

## "Beyond GDP: Welfare across Countries and Time"

### Replication Instructions

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This file describes the programs that are used to generate the empirical results in the paper. The results can be replicated by following the instructions below.

### **STATA PROGRAMS**

Stata programs are used to read in the raw country-specific Household Survey data and put it into a common format that we then analyze using Matlab programs. For details on each country, please see the Online Appendix. The programs are named "WBC\_YR\_sumstats.do," where "WBC" refers to the three-letter World Bank Country Code (BRA, CHN, ESP, FRA, GBR, IDN, IND, ITA, MEX, MWI, RUS, ZAF, or USA) and "YR" refers to the year of the survey (e.g. 06 for 2006, 85 for 1985).

The "sumstats" files create datasets WBC\_YR.dta and WBC\_YR.txt with the following common set of variables for each individual covered in that household survey:

- *hhid* (household id code)
- *hhsiz*e (number of individuals in the household)
- *age* (age of the individual)
- *leisure* (fraction of the time endowment the individual is not working)
- *hhexp* (total household expenditures on nondurables and services)
- *weight* (sampling weight)

The WBC\_YR.txt files are then used by matlab as described below.

### **MATLAB PROGRAMS**

The basic programs used to produce the results in the paper are listed and described below. All of the programs can be run in the correct order by executing the following master program in the main directory where the matlab files are unzipped:

*BeyondGDPMaster.m*

### **Micro Data Programs**

The original matlab programs we've run to produce the results in the paper assume the existence of the raw micro data in MicroData/Data/\*.txt:

BRA_03_exp.txt	FRA_05.txt	IND_83_exp.txt	RUS_07.txt	USA_05.txt
BRA_03_leisure.txt	FRA_84.txt	IND_83_leisure.txt	RUS_98.txt	USA_06.txt
BRA_08_exp.txt	GBR_05.txt	ITA_06.txt	USA_00.txt	USA_07.txt
BRA_08_leisure.txt	GBR_85.txt	ITA_87.txt	USA_01.txt	USA_84.txt
CHN_02.txt	IDN_06.txt	MEX_06.txt	USA_02.txt	USA_93.txt
ESP_01_exp.txt	IDN_93.txt	MEX_84.txt	USA_03.txt	USA_97.txt
ESP_01_leisure.txt	IND_05.txt	MWI_04.txt	USA_04.txt	ZAF_93.txt

We are permitted by the data sources to provide data for the U.S. only. We are not permitted to post data for the other countries and instead provide information on how to obtain access to the datasets below.

To aid users in replicating our results, we have saved the age-aggregated micro data into files in the MicroData/Data/ directory with names like “ITA\_06.mat” and “BRA\_08.mat.” These files contain data that has been aggregated up by age by running the program with the micro data present. The baseline results in Tables 2 and 3 in the paper can therefore be replicated conditional on this aggregation without the user obtaining any additional household survey data. (The robustness results in Table 4, however, require this survey data to be present in the \*.txt files. If that data \*has\* been obtained, you may change the MicroDataTXTFilesPresent variable to take the value 1 in SetParameters.m and uncomment the appropriate lines in BeyondGDPMaster.m to run the robustness programs.)

We provide examples of the micro data in USA\_84.txt and USA\_06.txt.

To generate the micro results from the cleaned data files in MicroData/Data/, run the following four programs:

*LambdaMaster.m* (creates *LambaMasterLevels.log* and *LambdaMasterGrowth.log*)  
*PlotMicroResults.m*  
*LambdaRobust.m* (creates *LambdaRobust.log*)  
*GrowthRobust.m* (creates *GrowthRobust.log*)

The first two programs can be run straight out of the zip file; the second two require the user to obtain the underlying household survey data.

These programs are described in more detail below.

