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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.



# ATR Ignition v.1

## Investment Strategy Testing Summary

The ATR Ignition strategy is a trend following trading technique developed by Larry Connors that is based on price breakouts above historical volatility as measured by the ATR (Average True Range) indicator. The strategy aims to capture strong market moves that occur after key volatility levels are broken – situations where the market emerges from a low volatility phase and initiates a new directional impulse.

The strategy parameters were optimized using The Grid Search technique. Although the strategy results on in-sample data are acceptable, the strategy failed the stability test in a wide range of optimized parameters. This means that the strategy loses its profitability when tests are performed on suboptimal parameters. Therefore, it is not recommended to use it in real transactions.

Our goal is to have a strategy that remains profitable and effective over a wide range of parameters, because the market is a changing organism and the optimal parameters can change over different periods. I cannot emphasize enough that for a strategy to work in real conditions, it must also work on suboptimal parameters and in suboptimal conditions. In a word - **it must be stable** to changing market conditions.

I don't know who said these words, but they perfectly reflect 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 ATR Ignition strategy** is a trend following trading technique developed by Larry Connors that is based on **price breakouts above historical volatility as measured by the ATR** (Average True Range) indicator. The strategy aims to capture strong market moves that occur after key volatility levels are broken – situations where **the market emerges from a low volatility phase and initiates a new directional impulse**.

For the purposes of the test, the daily volatility of financial instruments was used, analysing the moments when **the price breaks above or below the last close by a value equal to a multiple of the ATR (e.g. 150%)**.

**The strategy uses:**

- **Average volatility (ATR)** to determine the level of order activation (breakout);
- **Buy stop and sell stop orders** activated above/below the previous day's close;
- **Stop loss order** set one tick below (for a long position) or above (for a short position) the last candle;
- **Mechanism of closing a position** when a signal of the opposite position appears.

**Why can a volatility breakout be effective?** A breakout above a certain volatility level means that the market is breaking through a barrier of “natural price noise.” When prices move too quickly by historical standards, a strong trend is often initiated—investors and algorithms respond to increased activity, volume, and breaks of psychological support and resistance levels. Relative volatility strategies like ATR Ignition don't try to predict market direction, but rather respond to market momentum—making them immune to forecast bias and well-suited to momentum environments.

**Characteristics of the strategy and its strengths and weaknesses:**

- **Directional neutrality** – allows you to react to movements in both directions without predetermining the direction of the breakout.
- **Volatility-based** – adapts better to current market conditions than strategies with fixed price thresholds.
- **Defined risk level** – strict stop loss limits potential losses.
- **Lack of directional prediction** – strategy is based on reaction to movement, not prediction.
- **Potential false breakouts** – losses may occur in the event of short-term movements without continuation (so-called false breakouts).
- **Sensitivity to the ATR parameter** – the threshold value (e.g. 150%) should be adjusted to the instrument and the market environment.

**ATR Ignition** is a strategy that, despite its simplicity, provides access to an effective breakout trading mechanism. **Its strength lies in its reactivity to market behavior and its ability to adapt to current volatility conditions**. However, it requires careful calibration and conscious risk management, especially in the environment of false price signals.



## Step 2: Define investment principles

Below is the pseudocode for the **ATR Ignition v.1 strategy** on daily data:

- 1. Calculating Indicators:**
  - a. **ATR-N-day** – used to determine order activation levels.
  - b. **The previous day's closing price** – reference base for setting stop orders.
- 2. Generating Entry Signals (at the start of the day):**
  - a. **Each day, designate:**
    - i. Buy stop = Previous day's closing price +  $K * ATR$
    - ii. Sell stop = Previous day's closing price -  $K * ATR$Where K is the ATR multiplier (e.g. 1.5, i.e. 150% ATR).
  - b. **Set both pending orders (buy stop/sell stop).** If one order is activated, the other is canceled.
- 3. Position Opening Rules:**
  - a. **Long position:**
    - i. If the market price rises to the buy stop level, a long position will be opened.
    - ii. Set your stop loss one tick below the low of the previous day's candle.
  - b. **Short position:**
    - i. If the market price falls to the sell stop level, a short position will be opened.
    - ii. Set your stop loss one tick above the high of the previous day's candle.
- 4. Generating Exit Signals** – the position is closed when:
  - The stop loss will be activated, or
  - There will be an opposite signal (e.g. a long position is opened and the price drops below the new sell stop level → a new short position is opened, the old one is closed).
- 5. Daily Monitoring** – every day:
  - Calculate ATR and update order activation levels based on last close.
  - Verify if a breakout up or down has occurred.
  - Set new orders, cancel outdated ones.

The above rules have been 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.

