

README

Reproducibility Package for FTT-FLEX: Flexible Technology Diffusion Analysis Tool for Data Poor Countries

This reproducibility package contains partial code, partial data, and instructions to reproduce the results presented in the paper titled "FTT-FLEX: Flexible Technology Diffusion Analysis Tool for Data Poor Countries". The code included loads an EViews workfile with constructed data as input to produce the paper exhibits, which is not included because it contains restricted data. Programs for data wrangling and model solution have been omitted due to intellectual property restrictions.

Versions

The most recent version is available in this reproducibility package.

Description

The research paper presents the results of a study involving the development of new models and the analysis of shocks using the FTT-FLEX framework. There are three main components to this study:

- Create a new model FTT-FLEX
- Create a new macroeconomic model with energy demand expansion for Guinea Bissau and combine this model with FTT-FLEX module.
- Run FTT-FLEX shocks to generate analysis in the paper.

The following text provides instructions on data and programs for the above components.

Data and Code Availability Statement

The portion of the code included in the reproducibility package assumes all datasets used are already stored in the constructed EViews workfile: "GNBsoln_FTT.wf1"

These data come from various sources:

Global FTT-FLEX Database

Variable(s)	Source(s)	Accessible from
Levelized cost of electricity Variable name in "GNBsoln_FTT.wf1": COST_(technology).	IEA Levelised Cost of Electricity Calculator	https://www.iea.org/data-and-statistics/data-tools/levelised-cost-of-electricity-calculator

		Raw data is redistributable and included in the reproducibility package in "FTTAssumptions.xlsx"
Global baseline cumulative power production by technology Variable name in "GNBsoln_FTT.wf1": ACCUMULATED_PRODUCTION_(technology). Data from the IEA World Energy Outlook 2022 requires purchase.	Our World In Data (history) and IEA three future scenarios, World Energy Outlook 2022	https://ourworldindata.org/electricity-mix Raw data from Our World in Data is redistributable and included in the reproducibility package in "FTTAssumptions.xlsx" https://www.iea.org/data-and-statistics/data-product/world-energy-outlook-2022-extended-dataset Data requires purchase.
Learning rate by technology Variable name in "GNBsoln_FTT.wf1": LEARNING_(technology)	Main FTT-Power database and IRENA	Main FTT-Power: Data is not public but can be requested to the author of: Mercure, J-F. (2012), "FTT:Power A global model of the power sector with induced technological change and natural resource depletion", Energy Policy, 48, pp. 799-811 IRENA data was manually compiled from: IRENA (2023), Renewable power generation costs in 2022, International Renewable Energy Agency, Abu Dhabi. (https://www.irena.org/Publications/2023/Aug/Renewable-Power-Generation-Costs-in-2022) Data is public but not redistributable.
CO ₂ intensity by power generation technology. Variable name in "GNBsoln_FTT.wf1": CO2_COEFF_(technology)	Main FTT-Power database (originally from IEA)	Main FTT-Power: Data is not public but can be requested to the author of: Mercure, J-F. (2012), "FTT:Power A global model of the power sector with induced technological change and natural resource depletion", Energy Policy, 48, pp. 799-811
Lead and life time of power plant by technology Variable name in "GNBsoln_FTT.wf1": LEAD_(technology) and TAU_(technology)	Main FTT-Power database (originally from IEA)	Main FTT-Power: Data is not public but can be requested to the author of: Mercure, J-F. (2012), "FTT:Power A global model of the power sector with induced technological change and natural resource depletion", Energy Policy, 48, pp. 799-811
International fuel price assumptions based on IEA three future scenarios. Variable names in "GNBsoln_FTT.wf1": OIL_PRICE_STEPS, GAS_PRICE_STEP,	IEA three future scenarios, World Energy Outlook 2022	https://www.iea.org/data-and-statistics/data-product/world-energy-outlook-2022-extended-dataset Data requires purchase.

COAL_PRICE_STEP (two alternative scenarios: APS and NZE)		
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GNB Case Study

Variable(s)	Source(s)	Accessible from
Starting share of power generation by technology Variable name in "GNBsoln_FTT.wf1": SHARE_(technology)	Projections to 2024 made by the authors based on various news source about recent development.	---
Total electricity demand projections Variable name in "GNBsoln_FTT.wf1": DEMAND_TOTAL	Projections to 2024 based author's own assumptions.	---
GNB Macro model Variable names in "GNBsoln_FTT.wf1": GNBNY* (GDP), GNBNE* (expenditure), GNBGG* (fiscal), GNBV* (production), GNB LM* (labor), GNBEN* (environment), GNB BM* (BOP imports), GNB BX* (BOP exports)	MFMod, World Bank	Main MFMOd database: https://www.worldbank.org/en/publication/macro-poverty-outlook/mpo_ssa Data was complemented by Guinea-Bissau Country Economist's own sources for electricity sector expansion and public investment assumptions.

Computational Requirements

Software License: A valid EViews license is required to run the code provided in this repository. Please ensure that you have access to a licensed version of EViews before attempting to reproduce the results.

Instructions for Generating Results in the Paper

1. Import all data sources into GNBsoln_FTT.wf1
2. Run EViews program: FTT_Shocks2.prg

This program calls the Guinea Bissau MFMod model with FTT-FLEX extension and runs various shocks scenarios reported in the papers. All charts and table in the paper are printed on screen.

Other exhibits not reproduced by the code

Figure 4 displays results taken from [Guinea Bissau: Power Sector Policy Note 2020, World Bank](#). It is not produced by the code of this reproducibility package.

Citation

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Contact

For any questions or inquiries, please contact Unnada Chewpreecha at uchewpreecha@worldbank.org