



Omnesys Technologies



Cash (BSE) To Future (NFO) Bidding Strategy

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Cash (BSE) To Future (NFO) Bidding Strategy:

This strategy allows for quote based arbitrage between BSE equity and NSE future segments (NFO). It can quote on either equity or future for both sides (i.e buy cash (BSE) sell future (NFO) and buy future (NFO) sell cash (BSE).

Input Parameters:

NFO Scrip Details:

Exchange Seg: User needs to select relevant exchange segment, in this case NFO, which will be populated automatically.

Symbol: User needs to select relevant symbol for that particular exchange.

Expiry Date: To select the expiry date for a particular future token.

Lot Size: It is the relevant lot size for the selected futures symbol and is disabled.

BSE Scrip Details:

Inst Name: The user can select the relevant series in BSE Exchange for Cash.

Symbol: The user needs to select the relevant symbol for that particular exchange.

Type: User needs to select relevant type in BSE exchange for Cash.

PRO/CLI: It gives user an option to do in **PRO** or in **CLI** for cash and future segment. When cli is selected will give an option to select **Account id** and **Participant id** for cash and future segment.

Quote Side: Arbitrage side (i.e. buy cash sell future, buy future sell cash). User has the choice to select either of them.

Following user parameters need to be entered separately for each Quote side:

Limit(in Rs): This is the desired spread between equity and future legs, positive value indicates a profit arbitrage, negative value denotes a loss. The formula is: **Sell -Buy**

Quote Threshold (Rs.): always lower than or equal to the "Limit". The idea is to start bidding when the Quote threshold is breached.

Order Lots: This is the quantity in lots to be placed per opportunity for execution.

Total Lots: This is the total trade quantity in lots that the user intends to trade for the execution side.

Following parameters are common for both quote side, for a particular scrip token:

First Leg: Cash based or Future based. Selection of this leg determines whether first leg (bidding leg) will be Cash (BSE) or Futures (NFO).

First Leg Type: There are two categories in the first leg type: Best Bid/Ask and Sweep/Stand Price.

- a. Best Bid/Ask: If user selects Best Bid/Ask, then the strategy will place a single limit day order for the first leg. For placing first leg, our system will calculate the first leg price based on the limit and the weighted average price of the second leg. If the market price is better than calculated price, it will try to become best buyer/seller depending on whether one is buying or selling a given token. **It should be noted that bidding to become best buyer and best seller till the calculated first leg price. So calculated first leg price becomes a floor/ceiling for bidding.**
- b. Sweep/Stand Price: If user selects Sweep/Stand Price, then the strategy will place a single day order with first leg token, after the trade confirmation of first leg, second leg order is placed according to the Second leg Type selected. For placing first leg, our system will calculate the first leg price and place the order in the market at the calculated price but **will not** become best buyer or seller.

LTP % Check: This parameter is applicable for first leg placement. It has two option Yes or No. If 'Yes' option is selected, then LTP (%) parameter will be enabled. The percentage value entered in this parameter is used to create a band with respect to LTP. If the bidding first leg price is beyond this band, the orders will not be placed. If 'No' option is selected, then the LTP % band will not be formed.

LTP (%): This parameter is used in conjunction with the LTP % Check. The percentage value entered in this field determines the band that needs to be formed taking LTP As reference. It is enabled only when LTP % Check parameter is selected as Yes.

Second Leg Type: This parameter is used for the second leg. Once the first leg gets completed, how should the second leg be placed depends on this parameter. It has four options to place the second leg and are mentioned below:

1. **Traded +/- Limit:** If this option is selected, the placement of second leg price depends on the desired limit specified by the user and the traded price of the first leg for that given round.
2. **Same:** Once the first leg is completed, second leg is placed as limit orders with the same side rate. For example, if one is second leg buying, then bid rate will be taken as price for limit order and if one is selling then ask rate will be taken as price for the limit order.
3. **Opposite:** Once the first leg is completed, second leg is placed as limit orders with the Opposite side rate. For example, if one is buying, then ask rate will be taken as price for limit order and if one is selling, then bid rate will be taken as price for the limit order.
4. **LTP Based MPP%:** Once the first leg is completed, second leg is placed as limit order depending on LTP Based MPP%. For example, if one is buying the second leg, then the order will be placed by adding the MPP% specified to the LTP of the scrip, and if one is selling the second leg the order will be placed by subtracting the MPP% from the LTP of the scrip. If for any reason the order is not completed, and there is a change in LTP, it will modify the order price for that leg accordingly. When this option is selected, and user stops the strategy, the pending hedging leg order will be canceled.