The tests are performed assuming that **the risk of one position is 1.0% of total capital.**





We can follow the further behavior of the long position, which gained value very quickly. It should be remembered that **with a long position, we set a sell stop order every day, 200% ATR away from the last closing price**, which is both a trailing defensive order/take profit (along with the permanent stop loss order), as well as a signal to reverse the position. **Such an order was activated at the end of March 2007** (candle in the rectangle on the right), not only closing the long position, but also **reversing it to a short position**. **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 **the basic parameters**, which, on the one hand, should correspond to the assumed goals of the strategy, and on the other hand, be consistent with those **proposed by the creator of the strategy, i.e. Larry Connors**.

First of all, **we reject strategies that linearly lose capital**. If a strategy exhibits such a pattern, it is a clear signal that any parameter optimization does not make sense.

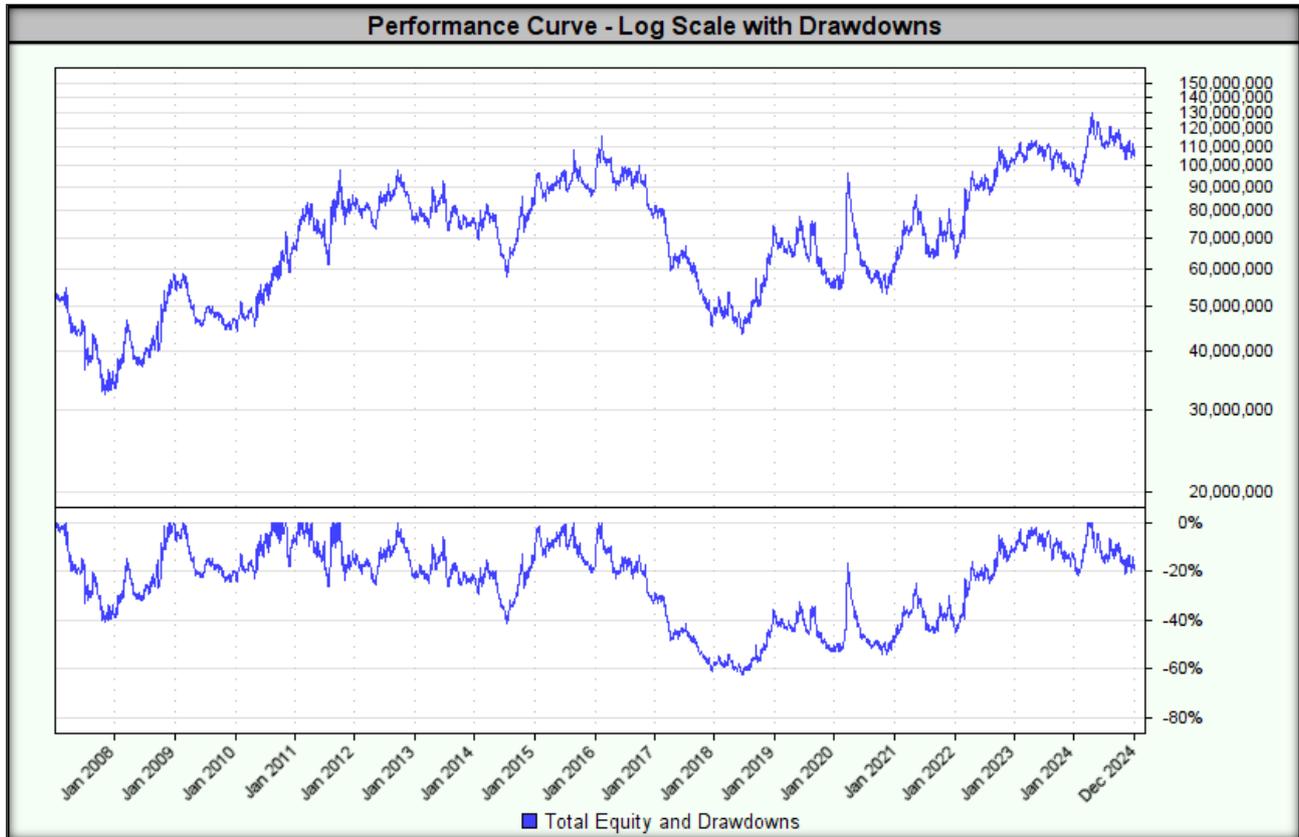
Our basic expectation is that the strategy generates **positive results**, even if they are at a low level.

