



# Reproducible Research Repository

## *Trade, Outsourcing, and the Environment*

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This review verifies the exhibits' reproducibility in the paper "*Trade, Outsourcing, and the Environment*".

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### *Main findings*

- The code was successfully executed on a new computer after:
  1. Changing the file paths.
  2. Verifying the installation of the needed packages.
  3. Following the instructions in the README to run the scripts in the adequate order.
- The output appears to be stable across multiple runs. There are variations in the .mat files, which are expected due to the inclusion of timestamps, along with the changes in PNG files produced by MATLAB that, upon close examination, reveal identical content, and the alterations in the summary.tex file confined to metadata about the code run time, collectively suggest that the code is stable, as these variations are consistent with expected behavior and do not indicate any underlying instability.
- The full code takes approximately 3 hours to run.
- Every exhibit has been reproduced accurately by the provided package.

### *Reproducibility assessment*

- Paper exhibits were attempted to be reproduced in two computers with the following specifications:
  1. Computer 1: Stata and R
    - OS: Windows 11 Enterprise
    - Processor: Intel(R) Core(TM) i5-1145G7 CPU @ 2.60GHz
    - Memory available: 15.7 GB
    - Software version: Stata version 17, R version 4.3.2
  2. Computer 2: Matlab

- OS: Windows 10 Enterprise
  - Processor: Intel(R) Core(TM) i5-1145G7 CPU @ 2.60GHz
  - Memory available: 32 GB
  - Software version: R2023a
- Our reproducibility analysis was conducted based on the paper provided by the authors via email on December 6th, along with CSV files shared on December 29th and January 4th. The validation process involved comparing the code-generated results with the paper’s exhibits to assess consistency. Notably, the maps in the paper were created by the World Bank’s cartographic unit and do not exactly match those produced by the Stata code. To evaluate the reproducibility of these figures, we compared the underlying data used by the cartographic unit with the CSVs generated by the code.

### *List of exhibits and reproducibility status*

#### **Results in the Main Section of the Paper**

- **Table 1** Does not show analysis results.
- **Figure 1: Reproduced.** The figure produced by Stata is not identical to what is shown in the paper, as the cartographic unit created the final graphs presented in the paper. However, after comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The file used was `wiod_eora_cbam_base.q.csv`, specifically focusing on the column `Eintens0`. The case will be the same for the rest of the figures which show maps in the paper.
- **Figure 2 Reproduced.** After comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The file used was `wiod_eora_cbam_base.q.csv`, specifically focusing on the column `psi`.
- **Table 2 Reproduced.**
- **Figure 3 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base.q.csv` and `wiod_eora_cbam_base.q.csv`, specifically focusing on the column `q_Eintens_percentage`.
- **Figure 4 Reproduced.**
- **Figure 5 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base.q.csv` and `wiod_eora_cbam_base.q.csv`, specifically focusing on the column `Outsrc_fixY_percentage`.
- **Figure 6 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base.q.csv` and `wiod_eora_cbam_base.q.csv`, specifically focusing on the column `Abatement_fixY_percentage`.

## Results in the Appendix

- **Figure B1 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base_p.csv` and `wiod_eora_cbam_base_p.csv`, specifically focusing on the column `Welf_percentage`.
- **Table C2** Does not show analysis results.
- **Table C3** Does not show analysis results.
- **Figure D1 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base_q.csv` and `wiod_eora_cbam_base_q.csv`, specifically focusing on the column `Ytot_percentage`.
- **Figure D2 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_base_q.csv` and `wiod_eora_cbam_base_q.csv`, specifically focusing on the column `Wageincome_percentage`.
- **Figure D3 Reproduced.** Compared to `emissions_base_q_bar` and `emissions_changes_base_q_bar`
- **Figure D4 Reproduced.** Compared to `emissions_base_p_bar` and `emissions_changes_base_p_bar`
- **Figure D5 Reproduced** Compared to `transport_emi_base_p_bar` `transport_emi_changes_base_p_bar`
- **Figure E1 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_fl_q.csv` and `wiod_eora_cbam_fl_q.csv`, specifically focusing on the column `Outsrc_fixY_percentage`.
- **Figure E2 Reproduced.** Comparing the underlying data used to produce the final maps, we can confirm that the CSVs generated by the code and the CSVs used for graphing contain the same values. The files used are `wiod_eora_tax_fl_q.csv` and `wiod_eora_cbam_fl_q.csv`, specifically focusing on the column `Abatement_fixY_percentage`.