

Homework 11

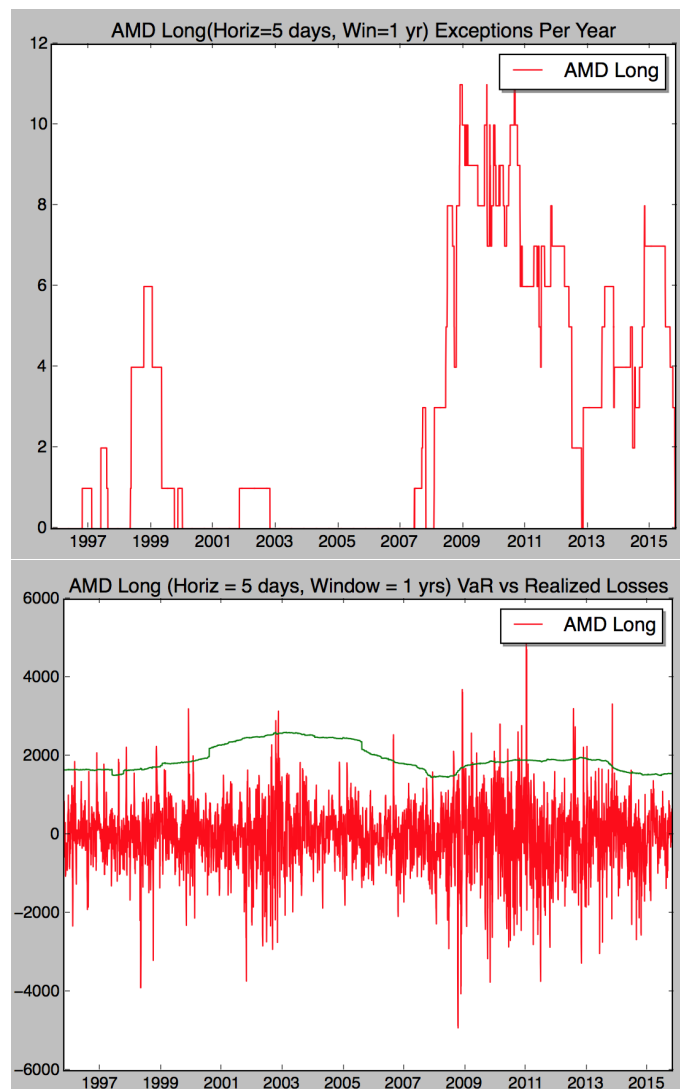
Due: 1:00 pm Thursday 1 Dec 2016

1. Backtesting, 5 year window

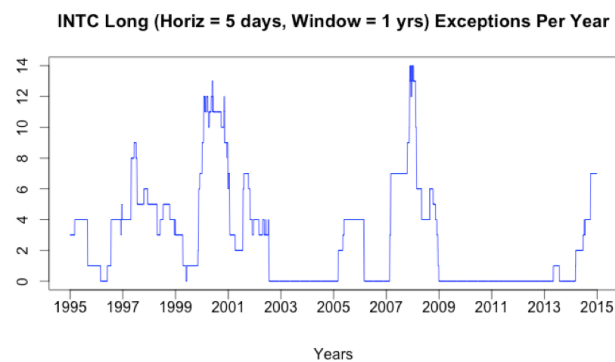
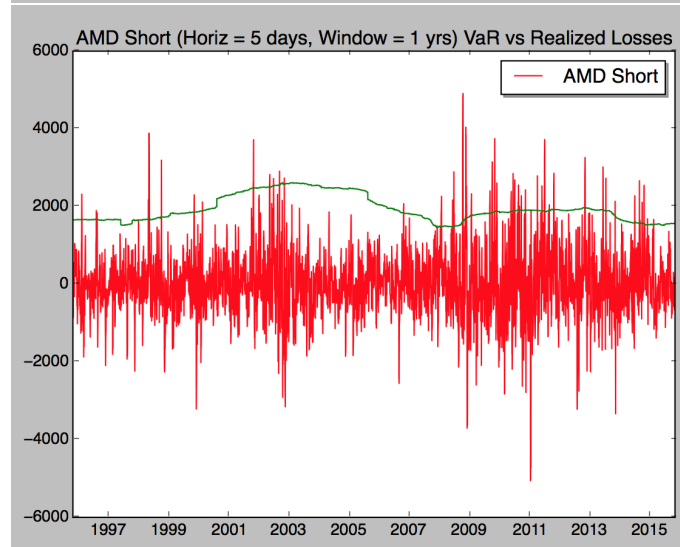
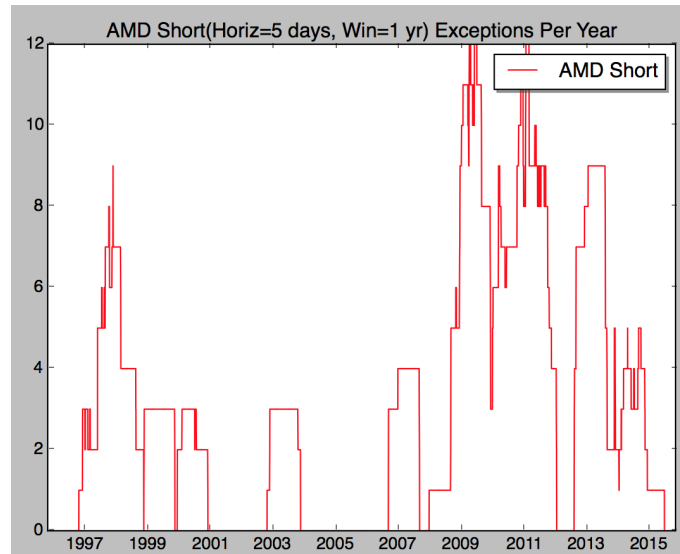
Back test the GBM based VaR estimates for long and short portfolios by counting the number of times the VaR on each date is exceeded by the subsequent 5 day change in each 