Problem 1

Download Engle, Lilien, Robins: 'Estimating Time Varying Risk Premia in the Term Structure: The Arch-M Model', Econometrica, 1987. We shall follow some of the estimations of the paper. Use the 'RP.WF1' Eviews file

1. Explain the general model and the application of excess yield holding.

2. Regress 'y' against a constant. Compare with the one estimated in the paper.

3. Evaluate the existence of ARCH effects through a correlogram and an heteroskedastic test.

4. Estimate an appropiate ARCH model. Is this specification correct when we take into account possible structural breaks in the DGP?

5. Estimate an ARCH-M. Specify the ARCH in mean as done in the paper

6. Compare the results with Figure 1

7. Which are the main differences between your modelizations and the one in the paper?

Problem 2

Using the e-views file named returns.wf1:

1. Estimate an AR(1) AR(6) with a constant.

2. Find the prefered GARCH(p; q) model for the series.

3. Explain wheter you find evidence of leverage effects.

4. Explain whether you think GARCH-M models are appropiate for this data.

Problem 3

Using the var_reg.wf1 workfile:

1. Create the series of log-differences for the S&P 500 and the difference of the EFFR (Effective Federal Funds Rate).

   Note: To do so, write in the command window:

   series dsp = log (sp) - log (sp (-1))

   series deffr = effr - effr (-1)

2. Limit the sample to 1/01/1985 - 7/31/1987.

3. Estimate an AR(1) model for dsp. What can you say about the residuals?

4. Is there evidence of ARCH effects?

5. Estimate a GARCH(1; 1) model. Do the new squared standarized residuals present auto-correlation?

6. Estimate a GARCH(1; 1) model with deffr as a variance regressor. Is it statistically significant?

7. Analyze the new squared residuals.

Problem 4

Using the workfile *rep.wf1*

1. Replicate the first three columns of Table 20.2 from 'Econometric Modelling with Time Series'. Martin, Hurn, Harris, Cambridge University Press, 2013.

2. Plot the estimated conditional variance with the GARCH(1; 1) model.

You may find tables and figures here:

http://www.cambridge.org/features/econmodelling/figuresandtables.htm

The table we need is

Problem 5

Open the workfile MVG.wf1.

Table 20.2

Maximum likelihood estimates of GARCH(1,1) and GARCH(0,1) = ARCH(1)
models of equity returns. Standard errors in parentheses are based on the Hessian.
The sample size is $T = 4952$.

Index	α_0	α_1	β_1	$T \ln L$	Unconditional Variance	
					(Theoretical)	(Empirical)
FTSE	0.013	0.079	0.907	-6348.796	0.964	0.984
	(0.003)	(0.008)	(0.012)			
	0.740	0.255	0.000	-6824.029	0.993	0.984
	(0.020)	(0.023)				
DOW	0.009	0.051	0.940	-6316.263	0.975	0.919
	(0.002)	(0.006)	(0.008)			
	0.748	0.195	0.000	-6712.500	0.929	0.919
	(0.019)	(0.022)				
NIKKEI	0.026	0.088	0.903	-8187.337	2.728	1.924
	(0.005)	(0.008)	(0.008)			
	1.587	0.182		-8561.058	1.940	1.924
	(0.040)	(0.020)				

1. Create the variables in differences of the 3 months and 1 year US yield, both expressed in percentages (muultiplied by 100).

2. Estimate a diagonal BEKK.

3. Plot the conditional covariances and the correlation.