HW 5

1. Read the data from the file `ebay.txt`, which contains the closing prices of the eBay shares and the S&P 500 index from January 3rd 2005 to March 31st 2005.

   a) Calculate the rates of return for the stock and the index for each day beginning January 4th and ending March 31st, 2005, using the formula

   $$\text{Return}_{\text{Day}_i} = \frac{\text{Price}_{\text{Day}_i} - \text{Price}_{\text{Day}_{i-1}}}{\text{Price}_{\text{Day}_{i-1}}}$$

   b) Report the correlation coefficient *r* between the rates of return for the stock and the index.

   c) Estimate the standard error of the correlation coefficient using 1000 bootstrap samples.

   d) Report the BCa 95% CI for the correlation coefficient.

   e) Calculate the traditional method for obtaining 95% CI for correlation using Fisher's transformation: $z_r \pm 1.96\sqrt{\frac{1}{n-3}}$, where $z_r = \frac{1}{2}\log\sqrt{\frac{1+r}{1-r}}$.

   f) Transform back the interval from part e) to the original scale by applying the `tanh` function. How does it compare to the answer from part d)?