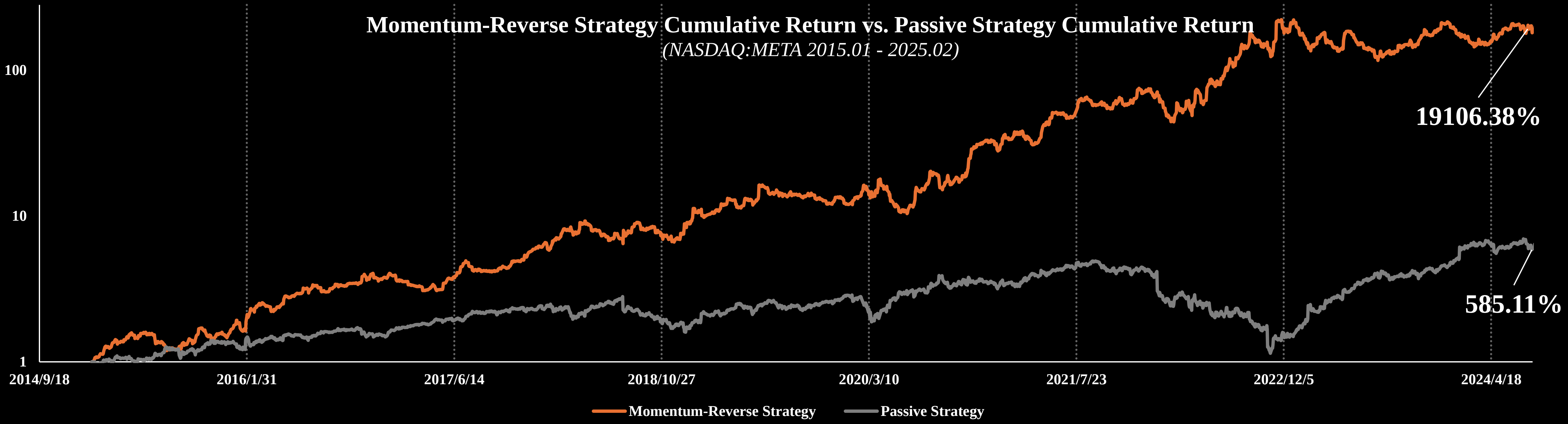
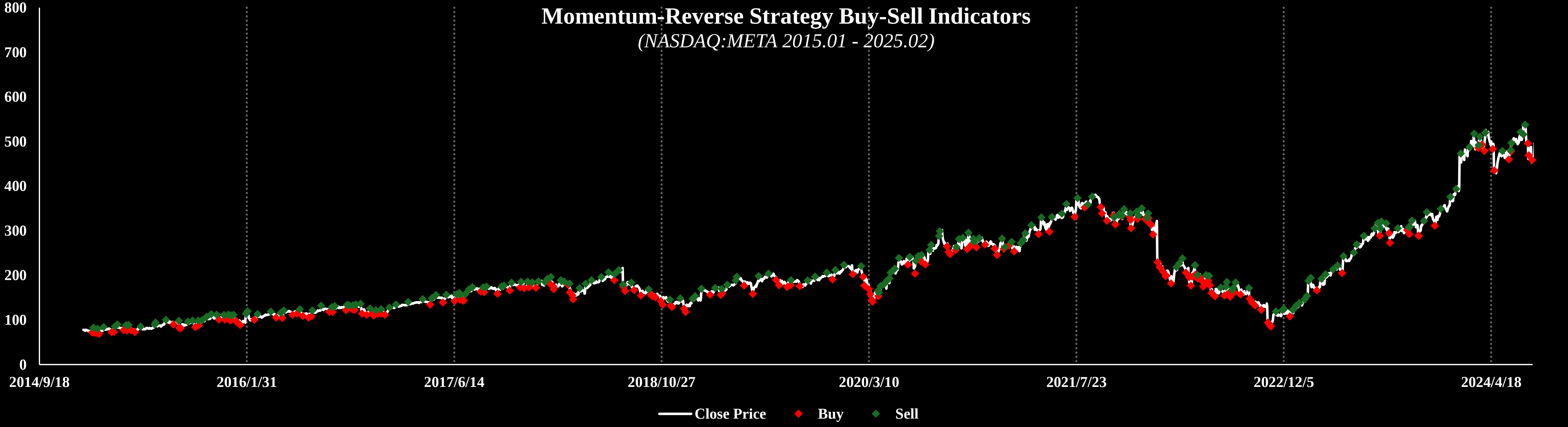
Momentum-Reversal Strategy

Xinjie Huang


Momentum-Reverse Strategy Cumulative Return vs. Passive Strategy Cumulative Return
(NASDAQ:META 2015.01 - 2025.02)
100
10
1
19106.38%
585.11%
2014/9/18
2016/1/31
2017/6/14
2018/10/27
2020/3/10
2021/7/23
2022/12/5
2024/4/18
Momentum-Reverse Strategy
Passive Strategy


