Populist Leaders and the Economy

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Replication Package – Readme and guidance

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1. Overview

This replication package contains the code to process the raw data, run the empirical analysis and produce the Tables and Figures, using Stata and R. Replicators should expect the code to run for 1 to 3 hours, depending on the machine. **Section 6 gives step-by-step instructions for replication**.

2. Data Availability and Provenance Statements

2.1 Statement about Rights

I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.

I certify that the author(s) of the manuscript have documented permission to redistribute/publish the data contained within this replication package

2.2 Summary of Availability

All data **are** publicly available.

2.3 Details on each Data Source

Summary of each data source in the archive

Data.Name	Data.File	Location	Provided	Citation
"Archigos"	Archigos_4.1_stata14.dta	PLE/data/	TRUE	Goemans et al. (2009
"Barro-Ursúa"	barro_ursua_macrodataset_1110.xls	PLE/data/	TRUE	Barro and Ursúa (2010)
"CNTS Conflict"	2021 Edition CNTSDATA.xlsx	PLE/data/	TRUE	Banks and Wilson (2021)
"IMF Balance"	IMF_GGXONLB_G01_GDP_PT.dta	PLE/data/	TRUE	International Monetary Fund (2019b)
"IMF CPI"	IFS_05-08-2019 14-21-40-26.dta	PLE/data/	TRUE	International Monetary Fund (2019a)
"IMF Debt"	debt_IMF_Global_Debt_Database.dta	PLE/data/	TRUE	Mbaye et al. (2018)
"IMF Finances"	finance_MAURO.dta	PLE/data/	TRUE	Mauro et al. (2013)
"IMF WEO CPI"	WEOOct2018all_pcpi.dta	PLE/data/	TRUE	International Monetary Fund (2018)
"KOF Global"	KOFGI_2019_data.dta	PLE/data/	TRUE	Gygli et al. (2019)
"Macro Tariffs"	macro_dataset.dta	PLE/data/	TRUE	Furceri et al. (2020)
"Macrohistory"	JSTdatasetR4.dta	PLE/data/	TRUE	Jordà et al. (2017)
"Maddison"	mpd2018.xlsx	PLE/data/	TRUE	Bolt et al. (2018)
"Penn World"	pwt91.dta	PLE/data/	TRUE	Feenstra et al. (2015, 2020)
"Polity"	p5v2018.xls	PLE/data/	TRUE	Marshall and Gurr (2020))
"Prices Argentina"	sh_ipc_2008.xls	PLE/data/	TRUE	INDEC (2023)
"Prices Brazil"	ipeadata.xls	PLE/data/	TRUE	IPEA (2023)
"Prices China"	ChnAnnual.xls	PLE/data/	TRUE	NBS (2023)
"Prices Romania"	INS_cpi.xlsx	PLE/data/	TRUE	INS (2023)

"Prices South Korea"	PricKor_06172148.xlsx	PLE/data/	TRUE	Bank of Korea (2023)
"Prices Taiwan"	cpiidx.xls	PLE/data/	TRUE	National Statistics Taiwan (2023)
"RR Crises"	Varieties_crises_CR_Update2015.dta	PLE/data/	TRUE	Reinhart and Rogoff (2009a)
"RR Debt"	debt_RR_2010_appended.dta	PLE/data/	TRUE	Reinhart and Rogoff (2010)
"RR Inflation"	CC_Inflation1500-2009_redux.xlsx	PLE/data/	TRUE	Reinhart and Rogoff (2009b)
"SWIID Gini1"	swiid8_1_summary.csv	PLE/data/	TRUE	Solt (2019)
"SWIID Gini2"	swiid8_3_summary.csv	PLE/data/	TRUE	Solt (2020)
"Systemic Crises"	41308_2020_107_MOESM1_ESM.xlsx	PLE/data/	TRUE	Laeven and Valencia (2020)
"Trade CEPII"	TRADHIST_WP.dta	PLE/data/	TRUE	Fouquin and Hugot (2016)
"V-Dem Institutions"	V-Dem-CY-Full+Others-v12.dta	PLE/data/	TRUE	Coppedge et al. (2022)
"WDI Consumption"	WDI_Extract_CO.xlsx	PLE/data/	TRUE	World Bank. (2022b)
"WDI Exports"	WDI_WB_NE.EXP.GNFS.ZS.dta	PLE/data/	TRUE	World Bank (2019a)
"WDI GDP1"	WDI_Extract_NYGDPPCAPKD1.xlsx	PLE/data/	TRUE	World Bank (2019b)
"WDI GDP2"	WDI_Extract_NYGDPPCAPKD2.xlsx	PLE/data/	TRUE	World Bank (2021a)
"WDI Imports"	WDI_WB_NE.IMP.GNFS.ZS.dta	PLE/data/	TRUE	World Bank (2019c)
"WDI Investment"	WDI_Extract_IN.xlsx	PLE/data/	TRUE	World Bank (2022b)
"WDI Tariffs"	WDI_Extract_TAR.xlsx	PLE/data/	TRUE	World Bank (2020)
"WDI Unemployment"	WDI_Extract_UE.xlsx	PLE/data/	TRUE	World Bank (2021b)

Details on data access and variables used per source

"Archigos": The Archigos Data Set of Political Leaders, Version 4.1 (Goemans et al. 2009), was downloaded from https://www.rochester.edu/college/faculty/hgoemans/data.htm (first bullet point). Copies of their variables "leader", "startdate" and "enddate" are provided as part of this archive. The data are in the public domain.

