Reversion Trade (DRP): Earnings Announcements

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Trade Thesis

- We believe that there is a De-risking Period (DRP) that takes place ahead of Earnings Announcements for stocks that have showed positive momentum ahead of earnings
    - From a Psychology perspective, we believe traders will look to take profit ahead of uncertainty of earnings announcements if the stock has had positive momentum and price movement going into earnings season
- We test this thesis on the constituents of Vaneck Semiconductor ETF (**SMH**) due to the fact that we first observed the DRP behavior within this group of stocks

Trade Thesis (contd.)

- In order to trade around this theory, we want place a limit order to buy before derisking occurs and buy the stock at 2% lower than the close on that day
- There is a point T-X days before earnings that is optimal for placing the limit order (essentially the beginning of the DRP)
    - For the purposes of our algorithm on average we found this to be T-5 days
- Similarly we will place an exit limit order to sell as soon as the limit to buy is filled so we can take profit once the stock reverts back from derisking
    - This all applies under the assumption that over the long run derisking occurs due to no fundamental negative news about the company

Stock Filtering: Two Methods

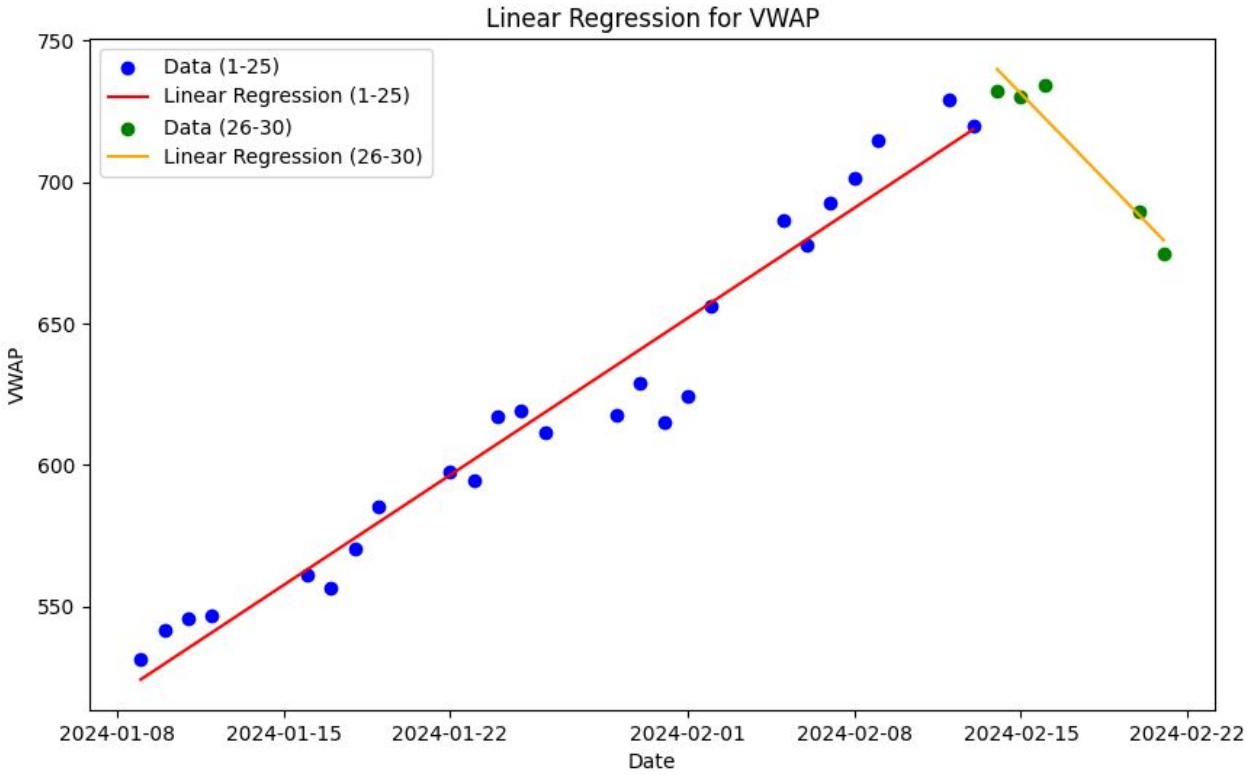
Filtering Linearly:

- Extract data from Refinitiv for 30 days before earning announcement (EA) & 10 days after
- From 30 to 25 days prior to the EA, perform a linear regression on the VWAP values against the date
  - should be a positive slope
  - Constraint: (slope > 0.13) to pass filter
- For the 5 day derisking period, perform a linear regression also on VWAP against date
  - should be negative slope to represent derisking
  - Constraint: (slope<0)
- Need stocks to pass both filters

Filtering with Percent-Change:

- Use same extracted data as linear filtering
- Instead of using linear regression slopes, normalize the data, calculate the percent change in VWAP
  - 30 to 25 days prior to EA
  - 5 day derisking period prior to EA
- Constraint: Filter out stocks with less than 3% change
- In order for a stock to “pass” the filter, more than 50% of earnings announcements have to pass the constraint

Linear Data Filtering Visualized



Filtering Results

Linear Filtering:

The average of slopes for rows 1-25 is: 0.1828519661241647
The average of slopes for rows 26-30 is: 0.32951528926403817

Stocks that Pass Upward Linear Filtering (# of slopes > 0.13 per stock)

AMAT.O 9
AMD.O 11
ASML.O 10
AVGO.O 14
INTC.O 3
LRCX.O 12
NVDA.O 12
QCOM.O 11
TSM 5
TXN.O 10

Stocks that Pass Downward Linear Filtering (# of slopes <0 per stock)

AMAT.O 7
AMD.O 12
ASML.O 8
AVGO.O 8
INTC.O 8
LRCX.O 13
NVDA.O 11
QCOM.O 6
TSM 4
TXN.O 10

3 Stocks that passed both linear filters: AMD.O, LRCX.O, NVDA.O

*Note: Linear filtering proved to be stricter than percent change filtering

Percent-Change Filtering:

The average percentage-change for rows 1-25 is: 4.144798201115389
The average percentage-change for rows 26-30 is: 1.3060607456398767

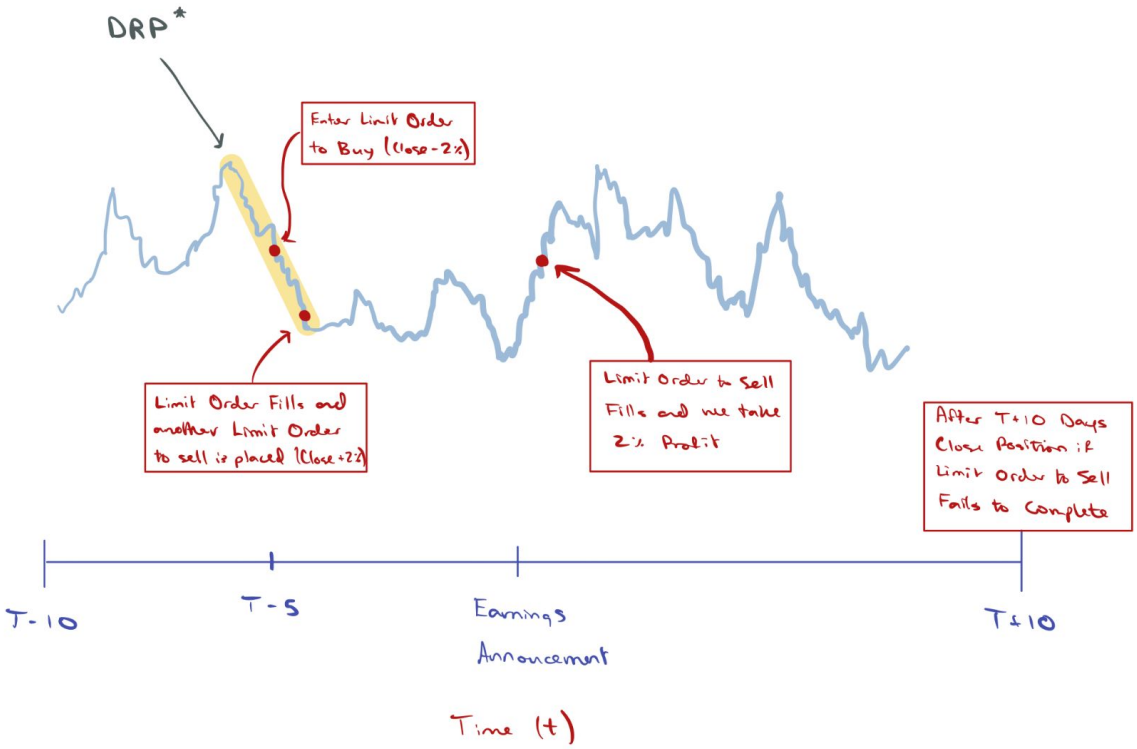
Number of percentage changes greater than 3 percent for 30-25 days before the earnings annoucement (rows 1-25 of the data):

