Terror Gaps v.2

Investment Strategy Testing Summary

The Terror Gaps strategy is a swing trading investment technique that uses **the RSI (Relative Strength Index) and a downward correction (taking into account price gaps)** of an instrument in **an upward trend** (quotes above the moving average). The key assumption of the strategy is **to open long positions during a correction and then close them after the price increases.**

Compared to the Terror Gaps v.1 version of this strategy, the parameters have been **optimized** using **The Grid technique Search, added exit element** protecting against excessive losses, the **ConnorsRSI indicator was changed to the classic RSI** and **position pyramiding was added.**

It should be noted that the strategy failed the stability test in a wide range of optimized parameters. This means that the strategy loses its profitability and generates a significantly larger drawdown 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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Contents

Step 1: Formulate an investment strategy

Terror Gaps is **a short-term investment strategy** created by **Larry Connors.** It is based on **market psychology,** and in particular on **the emotions of fear and greed** that are inherent in financial markets. The strategy focuses on **identifying and exploiting extreme states of fear,** especially during **sharp intraday sell-offs.**

The strategy involves **buying ETFs (exchange-traded funds) at times when other investors are selling their positions in panic,** often after a series of price declines.

Key elements of the strategy:

- **multi-day sell -off:** When an ETF experiences declines for several days in a row, **investors begin to feel uncomfortable and anxious;**
- **Gap down:** After a series of declines, the ETF **opens at a lower price the next day,** increasing fear among long position holders;
- **Further Intraday Decline: The ETF continues to decline** throughout the day, often leading investors to panic and irrationally sell off their holdings.

The strategy involves **entering a long position** at **the peak of fear,** taking advantage of a potential **price rebound** when the market calms down.

Characteristics of the strategy and its strengths and weaknesses:

- **Leveraging market psychology:** The strategy is based on understanding investor emotions, such as fear and panic, which often lead to irrational decisions.
- **Clearly defined rules:** Precise entry and exit criteria make it easy to implement and maintain trading discipline.
- **High Profit Potential:** Buying during extreme declines can yield significant gains in the short term when prices rebound.
- **Continuation Downside Risk:** There is no guarantee that once you enter a position, the price will stop falling, which could lead to further losses.
- **Requires a lot of mental toughness:** Trading against dominant market emotions can be difficult and stressful.
- **Simple implementation:** The strategy is easy to understand and implement, even for less experienced traders.
- **Flexibility:** Can be used on various markets and financial instruments.
- **Pyramiding a position** – adding a second position if the market continues to decline after opening the first long position.
- **Potential Difficulty Executing Orders:** During sharp declines, market liquidity may be limited.

To test the above strategy, we will make the following **changes and extensions:**

- **Instead of ETFs,** tests were performed on **stock indices, bonds, gold** and **the dollar index;**
- **The candle forming the gap** must **close below the opening** (for long positions), while **positions are opened the next day at the opening**

- **We will add a trend filter** in the form of **a moving average** to **open positions in line with the dominant trend;**
- **We increase (pyramid) positions** if after opening the first long position the market continues to fall.

Terror Gaps is a strategy that, while simple to implement, requires caution due to its susceptibility to false signals. Its application requires careful optimization and risk management, especially in volatile market conditions.

Step 2: Define investment principles

Below is **the pseudocode** for the **Terror Gaps strategy** on daily data:

1. **Calculating Indicators:**
    a. **XX-Day RSI:** Used to identify short-term oversold and overbought conditions in the market.
    b. **YY-day SMA:** Determines the long-term trend of the market. If the price is above the SMA-YY, it is considered to be in an uptrend.
2. **Generating Entry Signals - Long Position:**
    a. **First Long Position:**
        i. The instrument's price is above the YY-day SMA (uptrend);
        ii. RSI at closing must be less than ZZ1;
        iii. The daily opening price must be lower than the previous day's low price;
        iv. The closing price of the day must be below the opening price of the day (bearing candle);
        v. Open a long position the next day at open.
    b. **Adding a Second Unit:**
        i. If, during an open position, the closing price falls below the opening level of the first unit and the RSI remains below the HH1 level, an additional unit is opened, which increases the involvement in the position;
        ii. This is intended to take advantage of a further oversold market.
3. **Generating Exit Signals:** Close the entire position the next day on the open when the RSI closes above ZZ2 or price falls below the YY day moving average (SMA).
4. **Loss Management:** Long positions are closed at a loss when the instrument's closing price falls below the SMA-YY moving average.
5. **Daily Monitoring:**
    a. RSI and SMA values are calculated every day.
    b. The system checks whether the entry, addition of a position or exit conditions are met and takes appropriate actions the next day upon opening.
6. **Additional Notes:**
    a. **No Short Positions:** The strategy focuses only on long positions in an uptrend.
    b. **Financial Instruments:** For the purposes of this test, **long positions** on **stock indices, bonds, gold** and **the dollar index were used.**

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 carried out assuming that the risk of one position is **2.0% of the total capital,** with **a hypothetical stop loss order located 2 x ATR (40 days)** away from the position opening point.

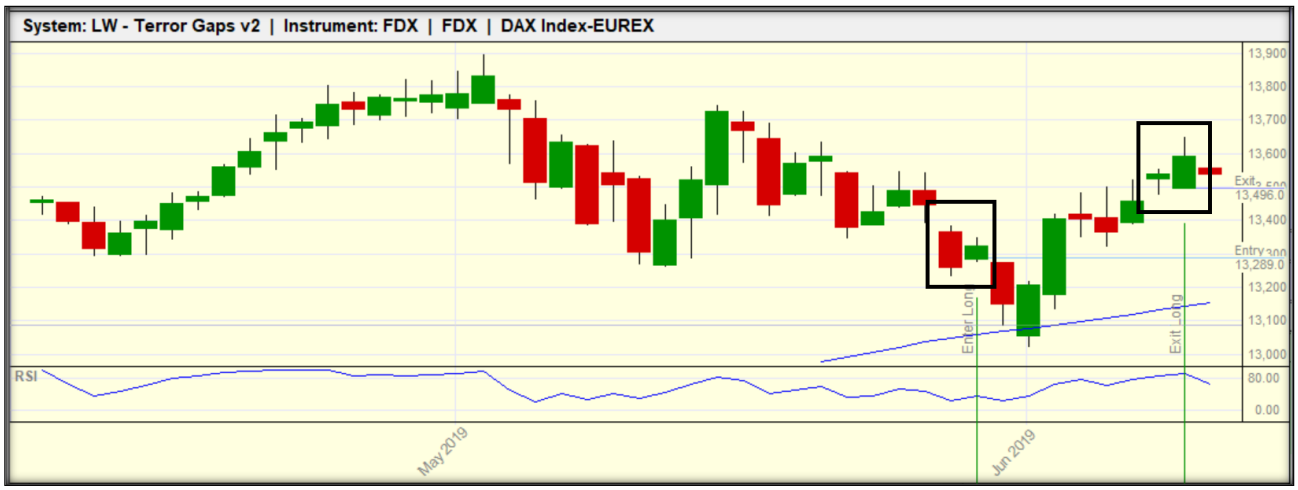
Step 3: Conduct a preliminary test of the investment strategy

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

- **Correctness of generated signals;**
- **Direction of opening position;**
- **Moment of opening a position;**
- **Position opening price;**
- **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 does not matter** whether the transactions are **profitable,** what **instrument was used** or whether they took place **recently** or **in the distant past.** The key is **to check whether the transactions are generated correctly** and in accordance with the assumptions described in the previous step.

The first transaction is on a **futures contract for the DAX index.** In May 2019, DAX was in **an upward trend** (price above the 100-day moving average). Therefore, we were only interested in long positions. To open a long position, **the RSI must be below 25,** while the candle preceding the opening of the position must open with **a downward gap,** and its **closing price must fall below the opening price.** This situation was created by **the first candle in the marked rectangle on the left.** So **the next day we open a long position for the opening** (the second candle in the marked rectangle on the left). **The system worked correctly.**



If we look at the above example, we can see that after the first position was opened, the market fell the next day and **the closing price fell below the opening price of the first unit (RSI remained below 30 the whole time).** This activated **the second buy order** (the first candle in the left-hand rectangle). The second long position was opened the next day at the opening price (the second candle in the left-hand rectangle).

The market immediately rebounded strongly, raising the **RSI indicator above 75,** which **signaled the closure of both positions** (the first candle in the rectangle on the right). The position was closed **the next day at the opening price** (the second candle in the rectangle on the right). **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.

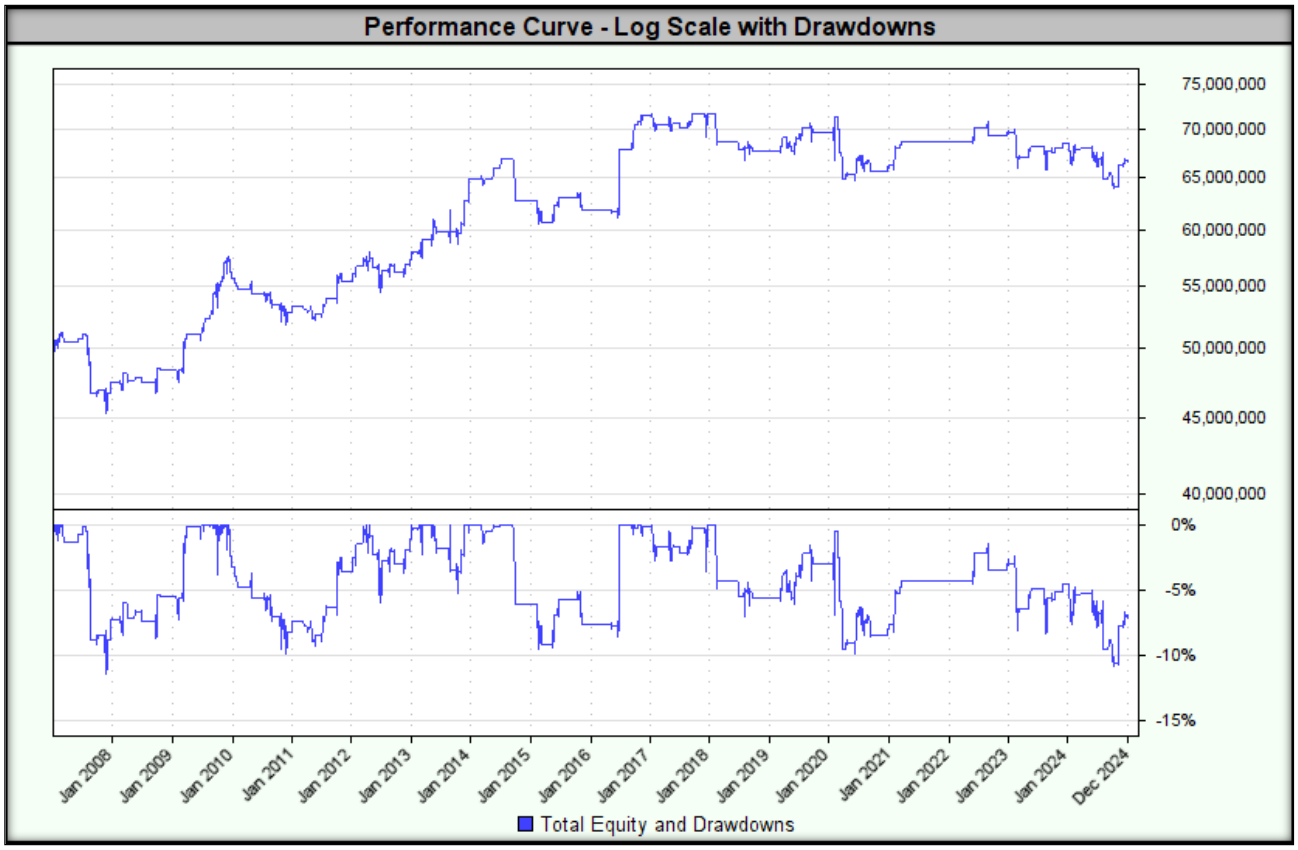
First of all, **we reject strategies that linearly lose capital.** If a strategy exhibits such a pattern, it is a clear signal that any parameter optimization does not make sense.

