



Financial Analytics in Python

AGENDA OF THE VIDEO

- Introduction to the Field of Financial Analytics
- Types of Financial Data that we can analyse
- What is Stock of a Business?
- Stock Trading.
- What are the different variables of interest in stock Trading?
- Stock Market Data for different Organizations.
- Should i invest in this Stock? How to answer this question using Financial Analytics?
- Obtaining Returns from stock prices.
- Reward metrics. How can i assess the return of my stock?
- Risk metrics. How can i assess the risk of my stock?
- Risk adjusted metrics. Giving one number of assess my investment decision.
- Task for you... (Analyse the stock of your favorite company)

Introduction to the Field of Analytics

What is Analytics?

Analytics is a field of study where the main focus is to derive insights from the data.

Now, where there is data, analytics can be leveraged to the organizations advantage.

Financial analytics in particular deals with analytical method on Financial dataset (Business Profit/loss, Expenses, Stock Market, Share Market, Crypto Market, Banking Data) to derive business value for the concerned organization.

Finacial Data

1. Predictive Sales Analytics Data
2. Client Profitability analysis
3. Cash Flow
4. Value Driver Analytics
5. Stock Market Analytics
6. Financial Markets Trading Analytics

Business Stock

The whole business can be thought of as a pie and each shareholder has some share in that pie. Essentially, what shareholders hold is **stock**.

There is a value of the whole company and if we divide that by the number stocks, we get the price of each stock or share.

The value of company is not fixed throughout but rather keeps changing according to the market fluctuations.



Stock Trading



Now, suppose at a given day, a company has some 500 shareholders.

The next day it is necessary that the same shareholders will hold the shares in the company. It might happen that next day some other 500 shareholders are there for the same company.

This happens because every registered company who has stock participate in what is called as **stock trading**. Their stocks are traded. So, if a company's stock is increasing a lot, then it might happen someone decides to sell those to earn some return.

Variables of Interest in Stock Trading

Every day, Trading happens and at the end of each day, for each company's stocks, the following key parameters are important to kind of see how is company doing in the financial market:

1. Open Price Value
2. Closing Price Value
3. Lowest Price Value
4. Highest Price Value
5. Volume of sales

Stock Market Data For different Organizations

	date	open	high	low	close	volume	Name
1	2013-02-08	15.07	15.12	14.63	14.75	8407500	AAL
2	2013-02-11	14.89	15.01	14.26	14.46	8882000	AAL
3	2013-02-12	14.45	14.51	14.1	14.27	8126000	AAL
4	2013-02-13	14.3	14.94	14.25	14.66	10259500	AAL
5	2013-02-14	14.94	14.96	13.16	13.99	31879900	AAL
6	2013-02-15	13.93	14.61	13.93	14.5	15628000	AAL
7	2013-02-19	14.33	14.56	14.08	14.26	11354400	AAL
8	2013-02-20	14.17	14.26	13.15	13.33	14725200	AAL
9	2013-02-21	13.62	13.95	12.9	13.37	11922100	AAL
10	2013-02-22	13.57	13.6	13.21	13.57	6071400	AAL
11	2013-02-25	13.6	13.76	13.0	13.02	7186400	AAL
12	2013-02-26	13.14	13.42	12.7	13.26	9419000	AAL
13	2013-02-27	13.28	13.62	13.18	13.41	7390500	AAL
14	2013-02-28	13.49	13.63	13.39	13.43	6143600	AAL
15	2013-03-01	13.37	13.95	13.32	13.61	7376800	AAL
16	2013-03-04	13.5	14.07	13.47	13.9	8174800	AAL
17	2013-03-05	14.01	14.05	13.71	14.05	7676100	AAL
18	2013-03-06	14.52	14.68	14.25	14.57	13243200	AAL
19	2013-03-07	14.7	14.93	14.5	14.82	9125300	AAL
20	2013-03-08	14.99	15.2	14.84	14.92	10593700	AAL

Which stock should I invest in? How to answer this question?

```
# Recommendation of the Stock
```

```
# Step - 1 Import all the necessary Libraries
```

```
pandas, matplotlib, numpy
```

```
# Step - 2 Learn to Calculate the Returns
```

Defined as the Ratio of Previous day Price and Current Day Price

```
# Step - 3 Learn to Calculate the Return Metric
```

There are many Risk metric, two of the most commonly used ones are:

- 1) Effective Rate of Return

- 2) Average Rate of Return

```
# Step - 3 Learn to Calculate the Risk Metric
```

Learn to Compute the volatility of a Stock. The larger the volatility, the worse the stock (or is it? Can't volatility be better in any situation)

```
# Step - 5 Adjusted Metric
```

```
Learn to Compare two stocks by their Sharpe Ratio.
```

```
# Between two stock, which stock will be better, the one with large Adjusted
```

```
# Metric
```

Steps that we will follow for Finding the best stock?

Step - 1 Obtaining Returns from stock prices.

Step - 2 Reward metrics. How can i assess the return of my stock?

Step - 3 Risk metrics. How can i assess the risk of my stock?

Step - 4 Risk adjusted metrics. Giving one number of assess my investment decision.

Obtaining Returns for each Day/Month/Year

$$\text{Return for today} = \frac{\text{Closing Price For today} - \text{Closing Price For yesterday}}{\text{Closing Price For yesterday}}$$

Return Metrics

Effective Rate of Return

$$R_E = [(1 + R_1) (1 + R_2) \dots (1 + R_n)]^{\frac{1}{n}} - 1$$

Average Rate of Return

$$\text{Average Return} = \frac{\text{sum of returns}}{\text{number of returns}}$$

Risk Metric

Volatility of Returns

Volatility of returns is simply the standard deviation of the collections of return values.

$$\sigma = \sqrt{\frac{\sum (x_i - \mu)^2}{N}}$$

Risk adjusted Metrics

SHARPE RATIO

$$S = \left(\frac{R_p - R_f}{\sigma_p} \right)$$

The R_p is the effective rate of return while R_f is the benchmark rate of return and the denominator is volatility

Task For you..

Your task in this Financial Analytics Video is to Take all that you have learned in this video and try to work on other different types of stocks that the dataset has and try to come up with the answer to the following questions:

1. Which stock is having the best sharpe ratio?
2. Which stock has greatest volatility?
3. Which stock should you invest in from the data?