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Methodology

TradingEdge.Pro's methodology describes a multi-step process for building and validating trading strategies, structured into two parts: strategy development and testing, and practical use. In the testing phase, a strategy is defined as a set of objective rules, validated through initial tests, optimised, and assessed for stability (robustness), and then evaluated using Walk-Forward Analysis. The detailed testing assumptions (including the instrument universe, in-sample/out-of-sample periods, data sources, transaction costs, and execution rules) are described in the "Testing Specification" document. The full methodology and metric definitions are available on the TradingEdge.Pro "Methodology" page.

Double Volume v.1

Investment Strategy Testing Summary

The Double Volume v.1 strategy is a short-term **trend-reversal system** that exploits local exhaustion following the establishment of **a new, multi-session price extreme on increased volume.** In a classic setup, the market reaches **a new high or low over a longer observation window,** and this candle is accompanied by **significantly higher volume than the average over the last dozen or so days.** If a directionally opposite candle appears within several consecutive sessions, **the system interprets this as the first signal of weakening momentum** and places an entry order on the opposite side of that candle. Entry is executed with a stop order, active for a limited number of sessions, a stop loss is placed on the opposite side of the signal candle, and the exit is short-term (**time-exit** after several days), unless the stop loss is reached first.

Although the strategy is based on **rational assumptions** and attempts to exploit **the stock market effect,** its **effectiveness in real-world trading remains questionable.** It has not even passed **preliminary testing,** meaning **it is not recommended for use in real-world trading.**

Our goal is to have a strategy that remains **profitable and effective across a wide range of parameters,** because the market is a volatile organism, and optimal parameters can change over time. **I can't** emphasize enough that for **a strategy to work** in real-world conditions, it must also perform under **suboptimal parameters** and **conditions.** In short, **it must be stable** to changing market conditions.

I don't know who said these words, but they perfectly capture the problem of many optimizations:

"I've never seen a strategy that didn't work in backtests."

We don't know the future, we don't know future market conditions, but if we know that our strategy **has historically generated acceptable results** in various market conditions and across various parameter ranges, then we are **one step ahead of other** market participants.

Contents

Step 1: Formulate an investment strategy

Double Volume v.1 strategy assumes **that a new, multi-session price extreme is more significant when accompanied by above-average volume.** This arrangement indicates that **the market is strongly committed to the dominant direction** and attracts participants' attention. At the same time, short-term "burnout" of the movement is more common at such moments, **especially if the extreme is immediately followed by a counter-directional candle.** The strategy seeks to capitalize on this momentum not by immediately entering against the trend, but only after the market breaks the extreme of the signal candle and confirms the attempted reversal.

For **a short position,** a setup is created when:

- the market sets a new **multi-session high** (e.g., 100-day high),
- the candle establishing this maximum **is accompanied by increased volume,** higher than the average volume from the last dozen or so sessions by a certain multiplier (e.g. 250%),
- in the next few days **a bearish candle appears,**
- after which the system sets **a sell stop order below the low of this candle** to enter only when the market confirms the reversal.

For **a long position,** the conditions are mirrored:

- the market sets a new, **multi-session low** (e.g., 100-day low),
- the candle establishing this minimum **is accompanied by increased volume,** higher than the average volume from the last dozen or so sessions by a certain multiplier (e.g. 250%),
- in the next few days **a bullish candle appears,**
- after which the system sets **a buy stop order above the high of this candle** to enter only when the market confirms the rebound.

An important element of the strategy is that **a counter-directional candlestick doesn't have to appear exactly the day after the extreme.** The strategy allows for such a signal to occur within a limited window of several consecutive sessions, allowing for a short stabilization phase following a volume impulse, but it doesn't extend the setup indefinitely. **An entry order also has a validity period and is canceled if the market doesn't confirm the signal within a specified timeframe.**

The strategy uses:

- **Donchian Channel** – Context Filter: the signal is to be created at a local high/low;
- **Volume Filter** – the candle establishing the extreme must have a volume significantly higher than the average of the last dozen or so sessions;
- **A candle opposite in direction** – appearing in a short window after a volume extreme;
- **Trigger stop T+1** – entry only after breaking the minimum/maximum of the signal candle;
- **Initial stop on the signal candle** – risk defined on the opposite side of the setup;
- **Time-exit** – short horizon of maintaining the position (5 days).

