A Study of Speculative Trade and Its ImpactonPriceDisequilibrium A Case Study of Nse EquityDerivative Market

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ABSTRACT Speculative trade in capital markets is a long term concern for investors and market regulators alike. This study aimed to quantify the speculative trades in NSE equity derivative market using working's speculative index (1960). Daily trade volumes and open interest data for each equity derivative product obtained for the period of four years. It is found that option products are more speculative than the futures and single stock futures are found to be less speculative. The study further assesses the NSE FO products in terms of speculative trades and identifies their impact on future market prices. The speculative index for each derivative product is constructed and regressed on daily average prices of a selected 80 stock futures to identify the product wise impact of speculation on market prices. Stock futures among other equity derivative products found significant in influencing the stock future prices.

INTRODUCTION

Speculation is the essential part of derivative market and L.C. Gupta committee on introduction of financial derivative markets in India suggested that the desired amount of speculation is needed for the market development. Speculation as the supplement for imbalances in short and long hedging positions, provide the liquidity in the market. Since speculation in markets is imminent due to irrational trading behaviour and imperfect market conditions, it is necessary to understanding the speculation in markets and its impact on market. NSE FO market is expected to draw speculators from spot market to equity derivative products since it offers leverage benefit at derivatives. Thus FO market helps in stabilising spot market prices by accepting speculation into the market.

As equity derivative products plays important role in price discovery process, the speculation must be controlled at FO market in order to avoid conditions of market crisis since derivative trades are more powerful than spot market trades. Thus it is very important to quantify and examine the speculation and its drivers at FO market in order to regulate the trading. NSE FO market offers trading on different equity derivative products which are together provide liquidity, price discovery and depth of the market. Understanding the speculative trades at each product level is needed to identify their significance in affecting the market performance. Many studies attempted to understand and quantify the speculation activity in markets and some of them are very successful in identifying the speculative trade and their impact on the market.

REVIEW OF LITERATURE

Many studies concluded that excessive speculation not desirable as it may destabilise the market prices and thus make prices move away from their intrinsic values. The speculative index first proposed by working's(1960) which provides the relative measure to capture the excess amount of speculation in a given market. This technique heavily based upon the assumption that investors in the market categorised as com-

mercial and non-commercial traders. Commercial traders assumed to be hedgers since their trades are well regulated by market governors imposing position limits and through reporting of their trades on periodic basis. While non-commercial traders are assumed to be speculators since they are not posed to such trade restrictions and they free to trade at will. Rutledge (1979), Leuthold (1983) and Bessembinder and Seguin (1993) used trade volumes to construct proxy variable to capture speculation and open interest data for capturing hedging activity. García et al. (1986) and Gwilym et al. (2002) proposed a better method of developing a relative but accurate measure to capture speculation in the market using both trade volumes and open interest. Speculative activity in NSE equity derivative market is not studied extensively as it documented in commodity market comprehensively. Sanders et al., 2008 proposed that increase in long speculative positions can be offset by short hedging positions. Robert T. Daigler (1991) in his paper titled "the speculative and hedging structure of financial futures contracts" used CFTC commitment data to analyse the futures market activity using workings speculative T index. He found that futures market indeed primarily for the purpose of hedging.

OBJECTIVE OF THE STUDY

This paper is aimed to examine the speculation at NSE FO market and its impact on the market prices. Further this part of the study seeks to identify NSE FO products which are highly speculative and quantify their impact on market prices. The primary objective of this study is to identify the speculative trade at NSE FO segment and to assess its impact on market prices. Since the NSE FO market accommodates trading for different financial derivative products, it is appropriate to quantify the speculation for each product class. Thus this study is also expected to produce the results which exhibit highly speculative FO products in comparison among themselves. Further we study the impact of the speculative trade for each product class on stock prices to assess whether the speculative trade has any significant impact on prices. The study is explicitly aimed to find the answers for the following research questions

1. Is NSE FO market featured excess speculation?
2. Which of the FO products at NSE attracts the speculative trading?
3. Do speculative trades destabilise the market prices?
4. Which of the FO products having significant impact on stock prices?
5. What is the product wise association between speculative trades and stock prices?