AMAT.O 14
AMD.O 11
ASML.O 10
AVGO.O 10
INTC.O 10
LRCX.O 8
NVDA.O 12
QCOM.O 11
TSM 12
TXN.O 10

5 Stocks that passed Percent-Change filtering: AMAT.O, AMD.O, NVDA.O, QCOM.O, TSM

Full Lifecycle Trade Example

- Entry
  - Place limit order at (T-5 days) to buy the stocks that have passed the filter at 2% lower than the closing price (at T-5)
- Once this fills immediately place another limit order to sell at 2% higher than the original limit fill price
- Exit
  - The limit order to sell will fill or we exit the position at (T+10 days)



Full Life Cycle Trade Results (Match Blotter)

Stock,Date,Batch,Limit Order Price,First Trigger Date,Low Price,Exit Price,First Trigger Exit Date,First Trigger Exit Price,Profit/Loss (Dollars),Profit/Loss (%)
NVDA.O,2024-02-13,1,706.8543999999999,2024-02-20,677.34,728.060032,2024-02-22 00:00:00,728.060032,21.205632000000037,3.0000000000000053
NVDA.O,2024-02-14,1,724.22,2024-02-15,724.0,745.9466000000001,2024-02-22 00:00:00,745.9466000000001,21.726600000000076,3.00000000000001
NVDA.O,2024-02-15,1,712.0484,2024-02-20,677.34,733.409852,2024-02-22 00:00:00,733.409852,21.361451999999986,2.999999999999998
NVDA.O,2024-02-16,1,711.6074,2024-02-20,677.34,732.955622,2024-02-22 00:00:00,732.955622,21.348221999999964,2.999999999999995
NVDA.O,2024-02-20,1,680.6296,2024-02-21,662.48,701.048488,2024-02-22 00:00:00,701.048488,20.418888000000038,3.0000000000000058
NVDA.O,2023-11-14,2,486.6288,2023-11-15,482.0,501.227664,2023-11-22 00:00:00,501.227664,14.598863999999992,2.9999999999999982
NVDA.O,2023-11-20,2,494.0082,2023-11-21,492.22,508.828446,It did not fill,455.03,-38.978200000000015,-7.890192915826097
NVDA.O,2023-08-16,3,426.1628,2023-08-18,416.6,438.94768400000004,2023-08-24 00:00:00,438.94768400000004,12.784884000000034,3.000000000000008
NVDA.O,2023-08-17,3,424.7663,2023-08-18,416.6,437.509289,2023-08-24 00:00:00,437.509289,12.742989000000023,3.0000000000000053
NVDA.O,2023-08-21,3,460.27660000000003,2023-08-22,453.331,474.08489800000007,2023-08-24 00:00:00,474.08489800000007,13.808298000000036,3.0000000000000075
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Full Life Cycle Trade Summary

Linear Filtering:

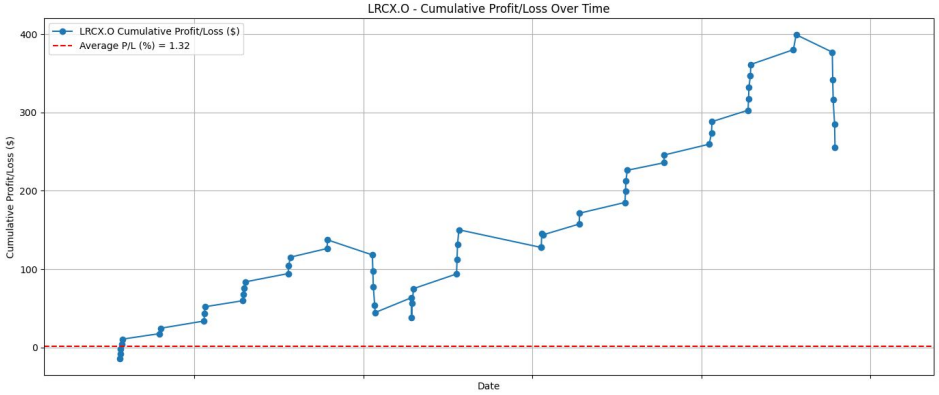
Total Stocks Passed Filter: 3
Total Successful Entry Limit Orders Filled: 167
Successful Entry Limit Order Percentage: 56%
Total Exit Orders that did not Fill: 30
Percent of Exit Orders that did not Fill: 17.96%

