HARALD SCHMIDBAUER İstanbul Bilgi Üniversitesi

FM 431: Econometrics of Financial Markets

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PROBLEM SHEET # 6

Problem 1: The following model was fitted to a series (1000 observations) of daily returns in percent on an asset, X_t:

$$X_t = 0.2 + \epsilon_t, \quad \epsilon_t = \nu_t \cdot \sqrt{h_t}, \quad h_t = 0.7 + 0.08\epsilon_{t-1}^2 + 0.91 h_{t-1},$$

where (ν_t) is Gaussian white noise.
For day $t = 1000$, a return of $x_{1000} = 2.8$ was observed, and h_{1000} was estimated as 4.

a) Determine the distribution of X_{1001}.

b) Now suppose that the actually observed return was $x_{1001} = -7\%$. Should we be surprised? Give reasons for your answer.

Problem 2: This is a practical exercise involving a GARCH model.

a) Download a series of historical daily FCHI closing quotations from `htpp://finance.yahoo.com`, save it on your computer in a suitable location and under a suitable file name..

b) Prepare the "Adjusted Close" series for analysis.

c) Compute the series of daily returns.

d) Fit a GARCH model to the (mean-corrected) FCHI return series.

e) Plot the series of conditional standard deviations.