Characteristics of the strategy and its strengths and weaknesses:

- **It takes advantage of the phenomenon of short-term exhaustion of the movement** after an impulsive breakout on high volume;
- **The volume filter improves selectivity** and limits trading on random price extremes;
- **Entering after confirmation** limits some hasty moves against the trend;
- **A single candle stop** simplifies risk control;
- **Short time-exit** limits market exposure;
- **In strong trends, even high volume and a counter-candle may turn out to be only a momentary pause;**
- **Risk of slippage when the stop is broken,** especially after sessions with high volatility.

Double Volume v.1 strategy is a tool for traders who want to capitalize on **sudden supply-demand imbalances** and **extreme price impulses** that occur after periods of strong trends. Although its premise is simple, effective implementation requires **disciplined rule execution,** consistent **risk management,** and the awareness that trades are being executed **against the prevailing trend.** Due to the specific setup and operational risks, the strategy is best suited for investors who understand its profile (less frequent signals, possible quick reversals, volatile results) and can maintain consistency in conditions of increased volatility.

Step 2: Determine investment principles

Below is **the pseudocode** for the **Double Volume v.1 strategy** on daily charts:

1. **Calculating Indicators:**
    a. **HighestHigh(XX)** – the highest high of the last XX sessions (Donchian channel);
    b. **LowestLow(XX)** – the lowest low of the last XX sessions (Donchian channel);
    c. **MAVolume(N)** – average volume from the last N sessions;
    d. **VolumeMultiplier(T%)** – a multiplier that determines how much the volume of the extreme candle should exceed the average volume;
    e. **SignalWindow(Y)** – the maximum number of sessions in which an extreme candle can be followed by a signal candle of the opposite direction;
    f. **ValidBars(V)** – number of sessions for which the entry order remains active;
    g. **ExitBars(Z)** – number of sessions to hold the position (timed exit).
2. **Setup Identification – Short Position (sell setup):**
    a. **Extreme:** today's high is the highest in the XX window;
    b. **Increased volume:** the volume of this candle is greater than MAVolume(N) × T;
    c. **Signal candle:** within a maximum of Y consecutive sessions, an extreme candle is followed by a bearish candle (close below open).
3. **Entry – Short Position:**
    a. **Order:** After the setup occurs, set a sell stop order for the next session one tick below the low of the signal candle.
    b. **Order validity:** the order remains active for V session; if it is not activated, it is canceled.
    c. **Initial Stop:** Set your stop loss one tick above the high of the signal candle.
4. **Setup Identification – Long Position (buy setup):**
    a. **Extreme:** Today's low is the lowest in the XX window.
    b. **Increased volume:** the volume of this candle is greater than MAVolume(N) × T;
    c. **Signal candle:** within a maximum of Y consecutive sessions, an extreme candle is followed by a bullish candle (close above open).
5. **Entry – Long Position:**
    a. **Order:** After the setup occurs, set a buy stop order one tick above the high of the signal candle for the next session.
    b. **Order validity:** the order remains active for V session; if it is not activated, it is canceled.
    c. **Initial Stop:** Set your stop loss one tick below the low of the signal candle.
6. **Closing a position:**
    a. **Timed exit:** If the stop loss has not been activated before, close the position at the opening of the session after Z sessions have passed since the entry date.
    b. **Stop Exit:** If the market touches the stop loss level, close the position as per the defensive order.
7. **Daily Monitoring:**
    a. Update HighestHigh(XX), LowestLow(XX) and MAVolume(N) every day.
    b. The system checks whether a new extreme on increased volume occurred in the last Y sessions and whether a directionally opposite candle appeared.

c. Then it sets appropriate sell stop/buy stop orders for the following sessions (valid for V days), and for open positions it runs a counter to ExitBars(Z) and controls the activation of stop loss.

The above rules are described in a way that allows them to be directly converted into a script in the chosen testing platform, which ensures the accuracy of the historical simulation and the reliability of the test results.

Testing is performed assuming that **the risk of one position is 1.0% of total capital.**

Step 3: Pre-test your investment strategy

Below are some purchase and sale transactions that allow you to verify the following aspects:

- **Correctness of generated signals;**
- **Direction of opening a position;**
- **Moment of opening the position;**
- **The opening price of the position;**
- **Moment of closing the position;**
- **Closing price of the position;**
- **Compliance of the transaction with the theoretical assumptions of the investment strategy.**

At this stage, **it doesn't matter** whether the trades are **profitable,** what **instrument was used,** or whether they occurred **recently** or **in the distant past.** The key is **to verify that the trades are generated correctly** and in line with the assumptions described in the previous step.

