3rd set assignments Introductory Econometrics

Task 1

Different methods for testing linear restrictions:

Use the data set `dcx_gh.wf1` to estimate the Glosten/Harris(1988) model.

$$\Delta p_t = \mu + c\Delta Q_t + z_0 Q_t + z_1 Q_t V_t + \varepsilon_t$$

Test the joint hypotheses that $z_0 = z_1 = 0$!

i) Estimate the unrestricted OLS regression with EViews and name the equation (e.g. `UMOD`) object by clicking on `NAME`.

ii) Estimate the restricted OLS regression with EViews and name the equation (e.g. `RMOD`) object by clicking on `NAME`.

iii) Create a scalar object for the sum of squared residuals of each estimated regression by using the following EViews commands in the command line:

```
scalar ussr=UMOD.@ssr;
scalar rssr=RMOD.@ssr;
```

iv) Create a scalar object for the number of observations:

```
scalar n=UMOD.@regobs;
```

v) Compute the F-statistic with help of the three created scalar objects.

Task 2

i) Use the Excel spreadsheet `dcxft_tim.xls` to estimate the Glosten/Harris model as in assignment sheet 1. Then, calculate the variance-covariance matrix of the parameter vector $\mathbf{b}$. The VC matrix can be computed as:

$$Var(\mathbf{b}|\mathbf{X}) = \sigma^2 \cdot (\mathbf{X}'\mathbf{X})^{-1}$$

Here, σ^2 can be replaced by its unbiased estimator $s^2 = \mathbf{e}'\mathbf{e}/(n-K)$, where $\mathbf{e} = \mathbf{y} - \mathbf{X}\mathbf{b}$, n is the number of observations and K is the number of estimated parameters.

ii) Test the joint hypotheses that $2c = 0.01$ and $z_0 = z_1 = 0$! Therefore, create the matrices $\mathbf{R}$ and $\mathbf{r}$ (Hayashi(2000) p.40). Then, compute the F-statistic as:

$$F \equiv (\mathbf{R}\mathbf{b} - \mathbf{r})'[\mathbf{R}\widehat{Var(\mathbf{b}|\mathbf{X})}\mathbf{R}']^{-1}(\mathbf{R}\mathbf{b} - \mathbf{r})/\#\mathbf{r}$$

where $\#\mathbf{r}$ is the dimension of $\mathbf{r}$ (number of restrictions).