Response to SEBI's Discussion Paper on: *Growth and development of equity derivatives markets in India*

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Contents

Exchange derivatives trading started in India with equity index futures in 2000. The institutional ecosystem that was put in place was a systemic shift in terms of market risk control and management, with clearing systems that included the ability to do real-time margining at the level of the end customer for a portfolio of derivatives.

In the nearly two decades since then, these institutions have proved to be robust even during episodes of very large shocks to market prices including the election results of May 2004, the global crisis of 2008 and the fat finger trade flash crash of October 2012. This is unlike Over-The-Counter derivatives markets that still suffer from counter-party credit risk related failures on occasion. The institutions of clearing corporations backed by robust margining systems have helped the expansion of equity derivatives to include index options, single stock futures (which replaced the old system of badla trading) and single stock options. Similar systems have also been deployed in building exchange traded derivatives in currency, interest rate and commodities.

At the time that these markets are about to turn 20, SEBI has put out a discussion paper on the *Growth and development of equity derivatives markets in India*. The stated objective of the discussion paper is to solicit views to

> *"Further strengthen the existing framework to be consistent with emerging trends and best practices in derivatives markets globally."*

The discussion paper starts with a presentation of the history of the policy discussion when the markets first started in 1998. In describing the relevant aspects of equity derivatives markets in the *L. C. Gupta committee report*, the discussion paper identifies the importance of ensuring that the equity derivatives markets be found:

- to be efficient and transparent,
- have entry criteria for participants that are more stringent on both knowledge and capital adequacy,
- have stringent regulation of sales practices, and
- the importance of strong cash markets.

This is followed by selected data to describes some features of the Indian equity derivatives markets. At the start is a description of the products and the participants. Data is presented on the size of the markets measured by market capitalisation and traded volumes or turnover. Then, data is presented on the share of certain participants in the traded volumes of the equity derivatives markets. The next data set provides a comparison of the size of the derivatives market across a select subset of other jurisdictions. However, none of the data that is presented in the report addresses whether the objectives that were listed from the *L. C. Gupta Committee report* have been met or not.

The next description in the SEBI discussion paper is about two of the factors that influence trading choices in the Indian equity markets: margins and securities transactions tax applicable across the different equity market segments.

The data and description is followed by a statement about three sets of SEBI initiatives: (1) initiatives in the cash markets, (2) improving the liquidity of the Securities Lending and Borrowing Mechanism (SLBM), and (3) requirements on sales practices.

The discussion paper then presents a list of nine issues for comments and views.

We present our response in the following Sections 1 - 9. Each section contains our response to the issue posed, and is organised as follows: (a) What is the question that SEBI is asking? (b) A summary of our response, which includes a summary of our findings followed by our recommendations for SEBI , and (c) The detailed analysis that helped us in arriving at our understanding and recommendations.

A tabulated version of the response in the format requested in the discussion paper is given in Section 10. The remainder of the document contains supporting analysis and the list of citations that we referred to while drafting our response.

1 Response 1: derivatives to cash turnover ratio

Question: *Ratio of turnover in derivatives to turnover in cash market is around 15 times. To what extent the drivers of this ratio in India are comparable with drivers in other markets?*

Summarising our response: Leverage in derivatives markets allows traders to take a given size of position with lower capital in derivatives than in cash. Research shows that traders choose which market to trade in by considering both the amount of leverage **and** liquidity. Therefore, the less liquid is the cash market, the more traders prefer to use derivatives rather than the spot.

A greater policy focus on developing the liquidity and depth of the cash market would bring the turnover ratio of the Indian equity market more in line with that seen in other jurisdictions.

Analysis:

In seeking what drives the derivatives to spot turnover ratio, we start with the choices of market participants.

Traders choose between the spot and the derivatives markets by examining both the leverage *and* the liquidity available in both markets (Aggarwal and Thomas 2013). If the liquidity of the spot market is significantly higher than the liquidity of the derivative market, then the trader needs to be compensated by a large amount of leverage to trade in the derivatives market. This leads us to consider three factors as determining turnover in the spot and derivatives markets: the liquidity of the derivative market, the liquidity of the spot market and the availability of capital.

A highly liquid derivatives market will imply a higher turnover ratio. Similarly, a spot market with poor liquidity will mean a higher turnover ratio.

If there is a very high amount of leverage in the derivative market, then traders will prefer derivatives markets over the spot market to trade, which can also cause a high turnover ratio.

1.1 Leverage in derivatives

Derivatives trading allows traders to take a given exposures with lower capital compared to taking the same exposure in the spot market. As a result, trading volumes in equity derivatives will tend to be higher than in spot. While this is likely to hold, in general, the ratio is likely to be higher in countries where there is limited capital for investment, because leverage is more highly prized.[1] However, a comparison of the leverage available

[1]The data presented in Table No. 9 in the SEBI discussion paper points to this fact. The reported derivatives to cash turnover ratio is higher for emerging markets such as Korea, India, Hong Kong and

in the Indian equity markets with other jurisdictions do not indicate that the leverage here is excessive. In fact, Indian equity derivatives have some of the highest margins (lowest leverage) in comparison with other exchange as can be seen in Table 7. So it is unlikely that the relatively high turnover ratios in Indian derivatives is driven by high leverage.

1.2 Liquidity differential between cash and derivatives

The ratio of derivatives to cash market turnover is affected by both the numerator and the denominator of the ratio. A high ratio is indicative of high levels of derivatives turnover relative to cash turnover. This is also the point that Professor J R Varma makes in his review of the SEBI discussion paper (Varma 2017):

> *"The discussion paper is worried about the high ratio of derivative market turnover to cash market turnover, and thinks that therefore there must be something wrong with the derivative market. The correct conclusion is quite the opposite: there is something grievously wrong about the cash market."*

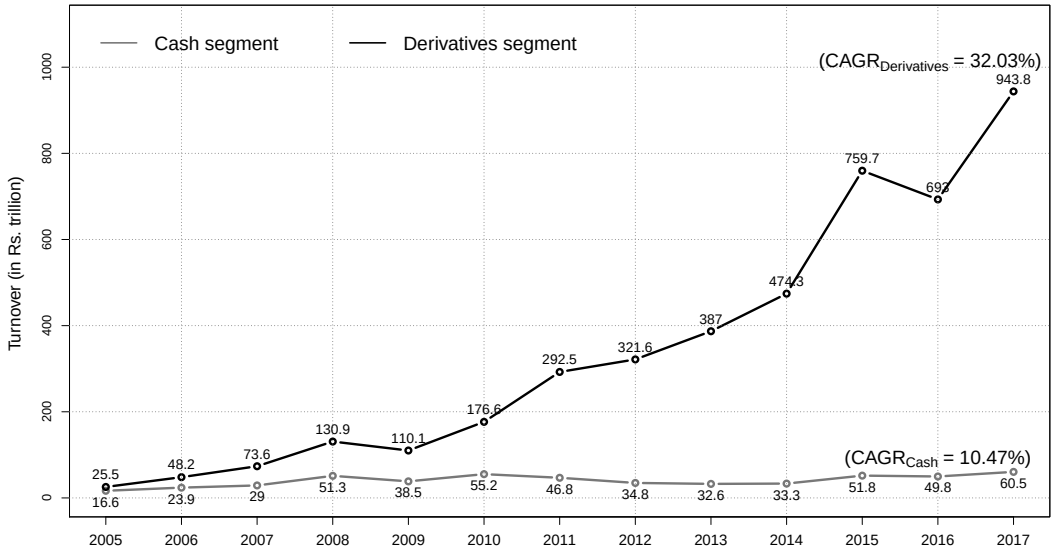
Table 1 shows the variation in growth between the equity cash and equity derivatives markets. While the derivatives market has grown, the cash market has stagnated. This is particularly visible in Panel B, which shows that between 2009 to 2017, while derivatives markets have grown at a compounded annual growth rate (CAGR) of 26.9%, cash markets have experienced only a 5.2% growth rate.

Russia in comparison to exchanges in developed markets such as Japan, Australia and the Euro zone.

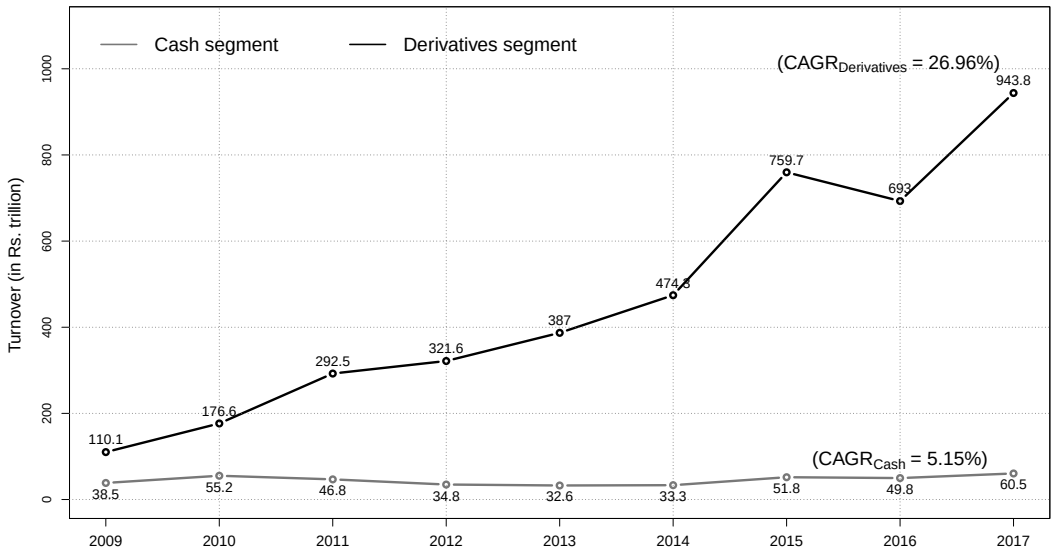
Table 1 Indian equity markets, derivatives and cash, 2005 to 2017

The graphs show the growth of the turnover in the equity cash market and derivatives market for the period from 2005 to 2017. The CAGR has been calculated and reported alongside each graph as well. Source: The data for these graphs have been taken from Table 2 of the SEBI discussion paper.

Panel A: growth 2005-2017



Panel B: growth 2009-2017



1.3 Why is the turnover ratio in other markets low?

In markets such as the US and Europe, a significant proportion of equity derivatives trading takes place in the Over The Counter (OTC) markets. As at June 2015, the notional outstanding of exchange traded equity index derivatives was USD 8 trillion (*Exchange Traded Derivatives by Instrument and Location, BIS Table 23A*).

In the same period, in H1 of 2015, the notional outstanding of OTC equity derivatives was USD 7.5 trillion (*OTC, Equity Linked Derivatives, BIS Table D8*). 43% of this came from US equities, and 36% from European equities. This is unlike the Indian market, and other Asian markets, which are focused mainly on exchange based trading in equities and equity derivatives.

A correct cross country comparison of the ratio of derivatives to cash market turnover must take into account the trading in both the exchange and OTC markets. The SEBI discussion paper currently uses only data from exchanges to compute this ratio, which may cause the ratio to be understated for several markets.

1.4 Cross-checking SEBI-reported derivatives-cash turnover ratio

Finally, we report that we were unable to replicate the derivatives to cash turnover ratios that are reported for select exchanges in Table 9 of the SEBI discussion paper (our replicated values are presented in Table 2). The computed ratios in Table 9 does not match with the ratio reported in Table No. 9 in the discussion paper. For example: the computed ratio for Japan is 1.57 whereas the discussion paper reports a ratio 1.9. We find similar gaps for the values for other international exchanges as well. In effect, the *reported claim* that the ratio is relatively higher for India, will still hold. However, the extent to which the Indian ratio appears misaligned with other countries' ratios, will be lower.

The computation of the ratio appears to understate the value of derivatives traded on the international exchanges. In the example for the Japan exchange, while traded contracts data shows trading in both single stock and index options, the turnover value for these is not available in the data. Similarly, for Korea Exchange, traded contracts data shows trading in single stock F&O but the turnover value is not available. In its computation, SEBI appears to not be taking this into account. This has an effect of understating the derivatives to cash ratio for those markets where there is a gap in data derivatives turnover.

Table 2 Computing cash to derivatives turnover for select exchanges

Exchange	Product	Turnover (USD Bn)	Shares/Contracts (in Mn)	Derivs/Cash (times)
Japan Exchange	Equity cash	6,361	6,66,174	
	Single stock futures	NA	NA	
	Single stock options	NA	0.85	
	Index futures	9,983	293.7	
	Index options	NA	34.2	
Ratio				1.57
Korea Exchange	Equity cash	1,680	2,62,637	
	Single stock futures	NA	172.1	
	Single stock options	NA	11.6	
	Index futures	3,479	44.4	
	Index options	34,475	359.0	
Ratio				22.59
India (NSE+BSE)	Equity cash	803	3,15,529	
	Single stock futures	1,469	172.7	
	Single stock options	787	88.9	
	Index futures	663	74.9	
	Index options	9,685	1041.5	
Ratio				15.69

Source: WFE monthly statistics, data for 2016

2 Response 2: global best practices to align cash and derivatives

Question: *What are the global best practices and experience in international markets to align cash and derivative markets?*

Summarising our response: Since derivative instruments derive their price from cash markets, global best practices on aligning these two markets focus on removing barriers that cause differential access to the derivatives and cash markets, and any other barriers to carrying out arbitrage between the two markets. Indian equity futures show persistent negative bias in basis values, on average. This suggests the presence of arbitrage opportunities, and structural barriers to eliminating these. These barriers include a persistent lack of capital to implement arbitrage strategies in equity markets, and missing markets. The former is because of constraints on flow of capital from Financial Institutions (FIs) in the formal financial systems into equity derivatives markets, as well as constraints on foreign investors. The latter includes a nascent SLBM and constraints on short selling in the equity spot market. Other reasons for the persistent arbitrage include differential trading costs across different markets, with the Securities Transaction Tax (STT) forming a large cost component in spot transactions and a relatively smaller cost in derivatives.

