

Reproducibility Package for Decentralized Markets for Electricity in Low-Income Countries

Overview

This describes the materials included in the replication package for "Decentralized Markets for Electricity in Low-Income Countries" by Megan Lang. It describes how the code produces the output in the paper and, for selected results, how to access the data needed to replicate the results in both the main paper and the appendix.

Data Availability

Some data cannot be made publicly available.

Data Sources

There are two data sources used in the paper, described below.

1. Administrative data from BBOXX Ltd:

Customer-level data on system size adopted, date of adoption, the prefecture where the customer lived at the time of adoption, and the dates that each prefecture became eligible for the subsidy. These data start in July, 2018 and continue through September, 2019. The customer-level data is proprietary and can only be obtained by signing a data sharing agreement with BBOXX Ltd. The dates that each prefecture became eligible for the subsidy are not proprietary and can be accessed in the Data folder of the replication package (see 'phases.csv').

2. Nationally representative data for Togo at the time CIZO was being implemented:

Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019. Note that this household survey is comprehensive and the paper uses a relatively small subset of the datasets included in the .zip file. Below, the source, URL, and access year are common for all datasets listed that are used in producing outputs in the paper.

Source: The World Bank Microdata Library

URL: <https://microdata.worldbank.org/index.php/catalog/4298/download/56142>

Access year: 2022

- Filename 1: ehcvm_ponderations_tgo2018.dta

- Filename 2: s00_me_tgo2018.dta

- Filename 3: s01_me_tgo2018.dta

- Filename 4: s11_me_tgo2018.dta

- Filename 5: s09c_me_tgo2018.dta

- Filename 6: s09b_me_tgo2018.dta
- Filename 7:** s07a1_me_tgo2018.dta
- Filename 8: s07a2_me_tgo2018.dta
- Filename 9: ehcvm_conso_tgo2018.dta

Instructions for Replicators

New users should follow these steps to run the package successfully:

- Users must first download all listed data from the World Bank Microdata Library. They should go to the mentioned links, download the listed files, and place them in the Data folder.
- Ensure all required software and dependencies are installed as listed in lines 6-18 of 'Public Data Replication.R'.
- Run 'Public Data Replication.R'.

List of Exhibits

The script 'Public Data Replication.R' reproduces only tables and figures in the paper that rely on publicly available data from Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019. However, the script `Proprietary Data Replication.R' details all data cleaning and analysis for results produced using the proprietary data from the solar company, should a researcher obtain access to the proprietary data independently.

Exhibit Name	Output Filename	Script	Notes
Figure 1.1	Cum.png	'Proprietary Data Replication.R', Line 437	Relies on proprietary data
Figure 1.2	ESPlot.png	'Proprietary Data Replication.R', Line 494	Relies on proprietary data
Table 1	main_results.tex	'Proprietary Data Replication.R', Line 511	Relies on proprietary data
Figure 2	Exp_Dist.png	'Public Data Replication.R', Line 299	
Figure 3	Monthly.png	'Proprietary Data Replication.R', Line 731	Relies on proprietary data

Exhibit Name	Output Filename	Script	Notes
Table 2	anticipation.tex	'Proprietary Data Replication.R', Line 826	Relies on proprietary data
Figure A1	p1.png	'Public Data Replication.R', Line 320	
Table A1	ptrends.tex	'Proprietary Data Replication.R', Line 911	Relies on proprietary data
Table A2	no_tt_robust.tex	'Proprietary Data Replication.R', Line 951	Relies on proprietary data
Table A3	robust_main_results.tex	'Proprietary Data Replication.R', Line 1059	Relies on proprietary data
Figure A2	Pre_Elec_het.png	'Proprietary Data Replication.R', Line 1131	Relies on proprietary data
Figure A3	byDay_long.png	'Proprietary Data Replication.R', Line 1195	Relies on proprietary data
Table A4	placebo_short.png	'Public Data Replication.R', Line 336	

Requirements

Software Requirements

- R version 4.3.0

Memory and Runtime and Storage Requirements

- Runs in under 5 minutes.

Folder Structure

Unzip the data folder provided when downloading the Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019 from the World Bank Microdata Library. Save the resulting folder under the "Data" folder in the replication package. Open the code file in the "Code" folder directly from the directory. Doing so ensures that the filepath will automatically be set such that the code runs.