"Barro-Ursúa": The Barro-Ursúa Macroeconomic Data dataset (Barro and Ursúa 2010) was downloaded from https://scholar.harvard.edu/barro/data_sets (the second dataset). A copy of their variable "GDP" is provided as part of this archive. The data are in the public domain.

"CNTS Conflict": The Domestic Conflict Event data from the Cross-National Time-Series Data Archive (CNTS) by Banks and Wilson (2021) can be purchased from https://www.cntsdata.com/academic-individual-or-research-team. Copies of their variables "domestic2", "domestic6" and "domestic8" are provided as part of this deposit.

"IMF Balance": The primary balance (% of GDP) data were downloaded from the International Monetary Fund's Fiscal Monitor Dataset (International Monetary Fund 2019b) website here: https://www.imf.org/external/datamapper/GGXONLB_G01_GDP_PT@FM/ADVEC/FM_EMG/FM_LIDC. A copy of their variable "primarynetlendingborrowing" is provided as part of this archive. The data are in the public domain.

"IMF CPI": The CPI data (International Monetary Fund 2019a) were downloaded here: https://data.imf.org/?sk=4FFB52B2-3653-409A-B471-D47B46D904B5. A copy of their variable "pricesconsumerpriceindexall" is provided as part of this archive. The data are in the public domain. Creating an account is required to handle more complex Data Queries.

"IMF Debt": The Global Debt Database (Mbaye et al. 2018) was downloaded by clicking on "Link to data for this title" here: https://www.imf.org/en/Publications/WP/Issues/2018/05/14/Global-Debt-Database-

Methodology-and-Sources-45838. A copy of their variable "cg" is provided as part of this archive. The data are in the public domain.

"IMF Finances": The Public Finances in Modern History Database (Mauro et al. 2013) was downloaded clicking on "Data" here: https://www.imf.org/external/datamapper/datasets/FPP. Copies of their variables "pb" and "d" are provided as part of this archive. The data are in the public domain.

"IMF WEO CPI": CPI data from the World Economic Outlook (WEO) database October 2018 (International Monetary Fund 2018) was downloaded by clicking on "By Countries" here: https://www.imf.org/en/Publications/WEO/weo-database/2018/October/download-entire-database. A copy of their variable "pcpi" is provided as part of this archive. The data are in the public domain.

"KOF Global": The KOF (Konjunkturforschungsstelle) Globalization Indices, Version KOFGI 2019, by (Gygli et al. 2019) were downloaded from https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html, by clicking on "KOFGI_2019 (ZIP, 4.8 MB)" (under "Archive"). Copies of their variables "KOFTrGI" and "KOFFiGI" are provided as part of this archive. The data are in the public domain.

"Macro Tariffs": The tariff data by Furceri et al (2020) were downloaded by clicking on "Data set" under "The Macroeconomy after Tariffs" under "Work that I'm currently Presenting" here: http://faculty.haas.berkeley.edu/arose/RecRes.htm. A copy of their variable "tariff" is provided as part of this archive. The data are in the public domain.

"Macrohistory": The Jordà-Schularick-Taylor Macrohistory Database, Version R4, by Jordà et al. (2017), was downloaded directly from the internet, specifically by browsing https://www.macrohistory.net/app/download/9834512469/JSTdatasetR4.dta?t=1662029183. Copies of their variables "rgdppc", "cpi" and "crisisJST" are provided as part of this archive. The data are in the public domain.

"Maddison": The Maddison Project Database, version 2018 (Bolt et al. 2018) was downloaded from https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2018. A copy of their variable "rgdpnapc" is provided as part of this archive. The data are in the public domain.

"Penn World": The Penn World Table, version 9.1 (Feenstra et al. 2015, 2020) was downloaded from https://www.rug.nl/ggdc/productivity/pwt/pwt-releases/pwt9.1. A copy of their variable "labsh" is provided as part of this archive. The data are in the public domain.

"Polity": The "Polity5: Regime Authority Characteristics and Transitions Datasets", version 2018 (Marshall and Gurr 2020) can be downloaded directly from the internet via browsing https://systemicpeace.org/inscr/p5v2018.xls. A copy of their variable "polity2" is provided as part of this archive. We were granted permission by the Center for Systemic Peace (CSP) to include the Polity5 variable "polity2" as a resource supplement to our published research in this data and replication folder.

"Prices Argentina": The price index data for Argentina can be downloaded from the website of the Instituto Nacional de Estadística y Censos de la República Argentina (National Institute of Statistics and Censuses) (INDEC 2023) at https://www.indec.gob.ar/indec/web/Institucional-Indec-InformacionDeArchivo, by clicking "Descarga" under "Series históricas" under "Índice de

Precios al Consumidor GBA, base abril 2008=100". The variable "Nivel general" in the sheet "Serie Histórica" is used in this project. The data are in the public domain.