Thus, greater policy research in aligning spot and derivatives markets requires designing reforms to lower constraints on FIs participation and developing weak or missing markets such as the SLBM into efficient and liquid markets. A similar policy effort is required to identify the causes of differential trading costs between these markets, and implementing policy changes to remove these differentials.

Analysis: We examine two aspects of aligning spot and derivatives markets: (1) aligning prices, and (2) eliminating differences in trading costs. While analysing whether the prices of the two markets are aligned, literature studies the measures of *basis* and *basis risk*.

2.1 Barriers to aligning prices

Basis is calculated as the price difference between the observed futures price and the estimated fair value of the futures calculated using the spot price. A persistent deviation between the two indicates that either or both markets are not functioning well.

Our analysis shows that both the Nifty futures and the single stock futures have a *negative basis* as can be seen from Table 3. This indicates that there is a persistent mis-pricing between spot and futures prices, and that there are barriers to closing arbitrage opportunities in the market. In order to remove this arbitrage violation, there needs to be more trading to sell the spot and buy futures. But short selling constraints in the spot market make it difficult to sell the spot readily. A solution for this is to develop a liquid SLBM market, which has been slow to develop. Grover and Thomas 2011 lay out some possible

policy interventions to fix the problem. While some growth in the SLBM market has taken place since then, it has not been to the extent required to fully remove the negative basis values seen in the Indian equity derivatives.

Table 3 Spot-futures basis, Nifty and Single Stock futures, Jan – Jun, 2017

This table reports three market efficiency measures for the Nifty futures and Single stock futures market. These are:

- **Basis:** (as a percentage of spot price) computed as:

$$\text{Basis} = z_t = \frac{(F_t - S_t \times e^{(r-d)*(T-t)}) \times 100}{S_t}$$

  Here, F_t is the price of futures contract at time t, S_t is the spot price at time t, r is the risk free interest rate for lending and borrowing, d denotes dividend rate (in our computation, we assume d to be zero), T is the date of expiry of the futures contract and $(T-t)$ captures number of days to expiry. In an efficient market, basis should be zero.

- **Basis risk:** the volatility in basis over a period of time captures what is called the *basis risk*. It is computed as:

$$\sigma_{\text{Basis}} = \sqrt{\frac{1}{n-1}\Sigma_{t=1}^{n}(z_t - \overline{z})^2}$$

  Here, z_t indicates the basis of a security at time period t, $\overline{z}$ is the average basis in a quarter, and n is the number of trading days in a given quarter. Basis risk measures the volatility in basis over time. Larger the value of the basis risk, lower the efficiency of the markets.

- **Observations with negative basis:** proportion of trading days on which negative basis values are measured as a ratio of the total number of trading days in the period. This measures the persistence of the deviation of the basis from zero.

Ideally, in efficient markets without any transaction costs, basis ought to be zero. However, in the real world of markets with transactions costs, basis will not be zero. The extent of deviation of the basis from zero, the standard deviation of basis, and the persistence of basis deviation from zero can be used to measure the degree of market inefficiency.

Measure	Unit	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
Nifty							
Basis	% of spot price	-0.11	-0.11	-0.12	-0.07	-0.22	-0.19
Basis risk	σ basis	0.12	0.14	0.16	0.18	0.28	0.17
Obs. negative basis	% of total obs.	80	84.21	76.19	55.56	77.27	80
Single stocks[1]							
Basis	% of spot price	-0.04	-0.04	-0.05	-0.06	-0.17	-0.18
Basis risk	σ basis	0.15	0.15	0.20	0.21	0.41	0.26
Obs. negative basis	% of total obs.	57.50	47.37	54.76	58.34	61.37	62.5

[1] Basis computed for top 10 stocks in the spot market, by traded volume. The average basis for each of the 10 single stock futures is computed daily. Then, the average across the 10 stocks is calculated and reported as the value of the basis for the month.

2.2 Aligning trading costs

Another reason for lack of alignment between spot and derivatives markets can be the differential costs of trading in these. If trading in one market is much higher (or lower) than the other, trading participants would prefer to choose the market where trading costs are *lower*.

Table 4 presents the cost of trading in the spot, futures and options markets. These values show that trading costs are the lowest for options market, followed by the futures market. These are the highest for the spot market. The largest source of the differential costs across segments arises from STT.

Table 4 Trading costs of trading equity cash and derivatives in India

This table shows the Rupee value of trading costs under various heads for a Rs.500,000 transaction in the equity cash and equity derivatives market.
The numbers have been hand-calculated using the assumptions on rates described in the footnote below the table.

(All values in Rs.)

	Brokerage[1]	STT[2]	Charges[3]	GST[4]	SEBI charges[5]	Stamp duty[6]	Total
Equity derivatives							
BSE futures	50	50	2.5	9.45	0.75	10	122.7
NSE futures	50	50	9.5	10.71	0.75	10	130.96
BSE options[7]	50	2.5	1.25	9.23	0.75	-	63.73
NSE option[7]	50	2.5	2.5	9.45	0.75	-	65.2
Cash							
NSE equity (intraday)	50	125	16.25	11.93	0.75	10	213.93
BSE equity (intraday)	50	125	1.5	9.27	0.75	10	196.52
NSE equity (delivery)	50	500	16.25	11.93	0.75	50	628.93
BSE equity (delivery)	50	500	1.5	9.27	0.75	50	611.52

[1] Brokerage taken at 0.01% transaction value.
[2] STT rates from `https://www.nseindia.com/int_invest/content/tax_other_taxes.htm`
[3] Charges include only exchange fee and clearing member charges
[4] GST at 18% is applicable on transaction charges
[5] SEBI charges applied at 0.00015% of the trade size
[6] Stamp duty for Maharashtra State 0.01% of turnover for delivery trades and 0.002% for non-delivery trades
[7] Transactions charge and STT are computed on option premium assumed at 1% of notional turnover

3 Response 3: participation in spot and derivatives markets

Question: *Considering the participants profile, what measures would be required to create balanced participation in equity derivatives market?*

Summarising our response: The notion of balanced participation is not a well formed one. There is no definition of balance in participation in the research literature, nor is it a measure that is typically published by other exchanges or regulators when discussing their objectives for the market.

What is well accepted is that it is considered important to have diversity of opinion in market places, and to prevent any single investor or class of investors from having *market power*. If any investor has market power, then the market is vulnerable to being manipulated, and the prices are likely to be inefficient.

Analysis:

A review of the literature does not provide any definition of what is a balanced participation in an asset market. Partly, this is a problem of definition: what are all possible sets of participants in the market? What are the categories of participants that we should expect in a market? Typical economics literature refers to categories of *informed* and *non-informed* traders, without defining how these can be identified. For the rest, participant categories are defined based on what specific exchanges care about. For example, some exchanges classify participants as *hedgers* and *non-hedgers*, because hedgers are allowed some offsets on their margins for hedged positions. The National Stock Exchange (NSE) captures *algorithmic* and *non algorithmic traders*. However, there is no reasoning or science determining what is balanced participation across these different categories of traders.

What is considered important is to have diversity of opinion in markets (Surowiecki 2004). Diversity of opinion helps to ensure that no single investor or investor category has market power. When any investor or set of investors have market power, they can manipulate market prices. In such a market, prices cannot be trusted to be the fair value price.

Further, a review of literature to identify market measures that are considered important by international exchanges and regulators point to the following important features for markets: (a) that they are orderly, fair and equitable; (b) efficient, and (c) that they have integrity (Aitken, B Harris, and Ji 2015). Table 5 shows the measures that global exchanges use in the context of market quality. As with the global regulators, international exchanges focus on measuring market quality and integrity as a means to encourage investor confidence in the market.

In our analysis of the Indian market, we look at three aspects of participation: (1) the type of participation, (2) its quality, and (3) more specifically the nature of individual investor participation.

Table 5 How exchanges define market quality

Exchange	Measures
NYSE	Market share and liquidity
	Bid-offer quotes
	Quote spread
	Quoted size at best prices
	Two sided liquidity
	Number of securities with a displayed quote
LSE Group	Liquidity – depth, width, frequency and resiliency
	Transaction costs
	Price discovery
	Volatility
	Trading profits
ASX	Trading activity – average daily volume, trade size
	Order book liquidity – bid ask spread, quoted depth
	Price volatility – trading range, σ of returns

Source: NYSE, LSEG and ASX website

3.1 Participant intensity in equity spot and derivatives

Figure 1 shows the variation in participation intensity between the cash and derivatives markets. It shows that:

- **Non-custodian-non-proprietors (NCNPs) trades** account for approximately 50% of the turnover in the cash market and 40% of the turnover in derivatives markets.
- **Proprietary (P) trades** account for less than 20% of turnover in the cash market but around 40% of the turnover in the derivatives market.
- **Custodian participants' (CP) trades** account for approximately 30% of the turnover in the cash market but only around 15% of the turnover in the derivatives market.

This highlights some interesting facts about trading in the Indian equity markets. First, domestic FIs face both explicit and implicit barriers to participation in equity markets (Section 8.3). These barriers are more intensive in the derivatives markets than in the cash market. For instance, banks, insurance, pension funds are not permitted to participate in equity derivatives. While MFs can participate, regulatory disincentives ensure that their participation is small. In global markets FIs form the biggest order flow to equity markets, but in India their participation in cash market is low, at approximately 6% of their Assets Under Management (AUM) (Table 12) and in the derivatives market in negligible, at less than 0.5% of the market turnover.

Second, the manner of imposition of STT creates a wide variation in trading costs between the cash and derivatives market (Table 4). Trading costs in the cash market are 9x of the

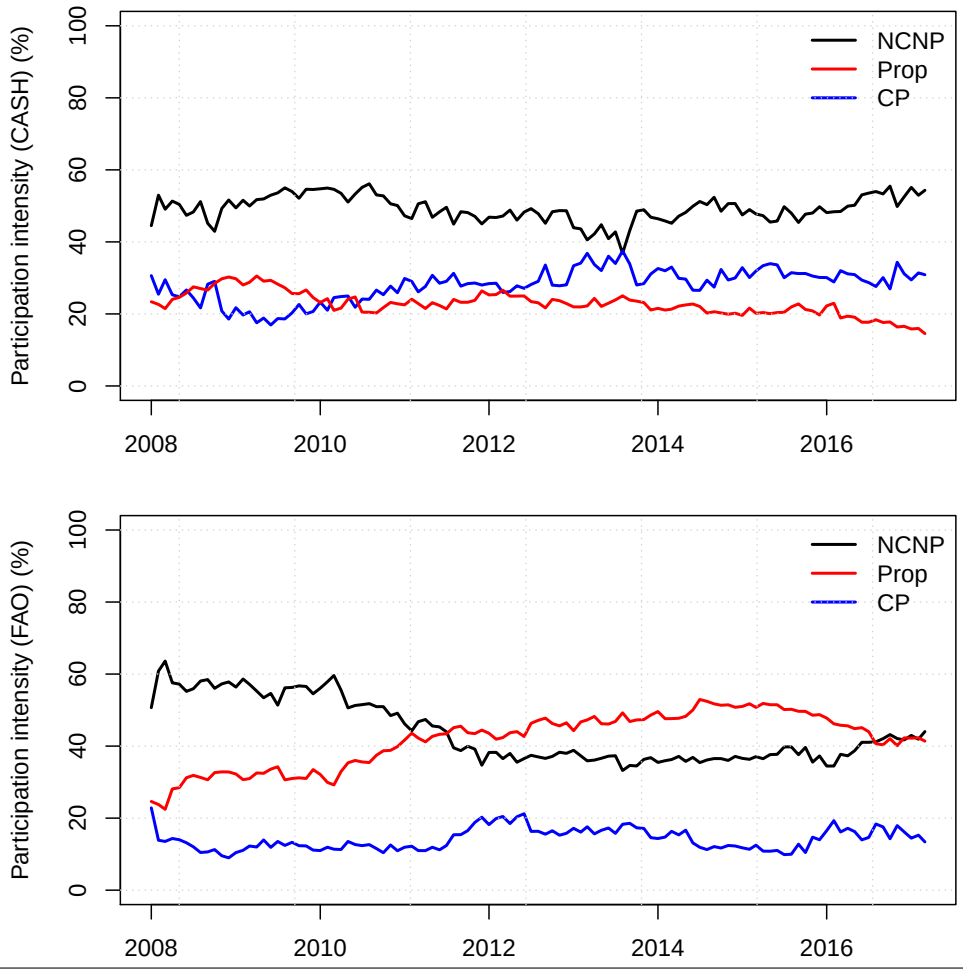
trading costs in the options market. This anomaly, along with the fact that the leveraged positions in derivatives require a lower upfront commitment of capital, incentivises P and NCNP participants to choose the derivatives markets, and more specifically the equity options market, for their position taking. The lack availability of capital incentivises this trading behaviour.