The first transaction was executed on **the sugar futures contract (SB).** In early January 2021, the market was **in an uptrend and established a new 100-day high.** The candle forming this peak (the first candle in the rectangle) also had **volume 250% higher than the average volume over the last 15 sessions,** which met the basic condition of the Double Volume v.1 strategy. The system then **waited a maximum of three sessions for a directionally opposite candle to appear.** Exactly **three days after the extreme candle, a bearish candle appeared** (the fourth candle in the rectangle), generating the correct **setup for a short position.**

For **the next session, a sell stop was set one tick below the low of this bearish candle.** At the same time, a stop loss was set **one tick above the high of the signal candle,** to be activated only after the position was opened. **The entry order was valid for two days** and was **executed the very next day,** opening a short position (the "Enter Short" line). From that point on, **the stop loss (the red dot above the market) was also active.** In the following days, instead of continuing the pullback, the market rose again, which led to **the activation of the stop loss** and the closing of the position at a loss (the "Exit Short" line, the second rectangle). **The system worked correctly.**

Another example. The trade was conducted on **a futures contract on the US Dollar Index (DX).** In mid-March 2020, **the market established a new 100-day low,** and this candle was accompanied by **volume approximately 250% higher than the average volume over the last 15 sessions** (the first candle in the rectangle). **The very next session was a bullish candle,** which, in accordance with the principles of the Double Volume v.1 strategy, triggered **a long position setup.**

For **the next session, a buy stop was set one tick above the high of the bullish candle. A stop loss was also set one tick below the low of the signal candle,** to be activated only after the position was opened. **The entry order was valid for two days** and was **executed the very next day,** opening a long position (the "Enter Long" line). From that point on, **the stop loss was also active** (the red dot above the market). In the next five sessions, the stop loss remained intact, so **the transaction was closed according to the time-exit rule** – at the open of day 6 (the "Exit Long" line, the second rectangle). **The system worked correctly.**

Once we are sure that the transactions are generated correctly, we can proceed to the first test of the strategy on the full **in-sample data set.** These tests are performed on **the basic parameters,** which – according to my assessment – should correspond to the assumed goals of the strategy.

First, **we reject strategies that linearly lose capital.** If a strategy exhibits this pattern, it's a clear signal that any parameter optimization is pointless.