"Prices Brazil": This price index variable for Brazil can be downloaded from the website of the Instituto de Pesquisa Econômica Aplicada (Institute of Applied Economic Research) (IPEA 2023) at http://www.ipeadata.gov.br/Default.aspx (Macroeconômico -> Temas -> Preços -> Todas -> "IPA-DI - geral - índice (ago. 1994 = 100)" (Annual, 1944-2022). The data are in the public domain.

"Prices China": The price index data for China can be found on the website of the National Bureau of Statistics China (NBS 2023) at https://data.stats.gov.cn/english/ (Annual -> Indicators -> Price Index -> Fixed-base Price Indices). The variable "Consumer Price Index (1978=100)" is used in this project. The data are in the public domain.

"Prices Romania": The price index data for Romania can be found on the website of the National Institute of Statistics (INS 2023) at https://insse.ro/cms/en/content/cpi-annual-data-series. The series "CONSUMER PRICE INDICES-%" under "CPI – annual data series" is used in this project. The data are in the public domain.

"Prices South Korea": The historical price index data for South Korea can be downloaded from the website of the Bank of Korea Economic Statistics System (ECOS) (Bank of Korea 2023) at https://ecos.bok.or.kr (4. Price Indices -> 4.1. Producer Price Indices -> 4.1.1. Producer Price Indices -> "4.1.1.4. Producer Price Index(All, 1910~1964)" (Annual). The data are in the public domain.

"Prices Taiwan": The price index data for Taiwan can be downloaded from the website of National Statistics Republic of China (Taiwan) (National Statistics Taiwan 2023) at https://eng.stat.gov.tw/cp.aspx?n=2327, by clicking "Time Series of Consumer Price Indices in Taiwan Area (EXCEL)" under "Consumer Price Indices". The variable "Yearly Index" (Base Period 2021=100) is used in this project. The data are in the public domain.

"RR Crises": The crisis data by Reinhart and Rogoff (2009a) was originally downloaded from https://carmenreinhart.com/dates-for-banking-crises/. Specifically, the four Excel datasets at the bottom of the page were downloaded and all country sheets were stacked to form a country-year panel. All irrelevant variables were dropped. The variables "Banking crises", "Domestic debt crises", "External debt crises" and "Currency crises" are provided as part of this deposit. The data was extended until 2014 based on Reinhart/Rogoff's updates. The data is not downloadable anymore, but the series on Banking Crises and Currency Crises as well as domestic and external default or restructuring (i.e., Sovereign Debt Crises) can be obtained from https://www.hbs.edu/behavioral-finance-and-financial-stability/data/Pages/global.aspx, while these may not correspond to the original data anymore due to updates. The data are generally in the public domain.

"RR Debt": The debt data by Reinhart and Rogoff (2010) was originally downloaded from https://carmenreinhart.com/debt-to-gdp-ratios/. Specifically, the four datasets at the bottom of the page were downloaded and all country sheets were stacked to form a country-year panel. All irrelevant variables were dropped. Their variable on "Total (domestic plus external) gross central government debt/GDP" is now provided as part of this archive ("Tot_gross_central_D_to_GDP"). The data are in the public domain.

"RR Inflation": The inflation data by Reinhart and Rogoff (2009b) data was downloaded from https://carmenrein-hart.com/inflation/. The four datasets at the bottom of the page were downloaded and all relevant country sheets were appended horizontally into one sheet. A reduced format sheet was then built. All irrelevant variables were dropped. Copies of all their "CPI" series are provided as part of this archive. The data are in the public domain.

"SWIID Gini1": The Standardized World Income Inequality Database (SWIID), version 8.1 (Solt 2019) was retrieved by downloading and unzipping the file "x_swiid8_1.zip" on the following website: https://doi.org/10.7910/DVN/LM4OWF. A copy of their variable "gini_disp" is provided as part of this archive. The data are in the public domain.

"SWIID Gini2": The Standardized World Income Inequality Database (SWIID), version 8.3 (Solt 2020) was retrieved by downloading and unzipping the file "x_swiid8_3.zip" on the following website: https://doi.org/10.7910/DVN/LM4OWF. A copy of their variable "gini_disp" is provided as part of this archive. The data are in the public domain.

"Systemic Crises": The Systemic Banking Crises Database II (Laeven and Valencia 2020) was downloaded from https://link.springer.com/article/10.1057/s41308-020-00107-3#Sec15, by clicking "Banking crisis database (XLSX 117 kb)". A copy of the variable "Systemic Banking Crisis (starting date)" (Sheet "Crisis Years") is provided as part of this archive. The data are in the public domain.

"Trade CEPII": The Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) TRADHIST dataset (Fouquin and Hugot 2016) was downloaded by clicking on "TRADHIST_WP.dta" ("Original data set, associated with the CEPII Working Paper") under "DOWNLOAD" here: http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=32. Copies of the variables "GDP_o", "IPTOT_o" and "XPTOT_o" are provided as part of this archive. The data are in the public domain.

"V-Dem Institutions": The Varieties of Democracy (V-Dem) Project dataset, version 12 (Coppedge et al. 2022) was downloaded from https://v-dem.net/data/the-v-dem-dataset/country-year-v-dem-fullothers/. Copies of the variables "v2x_jucon", "v2xel_frefair" and "v2xme_altinf" are provided as part of this archive. The data are in the public domain.

