Replication Package for "Lives, Livelihoods, and Learning: A Global Perspective on the Well-being Impacts of the Covid-19 Pandemic"

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February 2023

This file explains how to replicate all the figures and tables in the paper "Lives, Livelihoods, and Learning: A Global Perspective on the Well-being Impacts of the Covid-19 Pandemic".

Tables and figures are stored in the directories /Results or /Appendix/Results. For ease of formatting, the tables are generated in the Excel file /Results/Tables123.xlsx (and /Appendix/Results/AppendixTable1.xlsx), which is linked to the Excel files produced by the Stata code in the directory /OutputData.

Replicators attempting to reproduce the results should note that one dataset (Welfare vectors) is not included in the reproducibility package due to data sharing restrictions. Replicators should contact the dataset owners to obtain the corresponding data file and run the entire code. Details on the dataset and data are described below.

Stata code to generate the empirical results
The empirical results in the paper are generated using Stata 17.0 for Mac. Run *ReplicateAllTablesFiguresStata.do* to replicate all the empirical results. This file calls all the Stata do files in the directory /DoFiles or /Appendix/DoFiles with names based on the variable or figure generated by the file (e.g. FigureXX.do, YLL.do, etc.). Next, tables are automatically generated by Excel files located in the directory /Results or Appendix/Results and are linked to the output produced by the corresponding .do files within the OutputData folder. In order to run *ReplicateAllTablesFiguresStata.do*, you will first need to update the directory around line 14 to the location of this replication folder (and *ReplicateAllTablesFiguresStata.do*) on your computer. The programs will save logs in /Logs or /Appendix/Logs.

Directory list

/Results	Stores the Tables (.xlsx) and Figures (.pdf) in the main text
/DoFiles	Contains Stata Do files to generate the Tables and Figures in the main text
/InputData	Data from a variety of sources, used by CPY.do, FPY.do, YLL.do, and Alpha.do
/OutputData	Output of CPY.do, FPY.do, YLL.do and Alpha.do, necessary for the replication of figures and tables
/Logs	Directory to store the Stata log files to generate empirical tables and figures
/Appendix/DoFiles	Contains Stata Do files to generate the Figures in the Appendix
/Appendix/Logs	Directory to store the Stata log files that generate results in the Appendix
/Appendix/Results	Stores the Table (.xlsx) and Figures (.pdf) in the Appendix

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Replicating individual tables or figures

To produce specific tables or figures, you must initially execute the following .do files—Alpha.do, CPY.do, YLL.do, and FPY.do—located within the /DoFiles directory. These files, when run in any order, will generate the output data inside the /OutputData directory, necessary for the creation of the tables and figures. Tables are automatically generated by the Excel file located in the directory /Results or Appendix/Results (listed below), and are linked to the output produced by the corresponding .do files within the OutputData folder.

Figures can be generated by running the individual .do files listed below. Please note that the directories at the start of each .do file will need to be updated manually, or updated by first running line 14 of *ReplicateAllTablesFiguresStata.do*

Main text tables/figures

The main text results are stored in the files below in the folder /Results:

Tables 1-3: Results are in the sheets "table1," "table2," and "table3" of Tables123.xlsx. They are generated by applying formulas to the columns in the "data" sheet of Tables123.xlsx. The data sources for these columns are as follows:

- Columns A-F: FPY.xlsx (columns A-E and J).
- Columns G and H: CPY.xlsx (columns D and E).
- Column I: YLL.xlsx.
- Column J: Alpa.xlsx (column O).

These Excel files (FPY.xlsx, CPY.xlsx, YLL.xlsx, and Alpa.xlsx) are created using Stata do files located in the directory /DoFiles. Each Stata do file is named based on the variable it generates (e.g., Alpha.do).

To ensure the reproducibility of the results, Tables 123.xlsx should not be deleted.

Figure 1: Figure1.pdf, generated by DoFiles/Figure1.do

Figure 2: Figure2.pdf, generated by DoFiles/Figure2.do

Appendix tables/figures

The appendix results are stored in the files below in the folder /Appendix/Results:

Appendix Table 1: Results are in the sheet "appendix_table1" of AppendixTable1.xlsx. They are generated by applying formulas to the columns in the "data" sheet of AppendixTable1.xlsx. The data sources for these columns are as follows:

- Columns A-F: FPY.xlsx (columns A-E and J).
- Columns G and H: CPY.xlsx (columns D and E).
- Column I: YLL.xlsx.
- Column J: Alpa.xlsx (column O).

These Excel files (FPY.xlsx, CPY.xlsx, YLL.xlsx, and Alpa.xlsx) are created using Stata do files located in the directory /DoFiles. Each Stata do file is named based on the variable it generates (e.g., Alpha.do).

