

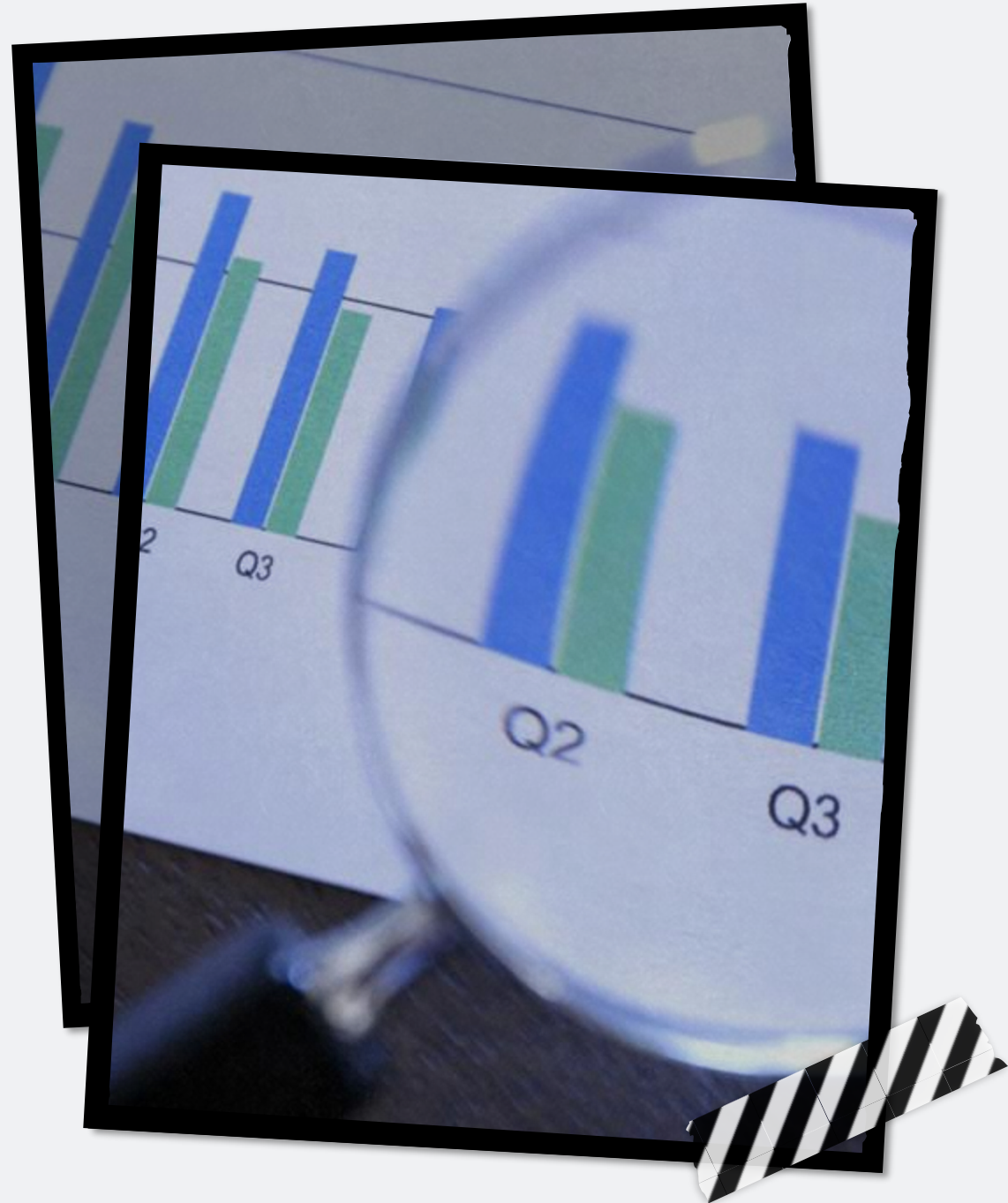
# ***Financial Trading Strategy for Success***





# Overview

- Used data from 2015-01-01 to 2022-12-01 to backtest the strategy
- Evaluation period from 2022-12-01 to 2024-21-01.
- Tested 4 different algorithms by stimulating trades with an initial investment of \$10,000.
- Used diverse tickers likely to meet the performance criteria.
- Data from Yahoo Finance



# Performance Criteria

- Annual Return  $> 5\%$ 
  - **Definition:** The average yearly growth rate of the initial investment.
  - **Objective:** Ensure the strategy generates meaningful returns exceeding inflation and standard benchmarks.
- Sharpe Ratio  $> 0.8$ 
  - **Definition:** A measure of risk-adjusted returns, comparing the excess return (above the risk-free rate) to the portfolio's volatility.
  - **Why it matters:** A Sharpe ratio above 0.8 indicates a good balance between return and risk.



