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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.



Spent Market Trading Pattern v.1

Investment Strategy Testing Summary

The **Spent Market Trading Pattern (SMTP) v.1** strategy is a swing trading strategy developed by **Larry Connors**. At its core are **three "short-term exhaustion" conditions: (1) Y-periodic extremum** (for long: Y-day low), **(2) the largest daily range over the last X bars**, **(3) a close within the upper Q%** of the daily range (the opposite is true for shorts). Entry is achieved **by buying a breakout** above the high of the signal candle, with **an initial stop at the low** of that candle. This is a formalized, filtered version of a "reversal day," designed to limit false signals.

Although the strategy's logic seems sound, **it hasn't even passed initial testing, as it linearly loses capital on in-sample data.** This means **it's 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.



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Step 1: Formulate an investment strategy

The **Spent Market Trading Pattern (SMTP) v.1** strategy looks for the moment when a **dynamic reversal candle** signals the **exhaustion of the current short-term movement**. For a long position, the signal candle must **establish a Y-period low**, have **the widest range of X sessions**, and **close within the upper Q%** of the daily range. Entry is executed **with a buy stop order**. 1 tick **above the high of** the signal candle, and the order itself is active for several sessions. After activating the order, we set **the initial stop** at the low of the signal candle, and close the position after a few days. The short version is **a mirror image of** the long version (Y-period high, the largest range of X, closing at the lower Q% of the range, sell stop below the low).

The strategy uses:

- **“Exhaustion” filter** – combination of Y-day low/high, largest X-day range and closing position within Q% of the daily range;
- **Precise trigger** – buy/sell stop relative to the signal candle;
- **Defined initial stop** – low initial risk and profit protection;
- **Asset class versatility** – Connors’ examples include stocks, bonds and index futures;
- **Timed exit** – closing a position after several sessions.

Characteristics of the strategy and its strengths and weaknesses:

- **Minimalistic, easy to program** – a few simple rules ensure transparency and low computational costs;
- **A signal of increased quality** – requires three conditions to be met simultaneously before entering the market;
- **Low frequency** – the combination of all conditions occurs rarely;
- **High correction amplitude increases nominal stop distances** – strict control of position size is necessary.

Spent Market Trading Pattern (SMTP) v.1, while simple, provides a **solid foundation for building algorithmic portfolios**. However, it requires **discipline and strict adherence to risk management methods**.



Step 2: Determine investment principles

Below is the pseudocode for the **Spent Market Trading Pattern (SMTP) v.1 strategy** on daily data:

1. Calculating Indicators:

- a. **Y-DayLowestLow/Y-DayHighestHigh** – the lowest low/highest high of the last Y sessions (including the current one).
- b. **X-DayMaxRange** – the largest daily range (high–low) in the last X sessions.
- c. **Q%-CloseTop/Bottom** – information whether today's close falls within the top Q% (for long) or the bottom Q% (for short) of the daily range.

2. Generating Entry Signals – Long Position:

- a. **Y-DayLowestLow:** Today's candle forms the lowest low of the last Y sessions ("Y-DayLowestLow" condition).
- b. **X-DayMaxRange:** today's candle range is the largest among the last X sessions ("X-DayMaxRange" condition).
- c. **Q%-CloseTop:** Today's close falls within the upper Q% of the daily range ("Q%-CloseTop/Bottom" condition).
- d. **Entry:** Once these conditions are met, set a buy stop order one tick above today's high; the order is valid for W-days.

3. Generating Entry Signals – Short Position:

- a. **DayHighestHigh:** Today's candle forms the lowest high of the last Y sessions ("Y-DayHighestHigh" condition).
- b. **DayMaxRange:** today's candle range is the largest among the last X sessions ("X-DayMaxRange" condition).
- c. **CloseBottom:** Today's close falls within the lower Q% of the daily range ("Q%-CloseTop/Bottom" condition).
- d. **Entry:** Once these conditions are met, set a sell stop order one tick below today's low; the order is valid for W-days.

