Introducing Close Auction Session in Equity Cash segment

(I) Objective

1. Over the years, passive fund investing has witnessed growing interest both globally and in India. Further, with steady growth of the economy and capital markets, the weightage of Indian stocks in major international indices has grown steadily over time.

2. Since the Indian securities market ecosystem does not currently support execution at closing price, there is scope for index tracking differences amongst passive funds. It can be argued that the risk of such tracking differences in replicating the index is ultimately borne by the investors in these passive funds.

3. Given the above context, some of the major passive funds tracking international indices have suggested the need to introduce a closing auction mechanism in India to determine the closing price of stocks in the equity cash market. It is also noted that major jurisdictions around the world have a closing auction mechanism.

4. This consultation paper suggests a broad design framework for a Close Auction Session (CAS) in India and seeks public comments on the desirability, feasibility and efficacy of introducing a CAS framework in equity markets in India.

(II) Background and data inferences

5. Currently, the closing price of stocks in India is determined through the last half an hour Volume Weighted Average Price (VWAP) which weighs the prices of a security during the last thirty minutes of the trading day, by the volume executed at each price.

6. While the said mechanism facilitates determination of a fair market closing price based on trading interest in stocks spread through the last half an hour of the trading day, it does not enable the interested buyers and sellers to trade exactly at the Close Price of the day.

Growth in passive investing

7. The growth of AUM of domestic passive funds in India over the years in India, since FY 20 has been tabulated below.

Table-1

As on date	Passive fund AUM (INR Crores)
March 31, 2020	1,62,500
March 31, 2021	3,09,217
March 31, 2022	4,99,319
March 31, 2023	6,74,531
March 31, 2024	9,08,881
Till 31-Aug-2024	10,95,509

Source: AMFI

8. Further, weight of Indian stocks in major international indices has grown over the years. The weightage of Indian stocks in some of the major international indices, as on November 29, 2024, has been tabulated below:

Table-2

Index Name	Weightage of Indian stocks in the Index
MSCI Emerging Markets Index	19.93%
MSCI Emerging Markets Small Cap Index	29.94%
FTSE Emerging Index	22.79%

Source: MSCI and FTSE website

9. It can be observed from the above tables that the growth of money inflow, both domestic and international, into passive fund investment schemes has only grown over the years.

Analysis of volatility of stocks on Index rebalancing days

10. As the closing price in India is determined by the last half an hour VWAP, it has been highlighted by some international passive fund houses that the current closing price mechanism can result in significant price volatility across a range of stocks, as well as

high risk of large orders not being completed, which in turn adds to the tracking difference of a passive fund. The said issue is particularly significant during large event days, such as, on index rebalancing days and derivative expiry days.

11. The above argument was segregated into two parts, viz, volatility observed during last half an hour of trading on index re-balancing days, and the tracking difference of passive funds in India on index re-balancing days and derivative expiry days.

12. With respect to the volatility (computed as standard deviation of 1-minute open-close returns for each stock and then averaged across stocks for each trading day), it was observed that for NIFTY 50 stocks, the volatility during the last half an hour was higher than the observed volatility for the trading period from 09:15 to 14:30 by 1.8 times and 1.5 times respectively, on the MSCI indices rebalancing day of May 31, 2024 and FTSE indices rebalancing day of June 21, 2024.

13. For international indices tracking Indian stocks, analysis was carried out for Indian stocks added/deleted into MSCI Indices falling under the category of MSCI Global Standard Indexes and MSCI indices falling under the category MSCI Global Small Cap Indexes. It was observed that for the affected stocks under MSCI Global Standard Indexes, the volatility during last half an hour was 3.3 times and 2.9 times more than that was observed during the period from 09:15 to 14:30, on the index rebalancing days of May 31, 2024 and August 31, 2024 respectively. Additionally, for the affected stocks under MSCI Global Small Cap Indexes, the volatility figures were 2 times and 2.3 times on the index rebalancing days of May 31, 2024 and August 31, 2024 respectively.

