HOMEWORK UNIT4 QUESTION 1

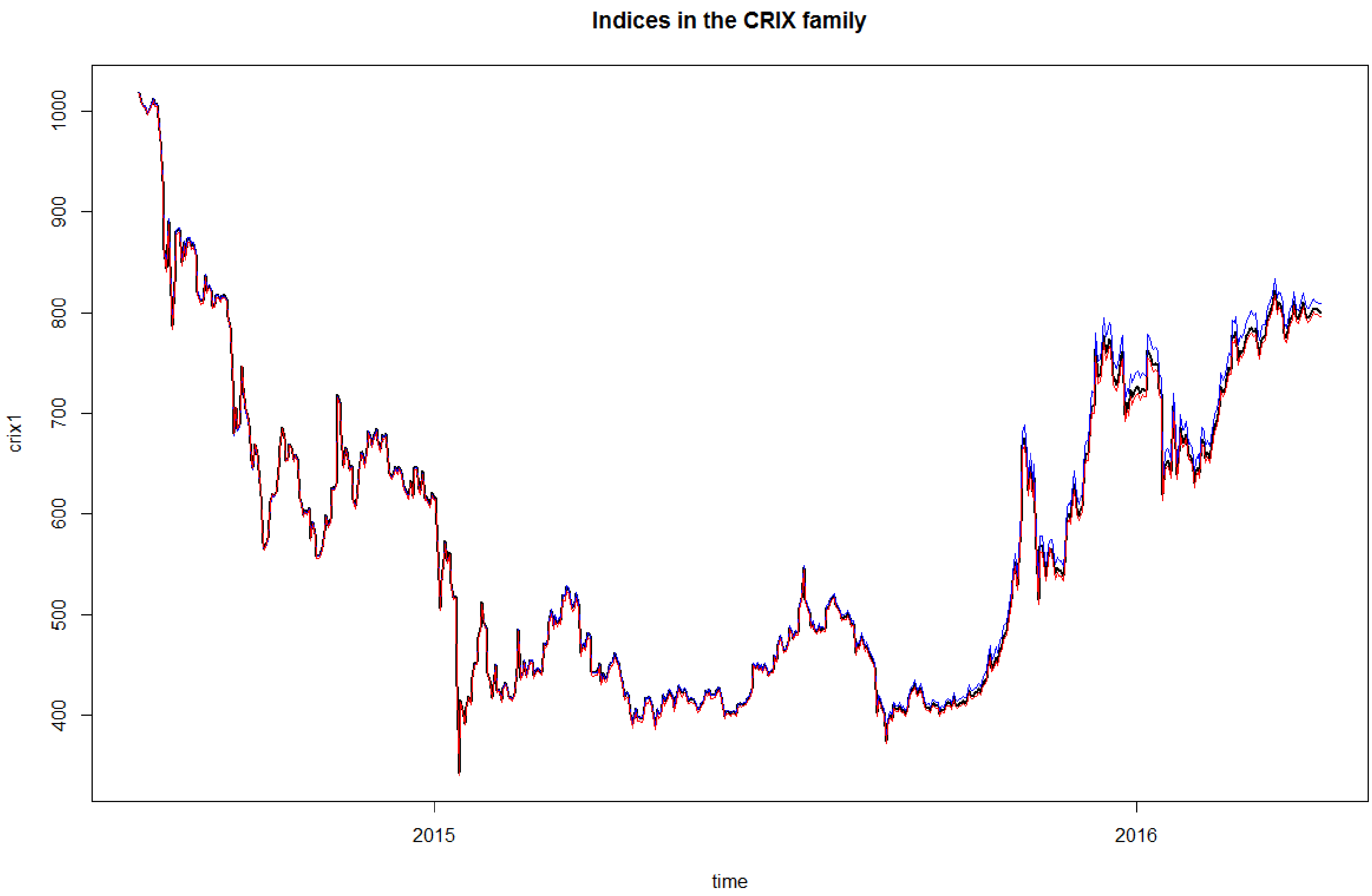


Figure 3: The daily value of indices in the CRIX family from 01/08/2014 to 06/04/2016: CRIX, ECRIX and EFCRIX.

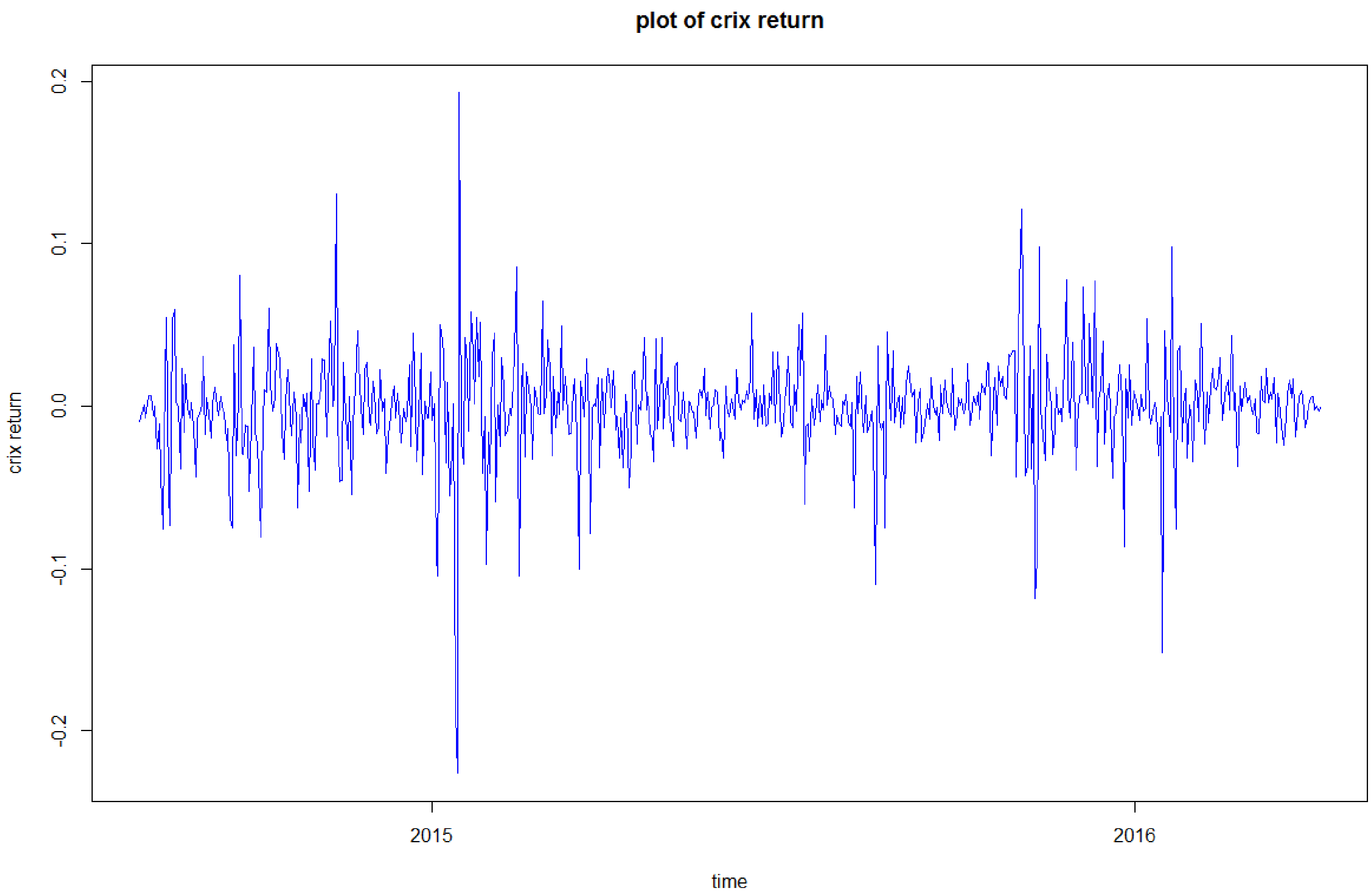


Figure 4: The log returns of CRIX index from 01/08/2014 to 06/04/2016.