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

Tested base parameters:

- **Length of the moving average (SMA):** 100 days;
- **RSI Lengths:** 2 days;
- **RSI Entry Threshold:** 25;
- **RSI Exit Threshold (take profit):** 75;
- **Price formation:**
  - The opening price of the day must be lower than the low price of the previous day (downward gap).
  - The closing price of the day must be below the opening price of the day (bearing candle).
- **Method of opening a position:** at the opening price of the next day;
- **Position size:** corresponding to the risk of 2.0% of the total capital, with a hypothetical stop loss order located 2 x ATR (40 days) away from the position opening position;
- **Size of 1 unit:** 50%;
- **Size 2 units:** 50%;
- **Position direction:** long positions (buy) only.

The test result is shown below.



Indicators/Measures	Concluding a transaction at the opening price
CAGR%	1.6%
MAR Ratio	0.14
RAR%	2.2%
R-Cubed	0.09
Robust Sharpe Ratio	0.39
Max Drawdown	11.5%
Wins	55.1%
Losses	44.9%
Average Win%	0.79%
Average Loss %	0.73%
Win/ Loss Ratio	1.09
Average Trade Duration (days)	9
Percent Profit Factor	1.34
SQN	-
Number of transactions	283

In summary, the system works properly and generates signals as expected. **Tests on basic parameters yielded average results.** Despite everything, we can move on to the most interesting stage of creating an investment strategy – **optimization and stability.**

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 considerations 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**

Gaps v.2 Strategy in this version it assumes **optimization of parameters using The Grid** method **Search.** It consists of **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 the parameters on **the in-sample data.** For this purpose, we determine the ranges of parameter **values** so that **the quotient of the highest and lowest values of the range was at least 150%.**

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

- **Length of the moving average (SMA):** range **95-145 days (step: 5);**
- **RSI Lengths:** Range **2-3 days (step: 1);**
- **RSI Entry Threshold:** range **24-36 (step: 1);**
- **RSI Exit Threshold (take profit):** range **55-83 (step: 2).**

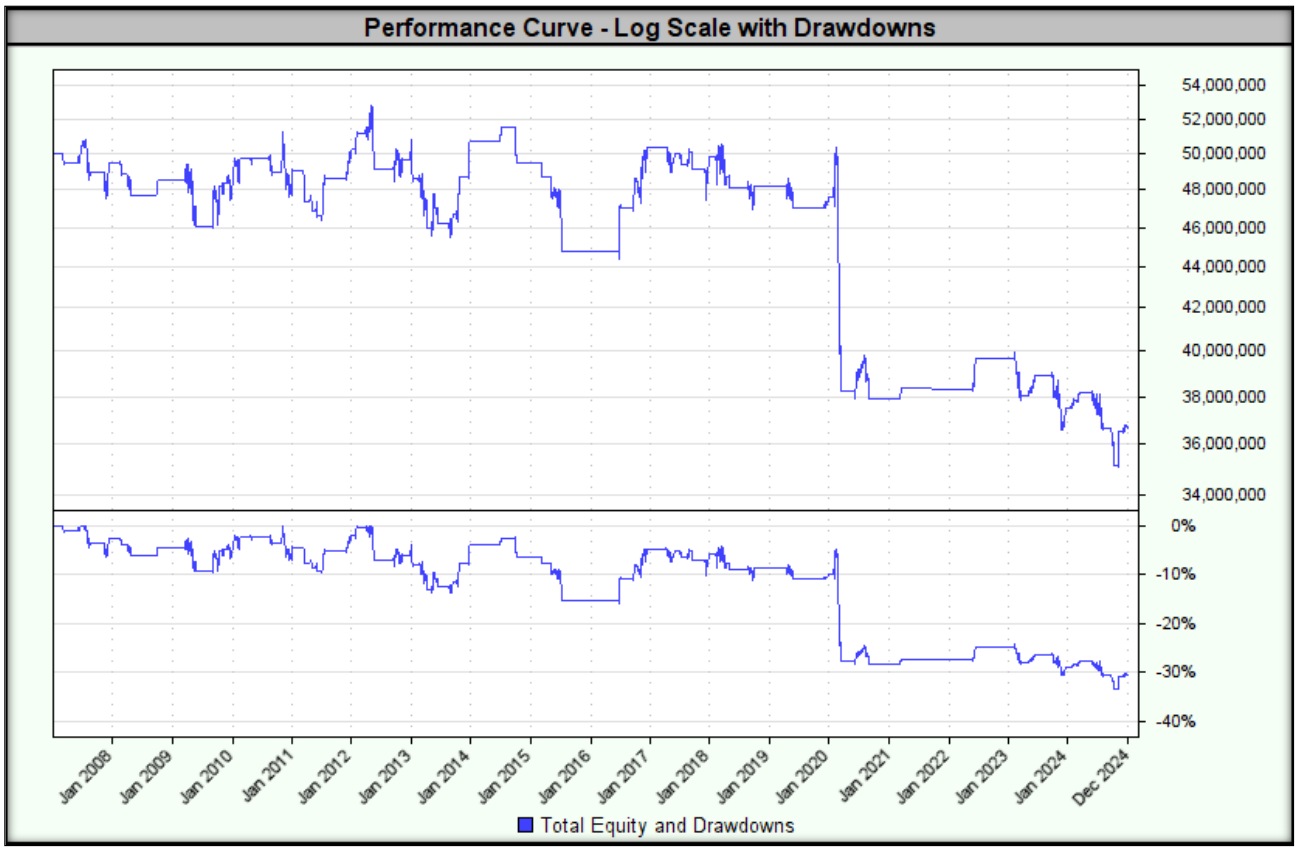
The lowest MAR value of -0.05 was achieved for the following parameters:

- **Length of the moving average (SMA):** 145;
- **RSI lengths:** 3;

- **RSI Entry Threshold:** 24;
- **RSI Exit Threshold (take profit):** 83.

Test	Moving Average (Bars)	RSIOpen	RSIClose	RSI (Bars)	End Balance	CAGR%	MAR	Sharpe	Ann. Sh...	Max TE DD	Longest DD	Trades	R3	RAR [%]
3930	145	24	83	3	$36,676,568.57	-1.71%	-0.05	-0.23	-0.27	33.4%	152.0	154	-0.05	-1.61
4230	145	34	83	3	$35,034,419.13	-1.96%	-0.05	-0.16	-0.21	39.1%	151.0	299	-0.04	-1.44
3540	140	24	83	3	$39,157,253.94	-1.35%	-0.05	-0.18	-0.24	27.4%	152.0	149	-0.04	-1.08
4260	145	35	83	3	$35,400,764.02	-1.90%	-0.05	-0.15	-0.20	38.9%	179.6	306	-0.04	-1.48
810	105	24	83	3	$40,806,982.70	-1.12%	-0.05	-0.21	-0.28	23.1%	209.5	135	-0.05	-0.90
4290	145	36	83	3	$35,114,554.68	-1.94%	-0.05	-0.15	-0.20	40.1%	179.6	316	-0.04	-1.53
420	100	24	83	3	$41,879,509.62	-0.98%	-0.05	-0.18	-0.25	21.2%	152.0	130	-0.04	-0.85
3900	140	36	83	3	$38,628,179.89	-1.42%	-0.04	-0.10	-0.15	34.0%	179.6	313	-0.02	-0.87
3840	140	34	83	3	$38,793,833.29	-1.40%	-0.04	-0.11	-0.16	33.7%	140.1	296	-0.02	-0.74
4110	145	30	83	3	$39,029,890.48	-1.37%	-0.04	-0.11	-0.17	33.3%	84.1	249	-0.02	-1.13