1 year window. Use the VaRs based on 5 year period parameter estimates.

What is the expected number of exceptions and how well do the number of exceptions match the expected number of exceptions?

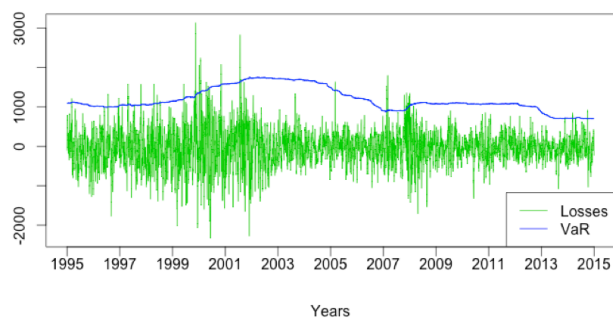
Solution:



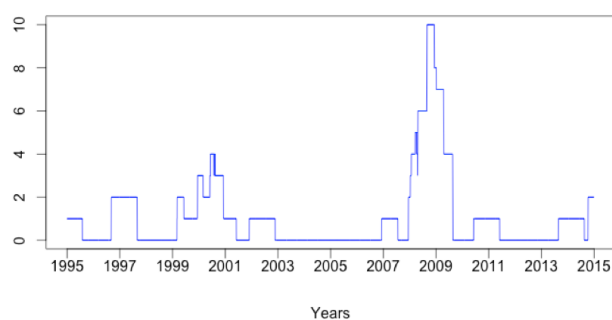
Solution:



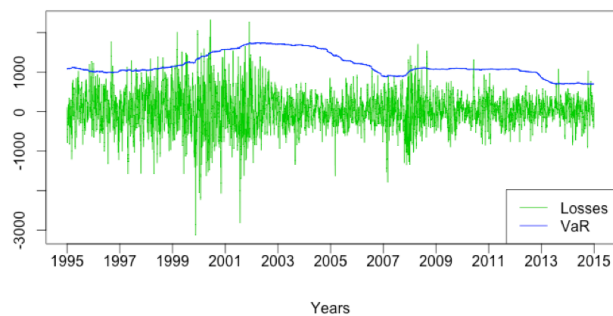
INTC Long (Horiz = 5 days, Window = 1 yrs) VaR vs Realized Losses



