

Bullet Points for Day 17

Introduction to ARCH and GARCH

The ARCH model is motivated by the easily confirmed empirical fact that for many assets the sequence of squares of asset returns show highly significant autocorrelation. The ARCH models address this in the most straightforward way imaginable.

Unfortunately, for an ARCH model to give a “good fit” it almost always must be of a high order, and this creates a set of new problems. To get around these, we consider the GARCH model. GARCH based models provide substantially more appropriate models for asset returns than any of their predecessors.

- First, a survey of results from the in-coming homework.
- A Stylized Fact: ACF of squared (and related) returns
- The ARCH Model
- The GARCH Model
 1. Specification
 2. Theoretical Features
 3. Methods for Fitting
- Illustrations Using S-Plus
 1. The Ford Example
 2. A Simulated Example using `simulate.garch()`
 3. Fitting of the Ford Data using `garch()`
- Discussion of the out-going homework.
- Broader discussion of probability modeling of asset returns

QUOTE OF THE DAY

“I do not understand your reluctance to accept that the standard form of CAPM just does not work.”

— Robert Merton, in a 1972 letter to Fisher Black, cited by MacKensie (2003, p. 851).

Robert Merton, who shared the 1997 Nobel Prize in Economics with Myron Scholes, was ahead of the curve. After all, Grainger in his 1992 “Forecasting” paper gave a stack of evidence against CAPM, but was still “not yet” ready to pull the plug.