

# Package ‘pwt10’

May 9, 2026

**Version** 10.01-0

**Date** 2023-02-27

**Title** Penn World Table (Version 10.x)

**Description** The Penn World Table 10.x (<<https://www.rug.nl/ggdc/productivity/pwt/>>) provides information on relative levels of income, output, input, and productivity for 183 countries between 1950 and 2019.

**LazyData** yes

**LazyDataCompression** xz

**Depends** R (>= 3.6.0)

**License** GPL-2 | GPL-3

**NeedsCompilation** no

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**Repository** CRAN

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pwt10.0

*Penn World Table 10.0***Description**

Relative levels of income, output, input, and productivity for 183 countries between 1950 and 2019 (base year: 2017).

**Usage**

```
data("pwt10.0")
```

**Format**

A data frame with 12,810 observations of 52 variables.

**country** factor with country name.

**isocode** factor with ISO 3166-1 alpha-3 country code.

**year** year.

**currency** factor with national currency unit.

**rgdpe** Expenditure-side real GDP at chained PPPs (in million 2017 USD).

**rgdpo** Output-side real GDP at chained PPPs (in million 2017 USD).

**pop** Population (in millions).

**emp** Number of persons engaged (in millions).

**avh** Average annual hours worked by persons engaged.

**hc** Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.

**ccon** Real consumption of households and government, at current PPPs (in million 2017 USD).

**cda** Real domestic absorption, (real consumption plus investment), at current PPPs (in million 2017 USD).

**cgdpe** Expenditure-side real GDP at current PPPs (in million 2017 USD).

**cgdpo** Output-side real GDP at current PPPs (in million 2017 USD).

**cn** Capital stock at current PPPs (in million 2017 USD).

**ck** Capital services levels at current PPPs (USA = 1).

**ctfp** TFP level at current PPPs (USA = 1).

**cwtfp** Welfare-relevant TFP levels at current PPPs (USA = 1).

**rgdpna** Real GDP at constant 2017 national prices (in million 2017 USD).

**rconna** Real consumption at constant 2017 national prices (in million 2017 USD).

**rdana** Real domestic absorption at constant 2017 national prices (in million 2017 USD).

**rnnna** Capital stock at constant 2017 national prices (in million 2017 USD).

- rkna** Capital services at constant 2017 national prices (2017 = 1).
- rtfpna** TFP at constant national prices (2017 = 1).
- rwtfpna** Welfare-relevant TFP at constant national prices (2017 = 1).
- labsh** Share of labour compensation in GDP at current national prices.
- irr** Real internal rate of return.
- delta** Average depreciation rate of the capital stock.
- xr** Exchange rate, national currency/USD (market and estimated).
- pl\_con** Price level of CCON (PPP/XR, price level of USA GDPo in 2017 = 1).
- pl\_da** Price level of CDA (PPP/XR, price level of USA GDPo in 2017 = 1).
- pl\_gdpo** Price level of CGDPo (PPP/XR, price level of USA GDPo in 2017 = 1).
- i\_cig** Factor indicating whether relative price data for consumption, investment, and government is extrapolated, benchmark, interpolated, ICP PPP timeseries: benchmark or interpolated, or ICP PPP timeseries: extrapolated.
- i\_xm** Factor indicating whether relative price data for exports and imports is extrapolated, benchmark, or interpolated.
- i\_xr** Factor indicating whether the exchange rate is market-based or estimated.
- i\_outlier** Factor indicating whether the observation on pl\_gdpe or pl\_gdpo is an outlier or not.
- i\_irr** Factor indicating whether the observation for irr is regular (not an outlier), may be biased due to a low capital share, hit the lower bound of 1 percent, or is an outlier.
- cor\_exp** Correlation between expenditure shares of the country and the US (benchmark observations only).
- statcap** Statistical capacity indicator (source: World Bank, developing countries only).
- csch\_c** Share of household consumption at current PPPs.
- csch\_i** Share of gross capital formation at current PPPs.
- csch\_g** Share of government consumption at current PPPs.
- csch\_x** Share of merchandise exports at current PPPs.
- csch\_m** Share of merchandise imports at current PPPs.
- csch\_r** Share of residual trade and GDP statistical discrepancy at current PPPs.
- pl\_c** Price level of household consumption (price level of USA GDPo in 2017 = 1).
- pl\_i** Price level of capital formation (price level of USA GDPo in 2017 = 1).
- pl\_g** Price level of government consumption (price level of USA GDPo in 2017 = 1).
- pl\_x** Price level of exports (price level of USA GDPo in 2017 = 1).
- pl\_m** Price level of imports (price level of USA GDPo in 2017 = 1).
- pl\_n** Price level of the capital stock (price level of USA in 2017 = 1).
- pl\_k** Price level of the capital services (price level of USA = 1).

## Details

The Penn World Table (version 10.0) is a database with information on relative levels of income, output, input, and productivity, covering 183 countries between 1950 and 2019. It is provided at <https://www.rug.nl/ggdc/productivity/pwt/> under the Creative Commons Attribution License (CC-BY), see Feenstra, Inklaar, and Timmer (2021, 2015) for more details. Version 10.0 represents the fifth release since the switch to the *Next Generation of the Penn World Table* of PWT versions 8.0 and 8.1 (see Feenstra, Inklaar, and Timmer 2015), followed by version 9.0 and 9.1. Section I of Feenstra et al. (2015) is still the recommended starting point as the main structure of the database and definition of its variables are unchanged in PWT 10.0. Nevertheless Version 10.0 contains important new and revised data.

