

BSE introduces Call Auction Trading Mechanism in Pre-open Session



Call Auction Trading Mechanism during pre-open session

INTRODUCTION

In the continuous market a trade occurs whenever a buy order and a sell order match each other at a price during the hours when the market is open.

In a **Call auction** market, orders are gathered for execution at predetermined times when the market is called. At the call, all buy orders are aggregated into a downward sloping demand function and all sell orders are aggregated in an upward sloping supply function. The market opening price and quantity traded are derived based on aggregated supply and demand for the underlying. The orders that trade and the price and quantity at which they trade, are set by multilateral matching, rather than by the sequence of bilateral matching used to determine trades in a continuous market.

APPLICATIONS

Call auctions can be applied to various sessions during the trading day –

 **At the Open**  **At the close**  **Intraday**  **Post Halt**  **IPO Listing**

ADVANTAGES

Call auction method of trading has several advantages –

- It leads to **reduced price volatility** due to multiple matching of orders at a single price.
- **Greater liquidity** owing to collection of orders providing a deeper demand supply schedule.
- **Better Price discovery** as errors get reduced due to collection of orders.
- It leads to **reduced market impact** as any given size of the order is small in relation to the counterpart orders when the latter are collected over time.
- It leads to **lower cost of transaction** as the trades executed during the call auction session do not incur impact cost.

It acts as a **fairer market** especially for small, non professional investors because all trades get executed at the same price. Also the simultaneity of trades eliminates the possibility of front running customer orders in the same security.



Orders accumulated and matched at a single price by the end of the session



Trades occur continuously as orders match on time/price priority



VWAP closing price calculation



Execution of trades at the closing price

Introducing call auction mechanism in pre-open session in equity segment

Securities and Exchange Board of India (SEBI) has issued circular No.CIR/MRD/DP/21/2010 dated 15 July 2010 and Circular No. CIR/MRD/DP/32/2010 dated 17th Sept 2010, notifying the Introduction of Call Auction in the Pre-open Session. BSE would like to provide a brief introduction to the concept and the details of the mechanism.

1. SESSION

The call auction mechanism will be applicable for the pre-open session.

2. ELIGIBILITY

The pre-open session will be introduced for the SENSEX and NIFTY components (Annexure 1). In case of any change in the composition of the Index, the incoming stock(s) will be incorporated for the computation of the opening price in the pre-open session. The call auction mechanism will continue to hold for the stock(s) moving out of the Index, though they will not be considered for the computation of the index.

Session	Order Entry Period	Order Matching & Confirmation Period	Buffer Period	Continuous Trading
Time	9:00 - 9:07/9:08 a.m.	9:08 - 9:12 a.m.	9:12 - 9:15 a.m.	9:15 a.m. - 3:30 p.m.
Action	<ul style="list-style-type: none"> Order Addition/Modification/Cancellation <i>Random stoppage between 7th and 8th minute</i> Dissemination of Indicative Price, Matchable quantity at the indicativ price & Indicative Index <i>Uniform price band of 20% is applicable</i> 	<ul style="list-style-type: none"> No Order Addition/Modification/Cancellation Opening price determination, order matching and trade confirmation 	<ul style="list-style-type: none"> To facilitate transition between pre open and continuous trading session 	<ul style="list-style-type: none"> Trades occur continuously as orders match at time/price priority



Additional Information

The continuous trading session will commence after the call auction session ends. The two trading sessions, continuous and pre-open sessions will not run concurrently.

The **Block Deal** trading session (35 minutes) will start with the commencement of the continuous session, i.e. from 9:15 a.m. - 9:50 a.m.

4. SALIENT FEATURES OF THE PRE-OPEN SESSION

- All orders entered in the system for a particular stock will match at a single price i.e., the market opening price.
- Orders are collected in the order entry period and execution occurs in the order matching and confirmation period.
- Duration of pre-open session will be for 15 minutes i.e. 9:00 a.m. – 9:15 a.m.
- Limit orders will get priority over market orders at the time of execution of trades.
- All orders shall be disclosed in full quantity, i.e. orders where revealed quantity function is enabled, will not be allowed during the pre-open session.
- Unexecuted, eligible orders will be moved to the continuous session
- In the event of no trades in the pre-open session, the orders entered in the pre-open session will be shifted to the order book of the continuous trading session on time priority basis. The price of the first trade during the continuous trading session will be taken as the opening price.
- During the Order Entry period of the pre-open session, indicative opening price(s) will be calculated for each stock at regular intervals and disseminated along with the matchable quantity for that stock and the indicative index.