Tested base parameters:

- **Distance of buy/sell order from last closing price:** 200% ATR;
- **ATR lengths:** 20 days;
- **Stop loss:** for long position, tick below the minimum of the candle preceding the day the position was opened; for a short position, tick above the maximum of the candle preceding the day the position was opened;
- **How to open a position:** buy stop/sell stop order;
- **Position size:** corresponding to a risk of 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 that similar outcomes will be achieved in the future.*



Indicators/Measures	Concluding a transaction at the opening price
CAGR%	4.4%
MAR Ratio	0.07
RAR%	3.5%
R-Cubed	0.03
Robust Sharpe Ratio	0.13
Max Drawdown	62.4%
Wins	27.1%
Losses	72.9%
Average Win%	3.02%
Average Loss%	1.00%
Win/Loss Ratio	3.04
Average Trade Duration (days)	72
Percent Profit Factor	1.13
SQN	0.29
Number of transactions	1413

In summary, the system works properly and generates signals as expected. Additionally, tests on basic parameters have yielded satisfactory results. We can now move on to the most interesting stage of creating an investment strategy – **optimization**.



## Step 4: Optimization and assessment of investment strategy stability

This stage of strategy creation and testing is crucial, as it determines how effective the strategy will be in real conditions. **I cannot emphasize enough that for a strategy to work in real conditions, it must also work on suboptimal parameters and in suboptimal conditions.** In a word – **it must be stable** to changing market conditions.

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

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

**My goal is not to find optimal parameter values – my goal is to find a wide range of parameters for which the strategy will generate acceptable results.** 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.

What **parameters to choose** for the next period is the subject of consideration in **Step 5 of the "Walk-Forward Analysis"** but before we get to that, **we need to know whether our strategy is stable** at all.

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

The **ATR Ignition v.1 strategy** in this version assumes **the optimization of parameters proposed by the creator of the strategy - Larry Connors**. We will optimize using **The Grid Search method**, which consists in **full optimization of all indicated parameters by creating a wide range of possible combinations**. Our goal is to find such **parameter ranges** that **the strategy remains stable (robust)**, which will allow us to assess its usefulness in real market conditions.

**The key criterion for assessing stability is that all test results must show a positive MAR value and the maximum drawdown must not exceed 250% of the drawdown value for the result with the highest MAR.** If any test generates a negative MAR value or if the drawdown exceeds 250% of the drawdown value for the result with the highest MAR, the strategy is rejected completely.

In the first step, we test the stability of parameters on **in-sample data**. For this purpose, we determine **the ranges of parameter values** so that **the quotient of the highest and lowest value of the range is at least 150%**.

In the tested strategy, the ranges defined in this way are:

- **Distance of buy/sell order from last closing price:** range 150%-250% ATR (step: 5 pp);
- **ATR lengths:** range 15-25 days (step: 1).

**The lowest MAR value of -0.07** was achieved for the following parameters:

- **Distance of buy/sell order from last closing price:** 160%;
- **ATR lengths:** 24 days.

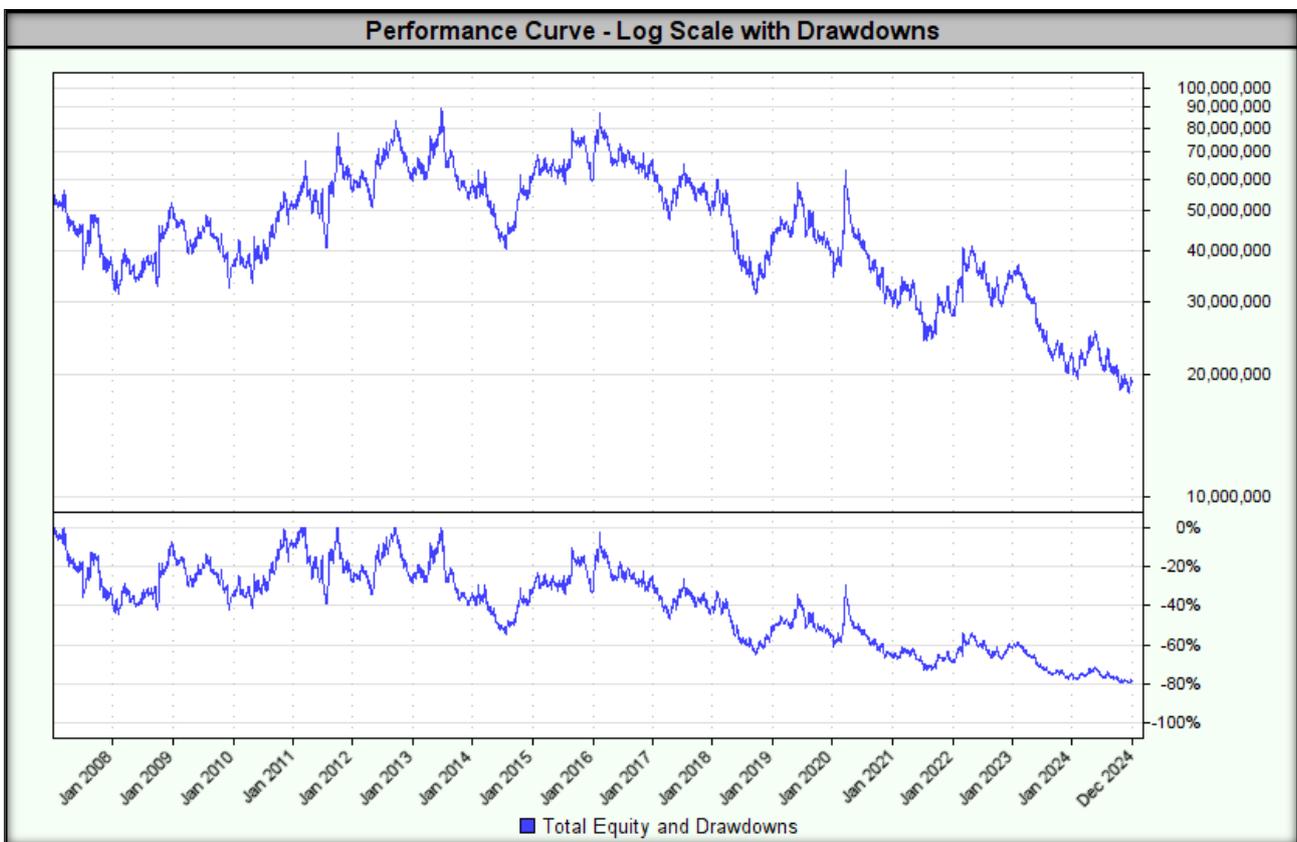
*Historical or simulated results do not guarantee that similar outcomes will be achieved in the future.*



