

Stock Technical Analysis with Python

Section 5: Strategies Performance
Comparison

Course Disclaimer

- This course has an educational and informational purpose and doesn't constitute any type of trading or investment advice. All conclusions reflect solely the instructor's opinions based on historical data and calculations with the possibility of future outliers not previously observed within this time series. Past performance doesn't guarantee future returns. Investment risk and uncertainty can possibly lead to its total loss for unleveraged products and even larger for leveraged ones.
- Therefore, the instructor is not responsible for any damages caused by using data, information, forecasts, opinions or conclusions for investment decisions; exclusively transferring all this responsibility to the student. Recommending that the student does own due-diligence based on several scenarios and assumptions before taking any forecasting or investment decision.

Strategies Performance Comparison

- **Strategies performance comparison** is done by using buy and hold strategy as benchmark against stock trading strategies based on single and multiple technical indicators. **Annualized return**, **annualized standard deviation** and **annualized Sharpe ratio** metrics are used for this assessment, among many others.

Annualized Return

- **Annualized return** is a performance metric calculated by cumulatively multiplying each daily return plus one and subtracting one at the end.

$$\text{Annualized Return} = \left[\prod_{t=1}^n (r_t(i) + 1) \right] - 1$$

$$(i)\text{Daily Return} = r_t = \frac{\text{Price}_t - \text{Price}_{t-1}}{\text{Price}_{t-1}}$$

Annualized Standard Deviation

- **Annualized standard deviation** is a risk metric calculated by multiplying daily standard deviation by the square root of two hundred and fifty two days.

$$\text{Annualized Standard Deviation} = \sigma(i) * \sqrt{252}$$

$$(i) \text{Daily Standard Deviation} = \sigma = \sqrt{\frac{1}{n} * \sum_{t=1}^n (r_t(ii) - \mu(iii))^2}$$

$$(ii) \text{Daily Return} = r_t = \frac{Price_t - Price_{t-1}}{Price_{t-1}}$$

$$(iii) \text{Average Daily Returns} = \mu = \frac{\sum_{t=1}^n r_t}{n}$$

Annualized Sharpe Ratio

- **Annualized Sharpe ratio** is a risk adjusted performance metric calculated by subtracting a risk free rate of return to the annualized return and dividing this result by annualized standard deviation (William F. Sharpe. "The Sharpe Ratio". *Journal of Portfolio Management*. Fall 1994.).

$$\text{Annualized Sharpe Ratio} = \frac{\text{Annualized Return} - \text{Risk Free Rate}}{\text{Annualized Standard Deviation}}$$