- The system will display the TOUCHLINE based on the possible open price so calculated along with the details of quantities available at the TOUCHLINE PRICES. In the market depth window, the indicative opening price along with the next four prices will be disseminated. The price points would also have the details of aggregate quantities available on the buy and sell side separately. If no indicative price is calculated, then the best available buy & sell orders will be displayed.
- At the end of the matching period, the system computes the opening Index values for SENSEX and other indices and starts disseminating the Index values to the market.
- A uniform price band of 20% will be applicable to all eligible securities during the pre-open session.

5. ORDER TYPES

Only market orders and limit orders will be permitted during order entry period of the pre-open session. Both order types will be considered for the computation of the opening price. No iceberg order will be allowed i.e. orders shall be disclosed in full quantity.

6. OPENING PRICE COMPUTATION

Computation of the market opening price of a stock during the pre-open session will follow process as given below –

Opening Price = Price at which maximum quantity is traded
if multiple prices exist then



Opening Price = Price at which there is minimum order
imbalance, if multiple prices exist then



Opening Price = Price closest to the previous closing price

Example 1: Order Book

Order No.	Buy Quantity	Buy Price	Sell Price	Sell Quantity	Order No.
1	100	ATO	91	100	7
2	100	96	91.5	100	8
3	150	95	93	100	9
4	50	93	95	100	10
5	100	91.5	96	200	11
6	100	91			

Demand Supply Schedule:

Price Point	Cumulative Buy Quantity	Cumulative Sell Quantity	Tradable Quantity	Absolute Order Imbalance (Demand Supply Mismatch)
96.00	200	600	200	400
95.00	350	400	350	50
93.00	400	300	300	100
91.50	500	200	200	300
91.00	600	100	100	500

In this example, Rs.95 will be the market opening price & 350 units of the stock would get executed into trade at that price.

If there are multiple price points with same traded quantity, we proceed to the next step.

Example 2: Order Book:

Order No.	Buy Quantity	Buy Price	Sell Price	Sell Quantity	Order No.
1	1000	ATO	ATO	500	7
2	1000	96.30	94.00	500	8
3	3000	96.20	96.20	1000	9
4	1500	94.00	96.30	3500	10
5	2000	92.00	98.00	3000	11
6	1000	90.00			

Demand Supply Schedule:

Price Point	Cumulative Buy Quantity	Cumulative Sell Quantity	Tradable Quantity	Absolute Order Imbalance (Demand Supply Mismatch)
98.00	1000	8500	1000	7500
96.30	2000	5500	2000	3500
96.20	5000	2000	2000	3000
94.00	6500	1000	1000	5500
92.00	8500	500	500	8000
90.00	9500	500	500	9000

Since there are 2 prices – Rs.96.20 & Rs.96.30 at which the match-able quantity is maximum, we look at the absolute order imbalance and select the price with the lowest order imbalance, which is at Rs.96.20. Hence, the market opening price in this case will be Rs.96.20 and 2000 units of the stock would get executed into trade at that price.

If there are multiple, volume maximizing prices at which the order imbalance is minimum, then we proceed to the next step.

Example 3: Order Book:

Order No.	Buy Quantity	Buy Price	Sell Price	Sell Quantity	Order No.
1	1000	ATO	ATO	500	7
2	1000	96.30	94.00	500	8
3	3000	96.20	96.20	1000	9
4	1500	94.00	96.30	3000	10
5	2000	92.00	98.00	3000	11
6	1000	90.00			

Demand Supply Schedule:

Price Point	Cumulative Buy Quantity	Cumulative Sell Quantity	Tradable Quantity	Absolute Order Imbalance (Demand Supply Mismatch)
98.00	1000	8000	1000	
96.30	2000	5000	2000	3000
96.20	5000	2000	2000	3000
94.00	6500	1000	1000	
92.00	8500	500	500	
90.00	9500	500	500	

Since there are 2 prices at which the match-able quantity is maximum as well as the absolute order imbalance is also the same, the price closest to the previous closing price is considered as the opening price.