Figure 1 Participation intensity in the equity cash and F&O markets, 2008 – 2017

The graph shows the fraction of trading done by three different categories of participants in the market:

- **Custodian trades (CP)**: includes institutional participants such as banks, MFs and insurance firms as well as Foreign Portfolio Investors (FPIs)
- **Proprietary trades (P)**: includes proprietary trades
- **Non Custodian, Non Proprietary trades (NCNP)**: includes trades by individuals (including HNIs), corporates, partnership firms and Non Resident Indians (NRIs).

The graph is at monthly frequency and shows the median values by participant category for each month. Source: The data for the graphs are the tick-by-tick data from the NSE.



3.2 Participation quality in derivatives markets

The ratio of Traded Volume (TV) to Open Interest (OI) in the derivatives market is generally considered a useful number about the quality of market activity. While the TV measures the trading activity and indicates the size of the market transactions during a day, the OI captures the size of the capital investment over a longer horizon. OI is an indicator of the margin funds that traders keep with the clearing corporation to cover the risk of a position carried over multiple days. We often find that TV is a feature of the market that displays higher volatility compared to the OI. News and information moves TV more than it moves OI. What does negatively impact OI, is regulatory or exchange actions that reduce position limits and increase margins. More importantly, we find that poor regulatory governance, by way of regulatory changes that are implemented without public consultation or any advance warning to the market, have a long-term negative impact on OI. This is because such actions by regulators are seen as adding to regulatory uncertainty, which is systemic and difficult to hedge.

The graphs in Figure 6 show the TV to OI ratio for Nifty futures and Nifty options from the period Jan, 2013 to Mar, 2017.[2] They are calculated as ratio of the average daily TV during the week in the numerator and the maximum OI during the same week in the denominator. The graphs illustrate two useful observations. First, the TV/OI ratio of 0.5 – 0.6 for futures and around 1.1 – 1.2 for options suggests that even with prop desks and non-institution-non-brokers being the dominant participants in the market, there is a base of capital that stays invested in the market over the long term (margin capital that is required to positions open). Second, for both Nifty future and options, the median TV/OI ratio has declined between November 2015 to March 2017.

These two together suggest that while equity derivatives markets have grown, this increase has not been fueled by speculative activity alone. The proportion of speculative to non-speculative participation is: (1) balanced, (2) has remained broadly so over time, and (3) has in fact declined (by 14% for Nifty futures and 20% for Nifty options) in the last 18 months.

In its discussion paper, SEBI has not presented any evidence to show how increased derivatives trading vis a vis cash trading has had an impact, either on overall market quality in the equity cash or derivatives market, or from a systemic risk perspective.

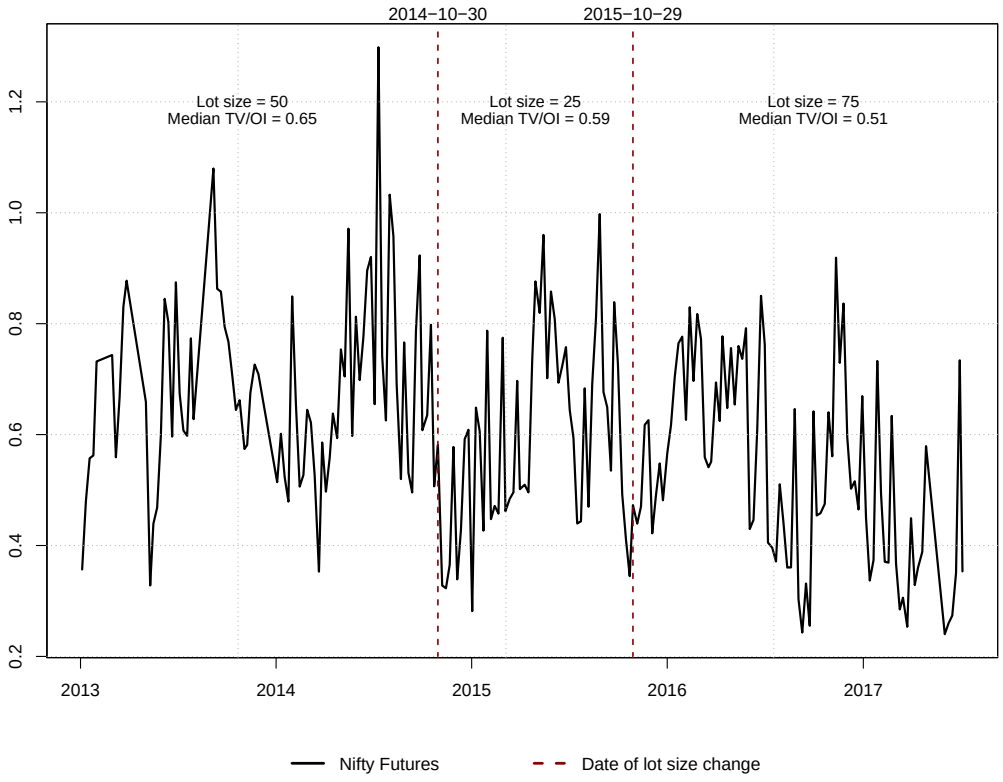
[2]During this period two instances of lot size changes were effected. In May, 2014, lot size for Nifty derivatives was revised from 50 to 25 (SEBI Master circular no. CIR/MRD/DP/17/2014 dated May 20, 2014). The change came into effect from 31st October, 2014.
`https://www.nseindia.com/content/circulars/FAOP27733.pdf`

In July, 2015, the lot size of Nifty derivatives from 25 to 75 (Circular CIR/MRD/DP/14/2015 dated July 13, 2015) The came into effect for near and next month contracts from 31st October, 2015.
`https://www.nseindia.com/content/circulars/FAOP30449.pdf`

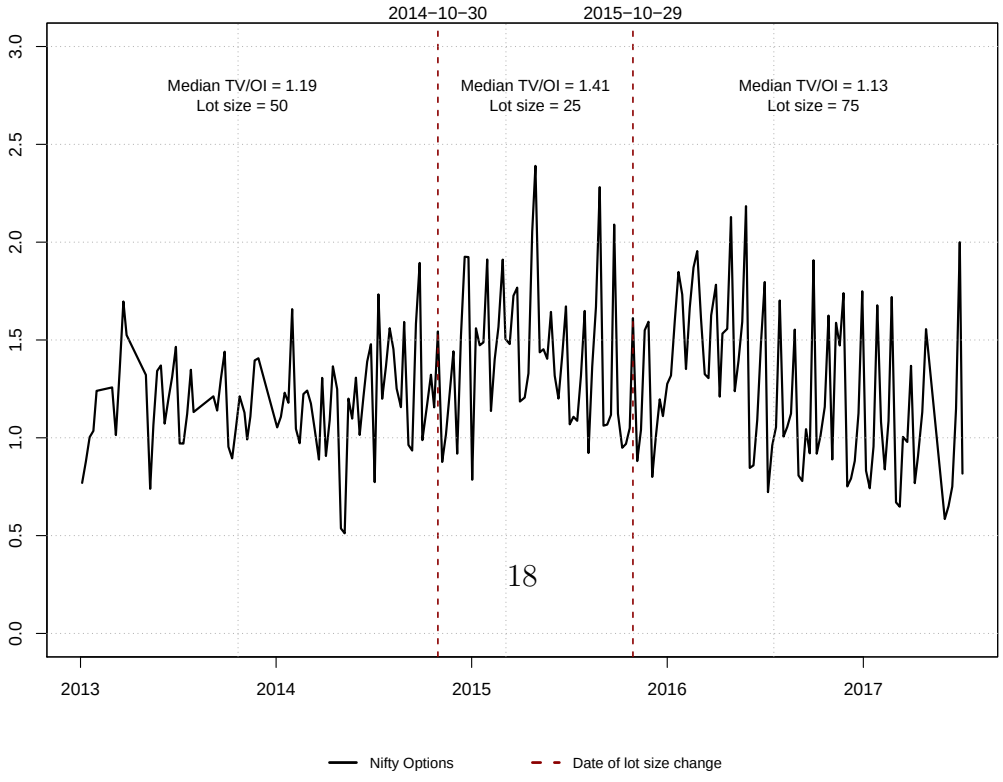
Table 6 TV/OI ratio for Nifty futures and options, Jan 2013 to Jul 2017

TV/OI is computed at weekly frequency by taking the ratio of average daily traded value for the week to the maximum OI for that week.
Source: The data for the graphs have been taken from the daily Bhavcopy from the NSE website.

Nifty futures



Nifty Options



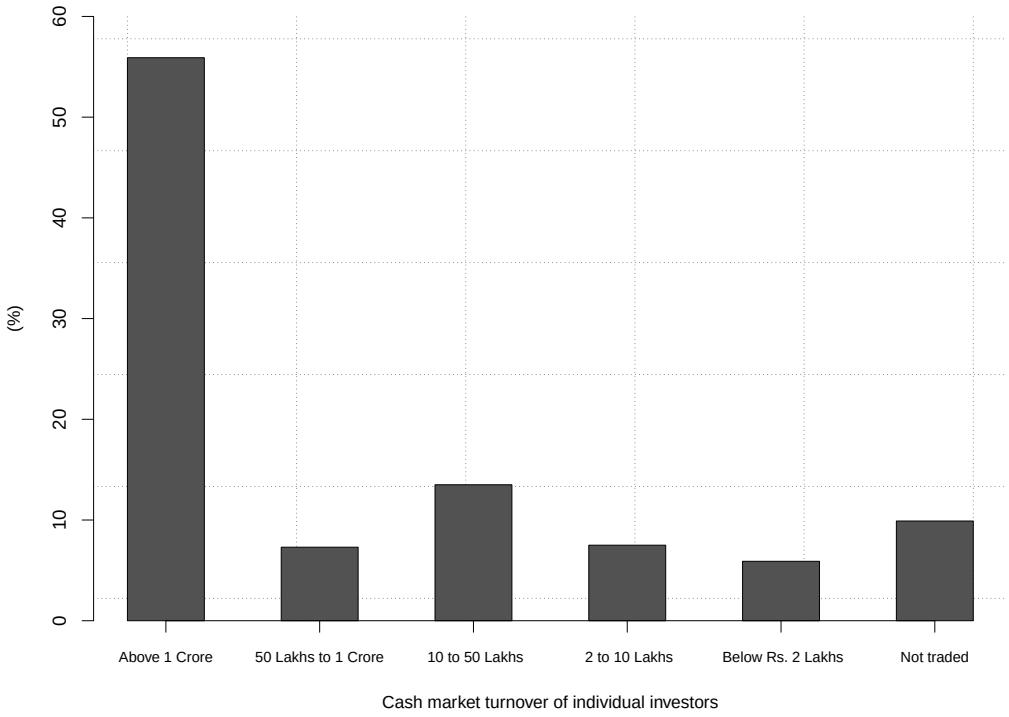
3.3 Individual investor participation in equity derivatives

Regulatory concerns on investor protection are specially focused on the small and marginal investors. In this context, data presented by SEBI in Table No. 6 and Table No. 7 in the discussion paper gives us a better understanding of the nature of individual investors' participation in the equity derivatives markets (represented in Figure 2). It points to two facts. First, individual investors account for 25.6% of the turnover in the derivatives markets. Second, within this, 55% of the turnover from individual investors comes from those investors who have a spot market exposure greater than Rs. 1 cr. Further, an additional 27% of the individual investor turnover in the derivatives market comes from investors whose spot market exposure is greater than Rs.10 lakhs but less than Rs.1 cr.

This suggests that while individual investors contribute a significant proportion of the equity derivatives turnover, more than three quarters of these are the investors with a relatively larger exposure to equity markets (given that average trade size in the most liquid stocks in the spot market is around Rs. 35,000 (Table 9), an exposure of greater than Rs. 10 lakhs may be deemed as large). These investors are likely to be the more *sophisticated investors* in the equity market.

Figure 2 Derivative market turnover by individual investors in relation to their spot market exposure

The graph shows the fraction of the spot market traded volumes attributed to categories of individual investors, classified by the size of their transactions.
Source: The data for this table has been taken from Table no. 7 in the SEBI discussion paper.



4 Response 4: product suitability for equity derivatives

Question: *Taking into account trading of individual investors in derivatives, especially options, is there a need to introduce a product suitability framework in our market?*

Summarising our response: We submit that the regulatory framework applicable to the Indian securities market contains obligations of suitability assessment for all financial service providers in the securities markets. A suitability framework that is specific to equity derivatives, as a product, is not warranted for three reasons. First, world over, suitability obligations are generally imposed only when dealing with retail consumers and are rarely specific to a market segment or product. Second, SEBI data shows that a majority of the individual participants in the equity derivatives market are those with relatively large exposures. These may be sophisticated consumers who understand the features of the product they are buying. Finally, there is no specific evidence of mis-selling of such products that SEBI has produced, which would warrant such a framework specific to the equity derivatives market to be out in place. Given this, a product suitability assessment framework, specific to the equity derivatives segment which is in over and above what is already in place, is both unwarranted and excessive.

Analysis:

We present our response to this question in two parts:

1. Whether India has a product suitability framework?
2. If yes, whether the existing suitability framework is adequate in the context of equity derivatives?