Test	ATR Bars	ATR Multiplier (%)	End Balance	CAGR%	MAR	Sharpe	Ann. Sharpe	Max TE DD	Longest DD	Trades	R3	RAR (%)	%PF	Expectancy
192	24	160%	\$19,164,656.09	-5.19%	-0.07	0.00	-0.24	79.8%	138.3	3520	-0.02	-3.15	0.99	-0.01
213	25	160%	\$18,962,765.39	-5.24%	-0.06	-0.00	-0.25	80.9%	138.3	3515	-0.02	-3.00	0.99	-0.01
85	19	150%	\$19,254,029.47	-5.16%	-0.06	0.02	-0.20	80.7%	158.9	4481	-0.02	-2.91	1.00	-0.00
64	18	150%	\$19,889,082.92	-4.99%	-0.06	0.02	-0.18	81.5%	158.9	4487	-0.02	-2.80	1.00	-0.00
127	21	150%	\$22,372,727.00	-4.37%	-0.06	0.04	-0.18	74.9%	158.9	4442	-0.02	-1.92	1.01	0.00
148	22	150%	\$23,293,526.53	-4.16%	-0.06	0.05	-0.17	73.5%	158.9	4445	-0.01	-1.86	1.01	0.00
43	17	150%	\$22,104,662.93	-4.43%	-0.06	0.03	-0.15	79.3%	158.9	4493	-0.02	-2.44	1.00	0.00
128	21	155%	\$21,862,249.96	-4.49%	-0.06	0.03	-0.20	80.4%	158.9	3928	-0.03	-4.34	1.00	-0.00
149	22	155%	\$21,988,096.90	-4.46%	-0.06	0.03	-0.20	80.1%	158.9	3926	-0.03	-4.45	1.00	-0.00
107	20	155%	\$21,540,926.24	-4.57%	-0.06	0.03	-0.19	82.2%	158.9	3953	-0.03	-4.55	1.00	-0.00
231	25	250%	\$24,050,441.94	-3.98%	-0.06	-0.13	-0.26	72.1%	158.9	538	-0.07	-5.60	0.88	-0.10

Below is a graph of the equity curve for **the strategy with the lowest MAR.**

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



The highest MAR value of 0.11 was achieved for the following parameters:

- Distance of buy/sell order from last closing price: 190%;
- ATR lengths: 18 days.

The highest MAR value was accompanied by a drawdown of 54.3%.

