-14	244090.71	0.63	46428.41	0.12	38211408.05
2014-15	265315.63	0.47	61732.59	0.03	55606453.39
2015-16	351221.01	0.54	61118.39	0.09	64825834.30
2016-17	350021.53	77.14	95570.09	6.47	37370301.61
2017-18	460653.71	81.77	148217.5	5.85	164984859.1
2018-19	654099.95	85.56	200010.31	5.29	237590973.7
2019-20	1082514.05	90.17	229034.28	3.56	345391355.5
2020-21	2629426.05	91.65	579351.62	4.07	643618108.3

The above table shows the business growth with option segment. It shows the turnover and percentage of index options and stock options.

In the year 2010-11 the turnover of index options was 192637.87 and its percentage was 0.65. The turnover of stock options was 20474.97 and its percentage was 0.91. The total turnover was 29248221.09.

In the year 2011-12 the turnover of index options was 253068.22 and its percentage was 0.80. The turnover of stock options was 19612.93 and its percentage was 0.06. The total turnover was 31349731.74.

In the year 2012-13 the turnover of stock options was 184383.24 and its percentage was 0.58. The turnover of stock options was 34288.56 and its percentage was 0.12. The total turnover was 31533003.96.

In the year 2013-14 the turnover of index options was 244090.71 and its percentage was 0.63. The turnover of index options was 46428.41 and its percentage was 0.12. The total turnover was 38211408.05.

In the year 2014-15 the turnover of index options was 265315.63 and its percentage was 0.54. The turnover of stock options was 61732.59 and its percentage was 0.03. The total turnover was 55606453.39.

In the year 2015-16 the turnover of index options was 351221.01 and its percentage was 0.54. The turnover of stock options was 61118.39 and its percentage was 0.09. The total turnover was 64825834.30.

In the year 2016-17 the turnover of index option was 350021.53 and its percentage was 77.14. The turnover of stock options was 95570.09 and its percentage was 6.47. The total turnover was 37370301.61.

In the year 2017-18 the turnover of index options was 460653.71 and its percentage was 81.77. The turnover of stock options was 148217.5 and its percentage was 5.85. The total turnover was 164984859.1.

In the year 2018-19 the turnover of index options was 654099.95 and its percentage was 85.56. The turnover of stock options was 200010.31 and its percentage was 5.29. The total turnover was 237590973.7.

In the year 2019-20 the turnover of index options was 1083514.10 and its percentage was 90.17. The turnover of stock options was 229034.28 and its percentage was 3.56. The total turnover was 345391355.5.

In the year 2020-21 the turnover of index options was 2629426.05 and its percentage was 91.65. The turnover of stock options was 579351.62 and its percentage was 4.07. The total turnover was 643618108.3.

FINDINGS

The table -2 shows the correlation between the cash market turnover and derivatives market turnover and total turnover. It is presenting the positive relationship between the cash market turnover and derivative market turnover.

- In NSE cash turnover and derivative turnover have a positive relationship it is 1.98. The analysis indicates strong relationship when the cash turnover and derivative turnover is increased.
- Derivative turnover and total turnover have a positive relationship it is 0.99 it has also a strong relationship between both turnovers.
- Cash turnover and total turnover have also positive relationship it is a 0.98. It means all have positive relationship between them but there is more strong relationship between derivative turnover & cash turnover.

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