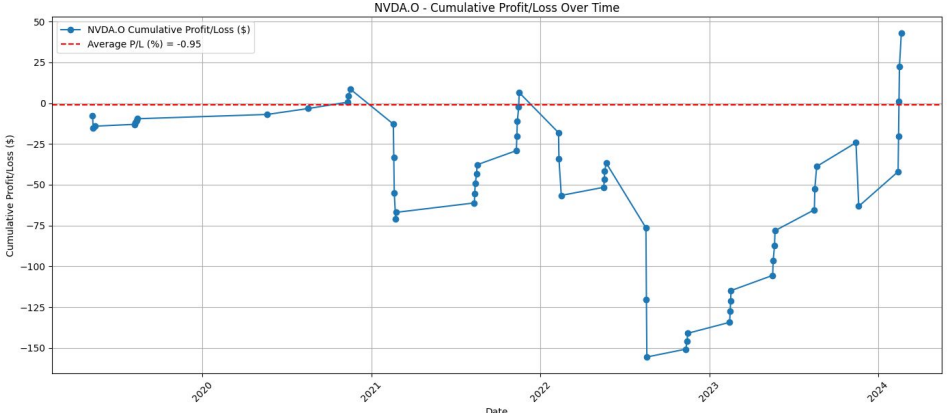
Percent-Change Filtering:

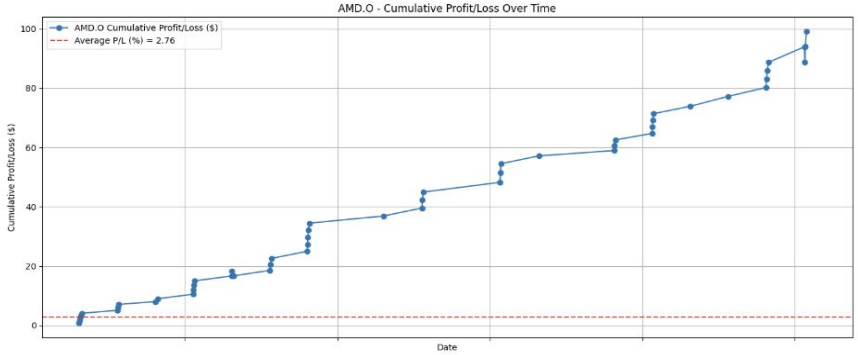
Total Stock Passed Filter: 5
Total Successful Entry Limit Orders Filled: 249
Successful Entry Limit Order Percentage: 49.8%
Total Exit Orders that did not Fill: 68
Percent of Exit Orders that did not Fill: 27.30%

- The stricter, linear filtering method showed less stocks passing the filter compared to the percent-change filtering method
- As a result of more stocks passing the less strict percent-change filtering, there are more successful exit limit orders filled
- The percent of Entry Limit Order success was higher with linear filtering
- The percent of exit orders that did not fill was higher with percent change filtering