4.1 Existing suitability framework in Indian securities market

India does have a product suitability framework in place for the securities markets. The framework is spread across different regulations issued by SEBI. For all intermediaries registered with SEBI, there is a general obligation to conduct a suitability assessment. In addition, there are specific suitability obligations for some types of intermediaries. The key regulations containing the product suitability framework are summarised below:

1. *Suitability obligations for all intermediaries*: SEBI-registered intermediaries are required to render the best possible advice to their clients, having regard to: (1) the clients' needs, (2) the environment, and (3) their own professional skills.(Schedule III of the *Securities and Exchange Board of India (Intermediaries) Regulations, 2008*) An intermediary is specifically prohibited from making a recommendation to any client or investor unless the intermediary has reasonable grounds to believe that the

recommendation is suitable (Regulation 15(3) of the *Securities and Exchange Board of India (Intermediaries) Regulations, 2008*).

2. *Suitability obligations for stock brokers and sub-brokers*: Stock brokers and sub-brokers are required to seek information from clients based on which recommendations may be made. The recommendation/advise has to be given on reasonable grounds, where the broker/sub-broker believes that the recommendation is "suitable" for such a client upon the basis of the facts provided by the client about its investment profile (Regulations 9, 15 and Schedule II of the *Securities and Exchange Board of India (Stock Broker and Sub Broker) Regulations, 1992*).

3. *Suitability obligations for investment advisers*: SEBI-registered investment advisors are required to (a) conduct a risk profiling of their clients on a regular basis; and (b) conduct a suitability assessment before advising on any product (Regulations 16 and 17 of *SEBI (Investment Advisers) Regulations, 2013*). These regulations are more prescriptive than the two regulations mentioned above, and specify the components of a suitability assessment obligation in greater detail. For instance, they mandate that an investment adviser has "a documented process for selecting investments based on clients investment objectives and financial situation".

   Further, they require the investment adviser to ensure that, "whenever a recommendation is given to a client to purchase of (sic) *a particular complex financial product* (emphasis supplied), such recommendation or advice is based upon a reasonable assessment that the structure and risk-reward profile of financial product is consistent with clients' experience, knowledge, investment objectives, risk appetite and capacity for absorbing loss".

A breach of the above mentioned regulations entails penal consequences, which can be in one or more of the following forms:

1. *Monetary penalties*: The *SEBI Act 1992* provides for penalties for specific offences such as fraudulent trading, failure to register, etc. There is no specific penalty for failure to comply with suitability obligations. Therefore, the provision relating to general penalty will apply to such non-compliance. The minimum penalty for such non-compliance is Rs. 100,000 and the maximum penalty is Rs. 10,000,000. (Section 15HB *SEBI Act 1992*).

2. *Suspension or cancellation of registration*: The regulatory framework prescribed by SEBI allows it to cancel or suspend the license of a registered entity for contravention of the regulations.

3. *Other actions*: The regulatory framework allows SEBI to take other actions such as restricting new product launches or new contracts, or barring specific persons associated with the defaulting entity from taking up positions with other financial market intermediaries, for contravention of the regulations issued by SEBI.

India has the basic regulatory framework governing product suitability in place, and the law provides for penal consequences for violation of such framework. Given the existence of this general framework, a suitability framework specific to *derivatives* is not warranted. It is unclear why the existing suitability framework will not serve the regulatory intent of ensuring that financial products are not mis-sold to consumers . Further, a review of the suitability assessment frameworks in other jurisdictions indicates that the framework prescribed by SEBI is largely in line with global standards. A summary of the framework governing suitability assessment in the securities markets in other jurisdictions is laid out in Annex A to this note.

4.2 Adequacy of suitability framework in the context of equity derivatives

We submit that given that a more than three quarters of the individual participation in the equity derivatives market in India if from large and possible sophisticated investors, a suitability framework specific to the equity derivatives market, is unwarranted and inappropriate.

4.2.1 Distinction between retail and sophisticated consumers

The purpose of a suitability framework is to protect retail consumers from buying products whose financial implications are not immediate and not entirely comprehensible at the time of the sale of such products. This is best summarised by the Australian Securities and Investment Commission (ASIC) in its regulatory guide no.175 on "Licensing: Financial product advisers conduct and disclosure" as under:

> *"The suitability rule is designed to address the lack of sophistication of retail investors who, irrespective of the level of risk disclosure, may not be able to adequately analyse their investment needs or develop strategies to achieve their investment goals."*

This principle has subsequently been endorsed by the Justice B.N.Srikrishna led Financial Sector Legislative Reforms Commission (FSLRC) in the *Report of the Financial Sector Legislative Reforms Commission*, which adopts the approach of adjusting regulatory intervention depending on the kind of consumer in question. The report states:

> *"...guiding principles to inform the choice and application of powers should accompany the grant of any broad range of powers. These principles will require the regulator to pay special attention to diversity in consumer profiles and differences in the kind of risks that different financial products pose to consumers..."*

It classifies the obligations of financial service providers into two categories, namely, obligations to retail consumers and obligations to sophisticated consumers. The *Report of*

the Financial Sector Legislative Reforms Commission recommends imposing the obligation of conducting a suitability assessment only when dealing with retail consumers, as under:

> *"Retail consumers may be in a situation where they are not able to fully appreciate the features or implications of a financial product, even with full disclosure of information to them. This makes a strong case for a thorough suitability assessment of the products being sold to them."*

This recommendation is in line with global regulatory practices in this regard. For instance, until recently, the Monetary Authority of Singapore (MAS) imposed suitability obligations only when dealing with retail consumers. In September 2015, MAS amended its framework to extend this obligation to sophisticated consumers, and that too, if such consumers *choose* to avail of this benefit.[3]

As discussed in section 3.3 of this note, 55% of the turnover in the equity derivatives market, is from those individual investors who have a cash market exposure greater than Rs. 1 cr. Further, an additional 27% of the individual investor turnover in the derivatives market comes from investors whose cash market exposure is greater than Rs. 10 lakhs but less than Rs. 1 cr. Since a majority of the individual investors (82%) in the equity derivatives segment are likely to be sophisticated investors, a suitability assessment framework specifically for the derivatives market is misplaced.

[3]The press release accompanying such amendment stated as under: "Investors who meet prescribed wealth or income thresholds to qualify as accredited investors (AIs)2 will have the *option to benefit from the full range of regulatory safeguards that are applicable for retail investors*." (*MAS Enhances Regulatory Safeguards for Investors*)

5 Response 5: setting margins, position limits and contract sizes

Question: *Considering participants profile, product mix and leverage in equity derivatives, what could be the guiding principles for setting minimum contract size and open position limits for equity derivatives?*

Summarising our response: Globally, there are no guiding principles laid down by regulators for designing specifications of equity derivatives products, or for derivative products on any asset class. This is always left to the exchanges, who are correctly incentivised to make sure that the choice of design parameters are optimised to maximise market quality. Past experience in the Indian context shows that when regulators have taken over the role of product design, it comes at the cost of market development and lost market share to international exchanges that compete for market share on the same domestic product.

If there is a role for the regulator, it is to ensure that the markets are competitive and fair in providing access to all participants, both producers and investors. Particularly so in the case of minimum contract size and position limits, which can be used as tools to limit or exclude participation by smaller sized investors. This introduces an element of anti-competition, which a regulator must seek to prevent. It can also result in the outcome of lower diversity of opinion, which hurts market quality (as discussed in Section 1).

SEBI must put in place a framework for devolving the responsibility of setting minimum contract size and position limits on to the exchanges. Alongside, SEBI must put in place a system to monitor the changes in market quality before and after these changes. Here market quality should include measures of price efficiency, resilience of liquidity, fair access to all participants and the market share of domestic markets compared to their global competitors.

Analysis:

5.1 Global experience in setting margins, position limits and contract sizes

Globally, a framework for risk management in exchange traded markets relies on three elements of market micro-structure design:

1. A robust system of **margins** to monitor and manage counter-party default risk. This system uses a combination of *Initial Margin* and *Mark-to-Market Margin* by the clearing corporation at the exchange. Given this:
    - the risk of counter-party default is managed and controlled (thus, protecting the interest of the other party),

- if individual counter-party risk is well managed by the trading member, there is little risk of micro-prudential failure, and
- since individual counter-party risk and trading member is controlled, there is little risk that multiple defaults will cascade into a systemic event.

2. Appropriately designed **position limits**, at client and member levels, to manage concentration risk. However, if position limits are too small, they can act as barriers to participation.
3. **Contract sizes** depending on the nature participation in the market. Large contract sizes are appropriate for markets dominated by institutional participants, whereas in markets which have diverse participation across institutional and non-institutional investors, relatively smaller contract sizes may be adopted.

   In many markets, mini derivatives contract, with lower lot sizes, exist alongside the primary derivative contracts. This enables even smaller investors to participate, however, it causes a fragmentation of liquidity between these products.

Setting of margins, position limits and contract sizes are critical decisions in the exchange traded market. At appropriate levels, each of these is a tool for managing risk. If not designed suitably, these can add to costs in the market, and become a barrier to participation.

Globally, the decision on margins, position limits and contract sizes are seen as commercial decisions, which are taken by exchanges based on the nature of product, participants and risks in the market. Securities markets regulators in these jurisdictions maintain an oversight over exchanges, but allow them the flexibility to take these decisions. This is unlike in India where margins, position limits and contract sizes are laid down by SEBI, and exchanges have little or no operational flexibility in this regard.

5.2 Indian approach to setting margins, position limits and contract sizes

Table 7 compares the margins, position limits and contract sizes across global exchange with India. In India, in addition to the global standard of initial and variation margin, an extreme loss margin is also imposed to take care of tail risk. The daily frequency of margin computation is 6 times, as compared to end of day or twice a day in global exchanges. This results in margins in Indian equity markets being some of the highest observed.[4]

Position limits and contract sizes are similar in their design to global exchanges, except that in India these are fixed by SEBI regulations. Given the weak regulatory governance standards in India,[5] this becomes cause for significant regulatory uncertainty for participants,

[4] A more detailed discussion on this is presented in Section 7.

[5] Burman and Zaveri 2013 shows that the transparency of the regulation making process at the Indian financial sector regulators is lower compared to other sector regulators in India, even though SEBI does

which turn has an adverse impact on market quality and investors' trust in markets.

For example, in July 2015, SEBI increased the minimum contract size of the equity derivatives contracts from Rs.200,000 to Rs.500,000. No rationale was put forward for this intervention despite the fact that a change like this imposes costs on the financial market infrastructure, as well as on all trading members, who have to change their systems interface with the exchange. To evaluate the costs and benefits of this intervention, we carried out an impact assessment exercise, the results of which are presented in detail in Appendix B. We find that the impact of this intervention on the market was negligible, and can be summarised as follows:

- Traded volumes on both the Nifty futures and options markets have *remained the same.*
- Open interest has *worsened* for the Nifty futures.
- Market liquidity has *improved* for the Nifty options.

In summary, the costs of this intervention have been *higher* than the *benefits.* The intervention added (a) to the real costs for trading members, which in the long term may translate into higher cost for their customers, and (b) to the level of regulatory uncertainty in the market, which may *lower* long term investments in equity derivatives markets. The benefits both in terms of market quality, and changes in participant composition are unclear. The evidence does not offer support that this was a successful intervention, with a positive impact for market quality or for the interests of investors in the equity derivatives market.

5.3 Adopting best practices in regulation making

What we can conclude from this intervention, however, is the importance of stating the objective for any regulatory intervention. Ideally, the objective must be such that it can be measured in terms of expected improvement in market quality or benefits to customers. Once this is done, SEBI can evaluate the regulatory intervention for how effective it was in achieving its objective. By doing so, it can then modify the design of future interventions such that the stated objectives can be achieved in the re-design. In this way, SEBI can improve its regulatory governance processes, as well as move closer to implementing a regulatory process within which to improve the effectiveness of regulatory interventions.

Chapter 4 of the *Handbook on adoption of governance enhancing and non-legislative elements of the draft Indian Financial Code* 2013 lays down the process for framing regulations, which is in line with the global best practices on regulatory governance. In a Financial Stability and Development Council (FSDC) Resolution dated October 24, 2013, all financial sector regulators agreed that

compare more favourably with the Reserve Bank of India (RBI) in this regard.

> *"1. All regulations after Oct. 31, 2013 and all other subordinate legislation (including circulars, notices, guidelines, letters, etc.) issued after Dec. 31, 2014 must comply with the following requirements:*
> *2. No subordinate legislation may be published without a Board resolution determining the need for such subordinate legislation.*
> *3. All draft subordinate legislation should be published with statement of objectives, the problem it seeks to solve, and a cost-benefit analysis (using best practices).*
> *4. Comments should be invited from the public and all comments should be published on the web site of the regulator. Regulations will become effective after the Board approves them. Board approval should take into account all comments received."*

While SEBI has made progress in this direction, its public consultation process and the subsequent regulation making are far from being compliant with the spirit of this resolution (Pattanaik and Sharma 2015).