# Performance Criteria(Contd)

- Maximum Drawdown < 50%
  - **Definition:** The largest peak-to-trough decline in portfolio value, as a percentage of the peak.
  - **Objective:** Limit significant losses to protect capital during unfavorable market conditions.
- Commission + Slippage 0.2% per trade
  - **Definition:** Accounts for real-world trading costs, including:
  - **Commission:** Broker fees for executing trades.
  - **Slippage:** The price difference between expected and actual execution.
  - **Why it matters:** Ensures the strategy remains profitable after accounting for transaction costs.



# **Strategy 1: Trend Following Moving Average Crossover**

- Two moving averages to identify market trends.
- Generates buy signals when the short-term MA crosses above the long-term MA and sell signals when it crosses below.



## ***How does it work?***

The strategy tracks two moving averages:

- +A **short-term moving average** (e.g., 20-day) that reacts quickly to price changes.
- +A **long-term moving average** (e.g., 50-day) that smooths out longer-term trends.



# Buy and Sell Signals

- **Buy Signal (Bullish Crossover):**
  - Occurs when the short-term moving average crosses **above** the long-term moving average.
  - Indicates upward momentum, signaling the start of a potential uptrend.
- **Sell Signal (Bearish Crossover):**
  - Occurs when the short-term moving average crosses **below** the long-term moving average.
  - Indicates downward momentum, signaling the start of a potential downtrend.



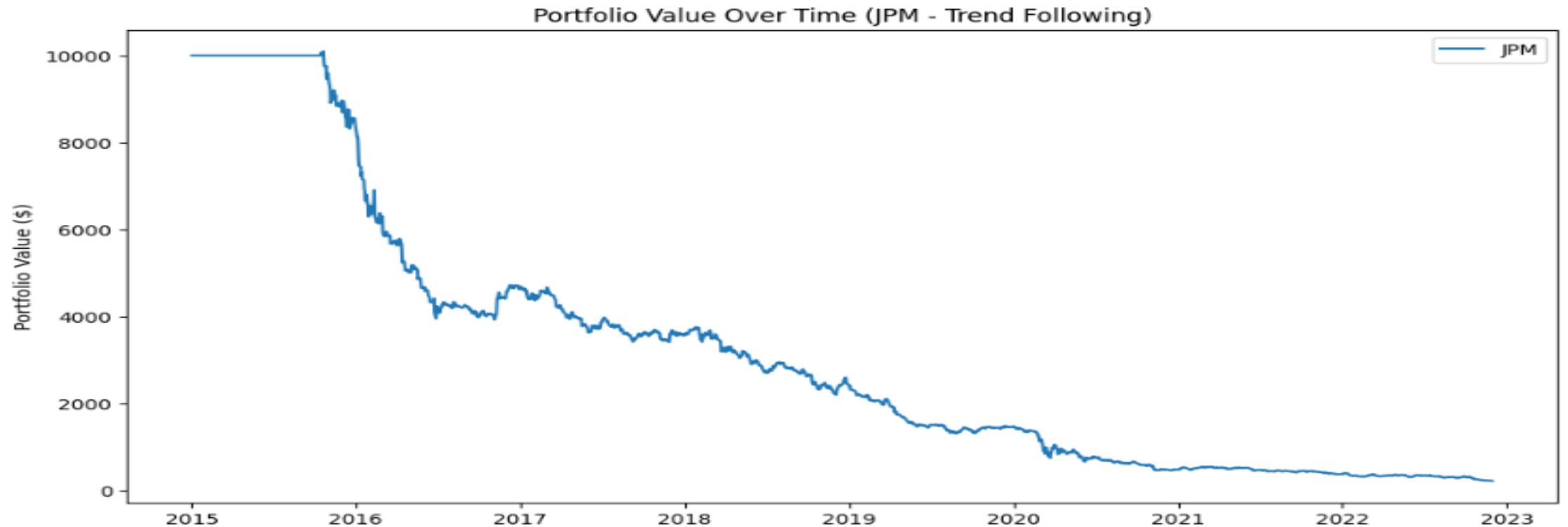
## Strategy Outcome (JPM):



Processing JPM...

