

Replication Package

Openness and Productivity Reform: Lessons for Middle-Income Economies from Thailand and other ASEAN

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Overview

This package replicates Tables 1 and 2 (descriptive statistics), and Table 6 (simulation results). Tables 3 and 5 are non-numerical tables. Table 4 is taken directly from another research paper (“Technological Capabilities and Export Upgrading: Evidence from Thailand” by Santoni Taglioni Artuso and Clarke 2026) and not produced by authors.

List of Exhibits

- **Table 1** → reproduced by `descriptive/code_tables_1_and_2.do` in Stata [find it in `descriptive/descriptive_tables.xls` sheet 1]
- **Table 2** → reproduced by `descriptive/code_tables_1_and_2.do` in Stata [find it in `descriptive/descriptive_tables.xls` sheet 2]
- **Table 3** → non-numerical table
- **Table 4** → taken from Santoni et al 2026
- **Table 5** → non-numerical table
- **Table 6** → reproduced by `simulations/run_all.m` in Matlab after running data processing scripts [find it in `simulations/main_results_table6.csv`]

Folder Structure

- `descriptive/`: folder for descriptive statistics
- `simulations/`: folder for the simulation code
- `simulations/tiva_2025/tiva_raw_2025/`: folder for raw ICIO files (see below)
- `simulations/tiva_2025/pwt_raw/`: folder for raw PWT files (see below)

Data

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

- **Source:** OECD
- **Year:** 2025
- **URL:** <https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html>
- **Access Date:** November 2025
- **Note:** There are two versions of ICIO: regular ICIO and extended ICIO. We use the 2025 edition (October 2025 update of regular ICIO). For this analysis we use the first and latest years available: 1994 and 2022. Access Type: January 2026 version is accessible (October 2025 version is not available on the website).
- **Citation:** OECD. 2025. “Inter-Country Input-Output tables (ICIO)”. OECD TiVA database. [dataset]. <https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html>. Accessed: November 2026.

2. Penn World Tables

- **Source:** University of Groningen
- **Year:** 2025 (version 10.01)
- **URL:** www.ggd.net/pwt
- **Access Date:** September 2025
- **Citation:** Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), “The Next Generation of the Penn World Table” *American Economic Review*, 105(10), 3150-3182, available for download at www.ggd.net/pwt.

3. Global Value Chains (GVC) WDR 2020

- **Source:** WITS (World Integrated Trade Solution)
- **Year:** 2026
- **URLs:** <https://wits.worldbank.org/gvc/global-value-chains.html>; <https://wits.worldbank.org/gvc/gvc-data-download.html>
- **Access Date:** June 2026
- **Citation:** Borin, A., Mancini, M., & Taglioni, D. (2025). Economic consequences of trade and global value chain integration: A measurement perspective. *The World Bank Economic Review*, 00(0), 1–24.

4. World Trade Organization (WTO) Data

- **Source:** World Trade Organization (WTO)
- **Year:** 2026
- **URL:** <https://data.wto.org/>
- **Access Date:** June 2026

5. Global Database on Non-Tariff Measures (NTMs)

- **Source:** UN Trade & Development (UNCTAD)
- **Year:** 2026
- **URLs:** <https://trainsonline.unctad.org/home>; <https://unctad.org/topic/trade-analysis/non-tariff-measures/NTMs-data>
- **Access Date:** June 2026
- **Citation:** UNCTAD. (2024). Making sense of Non-Tariff Measures (NTMs): A user's guide to accessing and analysing the data (UNCTAD Guide). United Nations Publishing.

6. Logistics Performance Indicators 2.0

- **Source:** World Bank Group
- **Year:** 2025
- **URLs:** <https://lpi.worldbank.org/en/home>; <https://data.worldbank.org/indicator/LP.LPI.OVRL.XQ>; <https://data.worldbank.org/indicator/LP.LPI.CUST.XQ>
- **Access Date:** June 2026
- **Citation:** Arvis, J.-F., Herrera Dappe, M., Ulybina, D., & Wiederer, C. (2026). Connecting to compete 2025: The new Logistics Performance Indicators 2.0. World Bank Publications.

7. Doing Business Archive

- **Source:** World Bank Group
- **Year:** 2020
- **URLs:** <https://archive.doingbusiness.org/en/doingbusiness>; <https://archive.doingbusiness.org/en/data/exploretopics/trading-across-borders>
- **Access Date:** June 2026
- **Note:** This dataset has been discontinued. However, at the time of writing, no comparable alternative was available for the export clearance time indicator derived from it.
- **Citation:** World Bank. (2020). Doing Business 2020: Comparing Business Regulation in 190 Economies. Washington, DC: World Bank.

Software Requirements

Descriptive

- StataNow/MP 18.5 for Windows (64-bit x86-64) or StataNow MP/19.5 for MacOS

Simulations

- Matlab 2026a
- Python 3.13.1 with Numpy, SciPy, Pandas, matplotlib and xarray
- Julia 1.12 with MAT, LinearAlgebra, DataFrames, DelimitedFiles, CSV and Printf

Tested on MacBook Pro with M5 Chipset.

Instructions

Descriptive Tables

- **Download and store data as follows:**
- **GVC indicators:** Download all files except “GVC TRADE data” from <https://wits.worldbank.org/gvc/gvc-data-download.html>, store in folder `descriptive/underlying_data_table_1`, and unzip all downloaded files. (Takes less than 5 minutes on the test computer.)
- **Tariffs:** Extract from <https://data.wto.org> the following tariff indicators for the selected countries in the last 5 years: “Simple average MFN applied tariff – all products (Percent)” and “Trade-weighted MFN applied tariff average – all products (Percent)” and store in `descriptive/underlying_data_table_2`. (Takes less than 10 minutes on the test computer.)
- **NTM:** Go to <https://unctad.org/topic/trade-analysis/non-tariff-measures/NTMs-data>, choose Thailand from the dropdown menu and write down the numbers for the Coverage Ratio and the Frequency Index. Repeat for Indonesia, Malaysia, Philippines, Vietnam, and Singapore. Save to Excel file `NTM_data` in `descriptive/underlying_data_table_2`. (Takes less than 5 minutes on the test computer.)
- **LPI:** Download the complete files from <https://data.worldbank.org/indicator/LP.LPI.OVRL.XQ> and <https://data.worldbank.org/indicator/LP.LPI.CUST.XQ> and store in `descriptive/underlying_data_table_2`. (Takes less than 5 minutes on the test computer.)
- **Doing Business indicators:** Download the complete file in Excel from <https://archive.doingbusiness.org/en/data/exploretopics/trading-across-borders> and store in `descriptive/underlying_data_table_2`. (Takes less than 5 minutes on the test computer.)
- Open `code_tables_1_and_2.do` from the descriptive folder.
- In the do file, change directory to the descriptive folder.
- Click Run. (Takes less than 1 minute on the Windows test computer.)
- Tables showing the results are in the two worksheets of the Excel file `descriptive_tables.xlsx` located in the descriptive folder.

Simulations

- Change directory to `simulations/tiva_2025`.
- Run `data_process_tiva.jl` with Julia. (Takes less than 10 minutes on the test computer.)
- Run `data_process_pwt.py` with Python. (Takes less than 2 minutes on the test computer.)
- Change directory to `simulations`.
- Run `run_main.m` in Matlab. (Takes less than 10 minutes on the test computer.)
- Table showing the results is `simulations/main_results_table6.csv`.