GARCH and multivariate GARCH models

Starting references (all references are hyperlinked):

- Straumann (2005) (Use this url within the university to get online access).
- The Handbook of financial statistics (Use this url within the university to get online access).
- Starica (2003), who discusses drawbacks of the GARCH(1, 1) model, note that in Section 3.1 he points out that the GARCH model is rather instable for small sample sizes.
- A review of multivariate GARCH models Silvennoinen et. al. (2009)

Things to do:

1. Review the various multivariate GARCH models that are available, giving conditions under which a stationary solution is exists.

2. Consider the drawbacks in multivariate GARCH estimation (such as the large number of parameters which need to be estimated) compared with univariate GARCH estimation.

3. Describe and implement different estimators (do an extensive simulation study) for various multivariate GARCH models and compare with univariate estimator. Explain how these estimators are derived from the quasi conditional likelihood.

4. Review the asymptotic sampling properties of univariate GARCH estimators and under what conditions they hold.