Four Step Process of Any Basic Trading Strategy

1. Hypothesis formation
2. Testing
3. Refining
4. Production

Our hypothesis is formulated as “market is mean reverting”. Mean reversion is a theory that suggests that the prices eventually move back to their average value. The second step involves testing the hypothesis for which we formulate a strategy on our hypothesis and compute indicators, signals and performance metrics. The testing phase can be broken down into three steps, getting the data, writing the strategy and analyzing the output. In this example we consider NIFTY-Bees. It is an exchange traded fund managed by Goldman Sachs. NSE has huge volume for the instrument hence we consider this. The image below shows the Open-High-Low-Close price of the same.

We set a threshold level to compare the fluctuations in the price. If the price increases/decreases we update the threshold column. The closing price is compared with the upper band and with the lower band. When the upper band is crossed, it is a signal for sell. Similarly when the lower band is crossed, it is a signal for sell.

**The coding section can be summarized as follows,**

* Adding indicators
* Adding signals
* Adding rules

A helicopter view towards the output of the strategy is given in the diagram below.

Thus our hypothesis that market is mean reverting is supported. Since this is back-testing we have room for refining the trading parameters that would improve our average returns and the profits realized. This can be done by setting different threshold levels, more strict entry rules, stop loss etc. One could choose more data for back-testing, use Bayseian approach for threshold set up, take volatility into account.

Once you are confident about the trading strategy backed by the back-testing results you could step into live trading. Production environment is a big topic in itself and it’s out of scope in the article’s context. To explain in brief this would involve writing the strategy on a trading platform.

As mentioned earlier, we would be building the model using quantstrat package. Quantstrat provides a generic infrastructure to model and backtest signal-based quantitative strategies. It is a high-level abstraction layer (built on xts, FinancialInstrument, blotter, etc.) that allows you to build and test strategies in very few lines of code.

**The key features of quantstrat are,**

* Supports strategies which include indicators, signals, and rules
* Allows strategies to be applied to multi-asset portfolios
* Supports market, limit, stoplimit, and stoptrailing order types
* Supports order sizing and parameter optimization

In this post we build a strategy that includes indicators, signals, and rules.