Table 7 Margin, position limits and contract size for equity derivatives globally

	London Stock Exchange (LSE)	**Australian Stock Exchange (ASX)**	**New York Stock Exchange (NYSE)**	**NSE**
Margins framework	Initial margin + Variation margin	Initial margin + Variation margin	NA	Initial margin + Variation margin + Extreme Loss margin
Frequency of margin calculation	End of day	End of day	NA	6 times
Position limits	LSE Derivatives Market Rules (September 26, 2016) specify that the Exchange may prescribe position limits, however the limits themselves are unavailable.	No position limits on equity derivatives	*NYSE ARCA Options*: None *NYSE Amex Options*: position limits vary according to the number of outstanding shares and past six-month and the TV of the underlying stock.	*Equity Index Options*: Higher of Rs.500 cr or 15% of the total OI in equity index futures and options each
Contract sizes	- *UK stock options:* $Strikeprice \times Multiplier$ - *FTSE 100 index futures:* GBP 10 per Index Point	- *ASX SPI Index Options:* USD 25 per index point - *ASX MINI SPI futures*: \$5 per index point	- *NYSE ARCA Options:* $\$100 \times IndexValue$ - *NYSE Amex Options*: Contract represents 100 shares of the underlying stock.	- *NIFTY F&O*: 75 into Index units

Source: LSEG, ASX, NYSE and NSE websites

6 Response 6: criteria for introduction of equity derivatives

Question: *Whether there is a need to review existing criteria for introduction of derivatives on stocks or derivatives on indices?*

Summarising our response: As discussed in Section 5, product design is optimally left to exchanges and intermediaries, because it is in their best interests to create an ecosystem where the most efficient prices are generated on products that fit the trading interests of as large a pool of participants as possible. This is more so in the case of derivatives, where tools such as position limits or contract size may be used to constrain participation. There is need to review and modify the existing criteria for introduction of derivatives giving exchanges and intermediaries full control of the process, with oversight from SEBI. The transition of the product introduction decision from SEBI to the exchanges can be done over a pre-defined period (say, of one year).

However, once this has been devolved on the exchanges and intermediaries, what SEBI can and must do is to measure and monitor the market quality of new products or new designs of old products. SEBI must constantly evaluate the price efficiency, resilience of liquidity of all products, any evidence of market manipulation, and the quantum of customer complaints about products. SEBI must also publish these on their website on a regular basis, as a demonstration of their own market monitoring responsibility, and to assure investors that the Indian markets remain of high quality and have integrity.

Analysis:

6.1 Criteria for introduction of equity derivatives in India

SEBI has laid down the criteria for introduction of single stocks into the derivative segment (*SEBI Cirular on the Revision of Eligibility Criteria for Stocks in Derivatives Segment* and *SEBI Master Circular on Matters relating to Exchange Traded Derivatives*). These criteria take into account the size of trading and the liquidity in the underlying market.

The eligibility criteria for introduction of stocks into the derivatives segment are:

- Stocks to be listed in the derivatives segment are chosen from amongst the top 500 stocks in terms of average daily market capitalisation and average daily traded value in the previous six months on a rolling basis.
- The stock's median quarter-sigma order size[6] over the last six months shall not be less than Rs. 10 lakhs.

[6]Quarter-sigma order size for a stock is the order size required to cause a change in the stock price equal to one-quarter of a standard deviation.

- The market wide position limit in the stock shall not be less than Rs. 300 cr.

  The market wide position limit (number of shares) shall be valued taking the closing prices of stocks in the underlying cash market on the date of expiry of contract in the month.

- The market wide position limit of open position (in terms of the number of underlying stock) on futures and option contracts on a particular underlying stock shall be 20% of the number of shares held by non-promoters in the relevant underlying security i.e. free-float holding.

An index is eligible to be listed in the F&O segment only if the stocks contributing to 80% weightage of the index are individually eligible for derivatives trading. However, no single ineligible stocks in the index can have a weight of more than 5% in the index.

An underlying has to conform to the eligibility criteria for a consecutive period of 3 months to be traded in the derivatives segment, failing which no new fresh month contracts can be issued on the same.

F&O contracts may be introduced on new securities which meet the above mentioned eligibility criteria. But this remains **subject to approval** by SEBI.

6.2 Criteria for introduction of equity derivatives on global exchanges

We look to global practice in this regard and review the eligibility criteria for introduction of equity derivatives on LSE, ASX and Moscow Exchange. We do not find any specific guidelines.

NYSE does provide some guidance. On NYSE, for a security to be eligible for an options contract:

- There should be minimum of 7,000,000 shares of the underlying security which are owned by persons other than those required to report their security holdings under section 16(a) of the Securities Exchange Act, 1934.
- There are a minimum of 2,000 holders of the underlying security.
- Trading volume (in all markets in which the underlying security is traded has been at least 2,400,000 shares in the preceding twelve months.
- If the underlying is a "covered security[7]", the market price per share of the underlying must be at least $3 for the previous five consecutive business days.

[7]As per the Securities Act 1933, a covered security is a security which is listed or authorised for listing on the NYSE, the American Stock Exchange or the National Market System of the NASDAQ Stock Market

- If the underlying is not a "covered security", the market price per share of the underlying should be at least $7.5 for the majority of business days during the three calendar months preceding the date of selection.

6.3 Need for a review of the eligibility criteria

In most global exchanges, there are no regulatory criteria defined for introduction of derivatives on equity or equity index underlying. Introducing new contracts is a purely commercial decision of the exchanges and they routinely introduce, modify and withdraw derivatives contracts, both on stocks and equity indices.

In India, over and above the regulatory guidelines for eligibility of stocks and indices to be listed for trading in the derivatives segment, there is requirement to seek specific SEBI approval to do so. Exchanges make applications to SEBI for introducing such derivative contracts. This brings in an element of regulatory discretion and uncertainty in the new product introduction process. Further, once a contract is introduced, any subsequent change in the contract specification also requires SEBI approval.

Any review of the criteria for introducing equity derivative contracts must (1) give flexibility to exchanges in introducing, modifying and withdrawing contracts, and (2) remove the need for regulatory approval and replace it with a principle based oversight framework.

7 Response 7: adequacy of margin framework

Question: *Taking in to account the margin levied in the derivative segment and consequent leverage, is the present margin framework adequate? Is there a need to review trading and risk management framework for derivatives?*

Summarising our response: The performance of a margin framework is measured by how well the clearing corporation can ensure that the markets continue to function with minimal counter-party defaults even through periods of extreme price movements. By this simple measure, the present margin framework, which has been in place since 1996 for the equity spot markets and 2000 for the equity derivatives markets, has functioned well. There have been no market failures, despite the intervening period having seen some of the harshest events of price changes in both domestic and global markets.

Since the time the design of the current margin framework was put in place, significant progress has been made in the transparency of the markets, and in the use of technology in financial services. Given this, SEBI would be wise to review the risk management framework for derivatives trading even without a crisis to trigger the review. The objective of the review should be to develop markets by seeking to reduce the capital cost of margins while maintaining the systemic integrity of the securities market. In order to do this, SEBI must consider a path to introducing portfolio margining: (a) to improve the capital efficiency in the market, and (b) to achieve progress in the convergence between various segments of the securities markets.

Analysis:

The depth and liquidity of exchange traded derivatives markets grow on the strength of the margin system. Margins allows the clearing corporation to become the single counter-party to all trades, which means that the risk of every trade is taken against the capital available at the clearing corporation.

The clearing corporation calculates the appropriate margin using a Value at Risk approach, which defines is the worst case loss in the value of a security that could take place with a very low probability. This model has been successfully deployed as the first model of margin calculation in most clearing corporations across the world.

When equity derivatives started trading in India, the institution of the clearing corporation was already firmly in place to eliminate the counter-party credit risk of matching orders placed anonymously by any counter-party for any security across the entire country. Thus, the equity markets ecosystem was already knowledgeable about the mechanics of novation. What the *L.C.Gupta committee report* asked for, in addition, was that the margin had to be calculated for every customer of every trading member. The details of the margining system was specified by *Report of the Committee on Risk Containment in the Derivatives Market* 1998, which incorporated the higher risks of securities and payment settlement, as they existed in 1998.

In 2017, many of the risks from those times have reduced, and improvements in payments and market micro-structure have improved the ability of the clearing corporation to better understand the risk, *and* to be able to control it. Given this, the capital that is charged as margin, computed using the 19989 system, is higher than the actual risk to the clearing corporation. It also means that customers are charged margin capital which is higher than the risk they bear.

This gap, between actual risk and the current margins, can be reduced by implementing a portfolio margining system for securities market portfolios, which in turn will improve the capital efficiency of the securities market. Why is this an appropriate approach today? When the *Report of the Committee on Risk Containment in the Derivatives Market* 1998 specified the margining system, there was only one derivative product that was being considered, the index futures contract. Index options were started subsequently. Thus, the concept of margining started with one contract. After December 2008, a limited form of portfolio margin was permitted by SEBI, cross margin futures against the underlying (*Cross Margining across Exchange traded Equity (Cash) and Exchange traded Equity Derivatives (Derivatives) segments, 2008*).

Since then, the exchange traded derivatives markets have developed to include derivatives on other equity products as well as derivatives on currency and interest rates. Each of these trade on different segments of the same exchange. A single investor could hold a portfolio with returns on equity, currency and interest rates simultaneously but its positions are margined separately. Since January 2016, with commodity derivatives also coming under SEBI's jurisdiction, a portfolio view of returns can also include returns on commodity derivatives. Since securities markets customers care about returns at the level of a portfolio, it is important to view risk too at the portfolio level, which may be less than or equal to the sum of the risk of the parts.

We also examine the global best practices deployed in risk management systems at clearing corporations globally. Table 8 presents the typical parameters in the design of a clearing corporation. It compares three systems that are used globally with the system at the National Securities Clearing Corporation Limited (NSCCL). The global systems that we use in the comparison include SPAN or "Standard portfolio analysis of risk system" which was developed by the Chicago Mercantile Exchange (CME), TIMMS or the "Theoretical Inter Market Margin System" developed by the Options Clearing Corporation (OCC), and OMS II developed by the NASDAQ for derivatives clearing. We find that the NSCCL margin system is far more costly in terms of: (1) capital required for margins, as well as (2) the uncertainty imposed on the trading member because of the high frequency of intra-day updates of the margins.

Table 8 A comparison on margins at major international margins system

	Parameter	NSCCL SPAN	SPAN	TIMS	OMS
1.	**Initial margin (IM)**	Yes	Yes	Yes	Yes
2.	**Valuation interval**	16 arrays	16 arrays	10 arrays	93 arrays
3.	**Price change multiplier**	1/3	1/3	1/5	1/15
4.	**Exposure margin**	3%	–	–	–
5.	**Payment margin**	Yes	Yes	Yes	Yes
6.	**Premium margin**	Yes	Yes	Yes	Yes
7.	**Delivery margin**	Included in inter-month spread	Included in inter-month spread	Yes	Yes
8.	**Minimum margin**	Yes (F&O)	Yes (O)	Yes (F&O)	Yes (O)
9.	**Volatility changes**	Yes	Yes	No*	Yes
10.	**Volatility estimate**	Risk metrics approach on underlying	Implied volatility	Implied volatility[2]	Implied volatility[3]
11.	**Inter-month correlation**	Delta-based inter-month spreads	Delta-based inter-month spreads	–	–
12.	**Asset correlation**	Dynamic approach-composite deltas	Dynamic approach-composite deltas	Static approach-classes/products	Static approach-window method[4]

Notes:
[1] Volatility changes are not accounted for in TIMS. However, the new TIMS introduced by OCC does account for the same.
[2] Volatility estimates for the new TIMS introduced by OCC is obtained using implied volatility.
[3] Volatility estimates are computed separately for options held and written.
[4] The static window method approach under OMS-II uses a predefined window size.

8 Response 8: market inefficiencies

Question: *Whether there are any inefficiencies in the market that needs to be addressed?*

Summarising our response: Indian equity markets were the success story of the reforms of 1990s. However, in recent years all segments of this market, issuance, secondary trading and derivatives face challenges in the form of policy inefficiencies, which constrain their growth and development.

The market for secondary trading, both in terms of size and depth, is showing signs of stagnation. While turnover has increased from Rs.38.5 trillion in 2009 to Rs.49.8 trillion in 2016, the number of securities that form the base of plausible and liquid investments in restricted to only the top 300 firms. These firms account for approximately 75% of the market turnover and 90% of the equity market capitalisation.

In the primary equity market, issuance has dropped from approximately Rs.900 billion in the period 2006-2009 to Rs. 520 billion in the period 2010-2014. This despite the fact that during the 2010 to 2014 period the Nifty Index grew at a CAGR of 18.2%. An analysis of the issuance trends, during the same period, in markets such as Japan, Singapore, South Korea, UK and USA shows that primary issuance's in all these countries saw an increase in the 2010-2014 period relative to the 2006-2009 period.

In addition, in India, both domestic FIs and FPIs face barriers to equity participation, in terms of rules of access, market frictions, high costs of trading and regulatory uncertainty. These barriers exist as explicit or implicit constraints of participants in all three segments[8] of the equity markets.

Analysis:

The Indian equity market is held up as one of the success stories of the reforms that was the response to the crisis of the 1990s. However, even today equity markets continue to have features that are characteristic of a market with low capital access, lack of depth and barriers to participation. As pointed out in Section 1, the derivatives markets appear large in relation to the spot market size. While the derivatives markets have grown, the spot market has continued to languish.

There are three obvious inefficiencies in the Indian equity market, which will benefit from stronger policy thinking and support. These are as follows:

1. lack of depth in equity trading;
2. high costs of procedure in equity issuance;
3. barriers to participation, which includes:
    (a) low domestic institutional participation in the spot and derivatives market, and

[8]Issuance, trading and derivatives

(b) barriers to foreign participation.

8.1 Poor depth in equity spot markets

Table 9 shows the secondary market trading from January 2017 to June 2017 for the best traded firms at both the NSE and the BSE, a sample of approximately 2,900 listed firms.

