

# DETECTION OF STRUCTURAL BREAKS IN TRENDING REGRESSION

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The talk will concern procedures for detection of structural breaks (or instability) in the retrospective setups.

In the *retrospective setup*, a sequence of observations  $Y_1, \dots, Y_n$  obtained at the ordered time points  $t_1 < \dots < t_n$  are available. The first  $m$  observations follow a certain statistical model and after the  $m$ -th observation the model changes and the remaining  $n - m$  observations follow another model. The point  $m$  is unknown and is called break (change point). The problem is to detect (to test  $H_0$ : no break (change) &  $H_1$ : there is a break (change) ) and to identify the location of such a change (to estimate  $m$ ).

The problem have many variants. They have attracted many researchers both from theoretical and applied point of view. Applications can be found in econometric time series, financial time series, meteorology, climatology, hydrology or environmental studies, and statistical quality control among others.

During the talk the test procedures for detection of breaks (changes) in regression models with "trending regressors" will be discussed in more details. Theoretical part will focus on behavior of max type test statistics whose limit distribution belongs to extreme value type. Approximations to critical values based on limit null distribution and bootstrap will be discussed. Results of a simulation study together with application to the real data sets will be presented. The talk will be mostly based on the paper: Segmenting mean-nonstationary time series via trending regressions written jointly with A.Aue and L. Horváth.