

“COMPARATIVE STUDY ON GROWTH OF CASH / SPOT MARKET SEGMENT AND DERIVATIVE (F&O) SEGMENT IN INDIAN STOCK MARKET”

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ABSTRACT

In the year 1994 NSE launched Cash/Spot market segment and Derivative segment has been launched in the year June 2000. Indian stock market is very sound in terms of participants from all sections, huge turnover and number of listed companies. Cash segment and Derivative segment both have grown with each other. NSE and BSE are the major exchanges. Over the years Indian stock market has modernized with the use of high modern information and communication technology. This Paper analyses the growth in terms of turnover in Cash and Derivative segments in Indian Stock Market. Past 10 years secondary data has been collected from 2009-2010 to 2018-2019 for analyzing comparative growth in turnover , related hypotheses are framed and tested with the help of statistical tools like correlation, ANOVA and T-Test and concluded by stating that Derivative segment is growing continuously compare to Cash market and in derivative segment option market segment is dominating.

INTRODUCTION

The Indian derivative market has become multi-trillion dollar markets over the years. Marked with the ability to partially and fully transfer the risk by locking in assets prices, derivatives are gaining popularity among the investors. The derivatives play vital functions like risk reduction through hedging, ensuring market efficiency, deal price discovery of the underlying asset, etc. whereas risk is more in Cash market because of immediate delivery. The sharp growth in the derivatives segment has, however, skewed trading in its favor, compared with the turnover in the cash segment. The daily average turnover in the derivatives segment in FY 2019 was around 10 lakh crore compared with the 35,000-crore turnover in the cash segment. The derivatives –to-cash turnover ratio of 28 times is among the highest globally. This unhealthy level of trading in derivatives is exposing retail investors to higher risk, according to a SEBI report.

DIVISION OF INDIAN STOCK MARKET

Stock market is divided in two parts cash market and derivative market. The **spot market** or cash market is a public financial market in which financial instruments or commodities are traded for immediate delivery. It contrasts with a futures market, in which delivery is due at a later date. **Derivative** is a product whose value is derived from the value of its underlying assets. This underlying entity can be an Equity, Commodities, Currency and Interest rate. It can be used for hedging, speculation and arbitrage opportunities.

Types of Derivatives

Futures: A futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price.

Options: An Option is a contract which gives the right, but not an obligation, to buy or sell the underlying at a stated date and at a stated price. While a buyer of an option pays the premium and buys the right to exercise his

option, the writer of an option is the one who receives the option premium and therefore obliged to sell/buy the asset if the buyer exercises it on him.

Index futures are futures contracts where a trader can buy or sell a financial index today to be settled at a future date. Index futures are used to speculate on the direction of price movement for an index such as the S&P 500. Investors and investment managers also use index futures to hedge their equity positions against losses.

An index option is a financial derivative that gives the holder the right, but not the obligation, to buy or sell the value of an underlying index, such as the Standard and Poor's (S&P) 500, at the stated exercise price on or before the expiration date of the option. No actual stocks are bought or sold; index options are always cash-settled, and are typically European-style options

A Stock Future: is a type of futures contract between two parties to exchange a specified number of stocks in a company for a price agreed today (the futures price or the strike price) with delivery occurring at a specified future date

A stock option gives an investor the right, but not the obligation, to buy or sell a stock at an agreed upon price and date. There are two types of options: puts which is a bet that a stock will fall, or calls, which is a bet that a stock will rise.

Factors affecting the stock market volatility

Economic growth Higher economic growth or better prospects for growth will help firms be more profitable because there will be more demand for goods and services.

Interest rates Lower interest rates can make shares more attractive and boost economic growth making firms more profitable.

Stability Stock markets dislike shocks that could threaten economic stability and future growth.

Confidence and expectations A key factor is the mood of investors.

Bandwagon effect At times the stock market seems to over-react to certain events.

Price to earnings ratio If share price rise significantly above historical averages, then this is a sign that shares are becoming overvalued and re due a correction at some point in the future.

Related markets Often investors have choices, rather than investing in stock market, they could buy government bonds or commodities.

