

Tutorial 4 Time Series Analysis

Stochastic Time Series: Vector Error Correction Modeling

Application 1) Engle Granger Approach

1. Upload the two oil prices from the “crude oil”-file and transform them into log data.
2. Open all data as group and examine the descriptive statistics. Test the normality assumption of the data using the Ljung Box test statistic. According to graphical inspection would you conclude the stocks following a common long run trend? In this context explain what is meant by spurious regression?
3. Following the Engle Granger approach examine whether the cointegration conditions are fulfilled for the log-prices.
4. Estimate a VECM model containing both time series, use the information criteria to determine the appropriate number of lags. What are the dynamic implication of the estimated model?

Application 2) Johansen test procedure

1. Please upload the six interest rate series corresponding to 3 month, 6 month, 1,3,5 10 years. According to graphical inspection would you conclude the stocks following a common long run trend?
2. Apply a cointegration test using the Johansen approach. Decide whether to include trend/ intercept components. Determine the appropriate number of lags according to the information criteria. How many cointegration relations can be found?
3. Estimate the corresponding appropriate VECMs and interpret your results.