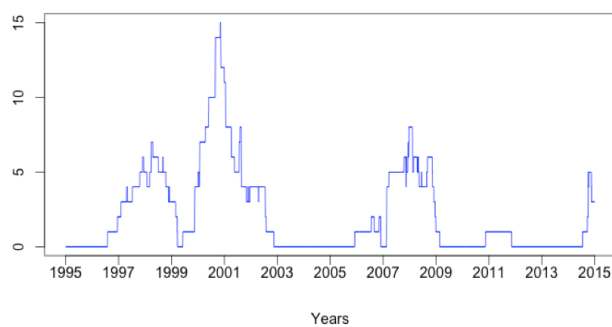
INTC Short (Horiz = 5 days, Window = 1 yrs) Exceptions Per Year

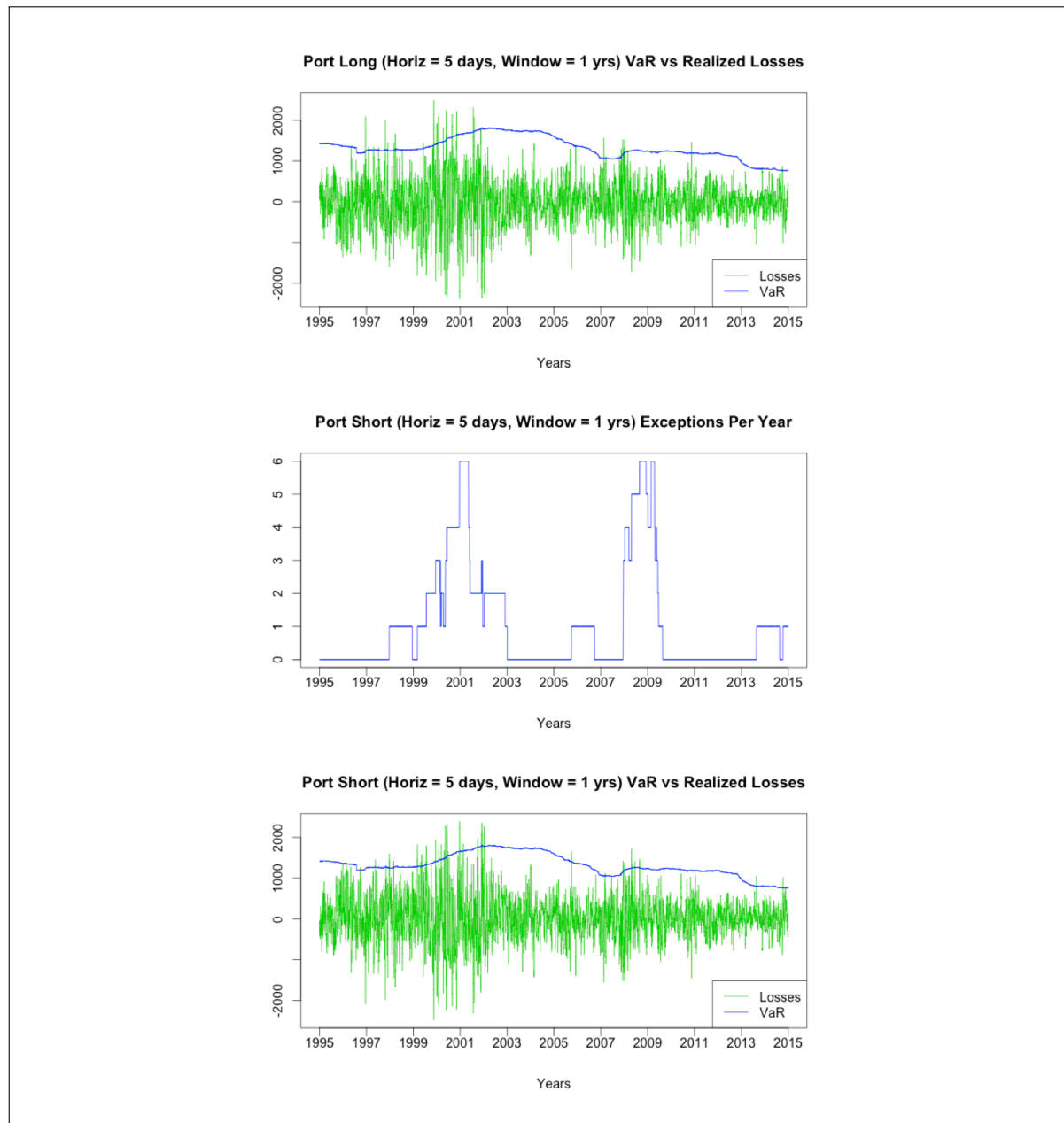


INTC Short (Horiz = 5 days, Window = 1 yrs) VaR vs Realized Losses



Port Long (Horiz = 5 days, Window = 1 yrs) Exceptions Per Year





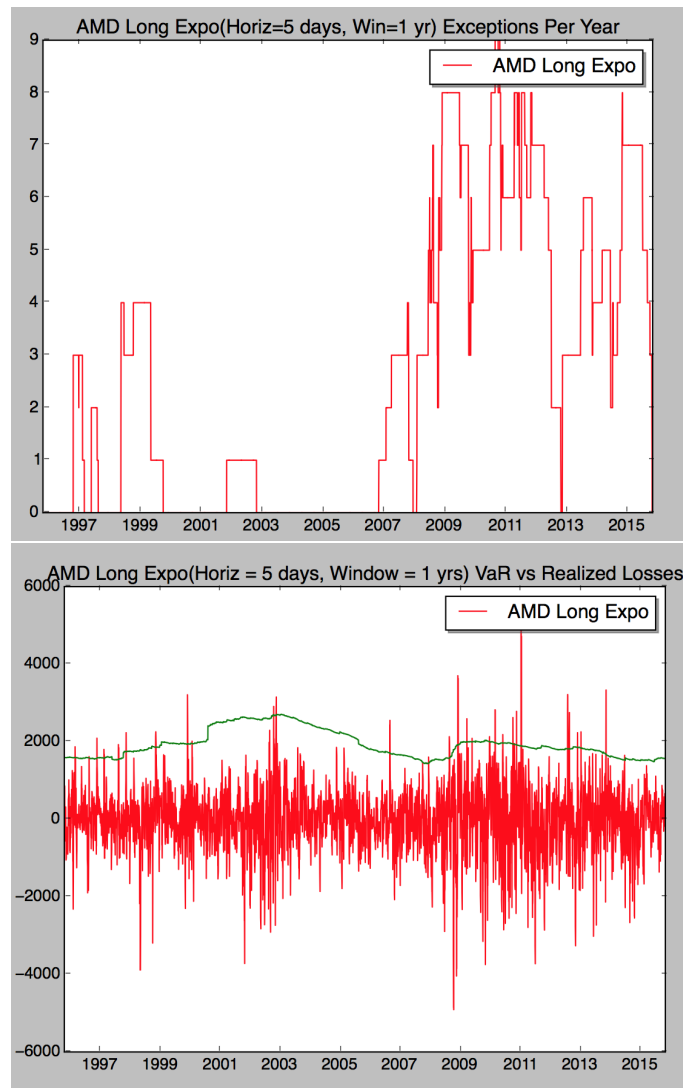
2. Backtesting, exponential equivalent

