Continuous national Gross Domestic Product (GDP) time series for 195 countries: past observations (1850-2005) harmonized with future projections according the Shared Socio-economic Pathways (2006-2100)

Recommended citation

Geiger, Tobias; Frieler, Katja (2018): Continuous national Gross Domestic Product (GDP) time series for 195 countries: past observations (1850-2005) harmonized with future projections according the Shared Socio-economic Pathways (2006-2100). V. 2.0. GFZ Data Services. http://doi.org/10.5880/pik.2018.010

NOTE: These data are a new version of (Geiger and Frieler (2017), http://doi.org/10.5880/pik.2017.003). Please use this updated version of this dataset which is corrected for a small error affecting Aruba (ABW) and documented in the Changelog below.

Content

Use of the dataset and full description

Before using the dataset, please read the article describing the methodology, especially about the uncertainties and the limitations of the method and use of the dataset.

Geiger, Tobias (2018): Continuous national Gross Domestic Product (GDP) time series for 195 countries: past observations (1850-2005) harmonized with future projections according the Shared Socio-economic Pathways (2006-2100), Earth Syst. Sci. Data (accepted) https://www.earth-syst-sci-data-discuss.net/essd-2017-80/

Please notify us (geiger@pik-potsdam.de) if you use the dataset so that we can keep track of how it is used and take that into consideration when updating and improving the dataset.

When using this dataset or one of its updates, please cite the DOI of the precise version of the dataset used and also the data description article which this dataset is supplement to (see above). Please consider also citing the relevant original sources when using the dataset. See the full citations in the References section further below.

Support

If you need support in using the dataset or have any other questions regarding the dataset, please contact Tobias Geiger (geiger@pik-potsdam.de).

Abstract

We here provide three different economic time series that amend or combine various existing time series for Gross Domestic Product (GDP), GDP per capita, and population to create consistent and continuous economic time series between 1850 and 2009 for up to 195 countries:

First, a continuous table of global income data (in 1990 Geary-Khamis $) based on the Maddison Project database (MPD) for 160 individual countries and 3 groups of countries from 1850-2010.

Second, a continuous table of global income data (in 2005 PPP $) for 195 countries based on a merged and harmonized dataset between MPD and Penn World Tables (PWT) v8.1 from 1850-2009, and additionally extended using PWT v9.0 and World Development Indicators (WDI), that is consistent with future GDP per capita projections from the Shared Socioeconomic Pathways (SSPs).

Third, a continuous table of global GDP data (in 2005 PPP $) for 195 countries from 1850-2009 based on the second income dataset multiplied by country population data, again consistent with future SSP GDP projections.

We use various interpolation and extrapolation methods to handle missing data and discuss the advantages and limitations of our methodology. Despite known shortcomings this dataset aims to provide valuable input e.g. for climate impact research in order to consistently analyze economic impacts from pre-industrial times to the distant future.

Please consult the Changelog below for a detailed description of the changes between versions.cd

Sources

Maddison Project database: Bolt and Zanden (2014)

Penn World Tables version 8.1 and version 9.0: Feenstra et al. (2015)

World Development Indicators: http://data.worldbank.org/

HYDE population data version 3.2: Klein Goldewijk et al. (2010), Klein Goldewijk et al. (2011)

OECD SSP2 and population projections: Dellink et al. (2017)

Files included in the dataset

primary files

Maddison_Project_data_completed_1850-2010.csv: Amended and completed Maddison project database based on current country definitions.

GDP-per-capita-national_PPP2005_SSP-harmonized_1850-2009.csv: Income (GDP per capita) by country in 2005 PPP Dollars.

GDP-national_PPP2005_SSP-harmonized_1850-2009.csv: GDP by country in 2005 PPP Dollars.

supplementary files

Maddison_data_availability_masked_1850-2010.csv: Availability mask of original data in Maddison project database based on current country definitions.

PPP_conversion_factors_PPP1990-PPP2005.csv: PPP coonversion factors used in this study.

Data format description (columns)

primary files

Table 1: Data structure in files.

Column	Description
ISO	ISO 3166 country codes
1850-2010	years

Custom ISO codes for country groups not explicitly mentioned in the Maddison_Project_data_completed_1850-2010.csv dataset:

Table 2: Additional "country" codes.

Code	Region description
EUR	group of 14 small Western European countries.
CAR	group of 21 Carribean countries.
EAS	group of 24 small East Asian countries.

unit

Unit is dollar in purchasing power parity (PPP), either 2005 PPP $ or 1990 Geary-Kharmi (G-K) $.

supplementary files

"Maddison_data_availability_masked_1850-2010.csv"

Table 3: Data structure in file.

Column	Description
ISO	ISO 3166 country codes
1850-2010	years

"PPP_conversion_factors_PPP1990-PPP2005.csv"

Table 4: Data structure in file.

Column	Description
ISO	ISO 3166 country codes
PPP_conversion_factor	ratio of PWT data (in PPP 2005 $) and Maddison data (in 1990 G-K $) in base_year
base_year	year in which the Maddison time series is truncated
5y_mean_applied	marker to indicate if interval [base_year, base_year+4 years] was used to determine

Column	Description
	mean PPP_conversion_factor
source	dataset that replaces Maddison data in in base_year

Changelog

v2 (April 2018)

The v2 release contains a minor change described below.

Data changes for country Aruba (ABW)

The linear interpolation in GDP per capita for Aruba (ABW) between observations in 2005 and SSP2 projections in 2010 was replaced by observed GDP per capita values for the years 2006-2009, as the SSP2 projection for Aruba turned out to be incorrect. As a result of this, the national GDP per capita and GDP timeseries for Aruba between 2006 and 2009 is different from the previous version.

References

Bolt, J. and Zanden, J. L. van: The Maddison Project: collaborative research on historical national accounts, The Economic History Review, 67(3), n/a–n/a, doi:10.1111/1468-0289.12032, 2014.

Dellink, R., Chateau, J., Lanzi, E. and Magné, B.: Long-term economic growth projections in the Shared Socioeconomic Pathways, Global Environmental Change, 42, 200–214, doi:10.1016/j.gloenvcha.2015.06.004, 2017.

Feenstra, R. C., Inklaar, R. and Timmer, M. P.: The Next Generation of the Penn World Table, American Economic Review, 105(10), 3150–3182, availablefor download at www.ggdc.net/, doi:10.1257/aer.20130954, 2015.

Geiger, T. and Frieler, K.: Continuous national Gross Domestic Product (GDP) time series for 195 countries: past observations (1850-2005) harmonized with future projections according to the Shared Socio-economic Pathways (2006-2100), doi:10.5880/PIK.2017.003, 2017.

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