

Appendix: Methodology and Definitions

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Definition of Gross Domestic Product at Purchasing Power Parities

Typically, the GDP is translated into U.S. dollars. The market foreign currency exchange rate, however, does not necessarily reflect differences in actual purchasing power in different countries. The use of purchasing power parities is designed to eliminate this distortion. Purchasing power parities indicate how many currency units are needed in one country to buy the amount of goods and services that can be purchased for a currency unit in another country.

Definition of Population

Population of a country includes all residents regardless of legal status or citizenship — except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. The values shown are midyear estimates.¹

The population numbers of countries were adjusted as follows:

COUNTRY	ADJUSTMENT
Antigua and Barbuda	To subtract population of Barbuda
Azerbaijan	To subtract population of Nagorno-Karabakh
Colombia	To subtract population of San Andres, Providencia and Santa Catalina
Cyprus	To subtract population of Northern Cyprus

¹ Economics: The World Bank.

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Fiji	To subtract population of Rotuma Island
Finland	To subtract population of Aland Islands
Georgia	To subtract population of Abkhazia and South Ossetia
Grenada	To subtract population of Carriacou and Petite Martinique
Mauritius	To subtract population of Agalega, Saint Brandon, and Rodrigues Island
Moldova	To subtract population of Transnistria
New Zealand	To subtract population of Chatham Islands
Papua New Guinea	To subtract population of Bougainville
Portugal	To subtract population of Azores and Madeira
Russia	To add population of Crimea
Seychelles	To subtract population of Amirantes Islands, Farquhar Islands, Islands in the Aldabra Group, Islands in the Alphonse Group, and South Coral Group
Somalia	To subtract population of Somaliland
Spain	To subtract population of Alboran Island, Alhucemas Islands, Ceuta, Chafarinas Islands, Melilla, and

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	Penon de Velez de la Gomera
Ukraine	To subtract population of Crimea, Donetsk People’s Republic, and Luhansk People’s Republic
Venezuela	To subtract population of Los Roques and Los Testigos

Where the World Bank population data is not available, I used Encyclopedia Britannica as the main source, and where the latter were unavailable, Wikipedia.

The prime alternatives to the World Bank and Encyclopedia Britannica as a source of population data are the IDB and the CIA. In some cases, when the population data of Encyclopedia Britannica is more in sync with the list of territories used in this yearbook, I used Encyclopedia Britannica population data as opposed to the World Bank. For example, while the IDB and the World Bank include into the population of France “overseas departments” (French Guiana, Guadeloupe, Martinique, Mayotte, Reunion), population data provided by Encyclopedia Britannica is adjusted by subtracting the population of these “overseas departments” (the accumulated difference is quite substantial and now stands at about 2.1 million). This is important because, following the lead of Encyclopedia Britannica, we consider these “overseas departments” to be separate territories for the purposes of international statistics.

Also, for West Bank and Gaza Strip I used Encyclopedia Britannica, which gives separate data for these two enclaves, as opposed to the World Bank, which combines them. I tend to agree with Encyclopedia Britannica that it makes sense to report West Bank and Gaza Strip separately. I only adjusted population of West Bank to subtract its Jewish population (about 350,000) to keep data in sync with Israel, for whom the World Bank includes Jewish population of West Bank. The decision to include Jewish population of West Bank into data for Israel is in line with the general approach of this book to report data on the territories of de-facto control.

The World Bank population data is generally available starting from 1960 and Encyclopedia Britannica data is available for 1950 only using old estimates, so for 1950 the latest estimates

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available from IDB are used. The exception is made for population of Mauritania for 1950, because IDB estimate for 1950 is higher than the World Bank data for 1960; because of that for Mauritania for 1950 I used data from Wikipedia.

The future year estimates for 2020, 2030, 2040, 2050, 2060, 2070, 2080, 290, and 2100 are based on the UN World Population Prospects.

Special care was taken for calculation of population of the former U.S.S.R. for the year of 1880. The population for 1870, 1880, and 1890 is available from www.tacitus.nu/historical-atlas/population/russia.htm. This data is synchronized with Maddison as follows:

Data	1870	1880	1890
Population of Russia Tacitus.nu	84,500	97,700	117,800
Population of U.S.S.R. Maddison	88,672		110,664
Population of U.S.S.R. synchronized with Maddison (logarithmic interpolation)		97,684.069	

Special care was taken for calculation of population of the former U.S.S.R. for the year of 1850. The population for the whole of the former U.S.S.R. for 1820, 1850, and 1870 are provided by Maddison. Maddison gives estimates of population of European Russia, Siberia, Caucasus, and Turkestan only for years of 1820 and 1870. This data is synchronized with Maddison as follows:

Data	1820	1850	1870
Whole U.S.S.R.	54,765	73,750	88,672
European	44,161		71,726

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Russia (Maddison)			
European Russia (logarithmic interpolation)		59,584.635	
Siberia (Maddison)	1,443		3,272
Siberia (logarithmic interpolation)		2,392.552	
Caucasus (Maddison)	2,429		4,587
Caucasus (logarithmic interpolation)		3,597.120	
Turkestan (Maddison)	6,732		9,087
Turkestan (logarithmic interpolation)		8,102.261	

Different countries of the former U.S.S.R. were applied population growth rates in the period of 1820-1850 depending on to which of these geographic regions they belong.