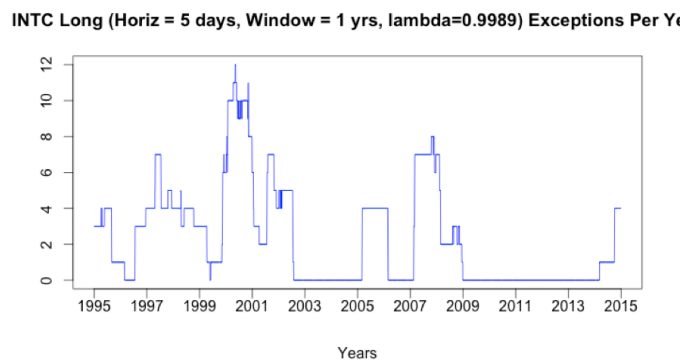
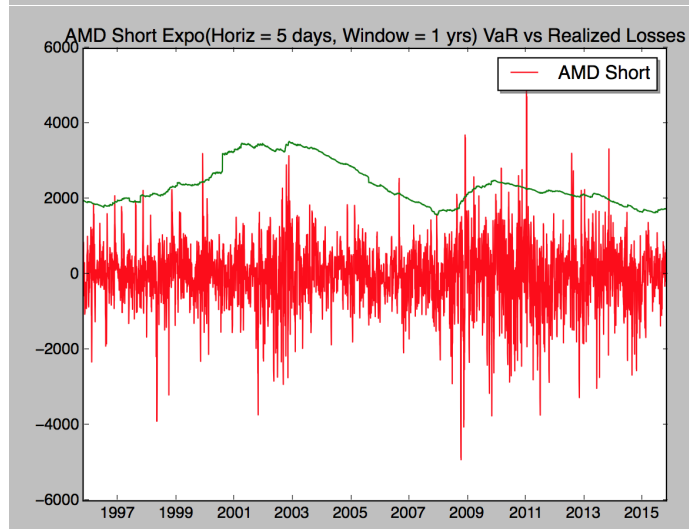
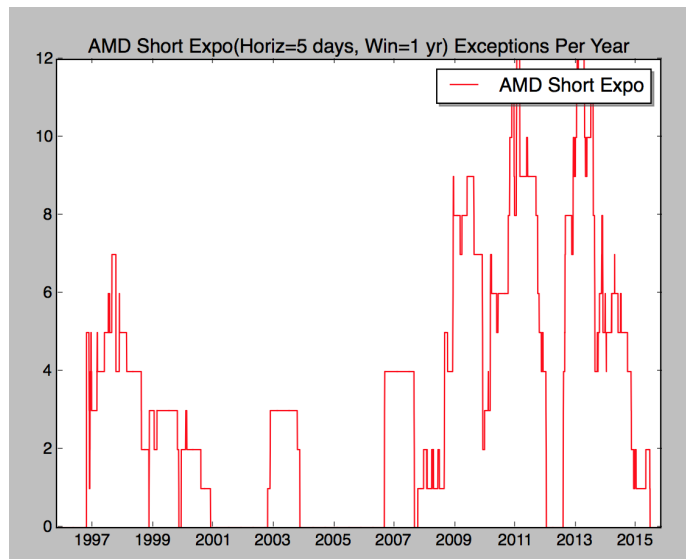
Repeat the previous problem using a lambda of 0.9989 (a 5 year window equivalent lambda). How do the results using a exponential weighting compare to the prior results?

Solution:

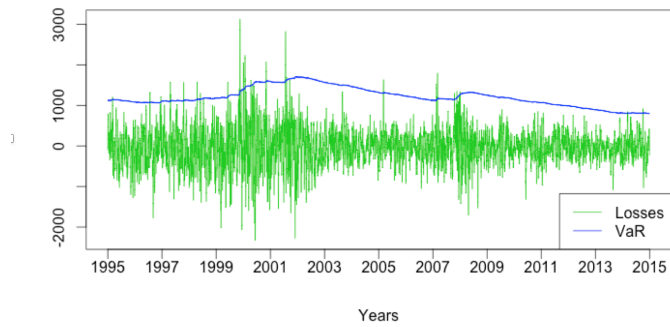
Observations:

- The 5 year equivalent exponential weighting tends to give the best results.
- 5 day VaRs perform slightly worse than 1 day VaRs but not substantially worse.
- The 1 year window and the 1 year equivalent exponential weighting both give less noiser VaRs than 2 year ones. Presumably the parameter estimates are noisier.