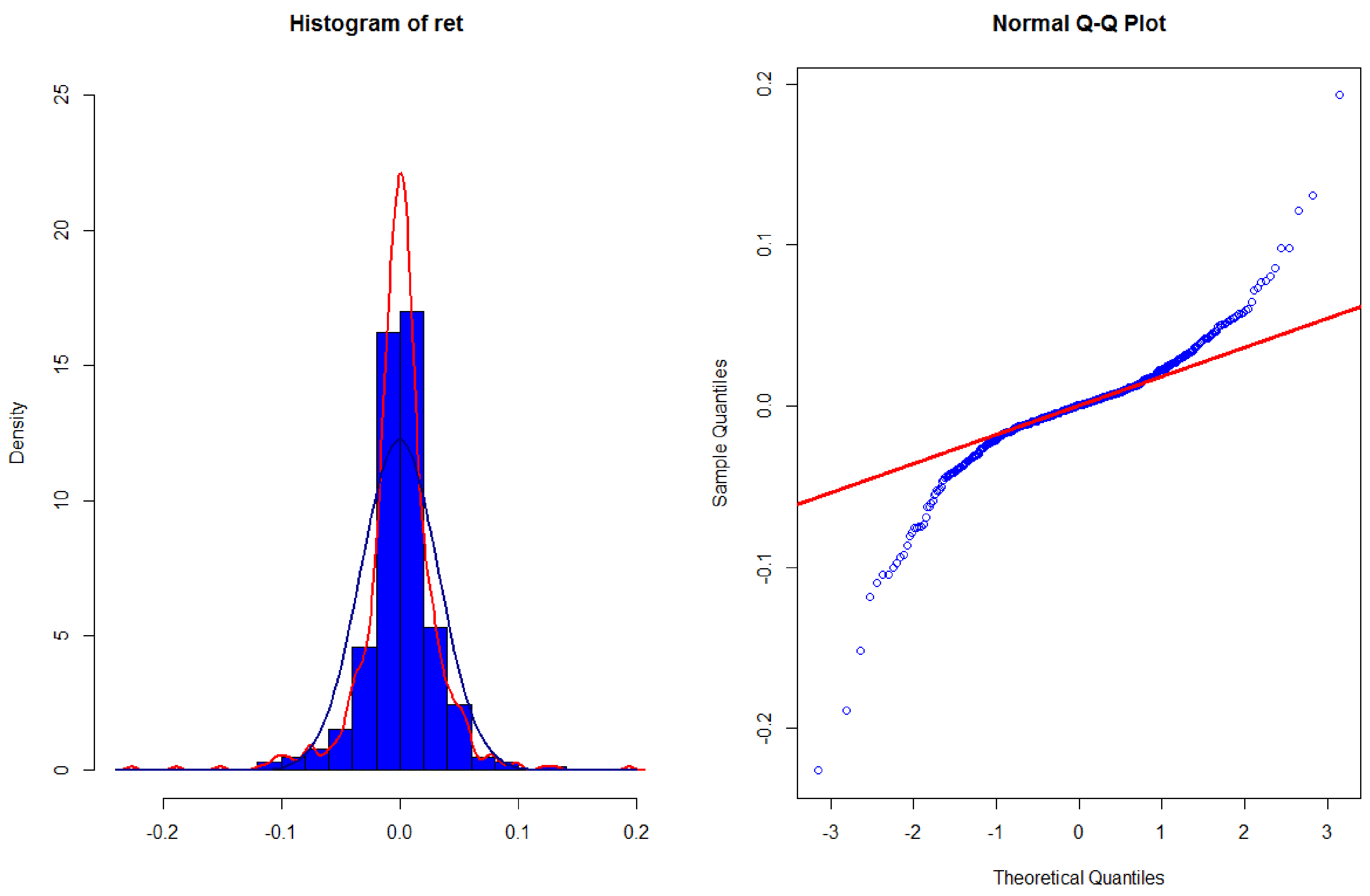


Figure 5: Histogram and QQ plot of CRIX returns from 01/08/2014 to 06/04/2016.

