

Syllabus for the course

MODERN METHODS FOR ECONOMIC POLICY ANALYSIS

Course code:	SE 910
Course title in the language of instruction:	Modern Methods for Economic Policy Analysis
Course title in Czech:	Moderní metody analýzy hospodářské politiky
Course title in English:	Modern Methods for Economic Policy Analysis
Number of ECTS credits allocated:	
Mode of delivery:	in person
Mode of completion:	graded course
Language of instruction:	English
Level of course and year of study:	doctoral
Semester:	1 - 4
Name of lecturer(s):	Ing. Michal Andrle, Ph.D. International Monetary Fund, Mission Chief, Deputy Chief of General Macro and Fiscal Division
Prerequisites and co-requisisites:	none
Recommended optional	none
Programme component:	
Work placement:	none

Aims of the course:

The course introduces modern methods for ex-ante and ex-post economic policy analysis and program evaluation. It outlines key methodological issues linked with causal inference and counterfactual analysis. The course will illustrate the methodological principles behind multiple types of dynamic macroeconomic models (VARs, Cowless Commission, RBC/New-Keynesian DSGE models) and how these are used in policy institutions for policy analysis. For example: ex-ante and ex-post analysis of Brexit. The second part of the course will introduce participants to the “credibility revolution” in empirical economics, outlining the Neyman-Rubin potential outcome approach and Pearl’s causal approach to causal identification. User-level introduction to causal identification, instrumental variables, matching, diff-in-diff, regression discontinuity analysis, or synthetic control method will be provided. Examples of policy analyzed in the course will be: measuring the effects of monetary and fiscal policies, tax reforms, Brexit, or trade wars, etc.

Learning outcomes and competences:

The graduates will have appreciation of modern methods of economic analysis as practiced in academia and in policy institutions and their pitfalls. They will be able to specify and assess a project that evaluates economic policies, assess the strength of the causal identification, external validity, and robustness.

Course contents:

- 1. Introduction: The “Why” and “What if” in Economics**
 - a. Welcome & getting to know each other, setting the expectations
 - b. Stylized facts, exploratory data analysis
 - c. The importance of quantitative analysis and causal reasoning
- 2. Dynamic Economic Models: Reduced-form vs. Structural**
 - a. Modeling economic behavior and the Lucas critique (VARs vs. Cowless vs. microfounded)
 - b. Micro-founded vs. semi-structural models: hopes and falls
 - c. Forecasting vs. scenario and policy analysis
- 3. Formulating and Testing Macroeconomic Models**
 - a. Modern applied structural models (DSGE, DSGE-light, gap models)
 - b. Nonlinear and linear form, uncertainty
 - c. Backward-looking and forward-looking economic models: expectations
 - d. Building and simulating a small economic model
- 4. Policy Analysis using Economic Models**
 - a. Scenarios, IRF analysis, variance decomposition
 - b. Historical shock decomposition
 - c. Counterfactual scenarios (“what if”)
- 5. Dos & Don’ts of Policy Analysis with Economic Models: Examples**
 - a. Examples of real-world economic analysis using various models
 - b. How not to get fooled: what to watch for, “smell tests”
- 6. Empirical Causal Inference without macro models**
 - a. Causality and identification in economics: credibility revolution in empirical econ
 - b. The Fundamental Problem of Causal inference
 - c. RCTs versus observational studies
- 7. Empirical Methods I:**
 - a. The perils of regression & the virtues of regression
 - b. Identification, DAGs, OVB, and Instrumental variables
- 8. Empirical Methods II:**
 - a. Regression discontinuity design
 - b. Introduction to Difference-in-Difference (DiD) analysis
 - c. Synthetic control method
- 9. Mystery Guest & Discussion of Policy Analysis**
 - a. Invited guest shares an example of a policy analysis with the participants
- 10. Buffer-overflow lecture:**

Learning activities, teaching methods and workload (hours):

Type of a teaching method	Hours of workload Daily attendance
Participation in lectures	26 h
Preparation for lectures	60 h
Preparation for the final test	70 h
Celkem	156 h

Assessment methods and criteria:

Requirement Type	Weight Daily attendance
Active lecture/seminar/workshop/tutorial participation	20 %
Final test	80 %
Total	100 %

Assessment:

Graded courses

- 1 Excellent (90-100%)
- 2 Very good (75-89%)
- 3 Good (60-74%)
- 4 Insufficient (0-59%)

Ungraded courses

P passed

NP Not Passed

Special requirements and details:

Experience with scripting or programming in any programming language is beneficial but not required. It is required for doing modern economic research, though. The course will use Python/Matlab to illustrate some basic concepts in economic modeling and linear algebra.

Reading:

The reading list (books, articles, working papers) will be provided during the course.

Some recommended reading:

Linde, J., F. Smets, R. Wouter: **Challenges for Central Bank's Macro Models**, Handbook of Macroeconomics, in: J. B. Taylor & Harald Uhlig (ed.), Handbook of Macroeconomics, edition 1, volume 2, <https://www.sciencedirect.com/science/article/pii/S157400481630009X>

Krugman, Paul: **Two Cheers for Formalism**, <http://web.mit.edu/krugman/www/formal.html>

IMF: IMF World Economic Outlook, Ch 2: **Countering Future Recessions in Advanced Economies: Cyclical Policies in an Era of Low Rates and High Debt**, <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>

Andrieu et al.: The Flexible System of Global Models – FSGM, IMF WP/15/64, <https://www.imf.org/external/pubs/ft/wp/2015/wp1564.pdf>

Angrist, J.D. and J.-S. Pischke: **The Credibility Revolution in Empirical Economics: How Better Research Design is Taking Con out of Econometrics**, Journal of Economic Perspectives, Spring 2010

Leamer, E.E.: **Let's Take the Con Out of Econometrics**, The American Economic Review, Vol. 73, No.1, March 1983

Books:

Canova, F.: **Methods for Applied Macroeconomic Research**, PUP 2007

Angrist, Pischke: **Mastering Metrics: The Path from Cause to Effect**, PUP 2014

Pearl, J.: **The Book of Why**, 2020