

# OpenSourceEconomics

A platform for transdisciplinary collaboration

January 27, 2020

Visit us on



Github

## **Computational modeling in economics**

- ▶ provide learning opportunities
- ▶ assess importance of competing mechanisms
- ▶ predict the effects of public policies

## **Development**

- ▶ economic model
- ▶ mathematical formulation
- ▶ computational implementation

## **Application**

- ▶ verification
- ▶ estimation
- ▶ validation
- ▶ uncertainty quantification

# OpenSourceEconomics

*We are a group of economists using computational models in the pursuit of our research. By adopting sound software engineering practices, we hope to leverage tools from computational science and increase the transparency and extensibility of our implementations. In doing so, we expand the set of possible economic questions that we can address and improve the quality of our answers.*

 **OpenSourceEconomics**

Learn, build, share, repeat.

Bonn, Germany [OpenSourceEconomics@policy-lab.org](mailto:OpenSourceEconomics@policy-lab.org)

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Pinned repositories

 <b>respy</b> Python package for the simulation and estimation of a prototypical finite-horizon dynamic discrete choice model  ● Python ★ 15 ⚡ 11 ● Jupyter Notebook ★ 10 ⚡ 6	 <b>gmipy</b> Python package for the simulation and estimation of generalised Roy model  ● Jupyter Notebook ★ 10 ⚡ 6	 <b>career_decisions_data</b> Dataset for the seminal paper on dynamic human capital investment by Keane & Wolpin (1997)  ● Jupyter Notebook ★ 1 ⚡ 1
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Find a repository... Type: All Language: All [New](#)

**respy**  
Python package for the simulation and estimation of a prototypical finite-horizon dynamic discrete choice model  
  
economics software-engineering structural-microeconomics  
  
● Python MIT ⚡ 11 ★ 15 ● 39 ⚡ 1 Updated 15 minutes ago

**ruspy**  
Python package for the replication of John Rust's 1987 paper on the optimal replacement of GMC bus engines  
  
● Jupyter Notebook MIT ⚡ 1 ★ 9 ● 2 ⚡ 0 Updated 3 hours ago

**norpyp**  
Python package for the analysis of human capital investment decisions using Norwegian population panel data.  
  
● Python ⚡ 1 ★ 1 ● 7 ⚡ 1 Updated 2 days ago

**soepy**

Top languages

- Jupyter Notebook ● Python
- Scheme ● TeX ● Fortran

Most used topics

Manage

- software-engineering
- behavioral-economics
- economics risk-preferences
- time-preferences

People 19 >



## **Members**

- ▶ Professors
- ▶ Postdoctoral researchers
- ▶ PhD students
- ▶ Master students
- ▶ Bachelor students

## **Models**

- ▶ respy
- ▶ soepy
- ▶ ruspy
- ▶ grmpy

## **Infrastructure**

- ▶ ose-server
- ▶ ose-utils
- ▶ estimagic
- ▶ datasets

## Table Of Contents

- Quickstart
- Tutorials
- Replications
- Economics
- Software
- Development
- API
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## Search

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Enter search terms or a module, class or function name.

# Welcome to respy's documentation!

[PyPI](#) | [GitHub](#) | [Issues](#) | [Pull Requests](#)

respy is a tool to solve, simulate, and estimate structural econometric models. It provides the computational support for several research projects that analyze the economics driving agents' educational and occupational choices over their life cycle within the framework of a finite-horizon discrete choice dynamic programming model.

The package is under ongoing development. We add new features every week and try to make it more flexible and easier to use without sacrificing execution speed. Our goal is to cover any model that falls under the classification of Keane-Wolpin-Eckstein models as proposed in a recent survey by [Aguirregabiria and Mira \(2010\)](#) and we are almost there. Already, you can replicate the seminal work by [Keane and Wolpin \(1994\)](#) and [Keane and Wopin \(1997\)](#).

Please visit the rest of our documentation to get more detailed information.

- [Quickstart](#)
- [Tutorials](#)
- [Replications](#)
- [Economics](#)
- [Software](#)
- [Development](#)
- [API](#)
- [Additional Information](#)

If you have any questions or comments, please do not hesitate to contact us on [slack](#) or file an issue on [GitHub](#).

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estimagic  
latest

Search docs

CONTENTS:

- Introduction
- Estimation
- Differentiation
- Inference
- The Dashboard
- Module reference
- Code Conventions



Repos - Das Data Warehouse für Postgres User. Beginne jetzt mit der Analyse deiner Daten!

