**SIdE Summer School 2026**

# Advanced Econometric Methods for Complex Data: Panels, Networks and Structural VARs
**Bertinoro, University Residential Centre – 19–25 July 2026**

## Module 1 (Days 1–3) Networks, Panels & High-Dimensional Inference

**Lecturer:** *Koen Jochmans* (University of Toulouse)

### Selected Bibliography

Here are recommended readings from Jochmans that map directly into the programme above. They cover panel data, network data, latent structures, bootstrap inference and identification issues.

- Jochmans, K. & Weidner, M. (2019). *Fixed-Effect Regressions on Network Data.* Econometrica, 87(5), 1543-1560.
  - Focuses on inference on fixed effects in linear regression models estimated from network data; covers the structure of the network and how it affects estimation accuracy.
- Jochmans, K. (2024). *Nonparametric Identification and Estimation of Stochastic Block Models from Many Small Networks.* Journal of Econometrics.
  - Deals with latent-structure models (stochastic block models) and non-parametric identification in network contexts.
- Higgins, A. & Jochmans, K. (2025). *Inference in Dynamic Models for Panel Data Using the Moving Block Bootstrap.* (preprint)
  - Focuses on panel data with fixed effects under rectangular-array asymptotics and proposes a moving block bootstrap scheme for valid inference.
- Bonhomme, S., Jochmans, K. & Weidner, M. (2024). *A Neyman-Orthogonalization Approach to the Incidental Parameter Problem.* (preprint)
  - Addresses panel and network models with many nuisance parameters/fixed-effects, constructing higher-order orthogonal estimating equations.
- Jochmans, K. (2023). *Peer Effects and Endogenous Social Interactions.* Journal of Econometrics.
  - Provides methods for dealing with endogenous selection of peers in linear-in-means models, using network restrictions and instrumental variables.

**Additional Recommended Works**

- Jochmans, K. (2023). *Modified-likelihood Estimation of Fixed-Effect Models for Dyadic Data.* Journal of the Spanish Economic Association.
- Jochmans, K. (2022). *Instrumental-Variable Estimation of Exponential Regression Models with Two-Way Fixed Effects with an Application to Gravity Equations.* Journal of Applied Econometrics.

(both provide further background useful for the applied sessions on days 3–4)

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# Module 2 (Days 4–6)

# A Bayesian Approach to Identification of Structural VAR Models

**Lecturer:** *Christiane Baumeister* (University of Notre Dame, NBER, CEPR)

## Reading List

### *Identification of Structural VAR Models*

We revisit the identification problem in structural VAR models and introduce a general Bayesian framework that nests traditional identification schemes. In particular, we question the current practice of identification in VAR models using inequality constraints. We illustrate the problems that arise from the traditional algorithm based on sign restrictions with an application to modeling the labor market. We introduce a more flexible approach for estimation and inference that is not subject to these concerns.

- Baumeister, C. and J.D. Hamilton (2015), "Sign Restrictions, Structural Vector Autoregressions, and Useful Prior Information," *Econometrica*, 83(5), 1963-1999.
- Baumeister, C. and J.D. Hamilton (2020), "Drawing Conclusions from Structural Vector Autoregressions Identified on the Basis of Sign Restrictions," *Journal of International Money and Finance*, 109, article 102250.
- Baumeister, C., and J.D. Hamilton (2024), "Advances in Using Vector Autoregressions to Estimate Structural Magnitudes," *Econometric Theory*, 40(3), 472-510.
- Hamilton, J.D. (2026), *Vector Autoregressions*, Cambridge University Press, Chapters 11 and 12.
- Brinca, P., J.B. Duarte, and M. Faria-e-Castro (2021), "Measuring Labor Supply and Demand Shocks during COVID-19," *European Economic Review*, 139, article 103901.
- Rubio-Ramirez, J.F., D.F. Waggoner, and T. Zha (2010), "Structural Vector Autoregressions: Theory of Identification and Algorithms for Inference," *Review of Economic Studies*, 77(2), 665-696.

### *The Role of Prior Information*

We illustrate this new method for identification by revisiting the role of oil supply and demand shocks in generating historical fluctuations in the price of oil and highlight several shortcomings of traditional approaches to identification of oil supply and demand shocks with a particular focus on the estimation of behavioral elasticities.

- Baumeister, C. and J.D. Hamilton (2019), "Structural Interpretation of Vector Autoregressions with Incomplete Identification: Revisiting the Role of Oil Supply and Demand Shocks," *American Economic Review*, 109(5), 1873-1910.
- Baumeister, C. and J.D. Hamilton (2022), "Structural Vector Autoregressions with Imperfect Identifying Information," *AEA Papers and Proceedings*, 112, 466-470.
- Caldara, D., M. Cavallo, and M. Iacoviello (2016), "Oil Price Elasticities and Oil Price Fluctuations," *Journal of Monetary Economics*, 103, 1-20.
- Kilian, L. (2009). "Not all Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market," *American Economic Review*, 99, 1053-1069.

- Kilian, L., and D.P. Murphy (2012), "Why Agnostic Sign Restrictions Are Not Enough: Understanding the Dynamics of Oil Market VAR Models," *Journal of the European Economic Association*, 10(5), 1166-1188.

### *Inference in Set-Identified SVAR Models*

We show how to supplement prior information about structural parameters with prior knowledge about the impacts of structural shocks and external instruments. We apply this idea to the study of the dynamic effects of monetary policy, its role in business cycle fluctuations, and the estimation of structural policy response coefficients in an interest-rate rule. We also show how to correctly construct credibility sets for impulse response functions, variance decompositions, and historical decompositions.

- Baumeister, C. and J.D. Hamilton (2018), "Inference in Structural Vector Autoregressions When the Identifying Assumptions are Not Fully Believed: Re-evaluating the Role of Monetary Policy in Economic Fluctuations," *Journal of Monetary Economics*, 100, 48-65.
- Belongia, M.T., and P.N. Ireland (2021), "A Classical View of the Business Cycle," *Journal of Money, Credit, and Banking*, 53(2-3), 333-366
- Nguyen, Lam (2025), "Bayesian Inference in Proxy SVARs with Incomplete Identification: Re-evaluating the Validity of Monetary Policy Instruments," *Journal of Monetary Economics*, 103813.
- Read, Matthew (2024), "Set-identified Structural Vector Autoregressions and the Effects of a 100 Basis Point Monetary Policy Shock," *Review of Economics and Statistics*, forthcoming.
- Watson, M.W. (2019), "Comment on 'On the Empirical (Ir)Relevance of the Zero Lower Bound' by Debortoli, Gali, and Gambetti," *NBER Macroeconomics Annual*.