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



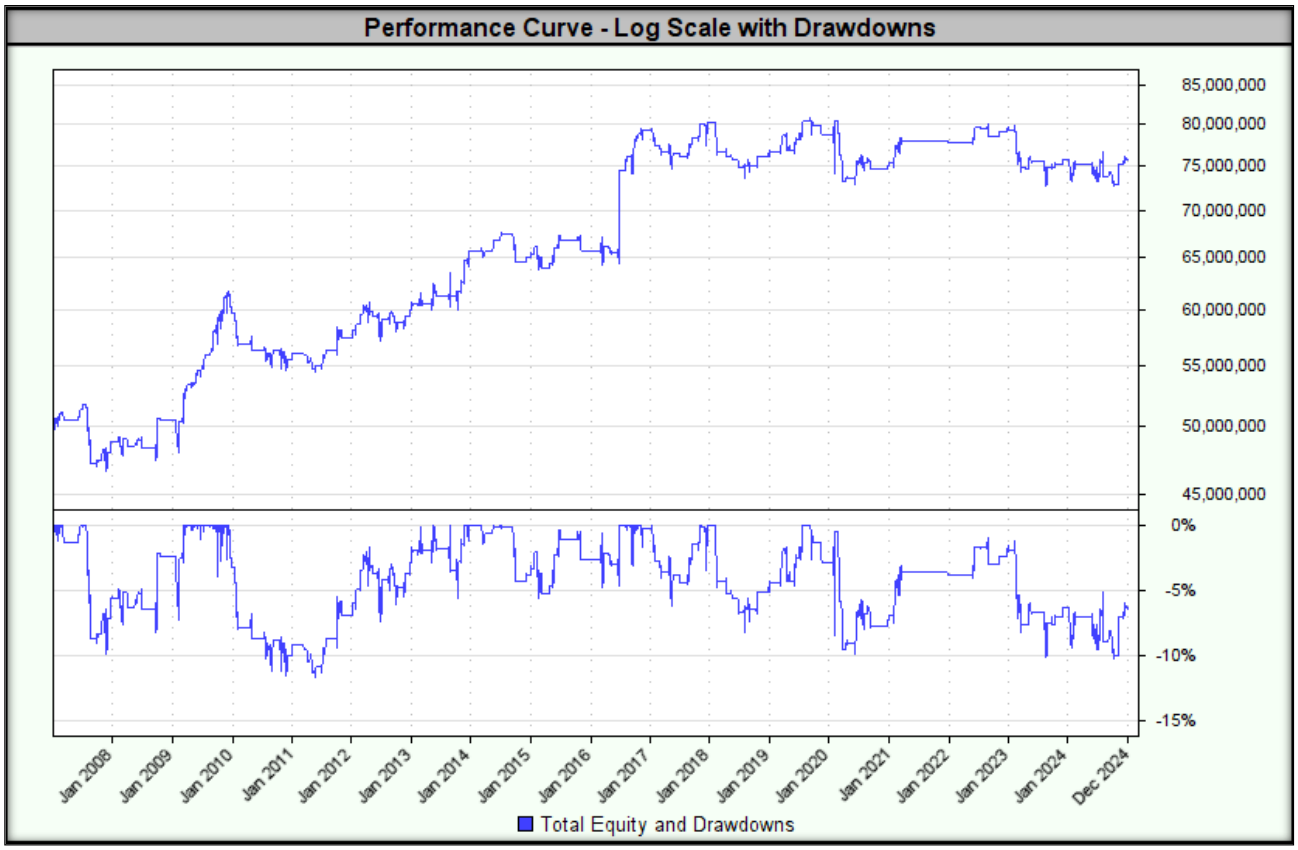
The highest MAR value of 0.20 was achieved for the following parameters:

- **Length of the moving average (SMA):** 95;
- **RSI lengths:** 3;
- **RSI Entry Threshold:** 32;
- **RSI Exit Threshold (take profit):** 75.

The highest MAR value was accompanied by **a drawdown of 11.7%.**

Test	Moving Average (Bars)	RSIOpen	RSIClose	RSI (Bars)	End Balance	CAGR%	MAR	Sharpe	Ann. Sh...	Max TE DD	Longest DD	Trades	R3	RAR [%]
261	95	32	75	2	$75,643,894.43	2.33%	0.20	0.38	0.33	11.7%	63.8	370	0.13	2.91
111	95	27	75	2	$71,287,821.38	1.99%	0.20	0.38	0.33	10.2%	63.8	311	0.13	2.57
259	95	32	73	2	$74,831,221.54	2.27%	0.19	0.37	0.33	11.7%	63.8	371	0.11	2.72
119	95	27	83	2	$79,713,998.62	2.63%	0.19	0.42	0.36	13.7%	27.7	308	0.15	3.38
2329	120	36	73	2	$77,661,587.26	2.48%	0.19	0.38	0.30	13.0%	84.1	465	0.12	3.14
389	95	36	83	2	$92,330,591.77	3.47%	0.18	0.46	0.34	18.7%	50.1	420	0.17	4.19
2299	120	35	73	2	$75,505,199.20	2.32%	0.18	0.36	0.29	12.6%	58.8	447	0.10	2.90
109	95	27	73	2	$70,312,743.92	1.91%	0.18	0.37	0.32	10.5%	63.8	311	0.12	2.39
2088	120	28	71	3	$72,428,010.82	2.08%	0.18	0.41	0.36	11.4%	40.1	233	0.14	2.86
231	95	31	75	2	$72,923,666.75	2.12%	0.18	0.36	0.28	11.7%	63.8	360	0.10	2.76

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



For all combinations of tested parameter ranges, **the highest drawdown was 40.1%.**

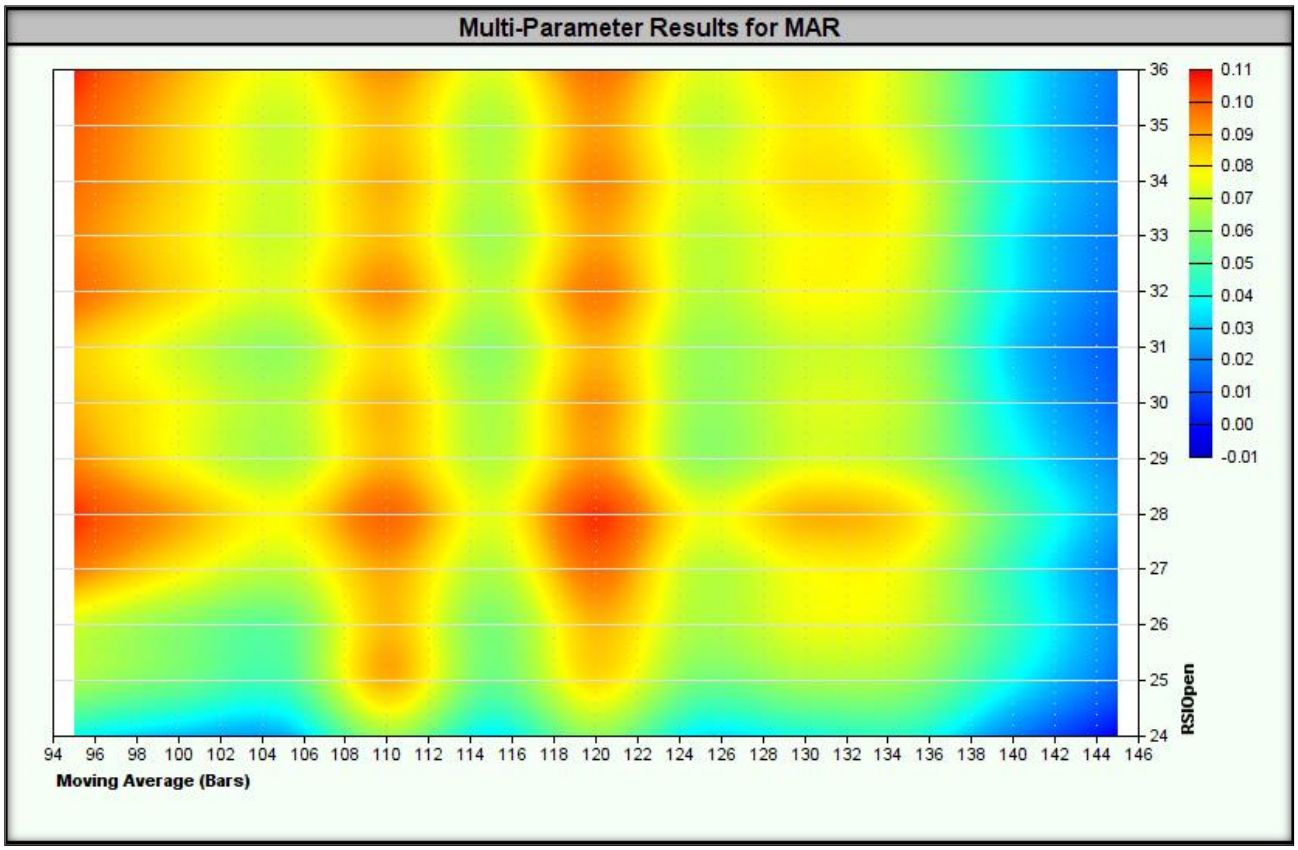
Test	Moving Average (Bars)	RSIOpen	RSIClose	RSI (Bars)	End Balance	CAGR%	MAR	Sharpe	Ann. Sh...	Max TE...	Longest DD	Trades	R3	RAR [%]
4290	145	36	83	3	$35,114,554.68	-1.94%	-0.05	-0.15	-0.20	40.1%	179.6	316	-0.04	-1.53
4200	145	33	83	3	$38,312,995.16	-1.47%	-0.04	-0.11	-0.16	39.7%	58.6	293	-0.02	-0.95
4230	145	34	83	3	$35,034,419.13	-1.96%	-0.05	-0.16	-0.21	39.1%	151.0	299	-0.04	-1.44
4260	145	35	83	3	$35,400,764.02	-1.90%	-0.05	-0.15	-0.20	38.9%	179.6	306	-0.04	-1.48
4170	145	32	83	3	$39,233,043.25	-1.34%	-0.04	-0.10	-0.15	37.3%	126.0	277	-0.02	-1.15
4140	145	31	83	3	$39,761,232.99	-1.26%	-0.03	-0.10	-0.15	36.2%	126.0	268	-0.02	-0.96
4080	145	29	83	3	$39,445,765.15	-1.31%	-0.04	-0.10	-0.15	35.0%	126.0	239	-0.03	-1.14
3990	145	26	83	3	$41,316,818.12	-1.05%	-0.03	-0.10	-0.14	34.4%	81.7	193	-0.01	-0.61
3810	140	33	83	3	$42,191,556.39	-0.94%	-0.03	-0.06	-0.10	34.4%	58.6	289	-0.01	-0.29
3900	140	36	83	3	$38,628,179.89	-1.42%	-0.04	-0.10	-0.15	34.0%	179.6	313	-0.02	-0.87

