

DEPARTMENT OF STATISTICS COLLOQUIUM SERIES
Texas A&M University

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POWERFUL TESTS FOR STRUCTURAL CHANGES IN VOLATILITY

ABSTRACT:

Detection of structural change in volatility is important to understanding volatility dynamics and the stylized facts observed for financial returns like IGARCH effect and volatility persistence. The commonly used tests, like CUSUM-based and LM-based tests, are constructed in the absence of explicit formulation of the alternative hypothesis and are subject to power loss. In this paper we specify a nonparametric alternative and propose modified tests building in such information through nonparametric estimation of the volatility function. The new tests are simple to use and reduce to standard ones for particular choices of tuning parameters. We provide a limit theory and establish conditions under which the new tests preserve the null distributions of the standard ones and are more powerful whenever the serial dependence is allowed or not. The smoothing parameters are selected in data-driven ways such that the proposed tests have good sizes in finite samples and achieve decent power gains. The problem of interest is related to and sufficiently different from that of testing for shifting mean. Extensive simulations under the framework of regime-dependent GARCH models and an empirical application are provided.

DATE: Thursday, February 2, 2012

TIME: 3: 45 p.m. – 4:45 p.m.

PLACE: Room 113, Blocker