

# Macroeconomics II

## University of Padova

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### Aim of the course

This is a 30 hour-subject. The goal of this subject is to learn how to estimate models for the analysis of the business cycle, identify its drivers, estimate the transmission mechanisms of structural impulses, and assess their relevance. The two main tools studied in this course are Vector AutoRegressive (VAR) models and Dynamic Stochastic General Equilibrium (DSGE) frameworks. Students will be introduced to reduced-form VARs and a variety of different identification schemes to move from the description of the data (provided by the reduced-form analysis) to the interpretation of the data (via the analysis provided by structural VARs). We will then move to DSGE frameworks and learn how to take them to the data, validate them, and use them to perform policy analysis. At the end of the course, students will be able to: i) read state-of-the-art scientific papers based on Structural VAR (SVAR) and DSGE analysis; ii) produce scientific research based on such approaches.

### Assessment

- *Students' presentations of state-of-the-art papers: 20%.* These 45 minute-long presentations will be group-presentations (3 groups of 3 students each), with questions from the audience (myself and the non-presenting students).
- *Final project: 80%.* The final project is expected to be a novel piece of research with a short motivation, a description of the data and the econometric approach, a documentation of the main result with comments (one Figure/Table could be enough), and a short concluding section. In other words, this project is expected to be a short scientific-type of paper. The final project is expected to be a solo project (although collaboration among students is allowed). The (hard!) deadline for the project is March 31, 2022.

## Classes

Blended or online, depending on the sanitary conditions. Please have a look at the official schedule for the time/place of our classes (the latter applies if classes are in presence - otherwise, a zoom link will be sent to you for each class we do online).

Tentatively, students' presentations will take place on January 28 (VAR material) and February 11 (DSGE material).

## Syllabus & readings

References for this subject are books and scientific papers. The two main books are Kilian and Lütkepohl (2017) (VAR models) and Herbst and Schorfheide (2015) (DSGE frameworks). The papers listed below are interesting readings (in part covered in class) one could start from to write his/her PhD thesis. References marked with an asterisk will be presented in class by students.

### VAR

#### 1. *VAR: Reduced-form analysis*

Kilian and Lütkepohl (2017) - chapter 2.

#### 2. *SVAR: Cholesky-identification strategy*

Kilian and Lütkepohl (2017) - chapter 4, Sims (1980), Christiano, Eichenbaum, and Evans (1999), Christiano, Eichenbaum, and Evans (2005), Stock and Watson (2001), Castelnuovo and Surico (2010).

#### 3. *SVAR: Traditional sign restrictions*

Kilian and Lütkepohl (2017) - chapter 13, Faust (1998), Canova and de Nicoló (2002), Uhlig (2005), Fry and Pagan (2011), Rubio-Ramírez, Waggoner, and Zha (2010), Baumeister and Hamilton (2015), Kim, Moon, and Velasco (2017), Uhlig (2017), Arias, Rubio-Ramírez, and Waggoner (2018).

#### 4. *SVAR: Restrictions on coefficients, shocks, ratios, and impulse responses.*

Ludvigson, Ma, and Ng (2019), (\*) Antolín-Díaz and Rubio-Ramírez (2019), Furlanetto, Ravazzolo, and Sarferaz (2019), Arias, Caldara, and Rubio-Ramírez (2019), Wolf (2019).

#### 5. *Proxy-SVARs*

Kilian and Lütkepohl (2017) - chapter 15, Mertens and Ravn (2013), Stock and Watson (2018), Gertler and Karadi (2015), Caldara and Kamps (2017), (\*) Jarociński and Karadi (2020).

#### 6. *Local Projections*

Kilian and Lütkepohl (2017) - chapter 12, Jordà (2005), Ramey and Zubairy (2018), Tenreyro and Thwaites (2016), Plagborg-Møller and Wolf (2020), (\*) Ascari and Haber (2021).

### DSGE

#### 7. *Turning a DSGE model into a Bayesian model*

Herbst and Schorfheide (2015), chapter 2.

#### 8. *A crash course in Bayesian Inference*

Herbst and Schorfheide (2015), chapter 3.

#### 9. *Metropolis-Hastings Algorithms for DSGE models*

Herbst and Schorfheide (2015), chapter 4, Smets and Wouters (2007), (\*) Christiano, Motto, and Rostagno (2014).

#### 10. *Sequential Monte Carlo Methods*

Herbst and Schorfheide (2015), chapter 5.

#### 11. *Other ways to estimate and validate DSGE frameworks and related issues and investigations*

Fernández-Villaverde, Rubio-Ramírez, Sargent, and Watson (2007), Canova and Sala (2009), (\*) Christiano, Eichenbaum, and Evans (2005), Leeper, Traum, and Walker (2017), (\*) Angeletos, Collard, and Dellas (2020).

## References

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