MPP%: This parameter is enabled only when Second leg type selected is **LTP Based MPP%**.

For Placing **Buy** Orders: **Placed Leg Buy Price = LTP + (LTP * MPP%)**

For Placing **Sell** Orders: **Placed Leg Sell Price = LTP - (LTP * MPP%)**

Threshold Quantity (%): Threshold quantity parameter is used in conjunction with the depth specified by the user. It is used to check whether a mentioned percentage of the order lot/quantity (depending on which is the second leg) is available for the specified market Depth. If it is available then only it will place/bid for the first leg.

Cash Threshold Quantity (%): is relevant if Cash is the first leg. If the other condition matches, and absolute Threshold Qty (%) is also available in the market depth, the execution of first leg (cash) starts. As soon as, a single quantity in cash side is traded, timer for leg 1 starts. At the expiration of timer 1, if the Cash Threshold Quantity % is not bought or sold (depending on the leg), the strategy will square-off the cash leg. If Cash threshold Quantity percentage is breached at or before the expiration of timer 1, it will complete the remaining first leg (cash), if open, after second leg is traded.

Absolute Threshold (%): will only be useful if first leg is Cash. If other conditions match, the first leg bidding will start if and only if absolute threshold (%) matches. In other words, if the absolute threshold Quantity (%) is available on Cash side, then only the first leg (cash) is executed. In other words, it will check whether Absolute Threshold % of the order lot is available on the side opposite to the bidding side of the first leg before putting on any bids.

Cash Tick Size (Rs.): It is a minimum tick for that scrip in Cash Segment.

Future Tick Size (Rs.): It is a minimum tick for that scrip in Future Segment.

Modify Factor (in ticks): It is applicable for second leg only. It is a tick (minimum tick size) to be added to second leg best modify price. If second leg order type is selected as LTP Based MPP%, modify factor parameter is not relevant.

Modify Times: number of times second leg order can be modified. Modify times depends on the tick. Hence, if the modify time is more than 1 and the trader receives tick more than once in 2 seconds, the modify factor will come into picture more than once in 2 seconds. If second leg order type is selected as LTP Based MPP%, modify times parameter is not relevant.

Timer (in seconds): It is used for the first leg cash side only. It dictates the time at which the first leg should be completed/ traded till the Cash Threshold (%) of the order lot quantity. It is only applicable when first leg selected is cash.

TimerLeg2 (in seconds): to modify any open order to limit order based on LTP Based MPP% after timer seconds for leg 2. This parameter is not applicable for second leg type selected as LTP Based MPP%.

Depth: User has the choice to select the relevant depth. Selection of depth is vital for both weighted average price calculation, first leg quantity check if its cash, as well as for quantity checks for second leg quantity.

Execution/Working:

1. When the market spread breaches quote threshold, based on the first leg type selected, it will place the order. If future is the first leg, and Best Bid Ask is the first leg order type, first leg limit order is placed in future segment based on the BID type set taking into consideration relevant price and limit. For example, one is buying Cash and selling in Futures leg, with multiple lot and depth more than 1 with Sell Futures as the bidding leg, then the price of the

bidding leg will be calculated as: **Limit + Weighted Average of Buy Cash i.e. Limit + Weighted Average of Ask rate of Cash leg.** If the market rate of the first leg is better than the user calculated derived price for the first leg (based on limit and weighted average of the second leg price) then it will try to become a best buyer/seller depending on whether one is buying first leg or selling the first leg.

2. Modify BID order (limit day order) based on price (weighted average) change in relevant second leg's price. First leg modification is continuous till it gets traded. Any change in the second leg price, will ensure that first leg price is changed irrespective of the first leg type selected. First Leg Day Order to be cancelled if quantity not available at any point in time.
3. On trade of first leg, Place second leg limit day order for the trade quantity taking into consideration Second Leg Type.
4. On confirmation of second leg, modify order taking into consideration best price, modify factor, modify times and trigger timer for duration as specified in parameter. On timer lapse or order modification upto modify times specified (whichever is earlier), modify second leg pending limit Day order to limit order based on LTP Based MPP% if the second leg type is other than LTP Based MPP%.