Differences between cash market and derivatives market

- 1) **Ownership** When you buy shares in the cash market and take delivery, you are the owner of these shares or you are a shareholder, until you sell the shares. You can never be a shareholder when you trade in the derivatives segment of the capital market.
- 2) **Holding period** When you buy shares in cash segment, you can hold the shares for life. This is not true in the case of the futures market, where you have to settle the contract within three months at the very maximum.
- 3) **Dividends** When you buy shares in the cash segment, you normally take delivery and are a owner. Hence, you are entitled to dividends that companies pay. No such luck when you buy any derivative contract.
- 4) **Risk Both** Cash and futures markets pose risk, but the risk in the case of futures can be higher, because you have to settle the contract within a specified period and book losses. In case of shares bought in the cash market, you can hold onto them for a indefinite period and can hence sell when prices are higher.
- 5) **Investment Objective** Differs you buy a contract in the derivatives market to hedge risk or to speculate. Individuals buying shares in the cash market are investors.
- 6) **Lot vs. Shares.** In the derivative segment you buy a lot, while in the cash segment you buy shares.

LETRATURE REVIEW

Dr. Anand Sharma, Dr. Namita Rajput and Dr. Anurag Agnihotri (2011) in their research paper ‘A study on Relationship Between Cash and Derivative segment in Indian Stock Market.’ Analysed the introduction of the derivative segment trading in India and its impact on the cash segment and also studied the relationship of turnover in cash and Derivative segment.

Ms. Shalini and Dr. Raveendra P (2014) in their paper ‘A study of Derivatives market in India and its current position in Global Financial Derivatives’ studied that scope history trend growth, future prospects and challenges of derivatives in India, they concluded that there is huge significance and contribution in the field of financial system

Shiv Singh Sarangdevot & Yuvraj Singh Rathore (2014) in their paper ‘Growth and Future of Derivatives in India: A study’ They analyzed the performance of derivatives Trading in India Since 2001 with special reference to F&O and concluded that Derivative market is growing very fast in the Indian Economy.

Miss.Caroline Priyanka koorse (2015) in her research paper ‘An Analysis of Financial Derivatives and its Growth Rate in India. Studied derivative market over the year and also analyzed comparative study of the NSE & BSE and concluded that overall performance of both exchanges needs to be improved. It can be seen that most traders are reluctant to trade in derivatives because of risk factor.

S. Subbalakshmi (2016) ‘ in her research paper ‘An Empirical Study on Derivative Trading in India’ studied the derivative trading in India rules and regulations in relation to Indian stock market and concluded that SEBI have to take crucial steps for development in Derivative market.

Mohammad Rubani (2017) in her research paper ‘A study of Derivative market in India’ studied the capital market in India with reference to Derivatives and concluded that the study has established the importance of derivative in capital market of India.

Gangineni Dhanaiah(2017) in his research paper ‘Growth of India’s Equity Derivatives Market’.An analytical study (2000-2015) studied the present status and growth of equity derivative market and concluded that equity derivative market experienced shifts in the share of different derivative products.

OBJECTIVES

- 1) To have an overview of Spot/Cash and Derivative segments in Indian stock market.
- 2) To study the factors contributing towards growth of Spot and F&O segment turnover in Indian stock market from past 10 years from 2009-2019.
- 3) To analyze the comparative growth in turnover of Stock Futures and Stock Option segment.
- 4) To analyze the comparative growth in turnover of Cash, Futures and Options market segments in Indian Stock Market.
- 5) To analyze the significant relationship between the variances of turnover of Cash, Futures and Options segments.

RESEARCH METHODOLOGY

The study is based on the secondary data. Data has been collected from website of National Stock Exchange of India for the period of ten (10) years from 2009-2019, different books journals are also consulted in this regard. The Indian stock market is segmented into Cash /Spot market, Futures market and Options market.

Statistical tools: Correlation, ANOVA and T- test (Student's T- test) are used

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases. A correlation coefficient is a statistical measure of the degree to which changes to the value of one variable predict change to the value of another.