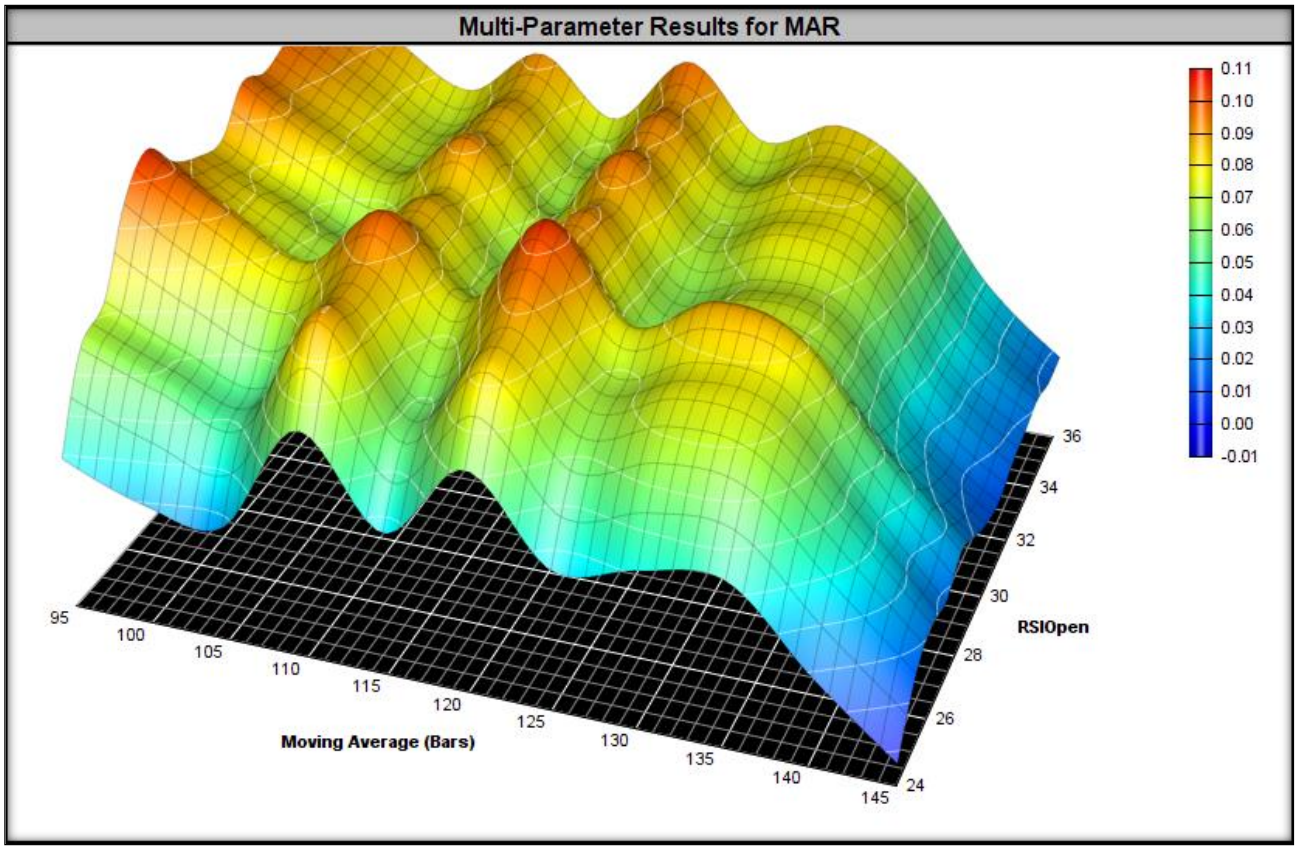
In summary, the strategy **failed the stability test** in a wide range of optimized parameters on the in-sample data because:

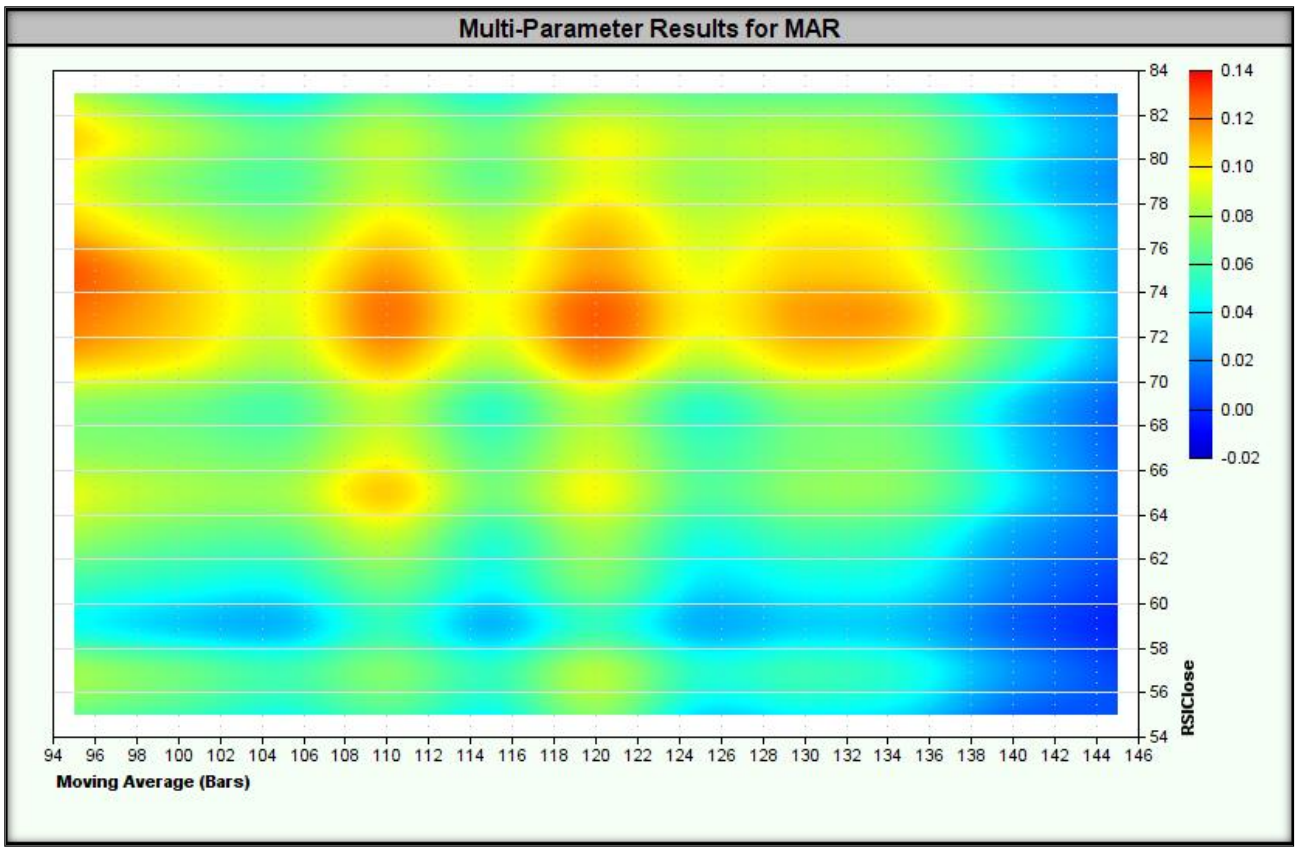
- **MAR value** – which indicates the instability of the strategy in different market conditions.
- **The maximum drawdown exceeded 250% of the drawdown value** for the result with the highest MAR (**40.1% vs. 11.7%)** – which means a high risk of deep capital drawdowns.

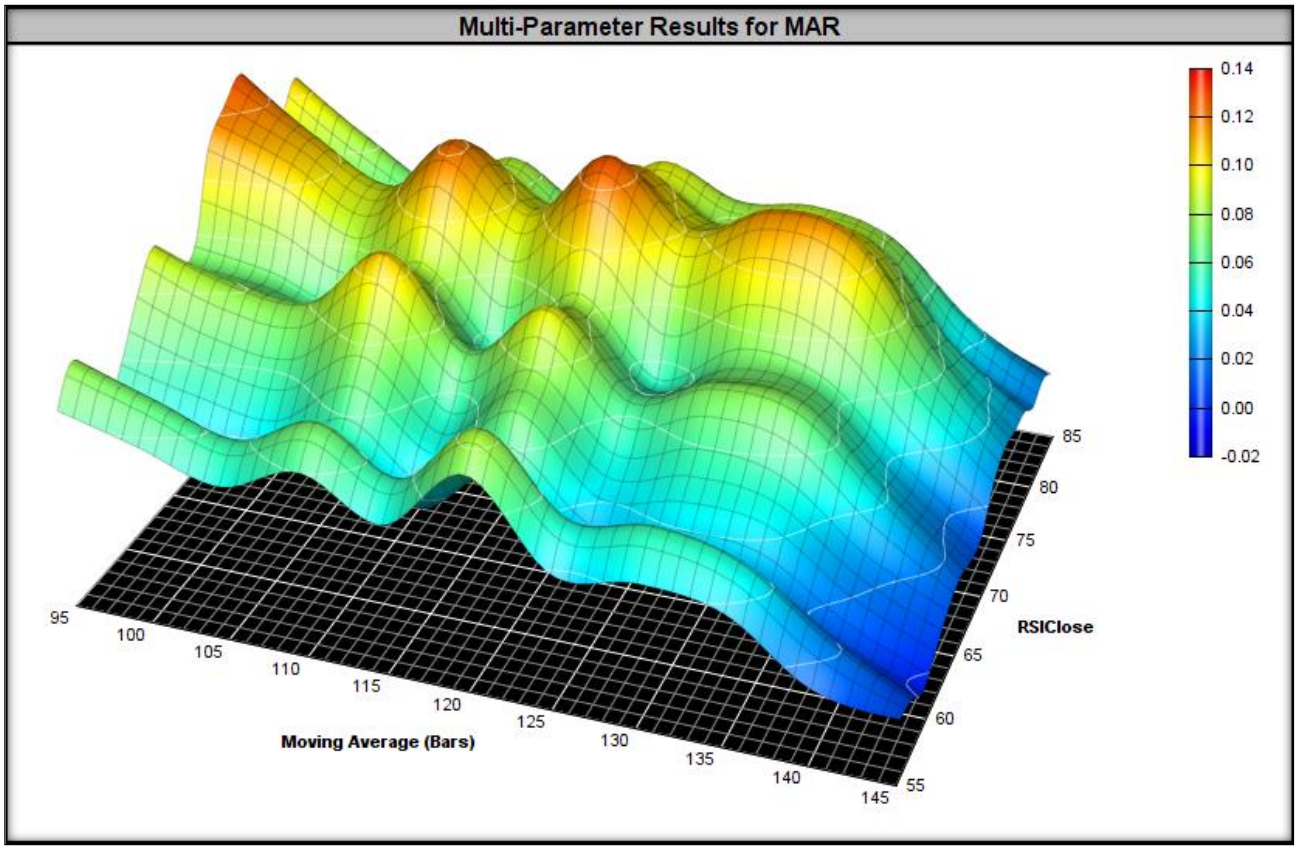
Therefore, **<u>further testing of the strategy on these ranges is not justified,</u>** because its use in real transactions **is highly questionable.**