To ensure the reproducibility of the results, AppendixTable1.xlsx should not be deleted.

Appendix Figure 1: AppendixFigure1.pdf, generated by Appendix/DoFiles/AppendixFigure1.do

Appendix Figure 2: AppendixFigure2.pdf, generated by Appendix/DoFiles/AppendixFigure2.do

Data availability statement

Here we provide details on the sources of the raw data (files located in the /InputData folder), specify whether any data cleaning has been performed, and offer instructions on accessing the data. This includes providing URLs for download or contact information for accessing restricted data.

Excess deaths WHO.xlsx	**About**: WHO dataset on global excess deaths, used to create YLL. Cleaning described in the instructions below. **Data availability**: Public **Version/date accessed**: May 2022 **Link**: https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates **Instructions**: Please refer to "Previous releases" at the bottom of the website provided to download the May 2022 vintage. Download is a zip file. Excel file used is *WHO_COVID_Excess_Deaths_EstimatesByCountry.xlsx,* only the tab *Country by year, sex and age*. Please delete rows 1 to 11, rows 5434 to 5439, and change the file name to *Excess deaths WHO.xlsx.* **Citation/author**: Estimates of Excess Mortality Associated With COVID-19 Pandemic (as of 25 March 2022). Geneva: World Health Organization, 2022.
IHME-GBD_2017_DATA-f89cefb0-1.csv	**About**: Mortality data, used to create YLL. No cleaning took place. **Data availability**: Public **Version/date accessed**: February 2023 **Link**: https://www.openicpsr.org/openicpsr/project/119941/version/V1/view **Instructions**: Dataset can be found inside the folder Replication/Data/GBD. **Citation/author**: ""Too Young to Die": Deprivation Measures Combining Poverty and Premature Mortality." American Economic Journal: Applied Economics, 13 (4): 226-57.
CLASS_historical.dta	**About**: Historical country income group classification. No cleaning took place. **Data availability**: Public **Version/date accessed**: November 2023 **Link**: https://github.com/PovcalNet-Team/Class **Instructions**: Dataset can be found inside the folder OutputData, called as CLASS.dta. Please change its name to CLASS_historical.dta **Citation/author:** Daniel Mahler
GlobalDist_1000bins_2019-2023_sep23.dta	**About**: Global binned distribution per country year. Cleaning described in the instructions below. **Data availability**: Public **Version/date accessed**: 20230919_2017_01_02_PROD

Link: https://github.com/worldbank/covid-impact-on-inequality-and-poverty/tree/main

Instructions: To generate the database, run the do files of the link provided above. This code queries updated poverty lines from the Poverty and Inequality Platform (PIP, World Bank) publicly available at https://pip.worldbank.org/home. If the code provided produces updated data that differs from the data used in this paper, please refer to the authors below. After running the code, change the name of the variable region_code to region_pip, and obs to quantile.

Citation/author: Mahler, D.G.; Yonzan, N.; Lakner, C. (2022). The Impact of COVID-19 on Global Inequality and Poverty. Policy Research Working Papers;10198. © World Bank, Washington, DC. http://hdl.handle.net/10986/38114 License: CC BY 3.0 IGO.

GlobalDist_1000bins_MYLseptember23_limitedvars.dta	**About**: Welfare vectors, used to create CPY. No cleaning took place. **Data availability**: Restricted **Version/date accessed**: 20230919_2017_01_02_PROD **Link**: Not available **Instructions**: Not publicly available, please ask authors for the dataset **Citation/author**: Mahler, D.G.; Yonzan, N.; Lakner, C. (2022). The Impact of COVID-19 on Global Inequality and Poverty. Policy Research Working Papers;10198. © World Bank, Washington, DC. http://hdl.handle.net/10986/38114 License: CC BY 3.0 IGO.
WEOOct2022all.xls	**About:** World Economic Outlook (WEO) Database, macroeconomic data series produced by the International Monetary Fund. **Data availability**: Public **Version/date accessed**: October 2022 **Link:** https://www.imf.org/en/Publications/WEO/weo-database/2022/October/download-entire-database **Instructions:** Please click on the button "By Countries" to download the dataset. **Citation/author:** International Monetary Fund, World Economic Outlook Database, October 2022
WDIEXCEL_extracted0923.csv	**About:** World Bank's World Development Indicators (WDI) Database **Data availability**: Public **Version/date accessed**: September 2023 **Link:** https://datatopics.worldbank.org/world-development-indicators/ **Instructions:** Please click on "CSV download" under Bulk Downloads. Open WDI_CSV.zip. Change the name of WDIData.csv to WDIEXCEL_extracted0923.csv

Data Availability Statement: OUTPUT_default_nolinks_31March2023.xlsx

The main data used as inputs for the baseline and scenario calibration of the LTGM are taken from the default calibration the LTGM and LTGM-NR, which is discussed in detail (including data sources) in Loayza et al. (2022). Below we provide further details on key variables (listed in "Summary" tab of OUTPUT_default_nolinks_31March2023). We list the raw data sources here. We describe where one can download the data, and under which names they are called in.