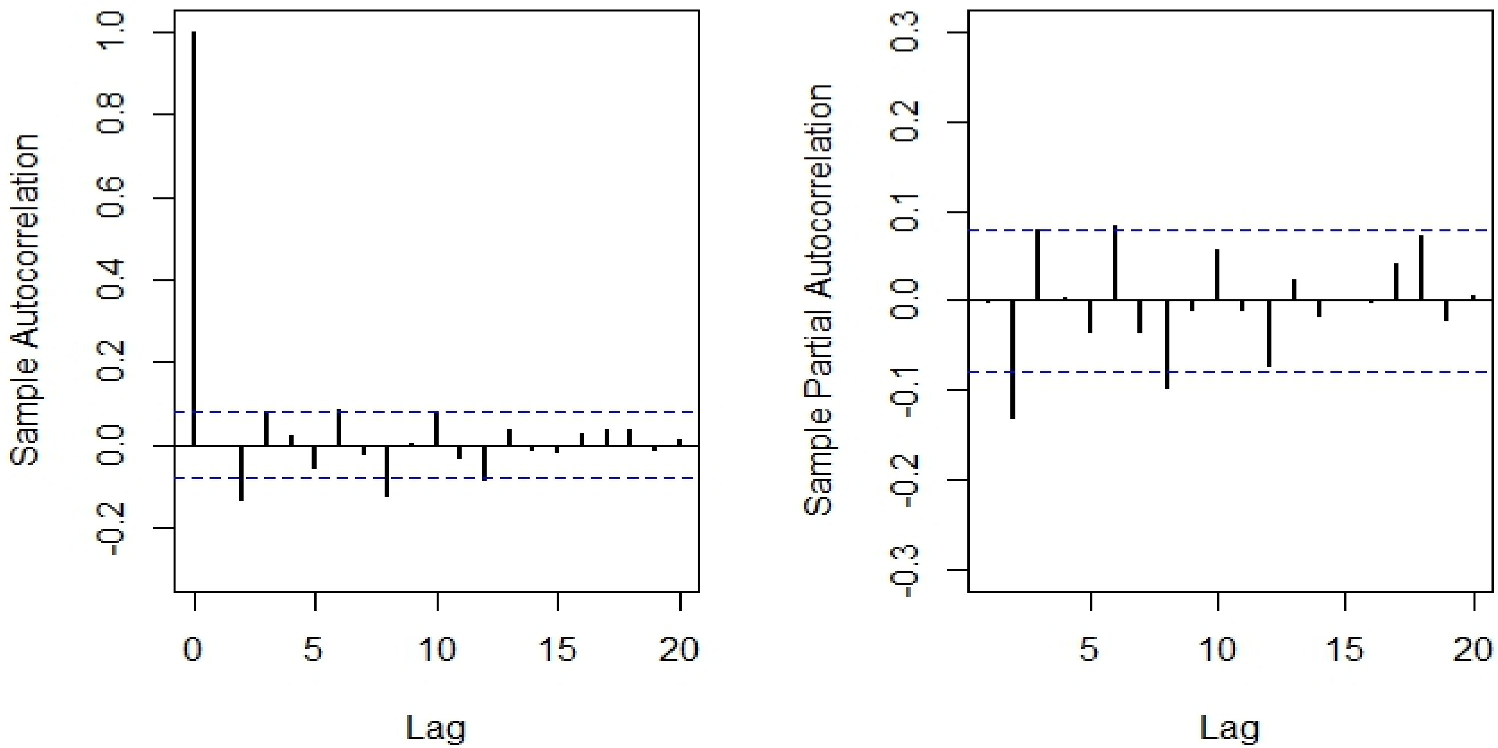
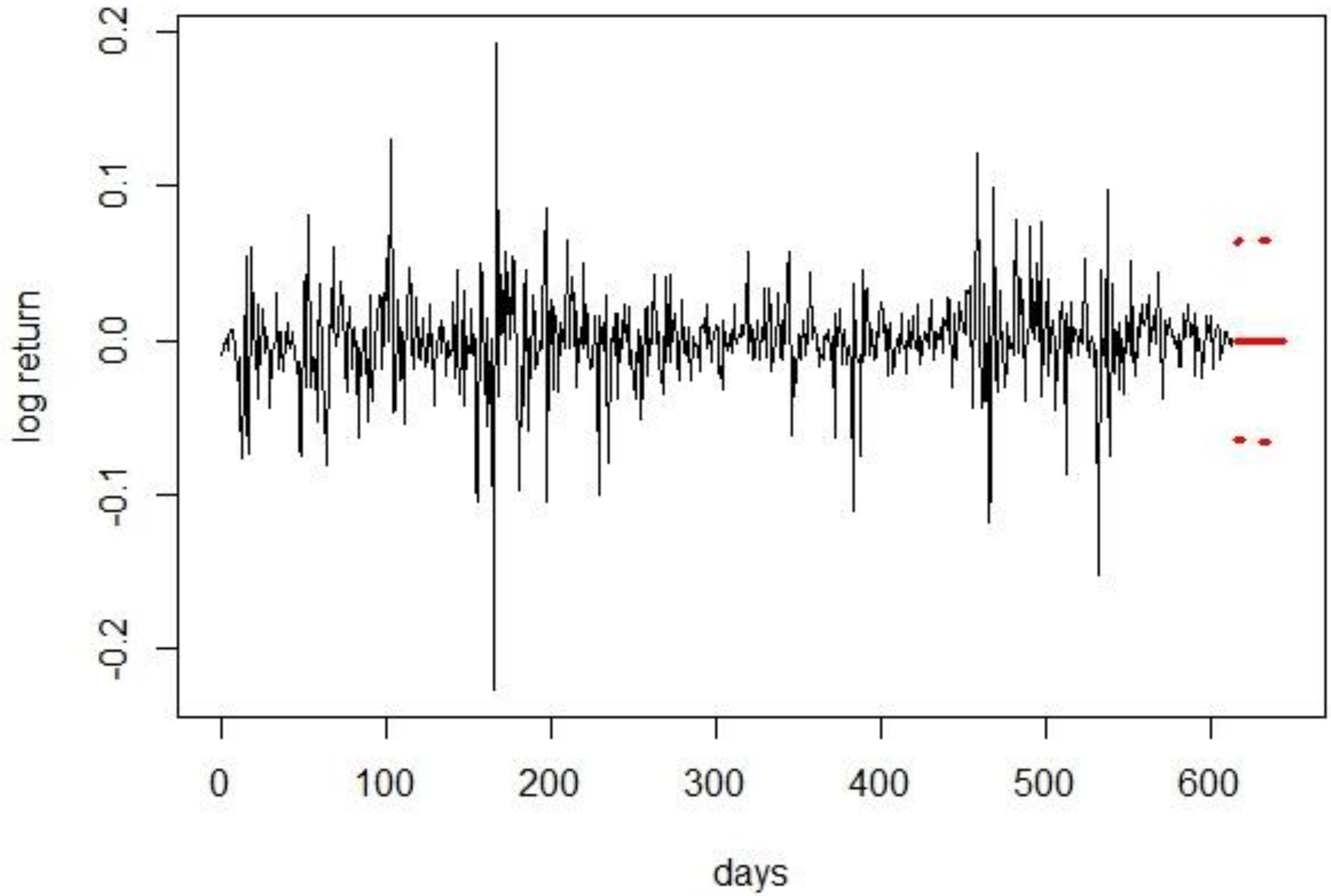


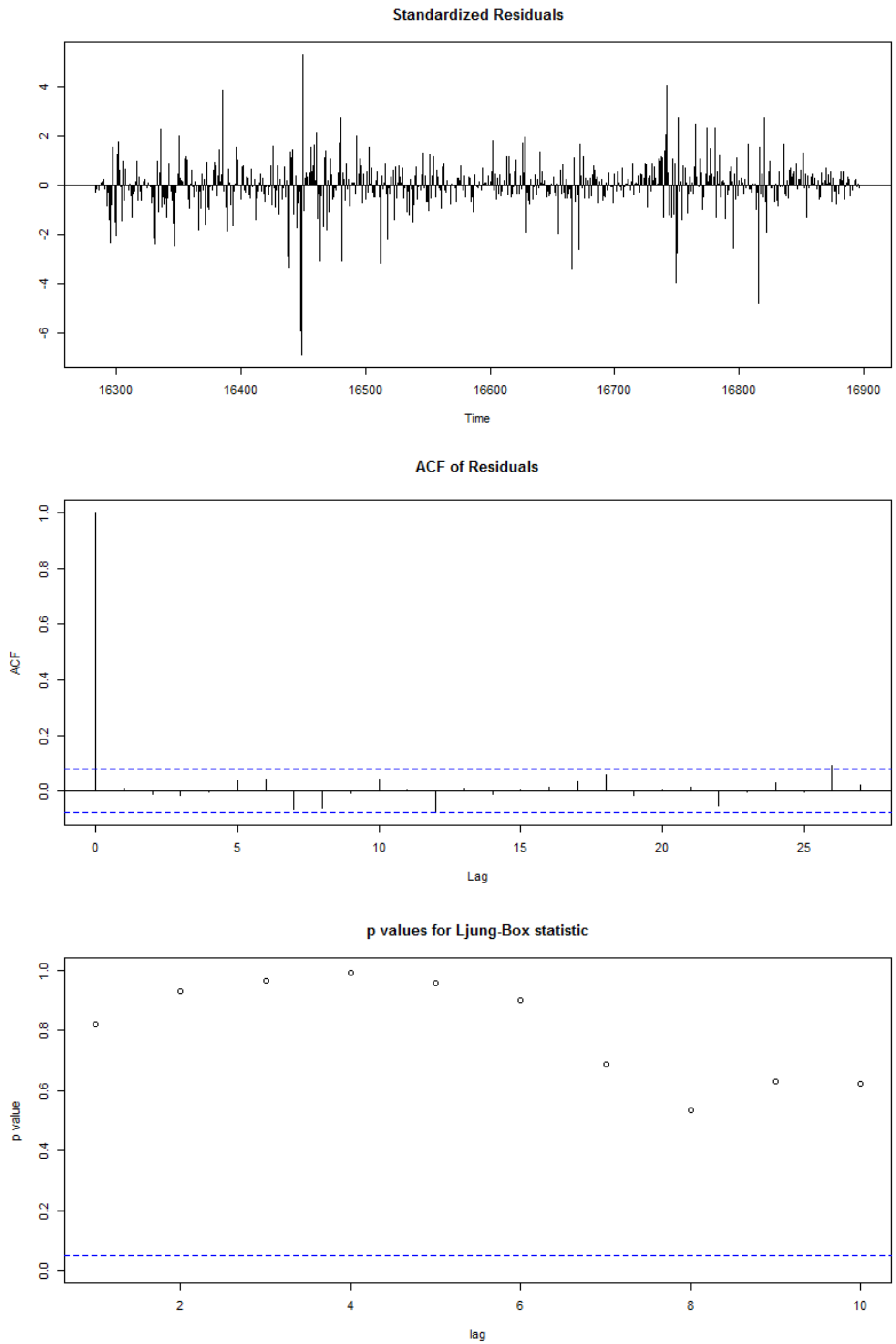
Figure 6: The sample ACF and PACF of CRIX returns from 01/08/2014 to 06/04/2016.

