Demand & Supply Strategy Module

Paper strategy structures, execution rules, rollover, and analysis

Scope

The Demand & Supply page is an isolated strategy-configuration and paper-execution module. It stores validated setups, resolves contracts from the Dhan master, subscribes every active leg to the WebSocket, and persists execution state independently of the browser. It never submits live orders.

Paper fills use the latest fresh WebSocket price. A missing, stale, simulated, REST-quote, or zero market price never triggers an entry, stop loss, target, or exit.

Common Concepts

- **Reference price:** Spot/equity by default. A futures reference can be selected where relevant.
- **Relative option strike:** ATM, OTM n, or ITM n, resolved from the Dhan security master for the selected expiry.
- **Exact option strike:** A numerical strike selected directly by the user.
- **Independent expiry:** Every option leg can use Current, Next, Monthly, or a fixed expiry.
- **Quantity:** Equity uses shares. Futures and options use lots; executable quantity is lot size multiplied by lots.
- **Strategy P&L:** Combined P&L is the sum of all equity, future, and option legs. Each leg must also retain its own P&L.

1. Pure Equity

Purpose: a manual Demand & Supply entry in NSE or BSE equity.

Inputs:

- NSE/BSE equity symbol
- BUY or SELL
- Entry, stop loss, target, and share quantity
- Positional paper holding mode

Validation:

- BUY: `SL < Entry < Target`
- SELL: `Target < Entry < SL`

Paper execution rule: BUY triggers when spot crosses down to or below Entry; SELL triggers when spot crosses up to or above Entry. A crossed price triggers even if the exact level is skipped.

2. Equity Options Overlay

Purpose: combine an equity position with one or more option legs.

The equity leg uses the configured entry, stop loss, target, quantity, and product. Each option leg independently defines BUY/SELL, CE/PE, expiry, strike selection, lots, and role.

Typical presets:

- **Covered Call:** Buy equity and sell CE.
- **Protective Put:** Buy equity and buy PE.
- **Collar:** Buy equity, sell CE, and buy PE.
- **Bullish Put Overlay:** Buy equity and sell PE. This increases bullish downside exposure and is not a hedge.
- **Custom Overlay:** Any validated collection of option legs.

3. Futures Options Overlay

Purpose: combine a long or short future with configurable option legs.

Typical presets:

- **Future Shield Long:** Buy future and buy PE.
- **Future Shield Short:** Sell future and buy CE.

- **Covered Future Long:** Buy future and sell OTM CE.
- **Covered Future Short:** Sell future and sell OTM PE.
- **Future Collar:** Buy future, buy PE, and sell OTM CE.
- **Reverse Future Collar:** Sell future, buy CE, and sell OTM PE.

The future expiry and each option expiry are independent. This is required for contracts whose futures and options expire on different dates.

4. Equity Yield Ladder

Purpose: accumulate exactly one option-lot equivalent of equity in calculated tranches while carrying one short call lot.

Inputs:

- Starting spot price `S`
- Call strike `K`
- Call premium `C`
- Master-contract lot size `L`
- Target call delta, default `0.30`
- Call expiry

Formula supplied by the strategy owner:

```
Raw quantity per entry = round((L * C) / (K + C - S))
Entry count            = round(L / Raw quantity per entry)
Entry interval         = (K - S) / Entry count
Entry[x]               = S + Entry interval * x
```

The implementation preserves this calculation but adjusts the final tranche so total equity equals exactly `L`. It does not overbuy shares when rounding produces a total above the lot size.

Example using RELIANCE `S=1429`, `K=1500`, `C=25`, and `L=500`:

Entry	Trigger	Shares
E1	1429.00	130
E2	1446.75	130
E3	1464.50	130
E4	1482.25	110

Total shares are 500 and one call lot is sold. Before all shares are accumulated, part of the short call is uncovered; the eventual execution screen must display that uncovered quantity explicitly.