## Source

Penn World Table 10.0, doi:10.15141/S5Q94M.

## References

Feenstra RC, Inklaar R, Timmer MP (2021). PWT 10.0: A User's Guide. URL <https://www.rug.nl/ggdc/productivity/pwt/>.

Feenstra RC, Inklaar R, Timmer MP (2015). The Next Generation of the Penn World Table, *American Economic Review*, **105**(10), 3150–3182.

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pwt10.01

*Penn World Table 10.01*

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## Description

Relative levels of income, output, input, and productivity for 183 countries between 1950 and 2019 (base year: 2017).

## Usage

```
data("pwt10.01")
```

## Format

A data frame with 12,810 observations of 52 variables.

**country** factor with country name.

**isocode** factor with ISO 3166-1 alpha-3 country code.

**year** year.

**currency** factor with national currency unit.

**rgdpe** Expenditure-side real GDP at chained PPPs (in million 2017 USD).

**rgdpo** Output-side real GDP at chained PPPs (in million 2017 USD).

**pop** Population (in millions).

- emp** Number of persons engaged (in millions).
- avh** Average annual hours worked by persons engaged.
- hc** Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.
- ccon** Real consumption of households and government, at current PPPs (in million 2017 USD).
- cda** Real domestic absorption, (real consumption plus investment), at current PPPs (in million 2017 USD).
- cgdpe** Expenditure-side real GDP at current PPPs (in million 2017 USD).
- cgdpo** Output-side real GDP at current PPPs (in million 2017 USD).
- cn** Capital stock at current PPPs (in million 2017 USD).
- ck** Capital services levels at current PPPs (USA = 1).
- ctfp** TFP level at current PPPs (USA = 1).
- cwtfp** Welfare-relevant TFP levels at current PPPs (USA = 1).
- rgdpna** Real GDP at constant 2017 national prices (in million 2017 USD).
- rconna** Real consumption at constant 2017 national prices (in million 2017 USD).
- rdana** Real domestic absorption at constant 2017 national prices (in million 2017 USD).
- rnna** Capital stock at constant 2017 national prices (in million 2017 USD).
- rkna** Capital services at constant 2017 national prices (2017 = 1).
- rtfpna** TFP at constant national prices (2017 = 1).
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- labsh** Share of labour compensation in GDP at current national prices.
- irr** Real internal rate of return.
- delta** Average depreciation rate of the capital stock.
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- pl\_con** Price level of CCON (PPP/XR), price level of USA GDPo in 2017 = 1.
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- pl\_gdpo** Price level of CGDPo (PPP/XR), price level of USA GDPo in 2017 = 1.
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- i\_xm** Factor indicating whether relative price data for exports and imports is extrapolated, benchmark, or interpolated.
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- i\_outlier** Factor indicating whether the observation on pl\_gdpe or pl\_gdpo is an outlier or not.
- i\_irr** Factor indicating whether the observation for irr is regular (not an outlier), may be biased due to a low capital share, hit the lower bound of 1 percent, or is an outlier.
- cor\_exp** Correlation between expenditure shares of the country and the US (benchmark observations only).
- statecap** Statistical capacity indicator (source: World Bank, developing countries only).

- cs<sub>h\_c</sub>** Share of household consumption at current PPPs.
- cs<sub>h\_i</sub>** Share of gross capital formation at current PPPs.
- cs<sub>h\_g</sub>** Share of government consumption at current PPPs.
- cs<sub>h\_x</sub>** Share of merchandise exports at current PPPs.
- cs<sub>h\_m</sub>** Share of merchandise imports at current PPPs.
- cs<sub>h\_r</sub>** Share of residual trade and GDP statistical discrepancy at current PPPs.
- pl<sub>c</sub>** Price level of household consumption (price level of USA GDPo in 2017 = 1).
- pl<sub>i</sub>** Price level of capital formation (price level of USA GDPo in 2017 = 1).
- pl<sub>g</sub>** Price level of government consumption (price level of USA GDPo in 2017 = 1).
- pl<sub>x</sub>** Price level of exports (price level of USA GDPo in 2017 = 1).
- pl<sub>m</sub>** Price level of imports (price level of USA GDPo in 2017 = 1).
- pl<sub>n</sub>** Price level of the capital stock (price level of USA in 2017 = 1).
- pl<sub>k</sub>** Price level of the capital services (price level of USA = 1).

### Details

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The changes in version 10.01 relate to the calculation of investment deflators and primarily affect the \*na variables for capital and TFP, i.e., those primarily designed to capture growth over time.

### Source

Groningen Growth and Development Centre (2023). Penn World Table 10.01, DataverseNL. doi:10.34894/QT5BCC.

### References

- Feenstra RC, Inklaar R, Timmer MP (2021). PWT 10.0: A User's Guide. URL <https://www.rug.nl/ggdc/productivity/pwt/>.
- Feenstra RC, Inklaar R, Timmer MP (2015). The Next Generation of the Penn World Table, *American Economic Review*, **105**(10), 3150–3182.

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