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Assignment 1

Assumptions:

We are buying/selling at the open and adj\_close price, and our algorithm depends on these two values, regardless of dividend devaluation.

Rounding takes place after each calculation.

* Shares bought/sold are first calculated for each day and rounded to 2 decimal places.
* End of day profit is calculated using the number of shares \* adj\_close rounded to 2 decimal places.
* Finally, total Profit/Loss (including the initial day investment) for the day is rounded to 2 decimal places.

While price per share was discussed, there is no requirement it needs to be included in the assignment answers, therefore calculations of per share per day were left out.

The Stock Ticker ‘WMT’ was used.

**Question 1:**

Average daily profit was calculated as the following:

If current day open > previous adj\_close:

Go Long:

If current day open < previous adj\_close:

Go Short:

Adding each day’s total profits divided by the total number of days:

Average total daily profit: **$-7.61**

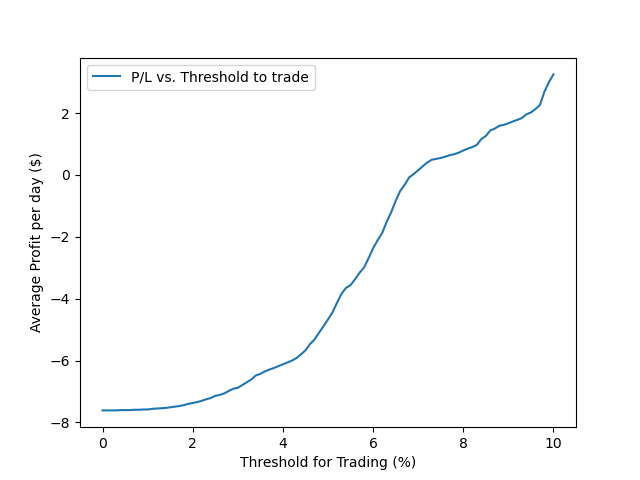
**Question 2:**

Long position profit: $-11,490.98

Short position profit: $13.98

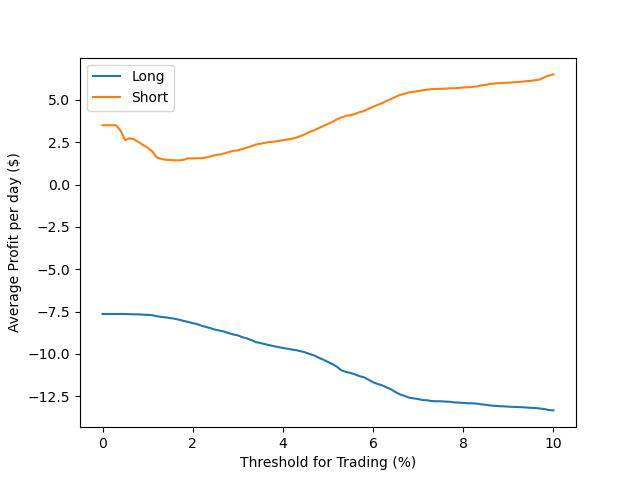
The short position profits are higher than the long position profits. It seems that due to dividend re-adjustment, there are calculations in here that aren’t reflected in our trading algorithm. Most of the time, adj\_close will always be lower than open, and we’ll almost always be losing money on a long trade, since adj\_close tends to be less than open by a significant amount.

**Question 3:**



Since the majority of the time when we go long, it’s always a loss (adj\_close < open) for most days, by increasing said threshold, we’re going to reduce our long trading days, which increases our profit per share (since our short trades almost always make money). By increasing threshold, we are only going to be trading on heavy gap up days, which generally results in profits at end of day. This pattern seems to only be monotonic increasing, which means 10% might not be an optimal threshold. Raising that threshold may yield a maximum profit per day. Results may be skewed towards our short positions making more money as well (since the threshold to short is already high due to the calculation of adj\_close to open being skewed by dividend calculation). Regardless, increasing threshold has the problem of trading less, which can decrease total profit despite a higher profit per day average.

**Question 4:**

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It seems that while profits decrease for going long, there are less trades, and more money per day on average comes from the increased number of short position profits that are made. Ironically, if we never went long with this strategy, we would see a significant increase in average profit per day.