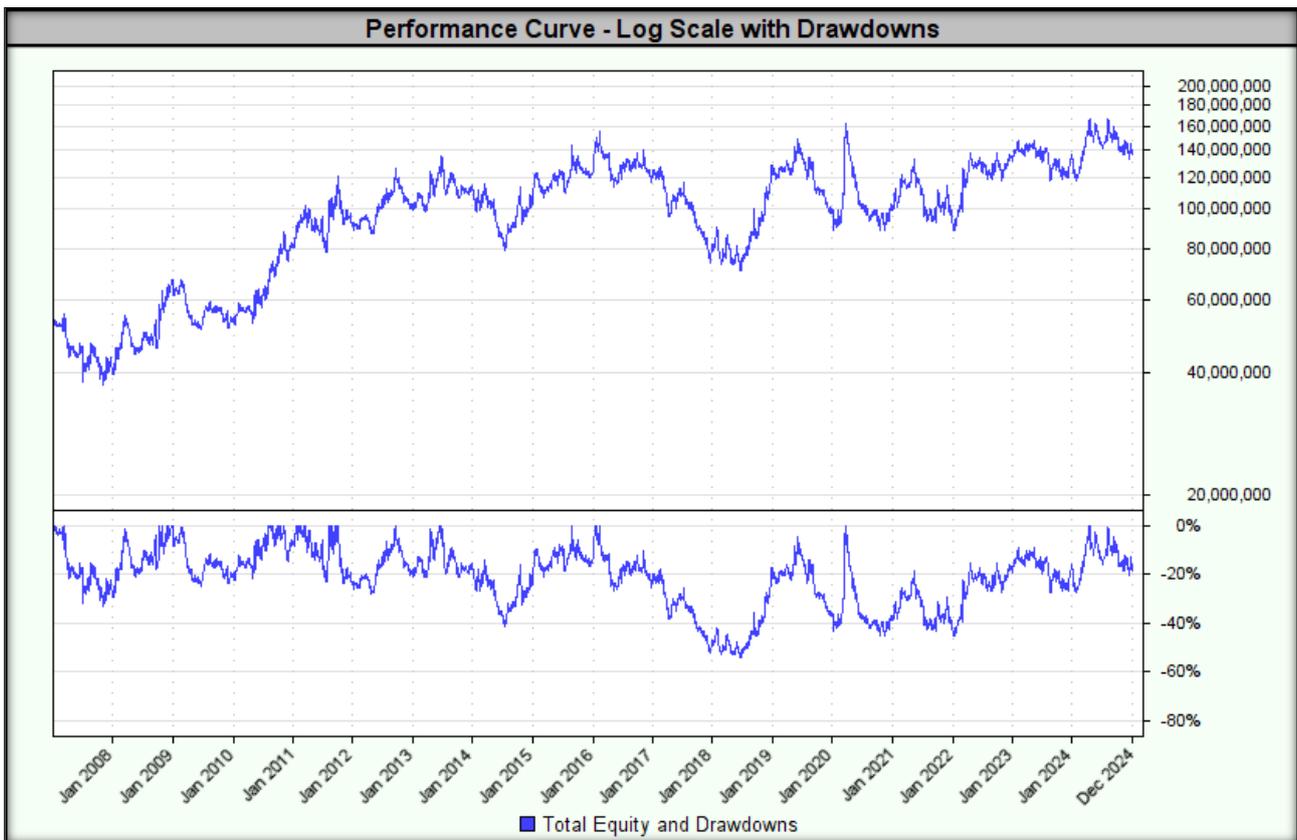
*Historical or simulated results do not guarantee that similar outcomes will be achieved in the future.*



Test	ATR Bars	ATR Multiplier (%)	End Balance	CAGR%	MAR	Sharpe	Ann. Sharpe	Max TE DD	Longest DD	Trades	R3	RAR [%]	%PF	Expectancy
72	18	190%	\$139,783,101.30	5.88%	0.11	0.34	0.22	54.3%	49.1	1770	0.05	5.38	1.13	0.09
51	17	190%	\$144,395,361.26	6.07%	0.11	0.35	0.23	56.9%	98.0	1772	0.06	6.03	1.13	0.09
93	19	190%	\$121,365,975.66	5.05%	0.09	0.31	0.18	53.3%	57.3	1760	0.04	4.62	1.11	0.08
158	22	200%	\$128,598,463.47	5.39%	0.09	0.32	0.18	59.1%	97.3	1421	0.04	4.56	1.15	0.11
115	20	195%	\$121,953,648.35	5.08%	0.09	0.31	0.17	56.8%	49.1	1591	0.04	4.46	1.12	0.09
94	19	195%	\$118,254,699.36	4.90%	0.09	0.31	0.16	57.1%	49.2	1586	0.04	4.48	1.13	0.09
137	21	200%	\$121,880,014.59	5.08%	0.08	0.31	0.17	61.0%	98.0	1421	0.04	4.04	1.14	0.10
30	16	190%	\$113,544,186.41	4.66%	0.08	0.30	0.17	56.2%	57.3	1775	0.04	4.99	1.11	0.08
179	23	200%	\$117,371,638.72	4.86%	0.08	0.31	0.17	59.2%	106.6	1422	0.04	4.28	1.14	0.10
11	15	200%	\$120,289,128.35	5.00%	0.08	0.31	0.16	61.5%	106.6	1441	0.04	3.90	1.14	0.10
32	16	200%	\$110,482,068.81	4.50%	0.08	0.29	0.15	56.4%	97.9	1440	0.04	3.99	1.13	0.09