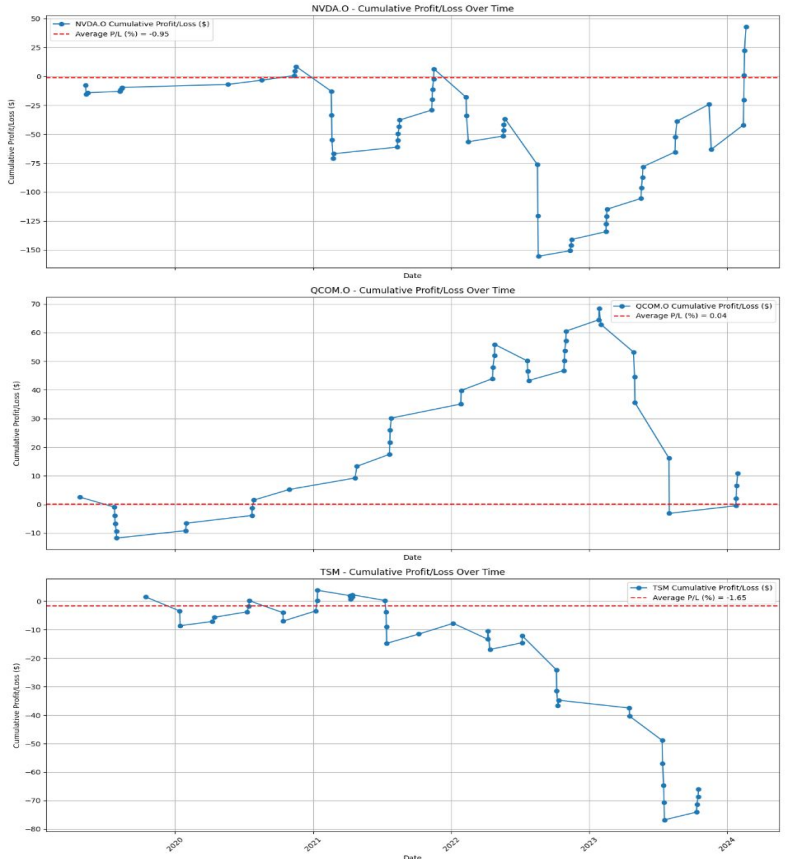
Profit and Loss - Linear Filtering

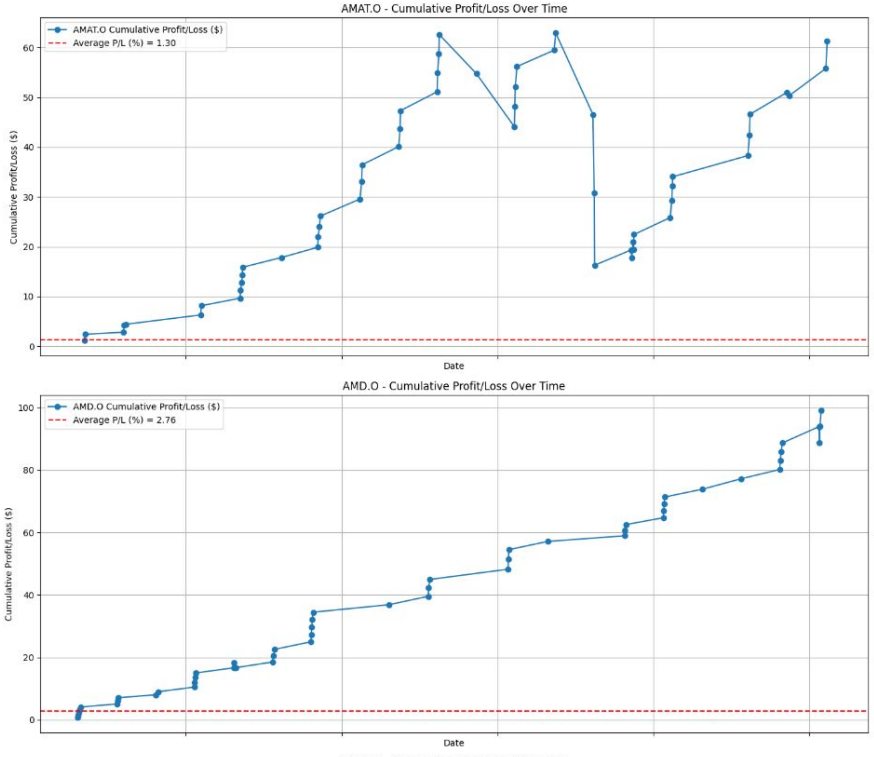






Profit and Loss: Percentage Change Filtering





Profit/Loss Summary

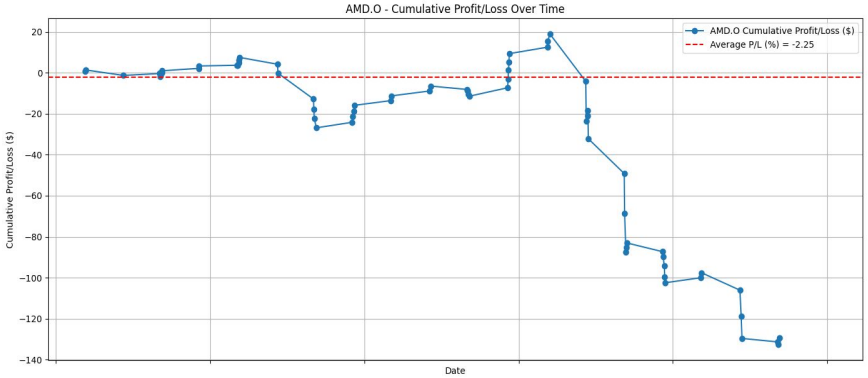
Linear:
Total Profit/Loss ($): 396.9531200000009
Average Profit/Loss (%): 0.9636761478981037
Average Profit Per Trade: $2.38