JPM Performance Criteria Check:  
Annual Return > 5%: Failed  
Sharpe Ratio > 0.8: Failed  
Maximum Drawdown > 50%: Failed  
Overall: Fail

Annual Return: -38.45%  
Sharpe Ratio: -1.61  
Maximum Drawdown: -97.87%



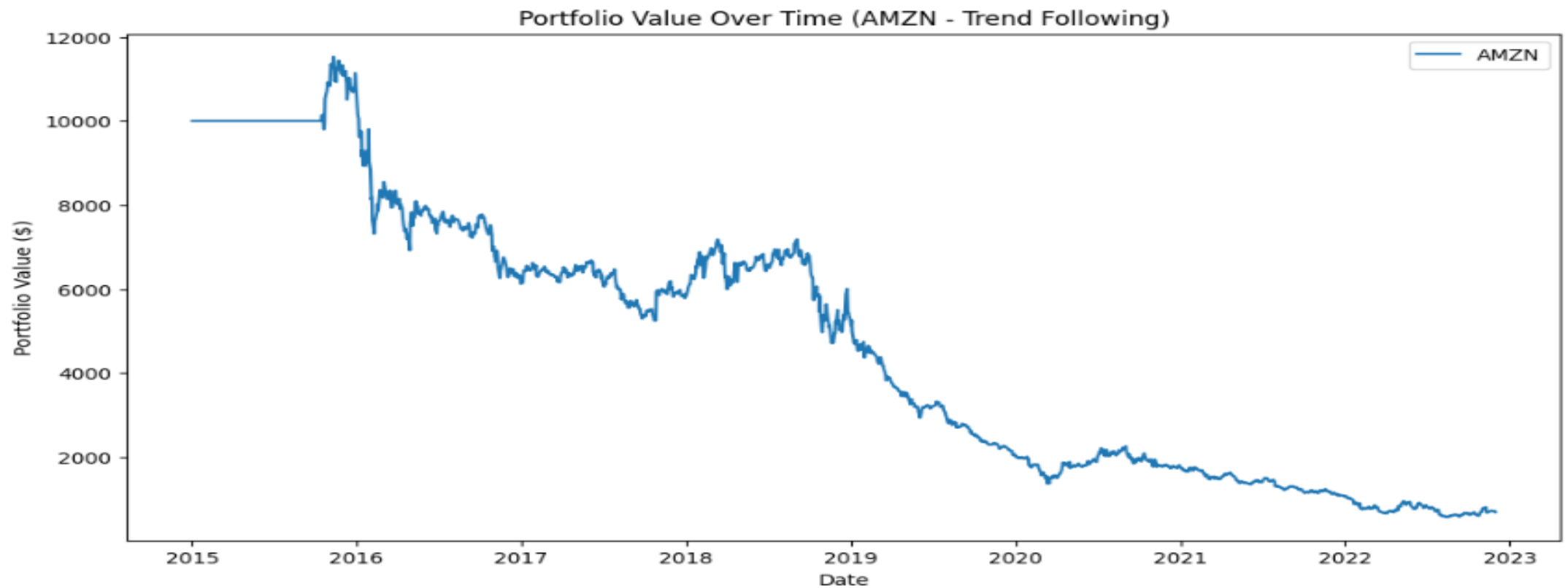


## Strategy Outcome (AMZN):

Processing AMZN...