If price falls, filled equity tranches remain held and the call can be rolled to a later expiry. Pending ladder levels remain associated with the same strategy lifecycle.

5. Futures Yield Ladder

Purpose: reuse the ladder levels for future accumulation.

For `N` calculated ladder entries:

- Sell `N` call lots.
- Buy one future lot at each of the `N` spot-reference trigger levels.
- The entry signal is evaluated using spot by default, while the actual fill and P&L use the selected futures contract.

This interpretation follows the requirement to sell four call lots when the formula produces four future entries. It creates uncovered short-call exposure until corresponding futures entries are filled and therefore requires an explicit risk display and live-order confirmation before activation.

6. Protected Equity Ladder

Purpose: add downside protection to the Equity Yield Ladder.

Structure:

- Accumulate one lot-size equivalent of equity using the same ladder.
- Sell one call lot.

- Buy one protective put lot using an independently selected strike and expiry.

The page reports call premium income, put premium cost, and net option credit. The put protects downside but reduces the strategy credit.

7. Rolling Future Income Ladder

Purpose: accumulate long futures at spot-based ladder levels, protect every filled future with a long put, and finance the basket with short calls across monthly rollovers.

Default structure:

- Five planned spot-reference entries between the starting spot and call strike.
- On the first expiry, sell one `0.30`-delta call lot for every planned entry.
- When entry n is reached, buy one future lot and one protective put lot for that tranche.
- A crossed trigger counts as filled; the spot does not have to print the exact price.
- All legs are positional and are never squared off merely because the day ended.

Rollover:

- At 15:20 on expiry day, close the current-expiry contracts using fresh WebSocket prices.
- Roll only the tranches whose futures have actually filled: each becomes one future, one put, and one short call in the next available expiry.
- Unfilled ladder levels remain pending. If one later triggers, its future, put, and short call are opened in the then-current expiry.
- Every rollover generation is stored as new legs. Old contracts, fills, P&L, and timestamps remain in the database and analysis log.

Completion:

- All planned future entries must be filled.
- Spot must reach or cross the configured call strike.
- Combined realized plus unrealized basket P&L must be positive.
- When all three conditions hold, all open futures, puts, and calls are closed and the strategy is completed. Otherwise it continues into the next expiry.

The Target Delta field documents how the call was selected. The current paper release uses the exact call strike and premium entered in the setup; it does not silently estimate option delta from strike distance. Re-select the live `0.30` delta contract when creating the setup.

Contract and Data Rules

1. Equity symbols come from the NSE/BSE security master.
2. Overlay and ladder symbols must be F&O-eligible before execution is enabled.
3. Lot sizes, expiries, strikes, tick sizes, and security IDs come from the refreshed Dhan master file.
4. Relative strikes are resolved when the setup is activated and again on rollover.
5. Every resolved leg is persisted with its exact contract identity.
6. Every active leg must be subscribed to the WebSocket after creation and after a backend restart.

Paper Execution Rules

1. Every required leg must have a WebSocket tick no older than 30 seconds before a grouped entry or exit is recorded.
2. Equity and futures overlays enter all configured legs together after the spot trigger. Spot SL or target closes the complete grouped strategy.
3. Every Demand & Supply strategy is positional. There is no end-of-day square-off; positions remain open across trading days until spot SL, spot target, or manual exit.

4. Ladder option legs open together once their feeds are fresh. Equity or future base legs then fill progressively when spot reaches each ladder trigger.
5. Equity and standard futures ladders remain open until manual exit. Automatic expiry rollover applies only to the Rolling Future Income Ladder and follows its separately documented tranche rules.
6. Strategy P&L is the sum of every leg. Open legs use fresh LTP; closed legs use persisted exit price. P&L is gross and excludes brokerage, taxes, and slippage.
7. Pausing is permitted only before entry. A running position cannot be paused because SL/target monitoring must remain active continuously.
8. A backend restart reloads active strategies and resubscribes every non-closed leg. The browser may be closed without stopping paper execution.