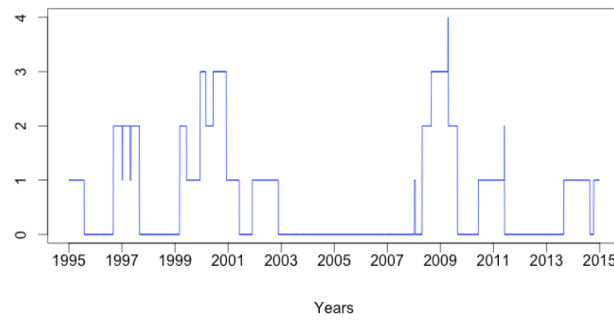




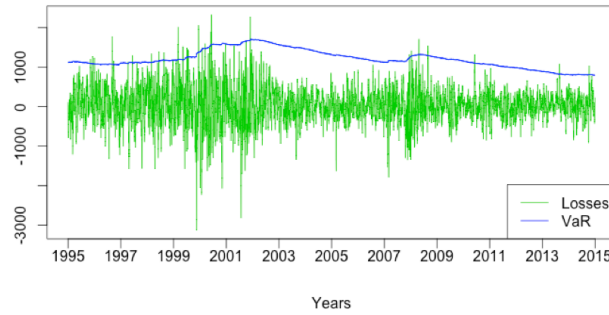
NTC Long (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) VaR vs Realized L



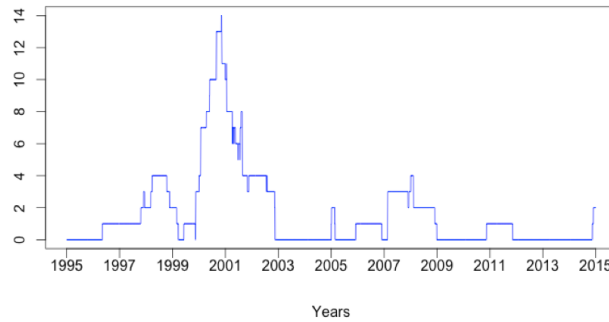
INTC Short (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) Exceptions Per Year



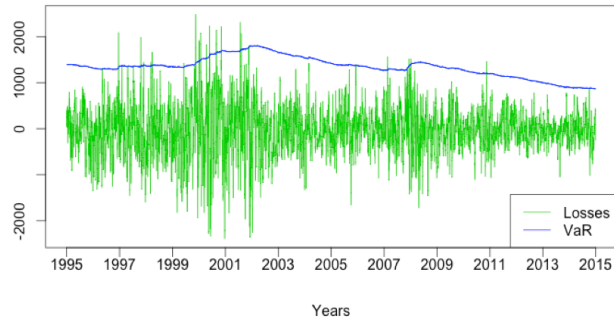
NTC Short (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) VaR vs Realized Lo



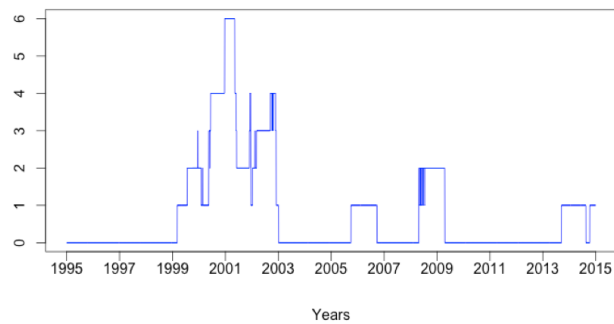
Port Long (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) Exceptions Per Year



Port Long (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) VaR vs Realized Los:



Port Short (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) Exceptions Per Year:



Port Short (Horiz = 5 days, Window = 1 yrs, lambda=0.9989) VaR vs Realized Los:

