

Tax Policy Research Unit and World Bank Overlapping Generations Model Training Day 1: (Evans)

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Tax Policy Research Unit and World Bank

Before we begin

- Me: Richard W. Evans, University of Chicago
- You:
- Training repository:
<https://github.com/OpenRG/WB-India-2019>
- Git installed
- GitHub accounts
- Anaconda distribution Python installed
- Jupyter notebooks

Past year and going forward

In the past 14 months:

- DeBacker and Evans: Simple OG model theory and computation
- Holmer and Frailer: Microsimulation model development
- Kallen: Business microsimulation model development

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- Staff gain full mastery of modeling and collaborative process
 - This step will take the longest
 - TPRU has opportunity to lead state orgs

Schedule, Week 1

Day	9-11am (Evans)	4-6pm (DeBacker)
M, Aug 5	Git and GitHub basic, intro to Python, IDE's and Python workflows, data types, input/output	Numpy, broadcasting, indexing, pandas, visualization
W, Aug 7	Object oriented programming, functions, docstrings	Optimization (unconstrained, constrained)
F, Aug 9	3-period lived agent OG model: theory	3-period lived agent OG model: computation

Schedule, Week 2

Day	Topic
M, Aug 19	Theory and components/modules of OG-USA, downloading the model, installing packages, setting a policy
T, Aug 20	Estimation of tax functions from India micro-simulation model, Calibrating lifetime earnings profiles
W, Aug 21	Calibrating demographics, Calibrating bequests and transfers
Th, Aug 22	Calibrating labor supply and wealth distribution, calibrating open economy, government closure rule
F, Aug 23	Ways to run the model, how to change the model, questions/exercises

Short-run goals

Week 1 (Up to speed)

- Everybody understands Git and GitHub
- Everybody knows how to code in Python
- Everybody has a similar coding workflow
- Intro to OG models

Week 2 (Learn full OG model and some calibration)

- How to run big OG model
- Tax and earnings
- Demographics, bequests, transfers
- Calibrating to labor and wealth
- Open economy and gov't debt assumptions

Long-run goals

Medium term

- Get OG-India calibrated and forecasting
- Integrate household tax microsimulation model

Long-term

- Multiple microsimulation models integrated
- TPRU staff lead core development
- TPRU staff manage collaborative workflow
- TPRU staff train all new collaborators

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Opportunity

Most other countries have legacy systems that prevent them from fully adopting modern modeling architecture in state organizations. India has opportunity to lead here.

Slide

Python introduction

Go through the following sections of [ACME Python Intro](#)

- Running Python
- iPython
- Python Basics
- Data types
- Control flow tools

Exercises

Do problem 1, 2, 3, 4, 6

Slide

Python input/output

Tutorials Notebook

Go through [Reading data into Python notebook](#).