HOMEWORK UNIT4
QUESTION 2



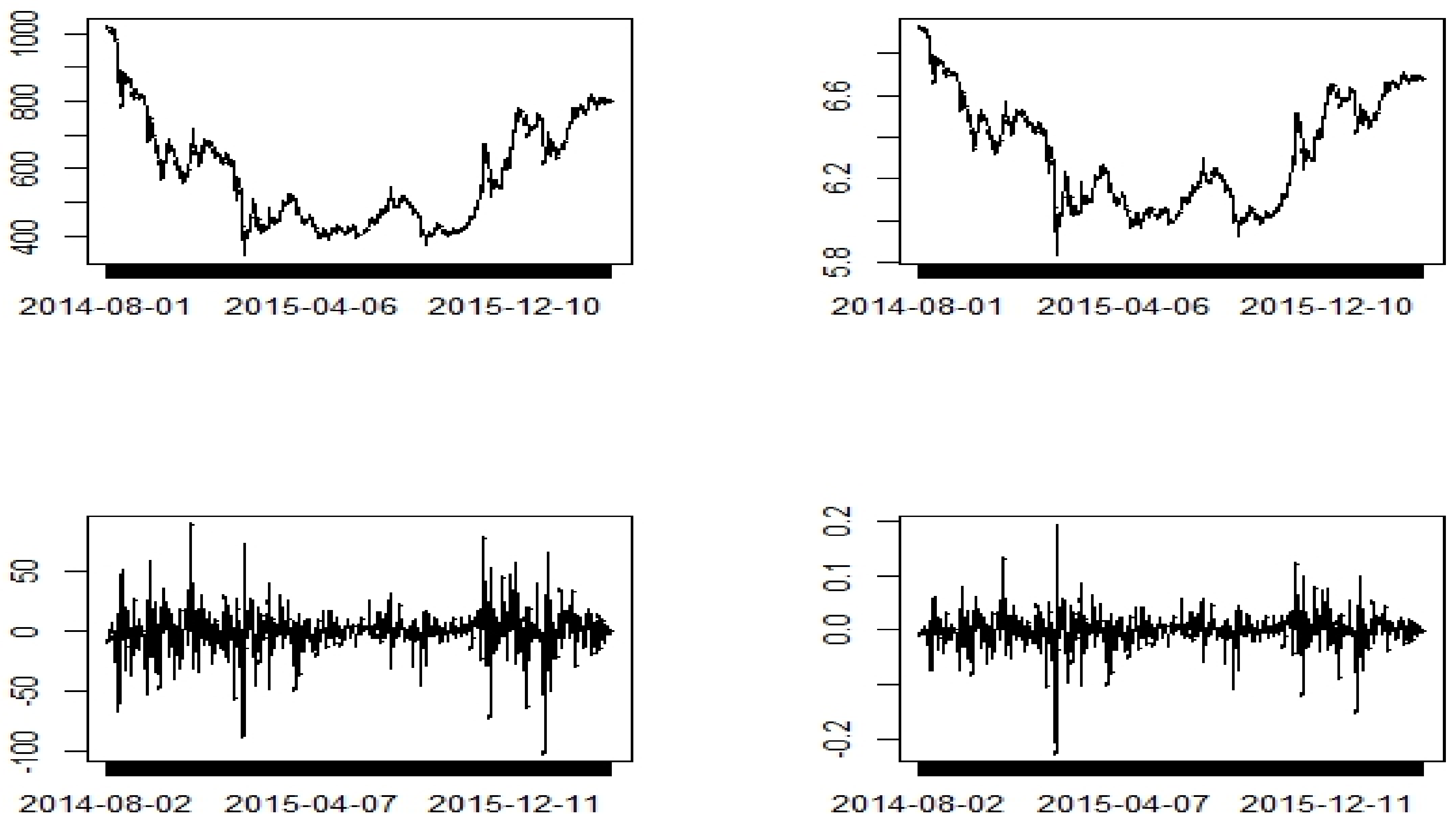
The CRIX returns and predicted values.

The confidence bands are red dashed lines.

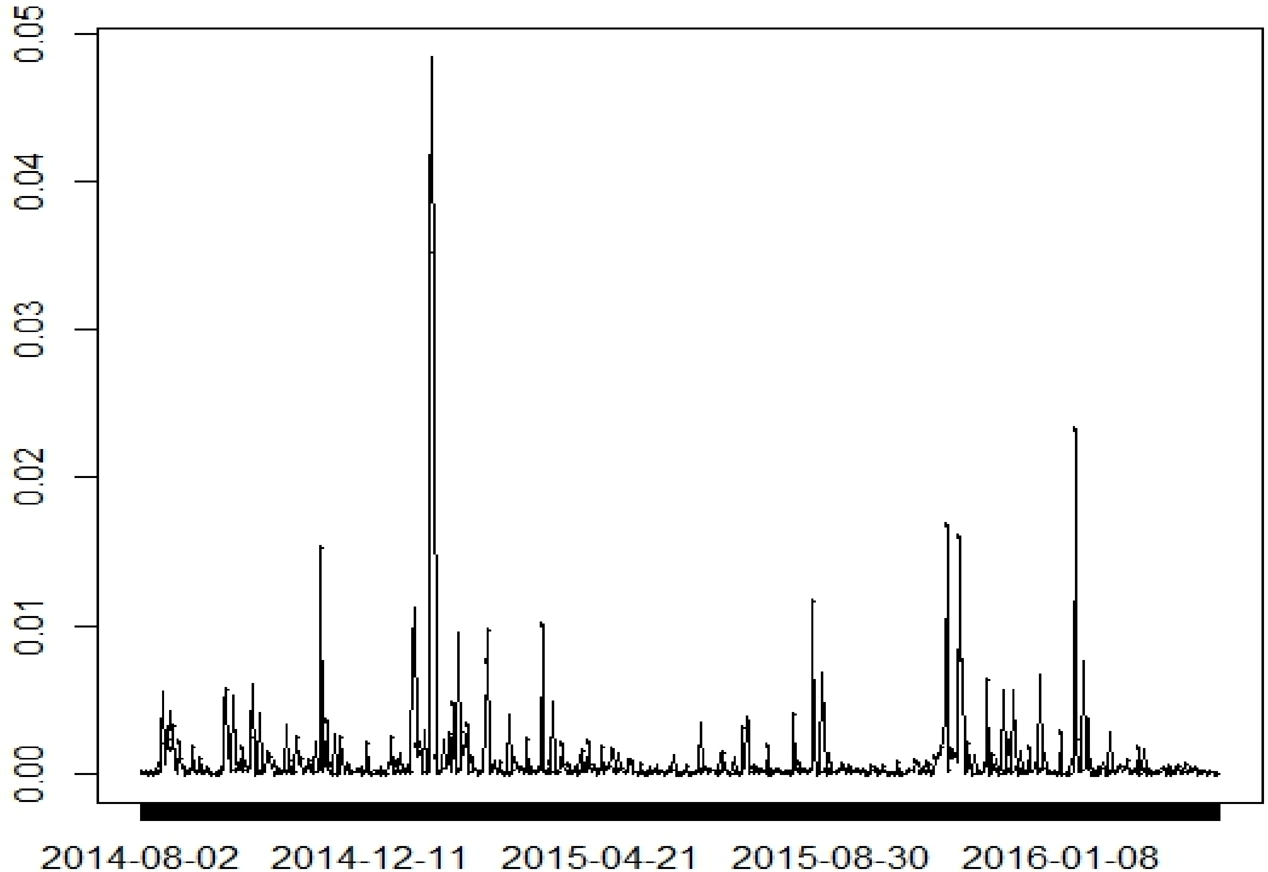


- Diagnostic plot of ARIMA(2,0,2) model
- significant p-values of Ljung-Box test statistic
- model residuals are independent

