Syllabus: Labor Economics

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1   Course Overview

Modern economics pursues a perfect combination between empirical work and theory. With this spirit in mind, this course introduces central methods and topics in labor economics.

We begin with the Roy model, the workhorse model of modern labor economics. We then review the econometric methods through the lens of the Roy model. After the midterm we shift toward a dynamic setting focusing on life cycle models and dynamic labor supply.

The topics covered in this course are intentionally broad. The goal is to familiarize you with fundamental findings and developments in the literature and help you with your future research. Starting from Spring 2023, this course will become a year-long one that includes more topics. You are welcome to take again then.

2   Format

- Tuesday 14:20 - 17:20 (7, 8, 9)

- Room 608 in the Social Science Building

- 3 Credits

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3   Prerequisite

We assume that you have taken a course in intermediate microeconomics and econometrics. We take this requirement seriously. For the second part of the course, we assume that you have a working knowledge of dynamic programming methods. Graduate-level macroeconomics is sufficient but not necessary. Note that although this course is officially titled "Labor Economics II", "Labor Economics I" is not a prerequisite.

4   Programming Language

Modern empirical economic research requires programming skills. The default language in this course is R or Julia. Stata is not recommended, and you will find it extremely hard to work with when doing problem sets.

This course takes programming seriously. You will devote much time cleaning data, coding models, and analyzing data. In the spirit of comparative advantage, we outsource a large part of our teaching of programming to DataCamp. Everyone in this course will be granted an access to DataCamp. Assignments will nudge you to finish courses on it.

Note that we emphasize the potential encounter of administrative data that are restricted to offline usage with a limited amount of computer memory. The problem sets will equip you with this technique with a massive dataset and force you to write efficient codes.

5   Assignments

Doing homework is essential, as learning by doing is the best way to internalize these skills.

For both parts of the courses, biweekly problem sets will be issued before the midterm. After the midterm, there will be required reading for each week. You are also asked to sign up for the NBER working paper series and identify one paper to write a referee report.

As the final assignment, you should write a proposal and prepare a presentation for the first part and provide at least some results for the second part of the course. Hopefully, these final assignments become (part of) your bachelor or master thesis. I personally encourage research on topics using Taiwanese data.

6 Grading

Final project 40%, homework 20%, midterm 20%, referee report 20%. Note that everything should be typed up in English with LaTeX.

7 Weekly Schedule

Week 1: Overview

The overview will provide a helicopter view of the topics we will cover throughout the year. We will introduce essential facts about each topic and preview what we will learn.

We will also spend some time discussing presentation skills, helpful advice for conducting empirical research, and even some philosophy of economic methodologies.

More practically, we'll introduce some miscellaneous computation and work-related skills that I found helpful. E.g., Github, Trello, debugger, memory control issues. Finally, we will introduce some valuable data resources.

Week 2: Roy Model

We will introduce the Roy model by Roy (1951), the workhorse model for modern labor economics. This is the central theme of the course. We will see that almost everything we see is an application of the Roy model.

Reading: Roy (1951)

Week 3: Roy Model and Potential Outcome Framework

We soon discover that the potential framework and the results from LATE are equivalent to the Roy model (Vytlacil, 2002). We present the equivalence results and talk about the implication of the framework.

Reading: Heckman (2010), Vytlacil (2002), and French and Taber (2011)

Week 4: Econometric Review: Control Variables

This lecture discusses control for observables and matching techniques and their limitation. Many of these are covered in Angrist and Pischke (2008).

Reading: Angrist and Pischke (2008) chapter 1-3

Week 5: Econometric Review: Instrumental Variables

In this lecture, we review the fundamental of instrument variables. We again view IV in the Roy model framework and extend the discussion to marginal treatment effects. We then discuss the extrapolation of identification.

Reading: Mogstad and Torgovitsky (2018) and Angrist and Pischke (2008) chapter 4

Week 6: Econometric Review: Panel Data

We briefly talk about difference-in-differences estimates. We then discuss difference-in-differences designs. We then cover the recent findings: two-way fixed effects regression generally does not recover causal effects even with parallel trends.

Reading: Callaway and Sant'Anna (2021) and Angrist and Pischke (2008) chapter 5

Week 7: Midterm

Week 8: Labor Supply

We will talk about topics in labor supply, including various versions of labor supply elasticities. We pay special attention to simple static models and discuss empirical challenges in estimating these models.

Reading: Keane (2011) and Chetty et al. (2011)

Week 9: Econometric Review: Dynamic Programming

We will briefly review dynamic methods in economics. In contrast to the materials taught in macroeconomics, we focus on combining theories and empirical works. We will talk about Rust (1987)'s famous engine replacement model as a review of dynamic programming.

Reading: Rust (1987)

Week 10: Econometric Review: Life Cycle Model Estimation

After reviewing the basic dynamic methods, we introduce their central application in modern labor economics – life cycle models. We discuss key elements of life cycle models, including identification and estimation.

Reading: Low and Meghir (2017)

Week 11: Econometric Review: Dynamic Discrete Choice Model Estimation

We introduce a class of models with unique properties and easier to estimate. They are tightly linked to the life cycle models, and one does not even need to solve the model before estimating it. We also introduce modern estimation methods that apply machine learning techniques such as GNNs in Kaji et al. (2020).

Reading: Aguirregabiria and Mira (2010), Arcidiacono and Ellickson (2011), and Kaji et al. (2020)

Week 12: Dynamic Labor Supply Model

After reviewing the econometric methods, we turn back to our theme and talk about the canonical dynamic labor supply model, such as Keane and Wolpin (1997). We then introduce more complicated models that introduce the power of these models, including Low and Pistaferri (2015) and Blundell et al. (2016)

Reading: Keane and Wolpin (1997), Low and Pistaferri (2015) , and Blundell et al. (2016)

Week 13: Sorting

We continue on wage determination this week. We introduce another strand of the literature: sorting in the labor market. We begin with the canonical model proposed by Abowd et al. (1999), and then discuss challenges in identification and estimation with Bonhomme et al. (2020).

Reading: Abowd et al. (1999) and Bonhomme et al. (2020)

Week 14-16: Proposal Presentation

References

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