Analysis of Variance (ANOVA) is a parametric statistical technique used to compare datasets. This Technique was invented by R.A Fisher it is used to compare means and relative variance between them. It is best applied where more than 2 populations or samples are meant to be compared.

T Test (Student's T-Test) the t test tells you how significant the differences between groups are; In other words it lets you know if those differences (measured in means/averages) could have happen by chance. The t score is a ratio between the **difference between two groups and the difference within the groups**. The larger the t score, the more difference there is between groups. The smaller the t score, the more similarity there is between groups.

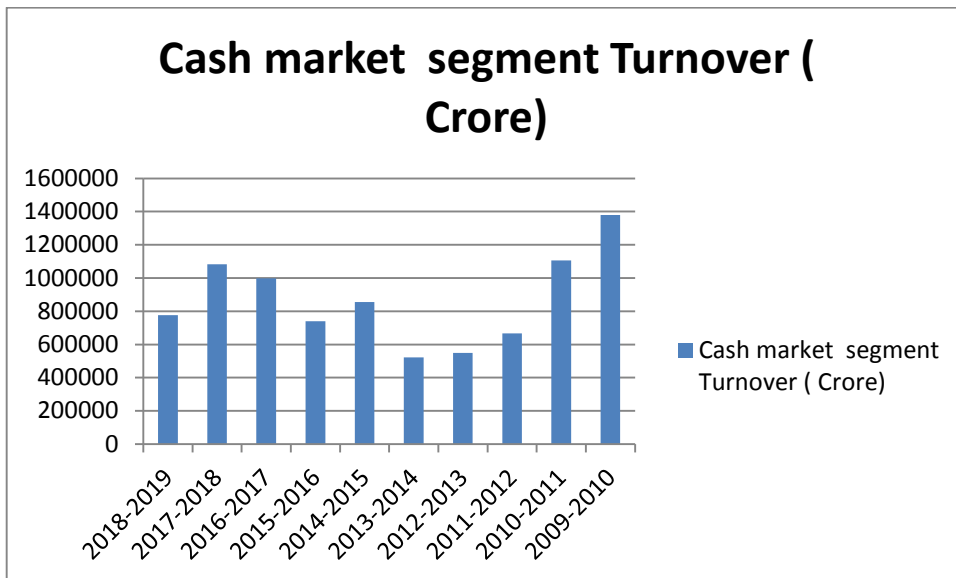
DATE ANALYSIS AND INTERPRETATION

Growth in Cash market in India

The following table shows the growth in turnover volumes in equity Cash segment at NSE

Table No.01

Financial Year (FY)	Turnover (Crore)
2018-2019	775590.08
2017-2018	1082968.21
2016-2017	998260.58
2015-2016	740088.59
2014-2015	854844.29
2013-2014	521664.2
2012-2013	548774.44
2011-2012	667497.58
2010-2011	1105026.89
2009-2010	1378809.32



It is observed from Table No.01 above that the Cash market turnover was high in the year 2009-2010 and moving down trend from 2010-2011 onwards and picked up in the year 2016-17 and 2017-18 after that again there is a surge in turnover in the year 2018-19.

