

MGMT-6075 Individual Project Advice

This is in response to some recent queries, which may be on your mind as well.

Reviewing them, I find there is need for clarity towards accomplishing the learning objectives, given the limited time to complete the assignment under these difficult times.

At the very outset, I wish to apologize for having assigned you a learning task, which from your perspective realistically appears more difficult than it did for me, when I designed it.

Also, learning about financial data is easier in terms comparing stock market versus FX market.

In the stock exchange, the price of 1 stock (scrip) quoted in local currency (as in US \$ on NYSE or NASDAQ) is x/y , where 'x' is # of US\$, and 'y' is 1 unit of the stock. When you buy 1 unit of that stock, you exchange 'x' amount of US\$ to obtain 1 unit of that stock. And, when you sell that stock later, you may either get back higher, same, or lower amount of US\$ you invested.

So your stock return would be:

$$r_t = \left(\frac{P_t - P_{t-1}}{P_{t-1}} \right) \text{ where:}$$

P_t = Closing stock price at time t (say today for daily) and

P_{t-1} = Closing stock price at time t-1 (say yesterday for daily)

In the FX market, the exchange rates are also quoted as x/y , where 'x' is the # of units of foreign currency of interest, and 'y' is 1 unit of the base currency (say US\$ as an example). So, with a quote of 104.39 ¥/1US\$, you would exchange 1 US\$ to get 104.39 units Japanese Yen, and then later when you sell the 104.39 Japanese Yen you may get either higher, same, or lower than 1 US\$ you invested.

The same logic should work for FX returns as well. However, I wanted you to get a feel for the FX data in real time. With high frequency data, you have bid and ask exchange rates, which are rarely found for free, and I did happen to find with the link shown in the handout.

Yes, bid and ask rates are quoted in both stock market as well as FX market, and I showed an illustration of how to compute returns, but from what I gather from your queries, dealing with high volume of data is overwhelming and tedious for those not taking up finance as an area of concentration.

So here is an easier and better option to complete your individual project:

Choose any exchange rate from the following links at Federal Reserve:

Fed Reserve FX Data Source: Monthly Spot Exchange rates:

Australian Dollar: <https://fred.stlouisfed.org/series/CCUSSP01AUM650N>

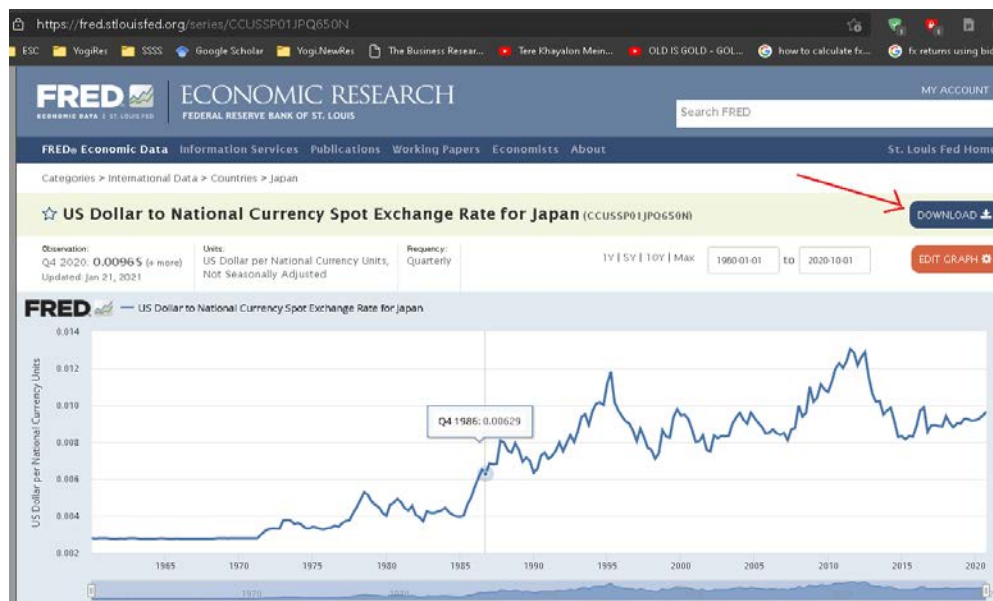
Japanese Yen: <https://fred.stlouisfed.org/series/CCUSSP01JPQ650N>

Canadian Dollar: <https://fred.stlouisfed.org/series/CCUSSP01CAM650N>

Euro: <https://fred.stlouisfed.org/series/CCUSSP01EZM650N>

UK: <https://fred.stlouisfed.org/series/CCUSSP01GBM650N>

You can download the data in Excel as shown by the red arrow below:



Choose **two** non-over-lapping time periods for your data series.

Compute the returns as shown above for the two time periods including the following higher moments

- 1) First Moment: Average (Mean) value of the returns
- 2) Second Moment about the mean: Variance of the returns
- 3) Standard Deviation of the returns: Square root of variance
- 4) Third Moment about the mean: Skewness of returns
- 5) Fourth Moment about the mean: Kurtosis of returns

Compute the above using built-in formulae in Excel (use **sample** formulae not population)

For bonus grade: Compare the means (average returns) for the two time periods whether they are significantly different.

Test Difference in Means (Averages): Here is how to

two-sample t-test

Here is a link to a well-illustrated video on how to do a two sample t-test in Excel

<https://mattchoward.com/how-to-perform-a-t-test-in-excel/>

Submit your analysis with a summary table of higher moments and interpretation (please do not submit your raw data).

Hope this helps and you enjoy learning and doing well.

Best!