Assignment 8

gtID Seed & Random Number

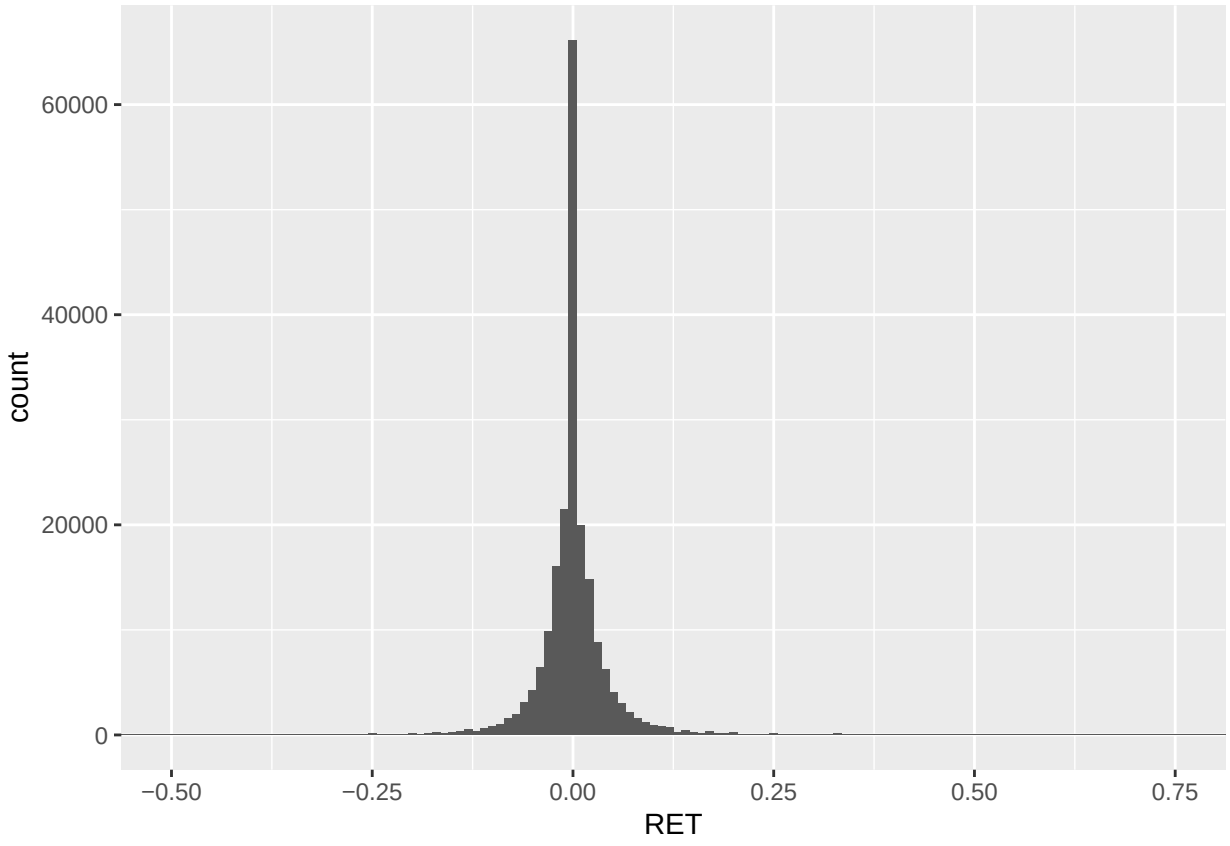
gtID Seed	902953178
Random Number	1989

Assignment 8.1

- All calculated values are inside tables in "Assignment8_1.pdf"