Portfolios and Parameters (Screenshot):

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NFO Scrip Details				BSE Scrip Details			Cash Account Details		Future Account Details		
Exch-Seg	Symbol	Expiry Date	Lot Size	Inst Name	Symbol	Type	PRO/CLI	Account ID	PRO/CLI	Account ID	Participant ID
NFO	HDFCBANK	29May201	500	500180	HDFCBANK	A	PRO	11365	PRO	11365	

☒ Buy Cash :: Sell Future ☐ Buy Future :: Sell Cash

Limit (Rs)	Quote Th (Rs)	Order Lots	Total Lots	Pending Qty	Traded Qty
1	1	1	1	1	

Limit (Rs)	Quote Th (Rs)	Order Lots	Total Lots	Pending Qty	Traded Qty

First Leg: future First Leg Type: Best Bid/Ask LTP % Check: No LTP %: SecLegType: Traded +/- Limit MPP(%): 0.5

ThrQty(%): 100 CashThrQty(%): 75 Abs.Thr(%): 70 CashTickSize: 0.05 FutTickSize: 0.05

Pending Order:
 Mod(times): 1 ModFactor(Tick): 1 Time(Sec): 1 Depth: 4 TimeLeg2(Sec): 1

Save Cancel

Risk Management

Risk Management System can be configured to have following checks which are defined by exchange with respect to Algorithms.

Sr. No.	Checks	Rules to set	Remarks
1	Price Check	1) Check Price Range Based on LTP 2) Check Circuit Limit	These rules will create a price range on the basis of Last Traded Priced as per the percentage set in the category window.
2	Quantity Check	a) Order Quantity including Square off Order b) Board Lot Quantity including Square off Order	These rules will restrict per order the number of quantity to be placed in market which is defined the category window. The user can define the number of quantity in Weights and in lots for Futures.
3	Order Value Check	Order Value including Square off Order	This rule will restrict per order the order value which can be placed in the market which is defined in category window
4	Trade Price Protection Check	Check Circuit Limit including square off order	This rule does not allow to place the order which has been placed above the Higher Circuit Limit or Lower circuit limit which id defined for contract/scrip by exchange
5	Market Price Protection	Check Price Range Based on LTP	This rule will create a price range on the basis of Last Traded Priced as per the percentage set in the category window.
6	Cumulative Open Order Value check	Pending order value	This rule will restrict the Open Order with the Value set in the category
7	Automated Execution Check	Turnover Order Level and Turnover Order Level Limit	This rule will calculate the value of all executed/ Unexecuted and un confirm orders and if breach the value set in category then further order will get rejected
8	Automatic stoppage in event of Algo execution leading to a loop or a runaway situation.	Order Throttle	If there number of order per seconds breaches the value which is set in Throttle then further order gets rejected by the system.
9	Net Position Vs. available margin	Gross Exposure, Gross Exposure Derivative, Var Margin Order Level, Span Margin Order Level	User can set the risk parameter based on Exposure and Margin based on which the margin used will be calculated on the basis of position taken. If the Margin used is equal to Cash margin then further order will be rejected by the system
10	RBI Violation checks for FII Restricted stocks.	Restricted Basket or RMS Blocking	User need to create a Restricted basket for the scrip and assign to the category of the user / client. Also RMS blocking can be used.
11	MWPL violation check	RMS Ban Symbol or RMS Blocking	The scrip for which market wide position limit is breach then scrip can be blocked or it needs to be in Ban.

12	Position Limit Checks	Scrip Group / Scrip Margin	User can define the quantity scrip wise in which the position can be taken in scrip group and then it needs to be assign to category at client level
13	Trading Limit Checks	Turnover Order Level Limit/ Gross Exposure Limit	User can define the Turnover or Exposure for a specific Client/User or Branch.
14	Exposure Limit check at individual client level and at overall level	Gross Exposure and Gross Exposure Limit	User can define the Exposure at Branch Level as well as Broker Level
15	Number of orders for the logic	NA	Depends on the user parameter (i.e order qty) set. This can vary from a minimum of a single lot to a maximum of total qty set.
16	Maximum number of scrips / contracts in which the logic will work at a time	NA	At a time, maximum number of scrips/contracts in which logic will work at a time is 1 or 2.
17	Number of legs		Two