Table 9 Equity trading in India, Jan-Jun, 2017

	Total Market Cap (USD Billion)		Avg. Daily Volume (USD Billion)		Avg. Trade Size (USD)		Turnover Ratio (Percentage)	
	Q4-17	Q1-18	Q4-17	Q1-18	Q4-17	Q1-18	Q4-17	Q1-18
All firms	1709.3	1622.5	4.06	4.13	444	433	0.0014	0.0016
D1	1516.1	1455.5	2.99	2.32	544	494	0.0014	0.0016
D2	121.8	107.7	0.43	0.42	295	334	0.0023	0.002
D10	0.157	0.142	0.0038	0.2088	201	481	0.0005	0.005

Q4-17 denotes Jan-Mar, 2017; Q1-18 denotes Apr-Jun, 2017

D1 denotes first decile, **D2** denotes second decile, and **D10** denoted tenth decile of firms based on market captilisation. There are approximately 290 firms in each decile.

Total market capitalisation is computed on the first day of the quarter for NSE and BSE listed firms.

Average daily traded volume summed across firms at BSE and NSE

Average trade size, $Tradesize = \frac{volume}{no.of trades}$

Daily turnover ratio, $TR = \frac{volume}{mcap}$

We observe that trading is concentrated in the top decile of firms (**D1**). Other than for the largest 290 firms, there is hardly any market liquidity suggesting a lack of depth in the equity spot market.

8.2 High costs of equity issuance

In addition to the above disadvantages of lack of a deep and liquid secondary market, the Indian equity issuance market also faces challenges. The Indian IPO market has high procedural costs, which show up as high issuance costs and greater time to issue compared to global exchanges. Table 10 shows data for equity issuance in India from the period 2008 to 2014. It shows that the median cost to issue in India is between 6% to 8% of the issue size. The median time taken to issue is more than 200 days and ranges from a minimum of 30 days to a maximum of 737 days. Much of the time taken, approximately 60%, is on account of regulatory approval delays. Given the volatility in equity markets, certainty in time to market is a critical element of the issuance process for both issuers and investors who are exposed to market risk in the interim.

Table 10 The time and cost of equity issuance, 2006–2014

Issue Type	Issue Details				Issue Costs		Time to Issue			
	No. of Issues		Issue Amount (USD Million)		Cost (Percentage)		Regulatory (days)		Total Time (days)	
	P1[1]	P2[2]	P1	P2	P1	P2	P1	P2	P1	P2
IPO										
Private small[3]	115	47	9.9	11.8	8.5	8.0	108	145	178	216
Private large[4]	107	62	45.7	48.8	6.8	6.7	83	116	119	193
PSU	7	7	377.8	102.8	2.2	3.1	49	42	146	62
FPO										
Private small	13	2	5.8	7.6	9.1	8.8	94	161	163	198
Private large	11	1	60.1	741.6	6.0	3.5	45	-	98	-
PSU	3	9	127.6	976.5	2.8	0.7	21	30	58	44

Source: Prime Database. Issue size, cost, and time taken are median values over the defined periods. Only main board issues are included.

[1] P1 denotes 2006 - 2009.

[2] P2 denotes 2010 - 2014.

[3] Private small are issues by private firms where issue amount < USD 20 million.

[4] Private large are issues by private firms firms where issue amount > USD 20 million.

Table 11 compares the NSE on various elements of the issue process against the U.S.[9] and the Far-East Asian markets.[10] It points to three concerns about the equity issuance market in India:

1. Issuance in India has cost structure that is largely fixed. Advisory, underwriting, legal fees and printing costs, form the bulk of the costs and do not vary much with issue size.

   This means that small firms/issue sizes tend to face a much higher cost at around 10% of the issue size.

2. In India, compliance and disclosures requirements for listed companies are not as stringent as on OECD exchanges. This results in lower costs but poorer corporate governance, which adversely affects investors interests.

   Compliance costs on the NYSE and NASDAQ, where there is consistently higher issuance and trading than in India, are at USD 1.5–2 million per year.

3. Regulations governing corporate action for listed companies, such as M&A, takeovers, secondary equity offers and de-listing are more challenging in India compared to the OECD exchanges.[11]

[9] This includes NYSE and NASDAQ.

[10] This includes SGX in Singapore and HKSE in Hong Kong.

[11] For example: De-listing is permitted only after a 95% buy back of shares and at least 25% of the public shareholders by number tender their shares for de-listing to be successful. This stipulation makes it very difficult for a company to de-list. In comparison, on the NYSE, de-listing and buy back are treated as separate events. A buy back of shares may precede de-listing but not necessarily so. De-listing can be done by giving a 10 day notice in the U.S. markets.

Table 11 Comparison of Equity Issuance, NSE vs. competitors

Factor	NSE	NYSE/NASDAQ	SGX/HKSE
Availability of capital	Low	High	High
Cost of issue	6-7%	6-7 %	NA
Time to issue Certainty about time	6-7 months, Variable	4 months, Certain	6 months, Variable
Post-listing costs	Relatively low	High	NA
Post listing compliance	Relatively low	High	NA
Operational flexibility	Low	High	NA
Regime	Merit based	Rule based	Merit based

Source: Freshfield Bruckhaus Deringer, IPO requirements, April, 2014; NSE website; SEBI ICDR Regulations, 2009

8.3 Low institutional participation

Globally, the largest order flow into equity markets comes from financial institutions like banks, insurance and pension firms that take the long horizon savings investment from households and channel them into securities and loans to maximise return for risk taken. In India, most of these institutions are government owned entities whose investment mandates tend to be heavily weighted towards investment in government securities. Table 12 presents the proportion of equity in the Assets Under Management (AUM) of these firms. We see that equity, an asset class with one of the highest expected return to risk ratio, has very low allocation in the investment portfolio of domestic financial institutions.

Table 12 Participation by domestic institutions in equity markets, 2016

	AUM (Rs.bn)	Equity (Rs.bn)	Fraction in equity (%)
Banks	1,29,595	552	0.4
Life Insurers	25,021	5,831	26.9
General Insurers	1,548	477	30.8
MFs	13,550	4,255	31.4
EPFO	7,500	75	1.0
NPS	1,188	NA	NA
Total	1,78,402	11,190	6.3

Sources: Data for banks RBI Statistical Tables on Baking in India ; for Life Insurers from the Life Insurance Council of India ; General Insurers from the General Insurance Council of India Annual Report ; MFs from SEBI Annual Report ; EPFO from the EPFO Annual Report ; and NPS from the NPS website.

All across the world, firms and investors have a *home bias*. This means that domestic savings and domestic institutions are critical to domestic market development. In the case of equity market development, domestic institutional investors have been, by design,

limited in their role and there is little that Indian policy has actively done to mitigate this bias.

Domestic institutions face even greater constraints in participating in the equity derivatives markets. Currently, most large domestic FIs are not permitted to participate:

- Insurance Regulatory and Development Authority (IRDA) has given in-principle approval but has not given operational clarity.

  For instance, ULIPs are a significant part of insurance firms portfolio but IRDA norms prevent their participation in this market.

- Banks are not permitted by RBI to participate.
- Foreign intermediaries in India are not permitted under FIPB norms.
- Equity mutual funds participation in equity derivatives is small.

These constraints reflect in the participation patterns in the equity derivatives market. As per Table No. 5 in the SEBI discussion paper, institutional participation in equity derivatives is only 14.14% of the market turnover, and domestic FI's contribution to this is less than 0.5%.

8.4 Constraints on foreign participation

In India, low levels of domestic institutional participation in equity markets has created an increased reliance on foreign capital. In March, 2017, FPIs equity assets under custody (AUC) stood at Rs. 23,706 bn.[12] This is approximately 22% of the market capitalisation of Indian equities.

Despite this, foreign investors face several levels of constraints on trading in Indian markets. It starts with onerous registration and compliance requirements for participating in investments onshore. They have to register as FPIs or come through direct investment route for investing in listed equities. Globally, the registration and customer due diligence requirements follow a standard form which is agreed upon by the Financial Action Task Force (FATF) signatory countries. Indian requirements have often been described as FATF plus.

A second and more subtle barrier that is presented to foreign investors is India is the *segmented market* design. This can be particularly expensive for global investors who are used to running a single book to enter and then manage a country portfolio, with returns and risks that are adjusted to the currency of their choice. In India a dollar return for a foreign investor means different rules to be followed for investment in equity issuance, equity trading, equity derivatives and currency derivatives markets. Capital is

[12]Source: NSDL FPI Monitor, `https://www.fpi.nsdl.co.in/web/Reports/ReportDetail.aspx?RepID=79`

not seamlessly managed, and worse, foreign investors face different rules in how they can participate compared to domestic participants.[13]

Another barrier is the high cost of trading.[14] A significant component of the cost in India is the high level of statutory levies in the form of STT and stamp duty (Table 4). Global centers for financial services have experimented with STT and removed it. In India however, not only is STT levied, but its incidence is used to determine the direct tax rates.[15] This creates anomalies and increases uncertainty in investment returns for all investors.

But perhaps, the greatest bottleneck to stable long term capital inflows comes from a lack of certainty on policies affecting investments. These may be policies on market access, market regulations or tax. For example, investors face regulatory uncertainty or from sudden changes in regulation.[16] High costs themselves pose a barrier, but these can be overcome by high returns. But policy uncertainty disincentivises market participants from taking a long term view. This risk makes Indian markets a target for short-term investors, and turns away long-term investors. This outcome is not optimal for India.

[13]For example, FPIs are not allowed to post equity securities or units of liquid Mutual Funds (MFs), unlike domestic participants. FPIs cannot cross-margin between cash and derivatives if they post government securities as collateral while domestic participants can.

[14]Mohanty 2011 compares trading costs in India with that in other jurisdictions and finds that trading costs in India are significantly higher.

[15]Lower rate of short term capital gains tax, 15% with STT and 30% without STT. Similarly, long term capital gains tax exempt with STT and 20% without STT. Levy of STT also used to determine whether a transaction is to be treated as speculative or non-speculative for the purpose of tax. Speculative transactions attract higher taxes.

[16]Restrictions on Participatory Notess (PNs) introduced by SEBI in July, 2017

9 Response 9: regulatory arbitrage

Question: *Whether there is any regulatory arbitrage that needs to be addressed?*

Summarising our response: Regulatory arbitrage refers to market participants exploiting regulatory variations to their advantage. In the context of the Indian equity derivatives market, this shows itself in the form of international markets offering Indian equity derivative contracts that compete with the domestic contracts. International market, in offering these contracts provide (1) greater flexibility in trading, (2) lower costs, and (3) a more certain and relatively lower intensity regulatory environment. Due to this, foreign investors, and even domestic market participants that have access to these international markets, prefer to trade in these locations. As these markets build liquidity, they may even become the sources of price discovery for Indian assets, specially during those periods during a day when the Indian markets are closed for trading.

Analysis:

Regulatory arbitrage in the equity derivatives market exists primarily in the form of competition from international markets that are increasingly focusing on introducing and trading India related products.

For example: SGX trades F&O on Nifty, futures on Nifty Bank, Nifty IT, Nifty CPSE, and Nifty Mid-cap 50 indices. It also offers two futures contracts on the MSCI India Index.

DGCX offers futures on the Sensex, two futures contracts on the MSCI India Index as well as Single Stock Futures on Indian stocks such as Axis Bank HDFC Bank, SBI, ICICI Bank, Infosys, Maruti Suzuki Ltd, L&T, Reliance Industries Ltd, Tata Motors, and TCS.

These exchanges offer longer trading times, lower margins, higher position limits, lower trading costs (no incidence of STT) and higher regulatory certainty in comparison to Indian exchanges.[17] In addition, these exchanges are trying to build a portfolio of India related products across equity, currency and debt securities. This increases their attractiveness to foreign investors who wish to take India exposure, but without having to comply with the onerous registration and compliance requirements that accompany direct access to Indian markets.

[17] DGCX, on its website, describes the features of its India Single Stock Futures as:

- Harmonised Contract Specifications
- No foreign exchange risk on the underlying equity
- US $ denominated; Cash Settled
- Retail sized stock futures for ease of trade
- Competitive transaction costs, optimal leverage
- No Transaction Tax and Zero Capital Gains tax
- Keep your money locally while you trade international stocks

Over time some of these exchanges have managed to build substantial liquidity offering competition to Indian exchanges in trading their own products. For example: in FY 16-17 SGX had a 53.7% share in Nifty futures turnover (Table No. 4, SEBI discussion paper).

Unless, domestic exchanges transform themselves to compete with these offshore markets, over time more and more domestic market trading may move to these offshore centers. The *Report of the Standing Council on international competitiveness of the Indian Financial System: Volume I* 2015 identifies the challenges to international competitiveness of the Indian derivatives markets, and makes policy recommendations on the measures required to address these.