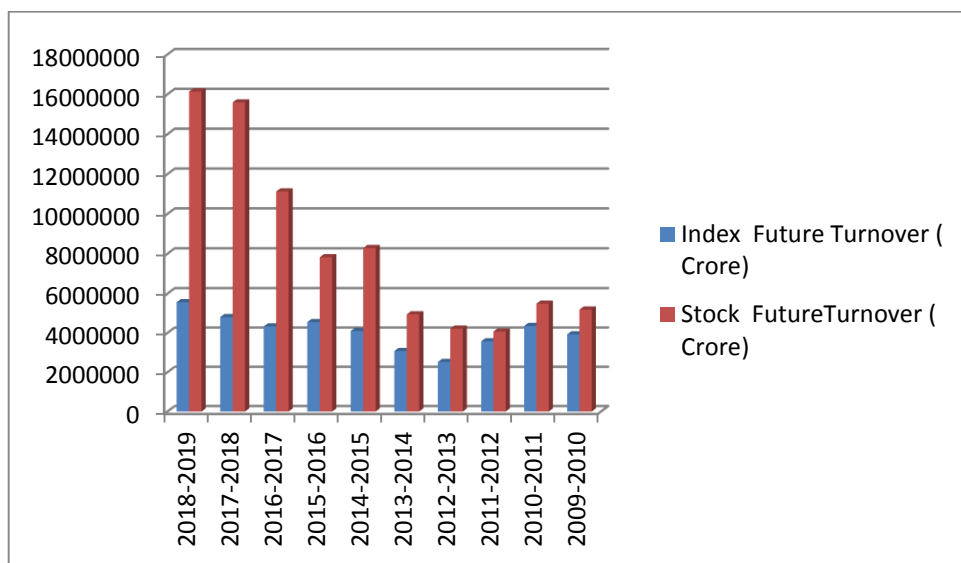
The various factors that contribute to the slow growth in cash market segment are high risk, trading of single shares are not popular in Indian stock market, Naked short-selling is banned few years ago, higher securities transaction tax levied in equity cash segment, investors savings are shifting from real assets such as property and gold towards financial assets such as bank deposits mutual funds, Derivatives etc.¹

Comparative growth in Index Future and Stock Future category in Indian Future derivative market segment.

The following table shows the trend in turnover in Index future market and stock future at NSE

Table No: 02

Financial Year (FY)	Index Future Turnover (Crore)	Stock Future Turnover (Crore)	Ratio turnover stock futures/Index futures
2018-2019	5568914.47	16147010.86	2.89
2017-2018	4810454.34	15597519.71	3.24
2016-2017	4335940.78	11129587.14	2.56
2015-2016	4557113.64	7828606	1.71
2014-2015	4107215.2	8291766.27	2.01
2013-2014	3083103.23	4949281.72	1.60
2012-2013	2527130.76	4223872.02	1.67
2011-2012	3577998.41	4074670.73	1.13
2010-2011	4356754.53	5495756.7	1.26
2009-2010	3934388.67	5195246.64	1.32



It is observed from the Table No: 02 . In the FY 2009-2010 to 2018-19 Stock futures turnover is more than the Index future, it is observed that the ratio of the turnover in Index future category to stock future had decreased to 3.24 times in 2017-2018 from 1.26 times in 2010-2011. Stock future category is dominating in Future derivative market segment.

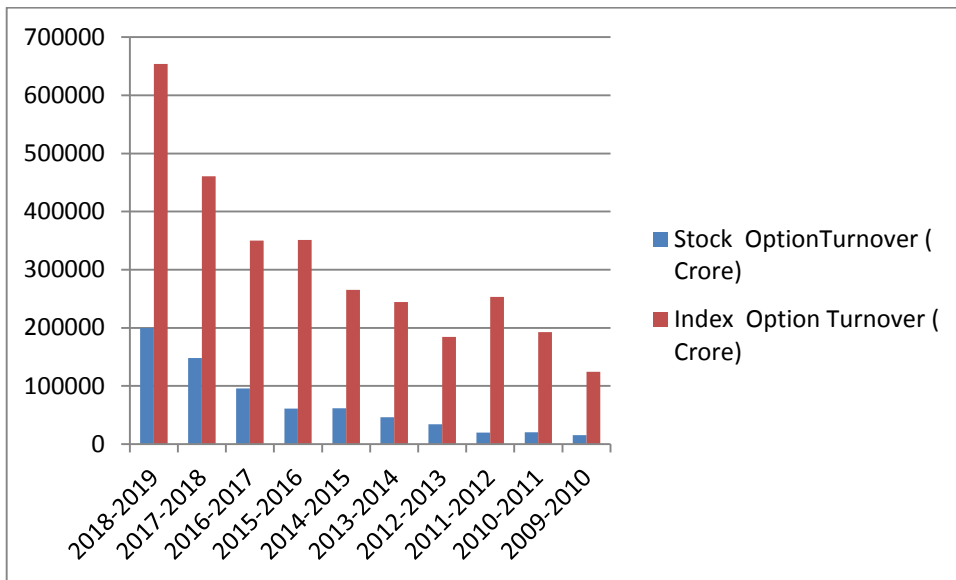
The reason for lower turnovers in index future compare to stock futures is, Index futures being a preferred mode for institutional investors but faces liquidity risk. The decrease in the turnover in index future categories over the year may be attributed to various reasons like Financial crises in the year 2008² which effected in the tiny loss in the year 2011 to 2015, in the FY 2016³ issues like NPAs of Indian Banks, Global Weakness, Global factors, crack down on black money by Indian government resulting in distress selling even US Presidential elections too had some bearing on the behaviour of investors.

