

## 1 Research (1-2 hours)

Keep researching on the topic on your own. I suggest you dive deeper into one of the topics you brought up on Wednesday. Try to find an equation or concept you can show the group on the next meeting! The idea is to share something with the group that we may all learn from so try to go beyond surface level understanding.

## 2 RSI Mean Reversion Strategy Testing (2-3 hours)

Great work last week! For this week I would like you both to complete any leftover work you had left from last week's assignment; I recall both of you had some difficulties in some areas. (You don't have to do any of the engulfing patterns and onward from the tutorial.)

Now that you have learned to plot different indicators and understand how they work I would like you to compare how they fare against a simple buy and hold strategy where you buy on the first day and sell on the last day:

$$\text{Return} = \frac{\text{Price}_{\text{last}} - \text{Price}_{\text{first}}}{\text{Price}_{\text{first}}}$$

Using the S&P 500 (\$SPY) over the last 5 years as your data,

1. The total return achieved
2. The total number of trades and how many are winning and losing
3. The win%
4. The average return per trade
5. The maximum and minimum prices during the given time period
6. The Max Draw Down:  $\text{MDD} = \frac{\text{Trough value} - \text{Peak value}}{\text{Peak value}}$
7. The Annual Sharpe Ratio:  $S = \frac{\text{average}(R_p - R_f)}{\text{stddev}(R_p)} \times \sqrt{252}$  where  $R_p$  is the strategy's daily return rate,  $R_f$  is the daily return of a 4% yearly bond ( $\frac{4\%}{252}$  since there are 252 trading days per year). We annualized the daily Sharpe ratio by multiplying it by  $\sqrt{252}$ .

You can just print these out or make a table so that you can share your results easily with the group. If you have some extra time, play around with the RSI thresholds and see if it leads to improvement.

## Notes (reminders from last week)

- Try to aim for 4 hours of work per week (3-5 hours is the recommended amount). Feel free to do more if you want but there is zero pressure to do so!
- Remember that if you are struggling with anything you can ask me questions anytime! (Yes even on weekends and evenings; I try to respond as soon as I can. I'm not online 24/7 but you don't have to wait until Monday 8am to ask me questions, I'll reply once I see it)