**MQL5.COM EA DEVELOPMENT PROJECT**

| **Project Details** | |
|---|---|
| Client: | Cornelius Zünd |
| Project Title: | Temple v1.0 |
| Developer: | |
| Project Start Date: | 2024.06.xx |
| Project End Date: | 2024.06.xx+10 |
| Budget: | 30USD |
| Language | MT5 |
| Compatible Pairs / Indices | All – the EA should be useable on any chart, pair or index. |
| Deliverables | • Functioning EA in MT5.<br>• Uncompiled code in English (must compile without errors).<br>• Compiled EA must be able to be uploaded to the MQL5 marketplace – an indication of robust and clean coding. |
| Reference Documents | Temple v1.0 ppt.pdf<br>Temple v1.0 doc.pdf |

**Introduction**

The goal of this project is to catch positions which are moving in the right direction, while locking / hedging the ones that do not. Positions are only opened when price has been moving according to the predominant trend, and wins are used to buy down existing locked positions.

After the first BUY is opened in a new Up Trend, each subsequent BUY position that is opened *within the same* Up Trend must have a higher open price than the last. Conversely each SELL opened *within the same* Down Trend must have a lower open price than the last.

After a position is opened on a valid signal, it may a) close in profit, b) remain open at a small loss or c) open a counter position if it has fallen too far in the wrong direction. In the case of a) and c) if on the next bar the open signal is still valid (and price has moved sufficiently), a new position will be opened and potentially hedged as well. The location of a hedge is calculated at the beginning of a bar, based on a user defined variable that is called the BARRIER.

For a BUY the BARRIER is calculated using the average distance between the OPEN and LOW values of (x) previous candles (default lookback period to 200). For a SELL, the distance between the OPEN and HIGH is used. There is also a multiplier to this value, which allows for modulation during back testing.

When a profit is realized and there are hedged / locked positions open, the profit buys down the previous hedge pairs as much as possible starting with the oldest remaining pairs. The purpose of this system is to freeze losses which can be unlocked with gains in either direction, depending on the validity of the open signals.

A standard trailing stop functionality will be used with the elements below:

- TS True/False: whether the trailing stop is to be used.
- TS start: how many points in profit until the trailing stop is activated (it can be 0).
- TS step: the distance of the trailing stop.

The open signal and position management logics are outlined below. Please also see the accompanying ppt.

**Open Signal**

The open signal is calculated at the open of each new bar, according to the criteria listed below:

1. There is a valid Trend.
2. It is the first position to open in the Trend, OR the open price is above/below the previous as explained.

Trend Direction Validation

For a BUY / Up Trend

- Price closes above the slow SMA (100).
- Fast SMA (25) is above the medium SMA (50).
- All SMAs are in a clear uptrend for the past 3 bars.
    - SMA (1) > SMA (2) > SMA (3) etc.
- *Note that numbers in () are variables.*

Up Trend Flag

- While these conditions are TRUE, the EA has a flag indicating that an Up Trend is TRUE.
- While these conditions are FALSE, the EA has a flag indicating that the Up Trend is FALSE.

When the trend is identified it is also assigned a "name", so that we are sure there is no confusion between trends in future. This can be simply a number, up to a maximum defined by the user (say 100 default). Once we get to the end of the naming, we cycle back to the first. The "name" only serves to help differentiate trends.

The flag condition and name are continually indicated on the top left of the screen for debugging purposes, as well as being used logically by the EA. If there is no trend, "no trend" will be indicated.

Position Numbering Within A Trend

- The first position opened in a trend will be referred to as p0.
    - This is an internal counter which is only used during trends and has no bearing on the position number that may be assigned by the system, nor the magic number.
- While Up Trend is TRUE, for a new position, the price must be > price at the last new position. Example:
    - p0 opens when the Trend Up flag is TRUE and a new trend has been identified (and named).
    - p1 can open when Up Trend Flag is TRUE AND OPEN price > p0 OPEN price.
    - p2 can open when Up Trend Flag is TRUE AND OPEN price > p1 OPEN price.
    - Etc.

When the Up Trend flag returns to FALSE, the position counter is reset. Therefore, the first position opened in each new trend is referred to as p0.

For a SELL / down trend

- As above, but opposite.

If the above conditions are satisfied, we have established the BUY / SELL open signal.

Notes:

1) The number of bars needed on each SMA to register as a "clear up/down trend" are defaulted to 3, however can be modified in the variables.
2) Note that the EA can have both the up and down trend flags set to FALSE simultaneously. It shall not be possible for the flags to be TRUE simultaneously.
3) The status and designation / "name" of each flag will be indicated in the top left of the chart for debugging purposes.