10 Tabulated response to matter for discussion in SEBI discussion paper

Sr. No.	Issues	Suggestions
Response 1	Drivers of high derivatives to cash turnover ratio: • The presence of leverage in derivatives, accompanied by high liquidity in equity derviatives relative to equity spot. • Lack of availability of capital in developing markets. • A stagnant spot market • SEBI not taking OTC equity derivatives trading in computing the ratio.	SEBI should focus on: • Monitoring derivatives market efficiency, liquidity and volatility, and use these measures as the basis of developing orderly and efficient derivatives markets. • Enhancing market integrity. • Reform the spot market to improve the depth of liquidity and breadth of access to equity finance for firms.
Response 2	• Derivatives to spot turnover ratio is not an appropriate measure of derivatives and spot market alignment. • Globally, regulators and exchanges are concerned with market efficiency and market integrity.	SEBI should focus on reducing barriers to arbitrage between spot and derivatives by: • Developing missing markets to align prices between spot and derivatives markets, such as reducing short selling constraints and developing the SLBM market. • Aligning trading costs across the spot and derivative markets and between the futures and options market.
Response 3	• Derivatives to spot turnover ratio is not an appropriate measure of a balanced market. • Domestic FIs do not participate in equity derivatives market due to regulatory restrictions. • Proprietary traders and NCNPs comprise bulk of the turnover. Since they are capital constrained, and find equity options to be the cheapest market in terms if trading costs, they trade here.	SEBI should focus on: • Enabling a stable regulatory environment for derivatives market to grow in an orderly and efficient manner. • Enabling institutional participation in equity derivatives.

	TV/OI ratios for Nifty futures and Nifty options show that there is a mix of speculative and non-speculative interest, which has remained stable over time. This suggests that the growth in these markets has not been fueled by speculative trading alone. • 77% of the individual investor turnover in equity derivatives is from relatively larger investors, not the marginal retail investors.	• Removing barriers and constraints to the further development of the equity derivatives markets. • Replicating the success of equity derivatives in other segments of securities markets within its jurisdiction
Response 4	• There already exists a product suitability framework within the ambit of extant SEBI regulations for intermediaries and brokers.	SEBI should focus on: • Creating an enforcement mechanism for the extant norms on product suitability. • Creating an effective redress mechanism for investors, both in the equity spot and equity derivatives markets.
Response 5	• While margins, position limits and contract sizes are commercial decisions for exchanges globally, in India, these form part of the regulator's mandate. Exchanges have very little operational flexibility in making these decisions.	SEBI should focus on: • Creating an oversight framework within which it should devolve decision making on margins, position limits and contract sizes to exchanges.
Response 6	• Globally, product introduction, modification and withdrawal in derivatives is a commercial decision for exchanges. However, in India, despite clearly laid down criteria for introduction of equity derivatives, this form part of the regulator's mandate. Specific approval from SEBI has to be sought for introducing or modifying a derivative contract.	SEBI should focus on: • Creating an oversight framework within which it should devolve decision making on product introduction, modification and withdrawal to exchanges.
Response 7	• The current margining systems in India were designed in 1998, in the context of risks that existed then. Since then, improvements in technology, payment systems and market microstructure design have reduced many of these risks significantly. This has resulted margins possibly being higher than the risks.	SEBI should focus on: • Reviewing the current margin framework to align the margin requirements with the risks in the system.

	• Equity derivatives margins in Indian exchanges are much higher compared to SGX, which offers direct competition in trading equity index derivatives to Indian exchanges. • Exchanges in India follow a segmented approach to margining and risk management. Members and clients have to post margins individually, within each segment. This is expensive specially in a country like India which has limited availability of capital.	• Rationalising the margin framework for equity derivatives in India to bring it on par with global exchanges. • Replacing the segmented approach that is currently followed with a portfolio level margining approach. This will improve efficiencies and reduce costs for investors.
Response 8	Market inefficiencies exist in the equity markets in India in the form of: • Lack of depth in equity trading. • High cost of procedure in equity issuance. • Barriers to participation for domestic FIs in both equity cash and derivatives markets • Barriers to participation for foreign investors in terms of high entry costs, high trading costs, market segmentation and regulatory uncertainty.	SEBI should focus on: • Creating a blue print for the next round of comprehensive equity market reforms along with an action plan for implementing these reforms.
Response 9	• Regulatory arbitrage exists between the onshore and offshore markets for India linked equity derivatives. • Offshore markets offer lowers costs, longer trading hours, larger position limits and higher regulatory certainty in comparison to the Indian markets.	SEBI should focus on: • Addressing the factors within its regulatory jurisdiction which reduce Indian exchanges competitiveness vis-a-vis offshore exchanges in trading India linked products. • Working with the Central Government (C.G.) to set up a coordination mechanism between itself, RBI, other financial sector regulators and Central Board of Direct Taxes (CBDT) to push through reforms to improve the international competitiveness of Indian financial markets.

A Overview of global regulatory framework governing product suitability

United States of America

In the U.S., suitability is generally applicable for all intermediaries in the securities markets. There is no separate set of suitability rule or guideline that applies to derivatives or specific financial instrument.

Financial Industry Regulatory Authority (FINRA), which is a Self Regulatory Organisation (SRO) for brokerage firms and exchange markets, publishes "Rules of Fair Practice" for market intermediaries. These rules require brokers and dealers to act fairly and equitably when dealing with customers. The rule seeks to promote ethical and legal compliance, in addition to any other legal requirements that maybe mandated by securities laws. FINRA general guidelines on suitability obligations are embodied in FINRA Rule 2111, which require brokers or dealers to exercise "reasonable diligence" on a customer's investment profile before recommending a transaction or investment strategy involving securities. It lists the three main suitability obligations for brokers and dealers:

- **Reasonable-basis suitability:**

  A broker is required to perform reasonable diligence to understand the nature of the recommended security or investment strategy, to understand the potential risks and rewards, and determine whether or not the recommendation is suitable based on that understanding.

- **Customer-specific suitability:**

  A broker has to seek information about an investor's profile, and to make recommendations which are suitable to this profile.

- **Quantitative suitability:**

  This limits the ability of brokers to undertake or recommend excessive trading on a customer account. It requires a broker to have a reasonable basis to believe that recommended transactions is not unsuitable for the customer only after considering the customer's investment profile.

Additional suitability requirements may apply across securities. For example, NYSE has "know-your-customer" (KYC) rules which create implied suitability duties for exchange members.[18] Securities Exchange Commission (SEC) Rule 15b10-3 applies to both member brokers and non-member brokers, and is aimed at supplementing anti-fraud rules which requires that the non-member broker must be satisfied that it is not harmful to the investor.[19]

[18]This obligation is created under FINRA Rule 2111.

[19]The right of action under the suitability rules have been interpreted to be actionable only when conduct is "tantamount to fraud". For example, this was stated in Buttrey v. Merrill Lynch, Pierce, Fenner &

Hong Kong

The Securities and Futures Commission (SFC) introduced a set of requirements to enhance the sales practices and conduct of intermediaries in May 2010.[20] The requirements include: (1) ensuring suitability for a client when making recommendations or solicitation, (2) assessing whether a customer understands the risks of derivative products,(3) understanding whether the client has net wealth to assume the risks and losses of trading the product (*HKMA Circular Issued by the Securities and Futures Commission Regarding Code of Conduct Requirements with respect to Derivative Products*). If a customer who does not demonstrate the knowledge of derivatives, wishes to purchase a derivative product, the intermediary is required to:

- Explain the risks associated with the product to the customer if the product is an exchange-traded product; or
- Warn the customer about the transaction and provide appropriate advise to the customer about the suitability of the transaction in all the circumstances if the product is a non-exchange traded product (*SFC Circular:Guidance to Licensed Corporations and Registered Institutions in relation to Investor Characterization and Professional Investors Requirements*).

Singapore

In January 2012, the MAS introduced requirements for intermediaries to formally assess a retail customer's investment knowledge and experience about derivatives before opening a specified trading product account (*MAS Notice on the Sale of Investment Products, CAP.289*). It requires intermediaries to assess whether such customers understand the risks and features of specified investment products.[21] Further, MAS does not allow execution only service for customers who do not possess the relevant knowledge or experience.

However, intermediaries are not prohibited from carrying out the transaction and are allowed to proceed with the customer's request to purchase after the customer has been duly warned/informed. If a customer declines to provide information necessary for an intermediary to make a suitability assessment, or declines to accept the intermediary's assessment on product suitability, the intermediary can proceed with the customer request on approval from its senior management, and document the customer decision (Para 11 and 12, *Securities and Futures Act* CAP.289).

Smith, Inc., 410 F.2d 135, 143 (7th Cir.), cert. denied, 396 U.S. 838 (1969).

[20]See: Para 5.1A of the *Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission*

[21]Para 7 states that where a customer does not provide information on his educational qualifications, investment experience or work experience, the licensed person or the exempt financial institution shall deem the customer not to possess knowledge or experience in derivatives.

B Impact of lot size change on equity derivatives market

On 13th July, 2015, SEBI changed the minimum contract size in the equity derivatives segment from Rs.2 lakhs to Rs.5 lakhs (*SEBI Circular on Review of Minimum Contract Size in Equity Derivatives Segment*). No rationale was provided for this regulatory intervention. We analyse the impact of this intervention on two aspects of the equity derivatives market:

1. participant intensity, and
2. market quality

These are compared pre and post the the effective date of the intervention (which is called the "event date"). For the analysis, 30th October, 2015 is take as the event date, since the change was applicable from the next trading day after the October expiry.

B.1 Market measures for comparison

Four measures of market quality are used to assess the impact:

1. **Participant intensity:** composition of market turnover by the three participant categories laid down in Section 3.1,
2. **Trade size by participant category:** the median value of each trade undertaken by the different categories of market participants. (Unit: Rs.lakhs)
3. **Market size measured by open interest (OI):** the value of contracts that have not yet been settled. Participants have to set aside margin capital for all their open positions. (Unit: USD billion per day)
4. **Liquidity measured by traded volume (TV):** value of the total near-month contracts traded on a single day. (Unit: USD billion per day)
5. **Liquidity measured by impact cost (IC):** cost of executing a transaction in a given security, for a specific predefined order size (Rs.1 mn), at any given point of time. Lower IC indicates better liquidity conditions. (Unit: percentage)

B.2 Methodology

Three questions are asked in the analysis:

1. What was the median size per trade by participant category before and after the intervention?

2. Was there a change in the composition of market participation, measured by any change in the share of C, P and NCNP?

3. Was there an impact on market size and market liquidity?

The median values of the measures described in Section B.1 are calculated for the pre and post event period. The Wilcoxon signed-rank test is used to check whether the change between these values are significantly different. A test value more than 0.05 says that the change is significant.

B.3 Findings

Table Table 14 and 15 compare the measures before and after the event date.

- For Nifty Futures:
  - Before the change, 55% of the trades came from CP and P categories. After the change, their participation declined to 53%. NCNPs share has increased from 45% to 46%.
  - Traded volumes (TV) has increased by 4.6%, and open interest (OI) has dropped by 11.5%.
  - The market liquidity measured by impact cost (IC) has remained the same.
- For Nifty Options:
  - Before the change, 63% of the trades came from CP and P categories. After the change, their participation increased to 66%. NCNPs share has declined from 37% to 34%.
  - TV has increased by 8% as has OI which increased by 1.2%.
  - Market liquidity measured by IC has declined.

Table 14 Participant composition and trade size before and after the lot size change by SEBI

	Share of turnover (%)		Trade size (Rs.lakhs)	
	Before	After	Before	After
Nifty Futures				
Custodian trades	21	21	2.09	5.62
Proprietary trades	34	32	2.16	5.72
Non-custodian non-proprietary trades	45	46	2.09	5.72
Nifty Options				
Custodian trades	10	16	3.07	6.15
Proprietary trades	53	51	3.97	6.39
Non-custodian non-proprietary trades	37	34	4.29	6.47

Table 15 Market quality before and after the lot size change by SEBI

	Nifty Futures		Nifty Options	
	Before	After	Before	After
TV (USD bn)	1.52	1.59	20.82	22.49
OI (USD bn)	2.86	2.53	17.89	18.10
IC (%)	0.005	0.005	0.398	0.360

Table 16 gives the results of whether the change in the market quality is significant. The results are that:

- For Nifty futures:
  - Traded volume and impact cost have not changed significantly.
  - The open interest is significantly different.
- For Nifty options:
  - Traded volume and open interest have not changed significantly.
  - Market liquidity has improved significantly after the change. However, it is difficult to establish whether this is because of the change in lot size.

Table 16 Wilcoxon paired test results for pre and post event period measures

	Nifty futures	**Nifty options**
Turnover (TV)	0.22	0.96
Open Interest (OI)	**0.002**	0.60
Impact cost (IC)	0.76	**0.048**

*Value below 0.05 indicates dissimilarity between periods

B.4 Conclusion

We set out to answer three questions in this analysis, and we find the following:

1. *What was the median size per trade before and after the intervention?*

   The median trade size for Nifty futures before the intervention was close to Rs.2 lakhs for all participant categories (CP, P and NCNP). This has gone up to Rs.5.7 lakhs after the lot size change.

   For Nifty Options, the median trade size for CP trades was Rs.3 lakhs and it was Rs.4 lakhs for P and NCNP trades before the change. This has also increased.

2. *Was there a change in the composition of market participation, measured by any change in the share of each type of participant?*

   The pattern of participation has broadly remained the same after the change.

3. *Was there an impact on market size and market liquidity?*
   - Traded volumes on both the Nifty futures and options markets have *remained the same.*
   - Open interest has *worsened* for the Nifty futures.
   - Market liquidity has *improved* for the Nifty options.

The analysis suggests that the there is no clear impact of this intervention. Some of the market quality measures have worsened, some have improved, and most have remained the same.[22] This raises a question about what objective SEBI had in mind when introducing this change in the contract size of equity index derivatives[23]. The Circular was silent on objectives and intended impact.

