

Public Abstract

First Name:Seungmin

Middle Name:

Last Name:Jahng

Adviser's First Name:Stanislav

Adviser's Last Name:Kolenikov

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:FS 2008

Department:Statistics

Degree:MA

Title:A MIXED MODEL FOR VARIANCE OF SUCCESSIVE DIFFERENCE OF STATIONARY TIME SERIES: MODELING TEMPORAL INSTABILITY IN INTENSIVE LONGITUDINAL DATA

Temporal instability of a stochastic process has been of interest in many areas of behavioral and social science. Recent development in data collection techniques in behavioral and health sciences, such as Ecological Momentary Assessment (EMA) enables researchers in these areas to get direct assessment on temporal fluctuations over time for many individuals. Although many researchers have used variance and autocorrelation as a temporal instability measure, their utility and interpretation are limited to index temporal instability. I propose variance of successive difference (VSD) of stationary time series as an overall index of temporal instability such that it is a function of variance and first order autocorrelation of time series. A version of variance of successive difference of unequally spaced time series is also presented as well as distinction of within-day and between-day instability measures. Given that VSD is an individual difference measure, it is proposed that group differences on these indices be explored using a mixed variance model proposed by Hedeker et al. (2008). To illustrate, we present EMA data from a study of negative mood in borderline personality disorder (BPD) and major depressive disorder (MDD) patients, resulting that BPD patients showed more negative affective instability than MDD patients.