**Position Open (BUY / SELL)**

When the BUY/SELL signal is confirmed at the open of a new bar, and the position is opened:

- A TP is set based on an expected # points of profit (user defined).
- There is no direct SL.
- BARRIER: Instead of a direct SL a pending order is set some distance away, based on the average distance between OPEN and LOW for a BUY (for a SELL use OPEN-HIGH) over some lookback period, times some multiplier (say 0.5 or 1.1).
    - for a BUY we are using the average distance from OPEN to LOW of the past (200) bars. The BARRIER is set below the OPEN price by this amount.
    - for a SELL we are using the average distance from open to high of the past (200) bars. The Barrier is set above the open price by this amount.
- The EA may not open positions when spread is above (20) points.

The lookback period (200) for the BARRIER can be selected by the user. Alternatively, the user can define a fixed BARRIER value in points. See the variables section.

**1st Position Management (BUY)**

After the initial position has been opened, the following scenarios are expected:

1. Price rises and reaches the TP on the same bar. The position is closed at the end of bar, and any open pending orders are cancelled.
2. Prices rises without hitting the TP, and is in profit at the close of the bar. It is closed at the end of bar, and any pending orders are cancelled.
3. Price falls without hitting the BARRIER and is in a loss position at the close of the bar. Nothing happens and the pending order remains open until activated or closed after a TP.
4. Price falls and hits the BARRIER; an opposite position is opened and locked. No further action is possible until the next bar.

Note that while a position is open and has not been locked, a new position cannot be opened (with the exception of the pending order, if hit).

*Opposite logic for SELL.*

**Subsequent Position Management**

If on a new bar there are existing hedged positions, AND there is a valid open signal (BUY or SELL, assume BUY in this explanation), AND spread is below the maximum spread value, a new position is opened in the valid direction. If conditions are not valid, nothing is opened on this bar. The following scenarios are expected:

1. Price rises such that the of sum of profit across all positions (profit and loss)>= # points profit (the TP value), all positions are closed and all open pending orders are cancelled.
2. Price rises such that the new un-hedged position is in profit at the end of the bar, the profitable position is closed before the end of the bar. The profit from this closure is used to close out existing open positions, in a balanced fashion, starting with the oldest hedge pair (partial closing).
3. Price falls and hits the pending order; a new opposite position is opened and locked. No further action is possible until the next bar.
4. Price falls without hitting the Barrier, and is in a loss position at the close of the bar. Nothing happens.

It is possible that we start with BUY positions that result in a series of hedged pairs, and they do not close before running out of open signals. They may stay open for some time; however, they are tightly hedged and there should be no unexpected increase in position sizes or margin requirements.

Eventually a new trend will appear, the direction does not matter, and it will again be possible to close profitable positions. It is anticipated that we may go through several trend cycles before all locked positions are cleared.

**Money Management**

The user will define the lot size using one of the following methods:

1. Fixed lot size
2. Lot sized / 10k account balance
3. Based on % risk

Only one of the above will be used at any given time, and the others are set to 0. If there is a disagreement between the lot sizes (more than one option is selected as TRUE) then the EA will prioritize based on the order above (fixed lot size has priority).

For the % risk calculation, the EA will use the Barrier value in lieu of a SL.

**Variable List**

The following are the variables that are expected, as a minimum, to be found in the EA.

- Global Variables
  - Max spread 20
  - Magic number 15151
  - Maximum Trend Labels 100
- Open Variables
  - SMA Slow 25
  - SMA Med 50
  - SMA Fast 100
  - Uptrend Slow 3 (#of bars)
  - Uptrend Med 3 (#of bars)
  - Uptrend Fast 3 (#of bars)
- Money Management
  - Fixed lot size 0 (if 0, not used)
  - Lots / 10k Balance 0 (if 0, not used)
  - Based on % risk 2% (if 0, not used)
- Barrier & TP
  - Lookback 200 (to calculate Barrier value)
  - Fixed Barrier 0 (in points. if 0, we use the lookback average else use this #).
  - Barrier Multiple 1.0 (to modulate the Barrier value if needed)
  - TP Points 100 (points, if 0 not used)
  - TP ATR 0.0 (a multiple of the ATR at the time of bar open, if 0 not used)
  - TS T/F 1.0 (whether the trailing stop is to be used)
  - TS start 50 (how many points until the trailing stop is activated)
  - TS step 50 (points the value of the trailing stop)

**Deliverables**

Conclusion of the project will be measured according to the following:

1. Functioning EA in MT5 (will test on demo and live account)
2. Must be back test able in MT5 without error.
3. Uncompiled code in English (must compile without errors or warnings).
4. Compiled EA must successfully upload to the MQL5 marketplace – an indication of robust and clean coding.