4. Stop Loss Management:

- a. **Long position:** set initial stop loss one tick below the low of the signal candle;
- b. **Short position:** set an initial stop loss one tick above the high of the signal candle.

5. Generating Output Signals:

- a. **Timed exit:** if the stop loss has not been activated earlier, close the position after the WW sessions from the entry date (closing the position at the opening price of the next day after the WW session has expired).

6. Daily Monitoring:

- a. Each day, determine the values: Y-DayLowestLow, Y-DayHighestHigh, X-DayMaxRange and check if the close is within the upper/lower Q% of the daily range.
- b. The system verifies entry/exit conditions and sets appropriate buy stop/sell stop orders for the following day; keeps a day counter to the WW session for active positions.



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.

Tests are performed assuming that the risk of one position is **2.0% 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 a DAX index futures contract. In early April 2024, an SMTP short sell signal appeared (first candle in the left-hand rectangle): **the daily candle formed a 10-session high (Y-DayHighestHigh), had the largest range of the last 10 sessions (X-DayMaxRange), and closed within the lower 25% of its daily range (Q%-CloseTop/Bottom)**. According to the strategy's rules, **a sell stop order was set for the next session, one tick below the signal candle's low**, and an initial stop order, one tick above its high. **The position was opened the next day (second candle in the left-hand rectangle). The system worked correctly.**

The strategy assumes **closing the position after 10 days or when a defensive order is triggered**. Since the stop loss order wasn't reached within the ten-day period, we close the position on the eleventh day at the opening (the second candle in the right-hand rectangle). **The system worked correctly.**





The second transaction was executed a few days later, also on a DAX futures contract. In mid-April 2024, a long SMTP position signal appeared (first candle in the left-hand rectangle): **the daily candle formed a 10-session low (Y-DayLowestLow), had the largest range of the last 10 sessions (X-DayMaxRange), and closed within the upper 25% of its daily range (Q%-CloseTop/Bottom)**. According to the strategy's rules, **a buy stop order was set for the next session, one tick above the signal candle's high, and an initial stop order, one tick below its low. The position was opened the next day (second candle in the left-hand rectangle). The system worked correctly.**

The strategy assumes **closing the position after 10 days or when a defensive order is triggered**. Since the stop loss order wasn't reached within the ten-day period, we close the position on the eleventh day at the opening (the second candle in the right-hand 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 conducted on **baseline parameters** that, in my opinion, should align with the strategy's stated goals.

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:

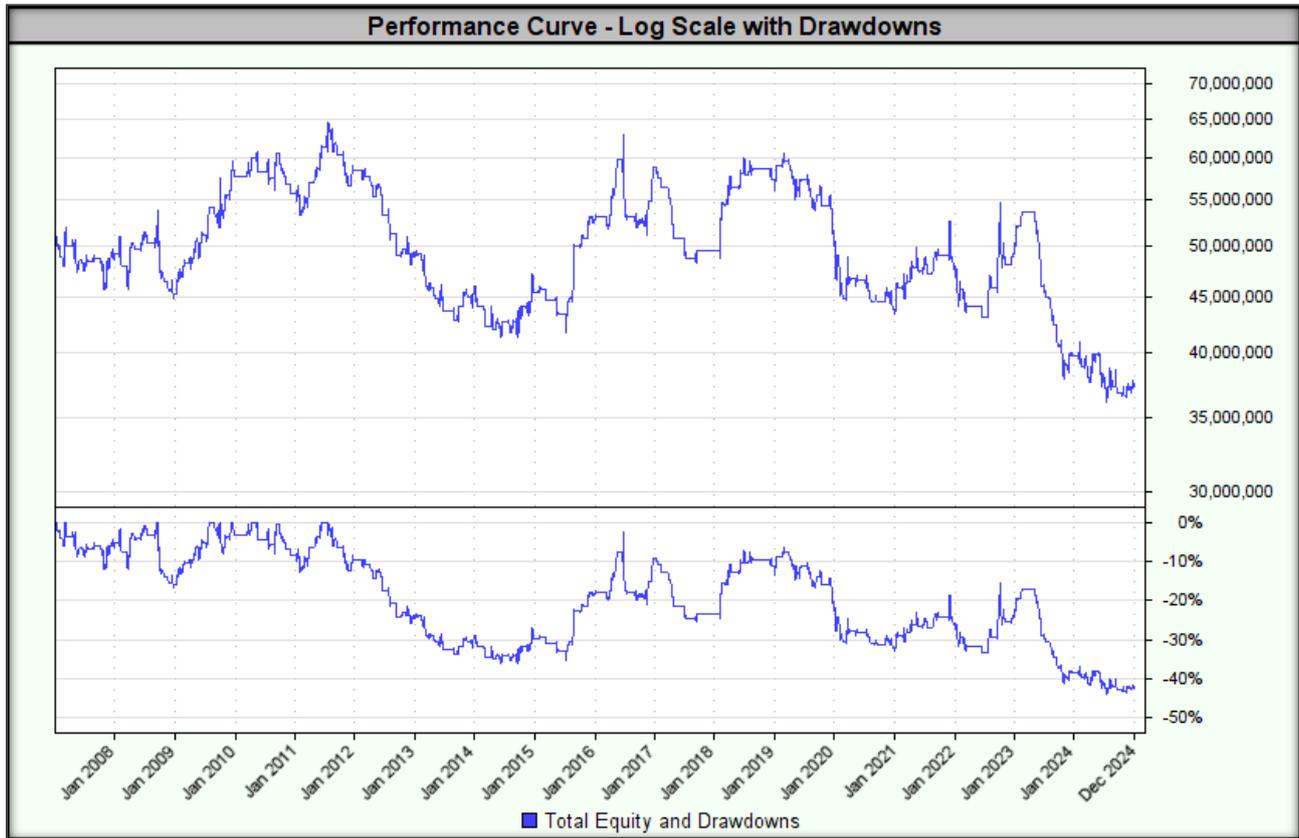
- **X-DayLowestLow/DayHighestHigh**: lowest/highest price in the last 10 days;
- **Q%-CloseTop/Bottom**: candle close at 25% of the upper/lower range;
- **Y-DayMaxRange**: the candle with the largest range over the last 10 days;
- **Position opening method**: buy/sell stop one tick above/below the high/low of the signal candle (for long/short position respectively);
- **Order validity**: the order remains active for the next 4 sessions;
- **Stop loss**: one tick below/above the low/high of the signal candle (for long/short position respectively);
- **Closing the position**: 10 days after opening (11th day for opening);



- **Position direction:** long and short;
- **Position sizes:** corresponding to a risk of 2.0% of total capital.

The test result is shown below.

Historical or simulated results do not guarantee that similar outcomes will be achieved in the future.



Historical or simulated results do not guarantee that similar outcomes will be achieved in the future.

Indicators/Measures	Concluding a transaction at the opening price
CAGR%	1.59%
MAR Ratio	-0.04
RAR%	-0.89%
R-Cubed	-0.01
Robust Sharpe Ratio	-0.08
Max Drawdown	44.1%
Wins	43.7%
Losses	56.3%
Average Win%	2.06%
Average Loss%	1.68%
Win/Loss Ratio	1.23
Average Trade Duration (days)	11
Percent Profit Factor	0.95
SQN	-0.09



Number of transactions	373
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In summary, the system performed well and is generating signals as expected. **However, the initial parameters are weak (generating a loss), so we will end testing at this stage and discard the strategy.**



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 the preliminary tests.

2. **Monte Carlo simulation**

The step was skipped due to failure of the preliminary tests.

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

The step was skipped due to failure of the preliminary tests.

4. **Long/short stability**

The step was skipped due to failure of the preliminary tests.

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

The step was skipped due to failure of the preliminary tests.

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

The step was skipped due to failure of the preliminary tests.

7. **Strategy Risk Management**

The step was skipped due to failure of the preliminary tests.



Step 5: Walk-Forward Analysis

The step was skipped due to **failure of the preliminary tests.**



Step 6: Using the strategy in real time

The step was skipped due to failure of the preliminary tests.