Mid Semester Presentation of Findings

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Introduciton

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Types of Investment Strategies

Fundamental Analysis utilizes financial information associated with an equity to identify whether an equity is undervalued or overvalued.

Technical Analysis is the broad range of strategies that are result of advancements in computational power which can identify investment opportunities.

I will be focusing on technical analysis as it is more based on a data scientist approach compared to a financial understanding which is at the root of fundamental analyst.

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The only data source that I have used is the YFinance API. Essentially it pulls the data from Yahoo Finance down to easily usable data.

The only data that is used in technical analysis is the historical price data. Using a predefined function it pulls data into to look like this.

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You can customize the data to have different frequencies, here you can see it is per day. You can choose different timespans to observe. All of this data is called the candlestick data.

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However I will only be looking at the close data value for each day.

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The goal of the project: Test different technical analysis investment strategies to find the optimal one to implement.

If you were to use this at face value you are going to overfit on historical data and end up going a pretty weak model so the following approaches will be taken to mitigate the chance of this occurring

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When choosing the stocks to backtest your model on, how should you decide on just a few stocks to represent so much of the market?

Well you can use an ETF which is an exchange traded fund which is basically a collection of dozens to hundreds of stocks all representing a portion of the value of the ETF.

Here is an example of an ETF and you can see the different % makeup for the top 10 largest % stocks, this is for a technology sector ETF

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These different sectors are made up from the GICS, which essentially is meant to represent each different component on the overall economy.

I have chosen the largest volume traded sector ETF to backtest models on to reduce the chance of overfitting to a specific type of stock.

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The other factor that needs to be considered is the time period of the backtesting.

As you can see if you were to invest in 2008 you are going to get drastically different results compared to investing in 2014. This is because of state of economic activity.

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This information is all quite necessary when I show you the models, so I hope that wasn’t too much information.

Essentially we are backtesting different investment strategies on historical data, utilizing ETFs and a variety of macroeconomic cycles to optimize a generalized model.

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Baseline Buy and Hold Strategy

To get overall results the backtesitng needs to happen hundreds if not thousands of time. Which is quite a lot of iterations. However about 1000 iterations does work in about a minute of computing.

The investment lasts 90 days and it will involve purchasing a single stock on a random given day, this process is repeated 1000 times.

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Talk through results

Standard deviation is something that needs to be considered for risk but I am focusing more on average returns.

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Relative strength index

You essentially look at the average returns

Compared to the average loss

Over a given time period