"WDI Consumption": The Households consumption expenditure per capita data by the World Bank (2022b) downloaded from https://data.worldbank.org/indicator/NE.CON.PRVT.PC.KD. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI Exports": The "Exports of goods and services (% of GDP)" data by the World Bank (2019a) were downloaded from https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI GDP1": The series "GDP per capita (constant 2010 US$)" by the World Bank (2019b) was available and downloaded from https://data.worldbank.org/indicator/NY.GDP.PCAP.KD in July 2019. However, it has been transformed to "GDP per capita (constant 2015 US$)" meanwhile (see next item). Information on the original series might be still found here: https://databank.worldbank.org/metadataglossary/jobs/series/NY.GDP.PCAP.KD. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI GDP2": The updated series "GDP per capita (constant 2015 US$)" by the World Bank (2021a) was downloaded in from https://data.worldbank.org/indicator/NY.GDP.PCAP.KD in

May 2022. Note that this is the same link under which "GDP per capita (constant 2010 US$)" could be downloaded in July 2019 (and the same Series Name and Series Code). A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI Imports": The "Imports of goods and services (% of GDP)" data by the World Bank (2019c) were downloaded from https://data.worldbank.org/indicator/NE.IMP.GNFS.ZS. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI Investment": The "Gross capital formation (constant 2015 US$)" data by the World Bank (2022b) were downloaded from https://data.worldbank.org/indicator/NE.GDI.TOTL.KD. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI Tariffs": The "Tariff rate, applied, simple mean, all products (%)" data series by the World Bank (2020) can be downloaded from https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.AR.ZS. A copy of the variable is now provided as part of this archive. The data are in the public domain.

"WDI Unemployment": The "Unemployment, total (% of total labor force)" data series by the World Bank (2021b) downloaded from https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS. A copy of the variable is now provided as part of this archive. The data are in the public domain.

3. Dataset list

Data file

PLE/data/2021 Edition CNTSDATA.xlsx
PLE/data/41308_2020_107_MOESM1_ESM.xlsx
PLE/data/Archigos_4.1_stata14.dta
PLE/data/barro_ursua_macrodataset_1110.xls
PLE/data/CC_Inflation1500-2009_redux.xlsx
PLE/data/ChnAnnual.xls
PLE/data/cpiidx.xls
PLE/data/debt_IMF_Global_Debt_Database.dta
PLE/data/debt_RR_2010_appended.dta
PLE/data/finance_MAURO.dta
PLE/data/IFS_05-08-2019 14-21-40-26.dta
PLE/data/IMF_GGXONLB_G01_GDP_PT.dta
PLE/data/INS_cpi.xlsx
PLE/data/ipeadata.xls
PLE/data/JSTdatasetR4.dta
PLE/data/KOFGI_2019_data.dta
PLE/data/macro_dataset.dta
PLE/data/mpd2018.xlsx
PLE/data/p5v2018.xls
PLE/data/PricKor_06172148.xlsx
PLE/data/pwt91.dta
PLE/data/sh_ipc_2008.xls
PLE/data/swiid8_1_summary.csv
PLE/data/swiid8_3_summary.csv
PLE/data/TRADHIST_WP.dta

PLE/data/Varieties_crises_CR_Update2015.dta
PLE/data/V-Dem-CY-Full+Others-v12.dta
PLE/data/WDI_Extract_CO.xlsx
PLE/data/WDI_Extract_IN.xlsx
PLE/data/WDI_Extract_NYGDPPCAPKD1.xlsx
PLE/data/WDI_Extract_NYGDPPCAPKD2.xlsx
PLE/data/WDI_Extract_TAR.xlsx
PLE/data/WDI_Extract_UE.xlsx
PLE/data/WDI_WB_NE.EXP.GNFS.ZS.dta
PLE/data/WDI_WB_NE.IMP.GNFS.ZS.dta
PLE/data/WEOOct2018all_pcpi.dta

4. Computational requirements

4.1 Software requirements

Replication requires StataMP version 17.0, R version 4.3.0, and RStudio version 2022.02.2 (or higher). See below for additional OS-specific requirements. Mac or Windows is recommended.

Windows users need the Rtools43 compiler. You can download and install it via the link provided in the second paragraph here: https://cran.r-project.org/bin/windows/Rtools/rtools43/rtools.html. After installation, please make sure to add the Rtool43 directory to the Windows PATH system environment variable as is standard (click here for an example of how to do this).

Mac users need the GNU Fortran 12.2 compiler installed. You can download the latest version with the link at the top of this page: https://cran.r-project.org/bin/macosx/tools/. They also need XCode developer tools. Installation instructions can be found at https://mac.r-project.org/tools/.

Additional packages

- Stata/MP 17.0
  - appendfile (as of 2022-12-17)
  - carryforward (as of 2022-09-14)
  - did_imputation (as of 2022-07-03)
  - dm89_2 (as of 2023-05-09)
  - dropmiss (as of 2020-01-07)
  - estadd (as of 2020-01-11)
  - estout (as of 2020-01-11)
  - eststo (as of 2020-01-11)
  - esttab (as of 2020-01-11)
  - ftools (as of 2020-10-02)
  - reghdfe (as of 2020-10-02)
  - stripplot (as of 2020-01-11)
  - synth (as of 2020-01-07)
  - texsave (as of 2022-12-17)
  - tsspell (as of 2022-09-14)
  - winsor2 (as of 2020-07-01)
- R 4.3.0
  - For a complete list please consult the `PLE/programs/renv.lock` file

4.2 Memory and Runtime Requirements

The code was last run on a Windows 10 Dell Latitude E5470 (64-bit operating system, x64-based processor) with 8,00 GB RAM and an Intel Core i5-6300U CPU with 2.40GHz.

