

**PROJECT
ON
FINANCE AND RISK ANALYTICS
(PART - B)**

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25-02-2024

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Problem 2

The dataset contains 6 years of information(weekly stock information) on the stock prices of 10 different Indian Stocks. Calculate the mean and standard deviation on the stock returns and share insights. You are expected to do the Market Risk Analysis using Python.

Ans:

- **Basic info:**

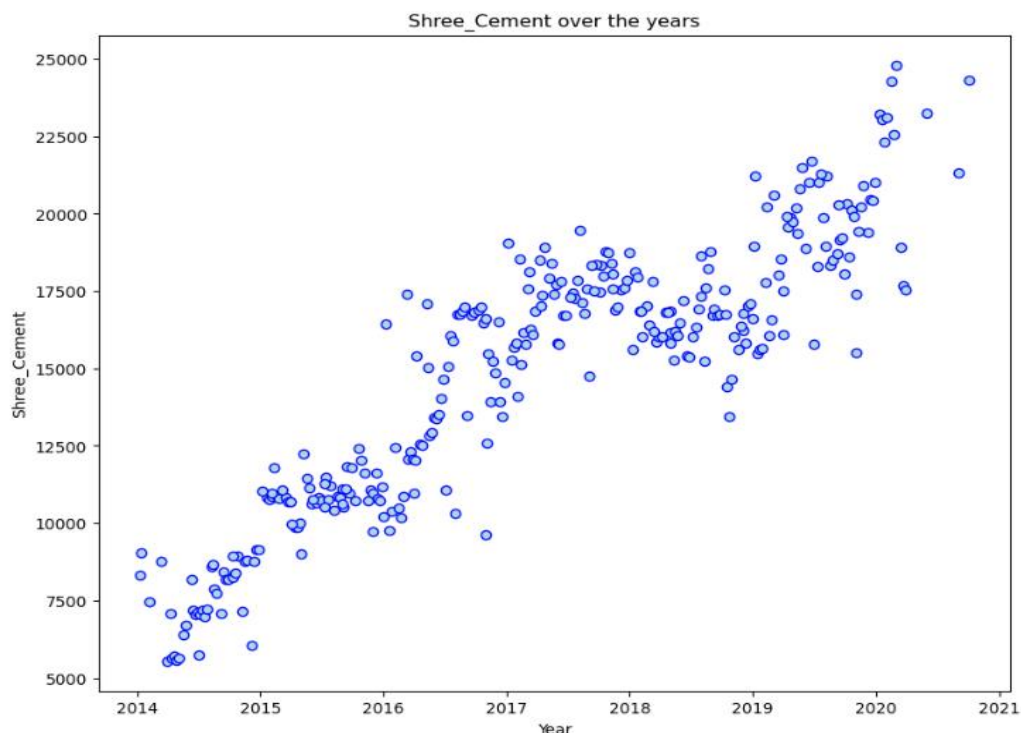
- There are 314 rows and 11 columns in the given data.
- There are 10 int64 and 1 object datatypes.
- There are no duplicates and no null values.

2.1 Draw Stock Price Graph (Stock Price vs Time) for any 2 given stocks with inference.

Ans:

i) **Shree Cement:**

Figure 1: Shree Cement stock prices over time



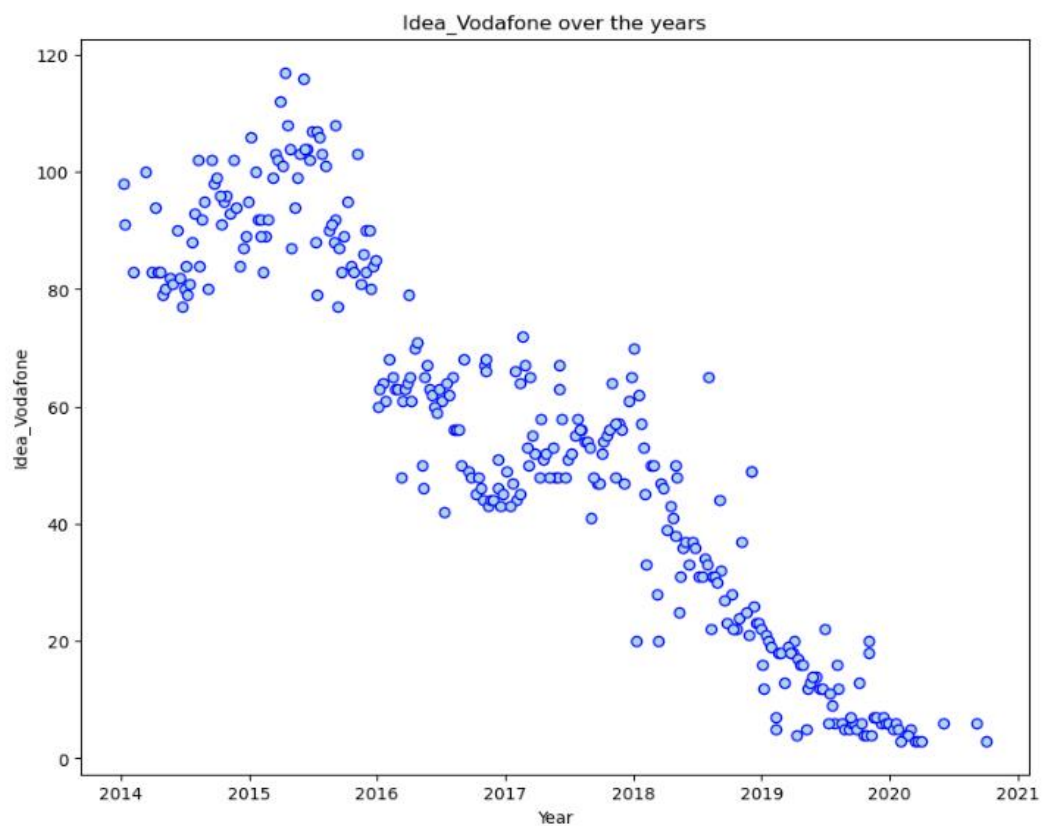
Observations

- We can observe an increase in stock prices over years.

- Stock prices ranged from 5543 to 24806 across years.
- Mean Stock price is 14806 across years.
- Sellers can hold or sell stocks at this price and buyers need to wait until the price comes down.

ii) **Idea Vodafone:**

Figure 2: Idea Vodafone stock prices over time



Observations

- We can observe a drastic decrease in stock prices over years.
- Stocks which were traded for 83 in 2014 has decreased to 3 in 2020.
- Idea Vodafone share price had gone up to 117 in 2015.
- It would be recommended to buy shares at this price, as it is the lowest.

2.2 Calculate Returns for all stocks with inference.

Ans:

Table 1: Returns for all stocks

	Infosys	Indian_Hotel	Mahindra_&_Mahindra	Axis_Bank	SAIL	Shree_Cement	Sun_Pharma	Jindal_Steel	Idea_Vodafone	Jet_Airways
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1	-0.026873	-0.014599	0.006572	0.048247	0.028988	0.032831	0.094491	-0.065882	0.011978	0.086112
2	-0.011742	0.000000	-0.008772	-0.021979	-0.028988	-0.013888	-0.004930	0.000000	-0.011978	-0.078943
3	-0.003945	0.000000	0.072218	0.047025	0.000000	0.007583	-0.004955	-0.018084	0.000000	0.007117
4	0.011788	-0.045120	-0.012371	-0.003540	-0.076373	-0.019515	0.011523	-0.140857	-0.049393	-0.148846
5	-0.031749	-0.015504	0.040656	0.061875	0.061558	0.011400	-0.008217	0.024898	0.012579	-0.016598
6	0.019981	0.060625	0.011881	0.076981	0.112795	0.067622	-0.016639	0.097543	0.048790	0.020705
7	-0.036221	0.199333	0.038615	0.059898	0.136859	0.056790	-0.049881	0.105732	-0.024098	0.169258
8	-0.041847	-0.012121	0.064183	-0.014642	-0.023530	0.048090	0.044835	-0.010084	-0.012270	-0.181630
9	0.135686	0.081917	-0.003559	0.071154	0.213574	0.105167	-0.018724	0.132686	0.024391	0.072031

Observations

- The maximum stock return of Infosys is 0.1357.
- The minimum stock return of SAIL is -0.2513.
- The minimum stock return of Axis Bank is -0.2848.
- The maximum stock return of Jet Airways is 0.3002.
- The minimum and maximum stock return of Shree Cement are -0.1292 and 0.1523.

2.3 Calculate Stock Means and Standard Deviation for all stocks with inference.

Ans:

- **Stock Means and Standard Deviation:**

Table 2: Stock Means and Standard Deviation

	Stock_means	Stock_standard_deviation
Infosys	0.002794	0.035070
Indian_Hotel	0.000288	0.047131
Mahindra_&_Mahindra	-0.001508	0.040189
Axis_Bank	0.001187	0.045828
SAIL	-0.003483	0.062188
Shree_Cement	0.003881	0.039917
Sun_Pharma	-0.001455	0.045033
Jindal_Steel	-0.004123	0.075108
Idea_Vodafone	-0.010808	0.104315
Jet_Airways	-0.009548	0.097972

