Mathematical Statistics
Stockholm University
Bachelor Thesis **2012:4**
http://www.math.su.se

Testing and modeling dynamic properties of returns volatility

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May 2012

Abstract

As a part of the essential financial theory it is assumed that asset returns are normally distributed with some mean value and some constant variance. This assumption is based on the large number law and is applicable to the significantly large number of observations. However, it has been observed that even for significantly long time periods this assumption is highly questionable. It has also been noticed that volatility of returns is varying over time in such a manner that reveals its' dependency within time. The dynamic models such as the class of ARCH/GARCH models has been developed for capturing dynamics of volatilities. In brief and generally, the ARCH/GARCH models express future volatility value based on the present and past values. The objective of this thesis is to survey the properties of returns and model volatility of returns with ARCH(1) and GARCH(1,1) models.

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