Below is a graph of the equity curve for **the strategy with the highest MAR.**

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



For all combinations of tested parameter ranges, **the highest drawdown was 84.6%**

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

Test	ATR Bars	ATR Multiplier (%)	End Balance	CAGR%	MAR	Sharpe	Ann. Sharpe	Max TE DD	Longest DD	Trades	R3	RAR [%]	%PF	Expectancy
91	19	180%	\$30,183,942.12	-2.77%	-0.03	0.04	-0.11	84.6%	106.6	2230	-0.01	-1.80	1.01	0.01
89	19	170%	\$31,601,978.15	-2.52%	-0.03	0.07	-0.08	83.2%	106.6	2806	-0.01	-1.46	1.01	0.01
7	15	180%	\$36,312,257.47	-1.76%	-0.02	0.08	-0.07	83.1%	106.6	2253	-0.01	-2.00	1.03	0.02
70	18	180%	\$32,879,557.55	-2.30%	-0.03	0.06	-0.09	82.9%	106.6	2239	-0.01	-1.70	1.02	0.01
107	20	155%	\$21,540,926.24	-4.57%	-0.06	0.03	-0.19	82.2%	158.9	3953	-0.03	-4.55	1.00	-0.00
112	20	180%	\$34,937,126.20	-1.97%	-0.02	0.07	-0.08	82.0%	106.6	2215	-0.01	-0.84	1.02	0.01
69	18	175%	\$32,485,010.62	-2.37%	-0.03	0.06	-0.08	81.8%	106.6	2503	-0.02	-2.32	1.02	0.01
64	18	150%	\$19,889,082.92	-4.99%	-0.06	0.02	-0.18	81.5%	158.9	4487	-0.02	-2.80	1.00	-0.00
133	21	180%	\$36,236,940.85	-1.77%	-0.02	0.07	-0.07	81.5%	106.6	2203	-0.01	-0.72	1.03	0.02
28	16	180%	\$39,327,634.38	-1.33%	-0.02	0.10	-0.05	81.5%	106.6	2256	-0.01	-1.66	1.04	0.02
175	23	180%	\$37,018,407.20	-1.66%	-0.02	0.07	-0.06	81.3%	106.6	2193	0.00	0.14	1.02	0.01

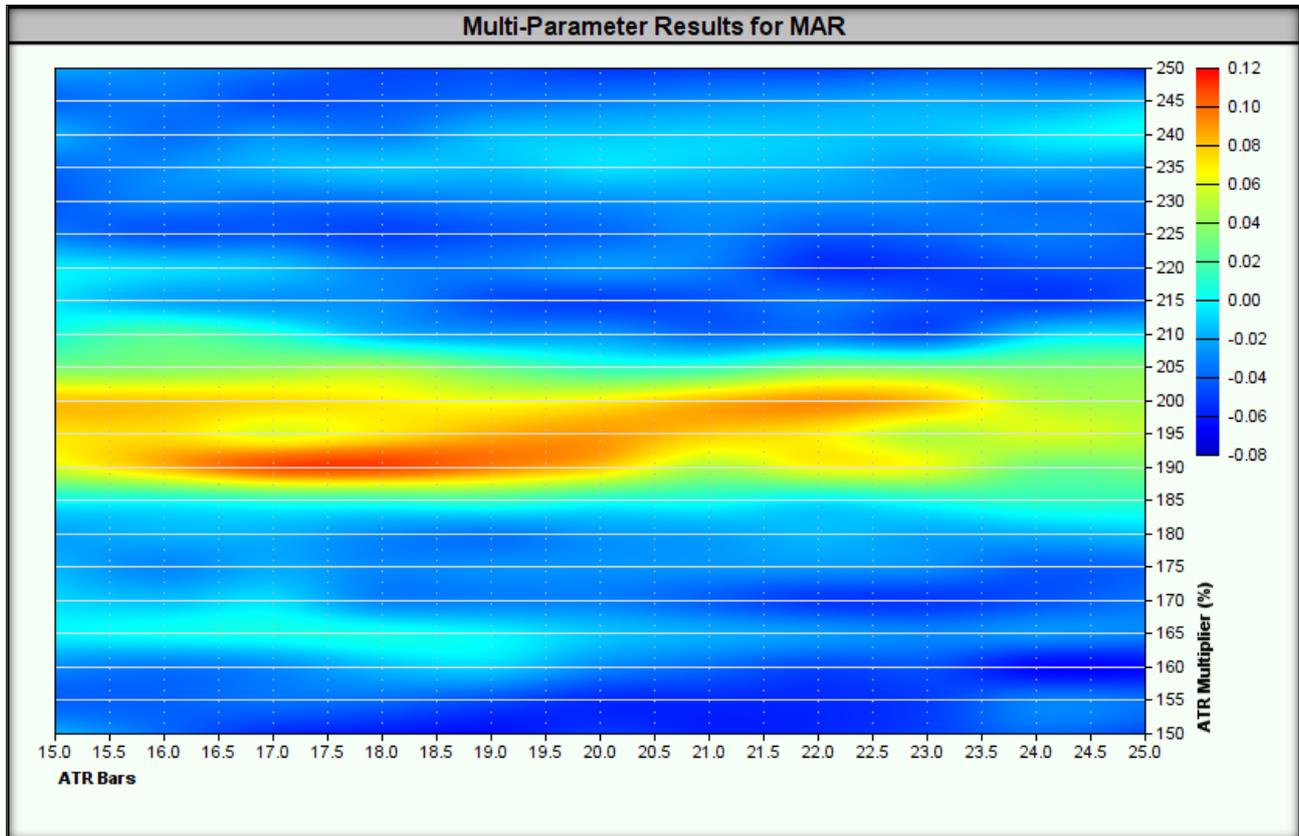
**In summary, the strategy failed the stability test over a wide range of optimized parameters because:**

