AfCFTA Ex-ante Analysis

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{r setup, include=FALSE} knitr::opts\_chunk(echo = FALSE, warning = FALSE, message = FALSE)

# AfCFTA Ex-ante Analysis

Replication package for the EMJMD-EGEI dissertation titled **“An Ex-ante Evaluation of the Economic Impact of the African Continental Free Trade Area (AfCFTA) on ex-ante evaluation of AfCFTA economic impacts”** authored by **Jamiu Olamilekan Badmus** and supervised by **Prof. Ruben Dewitte** - Economist at the economic research team of ING and visiting professor at Ghent University, Belgium.

## Overview

This repository contains the code and documentation for the ex-ante evaluation of the African Continental Free Trade Area (AfCFTA) agreement’s economic impacts. The replicator should expect the whole code to run for about 2 to 3 days.

## Data Availability

The data relied on in this dissertation can be found in the ‘./input’ folder of the repository. The data are donwloaded from the following sources:

1. **ITPD-E-R02 Trade Database**
   * **Source**: United States International Trade Commission (USITC)
   * **URL**: <https://www.usitc.gov/data/gravity/itpde.htm>
   * **Coverage**: 170 industries, 4 broad sectors, 265 countries, 1986-2019
   * **Citation**:
     + Borchert, I., Larch, M., Shikher, S., and Yotov, Y. (2022), “The International Trade and Production Database for Estimation - Release 2 (ITPD-E-R02),” USITC Working Paper 202207A.
     + Borchert, I., Larch, M., Shikher, S., and Yotov, Y. (2021), “The International Trade and Production Database for Estimation (ITPD-E),” International Economics, 166, 140166.
2. **Dynamic Gravity Dataset (Version 2.1)**
   * **Source**: United States International Trade Commission (USITC)
   * **URL**: <https://www.usitc.gov/data/gravity/dgd.htm>
   * **Citation**: Gurevich, T. and Herman, P. (2018). The Dynamic Gravity Dataset: 1948-2016. USITC Working Paper 2018-02-A.
3. **Structural Gravity Database**
   * **Source**: World Trade Organization
   * **URL**: <https://www.wto.org/english/res_e/reser_e/structural_gravity_e.htm>
   * **Citation**:
     + Larch, M., & Monteiro, J., Piermartini, R., and Yotov, Y. (2019). “On the Effects of GATT/WTO Membership on Trade: They are Positive and Large After All,” WTO Staff Working Papers ERSD-2019-09, World Trade Organization (WTO), Economic Research and Statistics Division.
4. **Tariff Data**
   * **Source**: World Integrated Trade Solution (WITS)
   * **URL**: <https://wits.worldbank.org/WITS/WITS/Restricted/Login.aspx>

## Computing environment

This code was run on a x86\_64-w64-mingw32 platform of a Windows 10 x64 (build 26100) computer.

The analysis is conducted in the R programming environment. R is free, open-source and available for download here: <https://www.r-project.org/>. The code has been tested against R version 4.5.1 (2025-06-13 ucrt).

Once R is successfully set up on your system, you will need to install a number of external R libraries. I have provided the code to install all the necessary R libraries in each of the R scripts.

## Instructions to replicators

The empirical data analysis takes place within the ./input, /code, and ./output directories respectively holding the external files, the code that operates on the files in the ./input directory, and the computational results.

Further files and directories refer to:

* The Readme files ./Readme.md, ./Readme.html, and ./Readme.docx are generated by ./Readme.Rmd. **NOTE: It’s fine if your write your Readme file in Word!**
* The ./afcfta\_milestone\_timeline.png and ./tralac\_2024.png files are pictures that show the time phase of AfCFTA agreement and the map of countries that has signed and/or ratified the agreement, respectively.

## Methodology

This research uses Poisson Pseudo-Maximum Likelihood (PPML) estimations and structural gravity modeling to evaluate the trade and welfare effects of AfCFTA.

### Key Tables:

| Table | Description | Location |
| --- | --- | --- |
| 3.1 | Summary Statistics by Sector | output/tables/summary\_statistics.tex |
| 4.1 | Intra-AfCFTA Trade Effects (Overall) | output/tables/tab\_afcfta.tex |
| 4.2-4.9 | REC-specific Trade Results | output/tables/tab\_amu.tex through tab\_sadc.tex |
| C.1 | General Equilibrium Table (with Robustness Check) | output/tables/welfare\_effects\_table.tex |
| C.2 | Robustness: Partial Equilibrium | output/tables/tab\_afcfta\_rob.tex |

### Key Figures:

| Figure | Description | Location |
| --- | --- | --- |
| 3.1 | Trade and Tariff Evolution | output/figures/intra\_africa\_trade\_and\_tariffs\_combined.pdf |
| 3.2-3.9 | REC Trade Flow Patterns | output/figures/rec\_trade\_flows\_amu.pdf through rec\_trade\_flows\_sadc.pdf |
| 4.1 | Overall AfCFTA Border Effects | output/figures/graph\_afcfta\_brdr.pdf |
| 4.2 | REC-specific Border Effects | output/figures/graph\_amu\_to\_af.pdf through graph\_af\_to\_amu.pdf, etc. |
| 4.3 | General Equilibrium (Welfare) Plots | output/figures/welfare\_effects\_with\_row\_geppml\_agri.pdf though welfare\_effects\_with\_row\_geppml\_struc.pdf |

## Contact

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