ReadMe File

Matthias Meier

June 23, 2022

1 General Information

This file aims to provide a short overview on the additionally provided documents related to the master's thesis "An Agent-Based Model of the Rental Housing Market". In addition, specific instructions are provided for the replication of all results presented in the thesis.

2 Contents and Structure

The provided folder "Master_Thesis_Code" is structured as follows:

1. Code: The folder contains all required .py files with the code to run the model and replicate the results from the master's thesis:
    - agents.py
    - additional_methods.py
    - calibration.py
    - parameters.py
    - path.py
    - runOFAT.py
    - runPolicy_intervention.py
2. Plots: The folder contains three subfolders (see below) where all plots presented in the thesis are stored. The pictures are formatted as .png images. Please note that the images will be automatically overwritten if the provided code is executed.

    2.1 Calibration

    2.2 OFAT

    2.3 Policy intervention

3. Tables: The folder contains all tables presented in the thesis as .xlsx documents. Each excel file contains multiple worksheets with the results. Same as for the images, the documents will be automatically overwritten if the provided code is executed. Please create copies first if you want to keep the originally provided documents.

3 Software and Toolboxes

All code files were created in Python 3.8. It is recommended to use the same version of Python to run the code. The following additional toolboxes have been used:

- numpy [pip install numpy]
- matplotlib [pip install matplotlib]
- pandas [pip install pandas]
- scipy [pip install scipy]

The code in the square brackets can be used to install the toolboxes if they are not already installed. The toolboxes must be installed before the code files are executed.

4 Instructions for replication

After all required toolboxes have been installed, the steps below can be followed to for the replication of the results:

1. Open the file path.py, replace the paths and save the file.
2. Run the file calibration.py to reproduce the plots related to the calibration.
3. Run the file runOFAT.py to reproduce the results from the OFAT analyses. Please note that it might take several hours to process the entire code. If needed, the number of simulations can be reduced to shorten the calculation time.
4. Run the file runPolicy_intervention.py to reproduce the tables and plots related to the results regarding the policy intervention experiments.
5. All results can now be accessed in the folder (see section 2 Contents and Structure)