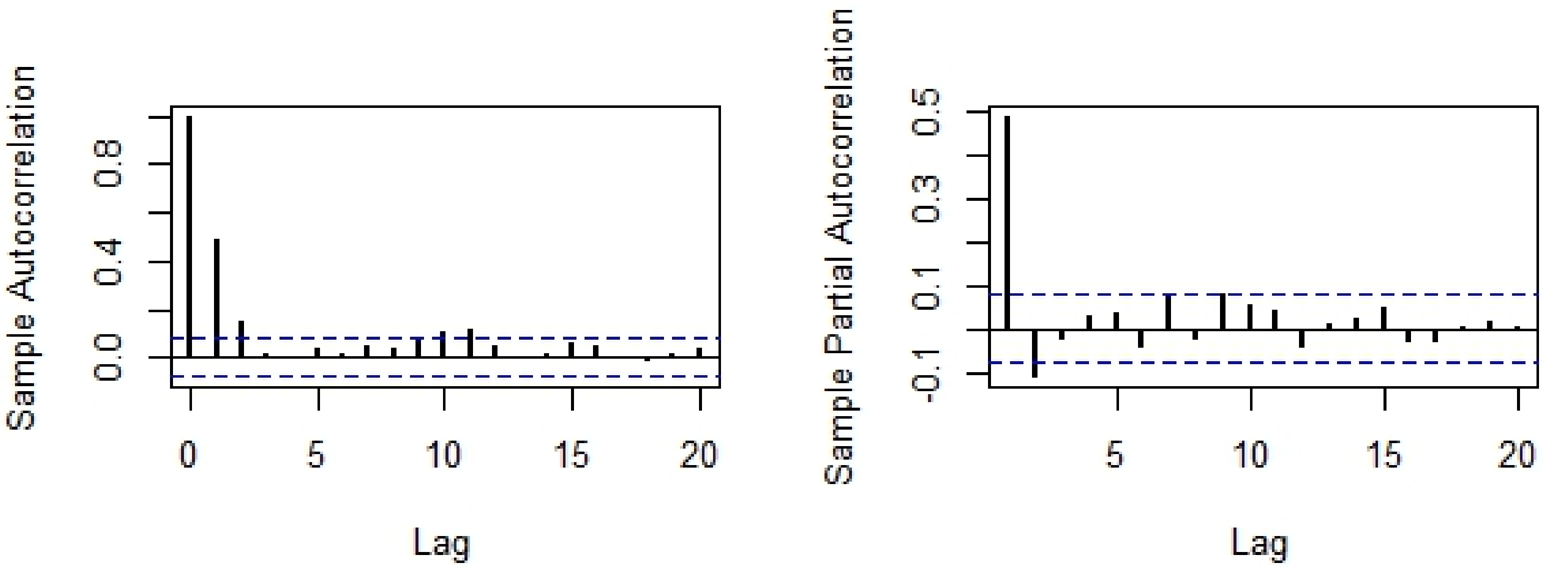
HOMEWORK UNIT4
QUESTION 3



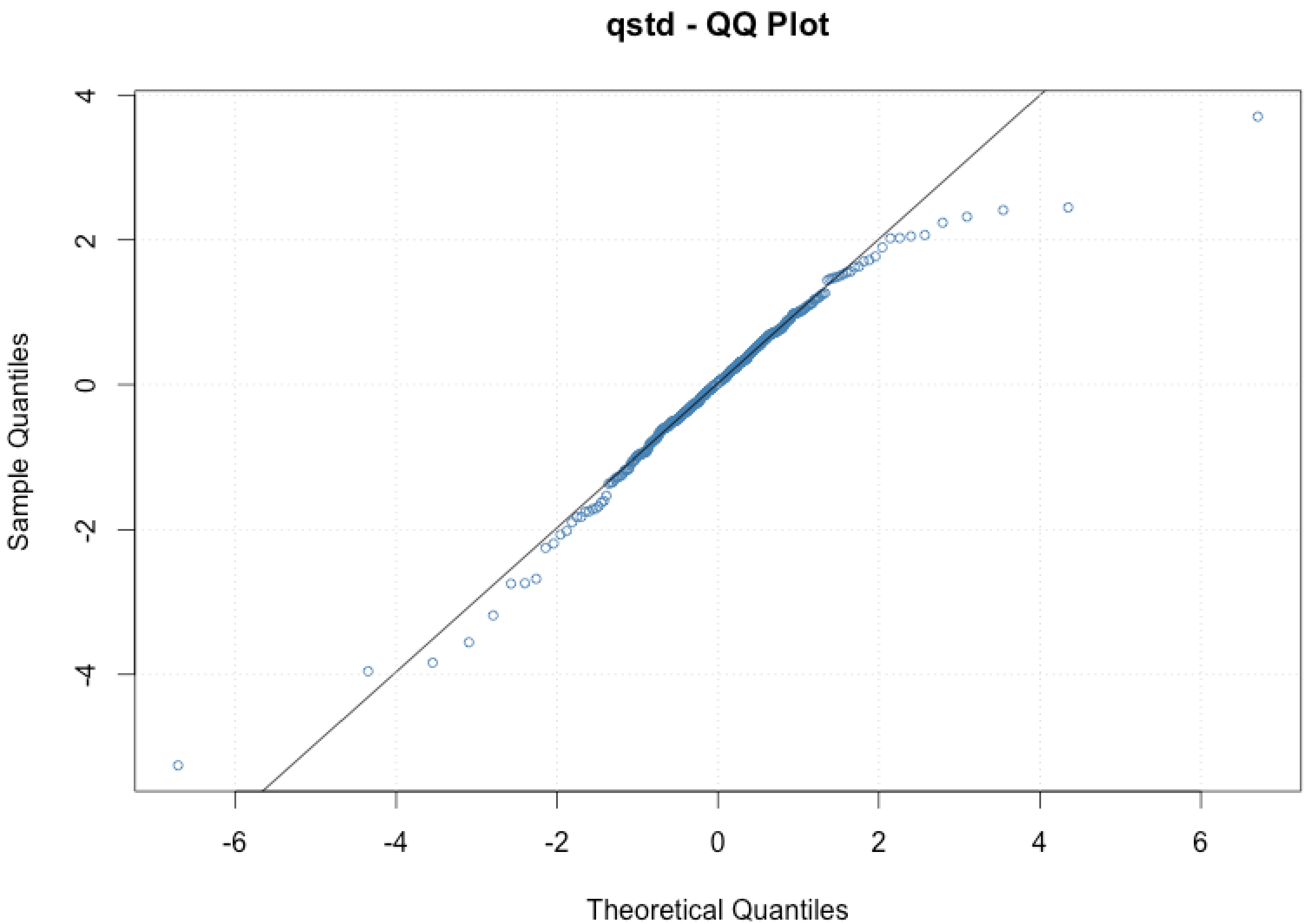
The difference of crix returns.