Penn World Table 10

PWT version 10.01 is a database with information on relative levels of income, output, input and productivity, covering 183 countries between 1950 and 2019. We use data from PWT 10 to calibrate the labor share, initial capital to output ratio, depreciation rate and TFP. You can download PWT 10 from https://www.rug.nl/ggdc/productivity/pwt/?lang=en.

- Labor share. The labor share is a key parameter for the impact of human capital on growth and is taken from Penn World Table 10 (PWT10) for 2019 (most recent observation) under "labsh" "Share of labour compensation in GDP at current national prices"
- Depreciation rate is taken from "delta" the "average depreciation rate of the capital stock"
- Initial capital-to-GDP ratio. The initial capital-to-GDP ratio is calculated using the 2019 observations on physical capital stock and GDP from PWT 10. More specifically, we compute KY= rnna/rgdpna where "rnna" is "Capital stock at constant 2017 national prices (in mil. 2017US$)" and "rgdpna" is "Real GDP at constant 2017 national prices (in mil. 2017US$)"

World Economic Outlook (October 2022)

We set the path for investment equal to the IMF's World Economic Outlook (October 2022) from 2021 to 2027. The variable is "NID_NGDP" "Total investment, Expressed as a ratio of total investment in current local currency and GDP in current local currency". One can download the data here: https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022.

World Bank's Human Capital Project

The data for the HCI of young cohorts (5-19 year-olds in 2020-2021 and future cohorts) are taken from the World Bank's Human Capital Project, (which measures the expected LAYS a child born today is expected to attain by her 18th birthday (including quantity and quality of education, S_c and Q_c). The HCI data can be downloaded here: https://www.worldbank.org/en/publication/human-capital under "Expected Years of School" and "Test Scores"

Barro-Lee Educational Attainment Database

The data for the years of schooling of older generations is from the Barro-Lee Educational Attainment Database and can be downloaded here http://www.barrolee.com . The database is explained in details in Barro and Less (2013)

National Accounts Data from the UN's Statistical Division (UNSD)

To simulate future TFP growth paths we use the most recent data on the share of agriculture in total Gross Value Added reported by the UNSD. We use the ISIC3 classification. The data can be downloaded here:

http://data.un.org/Explorer.aspx?d=SNAAMA under National Accounts Estimates of Main Aggregates, variable "Gross Value Added by kind of Economic Activity at current prices"

UN's World Population Prospects
We use the UN's World Population Prospects forecasts for total population growth and the working-age population from 2021 to 2100.

World Bank's World Development Indicators
- The labor force participation rate is taken from the World Bank's WDI under
- "Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate)" code SL.TLF.ACTI.ZS
- GDP per capita is taken from the WDI under "GDP per capita, constant 2015 US$" code NY.GDP.PCAP.KD

UNESCO
The UNESCO data records for each day of 2020 and 2021 whether schools are fully closed, partially closed, or open. UNESCO codes days into "Fully Closed" and "Partially Closed" with the latter getting a weight of 0.5. You can download variables Fully Closed" and "Partially Closed" at UNESCO's dashboard on the global monitoring of school closures caused by the COVID-19 pandemic: https://covid19.uis.unesco.org/global-monitoring-school-closures-covid19/

Natural resources
Many countries in our sample are large natural resource exporters. For these countries, we apply the Natural Resource Extension of the LTGM (LTGM-NR). Key assumptions for the LTGM-NR are the initial reserves and discoveries of natural resources. Information on reserves is taken from the BP-Energy Dataset for oil, natural gas and coal; and from the U.S. Geological Survey Database (USGS) for mining industries, such as copper, gold, and iron.

References (for OUTPUT_default_nolinks_31March2023.xlsx):

Loayza, Norman V. & Galego Mendes, Arthur & Mendez Ramos, Fabian & Pennings, Steven Michael, 2022. "Assessing the Effects of Natural Resources on Long-Term Growth : An Extension of the World Bank LongTerm Growth Model," Policy Research Working Paper Series 9965, The World Bank.
Barro, Robert J. & Lee, Jong Wha, 2013. "A new data set of educational attainment in the world, 1950–2010," Journal of Development Economics, Elsevier, vol. 104(C), pages 184-198.