RESEARCH METHODOLOGY

Quantifying speculative trading in a market is comes tricky when dealing with secondary data. Since there is no direct measure to quantify the speculative trade, we deploy the relative measure of speculation using workings speculative index. Workings speculative index as a measuring instrument which describes the speculation in excess of what is minimum required to meet short and long hedging demand (see. Buyuksahin and harrris(2011). Excessive speculation may be understood as the benefiting activity in an investor private point of view but not beneficial in social planner point of view. The underlying assumption of workings speculative index is that institutional investor act as hedgers in the FO market since their trades are regulated for only hedging their portfolios. Whereas retail investors along the proprietary traders represents the speculative traders since they are not attracted by position limits. This assumption holds true in the case of NSE FO in which institutional investors participation in FO market is regulated through position limits. Whereas retail investors along the proprietary traders represents the speculative traders since they are not attracted by position limits. Thus taking the trades of hedgers and speculators, the following workings speculative index can be constructed.

Working's Speculative Index= 1+ SL/HL+HS   if HL>HS

OR

1+ SS/HL+HS   if HL<HS

Since NSE FO market has FOUR major financial derivative products Stock Futures, Stock Options, Index Futures and Index Options, we obtained daily open interest for each FO product for the period of four years i.e. from 2012 to 2015 from NSE Official website.

To assess the impact of speculation on market prices, we sampled 80 stocks from NSE to represent both spot and FO market prices. These stocks are highly liquid in both markets and most weighted in their respective industrial indices represents the entire NSE NIFTY. We collected daily closing prices of stocks from both spot and futures market for the period mentioned earlier. To represent the stock price from both the markets, we constructed a variable to represent the basis of each stock selected. Basis is termed simply the difference between FUTURE price and SPOT price for a particular stock. Under the perfect market hypothesis, the basis value for a particular stock should follow simply the cost of carry model of value which can be represented as:

COST OF CARRY= e ^ (I-D)(T-T)

INTRINSIC VALUE OF FUTURE= SPOT PRICE * (1+COST OF CARRY)

BASIS= FUTURE PRICE – SPOT PRICE

A future contract is priced at its intrinsic value when basis matches the cost of carry model and the difference between basis and cost of carry becomes zero given spot price in cost of carry valuation is at its equilibrium price. We constructed a proxy variable to capture the differences between the actual future price and the intrinsic value of future from cost of carry model for each selected stock.

PROXY it = FUTURE PRICE it – INTRINSIC VALUE OF FUTURE CONTRACT it

The developed proxy variable captures the deviations of stock prices at both markets from their equilibrium prices and represents the stability of future prices in line with spot prices. These proxy variables are regressed on speculative indices developed for each FO product class to assess the impact of speculative trade on market prices

D(PROXY it) =   C + D(SFSI)it + D(SOCSI)it + D(IFSI)it + D(IOCSI)it + D(IOPSI)it + D(PROXY it(-1))

The variables in the model are first differenced to eliminate heteroscedasticity and multicollinearity problems from estimation model. Lag value of proxy used as one of independent variable in the model to curb the serial correlation problem so that the estimated parameters are BLUE (best linear unbiased estimator).

RESULTS & DISCUSSION

Workings speculative index for each FO product is constructed and projected in graph 1.1 over the period of four years after applying Hodrick-Presscott filter (H-P Filter) to eliminate the noise from the series.