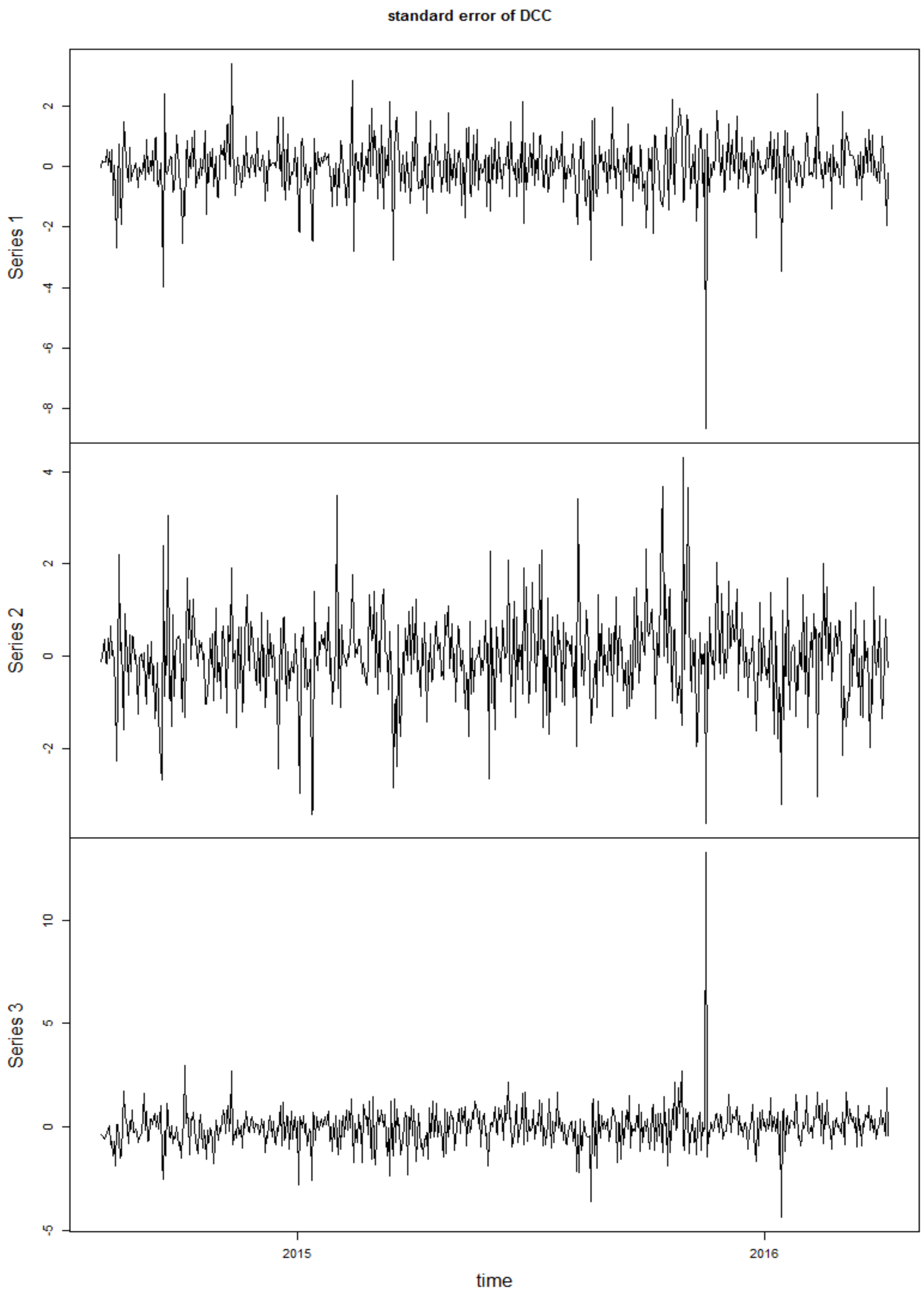


The squared ARIMA(2,0,2) residuals of CRIX returns.



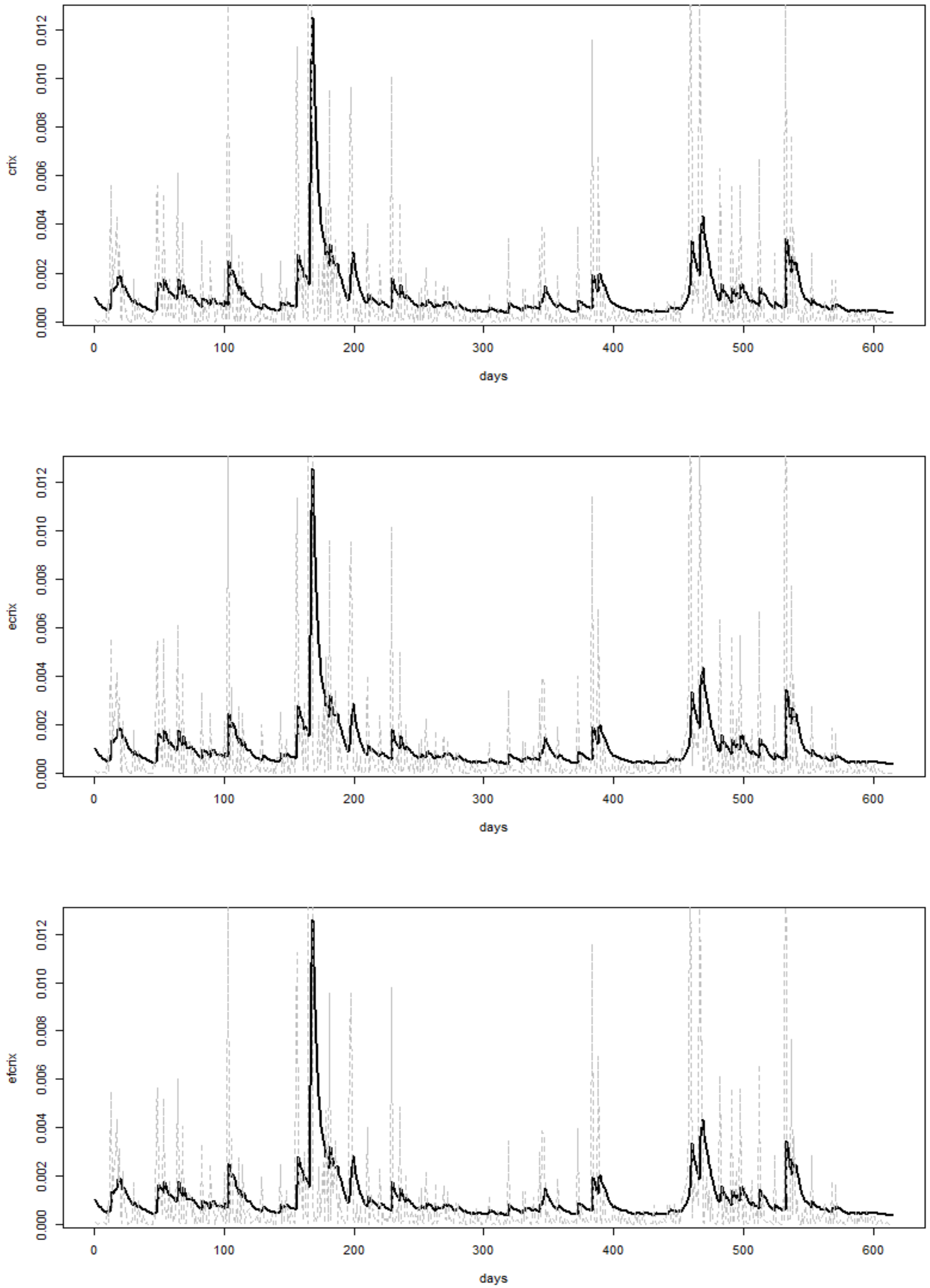
The ACF and PACF of squared ARIMA(2,0,2) residuals from 01/08/2014 to 06/04/2016.


qstd - QQ Plot
Sample Quantiles
Theoretical Quantiles
4
2
0
-2
-4
-6
-4
-2
0
2
4
6