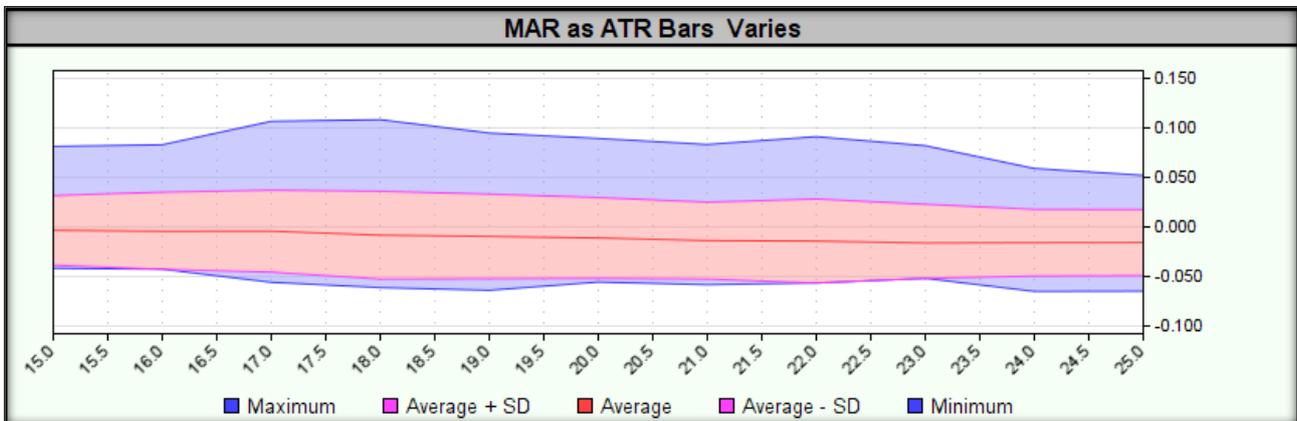
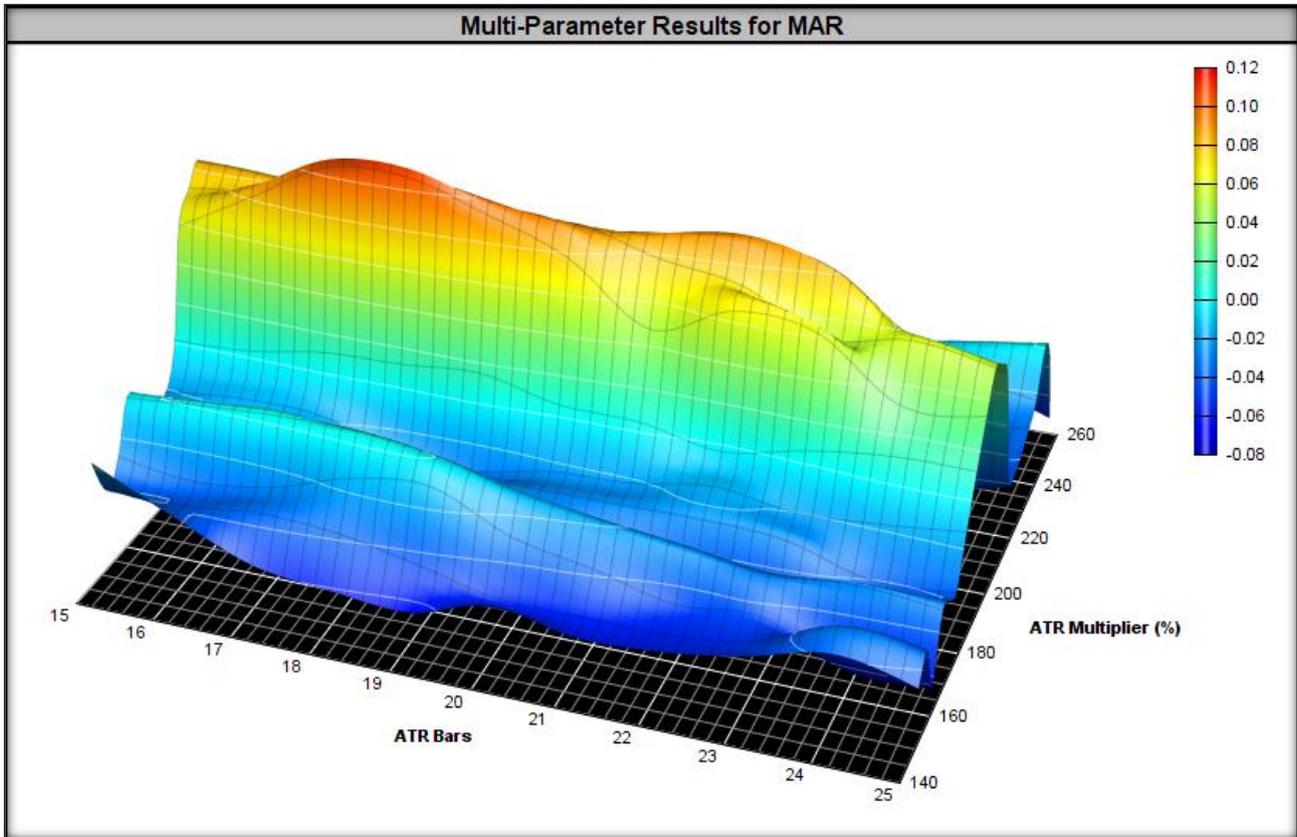