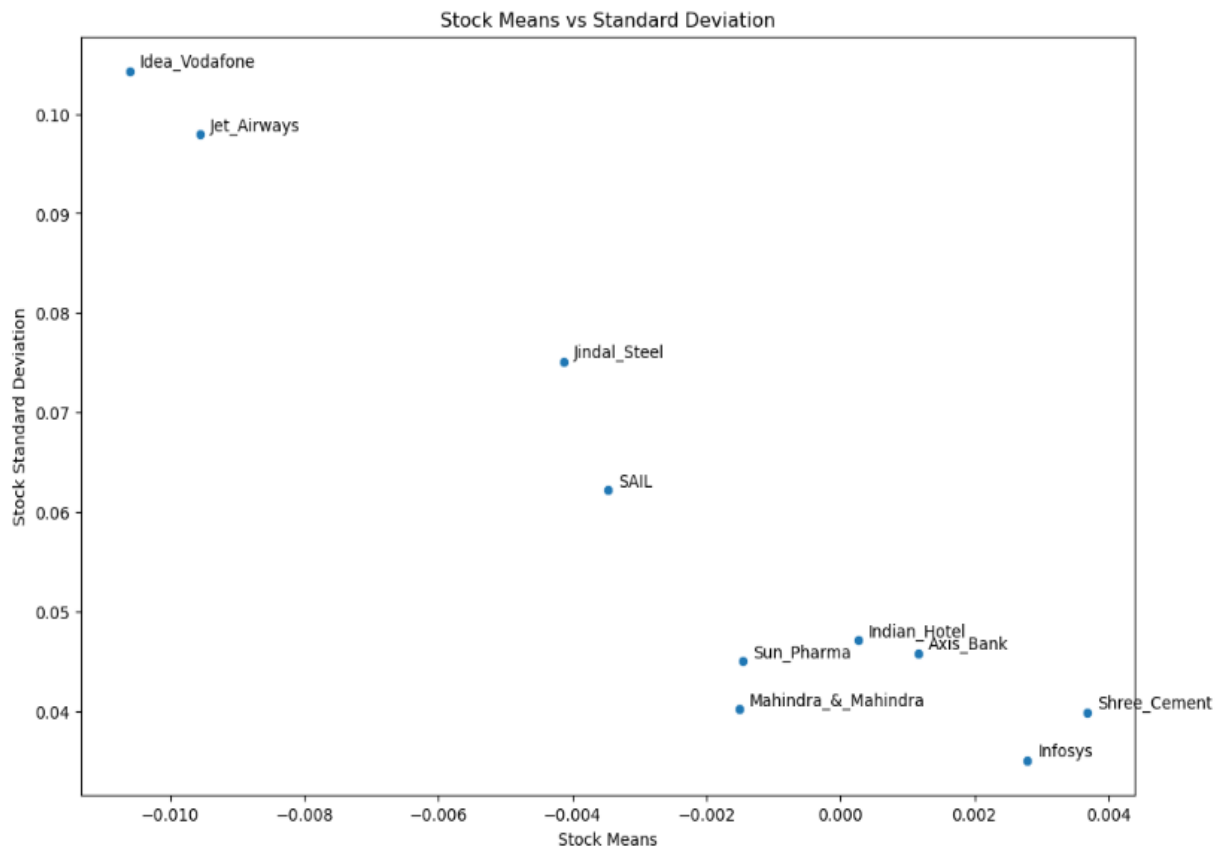
Observations

- Mean stock price of Mahindra & Mahindra is -0.0015.
- Mean stock price of Indian Hotel is 0.0002.
- Mean stock price of Jindal steel is -0.0041.
- Standard deviation of SAIL stock is 0.0622.
- Standard deviation of Infosys stock is 0.0028.
- Standard deviation of Sun Pharma stock is 0.0450.

2.4 Draw a plot of Stock Means vs Standard Deviation and state your inference.

Ans:

Figure 3: Stock Means vs Standard Deviation



Observations

- 'Idea Vodafone' stocks give the lowest return and are of high risk.
- 'Shree Cement' stocks are the ones with highest return and are of lower risk.
- 'Infosys' stocks have the lowest risk and gives second highest return when compared with the other provided stocks.

2.5 Conclusions and Recommendations.

Ans:

- **Conclusions:**

- 'Shree Cement', 'Infosys', 'Indian Hotel', 'Axis Bank' stocks are with lower risk and good returns.

- 'Sun Pharma', 'Mahindra & Mahindra' stocks have lower risk and neutral or close to neutral return.
- 'SAIL', 'Jindal Steel', 'Jet Airways' and 'Idea Vodafone' stocks are of high risk and lower return.
- Based on the investment decisions one can choose which segment of stocks they want to go ahead with, i.e., low risk – high return, high risk – low return, etc.

- **Recommendations:**

- Stocks such as 'Sun Pharma', 'Mahindra & Mahindra' are good for the investors who expect guaranteed returns. These kinds of stocks are less risky and would be good for long term investments.
- 'Jet Airways' stock is generally for the short-term investments, wherein we can expect high volatility, i.e., risk associated with it.
- 'Idea Vodafone' stock is decreasing its price over the years, so investors can take risk by buying these stocks as a long-term investment and hoping to increase its price gradually over the years.
- Investors looking for short-term investments can also buy 'Jindal Steel' and 'SAIL' stocks, as the volatility is slightly high.
- It is recommended to buy stocks of 'Shree Cement' and 'Infosys' for the ones who are looking to earn high returns and at very less risk. These two stocks are the best option when compared with the other provided stocks.

-----THE END-----