Comparative growth in Index Option and Stock Option category in Indian Option derivative market segment.

The following table shows the trend in turnover in Index Option market and stock Option at NSE.

Table No: 03

Financial Year (FY)	Stock Option Turnover (Crore)	Index Option Turnover (Crore)	Ratio turnover Stock Option/Index Option
2018-2019	200010.31	654099.95	3.27
2017-2018	148217.5	460653.71	3.10
2016-2017	95570.09	350021.53	3.66
2015-2016	61118.39	351221.01	5.74
2014-2015	61732.59	265315.63	4.29
2013-2014	46428.41	244090.71	5.25
2012-2013	34288.56	184383.24	5.37
2011-2012	19612.93	253068.22	12.90
2010-2011	20474.97	192637.87	9.40
2009-2010	15272.89	124416.58	8.14



It is observed from the Table No: 03 . In the FY 2009-2010 to 2018-19 Index Option turnover is more than the Stock Option , it is observed that the ratio of the turnover in stock Option category to index Option had increased to 12.90 times in 2011-2012 to 3.10 times in 2017-2018. Index Option category is dominating in Option derivative market segment.

The reason for high growth of Index Option category compare to Stock Option category is index options are used for hedging portfolios by investors and traders to profit from event volatility. Factors such as global financial crisis in the year 2008, Banking stress and inflation in the year 2013⁴ ,Crude oil prices, political scams , Security Transaction Tax (STT) on Options is chargeable on option premium value etc .,affect the option market volatility.

Comparative growth in Cash and F&O segment in Indian stock market .

The following table shows the trend in turnover in Cash and F&O segment at NSE.

Table No: 04

Financial Year (FY)	Cash Turnover (Crore)	F&O Turnover (Crore)	Ratio turnover F&O turnover/Cash turnover
2018-2019	775590.08	237590973.7	306.33
2017-2018	1082968.21	164984859.1	152.34
2016-2017	998260.58	94370301.61	94.53
2015-2016	740088.59	64825834.3	87.59
2014-2015	854844.29	55606453.39	65.04
2013-2014	521664.2	38211408.05	73.24
2012-2013	548774.44	31533003.96	57.46
2011-2012	667497.58	31349731.74	46.96
2010-2011	1105026.89	29248221.09	26.46
2009-2010	1378809.32	17663664.57	12.81

It is observed from the Table No: 04 . In the FY 2009-2010 to 2018-19 F&O turnover is more than the Cash segment , it is observed that the ratio of the turnover in Cash segment to F&O had increased to 306.33 times in 2018-2019 from 12.81 times in 2009-2010.F&O segment is dominating in Indian stock market segment during the aforesaid period.

The reason for slow growth in Cash segment is mentioned in Table No.01. Due to those factors investors are migrating to Derivative segments, so derivative segment is noticing high growth. The rise in derivative turnover is considered unhealthy as the function of derivatives is to provide a channel for hedging risk. An unusual high ratio could, therefore point towards excessive trading and speculation.⁵

CORRELATION

To ascertain the objective of the study the following hypotheses are undertaken to test.

HYPOTHESIS

H0: There is no significant relationship between Cash market turnover and F&O market turnover.

H1: There is a significant relationship between Cash market turnover and F&O market turnover.

