# J. Ditzen: Identifying dominant factors in panel time series models with cross-sectional dependence using lasso

Abstract: Panel time series models with a large number of observations over time and cross-sectional units are likely to inhibit dependence across units. The dependence can be approximated using the common correlated effects estimator (Pesaran, 2006) which adds the unweighted average across all cross-sectional units. The assumption of equally weighting all cross-sectional units has two implications. First, it implies a spatial equilibrium (Bhattacharjee et al., 2020). Secondly, it assumes that all cross-sectional units affect each other equally.

This talk will present an alternative of determining the weights of the cross-sectional averages and taking both considerations into account using a data driven methodology. To understand the dependencies across cross-sectional units, identifying common dominant factors or units is key. Monte Carlo simulation results using lasso regression methods to identify the dominant cross-sectional units will be presented. The project is related to the literature on infinite VARs (Chudik, Pesaran 2013) and using lasso on dependent time series data (Belloni et al. 2016; Ahrens et al., 2020).