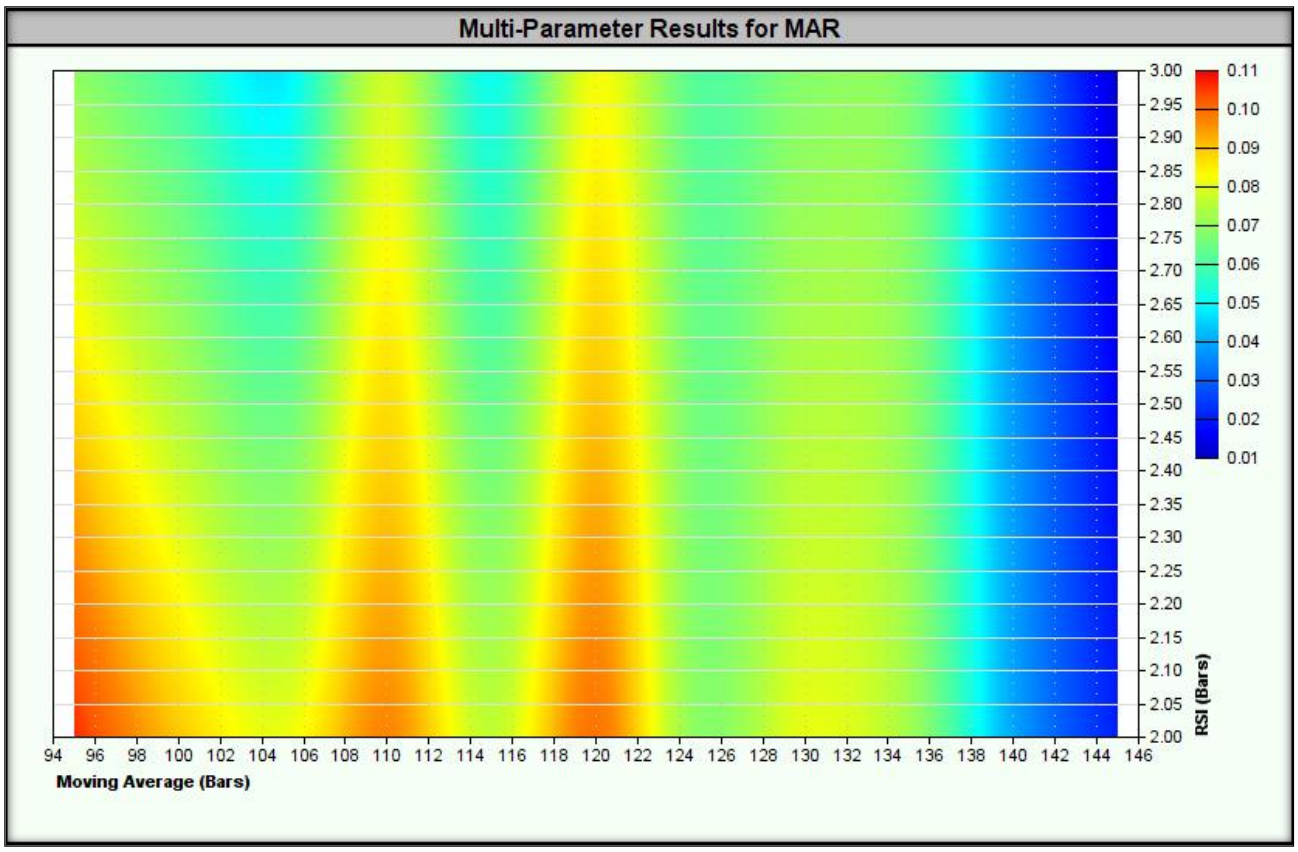
Heatmaps for the tested ranges are presented below.




Multi-Parameter Results for MAR
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
95
100
105
110
115
120
125
130
135
140
145
Moving Average (Bars)
24
26
28
30
32
34
36
RSIOpen


Multi-Parameter Results for MAR
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146
Moving Average (Bars)
54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84
RSIClose





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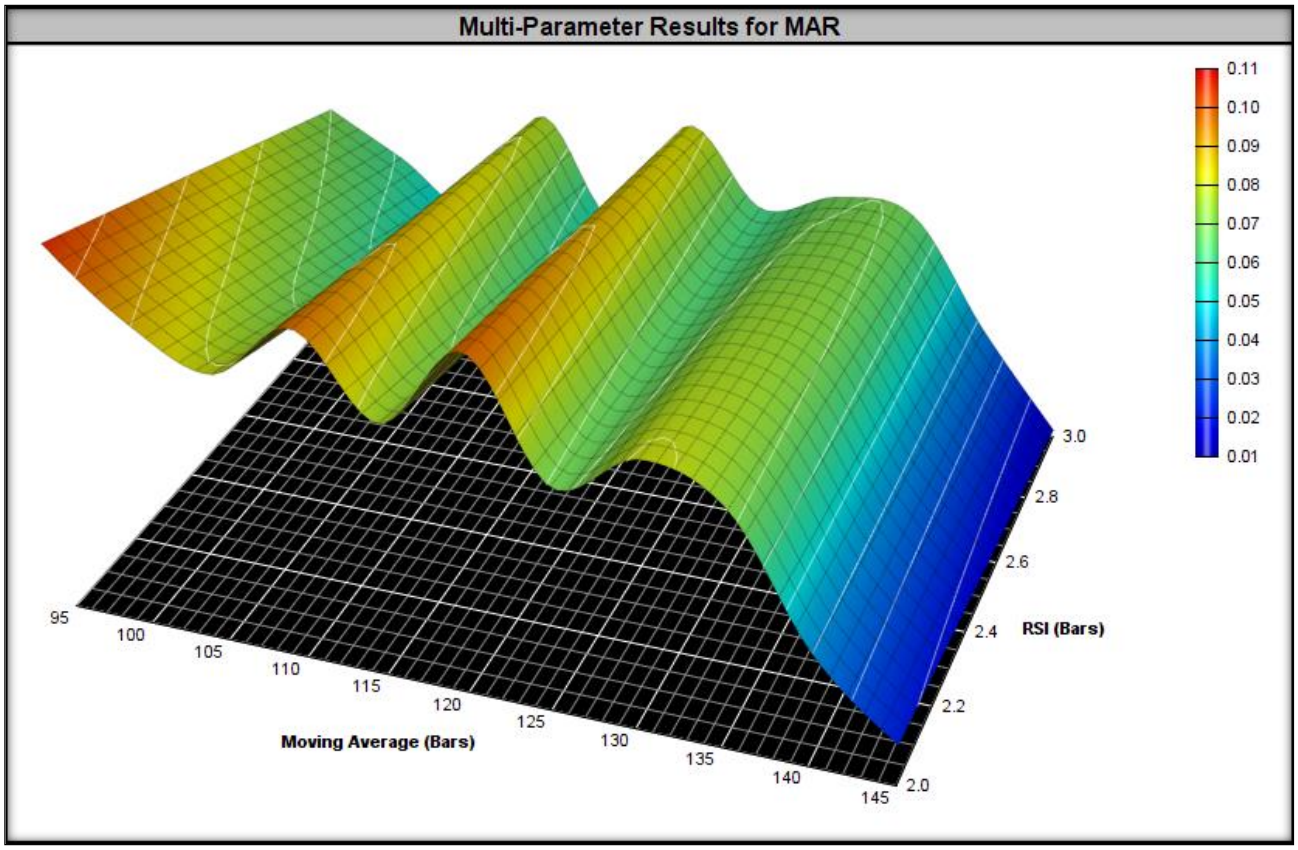
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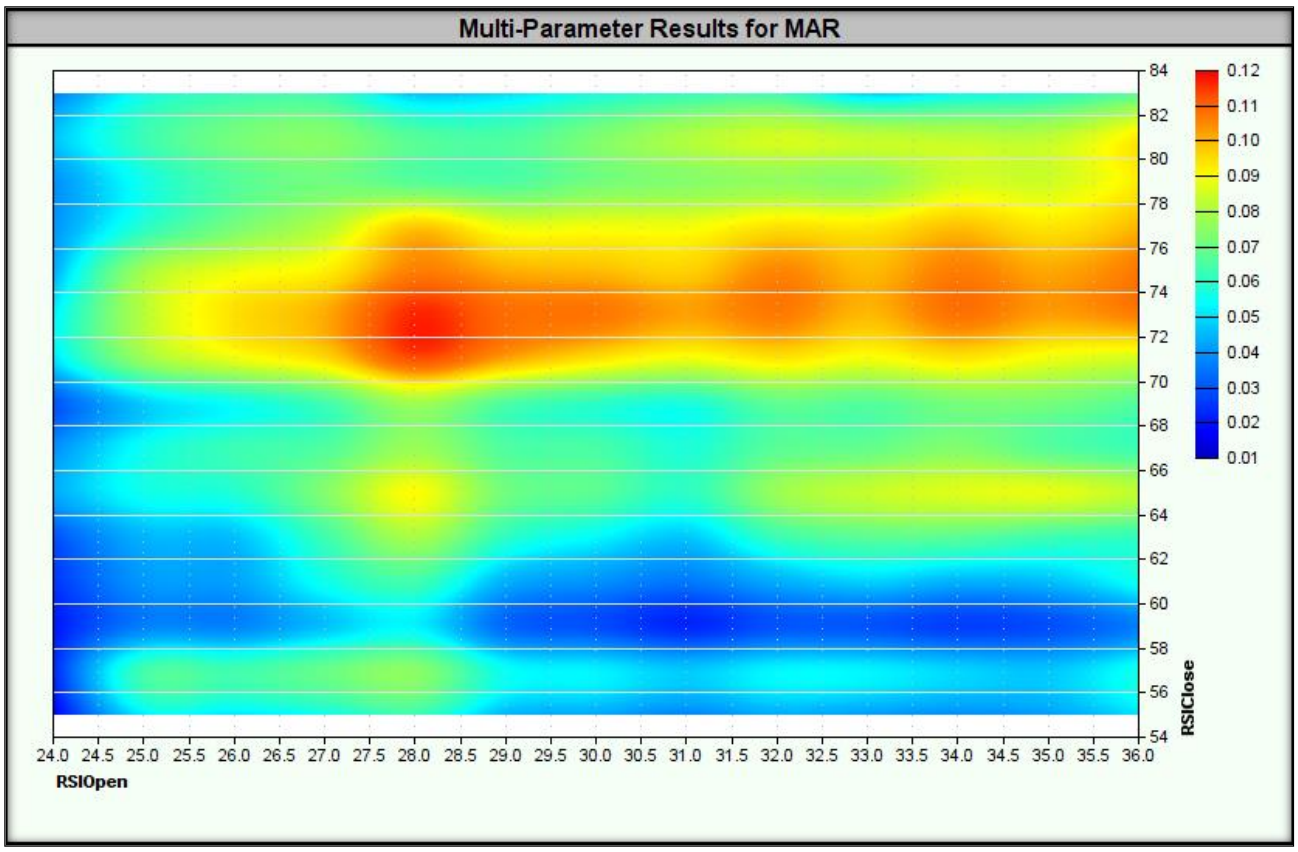
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
95
100
105
110
115
120
125
130
135
140
145
Moving Average (Bars)
3.0
2.8
2.6
2.4
2.2
2.0
RSI (Bars)