The approximate time needed to reproduce the analyses on a standard Windows desktop machine (as of 2023) is 2.5 to 3 hours (using Stata/MP 17.0 and R 4.3.0 under Windows 10). On modern Macs, runtime is approximately 1 hour.

5. Description of programs/code

A master file in `PLE` is responsible for batch executing all code for replication. There is one master file for each operating system: `runall_win.bat` (for Windows) and `runall_mac.sh` (for Mac).

These are plaintext files that are called from the Command Prompt / Terminal (see Section 6). They can be opened in any text editor (or a code-editing software like VSCode). As you can see if you open the files, they call a Stata `.do` file and an `.R` script, both of which are located in the `PLE/programs` folder: The file `allstata.do` extracts and reformats the raw datasets stored in `PLE/data` (by calling `datprep.do`) and then produces 10 tables and 15 figures (by calling `figtabs.do`). Please note that during execution, it produces auxiliary `.dta` files, which are deleted once replication is finished. The file `ranscm.R` then generates an additional 15 figures.

All output is named so that it can be easily correlated with the manuscript and Appendix (e.g. `Table3.tex` or `FigureC5.pdf`) and exported to the `PLE/figures` and `PLE/tables` folders. After replication, you can check the "last modified time" of the figures and tables in these folders to verify that they were indeed reproduced during replication.

All remaining files and folders in the `PLE` folder represent systemic architecture covering auxiliary code and package management files accessed automatically by the main codes described above.

6. Instructions to replicators

There are two options for replication: A) all files can be executed from the command line, or B) the Stata and R programs can be executed separately. The second option can be used if the first does not work.

A. To replicate everything from the command line

Steps for Windows users:

1. Open Command Prompt. Navigate to the PLE directory on your machine by typing:

   ```
   cd /d C:\path\to\PLE
   ```

   (Replace `\path\to\`with the path to the location in which you have saved the PLE folder).

2. Run the windows replication file by typing:

   ```
   runall_win.bat
   ```

   NB: this script assumes that you have Stata**MP**. If you instead use StateSE, please see the Appendix to this README for instructions on how to change the code.

After executing step 2, the `runall_win.bat` script calls the Stata and R files. Replication takes between 2.5 and 3 hours depending on your machine. If you would like to open `runall_win.bat` to check its contents (or if you need to edit them – see Appendix on Troubleshooting), you can open the file with any text editor. You may need to right click, choose "open with," and choose a text editor, or drag and drop into one. Note that you can also execute the replication by double-clicking the `runall_win.bat` file in the `PLE` folder.

You may encounter errors, depending on your machine's architecture, or if your Stata or R are not configured in the default way. If you encounter errors, please see the Appendix on Troubleshooting.

Steps for Mac users:

1. Open Terminal. Navigate to the PLE directory on your machine by typing the following and then pressing enter:

   ```
   cd /path/to/PLE
   ```

   (Replace `/path/to/` with the location in which you have saved the replication kit folder.)

2. Make the mac replication script executable by typing:

   ```
   chmod +x runall_mac.sh
   ```

3. Run the replication script by typing:

   ```
   ./runall_mac.sh
   ```

   NB: this script assumes that you have Stata**MP**. If you instead use StateSE, please see the Appendix to this README for instructions on how to change the code.

   Terminal will likely prompt you to enter an admin password after executing step 3 above; type it in and press enter when asked.

   This is because the script temporarily changes Macs' security settings in order to access two older Stata and R plugins from "unidentified developers." Once the script is finished running, security settings are automatically restored (you will be prompted to enter your password one more time at the end of replication, so that they can be restored). If you are not on your personal computer, you will need access to an admin password in order to run replication in this way.

   This script calls the Stata and R files. After you've entered your password, it will run in the background. If you would like to open the script to check its contents (or if you need to edit them –for instance if you run into problems and need to implement the solutions in the Appendix on Troubleshooting), you can open the file with any text editor. You may need to right click, choose "open with," and choose a text editor. Replication takes about 1 hour on modern macs (30 minutes for Stata and 30 minutes for R).

   You may encounter errors, depending on your machine's security settings, or if your Stata or R are not configured in the default way. If you encounter errors, please see Appendix on Troubleshooting.

B. To replicate using the Stata and R files separately

Additional software requirement: Docker. You can download here.

1. Open PLE/allstata.do in STATA 17 and run the program.
2. Because of numerous package dependencies, we recommend replicating the R script using a docker image provided by the AEA.
    a. Make sure your Docker is running (i.e., you have opened Docker desktop on your computer) and that you are signed into your Docker account.
    b. "Pull" the AEA docker image for this project by typing into your terminal/CLI:

```
docker pull aeadataeditor/aearep-3974
```

    c. Launch a terminal inside of the Docker container:

```
docker run -it --rm -v "/path/to/PLE/Programs":/project -w
/project aeadataeditor/aearep-3974 /bin/bash
```

    d. Run the ranscm.R file using Renv, inside the Docker container:

```
Rscript -e 'renv::load(); source("ranscm.R")'
```

For additional troubleshooting help, see the "Appendix on troubleshooting."

