

Description

The zip-file "BCA-Revisited(code).zip" contains all code required to replicate the central case simulation results in the paper: Border Carbon Adjustments Revisited authored by: Böhringer, C., Dube.I., Fischer, C., Rutherford Thomas.F.

Requirements

To execute the files contained in this repository and replicate the results, you will require: GAMS version 49.3.0 with a license for PATH and MPSGE

All files are executed on Windows OS. The path environment variable should be set so that both GAMS can be called from the command line.

Instructions

To replicate Figures 2-24 and Table 5 of the paper, execute the batch file: 'run.bat' on the DOS command line. This will fill in all Figures in the EXCEL files 'mrio_results.xlsx'(results for the MRIO analysis),"cge_results.xlsx" (results for the central case CGE analysis), and "ssa_results.xlsx" (results for the systematic sensitivity analysis).

The three Excel results files need to be present as a starting point for filling in the results from the simulations.

Results for the MRIO analysis are populated by the MRIO program (see 'call gams mrio --ds=wb62_12_3') within run.bat into the sheets of the mrio_results.xlsx file labeled from fig2-3,fig4,..., fig8-9 in correspondence to the enumeration of the figures in the paper. The sheets serve as the source data for generating the respective Pivot-Table-Charts (with the prefix TC-) and the number of the figures as they appear in the paper. To update these figures, click in the menu bar on 'data', then goto "queries & connections" and click there "refresh all".

Results for the central case CGE analysis are populated by the CGE scenario program (see 'call gams cge_scenario=mdl') within run.bat into the sheet macro of the Excel file cge_results.xlsx. From this sheet, the Pivot-Table-Charts are created automatically with table sheets (e.g.TC-EV(macro) labeled by the prefix TC- followed by the abbreviation of the reported item (e.g. '-EV' - for equivalent variation) and in brackets the source data sheet (here: (macro)) while the associated figure (e.g. fig10-EV(macro)) which appears in the paper is labeled with the respective figure number (e.g.: fig10), followed by the abbreviation of the reported item (e.g.-EV) and the source sheet (here (macro)). To update these figures, click in the menu bar on 'data', then goto "queries & connections" and click there "refresh all".

Results of the systematic sensitivity analysis (in total 17 additional runs) are created by individual calls of the scenario file cge_scenario.gms enumerated from 1 to 17. The results are merged together in the reporting routine ssa_report.gms which dumps all the results into a summary sheet "data" of the EXCEL file ssa_results.xlsx. From this summary sheet all the figures of the sensitivity analysis - Figures 16-24 -- as well as Table 5 of the paper are created. To update these figures, click in the menu bar on 'data', then goto "queries & connections" and click there "refresh all".

Data Availability Statement

Details on the input data are as follows Filenames: wb62_12_3.gdx (input file for MRIO analysis and central case CGE analysis) wb12_12_3_2011.gdx, wb12_12_3_2014.gdx, wb12_12_3_2017.gdx

Database: GTAP Data Base Version 11

Provider: Center for Global Trade Analysis, Purdue University

Reference year: 2017

Release GTAP 11: (released 2023)

Original data access: GTAP Data Base portal

Processing: Aggregation to regions and sectors as listed in Tables 1 and 2 of the paper with the mappings to the comprehensive set of regions and sectors in the GTAP11 database as listed in Tables A1 and A2 of Appendix A

License: For accessing the GTAP11 data, one must purchase a user license for downloading the GTAP database. Data extracted and aggregated from the database for specific publications - here the above listed datasets - can be shared and released publically.

Statement of Rights

A valid GTAP11 license is hold by two authors of the paper (Böhringer and Rutherford) which have legitimate access to the data and thereby also permission to use and redistribute composite specifc datasets used as data input for scientific analysis.