Persistence

The module uses `data/demand_supply.db`, separate from the existing trading and backtesting databases. Strategy setups, legs, events, daily performance, peak P&L, and drawdown survive restarts, while database files, credentials, tokens, market data, and generated reports remain excluded from Git.

Market-View Combination Guide

Bullish

Structure	Legs	Best fit	Main risk
Pure Equity Long	Buy equity	Strong directional demand setup	Full equity downside
Protective Put	Buy equity + buy PE	Bullish with crash protection	Put premium decay
Bullish Put Income	Buy equity + sell PE	Strong bullish conviction	Downside exposure is increased
Long Future Shield	Buy future + buy PE	Leveraged bullish view with floor	Basis and option cost
Equity Yield Ladder	Staged equity + short CE	Gradual bullish accumulation	Short call is partly uncovered during accumulation
Protected Equity Ladder	Staged equity + short CE + long PE	Gradual bullish accumulation with protection	Reduced credit and rollover cost
Rolling Future Income Ladder	Staged futures + long PE + short CE	Multi-expiry bullish accumulation	Initial calls can be partly uncovered until triggers fill

Bearish

Structure	Legs	Best fit	Main risk
Pure Equity Short	Sell equity positionally	Supply rejection	Unlimited upside risk without a hard SL
Bearish Protective Call	Sell equity + buy CE	Bearish with capped upside risk	Call premium decay
Covered Put	Sell equity/future + sell PE	Moderately bearish	Profit is capped below the put strike
Short Future Shield	Sell future + buy CE	Leveraged bearish view with protection	Basis and option cost
Reverse Future Collar	Sell future + buy CE + sell PE	Moderately bearish with reduced hedge cost	Short put limits downside profit

Sideways or Mildly Bullish

Structure	Legs	Best fit	Main risk
Covered Call	Buy equity + sell OTM CE	Sideways to mildly bullish	Upside is capped; equity downside remains
Collar	Buy equity + sell OTM CE + buy OTM PE	Range-bound with defined protection	Both upside and downside are bounded
Long Future Covered Call	Buy future + sell OTM CE	Sideways to mildly bullish	Leveraged downside remains
Future Collar	Buy future + sell OTM CE + buy OTM PE	Range-bound leveraged position	Expiry and basis mismatch

Volatile or Uncertain

The first release does not include a standalone long straddle/strangle preset because these structures do not contain an equity or future anchor. They can be added later as a dedicated Options-Only template. For the current templates, use Protective Put, Future Shield, Collar, or Reverse Collar when protection matters more than premium income.

MARUTI Sample Catalogue

The repeatable sample command is:

```
python scripts/seed_demand_supply_samples.py
```

Use `--replace` to refresh only records whose names start with the fixed `SAMPLE MARUTI` catalogue. It never activates a setup. The server sample snapshot uses:

- Spot reference: `13,811`
- Current expiry: `25-Aug-2026`
- Master lot size: `50`
- ATM area: `13,800`
- Ladder short call: `14,000 CE`, premium snapshot `240.90`
- Ladder protective put: `13,600 PE`, premium snapshot `145.55`
- Rolling future ladder: five planned entries using the same call and put snapshots

Relative sample legs use `OTM2`. At the snapshot, that corresponds approximately to `14,000 CE` or `13,600 PE`. Exact contracts must be resolved again at activation time because spot, expiry, and strike grids change.

Analysis Fields

Each strategy records creation date, first start date, calendar age, trading-day count, current reference LTP, realized P&L, unrealized P&L, combined P&L, peak P&L, maximum drawdown, drawdown timestamp, leg entry/exit counts, daily performance, and a timestamped event log. Expanding a strategy shows individual contracts, quantities, trigger/fill prices, status, exit reason, and leg P&L.

The paper defaults above are intended for execution testing. The rolling future template persists monthly contract generations, but transaction costs, partial-fill simulation, and portfolio-level risk limits remain future work. This module is paper-only and is not a live-order release.