University of Ljubljana
SEB SCHOOL OF ECONOMICS AND BUSINESS

BANKA SLOVENIJE
EVROSISTEM

The Research Centre of the School of Economics and Business,
in cooperation with **the Bank of Slovenia,**
cordially invites you to a research seminar
on **Friday, 8th May 2020 at 11:00 CEST**

Author:

doc. dr. Andrej Srakar

Institute for Economic Research, Ljubljana
University of Ljubljana, School of Economics and Business

will present the article:

Endogeneity modelling in static and dynamic MIMIC models

Multiple Indicators Multiple Causes (MIMIC) models are type of structural equation models, a theory-based approach to confirm the influence of a set of exogenous causal variables on the latent variable, and also the effect of the latent variable on observed indicator variables (Zellner, 1970; Goldberger, 1972; Jöreskog and Goldberger, 1975; Weck, 1983; Frey and Weck, 1983; Frey and Weck-Hannemann, 1984; Aigner et al., 1988). MIMIC models are commonly used in economics for modelling the shadow economy (see e.g. Thomas, 1992; Schneider, 1994; 1997; 2003; 2005; Giles, 1999; Giles and Tedds, 2002; Giles et al., 2002; Buehn and Schneider, 2008; Breusch, 2016). In a common MIMIC model, multiple indicators reflect the underlying latent variables/factors, and the multiple causes (observed predictors) affect latent

EFMD EQUIS ACCREDITED
AACSB ACCREDITED
ASSOCIATION AMBA ACCREDITED

variables/factors. Basic assumptions of MIMIC are clearly violated in case of a variable being both an indicator and a cause, i.e. in the presence of reverse causality. Furthermore, the model is then unidentified. To resolve the situation, which can arise frequently (example: in modelling shadow economy, GDP can be both a predictor and consequence), we utilize a version of Bollen's 2SLS estimator for structural equation models (Bollen, 1996) combined with Jöreskog (1970)'s method of the analysis of covariance structures to derive a new, 2SLS estimator for MIMIC models. As MIMIC estimation lacks closed form solutions for parameters (to resolve it, in their original contribution, Jöreskog and Goldberger (1975) propose a maximum likelihood estimation approach), we use Madansky-Hägglund-Jöreskog and Bollen's IV and 2SLS estimators for the factor loadings of the measurement model along with formulas from Hägglund (1982) to estimate the covariance matrices of latent variables. Second, we use this estimated covariance matrix of the latent variables and apply Jöreskog's (1970) maximum likelihood procedure to estimate coefficient estimates for the latent variable model. We present 2SLS empirical estimation procedures for both static and dynamic/error-correction (Buehn and Schneider, 2008) MIMIC models and derive their basic asymptotic theory. We study the performance of the estimators in a simulation study and apply findings to two empirical cases: static one, estimating precarious status of older workers (using dataset of Survey of Health, Ageing and Retirement in Europe) and a dynamic one, estimating deaccessioning in museums on a large panel dataset of American museums in period 1989-2017.

Based on joint work with prof. Marilena Vecco (Burgundy School of Business – Université Bourgogne Franche-Comté, Dijon, France) and prof. Miroslav Verbič (School of Economics and Business, University of Ljubljana and Institute for Economic Research (IER), Ljubljana, Slovenia).

Please sign up for free seminar at http://raziskave.ef.uni-lj.si/a/836
Access details will be sent prior to the event to signed up users.