Statistics Assignment

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Collect data

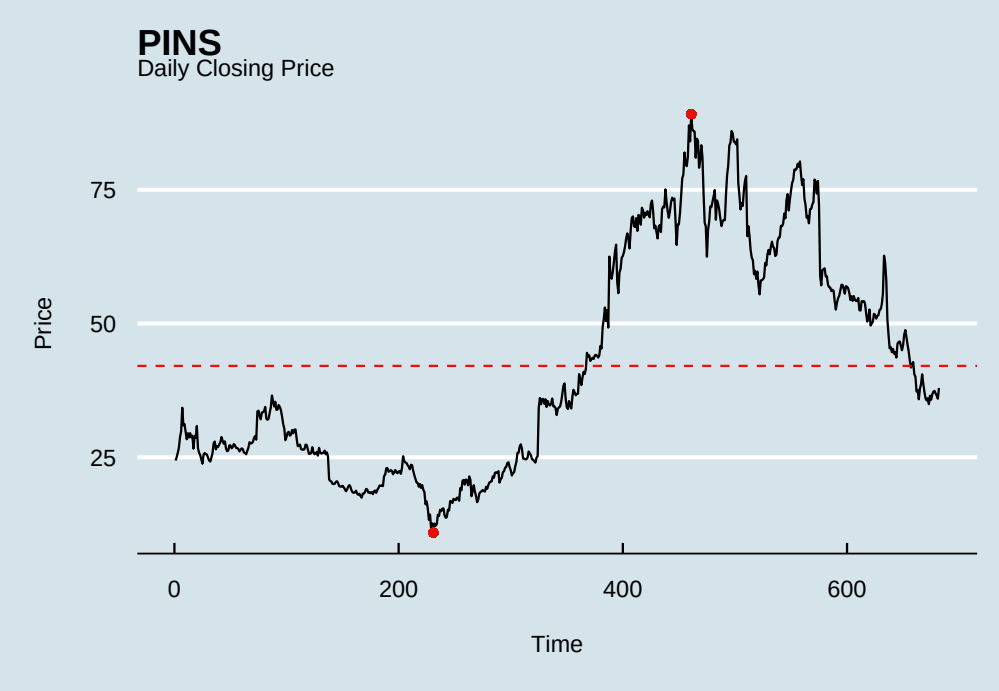
Now we can collect data from the `tidyquant` database. We'll be using Pinterest stock closing price from the IPO date until the end of 2021. We download the data and pipe it to extrapolate only the close price column which we assign to vector `price`.

```
price <- tq_get("PINS", get = "stock.prices", from = "2019-04-18", to = "2021-12-31") %>%
  .$close
head(price)
```

```
## [1] 24.40 24.99 25.85 26.80 28.80 29.85
```

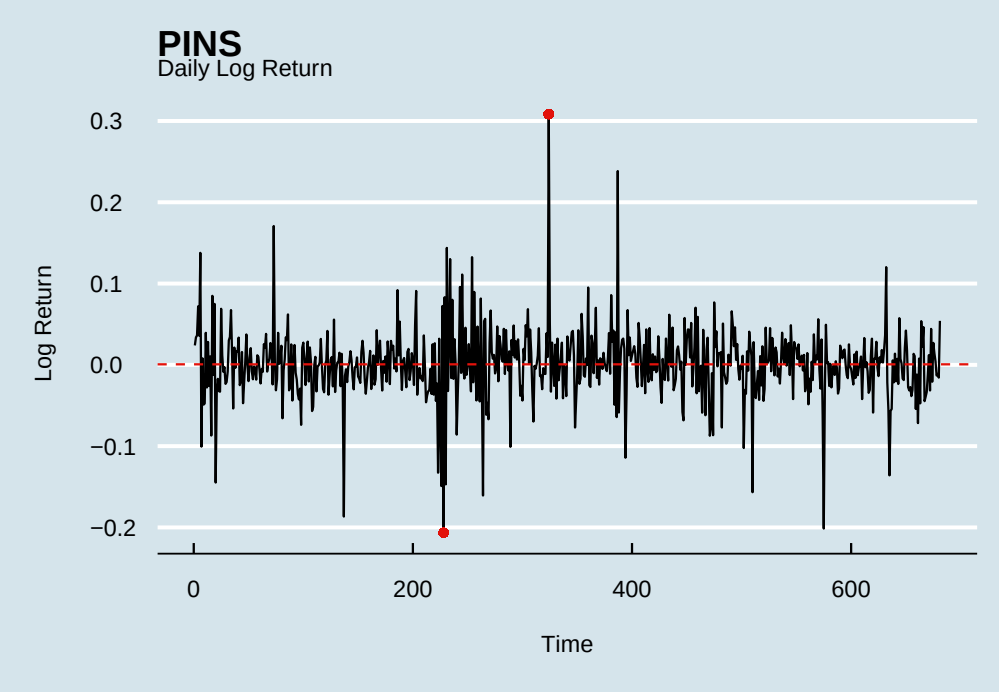
Daily Closing Price

We plot the data as a line having t on the x axis and P_t on y axis.



Daily Log Return

We use the following code to compute the daily log return r_t (i.e. the log of the ratio between P_t and P_{t-1})



Mean

```
m.1
```

```
## [1] 0.0005699206
```

```
m.2
```

```
## [1] 0.0006144026
```

Comments on mean

Standard deviation

```
s.1
```

```
## [1] 0.04283665
```

```
s.2
```

```
## [1] 0.04287659
```

comments on sd

Correlation

```
corr.log.rt
```

```
## [1] -0.06192373
```

The correlation coefficient shows a very weak negative linear dependence. A negative linear dependence means that given a log return r_k at day k, then r_{k+1} will tend to move the stock price in the opposite direction with a more or less constant magnitude. However, the very low correlation coefficient tells us that the daily log-return of day $k+1$ cannot be expressed as linear function of r_t. Hence the linear dependence is negligible and we cannot draw any conclusion about the relationship of two consecutive days log-return.

Absolute value

```
corr.log.rt.abs
```

```
## [1] 0.1566142
```

comments on correlation

Source

Giampietro Ciancio, Riccardo Valenti. 2022. "Stats Assignment." 2022. https://github.com/giampietrociancio/StatsAssignment.