<u>Analysis of tracking difference of passive funds on event days</u>

14. With respect to the tracking difference, data in respect of some domestic passive fund schemes and an ETF was analysed. It was observed that on event days, including index reconstitution days, there is an increase in tracking difference for such funds. For a domestic Index fund tracking NIFTY 50, the average tracking difference on rebalancing days, for the period from June, 2023 to July 2024, is 0.76 bps while the average tracking difference on other days for the said period stands at -0.12 bps. For another passive fund tracking NIFTY Midcap 150 index, it has been observed that the

average tracking difference on rebalancing days, for the period from June, 2023 to July 2024, stands at -1.46 bps while on the other days, the said figure stands at -0.09 bps.

15. Additionally, data of an international passive fund tracking global indices of MSCI, FTSE and S&P was analysed in respect of trades executed in the last half an hour, for the period from July, 2023 to July 2024. It has been observed that for the said passive fund, tracking difference on index rebalancing days, in respect of orders for Indian stocks aggregated across all the above mentioned global indices, averaged at -3.29 bps. This was substantially higher than the average value of -0.19 bps across all other days in the said period. Further, the said fund had a tracking difference on all its traded days for the said period.

International benchmarking

16. All major jurisdictions around the world, including the ones in Asia Pacific have a closing auction mechanism.

17. The volatility (computed as standard deviation of 1-minute open-close returns for each stock and then averaged across stocks for each trading day) and trading activity, for the last half an hour of trading day in each jurisdiction, was analysed comparatively for the affected (included/excluded) stocks in MSCI Global Standards Indexes and MSCI Global Small Cap Indexes, on the index rebalancing days of May 31, 2024 and August 31, 2024. The analysis has been tabulated below.

Table-3

Rebalance day – May 31, 2024

	India (No Closing Auction)	Hong Kong and South Korea (With Closing Auction)
MSCI Global Standards Indexes	• volatility during last half an hour was 3.3 times of the period from 09:15 – 14:30	• No spike observed in volatility at close on MSCI index rebalancing day.

	• 83% of trading activity of the day carried out in the last half an hour.	• the last 30 min turnover was 85% and 40% of the day's turnover for Hong Kong and S Korean securities respectively.
MSCI Global Small Cap Indexes	• volatility during last half an hour was 2 times of the period from 09:15 – 14:30. • 76% of trading activity of the day carried out in the last half an hour.	• No spike observed in volatility at close on MSCI index rebalancing day.

Source: SEBI Internal Analysis

Table-4

Rebalance Day – August 31, 2024

	India (No Closing Auction)	Hong Kong and South Korea (With Closing Auction)
MSCI Global Standards Indexes	• Volatility during last half an hour was 2.9 times of the period from 09:15 – 14:30 • 73% of trading activity of the day carried out in the last half an hour.	• No spike observed in volatility at close on MSCI index rebalancing day. • The last 30 min turnover was 84% and 25% of the day's turnover for Hong Kong and S Korean securities respectively.
MSCI Global Small Cap Indexes	• Volatility during last half an hour was 2.3 times of the period from 09:15 – 14:30.	• No spike observed in volatility at close on MSCI index rebalancing day.

	India (No Closing Auction)	Hong Kong and South Korea (With Closing Auction)
	• 74% of trading activity of the day carried out in the last half an hour.	

Source: SEBI Internal Analysis

18. It is observed from the above analyses that for securities included/excluded in the indices on rebalancing days, the jurisdictions which have a closing auction mechanism see no spike in volatility.

19. Further, it is found that on days other than the above rebalancing days, the volatility during the last half an hour, in India, was roughly in line with the volatility during 09:15 to 14:30.

Analysis of Liquidity patterns in jurisdictions with a Closing Auction Session

20. To gauge the impact of introduction of a Closing Auction Session (CAS) on the Continuous Trading Session (CTS) of normal market trading hours, liquidity patterns of Hong Kong and South Korea were analysed, for the period from May 2024 to June 2024.

21. It was observed that CTS of the last 30 minutes, preceding CAS, for both the markets continued to attract considerable trading volumes. The CTS turnover of the last 30 minutes, for both the markets, remains stable around 9%-14%, across all trading days.

22. Further, it was also observed that CAS attracted huge surge in trading volumes on event days, stemming from index rebalancing and derivatives expiry.

