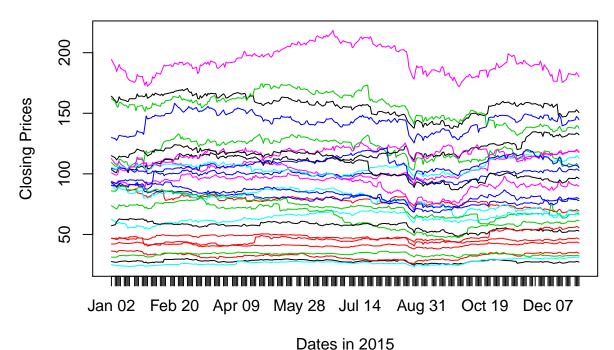
36-402 Homework 1

Eu Jing Chua eujingc January 20, 2019

Question 1

a)

Plot of closing prices against dates in 2015



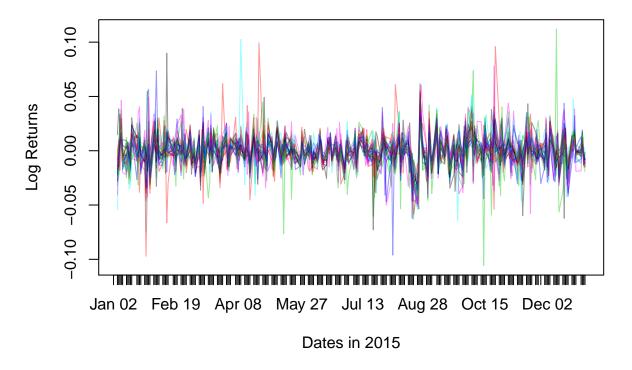
Dates III 201

```
b)

n <- nrow(close_price)
l.returns <- log(close_price[2:n, ] / close_price[1:(n-1), ])</pre>
```

 $\mathbf{c})$

Plot of log returns against dates in 2015

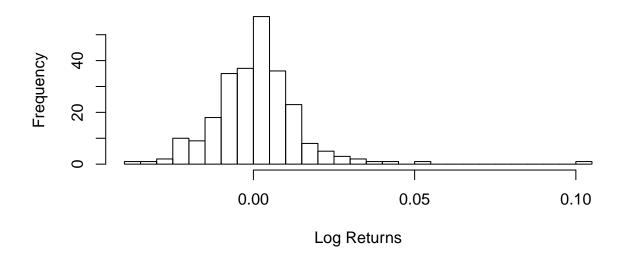


The log returns look more comparable as they all have the same scale now and the dependence over time is more visible.

Question 2

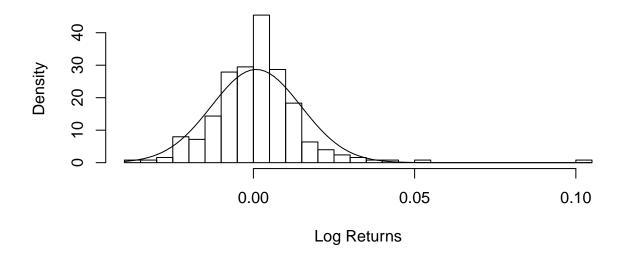
a)

Histogram of log returns for GE



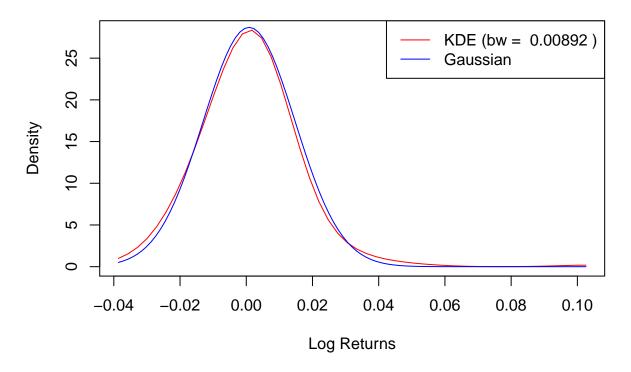
b)

Histogram of log returns for GE



The normal distribution appears to fit the distribution of the log returns well, with the exception of possible outliers with exceptionally high log returns. \mathbf{c})

Plot of Density of Log Returns of GE



The kernel density estimate (KDE) has heavier tails than the best-fitting gaussian and is also slightly skewed to the left. The KDE also has relatively lower density around the mean.