Project on

"Robust Modeling and Forecasting of Nonlinear Macroeconomic Time-Series Models: Theory and Applications"

Project leader: Rickard Sandberg (Stockholm School of Economics)

Co-workers: Pentti Saikkonen (university of Helsinki), Robinson Kruse (University of Hanover)

Period: 2012-2016

Funded by: Jan Wallander's and Tom Hedelius' Research Foundations, Grant No. P2012-0085:1

Amount: 2 million SEK

Summary of the project

This project presents a nonlinear framework for (outlier robust) modeling and forecasting of macroeconomic time series. A nonlinear (rather than a linear) framework is simple motivated by: (a) the amount of overwhelming evidence in favor of nonlinearities in the dynamics and trends in major economic variables documented in the literature (e.g., in Europe and U.S. unemployment rates, GDP, investments, productivity, exchange rates, consumption and interest rates to list a few), and (b) the fact that nonlinear behavior of macroeconomic variables abound in theory (e.g., J. M. Keynes considered already in 1936 nonlinear models for, e.g., unemployment rates).

The project yields advances in multiple directions over existing work: (1) several new flexible nonlinear models (capturing most of the linear and nonlinear features seen in macroeconomic data) for both single and multivariate relationships are presented (2) a sound modeling cycle is provided, and contains the steps specification, estimation, and evaluation (3) using the new models, profound forecasting exercises are undertaken (4) new powerful unit root tests are derived (5) the contributions by 1-4 are robustified in an outlier context (6) employing our new models and robust methods, about 214 major leading US and Europe economic variables are analyzed (7) all results are made available for practitioners by free access to data and programming code.