Assignment 8.2

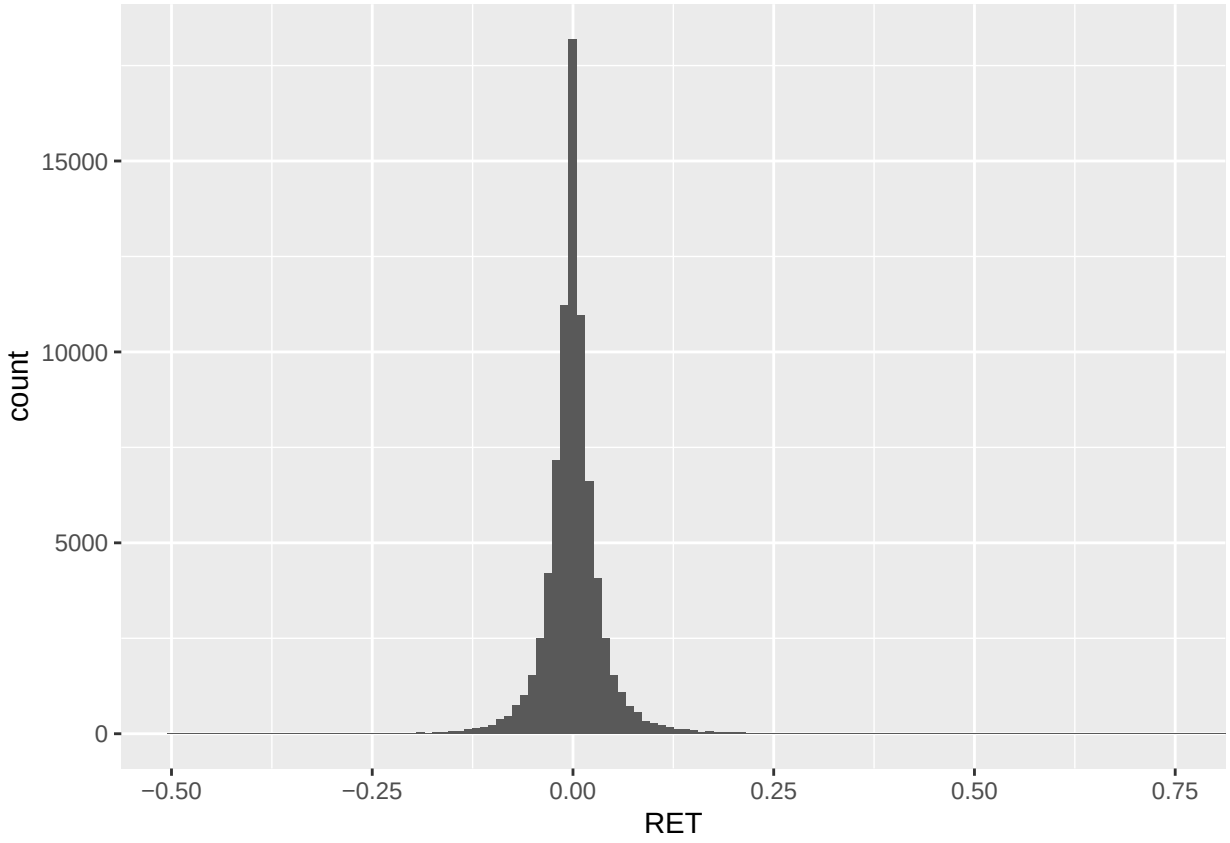
1. Histogram of returns from January 1989 - December 1998



1. Calculated VaR, $VaR, and ES

VaR	0.058824
$VaR	5882400.000000
ES	0.104053

2. Histogram of returns from January 2000 - December 2010



2. Calculated VaR, $VaR, and ES

VaR	0.053057
$VaR	5305660.000000
ES	0.089799

- Both functions have normal-like distributions, centered around 0. However the January 2000 to December 2010 distribution looks like it has has lower kurtosis and higher variance. There are less data points because not all the sampled firms had returns in the later time period. But relatively, the January 2000 to December 2010 distribution has less values closer to 0, and more values spread out. This could be from containing two periods of high instability: dotcom bubble and Great Recession.
- The value at risk and expected shortfall of the returns from January 1989 to December 1998 are higher than than those from January 2000 to December 2020. This means there are more negative outliers in the later set of returns. This is interesting, as the data is more variant, but has less risk at the extreme negative tail.

Assignment 8.3

- There are only 44 plots for these because the other 56 sampled firms did not have any data available from January 2000 to December 2010.
- RiskMetrics and GARCH(1,1) plots are in the file "Assignment8_3.pdf".
- The GARCH(1,1) plots and the RiskMetrics plots have very similar shapes. However, the GARCH(1,1) models tend to have higher peaks in the volatility calculations. The GARCH(1,1) plots also look like they are little bit noisier than the RiskMetrics plots. This could mean that with our estimated parameters, the GARCH(1,1) model is a lot more sensative to volatility than the RiskMetrics plot.