

## Tutorial 2 Time Series Analysis

### Stochastic Time Series: ARCH modeling

1. Upload the following time series "usa" and "japan".
2. Generate log and log differences of both time series. What result do we obtain after differencing the logs?
3. Is the resulting time series stationary? Use a Unit root test.
4. Estimate an appropriate ARMA model using the estimated acf and pacf. Check for white noise in the residuals. Examine the squared residuals. Test for ARCH effects in the residuals.
5. Given we find ARCH effects in the residuals, estimate an ARCH model and test for misspecification in the residuals.
6. Fit a GARCH model. Which of the last two models is preferred?