7. List of tables and figures

Name	Program	Subprogram	Output file
Table 1	Not empirical	Not empirical	Not empirical
Table 2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/Table2.tex
Table 3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/Table3.tex
Table A1	*Not empirical*	*Not empirical*	*Not empirical*
Table B1	*Not empirical*	*Not empirical*	*Not empirical*
Table B2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableB2.tex
Table B3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableB3.tex
Table C1	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC1.tex
Table C2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC2.tex
Table C3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC3.tex
Table C4	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC4.tex
Table C5	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC5.tex
Table C6	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/tables/TableC6.tex
Table D1	*Not empirical*	*Not empirical*	*Not empirical*
Figure 1	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/Figure1.pdf
Figure 2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/Figure2.pdf
Figure 3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/Figure3.pdf
Figure 4	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/Figure4.pdf
Figure 5	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/Figure5.pdf
Figure 6	PLE/programs/ranscm.R	-	PLE/figures/Figure6.pdf

Figure 7	PLE/programs/ranscm.R	-	PLE/figures/Figure7.pdf
Figure 8	PLE/programs/ranscm.R	-	PLE/figures/Figure8.pdf
Figure 9	PLE/programs/ranscm.R	-	PLE/figures/Figure9.pdf
Figure 10	PLE/programs/ranscm.R	-	PLE/figures/Figure10.pdf
Figure 11	PLE/programs/ranscm.R	-	PLE/figures/Figure11.pdf
Figure 12	PLE/programs/ranscm.R	-	PLE/figures/Figure12.pdf
Figure 13	PLE/programs/ranscm.R	-	PLE/figures/Figure13.pdf
Figure 14	PLE/programs/ranscm.R	-	PLE/figures/Figure14.pdf
Figure A1	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureA1.pdf
Figure A2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureA2.pdf
Figure A3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureA3.pdf
Figure B1	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureB1.pdf
Figure B2	PLE/programs/ranscm.R	-	PLE/figures/FigureB2.pdf
Figure B3	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureB3.pdf
Figure B4	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureB4.pdf
Figure B5	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureB5.pdf
Figure B6	PLE/programs/ranscm.R	-	PLE/figures/FigureB6.pdf
Figure B7	PLE/programs/ranscm.R	-	PLE/figures/FigureB7.pdf
Figure B8	PLE/programs/ranscm.R	-	PLE/figures/FigureB8.pdf
Figure B9	PLE/programs/ranscm.R	-	PLE/figures/FigureB9.pdf
Figure C1	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureC1.pdf
Figure C2	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureC2.pdf
Figure C3	PLE/programs/ranscm.R	-	PLE/figures/FigureC3.pdf
Figure C4	PLE/programs/ranscm.R	-	PLE/figures/FigureC4.pdf
Figure C5	PLE/programs/ranscm.R	-	PLE/figures/FigureC5.pdf
Figure C6	PLE/programs/ranscm.R	-	PLE/figures/FigureC6.pdf
Figure C7	PLE/programs/allstata.do	PLE/programs/figtabs.do	PLE/figures/FigureC7.pdf

References

1. Bank of Korea. 2023. Producer Price Index (All, 1910~1964). Bank of Korea Economic Statistics System (ECOS). Seoul, South Korea. https://ecos.bok.or.kr (accessed July 6, 2023).
2. Banks, A.S., K.A. Wilson. 2021. Cross-National Time-Series Data Archive. Databanks International. Jerusalem, Israel. https://www.cntsdata.com. 2021 Edition (accessed January 18, 2022).
3. Barro, R.J., J.F. Ursúa. 2010. Barro-Ursua Macroeconomic Data. https://scholar.harvard.edu/barro/data_sets (accessed August 31, 2018).
4. Bolt, J., R. Inklaar, H. de Jong, J.L. van Zanden. 2018. Maddison Project Database, version 2018. Rebasing `Maddison': new income comparisons and the shape of long-run economic development. Maddison Project Working Paper No. 10. https://rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2018 (accessed January 29, 2018).
5. Coppedge, M., J. Gerring, C. H. Knutsen, SS. I. Lindberg, J. Teorell, N. Alizada, D. Altman, M. Bernhard, A. Cornell, M. S. Fish, L. Gastaldi, H. Gjerløw, A. Glynn, S. Grahn, A. Hicken, G. Hindle, N. Ilchenko, K. Kinzelbach, J. Krusell, K. L. Marquardt, K. McMann, V. Mechkova, J. Medzihorsky, P. Paxton, D. Pemstein, J. Pernes, O. Rydén, J. von Römer, B. Seim, R. Sigman, S.-E. Skaaning, J. Staton, A. Sundström, E. Tzelgov, Y. Wang, T. Wig,

