

Data Sources and Code Samples

Time Scales of the Low-Carbon Transition

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1 Data Sources

Datasets used for the paper were obtained from the following databases:

- For the time series in prices and quantities, EU KLEMS (Statistical National and Growth Accounts, <https://euklems.eu/>)
- For the input-output tables, WIOD (2016 release, <https://www.rug.nl/ggdc/valuechain/wiod/wiod-2016-release>)

2 Code Samples

A lot of code was written in the development of the paper, the indexing of which was unfortunately lost in a transfer between computers. Hence, only specific modular samples of the code are uploaded to the database, which showcase each step involved in the computations. Please contact me at <mailto:oriolvallescodina@gmail.com> if you require guidance or clarification in understanding the code.

- `FS_Model_with_technical_innovations.R` This code reproduces the three cases of technical change envisioned in the original contribution by Flaschel and Semmler (material-saving innovations, substitution effects, and joint production)
- `FS_Oscillations.R` This code simulates the simplest version of the Flaschel-Semmler model of multi-sector growth without technical change for specific cases of the input-output matrix A , saves it into the `capital` object and visualizes key variables. It is used to plot figure 1 in the manuscript.
- `Data_Driven_Model.R` This code simulates the data-driven version of the dynamic model with technical change and the tax-subsidy policy as well as empirically calibrated values for the adjustment coefficients, which are saved in the file `FS_COEFS_dis.RDS` (also supplied).
- `EUKLEMS.R` This code parses the EU KLEMS dataset into wide format and computes the variables of interest, which should be saved in the file `DATUM.RDS` (also supplied).
- `empirical--analysis--7.Rmd` This code provides partial documentation of the econometric estimation of the parameters: it loads the file `DATUM.RDS` and computes the adjustment coefficients using the linear mixed-effects model, which are saved in the file `FS_COEFS_dis.RDS`. The HTML render is also provided.
- `PRINT_UNIVERSE.R` This code provides the functions to visualize single and multiple simulations.
- `Tax_Subsidy_Analysis.R` This code computes 4,500 simulations of the data-driven model for Germany for different parameter ranges to check the dependence of decarbonization speed with respect to them. It can also be used to visualize the last figure of the manuscript.