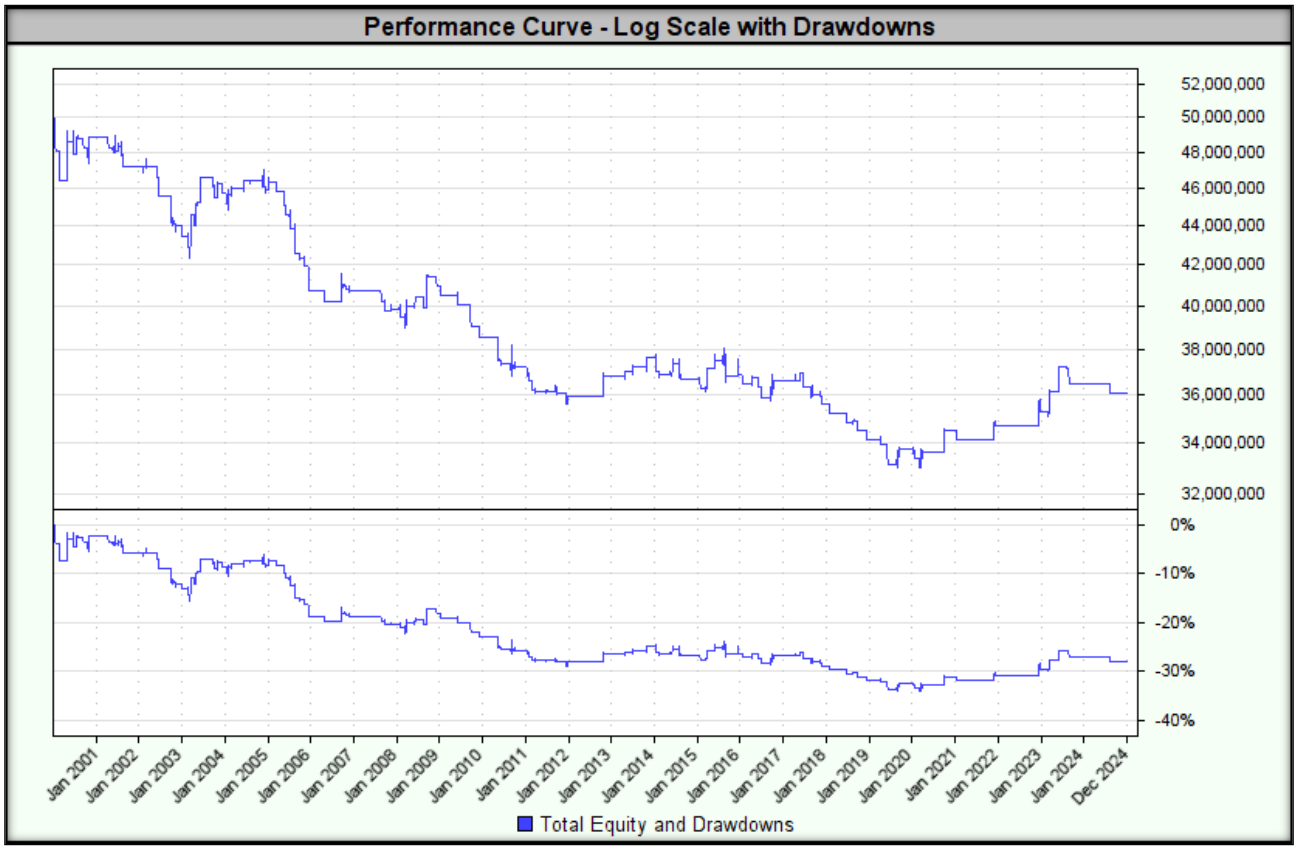
Our basic expectation is that the strategy generates **positive results,** even if they are at a low level.

Tested base parameters:

- **HighestHigh & LowestLow:** 100 days;
- **MAVolume:** 15 days;
- **VolumeMultiplier:** 250%;
- **SignalWindow:** 3 days;
- **ValidBars:** 2 days;
- **ExitBars:** 5 days;
- **Position opening method:** 1 tick below (for a short position)/above (for a long position) the extreme of the signal candle;
- **Stop loss:** 1 tick above (for short position)/below (for long position) the extreme of the signal candle;
- **Position Size:** Fixed Fractional; Risk Equity 1.0% of total capital;
- **Position direction:** long (buy) and short (sell) positions.

The test result is shown below.

Historical or simulated results do not guarantee similar results in the future.



Historical or simulated results do not guarantee similar results in the future.

Indicators/Measures	Concluding a transaction at the opening price
CAGR%	-1.30%
MAR Ratio	-0.04
RAR%	-1.39%
R-Cubed	-0.04
Robust Sharpe Ratio	-0.39
Max Drawdown	34.0%
Wins	35.5%
Losses	64.5%
Average Win%	1.29%
Average Loss%	1.02%
Win/Loss Ratio	1.26
Average Trade Duration (days)	5
Percent Profit Factor	0.69
SQN	-
Number of transactions	155

In summary, the system works properly and generates signals as expected. However, **tests on the underlying parameters yielded poor results.** Therefore, **<u>further testing of the strategy is not warranted,</u>** as its use in real-world trading **is highly questionable.**

Step 4: Optimizing and assessing the stability of the investment strategy

1. **Stability across a wide range of optimized parameters**

The step was skipped due to **failure of previous tests.**

2. **Monte Carlo simulation**

The step was skipped due to **failure of previous tests.**

3. **Stability over a moving time window**

The step was skipped due to **failure of previous tests.**

4. **Long/short stability**

The step was skipped due to **failure of previous tests.**

5. **Stability in the portfolio of financial instruments**

The step was skipped due to **failure of previous tests.**

6. **Money Management (Position Sizing)**

The step was skipped due to **failure of previous tests.**

7. **Strategy Risk Management**

The step was skipped due to **failure of previous tests.**

Step 5: Walk-Forward Analysis

The step was skipped due to **failure of previous tests.**

Step 6: Using the strategy in real time

The step was skipped due to **failure of previous tests.**