Analysis of trading pattern of participants during the last 30 min on Index Rebalancing days in India

23. To gauge the possible shift in trading volume due to introduction of CAS in India, an analysis of turnover of various categories of market participants during the last half an

hour of trading, on the MSCI India Index rebalancing days of February 29, 2024 and May 31, 2024, was carried out for the stocks which were included or excluded from the index on the said dates (affected stocks). The following inferences can be drawn from the said analysis:

23.1. FPIs were the largest participants on both the buy side and sell side. FPIs contributed around 56% - 60% of the gross traded value in the affected stocks on the index rebalancing days. This is not surprising as money from foreign passive funds is expected to track such internal Indices.

23.2. Proprietary and Retail categories contributed around 17% and 11%, respectively, of the gross traded value in the affected stocks on the index rebalancing days.

23.3. Domestic Mutual funds contributed around 8% - 9% of the gross traded value in the affected stocks on index rebalancing days.

24. It can be inferred that post introduction of CAS there may be a shift of liquidity from last half an hour of CTS to CAS. It is possible that participant categories such as FPIs and Mutual Funds might prefer executing their trades at the Close Price discovered in CAS.

25. As analysed at Table-3 and Table- 4 above, currently on index rebalancing days, there is a concentration of liquidity in the last half and hour of trading. Introduction of CAS may shift that liquidity towards CAS on Index rebalancing days.

26. Further, as analysed at paras 19-21 above, in the medium term, the liquidity distribution is expected to stabilize, with CAS attracting most trading volumes on index rebalancing days.

<u>Analysis of Reference Prices and Closing Prices around rebalancing days</u>

27. For the said analysis, data from an international passive fund house, on Reference Prices (used for applying price bands in CAS) and Closing Prices (determined through

CAS) was analysed for stocks, in a few jurisdictions, which were included/excluded from the MSCI indices, for the rebalancing done in Q2 of 2024 in the said indices.

28. The % difference between Reference price and Close Price for the above category of stocks was analysed for the periods of, 7-days before rebalancing, on the day of rebalancing and 7-days after rebalancing.

29. It was observed that on an average there is substantial difference between the Reference Price (across all the jurisdiction analysed), as determined by CTS and the Close Price, as determined by CAS on the Index Rebalancing day. The said difference ranges from 61 bps (0.61%) to 404 bps (4.04%) for various jurisdictions.

30. For the periods of 7-days before expiry and 7-days after expiry, the average difference between Reference Price and Close Price (across all the jurisdiction analysed) ranged from -20 bps (-0.2%) to 50 bps (0.5%).

(III) Proposals

31. Given the above analysis, and the request raised by certain passive funds, SEBI is seeking public comments on the introduction of a CAS in India with the following design elements:

31.1. <u>Proposal - Introduction of CAS in India</u>

31.1.1. CAS may be introduced as a call-auction mechanism for determining closing price of each stock in equity cash segment, replacing the extant VWAP mechanism.

31.2. <u>Proposal – Timings of CAS</u>

31.2.1. CAS may be implemented as a separate session of 15 minutes from 15:30 - 15:45.

31.3. Proposal – Applicable securities for CAS

31.3.1. CAS to be applied to stocks in a phased manner. To being with, CAS to be applicable to stocks on which derivatives are available, to ensure this is only offered on stocks on which have sufficient liquidity.

31.4. Proposal – CAS Design with 4 stages

31.4.1. CAS may be split into 4 sessions. A Reference Price Determination period, an Order Input period, a No Cancellation period including a random close of order entry followed with the final stage of trade confirmation and order matching. The timings along with the stages have been tabulated below:

Table-5

Session No.	Session purpose	Session begin time	Session duration
1	Reference Price Calculation	15:30	1 min
2	Order Input Period	15:31	6 min
3	No Cancellation Period including Random Close in the last 2 minutes	15:37	4 min
4	Trade confirmation and order matching	15:41	4 min

Price limits applicable to CAS

31.4.2. A two stage-price limit structure may be made applicable separately to the order input period (Session 2) and No Cancellation Period (Session 3).

31.4.3. Based on the analysis carried out for Indian stocks entering/exiting major international indices on rebalancing days, it is proposed that for the first stage (Session 2), a price band of ± 5% from the Reference Price may be applied.

31.4.4. For stage two (Session 3), the price limits for new orders to be between highest bid and lowest ask, as recorded at the end of Order Input Period. No orders can be amended or cancelled in this session.