- If Previous close is Rs.96.50, then the market opening price = Rs.96.30
- If Previous close is Rs.96.10, then the market opening price = Rs.96.20
- If Previous close is Rs.96.25, then the market opening price = Rs.96.25 (since the previous close is at the mid-value of the price points where match-able quantity is maximum and the demand supply gap is same)

7. ORDER EXECUTION PRIORITY

Limit orders will get priority over market orders at the time of execution of trades on time price priority. The sequence of the order execution will be as given below –

- Eligible Limit orders will be matched with eligible limit orders.
- Residual eligible limit orders will be matched with market orders.
- Residual Market orders will be matched with market orders.

All orders entered in the system will match at the same price, i.e., the market opening price.

All unmatched limit orders during the pre-open session will be shifted to the order book of the continuous trading session on price-time priority basis.

All unmatched market orders will be moved to the continuous session as limit orders priced at the opening price, and will retain their original time stamp.

In case the opening price is not discovered in the pre-open session, wherein, there are only market orders, the market orders shall be matched at previous day's closing price. All unmatched orders shall be shifted to the order book of the continuous market priced at previous day's close following time priority.

In the event of no trades during the pre-open session (i.e. if the opening price is not determined) and if there are no market orders to be matched, all unmatched market orders (priced at the previous day's close) and the limit orders will be shifted to the order book of the continuous trading session on price-time priority basis. The price of the first trade during the continuous trading session will be taken as the opening price

8. INFORMATION DISSEMINATION

During the Order Entry period of the pre-open session, indicative opening price(s) will be calculated for each stock at regular intervals and disseminated. Indicative cumulative buy and sell quantity for that stock will also be displayed. An indicative index will be calculated based on the indicative prices and disseminated.

The system will disseminate the potential matching price along with the matchable quantity at the price.

BOLT Screen Shot during Pre-open session:

The screenshot displays the BOLT trading system interface during a pre-open session. The main window is titled 'Order Entry' and shows various fields for order placement, including 'Order Type', 'Total Qty.', and 'Indicative Open Price'. A red circle highlights the 'Indicative Open Price' field. Below the main window is a 'Best Five Rates' window, which displays a table of order book data. Callouts point to various elements: 'No Iceberg Orders allowed' (top right), 'Indicative price on Touchline' (top right), 'Indicative Open Price' (middle right), 'Indicative matchable Qty.' (middle right), 'Indicative High / Low Price' (bottom right), 'Indicative order book' (bottom left), 'Total Buy Qty in the order book' (bottom center), and 'Total Sell Qty. in the order book' (bottom right).

The system will display the TOUCHLINE based on the indicative opening price so calculated along with the details of quantities available at the TOUCHLINE PRICES. The cumulative quantity will include market orders.

The market depth window will display the indicative opening price along with the next four prices points. The price points would also have the details of aggregate quantities available on the buy and sell side separately.

Example of Market Depth :

Order Book:

Buy Quantity	Buy Price	Sell Price	Sell Quantity
100	ATO	91	100
100	96	91.5	100
150	95	93	100
50	93	95	100
100	91.5	96	200
100	91	97	50
100	90	98.5	50
		99	100

Demand Supply Schedule:

Price Point	Cumulative Buy Quantity	Cumulative Sell Quantity	Tradable Quantity	Absolute Order Imbalance
96	200	600	200	400
95	350	400	350	50
93	400	300	300	100
91.5	500	200	200	300
91	600	100	100	500

The opening price is Rs. 95.00 (price at which the maximum quantity is traded)

The market depth would display:

- The indicative opening price along with the next 4 prices
- The cumulative buy and sell quantities at each of these price
- The cumulative quantity will include the market orders.

Buy Quantity	Buy Price	Sell Price	Sell Quantity
350	95	95	400
400	93	96	600
500	91.5	97	650
600	91	98.5	700
700	90	99	800

If no indicative price is calculated, then the best available buy & sell orders will be displayed.