S. Wilson, D. Ziblatt, 2022, V-Dem Dataset v12. Varieties of Democracy (V-Dem) Project. https://v-dem.net/data/the-v-demdatasetcountry-year-v-dem-fullothers/ (accessed March 1, 2022).
6. Feenstra, R.C., R. Inklaar, M.P. Timmer. 2015. The next generation of the Penn World Table. *American Economic Review*, 105 (10): 3150-3182.
7. Feenstra, R.C., R. Inklaar, M.P. Timmer. 2020. Penn World Table version 9.1. Groningen Growth and Development Centre. https://doi.org/10.15141/S50T0R (accessed August 7, 2020).
8. Fouquin, M., J. Hugot. 2016. Two Centuries of Bilateral Trade and Gravity Data: 1827-2014. CEPII Working Paper 2016-14, May, CEPII. http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=32, TRADHIST_WP, Original data set, associated with the CEPII Working Paper (accessed July 12, 2016).
9. Furceri, D., S.A. Hannan, J.D. Ostry, A.K. Rose. 2020. The Macroeconomy after Tariffs. Working Paper. https://faculty.haas.berkeley.edu/arose/RecRes.htm ("Data set", accessed March 6, 2019).
10. Goemans, H.E., K. S. Gleditsch, G. Chiozza. 2009. Introducing Archigos: A Dataset of Political Leaders. *Journal of Peace Research*, 46 (2): 269-283. https://rochester.edu/college/faculty/hgoemans/data.htm. Version 4.1 (accessed October 20, 2017).
11. Gygli, S., F. Haelg, N. Potrafke, J.-E. Sturm. 2019. The KOF Globalisation Index – Revisited. *Review of International Organizations*, 14 (3): 543-574. kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index Version KOFGI 2019 (accessed August 10, 2020).
12. INDEC. 2023. Índice de Precios al Consumidor GBA, base abril 2008=100. National Institute of Statistics and Censuses of Argentina. Buenos Aires, Argentina. https://www.indec.gob.ar/indec/web/Institucional-Indec-InformacionDeArchivo (accessed July 6, 2023).
13. INS. 2023. CPI – annual data series. National Institute of Statistics. Bucharest, Romania. https://insse.ro/cms/en/content/cpi-annual-data-series (accessed July 6, 2023).
14. International Monetary Fund. 2018. World Economic Outlook Database: October 2018. Inflation, average consumer prices – PCPI. imf.org/en/Publications/WEO/weo-database/2018/October/download-entire-database (accessed May 6, 2019).
15. International Monetary Fund. 2019a. Consumer Price index, All items - PCPI_IX. data.imf.org/?sk=4FFB52B2-3653-409A-B471-D47B46D904B5 (accessed May 8, 2019).
16. International Monetary Fund. 2019b. Fiscal Monitor. Primary net lending/borrowing (also referred as primary balance), % of GDP - GGXONLB_G01_GDP_PT. https://imf.org/external/datamapper/GGXONLB_G01_GDP_PT@FM/ADVEC/FM_EMG/FM_LIDC (accessed March 6, 2019).
17. IPEA. 2023. IPA-DI - geral - índice (ago. 1994 = 100). Institute of Applied Economic Research. Brasilia, Brazil. http://www.ipeadata.gov.br/Default.aspx (accessed July 6, 2023).
18. Jordà, O., M. Schularick, A.M. Taylor. 2017. Macrofinancial History and the New Business Cycle Facts. In: M. Eichenbaum, J.A. Parker (eds.): *NBER Macroeconomics Annual 2016*, Vol 31. Chicago: University of Chicago Press. https://www.macrohistory.net/database. Version R4 (accessed July 31, 2019).
19. Laeven, L., F. Valencia. 2020. Systemic Banking Crises Database II. *IMF Economic Review*, 68 (2): 307-361. https://link.springer.com/article/10.1057/s41308-020-00107-3#Sec15 (accessed September 19, 2020).
20. Marshall, M.G., T. Gurr. 2020. Polity5: Political Regime Characteristics and Transitions, 1800-2018 (Dataset Users' Manual). https://systemicpeace.org/inscrdata.html. Polity5 dataset version 2018 (accessed October 5, 2020).
21. Mauro, P., R. Romeu, A. Binder, A. Zaman. 2013. A Modern History of Fiscal Prudence and Profligacy. IMF Working Paper No. 13/5, International Monetary Fund, Washington, DC. https://imf.org/external/datamapper/datasets/FPP (accessed August 1, 2018).
22. Mbaye, S., M.M.M., Badia, K. Chae. 2018. Global Debt Database: Methodology and Sources. IMF Working Paper No. 2018/111, International Monetary Fund, Washington, DC. https://imf.org/en/Publications/WP/Issues/2018/05/14/Global-Debt-Database-Methodology-and-Sources-45838 (accessed August 1, 2018).
23. National Statistics Taiwan. 2023. Time Series of Consumer Price Indices in Taiwan Area. National Statistics Republic of China (Taiwan). Taipei City, Taiwan. https://eng.stat.gov.tw/cp.aspx?n=2327 (accessed July 6, 2023).
24. NBS. 2023. Consumer Price Index (1978=100). National Bureau of Statistics of China. Beijing, China. https://data.stats.gov.cn/english/ (accessed July 6, 2023).
25. Reinhart, C.M., K.S. Rogoff. 2009a. *This Time is Different: Eight Centuries of Financial Folly*. Princeton, New Jersey: Princeton University Press. https://carmenreinhart.com/dates-for-banking-crises/ (accessed July 7, 2019).