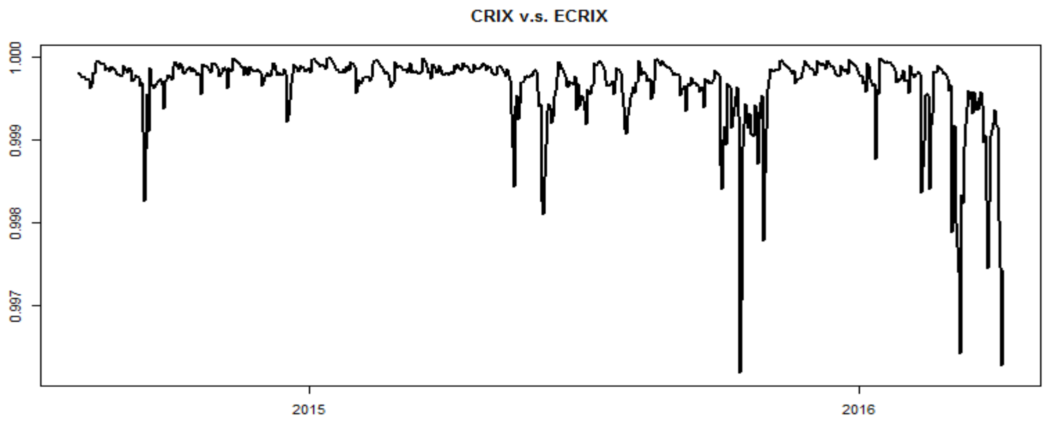
The standard error of DCC-GARCH model.

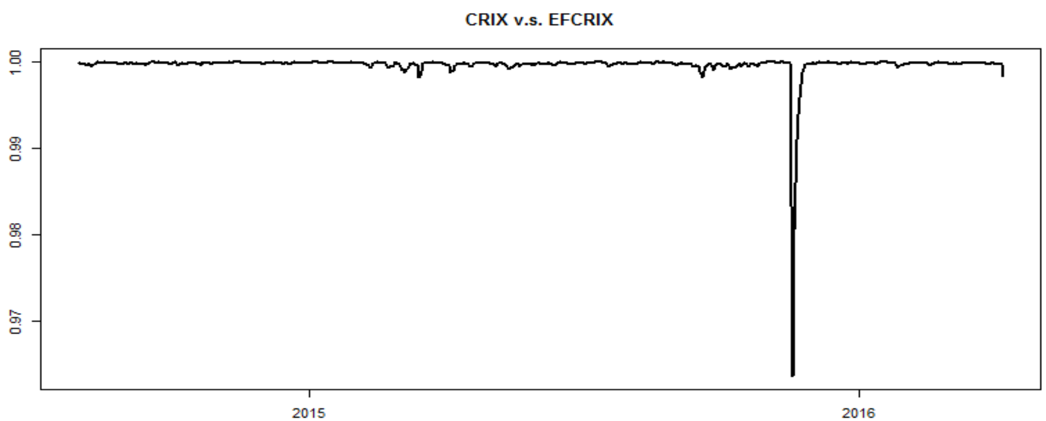
CRIX(upper)
ECRIX (middle)
EFCRIX(lower)

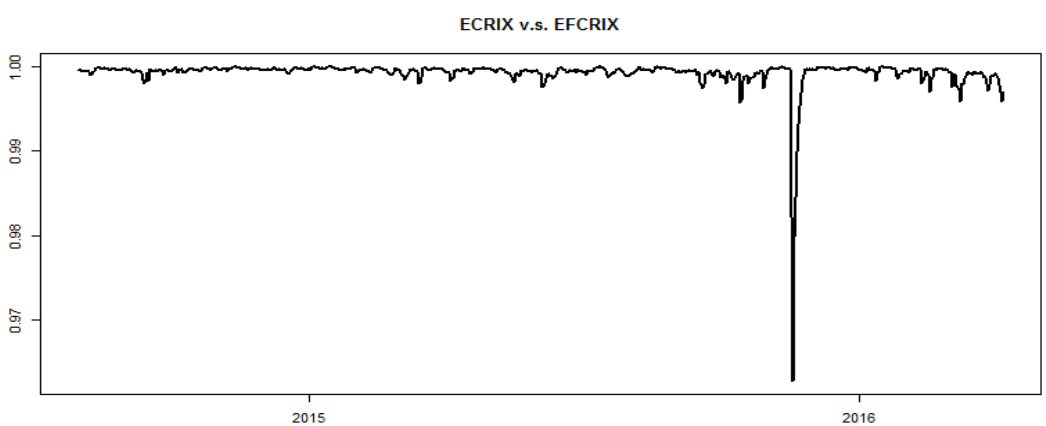


The estimated volatility (black) and realized volatility (grey) using DCC-GARCH model.

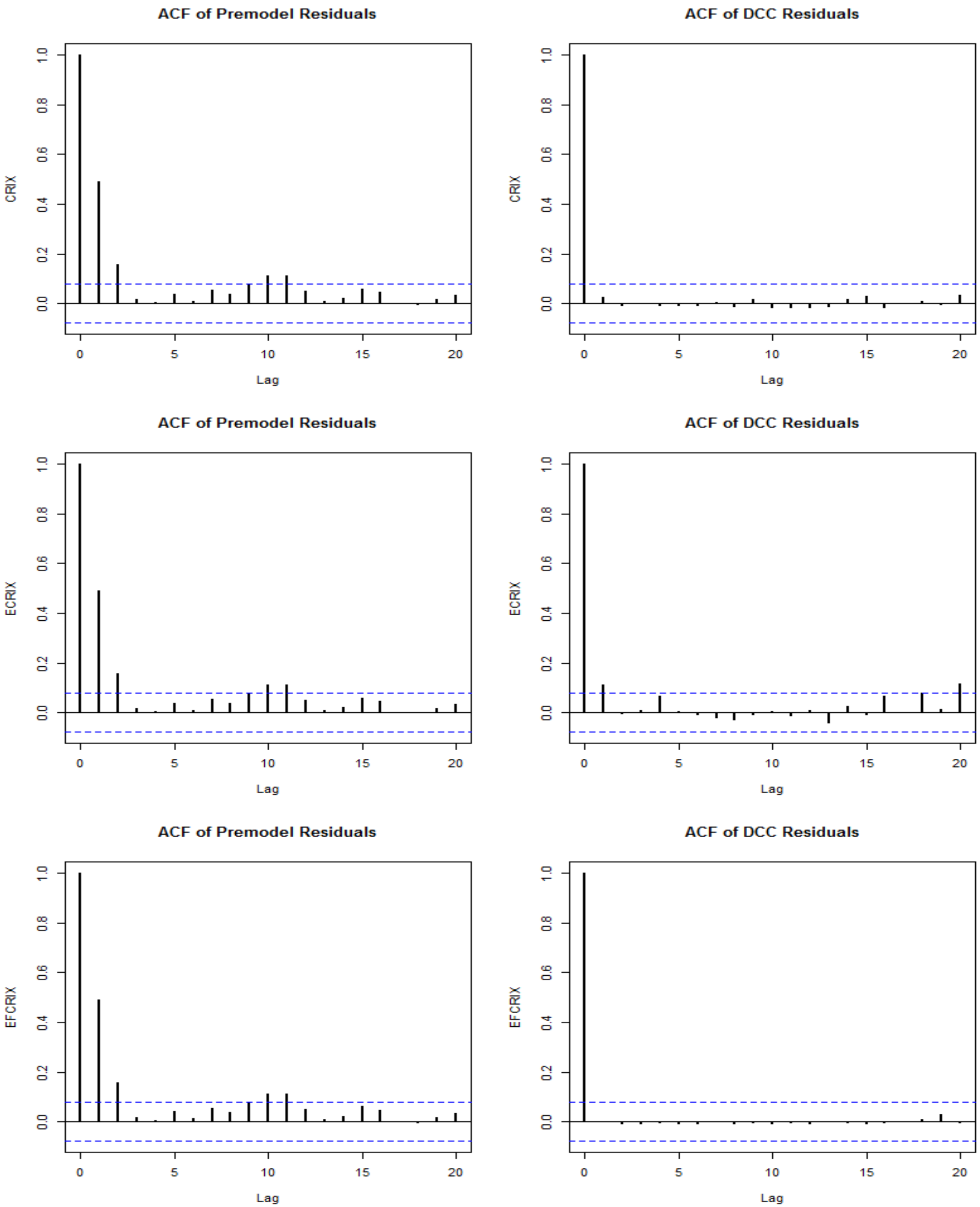
CRIX(upper)
ECRIX (middle)
EFCRIX(lower)