AMZN Performance Criteria Check:  
Annual Return > 5%: Failed  
Sharpe Ratio > 0.8: Failed  
Maximum Drawdown > 50%: Failed  
Overall: Fail

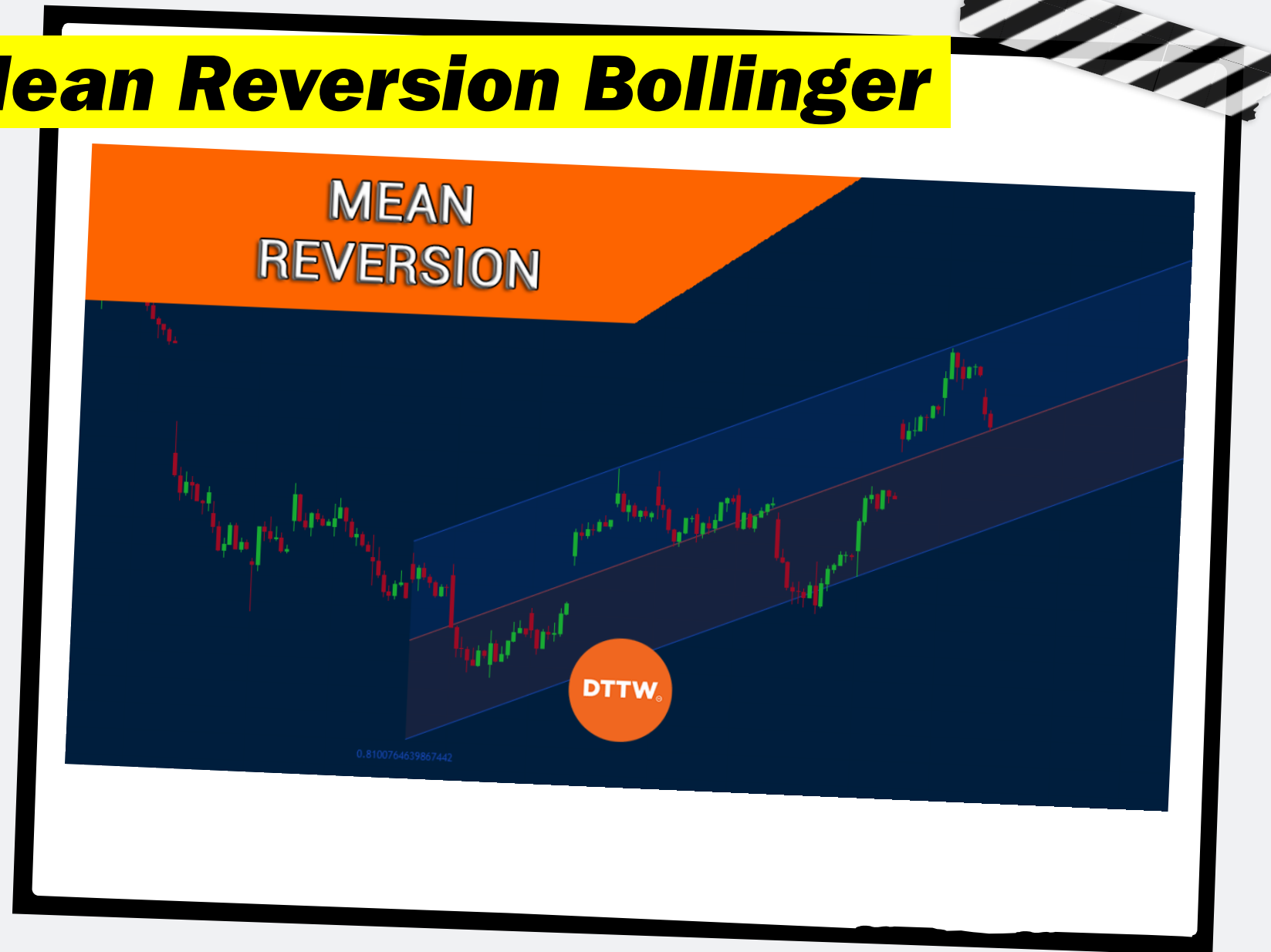
Annual Return: -28.78%  
Sharpe Ratio: -0.92  
Maximum Drawdown: -95.09%



# Strategy 2: Mean Reversion Bollinger

## Bands

- Uses Price Volatility to identify overbought or oversold conditions.
- Capitalizes on Price corrections.