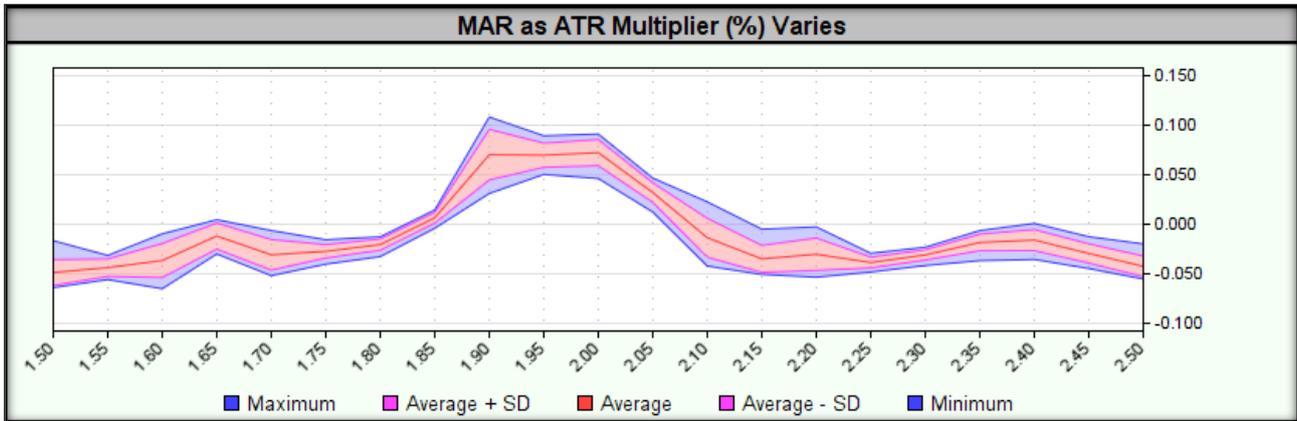
- **Not all test results showed a positive MAR value** – which indicates the instability of the strategy in different market conditions.

Therefore, **further testing of the strategy is not justified**, as its use in real transactions is **highly questionable**.

Heatmaps for the tested ranges are presented below.







## 2. Monte Carlo simulation

This step was skipped due to failure of previous stability tests.

## 3. Stability over a moving time window

This step was skipped due to failure of previous stability tests.

## 4. Long/short stability

This step was skipped due to failure of previous stability tests.

## 5. Stability in the portfolio of financial instruments

This step was skipped due to failure of previous stability tests.

## 6. Money Management (Position Sizing)

This step was skipped due to failure of previous stability tests.

## 7. Strategy Risk Management

This step was skipped due to failure of previous stability tests.



## Step 5: Walk-Forward Analysis

**This step was skipped** due to failure of previous stability tests.



## Step 6: Using the strategy in real time

**This step was skipped** due to **failure of previous stability tests.**