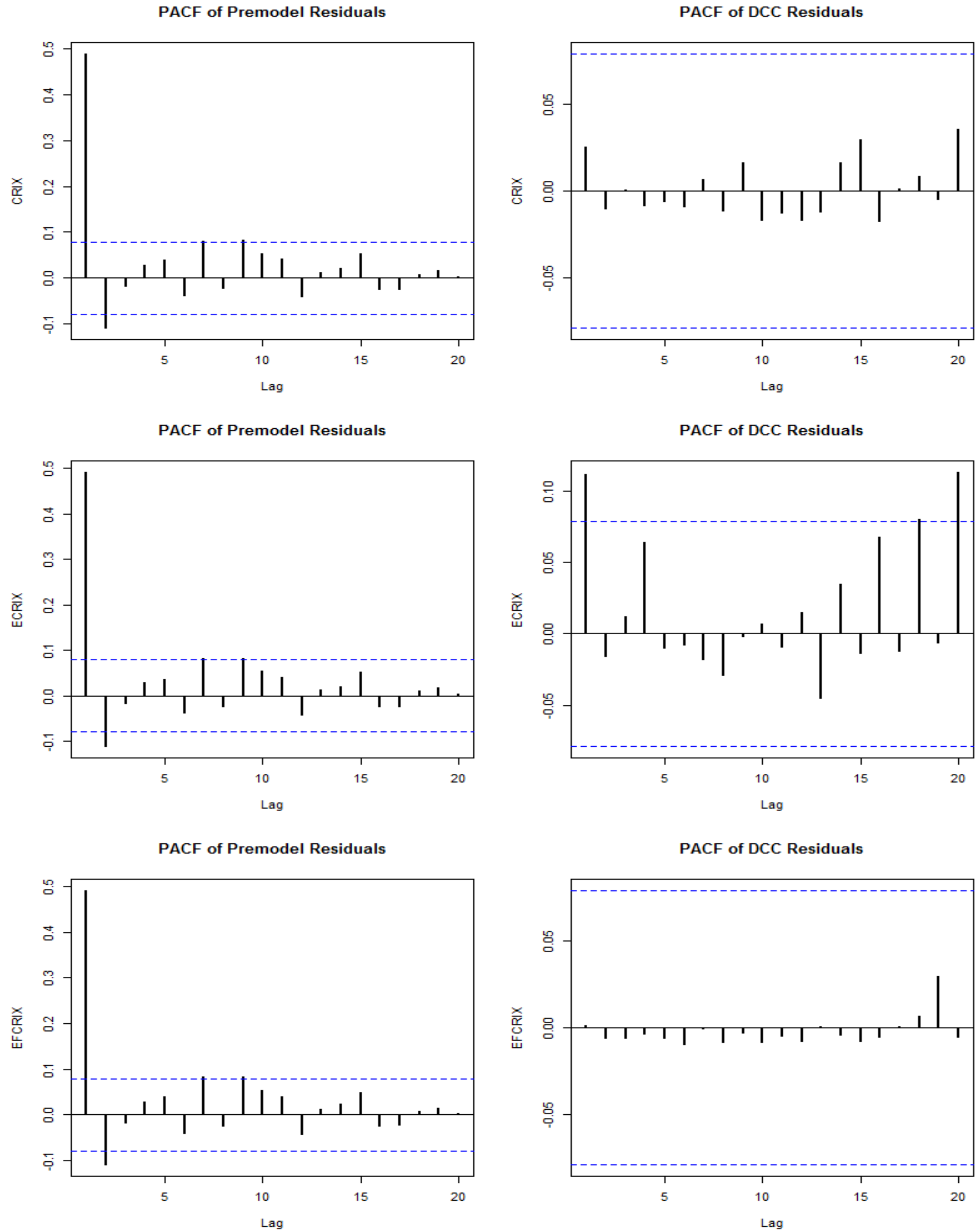


The dynamic autocorrelation between three CRIX indices: CRIX,ECRIX and EFCRIX estimated by DCC-GARCH model.



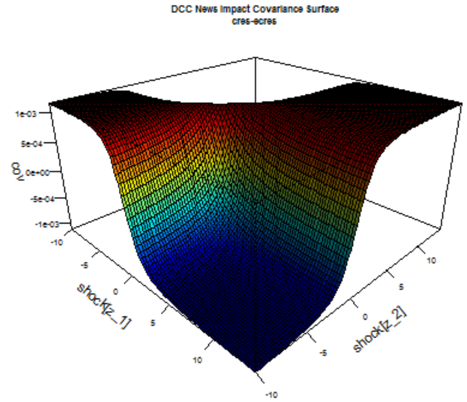
The comparison of ACF between premodel squared residuals and DCC squared residuals.

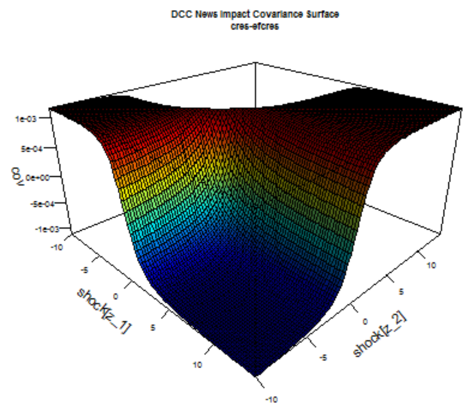
CRIX(upper)
ECRIX (middle)
EFCRIX(lower)

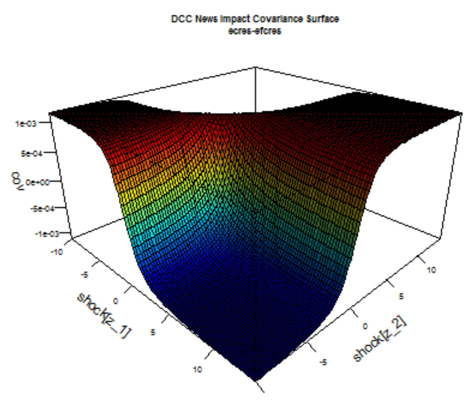


The comparison of PACF between premodel squared residuals and DCC squared residuals.

CRIX(upper)
ECRIX (middle)
EFCRIX(lower)


DCC News Impact Covariance Surface
cres-ecres
cov
1e-03
5e-04
0e+00
-5e-04
-1e-03
shock[z_1]
shock[z_2]
-10
-5
0
5
10


DCC News Impact Covariance Surface
cres-efcres
cov
1e-03
5e-04
0e+00
-5e-04
-1e-03
shock[z_1]
shock[z_2]
-10
-5
0
5
10


DCC News Impact Covariance Surface
ecres-efcres
cov
1e-03
5e-04
0e+00
-5e-04
-1e-03
shock[z_1]
shock[z_2]
-10
-5
0
5
10