

README

**Erhan Artuc, Alessandro Barattieri, Isambert Leunga Noukwe, and
Aaditya Mattoo (2026)**

"Can the Flying Geese Fly Again? Automation and the Pattern of Industrialization"

World Bank Policy Research Working Paper Series

Overview:

This replication package consists of the code to run the example models in the paper, the code to process data, and the code to produce figure/tables.

Please follow the instructions below to replicate the figures and tables of the paper. The whole replication process should take less than 20 minutes in most cases. Replication requires Matlab with optimization toolbox, Stata and R.

Folder Structure and Main Files:

- * README.rtf → this readme file
- * S1_RUN_STATA.do → Stata script to computing some model parameters and data need for calibration and simulations.
- * S2_RUN_MATLAB.m → Matlab script to run first, this script processes the data, solves the model, and produces all tables and some of the figures.
- * S3_RUN_STATA.do → Stata script to create descriptive figures
- * S4_RUN_R.do → Stata script to create descriptive figures
- * **figures** (folder) → all figures will appear here
- * **tables** (folder) → all tables will appear here
- * **script_data** (folder) → Matlab data processing scripts
- * **script_model** (folder) → Matlab scripts to run the model, create figures and tables
- * **results_tmp** (folder) → Intermediate results in Matlab format
- * **data_robots** (folder) → Robots data from IFR
- * **data_pop** (folder) → UN population projections
- * **data_trade** (folder) → Trade data from ICIO

Data Availability Statement:

1. Inter-Country Input-Output tables (ICIO)

Source: OECD

Year: 2023

URL: <https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html>

Access Date (Month-Year): March 2026

Note: There are two versions of ICIO: regular ICIO and extended ICIO. We use 2023 release (regular ICIO). For this analysis we use data for year 2020.

Access Type: Accessible

Citation: OECD. 2023. "Inter-Country Input-Output tables (ICIO)". OECD TiVA database. [dataset].

<https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html>. Accessed March 2026.

2. International Federation of Robotics Data

The robot data is sourced from the International Federation of Robotics

Source: International Federation of Robotics

Year: 2025

URL: <https://ifr.org/>

Access Type: Restricted

Citation: International Federation of Robotics. (2025). World robotics 2025 – industrial robots (tech. rep.). IFR Statistical Department. Frankfurt, Germany

Note: To convert the robot stock into robots per 1,000 workers, we use employment data by industry from Trade in employment (TiM) 2023 edition.

URL: [OECD Data Explorer • Trade in employment \(TiM\) 2023 edition](#)

3. UN Population Projections

Source: Population Division of the United Nations

Year: 2024

URL: <https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html>

Access Date (Month-Year): July 2026

We use the population projection for 2035.

Access Type: Accessible

Citation: United Nations, Department of Economic and Social Affairs, Population Division (2024). [dataset].

4. GDP AND POPULATION DATA

Source: World Development Indicators (WDI)

Year: 2026

URL: <https://databank.worldbank.org/source/world-development-indicators>

Access Date (Month-Year): February 2026

Note: WDI do not provide data for Tawain, China. We take Taiwan, China data from

<https://www.worldeconomics.com/GrossDomesticProduct/Real-GDP-Per-Capita-PPP/Taiwan.aspx>

Access Type: Accessible

World Bank, 2026. World Development Indicators. [dataset].

<https://databank.worldbank.org/source/world-development-indicators>. Accessed February 2026.

Statement about Rights:

We certify that the authors of the manuscript have legitimate access to and permission to use the data used in this manuscript.

Instructions for Replicators:

Run the following scripts in the exactly given order, and the results will appear in the “figures” and “tables” folders. Please change the working directory as needed.

1. Download the IFR data and put it under “data_robots” folder. This dataset is not publicly available and only private access, therefore we are not allowed to distribute it. We provide raw data files for the remaining data sets.

2. Edit the working directory line in the beginning of the “S1_RUN_STATA.do” script to match “replication_corrected” folder in your system in Stata and then run “S1_RUN_STATA.do”

2. Change the working directory to “replication_corrected” in Matlab and run “S2_RUN_MATLAB.m”
3. Edit the working directory line in the beginning of the “S3_RUN_STATA.do” script to match “replication_corrected” folder in your system in Stata and then run “S3_RUN_STATA.do”
4. Change working directory to “replication_corrected” in R and run “S4_RUN_R.R”
5. Check the “figures” and “tables” folders for all results presented in the paper.

Software Requirements

Any software below to solve the model, process data, and create tables and figures (tested on the versions indicated):

- Matlab 2026a with Optimization Toolbox
- R 4.3.3
- Stata 19