Data description:

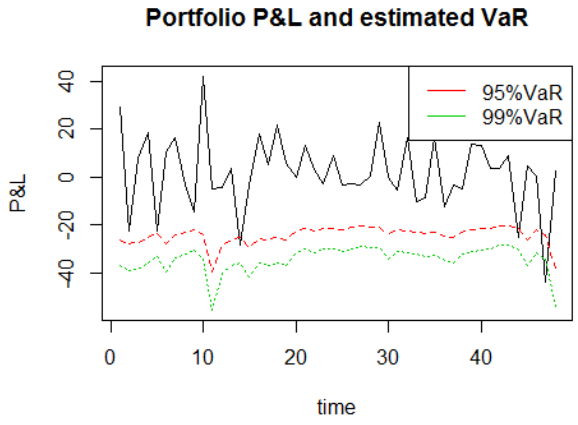
The data contains daily adjusted stock prices from 2015/05/01 to 2016/04/25 (T=248) of 10 Internet and Software stocks in S&P500. The portfolio is a value weighted portfolio, containing 1 unit of each stock during the whole period. The initial value of the portfolio is the sum of the prices of these 10 stocks at 2015/05/01.

Method:

The DCC model is used to estimate the variance covariance matrix of returns of the stocks. The estimation rolling window contains 200 days (t=200). Therefore, from this method, 48 VaR can be estimated.

To evaluate the estimated 95%VaR and 99%VaR, a backtest has been done using conditional (Christoffersen) coverage tests for the correct number of exceedances. The confidence level at which the null hypothesis is evaluated is 0.05.

Results:



From the graph above, we can see that, there are 3 exceedances using 95%VaR and 1 exceedance using 99%VaR.

The likelihood ratio test statistics of unconditional and conditional case, and critical value at 5% confidence interval of both 95%VaR and 99%VaR are showed in the table below:

uc.LRstat95	inde.stat95	cc.LRstat95	cc.critical95	Test decision
0.1467909	0.4094085	0.5561994	5.991465	Fail to Reject H0
uc.LRstat99	inde.stat99	cc.LRstat99	cc.critical99	Test decision
0.4336495	0.04348169	3.884941	5.991465	Fail to Reject H0

Table: Test statistics and decision of backtest

Both null hypothesis of backtest of 95%VaR and 99%VaR cannot be rejected, meaning that our VaR are considerably well estimated.