GRAPH 1.1
HP filtered Speculative index for all FO products
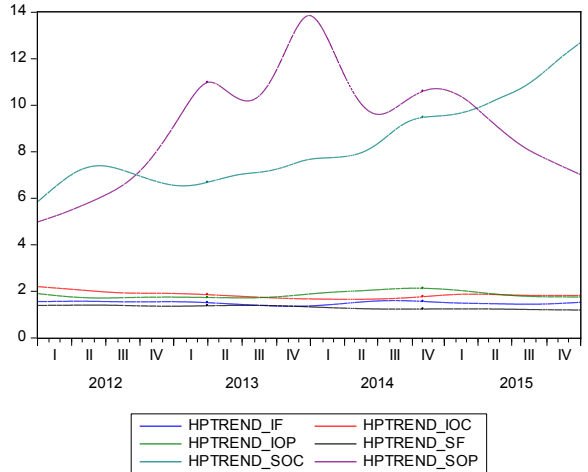
speculative indices for stock options are scaled very high from other products speculative indices, the above shown graph may not be appropriate to exhibit the trends in other products performance. Graph 1.2 shows the trends in speculative indices for FO products excluding stock options performance which clearly indicates that the speculative trade in index option products are higher than the stock and index futures. The filtered series exhibits the trends in the series of speculative index which shows that there is a shift in the third quarter of FY 2013-14.

GRAPH 1.2
HP filtered Workings speculative index for FO products excluding stock options
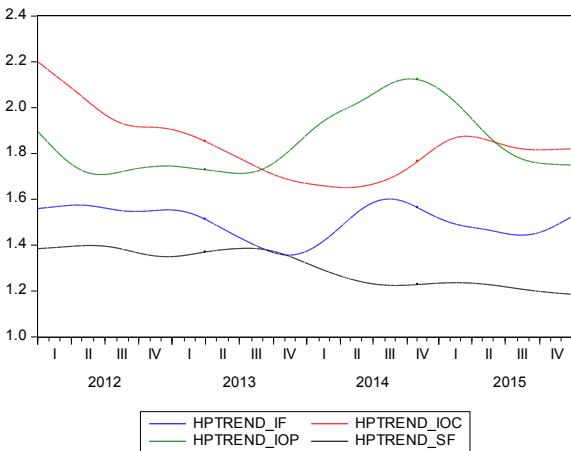
Speculative index for stock options exhibits very high mean with 8.29 and 9.26 for call and put option products which indicates these products are heavily traded by retail investors. These implications are not reliable since JB statistics for stock options are very high which is indicating the data distribution is not normal.

of the stocks, the results provide strong implication that speculation at index put options are positively associated with stock price instability.

FINDINGS
This part of study identifies that the NSE FO market is featured high speculative trading which is theoretically expressed as unwanted excess speculation using working speculative index. We prepared speculative indices for each type of FO product rather than preparing it for entire market. The analysis suggested that all FO products are traded with excess speculation in which options are attracting relatively high amount of excess speculative trading comparing to future products. Though the results exhibits stock options are filled with excessive speculative trade, we could not conclude that they are highly speculative since the stock options data shows invalid statistical properties which void the data validity for analysis. Apart from stock options, index options among other FO products are highly speculators traded in relation to the hedgers.

Many studies concluded that speculation would cause destabilisation of prices in markets. This study found no such evidence since the highly speculative index options significantly impacts price instability for less number of securities whereas low speculative stock futures significantly affects prices for most of the stocks. From this study we found that stock futures trading has positive association with price instability which implies

TABLE 2.1
Descriptive statistics for Working's speculative index for FO products

	SFSI	SOCSI	SOPSI	IFSI	IOCSI	IOPSI
Mean	1.303499	8.287777	9.255312	1.500625	1.831489	1.849143
Median	1.288124	6.289483	5.120236	1.497300	1.800602	1.814060
Maximum	1.826795	181.2753	1069.103	2.042146	2.534281	2.675257
Minimum	1.142777	2.146034	1.959404	1.195611	1.371538	1.373262
Std. Dev.	0.091682	13.09057	45.00590	0.156280	0.212451	0.248288
Skewness	0.617668	9.161870	19.38009	0.306960	0.609059	0.687522
Kurtosis	3.325760	100.4432	416.4042	2.613182	2.744095	3.089283
Jarque-Bera	66.98719	403477.7	7075803.	21.60952	63.58573	77.92657
Probability	0.000000	0.000000	0.000000	0.000020	0.000000	0.000000
Observations	985	985	985	985	985	985

Apart from stock options performance, index options exhibits high speculative trade than stock and index futures markets with speculative index mean value of 1.83 and 1.84 for call and put options respectively. Index futures are relatively high speculative products in comparison with stock futures. The statistics from table 2.1 indicates option products are highly speculator traded comparing to future products.

Proxy variable to capture stability of stock price for each stock constructed and regressed on speculative indices calculated using equation-1 explained in the previous section to assess the impact of speculation on stock prices. A total of 80 regression equations are estimated for the stocks listed in Annexure-1 and saved the coefficients along with their P values at 5% significance level. The following table 2.2 exhibits the summary of results of the regression analysis.

Table 2.2

AT 5% SIGNIFICANCE LEVEL	NO OF SIGNIFICANT COEFFICIENTS	NO OF POSITIVE COEFFICIENTS	NO OF NEGITIVE COEFFICIENTS
STOCK FUTURES	31	78	2
STOCK OPTIONS CALL	19	55	25

AT 5% SIGNIFICANCE LEVEL	NO OF SIGNIFICANT COEFFICIENTS	NO OF POSITIVE COEFFICIENTS	NO OF NEGITIVE COEFFICIENTS
STOCK OPTION PUT	0	51	29
INDEX FUTURES	7	54	26
INDEX OPTION CALL	19	13	67
INDEX OPTION PUT	13	56	24

From the above summary table, we can note that speculative trades at stock futures market are most significant in explaining the price deviations from intrinsic value for most of the stocks i.e. for 31 stocks. The result indicates almost coefficients are positive for stock futures suggesting there is positive association between the price instability and speculative trade at stock futures market. Recalling from the previous section, speculation at stock options are not well quantified and above table 2.2 also provides the similar implication that speculation at stock options market is not significant in explaining price variations. Speculation at Index futures has less power of influence on price imbalances which could explain only 7 stock prices out of 80 stocks. Index call options are having moderate influence on price stability and exhibits negative regression coefficients' which indicates the negative association between price instability and speculation at index call options. Though index put options are not significant in explaining price instability for most

that trading at stock futures do destabilise the security prices via adjusting spot price or futures price. It is also found that trading through index call options do good for markets by stabilising the security prices as index call option trades has negative association with price instability.

ANNEXURE 1
LIST OF SELECTED STOCKS

AUTO ANCIL-LARIES	APOLLOTYRE ASHOKLEY BAJAJ-AUTO BHARAT-FORG EXIDEIND HEROMO-TOCO M&M MARUTI MRF TATAMO-TORS	FMCG	COLPAL DABUR HINDUNILVR ITC JUBLFOOD TATAGLOB-AL LT
		INFRA	RELINFRA UNITECH
BANKS	AXISBANK BANKINDIA HDFCBANK ICICIBANK INDUSINDBK KOTAKBANK LICHSGFIN PFC PNB RELCAPITAL SBIN SRTRANSFIN UNIONBANK YESBANK ANDHRA-BANK BANKBARO-DA CANBK IDBI IOB ORIENTBANK SYNDIBANK FINANTECH	MEDIA & ENTERTAIN-MENT	DISHTV SUNTV ZEEL
		METALS	COALINDIA HINDALCO JSWSTEEL NMDC SAIL SESAGOA TATASTEEL
		PHARMACEU-TICALS	CIPLA DIVISLAB DRREDDY LUPIN RANBAXY SUNPHAR-MA
		POWER N OIL	BPCL CAIRN GAIL IOC JINDALSTEL NTPC ONGC POWERGRID RELIANCE RPOWER TATAPOWER
COMPUTERS - SOFTWARE	HCLTECH HEXAWARE INFY OFSS TCS TECHM	TELECOM	BHARTIARTL IDEA RCOM TATACOMM
CONSTRUC-TION	DLF GMRINFRA		

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