Sponsored - Ads served ethically

Read the Docs v: latest ▾

# Welcome to estimagic's documentation!

## Contents:

- Introduction
  - Estimation
  - Inference
  - Automate the boring stuff
  - Give you freedom
- Estimation
  - Overview
  - The params DataFrame
  - Specification of Constraints
  - List of algorithms
- Differentiation
  - Overview
  - Functions
  - Methods
- Inference
- The Dashboard
  - Overview
  - Tabs
  - Options

## **Development**

- ▶ GitHub organization
- ▶ Gitflow workflow
- ▶ code reviews
- ▶ testing harness
- ▶ continuous integration

## **Support**

- ▶ team meeting
- ▶ chatroom
- ▶ courses
- ▶ hackathons
- ▶ quality guide

## **Events**

- ▶ conferences
- ▶ retreat

## Figure: Impressions



PASC



Retreat

# Cooperations

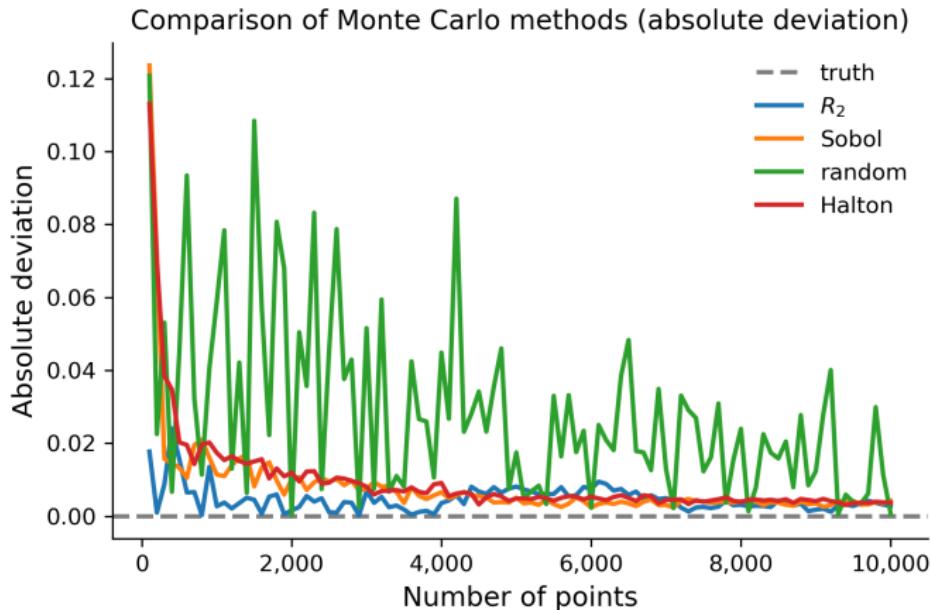


Institute for  
Numerical Simulation

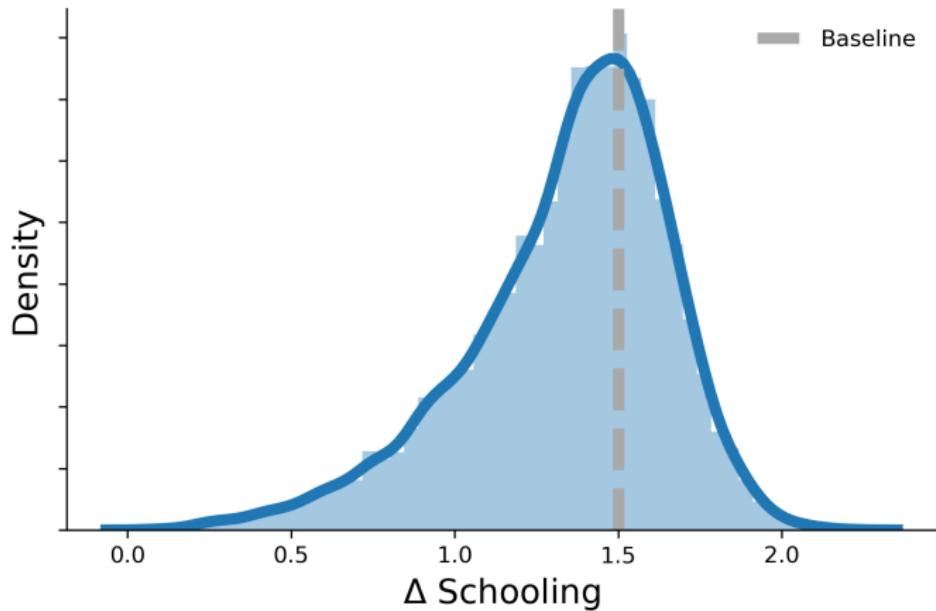


# **Example projects**

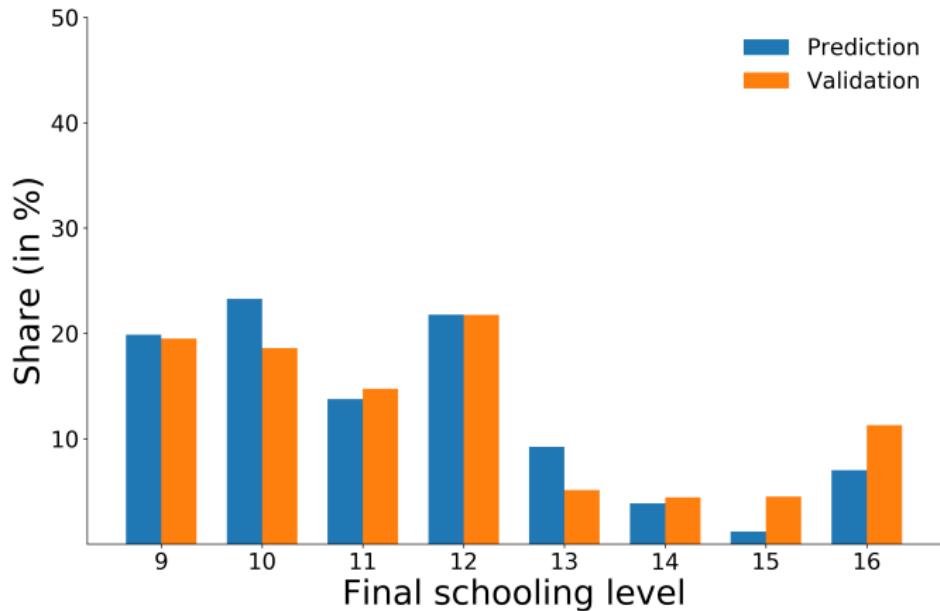
# Advanced numerical integration



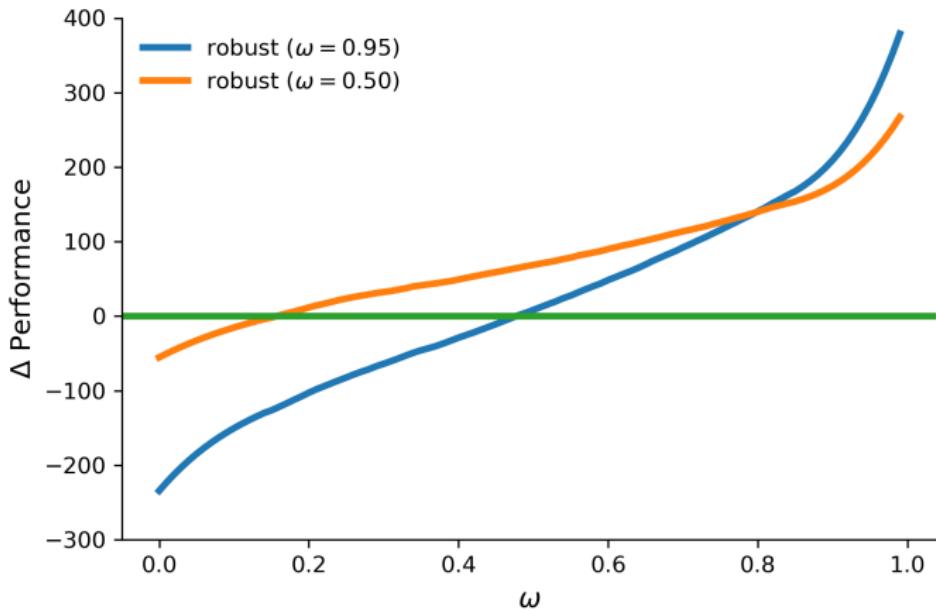
## Uncertainty quantification



## Option value of schooling



## Robust decision making



## **Join us!**

GitHub <http://bit.ly/ose-github>

Meetup <http://bit.ly/ose-meetup>

Zulip <http://bit.ly/ose-zulip>