# **"Strategy 2: Mean Reversion Bollinger Bands"**

- This strategy leverages Bollinger Bands, a popular technical analysis tool, to identify price volatility and potential overbought or oversold conditions in the market.
- Definition: Bollinger Bands consist of a middle band (a simple moving average) and two outer bands (standard deviations away from the moving average). These bands dynamically adjust based on market volatility.
- Key Insight: The strategy capitalizes on the principle of mean reversion, where asset prices tend to revert to their average over time.
- How it works:
  - When the price moves towards the upper band, it signals that the market might be overbought, potentially leading to a reversal downward.
  - Conversely, when the price moves towards the lower band, it suggests the market might be oversold, indicating a potential upward correction.
- This strategy is particularly effective for traders aiming to profit from price corrections, using the natural oscillations around the mean to identify trading opportunities



## Strategy Outcome:

```
Results for NVDA & AAPL:  
  Annual Return > 5%: -0.26 (Failed)  
  Sharpe Ratio > 0.8: -2.13 (Failed)  
  Max Drawdown < 50%: -0.91 (Failed)  
Pass Criteria: No
```

```
-----  
Processing pair: NVDA & TSLA...
```

```
Results for NVDA & TSLA:  
  Annual Return > 5%: -0.70 (Failed)  
  Sharpe Ratio > 0.8: -3.69 (Failed)  
  Max Drawdown < 50%: -1.00 (Failed)  
Pass Criteria: No
```

```
-----  
Processing pair: NVDA & NFLX...
```

```
Results for NVDA & NFLX:  
  Annual Return > 5%: -0.48 (Failed)  
  Sharpe Ratio > 0.8: -2.40 (Failed)  
  Max Drawdown < 50%: -0.99 (Failed)  
Pass Criteria: No
```

```
-----  
Processing pair: NVDA & META...
```

```
Results for NVDA & META:  
  Annual Return > 5%: -0.36 (Failed)  
  Sharpe Ratio > 0.8: -1.94 (Failed)  
  Max Drawdown < 50%: -0.97 (Failed)  
Pass Criteria: No
```

```
-----  
Processing pair: NVDA & ADBE...
```

```
Results for NVDA & ADBE:  
  Annual Return > 5%: -0.19 (Failed)  
  Sharpe Ratio > 0.8: -1.07 (Failed)  
  Max Drawdown < 50%: -0.82 (Failed)  
Pass Criteria: No
```

```
-----  
Processing pair: NVDA & CRM...
```

```
Results for NVDA & CRM:  
  Annual Return > 5%: -0.24 (Failed)  
  Sharpe Ratio > 0.8: -1.49 (Failed)  
  Max Drawdown < 50%: -0.89 (Failed)  
Pass Criteria: No  
-----
```