Momentum-Reverse Strategy Buy-Sell Indicators
(NASDAQ:META 2015.01 - 2025.02)
800
700
600
500
400
300
200
100
0
2014/9/18
2016/1/31
2017/6/14
2018/10/27
2020/3/10
2021/7/23
2022/12/5
2024/4/18
Close Price
Buy
Sell

Strategy Overview - 1

S&P500 Stock History Data

Inputs

Parameters	Value
***start_date*:**	2015-01-01
***end_date*:**	2025-02-25
***random_stock_num*:**	100
***random_seed*:**	628

Outputs

Parameters
open price
close price
volume

Strategy Overview - 2

Momentum Calculation

Inputs

Parameters	Value
***momentum_lookback*:**	13 days*
***relative_threshold_lookback*:**	252 days
***relative_threshold_percent*:**	30%*

$$\boldsymbol{Momentum} = \frac{Close\ Price_t}{ClosePrice_{t-momentum\_lookback}} - 1$$

***Relative Threshold* Calculation**:

1. Individual Stock Daily Return Data:

[-5%, -1%, -6%, 4%, 3%, -2%, 8%, -7%, 9%, 10%]

2. Take absolute value:

[5%, 1%, 6%, 4%, 3%, 2%, 8%, 7%, 9%, 10%]

3. Sort:

[1%, 2%, **3%**, 4%, 5%, 6%, 7%, 8%, 9%, 10%]

30th percentile

Strategy Overview - 3.1

Trade

Inputs

Parameters	**Value**
***transaction_fee*:**	0.1%
***stop_loss_pct*:**	5%
***vol_risk_multiplier*:**	0.8*
***reverse_switch*:**	-1
threshold	-
***current_position*:**	0

If ***current_position*** = -1, and ***momentum*** falls into……

[-1, -***threshold***]	[***threshold***, -***threshold***]	[***threshold***, 1]
current_position = -1	***current_position*** = 0	***current_position*** = 1
(Turn to short selling)	(No position / Close position)	(Turn to buy long)
Hold Short Positions	**Close All Short Positions**	**Close Short Positions and Go Long**

Strategy Overview - 3.2

Trade

Inputs

Parameters	Value
***transaction_fee*:**	0.1%
***stop_loss_pct*:**	5%
***vol_risk_multiplier*:**	0.8*
***reverse_switch*:**	-1
threshold	-
***current_position*:**	0

***reverse_switch*: A tall tree catches all of the wind.**

Momentum Trading: Following the trend, assuming that "what goes up will continue to rise, and what falls quickly will keep falling."

Reversal Trading: The market tends to reverse after overreacting, so sell when momentum is high and buy when momentum is low.

In case of high trade volume led to fake prosperity on the momentum:

If

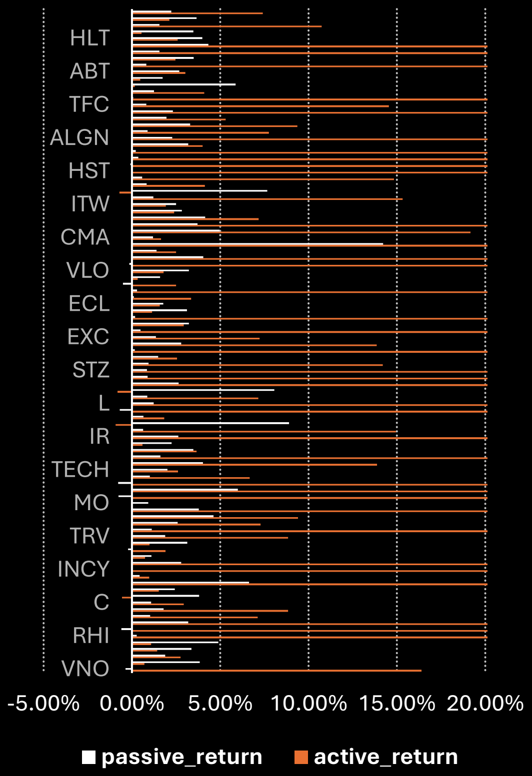
$$Volume_t > \underbrace{\frac{\sum_{i=1}^{20} Volume_{t-i}}{20}}_{\text{Volume MA20}} \times 1.5$$

Then

$$Real\ Daily\ Trade\ Return = vol\_risk\_multiplier \times Paper\ Daily\ Trade\ Return$$

Strategy Overview - 4

Strategy Evaluation & Conclusion



Holding Period:	From 2015-01-01 to 2025-02-25 (~ 10.16 years)
Momentum-Reverse Strategy Average Annual Return	30.77%
Passive Strategy Average Annual Return	9.79%
Average Annual Excess Return	20.98%
(Benchmark) S&P 500 Average Annual Return	11.08%
ERP	8.57%
Win Rate	75.00%

Among 100 Stocks, strategy **win rate** has reached **75%**

Average annual excess return reached **20.98%**

Histogram of Sharpe Ratio of 100 Stocks' Momentum Strategy