Multi-Parameter Results for MAR
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
84
82
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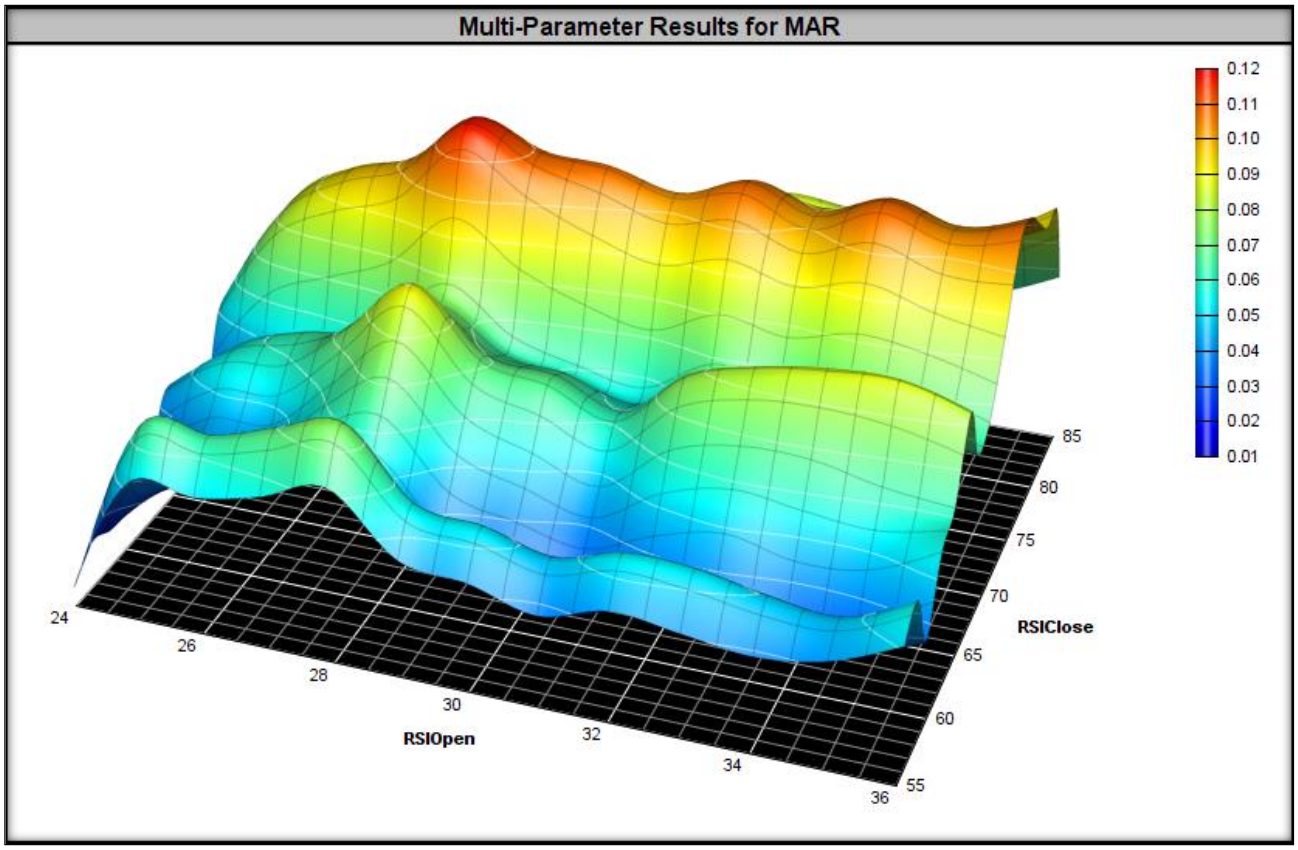
78
76
74
72
70
68
66
64
62
60
58
56
54
RSIClose
24.0 24.5 25.0 25.5 26.0 26.5 27.0 27.5 28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0