31.5. Alternative Proposal - CAS design with 3 stages

31.5.1. Alternatively, CAS may be split into 3 sessions, without a No-cancellation period, in line with the architecture of the Call Auction in Pre-Open Session . A Reference Price Determination period, an Order Input period including Random closing of order entry in the last 2 minutes and the final stage of trade confirmation and order matching. The timings along with the stages have been tabulated below:

Table-6

Session No.	Session purpose	Session begin time	Session duration
1	Reference Price Calculation	15:30	1 min
2	Order Input Period including Random Close in the last 2 minutes	15:31	10 min
3	Trade confirmation and order matching	15:41	4 min

Price limits applicable to CAS

31.5.2. A single stage-price limit structure may be applicable to Order Input Period and Random Closing Period (Session 2).

31.5.3. Based on the analysis carried out for Indian stocks entering/exiting major international indices on rebalancing days, a price band of ± 5% from the Reference Price may be applied.

31.6. Proposal - Reference price for CAS

31.6.1. With a view to provide a sense of continuity to the market, as per the extant practice, reference price be based on the VWAP of the last half an hour of CTS.

31.7. Proposal - Types of orders allowed in CAS

31.7.1. Limit orders and Market orders shall be allowed during CAS. Both shall be reckoned for computation of equilibrium price.

31.8. Proposal – Equilibrium price

31.8.1. The Close Price in CAS be determined through the Equilibrium Price mechanism.

31.8.2. It is proposed that Equilibrium Price shall be the price at which the maximum volume is executable.

31.8.2.1. In case more than one price meets the criteria, the equilibrium price shall be the price at which there is minimum unmatched order quantity. The absolute value of minimum order imbalance quantity shall be taken into consideration.

31.8.2.1.1. Further, in case more than one price has same minimum order imbalance quantity, the Equilibrium Price shall be the price closest to the Reference Price.

31.8.2.1.1.1. In case the Reference Price is the midpoint of the pair of the above mentioned prices which are closest to it, then the Reference Price would itself be the Closing Price for the day.

31.8.3. In case where no Equilibrium Price is discovered, then Reference Price would itself be the Closing Price for the day.

31.9. Proposal – Order execution priority in CAS

31.9.1. Immediately, pursuant to discovery of Closing Price in CAS, order matching/execution would start. At the time of order execution, limit orders shall be given priority over market orders. The sequence of order execution in CAS shall be similar to the priority of the Pre-Open Call Auction Session, as stated under:

31.9.1.1. Eligible limit orders shall be matched with eligible limit orders in the price-time priority at the final equilibrium price.

31.9.1.2. Residual eligible limit orders, in the order of price-time priority, shall be matched with market orders, in the order of time priority.

31.9.1.3. Market orders to be matched with market orders, in the order of time priority.

31.10. Proposal – unexecuted orders of the CTS

31.10.1. All unexecuted orders of the CTS session may be automatically carried forward to CAS. However, all the orders with price outside the price limits applicable to CAS would be cancelled.

31.10.2. Such orders would be treated as limit orders in CAS and such orders would have higher time priority than limit orders placed during CAS.

31.10.3. It is clarified that the order execution priority would be as per the proposal at 31.9 above.

31.11. Proposal – Calculation of Settlement Price of a security by Clearing Corporations

31.11.1. The Settlement Price of a security across Clearing Corporations will be computed as the weighted average of Equilibrium Prices determined in CAS across the interoperable exchanges.

31.12. Proposal – Discontinuation of Post-Close session

31.12.1. With the introduction of CAS, the extant post-closing session at exchanges be discontinued. As CAS would enable participants to execute their trade at the Closing Price, a post-closing session may not be required and hence, the same may be discontinued.

32. The said consultation paper would be available for comments on SEBI website for 21 days from the date of issuance. Comments may be sent to the following, latest by December 26, 2024 via online web based platform through the following link:

https://www.sebi.gov.in/sebiweb/publiccommentv2/PublicCommentAction.do?doPublicComments=yes

In case of any technical issue in submitting your comment through web based public comments form, you may e-mail your comments to mrd_consultation@sebi.gov.in. While sending the e-mail kindly mention the subject as: *Comments with respect to "Consultation Paper on Introducing Close Auction Session in Equity Cash segment*".

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