Market picture window for various periods in the pre open session

Fields	Before any orders are entered	Order Entry Period	Order Matching and Confirmation Period :
LTP	Blank	Indicative Opening Price	Actual opening price, once discovered; till then Indicative opening price
LTQ	Blank	Indicative matchable Quantity	Traded quantity of the last trade at the opening price
OPEN	Blank	Blank	Actual opening price, once discovered; till then remains blank
HIGH	Blank	Highest indicative price	Highest indicative price displayed until actual Open Price is discovered
LOW	Blank	Lowest indicative price	Lowest indicative price displayed until actual Open Price is discovered
LCKtlm/ UCKtlm	Blank	Blank	Blank
CLOSE	Previous day's close price	Previous day's close price	Previous day's close price
TOTAL BUY DEPTH	Blank	Total buy quantity of all orders in the order book	Total buy quantity of all orders in the order book
TOTAL SELL DEPTH	Blank	Total sell quantity of all orders in the order book	Total sell quantity of all orders in the order book
SENSEX	Previous day's closing value	Indicative value based on indicative open price of SENSEX scrips	Will get updated as & when actual open price of SENSEX scrips is discovered

9. INDEX COMPUTATION

Indicative values for all BSE indices will be calculated and disseminated at regular intervals during the order entry period. Post order entry, the indicative index will incorporate the opening price(s) of the stock(s) as and when determined to compute actual opening value. In the absence of the indicative price, the previous closing price of the stock will be used. Once the opening price of all SENSEX 30 stocks is determined, the real index will be calculated and displayed.

10. RISK MANAGEMENT

Margins & Collateral: During the pre open session, up front margins will be adjusted against the available collateral of members at the time of entering orders into the system. In other words, orders will not be accepted in the system if the members does not have adequate collateral.

However blocking of up front margins at trade level shall continue to be applicable to the continuous trading session from 9:15 am - 3.30 pm.

Price Bands & Circuit Filters: A uniform price band of 20% will be applicable to all eligible securities during the pre-open session. In the event the Index breaches its prescribed threshold limit upon calculation of the opening value of SENSEX, a trading halt (market wide circuit breakers) will be triggered as per current practice (SEBI Circular Ref. No. SMDRPD/Policy/Cir-37/ 2001 dated June 28, 2001). The halt shall be applicable at the start of the continuous trading session. The index breach will not impact the execution and confirmation of trades during the pre-open matching session.

ANNEXURE 1: LIST OF ELIGIBLE STOCKS FOR THE PRE-OPEN SESSION

ACC LIMITED

HINDUSTAN UNILEVER LTD.

RELIANCE CAPITAL LTD

AMBUJA CEMENTS LTD

ICICI BANK LTD.

RELIANCE INDUSTRIES LTD

AXIS BANK LIMITED

INFRA. DEV. FIN. CO. LTD

RELIANCE INFRASTRUCTURE LTD

BAJAJ AUTO LTD

INFOSYS TECHNOLOGIES LTD

RELIANCE POWER LTD.

BHARTI AIRTEL LIMITED

ITC LTD

SESA GOA LTD

BHEL

JINDAL STEEL & POWER LTD

STEEL AUTHORITY OF INDIA

BHARAT PETROLEUM CORP LTD

JAIPRAKASH ASSOCIATES LTD

STATE BANK OF INDIA

CAIRN INDIA LIMITED

KOTAK MAHINDRA BANK LTD

SIEMENS LTD

CIPLA LTD

LARSEN & TOUBRO LTD.

STERLITE INDS (IND) LTD

DLF LIMITED

MAHINDRA & MAHINDRA LTD

SUN PHARMACEUTICALS IND.

Dr REDDY'S LABORATORIES LTD

MARUTI SUZUKI INDIA LTD.

SUZLON ENERGY LIMITED

GAIL (INDIA) LTD

NTPC LTD

TATA MOTORS LIMITED

HCL TECHNOLOGIES LTD

OIL AND NATURAL GAS CORP.

TATA POWER CO LTD

HDFC LTD

PUNJAB NATIONAL BANK

TATA STEEL LIMITED

HDFC BANK LTD

POWER GRID CORP. LTD.

TATA CONSULTANCY SERV LTD.

HERO HONDA MOTORS LTD

RANBAXY LABS LTD

WIPRO LTD

HINDALCO INDUSTRIES LTD

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