

Boosting Empirics with Theory

- Lecturer:** Professor Dr. Wolf Wagner (Rotterdam School of Management, Erasmus University, and CEPR)
- Date:** October 08-11, 2024
(lectures each day from/to: 9:00-10:30, 11:00-12:30, 13:30-15:00)
- Venue:** OvGU Magdeburg, Faculty of Economics and Management, Universitätsplatz 2, 39106 Magdeburg, room A-225 (faculty center)
- Registration:** until September 30, 2024 via email: michael.kvasnicka@ovgu.de

Prerequisites

Participants should be familiar with basic concepts of statistics and econometrics, especially linear regression and hypothesis testing.

Overview and Objectives

Methodology courses typically focus on either theory or on the empirical estimation. This course aims to bridge the gap between the two by exploring several ways in which empirical studies can benefit from using theory. While it is common for theory papers to derive empirical predictions, this course will emphasize an interplay between theory and empirics starting from existing empirical work. We will demonstrate that using theory can often be a low-hurdle approach to improving empirical exercises. Without requiring the collection of new data, theory can help overcome identification challenges, sharpen empirical specifications, derive policy implications, or supplement regressions with additional quantitative exercises. Using theory can take, for instance, the form of explicitly linking the empirics to prior theoretical work, or adding a theoretical framework (even just a single equation) to the paper. We will discuss these possibilities in the context of actual research papers. In doing so, we will also pay attention to their evolution. Several of these papers began as purely empirical studies but later added theory to overcome specific challenges and enrich the analysis.

Topics covered

The course will cover the following topics:

1. Clarifying the economic mechanism and creating testable implications.

Empirical exercises frequently investigate a fairly complex economic mechanism, and it is often difficult to understand how the various empirical results relate to the potential mechanism. This not only hinders the empirical investigation, but also a convincing presentation of the results. A simple framework may help illustrate the workings of the main mechanism. It creates a coherent framework to think about the mechanism and see whether it is consistent with the empirical results. As a side benefit, it naturally creates testable implications (e.g., "If it is our mechanism A, then it should disappear in subsample X") and helps to sharpen the empirical specification (e.g., "If it is mechanism A, then only this dimension of our empirical proxy should matter, but not the other").

2. Using theory to overcome identification challenges.

Multiple economic mechanisms can be consistent with a set of empirical results, making identification challenging. Theory can help map channels into empirical outcomes and disentangle channels from each other. For example, theory can predict that a specific channel is only present (or more pronounced) under certain conditions (e.g., for a specific group of observations), which can then be empirically investigated. Alternatively, theory can help uniquely link a set of empirical outcomes to a specific mechanism.

3. Creating policy counterfactuals.

The goal of academic studies is often to inform policy. In the case of an empirical paper, specific findings may be used to recommend certain policies. However, this approach is subject to the Lucas critique: agents are likely to adjust their behavior in response to a policy change. Theory, modeling both the direct impact of a policy and the optimizing behavior of agents, can account for both effects. Using estimated regression coefficients, this approach may allow calculating the net effect of policy changes, making it robust to the Lucas critique. Theory also helps a normative interpretation to regression findings. For example, in a certain situation, an estimated effect might be interpreted as an externality. The normative interpretation may then be used to make welfare inferences.

4. “Taking coefficients seriously”.

Empirical studies often evaluate coefficient estimates in a narrow sense, for example, by assessing “economic significances” based on standard deviation changes. This can be a missed opportunity. In the context of theory, coefficients have specific meaning and can be used as inputs into (simple) additional exercises. For example, a coefficient may be interpreted as the “incidence” of an effect or as a “multiplier”. Utilizing this, one can carry out additional exercises, such as calculating industry-wide (or dynamic) effects, or do simple simulations based on the estimated coefficients.

The course will also feature an assignment that will make course participants link their own work to theory, and apply the ideas of the course.

Overall, the aim of this course is to help researchers understand how theory can enhance the quality and impact of empirical research. By providing concrete examples and practical guidance.