# Strategy 3: Market Making

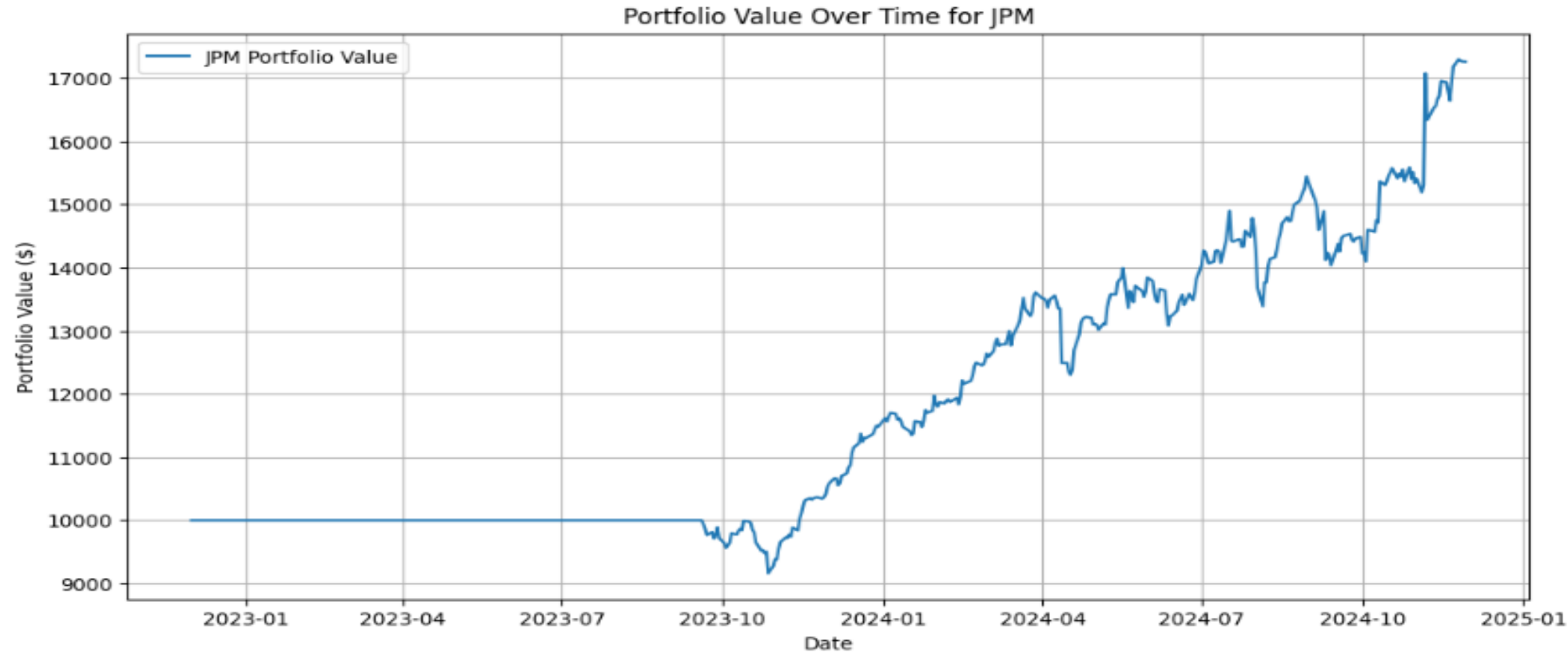
- Market making is the practice of providing liquidity to financial markets by continuously offering to buy and sell an asset, profiting from the bid-ask spread.
- Continuously Buying and Selling an asset, profiting from the bid-ask spread.
- Benefits from frequent, small trades with minimal directional risk.





# Strategy Outcome(JPM):

JPM Performance Criteria Check:  
Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Overall: Pass  
Annual Return: 33.53%  
Sharpe Ratio: 1.68  
Maximum Drawdown: 8.72%



# ***Strategy outcome (JPM)***

- The JPM strategy performed exceptionally, meeting all criteria:
- Annual Return: 33.53% (above 5%).
- Sharpe Ratio: 1.68 (well above 0.8, indicating excellent risk-adjusted returns).
- Max Drawdown: 8.72% (well below 50%, demonstrating minimal risk).
- The portfolio value consistently grew from \$10,000 to over \$17,000, with strong upward momentum and minimal drawdowns. Overall: Pass.



# Strategy Outcome(AMZN):

AMZN Performance Criteria Check:  
Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Overall: Pass  
Annual Return: 26.01%  
Sharpe Ratio: 1.04  
Maximum Drawdown: 18.21%



# **Strategy outcome (AMZN)**

- The AMZN strategy performed well, meeting all criteria:
- Annual Return: 26.01% (above 5%).
- Sharpe Ratio: 1.04 (above 0.8, indicating good risk-adjusted returns).
- Max Drawdown: 18.21% (below 50%, showing controlled risk).
- The portfolio value grew steadily from \$10,000 to around \$15,000, with recoveries after minor dips, indicating strong and consistent performance. Overall: Pass.





## Strategy 4: Momentum

- Based on two indicators: RSI( Relative Strength Index) and MACD(Moving Average Convergence Divergence)
- RSI:It shows whether momentum is accelerating or decelerating by generating a measurement of how overbought or oversold a security is
- MACD: helps to decipher whether new trends are either bullish or bearish
- It helps get profits from sustained price movements  
buying high and selling higher





## Strategy Outcome:

### NVDA Performance Criteria Check:

Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Annual Return: 7847.32%  
Sharpe Ratio: 12.55  
Maximum Drawdown: 0.00%

NVDA - Performance criteria met!.

### AAPL Performance Criteria Check:

Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Annual Return: 1006.33%  
Sharpe Ratio: 10.78  
Maximum Drawdown: 0.00%

AAPL - Performance criteria met!.