RSIOpen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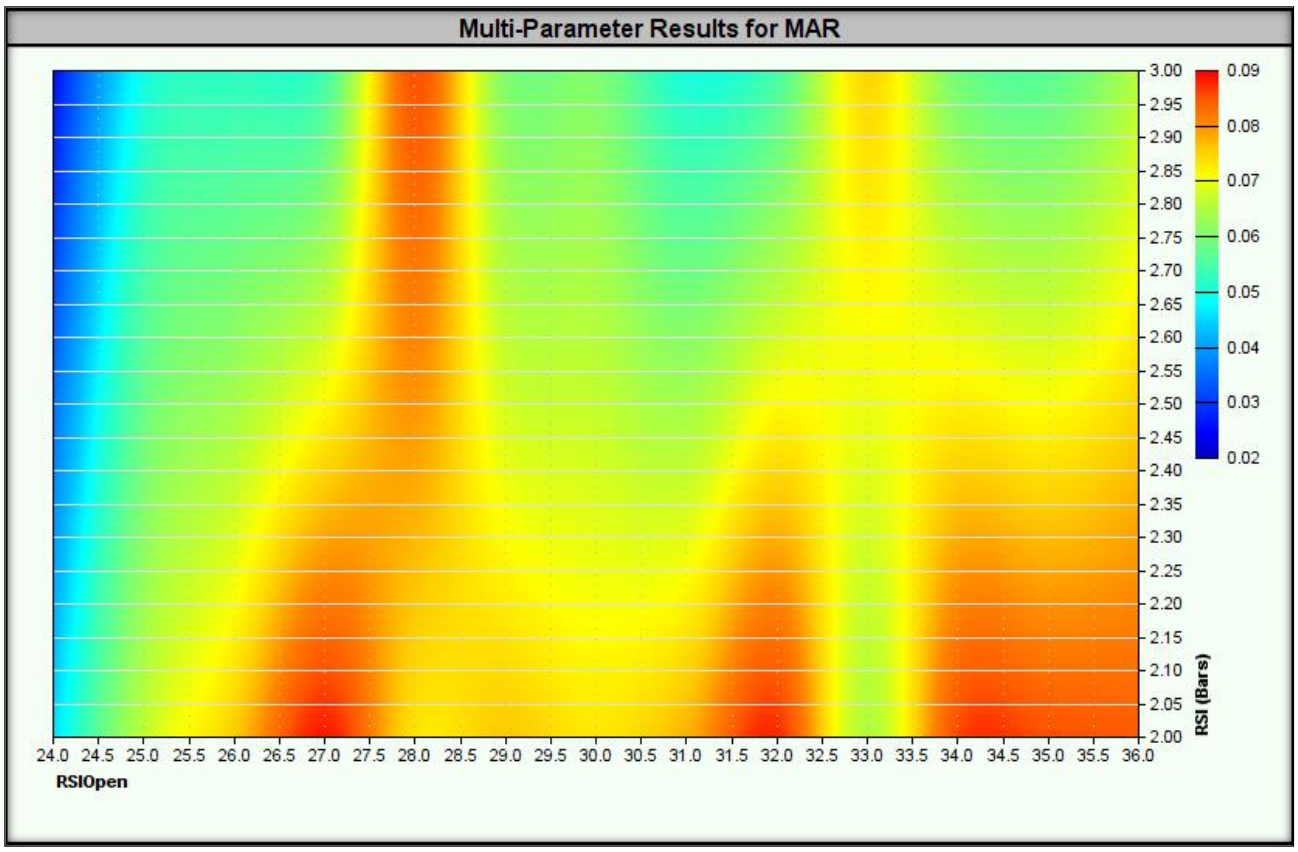
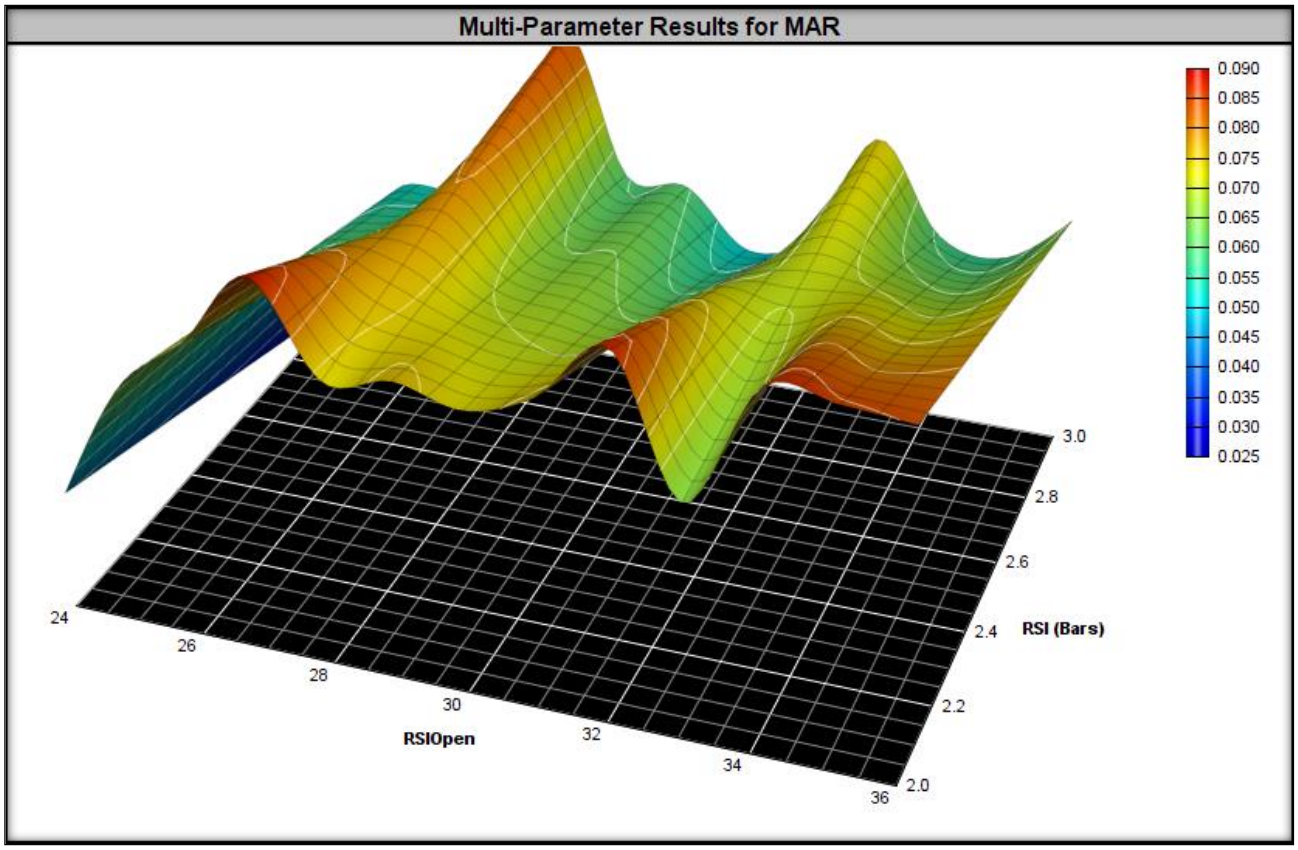
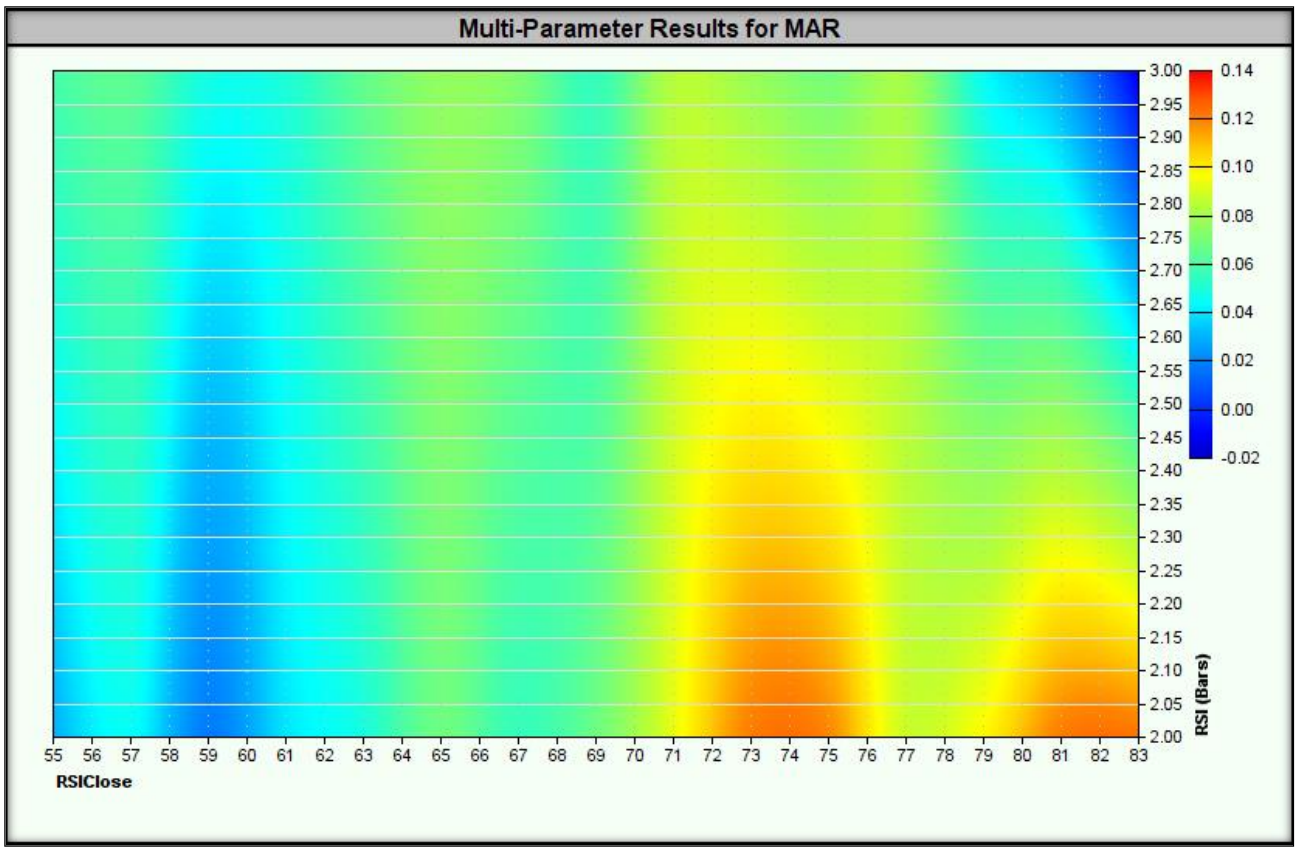
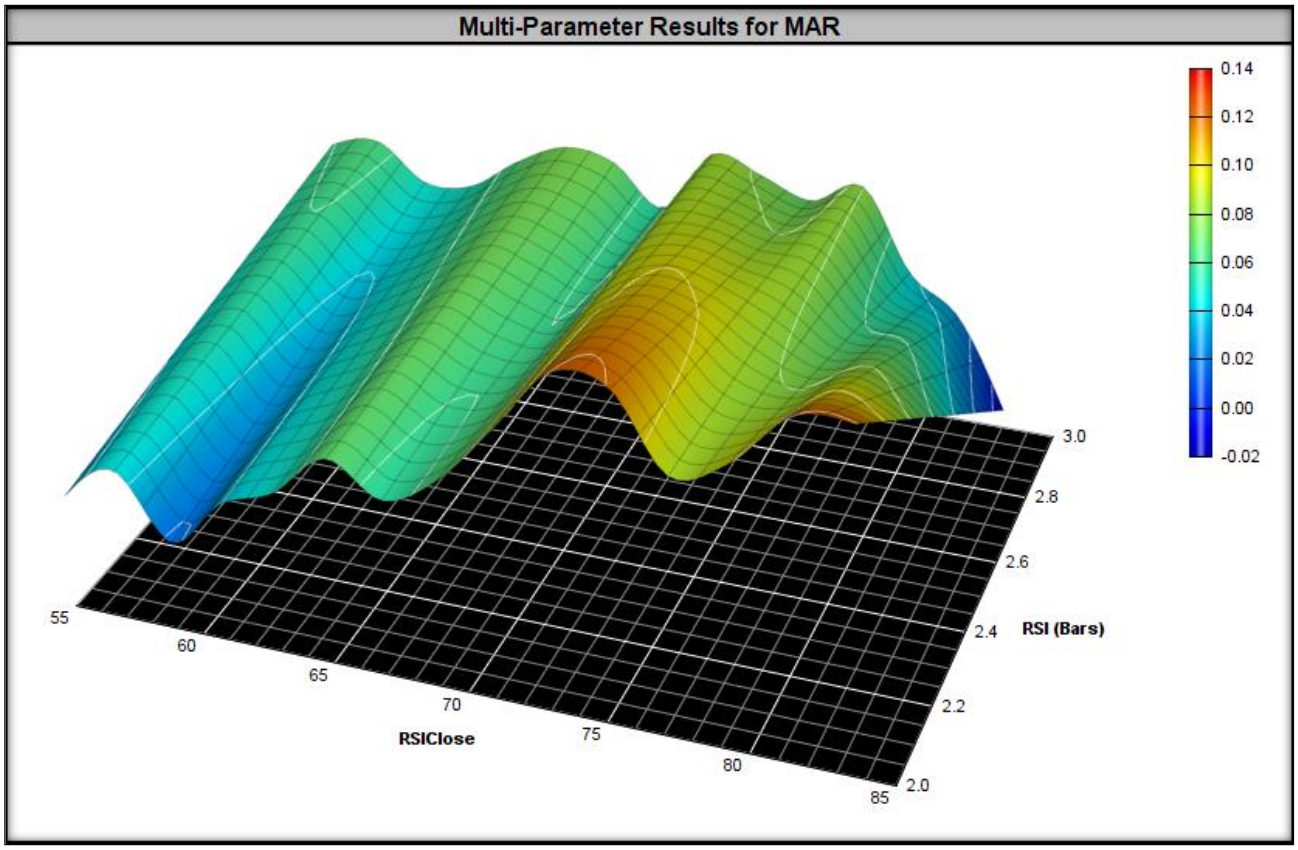
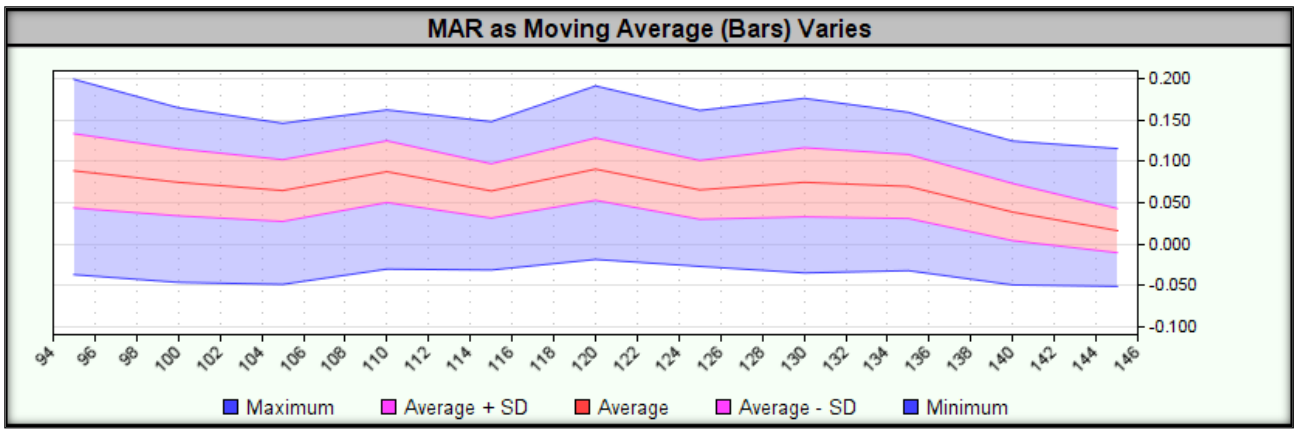
0.07
0.06
0.05
0.04
0.03
0.02
0.01
24
26
28
30
32
34
36
RSIOpen
55
60
65
70
75
80
85
RSIClose