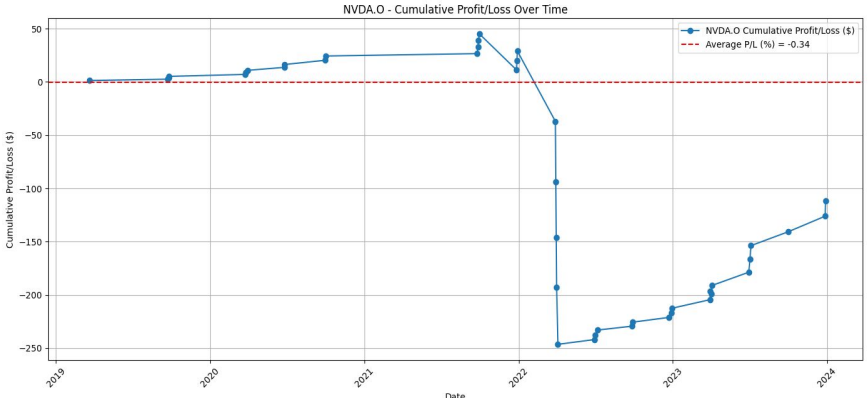
Percent Change:
Total Profit/Loss (Dollars): 148.221869000001
Average Profit/Loss (%): 0.32491559702602624
Average Profit Per Trade: $0.60

- The stricter Linear filtering method is overall more successful compared to the percent-change filtering method, showcasing a higher profit in USD and profit percentage

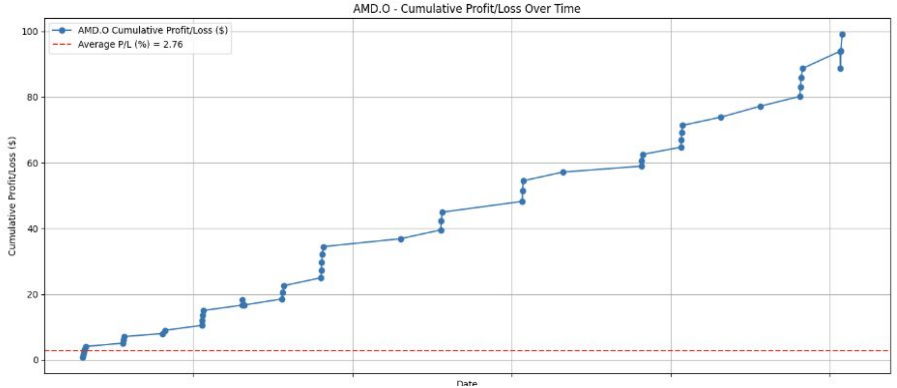
Comparison: Applying the Same Method in the middle of the Quarter

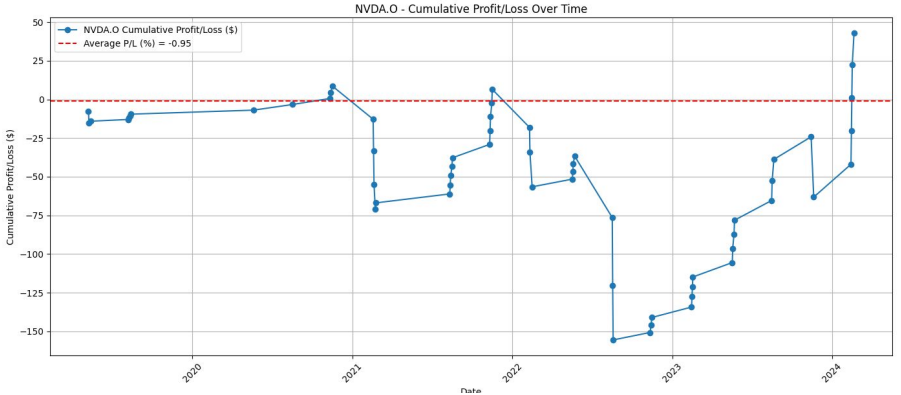
Not during derisking period (middle of the quarter)





During derisking period





Future Work

- Filter for a wider range of stocks
  - Try to isolate specific sectors or groups of companies that make this strategy more profitable (outside of just **SMH**)
- Implement Machine Learning (Optimization of Algorithm)
  - Find the optimal point for each stock in our expanded pool to place the limit order to buy
    - At what point is it the most profitable to enter this trade?
  - On the same token we would want to find the optimal point to exit (both from a time and Percentage profit perspective)
    - At what point is it the most profitable to exit?
  - If the limit order to sell doesn't fill what is the optimal point from a profit perspective to close the trade
- Test to see if there are other announcements related to company fundamentals (i.e. Analyst Days) that the DRP applies