### TSLA Performance Criteria Check:

Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Annual Return: 18798.02%  
Sharpe Ratio: 12.90  
Maximum Drawdown: 0.00%

TSLA - Performance criteria met!.

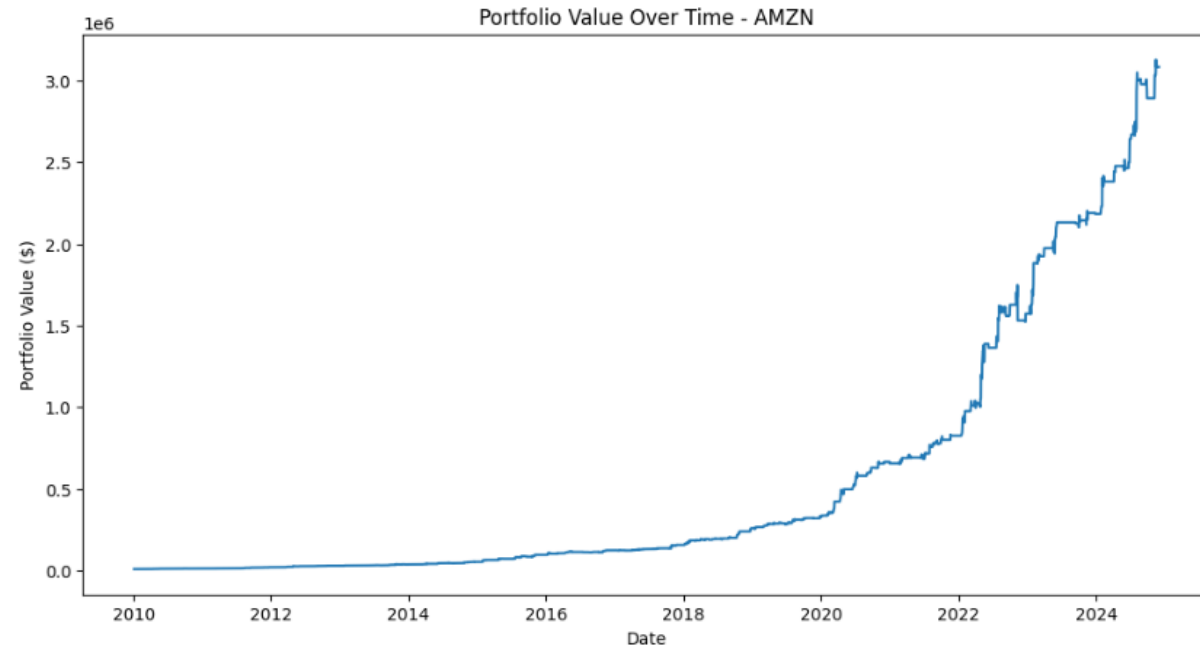
### NFLX Performance Criteria Check:

Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Annual Return: 4945.61%  
Sharpe Ratio: 11.44  
Maximum Drawdown: 0.00%

NFLX - Performance criteria met!.

The best ticker is: AMZN

Annual Return: 46.53%  
Sharpe Ratio: 2.19  
Maximum Drawdown: -12.83%



- Many tickers passed the performance criteria
- Out of them Amazon was the best performer highlighting it as the most successful stock



# ***Final Decision: Market Making Vs Momentum***

- Other Strategies had zero to very minor success and these two have shown potential from their result.

Market Making:

```
AMZN Performance Criteria Check:  
Annual Return > 5%: Passed  
Sharpe Ratio > 0.8: Passed  
Maximum Drawdown < 50%: Passed  
Overall: Pass  
Annual Return: 26.01%  
Sharpe Ratio: 1.04  
Maximum Drawdown: 18.21%
```

Momentum:

```
The best ticker is: AMZN  
  
Annual Return: 46.53%  
Sharpe Ratio: 2.19  
Maximum Drawdown: -12.83%
```

- Trading on the stock of Amazon using Momentum strategy clearly gives better yield and showed success for more tickers.





## ***Conclusion:***

- Using Momentum strategy on Amazon stocks, we will be able to more than quadruple your investment in 5 years with consistent 46.53% annual returns.
- We may also use this strategy to other stocks and get a rewarding return of investment.