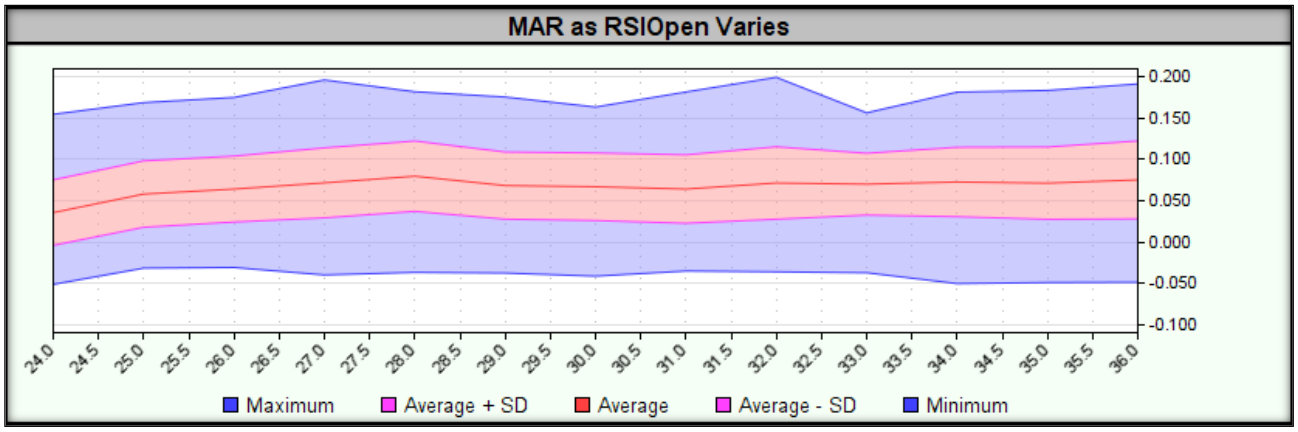

Multi-Parameter Results for MAR
3.00
2.95
2.90
2.85
2.80
2.75
2.70
2.65
2.60
2.55
2.50
2.45
2.40
2.35
2.30
2.25
2.20
2.15
2.10
2.05
2.00
RSI (Bars)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
24.0 24.5 25.0 25.5 26.0 26.5 27.0 27.5 28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0
RSIOpen

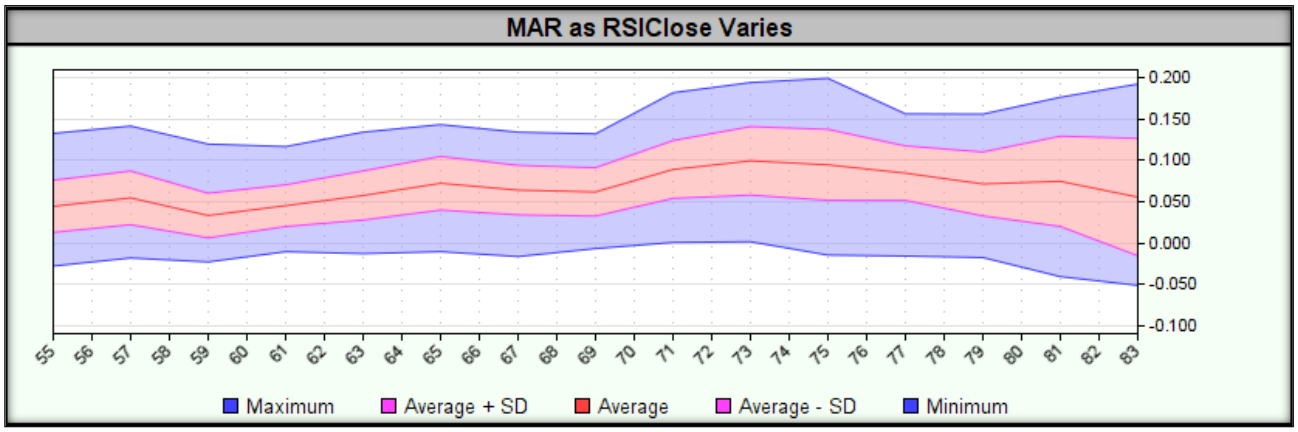

Multi-Parameter Results for MAR
0.090
0.085
0.080
0.075
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
24
26
28
30
32
34
36
RSIOpen
2.0
2.2
2.4
2.6
2.8
3.0
RSI (Bars)

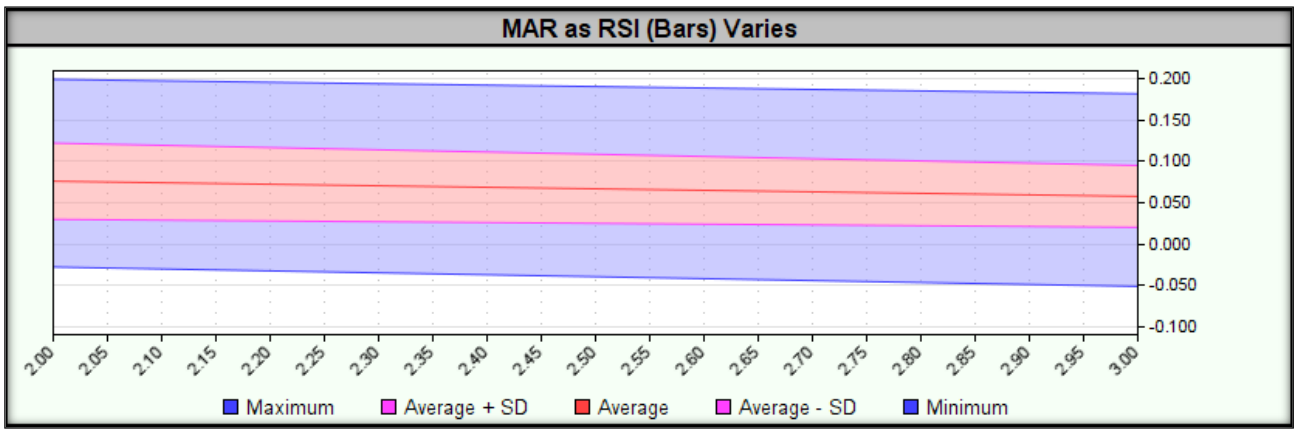

Multi-Parameter Results for MAR
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
RSIClose
3.00
2.95
2.90
2.85
2.80
2.75
2.70
2.65
2.60
2.55
2.50
2.45
2.40
2.35
2.30
2.25
2.20
2.15
2.10
2.05
2.00
RSI (Bars)


Multi-Parameter Results for MAR
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
55
60
65
70
75
80
85
RSIClose
2.0
2.2
2.4
2.6
2.8
3.0
RSI (Bars)


MAR as Moving Average (Bars) Varies
0.200
0.150
0.100
0.050
0.000
-0.050
-0.100
94
96
98
100
102
104
106
108
110
112
114
116
118
120
122
124
126
128
130
132
134
136
138
140
142
144
146
Maximum
Average + SD
Average
Average - SD
Minimum







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. **Stability long/short**

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

Walk Forward Analysis (WFA) is a key tool for assessing **a strategy's ability to perform under real market conditions.** It provides **reliable measures of profit and risk** after the optimization process and allows for answering several key questions:

1. **What rate of return can you expect from the strategy?**
    - The optimization result often overestimates the expected rate of return, which can lead to unrealistic forecasts.
    - WFA provides a more **reliable and realistic measure of return** by minimizing the impact of overfitting to historical data.
2. **What set of parameters should be used in the next period?**
    - Thanks to **WFA,** it is possible **to dynamically adjust the strategy parameters** to **the latest market changes,** increasing its adaptability.

WFA tests the strategy over multiple time periods, which helps **minimize the risk of overfitting** (overfitting the strategy to historical data). The WFA process consists of **two repeated steps:**

1. **Optimization (In-sample):**
    - The strategy is optimized over a specific **training period** (**in-sample)**.
    - In this step, parameters are adjusted to obtain **the best results.**
2. **Testing (Out-of-sample):**
    - The strategy, using **the parameters optimized in Step 1,** is tested on **a test period** (**out-of-sample)**.
    - This stage verifies the effectiveness of the strategy in new market conditions that **were not used** during optimization.

Walk Forward Efficiency (WFE) is a key measure that assesses whether a strategy has the potential to perform under real market conditions. WFE compares:

- **The rate of return achieved in the in-sample window** (where parameters were optimized)
- **The rate of return in the out-of-sample window** (where the strategy was operating on unknown data)

Similarly, **for the drawdown value,** WFE checks whether the strategy does not lose significant stability outside the optimization period.

A strategy considered **stable (robust) should meet the following conditions:**

- **WFE ≥ 50% for the rate of return** – means that the strategy retains at least half of its effectiveness outside the optimization period.
- **WFE ≤ 150% for drawdown** – means that the drawdown outside the optimization period is not significantly higher than during the optimization period.

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

Step 6: Using the strategy in real time

After **extensive testing, implementing a real-time** trading strategy becomes **relatively easy.** Buy/sell signals and **stop loss orders are generated automatically** by the computer based on previously established rules and formulas.

The most important element of **strategy implementation** is **consistent enforcement of all signals, without exceptions. How Larry Williams noted:** *"Trading strategies work. Traders do not."*

Before making **a final decision to implement a strategy,** it is necessary to check **whether it really adds value** to the results of the entire portfolio. It does not make sense to implement a strategy that **generates similar signals** or **is characterized by a similar course of the equity curve.**

Key criteria for evaluating the strategy before implementation:

1. **Daily Return Correlation**
   - The **lower the correlation** with other strategies, the better.
   - **Optimal values:** Correlation **close to zero or negative.**
2. **Reducing maximum drawdown**
   - If adding a strategy to a portfolio results in **a lower maximum drawdown,** this is **a strong positive signal.**
3. **Objective Function Improvement (MAR)**
   - If adding a strategy causes **the MAR to increase,** this indicates that **it has added value** to the portfolio.
4. **Better results in Monte Carlo simulation**
   - Monte Carlo simulation determines the potential **maximum drawdown.**
   - If Monte Carlo results **improve** after adding a strategy, this is **a strong positive signal.**

The above elements are often interrelated – usually **all of them are met** or **none of them are met.**

Once you decide to add a strategy to your portfolio, **the question arises:** *Should you implement your strategy right away or is it better to wait?*

Some studies suggest **an incubation period** of **3-6 months,** during which:

- The strategy is **monitored** but **does not execute real transactions.**
- **Generated signals, positions and results** are observed to identify **potential anomalies.**

In our case, **the incubation period** lasts from the moment **the strategy is launched in a live environment** until **a drawdown occurs at a level of about half of the maximum drawdown** observed in historical data. **Only after reaching this threshold does the strategy begin to be used with real funds.**

Thanks to this:

- **We avoid investing real money in an untested environment.**
- **We wait for a drawdown to occur** before launching the strategy, which **reduces the risk of starting at an unfavorable moment.**

The final decision to fully implement it should be based on **thorough testing and analysis of the value added to the portfolio,** so that the strategy actually supports long-term investment goals and does not increase unnecessary risk.