26. Reinhart, C.M., K.S. Rogoff. 2009b. *This Time is Different: Eight Centuries of Financial Folly*. Princeton, New Jersey: Princeton University Press. https://carmenreinhart.com/inflation/ (accessed July 7, 2019).
27. Reinhart, C.M., K.S. Rogoff. 2010. Growth in a Time of Debt. *American Economic Review*, 100 (2): 573-578. https://carmenreinhart.com/debt-to-gdp-ratios/ (accessed March 5, 2019).
28. Solt, F. 2019. Standardized World Income Inequality Database, version 8.1, May 2019. https://doi.org/10.7910/DVN/LM4OWF (accessed July 31, 2019).
29. Solt, F. 2020. Standardized World Income Inequality Database, version 8.3, May 2020. https://doi.org/10.7910/DVN/LM4OWF (accessed May 14, 2020).
30. World Bank. 2019a. Exports of goods and services (% of GDP) - NE.EXP.GNFS.ZS. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS (accessed March 6, 2019).
31. World Bank. 2019b. GDP per capita (constant 2010 US$) - NY.GDP.PCAP.KD. World Development Indicators, The World Bank Group. https://databank.worldbank.org/metadataglossary/jobs/series/NY.GDP.PCAP.KD (accessed July 31, 2019).
32. World Bank. 2019c. Imports of goods and services (% of GDP) - NE.IMP.GNFS.ZS. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/NE.IMP.GNFS.ZS (accessed March 6, 2019).
33. World Bank. 2020. Tariff rate, applied, simple mean, all products (%) - TM.TAX.MRCH.SM.AR.ZS. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.AR.ZS (accessed August 10, 2020).
34. World Bank. 2021a. GDP per capita (constant 2015 US$) - NY.GDP.PCAP.KD. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/NY.GDP.PCAP.KD (accessed February 15, 2022).
35. World Bank. 2021b. Unemployment, total (% of total labor force) (modeled ILO estimate) - SL.UEM.TOTL.ZS. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS (accessed January 29, 2022).
36. World Bank. 2022a. Gross capital formation (constant 2015 US$) - NE.GDI.TOTL.KD. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/NE.GDI.TOTL.KD (accessed May 9, 2022).
37. World Bank. 2022b. Households and NPISHs final consumption expenditure per capita (constant 2015 US$) - NE.CON.PRVT.PC.KD. World Development Indicators, The World Bank Group. https://data.worldbank.org/indicator/NE.CON.PRVT.PC.KD (accessed June 5, 2022).

Appendix

Windows troubleshooting:

The batch file `runall_win.bat` assumes a *default* setting. Hence, please verify if the paths to Stata (and the `StataMP` version used) and to Rscript used in the `runall_win.bat` file really correspond to those on your machine (the default paths use are highlighted in yellow):

```
@echo off

"C:\Program Files\Stata17\StataMP-64.exe" /e /q do programs\allstata.do

cd programs

"C:\Program Files\R\R-4.3.0\bin\x64\Rscript.exe" -e "renv::load(); source('ranscm.R')"
```

If not, try adjusting the path(s) or the Stata version (i.e. using `StataSE`) and executing the file again.

On some machines, e.g. under an i386 architecture, running `Rscript.exe` from `runall_win.bat` may not work. If you run into errors, open the batch file (use any text editor) and try replacing

```
“C:\Program Files\R\R-4.3.0\bin\x64\Rscript.exe” -e “renv::load(); source('ranscm.R')”
```

with e.g. one of these options (stylized) and try execute the batch file again:

```
“C:\Program Files\R\R-4.3.0\bin\i386\Rscript.exe” -e “renv::load(); source('ranscm.R')”

“C:\Program Files\R\R-4.3.0\bin\x64\R.exe” --vanilla “renv::load(); source('ranscm.R')”

“C:\Program Files\R\R-4.3.0\bin\x64\R.exe” R CMD BATCH “renv::load(); source('ranscm.R')”
```

Mac troubleshooting:

If your Stata or R installation is not configured in the default way (for example, if you have multiple versions of Stata installed), you may need to follow these steps.

If you get an error like `stata-mp not found`, open the `runall_mac.sh` file and verify that the location of your `StataMP.app` file on your machine is as written in the script. If it is not, replace it with the correct file path. (Click here for more troubleshooting of this issue.)

If you have a different version of Stata installed, try replacing the corresponding command in the `runall_mac.sh` script (for example, use `StataSE.app` and `stata-se` instead of `StataMP.app` and `stata-mp`).

If you get an error like `Rscript not found`, type `which Rscript` into Terminal and take the output (*not including* the final `/Rscript`) and add the following command to the `runall_mac.sh` file before line 7 (i.e., before the command `Rscript -e ‘renv::load(). . .`):

```
export PATH=$PATH:/output/of/which Rscript
```

If the error message mentions “sh” or “rm”, type `which rm` and `which sh` into Terminal. Add `export PATH=$PATH:/path/to/rm:/path/to/sh` to the runall_mac.sh file. Then retry steps 2 and 3.

When running ranscm.R in the docker container, an alternative to steps B.2.c-d is to run:

```
docker run -it --rm -v "/path/to/PLE/programs":/project -w /project aeadataeditor/aearep-3974 R CMD BATCH ranscm.R
```

This was suggested by the AEA replicator; on some machines, we found the command printed in section 6 to be more effective.