We conjecture that a possible objective could have been to reduce trades by certain participant categories. But the analysis in Table 14 does not indicate significant changes in participation intensity across categories.

Thus, we infer that there was no effective change in market quality or participant composition that can be clearly attributed to the change in lot size.

[22]The analysis does not make any assertions of causality or lack of it. Outcomes may have been driven by a variety of factors affecting market development.

[23]The change in contract size was also applicable to single stock futures and options (F&O). This note does not reflect on the impact of this intervention on single stock F&O.

B.5 Graphs: impact of lot size changes

Impact of lot size change on Nifty Futures

Figure 3 Nifty futures: open interest

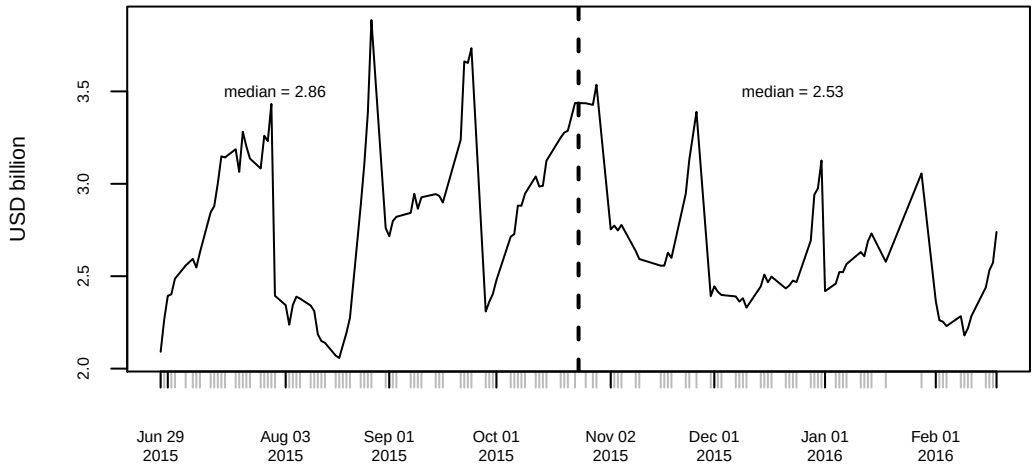


Figure 4 Nifty futures: turnover

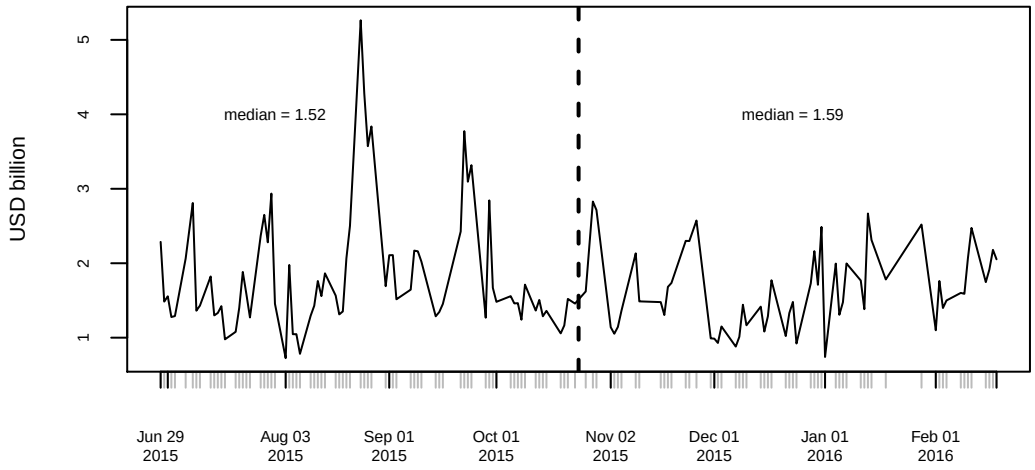


Figure 5 Nifty futures: impact cost

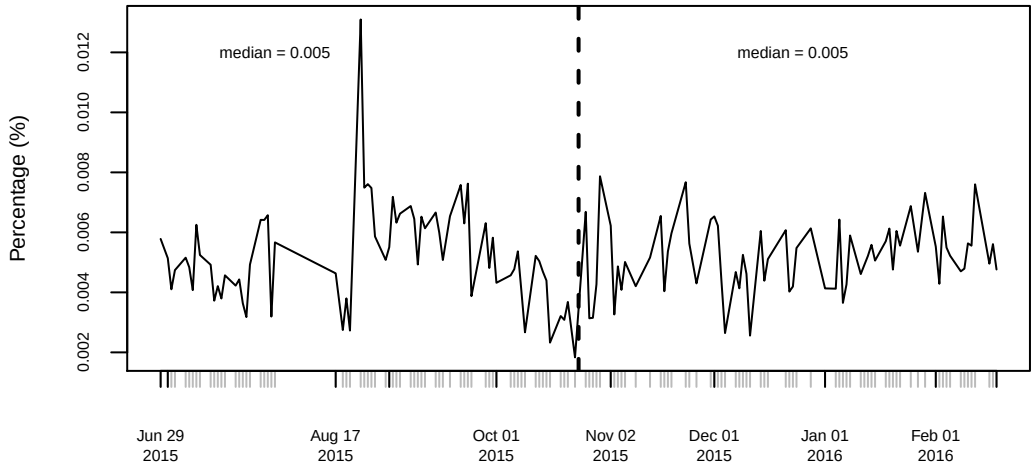
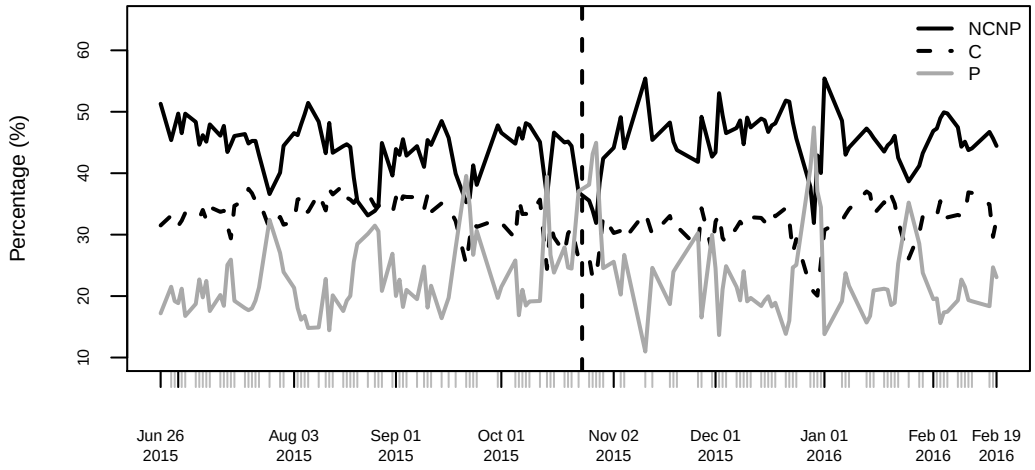


Figure 6 Nifty futures: composition of participation



Impact of lot size change on Nifty Options

Figure 7 Nifty options: open interest

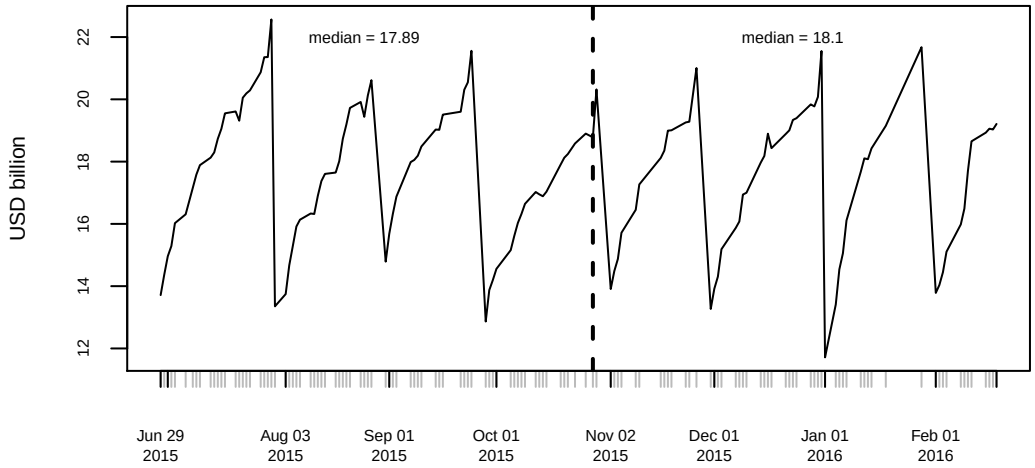


Figure 8 Nifty options: turnover

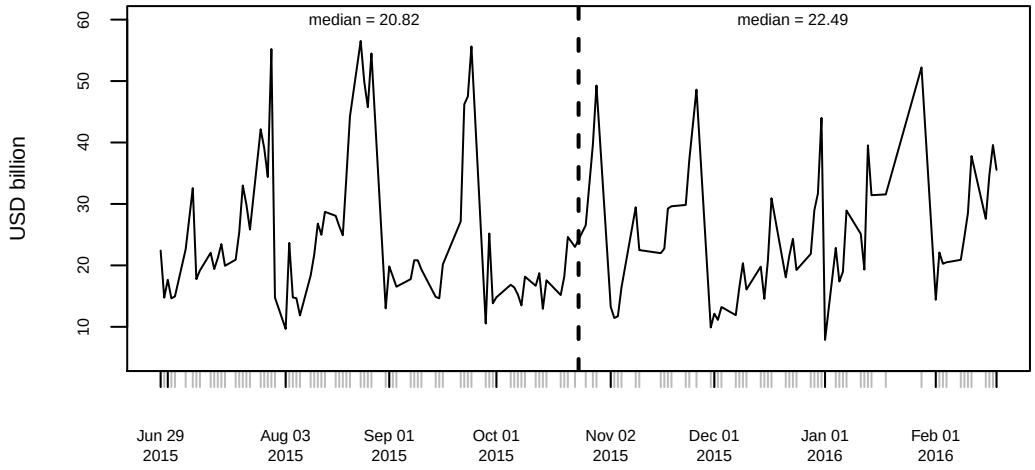


Figure 9 Nifty options: impact cost

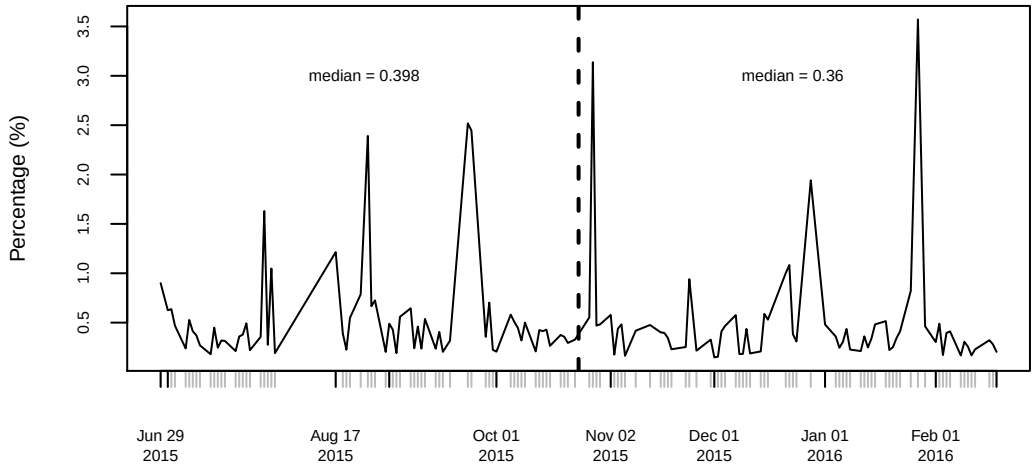
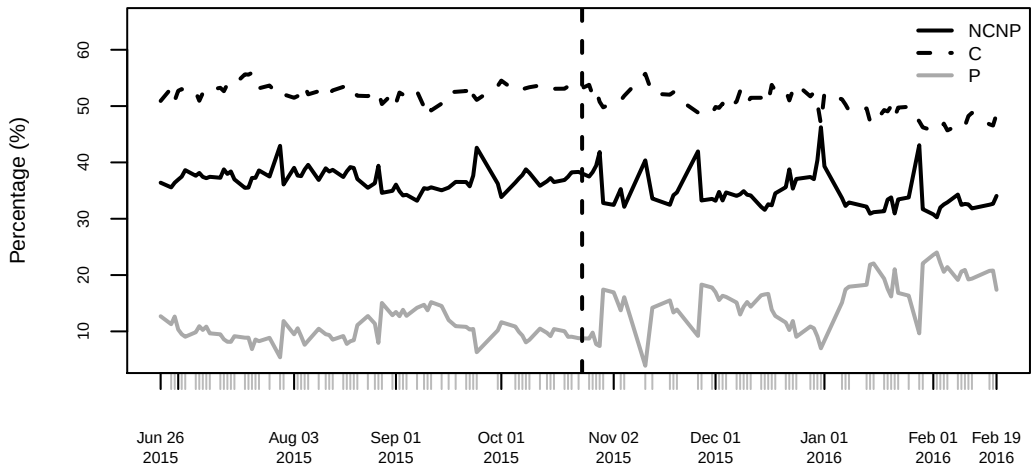


Figure 10 Nifty options: composition of participation



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