	<i>F&O Turnover (Crore)</i>	<i>cash Turnover (Crore)</i>	<i>Significance F</i>	<i>P-value</i>	<i>Multiple R</i>	<i>level of significance</i>
F&O	1	0.020	0.954	0.954	0.020	0.05
Cash	-0.222	1				

Correlation =-0.020, df=8,alpha=0.05

There is a positive correlation(0.020) this indicates that there is a significant relationship between Cash market turnover and F&O market turnover both are correlated to each other to the extent of 0.020 percent , if cash market turnover moves 0.020 % upward the F&O will also move upward to the extent of 0.020 % and vice versa. The P-value=0.954 is greater than alpha=0.05 So, H0: There is no significant relationship between Cash market turnover and F&O market turnover. is accepted and alternative hypotheses is rejected.

Comparative growth in Futures and Option segment in Indian stock market .

The following table shows the trend in turnover in Futures and Option segment at NSE.

Table No: 05

Financial Year (FY)	Future segment Turnover(Crores)	Option segment Turnover(Crores)	Ratio turnover Future segment /Option segment
2018-2019	16147010.86	200010.31	80.73
2017-2018	15597519.71	148217.5	105.23
2016-2017	11129587.14	95570.09	116.45
2015-2016	7828606	61118.39	128.08
2014-2015	8291766.27	61732.59	134.31
2013-2014	4949281.72	46428.41	106.60
2012-2013	4223872.02	34288.56	123.18
2011-2012	4074670.73	19612.93	207.75

2010-2011	5495756.7	20474.97	268.41
2009-2010	5195246.64	15272.89	340.16

It is observed from the Table No: 04. In the FY 2009-2010 to 2018-19 Future segment turnover is more than the Option segment, it is observed that the ratio of the turnover in Future segment to option had decreased to 80.73 times in 2018-2019 from 340.16 times in 2009-2010. Option segment is dominating in Indian stock market segment during the aforesaid period.

The reason for decrease of Future turnover ratio to Option turnover ratio which indicates that Option trading is increasing in Indian stock market. Bulk of traders are migrating from Future market segment to Option market ,because of Security Transaction Tax (STT) ⁶ on options is chargeable on option premium value, which is lower In term of value than that of futures where it is chargeable on notional value. There are various strategies like bull spread, bear spread, butterfly spread etc., which enables Option traders to earn upfront premium that may be used to off-set losses and enhance profit.

T – TEST

Note; compares means of both the sample

HYPOTHESIS

H0: There is no significant difference in turnover of stock future market and stock option market.

H1: There is a significant difference in turnover variance of stock future market and stock option market

t-Test: Paired Two Sample for Means		
	<i>Futures market</i>	<i>Options market</i>
Mean	8293331.779	70272.664
Variance	2.06952E+13	3737616213
Observations	10	10
Pearson Correlation	0.964354344	
Hypothesized Mean Difference	0	
level of significance	0.05	
Degree of freedom	9	
t Stat	5.791101856	
P(T<=t) one-tail	0.000131193	
t Critical one-tail	1.833112923	
P(T<=t) two-tail	0.000262385	
t Critical two-tail	2.262157158	

Since the calculated⁷ is (0.000131) and critical value is (1.83) calculated value is less than critical value the H0 is accepted .There is no significance difference in turnover of stock future market and stock option market.

ONE-WAY ANOVA**HYPOTHESIS**

H₀=There is no significant difference in turnover of cash market, stock future market and stock option market.

H₁=There is a significant difference in turnover of cash market, stock future market and stock option market.

Comparative growth in Cash ,Futures and Option segment in Indian stock market .

The following table shows the trend in turnover in Cash, Futures and Option segment at NSE.