*SetParameters.m* -- Sets the Baseline parameter values, including MicroDataTXTFilesPresent

*LambdaMaster.m* -- Master program for generating the main micro results

- *LambdaStats.m* -- main function for levels results
- *GrowthStats.m* -- main function for growth results
- *lambdastats80.m* -- main function for computing lambda
- *mainmoments80.m* -- underlying function that reads micro data / sets it up.
- *GetUBarMicro.m* -- function that calibrates ubar using U.S. microdata
- *survivalrate.m* and *WHOSurvivalRate2013.m* -- reads and interpolates survival rates

*PlotMicroResults.m* - creates graphs of underlying data and results

*LambdaRobust.m* -- Master program for robustness results

- *CRRARStats.m* -- function getting results with CRRA/CFE preferences
- *lambdacrra80.m* -- main function for computing lambda
- *mainmoments80crra.m* -- underlying function that reads micro data / sets it up.
- *GetUBarMicroCRRAR.m* -- function that calibrates ubar for CRRA/CFE case

*GrowthRobust.m* -- Master program for growth rate robustness results

- *GrowthCRRAR.m* -- function getting growth results with CRRA/CFE preferences

## **Macro Data Programs**

To generate the macro results from the data files provided in \*.mat, run the following three programs:

- RawlsLevels.m* (creates *RawlsLevels.log*)
- RawlsGrowth.m* (creates *RawlsGrowth.log*)
- Rawls15Micro.m* (creates *Rawls15Micro.log*)

These programs are described in more detail below.

*RawlsLevels.m* -- Main level results

- *MakeData15.m* -- sets up data PWT 8.0 and EV for 2007
- *Rawls15.m* -- solves for level results
- *PlotBasicResults.m* -- plots key results for levels

*RawlsGrowth.m* = master macro file for growth results

- *MakeDataGrowth15.m* -- sets up the data
- *Growth15.m* -- solves for the growth results

*Rawls15Micro.m* -- level results for the ctys/years w/ micro data

- *MakeDataMacroMicro15.m* -- sets up data

Underlying programs that generate data in \*.mat. These programs are discussed in more detail in the Online Appendix:

- *AnnualHoursPWT80.m*
- *LifeExpectancyWB80.m*
- *WBAdultPopulation80.m*
- *WIID3aLevels80.m* and *WIID3aGrowth80.m*

## **Obtaining the Household Survey Micro Datasets**

Contact information for obtaining access to micro datasets used in this paper:

U.S. Consumer Expenditure Surveys (CE): [http://klenow.com/fabrizio\\_cex.dta](http://klenow.com/fabrizio_cex.dta)

Brazilian Consumer Expenditure Survey in Brazil (POF) and National Household Sample Survey (PNAD):

<http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pof/2002analise/microdados.shtm>

[http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pof/2008\\_2009/microdados.shtm](http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pof/2008_2009/microdados.shtm)

<http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad2008/microdados.shtm>

Chinese Household Income Project (CHIP):

<http://www.icpsr.umich.edu/icpsrweb/DSDR/studies/21741>

French Family Budget Survey (BDF):

<http://www.cmh.ens.fr/greco/enquetes/XML/lil.php?lil=lil-0365>

<http://www.cmh.ens.fr/greco/enquetes/XML/lil.php?lil=lil-0067>

India's National Sample Survey (NSS):

Household Consumer Expenditure <http://164.100.34.62/index.php/catalog/CEXP>

Employment and Unemployment <http://164.100.34.62/index.php/catalog/EUE>

Indonesian National Socioeconomic Survey (SUSENAS):

<http://microdata.bps.go.id/mikrodata/index.php/catalog/SUSENAS>

Italian Survey of Income and Wealth (SHIW): <https://ideas.repec.org/c/red/ccodes/09-225.html>

Mexican National Survey of Income and Expenditure (ENIGH):

<http://www.inegi.org.mx/est/contenidos/Proyectos/encuestas/hogares/regulares/enigh/>

Malawian Integrated Household Survey (IHS): <http://go.worldbank.org/NOXNI9YDS0>

Russian Longitudinal Monitoring Survey (RLMS): <http://www.cpc.unc.edu/projects/rlms-hse>

South African Integrated Household Survey (IHS): <http://go.worldbank.org/TFCHVNUXQ0>

Spanish Continuous Household Budget Survey (ECPF) and European Community Household Panel (ECPH) for Spain. : <https://ideas.repec.org/c/red/ccodes/09-199.html>

U.K. Family Expenditure Survey (FES): <https://ideas.repec.org/c/red/ccodes/09-202.html>