Table No: 06

YEAR	CASH MARKET	STOCK FUTURE MARKET	STOCK OPTION MARKET
2018-2019	775590.08	16147010.86	200010.31
2017-2018	1082968.21	15597519.71	148217.5
2016-2017	998260.58	11129587.14	95570.09
2015-2016	740088.59	7828606	61118.39
2014-2015	854844.29	8291766.27	61732.59
2013-2014	521664.2	4949281.72	46428.41
2012-2013	548774.44	4223872.02	34288.56
2011-2012	667497.58	4074670.73	19612.93
2010-2011	1105026.89	5495756.7	20474.97
2009-2010	1378809.32	5195246.64	15272.89

SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
CASH MARKET	10	8673524.18	867352.418	74156836016
STOCK FUTURE MARKET	10	82933317.79	8293331.779	2.06952E+13
STOCK OPTION MARKET	10	702726.64	70272.664	3737616213

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	4.11331E+14	2	2.05665E+14	29.701	1.514	3.354
Within Groups	1.86958E+14	27	6.92436E+12			
Total	5.98288E+14	29				

Since the calculated F value 29.701 is more than the critical value (tabular value) 3.354 the null hypothesis $H_0 =$ There is no significant difference in turnover of cash market, stock future market and stock option market is rejected and the alternative $H_1 =$ There is a significant difference in turnover of cash market, stock future market and stock option market is accepted.

FINDINGS

1. From Table No.01 that there is a decrease in turnover from 2010-2011 onwards and picked up in the year 2016-17 and 2017-18 after that again there is a surge in turnover in the year 2018-19. Because of few factors such as Naked short-selling is banned few years ago, higher securities transaction tax levied in equity cash segment, investors savings are shifting from real assets such as property and gold towards financial assets such as bank deposits mutual funds, Derivatives etc.¹
2. From the Table No: 02 that in the FY 2009-2010 to 2018-19 Stock futures turnover is more than the Index future, Stock future category is dominating in Future derivative market segment. The decrease in the turnover in index future categories over the year may be attributed to various reasons like Financial crises in the year 2008² which effected in the tiny loss in the year 2011 to 2015, in the FY 2016³ issues like NPAs of Indian Banks, Global Weakness, Global factors, crack down on black money by Indian government resulting in distress selling even US Presidential elections too had some bearing on the behaviour of investors.
3. From the Table No: 03 that in the FY 2009-2010 to 2018-19 Index Option turnover is more than the Stock Option. Because Index options are used for hedging portfolios by investors and traders to profit from event volatility. Factors such as global financial crisis in the year 2008, Banking stress and inflation in the year 2013⁴, Crude oil prices, political scams, Security Transaction Tax (STT) on Options is chargeable on option premium value etc., affect the option market volatility.
4. From the Table No: 04 that In the FY 2009-2010 to 2018-19 Future segment turnover is more than the Option segment, Option segment is dominating in Indian stock market segment during the aforesaid period. Because bulk of traders are migrating from Future market segment to Option market because of Security Transaction Tax (STT)⁶ on options is chargeable on option premium value which is lower In term of value than that of futures where it is chargeable on notional value. There are various strategies like bull spread, bear spread, butterfly spread etc., which enables Option traders to earn upfront premium that may be used to off-set losses and enhance profit.
5. From the Table No: 04 Statistical tools are used to analyze the significant relationship between Cash market and F&O market. There is a positive correlation (0.020) this indicates that there is a significant relationship between Cash market turnover and F&O market turnover both are correlated to each other to the extent of 0.020 percent, if cash market turnover moves 0.020 % upward the F&O will also move upward to the extent of 0.020 % and vice versa.
6. From the Table No: 05 Futures and Options market are identical there is no significance difference in the variance of both the market as per T-Test.
7. From the Table No: 06 All the three markets are having a significant relationship all the three markets performances are not similar to each other as per ANOVA test.

CONCLUSION

Derivative segment is growing very fast in the Indian Economy. The turnover of F&O segment is more compare to Cash/Spot market. Because of regulated and transparent rules and strong communication network is helping the investors to trade in derivatives and protect their investment from risk. Decrease in cash market turnover is because of few factors such as Naked short-selling is banned few years ago, higher securities transaction tax levied in equity cash segment, investors savings are shifting from real assets such as property and gold towards financial assets such as bank deposits mutual funds, Derivatives etc. In derivative segment Option market is dominating because Index options are used for hedging portfolios by investors and traders to profit from event volatility and Security Transaction Tax (STT) on Options is chargeable on option premium value. Because of these factors bulk of investors are migrating from futures market segment to option market segment.

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