Special care was taken for calculation of population of the Indian sub-continent for the year of 1938. The population for the whole of the undivided India for 1929, 1938, and 1941 are provided by Maddison. Maddison gives estimates of population of Indian Union, Bangladesh, and Pakistan only for years of 1929 and 1941. This data is synchronized with Maddison as follows:

Data	1929	1938	1941
Undivided India	333,100	376,100	391,700
Indian Union (Maddison)	275,861		321,565
Indian Union		309,436.578	

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(logarithmic interpolation)			
Bangladesh (Maddison)	34,427		41,966
Bangladesh (logarithmic interpolation)		39,932.836	
Pakistan (Maddison)	22,812		28,169
Pakistan (logarithmic interpolation)		26,717.583	

Special care was taken for calculation of population of the Indian sub-continent for the year of 1920. The population for the whole of the undivided India for 1913, 1920, and 1929 are provided by Maddison. Maddison gives estimates of population of Indian Union, Bangladesh, and Pakistan only for years of 1913 and 1929. This data is synchronized with Maddison as follows:

Data	1913	1920	1929
Undivided India	303,700	305,600	333,100
Indian Union (Maddison)	251,906		275,861
Indian Union (logarithmic interpolation)		253,455.258	
Bangladesh (Maddison)	31,786		34,427
Bangladesh (logarithmic interpolation)		31,957.697	
Pakistan (Maddison)	20,008		22,812
Pakistan (logarithmic interpolation)		20,185.902	

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Special care was taken for calculation of population of the Indian sub-continent for the years of 1880, 1890, and 1900. The population for the whole of the undivided India for 1870, 1880, 1890, 1900, and 1913 are provided by Maddison. Maddison gives estimates of population of Indian Union, Bangladesh, and Pakistan only for years of 1870 and 1913. This data is synchronized with Maddison as follows:

Data	1870	1880	1890	1900	1913
Undivided India	253,000	257,200	279,626	284,500	303,700
Indian Union (Maddison)	212,189				251,906
Indian Union (logarithmic interpolation)		215,496.316	233,098.710	236,916.508	
Bangladesh (Maddison)	24,721				31,786
Bangladesh (logarithmic interpolation)		25,287.554	28,370.936	29,053.739	
Pakistan (Maddison)	16,090				20,008
Pakistan (logarithmic interpolation)		16,409.213	18,130.418	18,508.118	

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Definition of the GDP Historical Data Since 1AD

I used information about GDP Per Capita in purchasing power parities for 1950 and the latest (current) year as the basis points. I also appropriated Angus Maddison's² hypothesis that GDP Per Capita in purchasing power parities cannot be less than 400 dollars in 1990 prices, and utilized a logarithmic interpolation technique to slightly adjust Maddison's statistical curves for years other than basis years.

It is customary in historical comparisons of the countries of the world to use Gross Domestic Product (GDP) in purchasing power parities. If GDP in market exchange rates is used, then the historical picture becomes distorted in favor of the countries that have strong currencies in the last year of observations. In effect many less developed countries would appear too weak in the past, having GDP per capita less than the minimum level of 400 dollars in 1990 prices.

The data is given for countries within the current (latest year) boundaries.

I interpolated per capita GDP at purchasing power parities. The reason I interpolated per capita as opposed to gross data is that per capita growth rates are more invariant than the gross growth rates (the latter to some degree depend on the growth rates of the population, which vary by time and country).

For years prior to 1950, the principal source of per capita GDP at purchasing power parities (GDP at PPP) is Angus Maddison.

For GDP at market exchange rates per capita and GDP at purchasing power parities per capita, the hierarchy of sources within the latest year is: WB, IMF, UN, EM, E, CIA, IISS, WIKI.

The CIA's GDP per capita data from the *World Factbook* is inexact, being rounded to the hundred or thousand dollars, and is often out of sync with the CIA's gross GDP numbers. The obvious way to synchronize CIA gross GDP and GDP per capita numbers and to increase the precision of GDP per capita estimates would be to recalculate GDP per capita by dividing CIA gross GDP numbers

² Economics: Maddison (1995), (2001), (2003), (2007).

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by CIA population data for the corresponding years. Unfortunately, sometimes CIA gross GDP numbers appear to be even rougher estimates than CIA GDP per capita numbers. Therefore, in synchronizing CIA gross GDP and GDP per capita, I used the following rule: if after these calculations, the CIA number does not look like a rounded one (to the precision of 100) of my calculated number, a maximum of the CIA number and my calculated number is taken. If either of these two indicators is missing, a regression is used to obtain the other one of the pair.

For years after 1950, there are two main sources of per capita GDP at PPP: Angus Maddison for 1950 through 2000 and the World Bank for 1960 through the current year. The World Bank per capita GDP at PPP exists in 1990 prices (for year of 1990), intermediate price base (entitled 2010 prices in the World Bank Development indicators online; but there are reasons to believe that the base year is different for this series for different countries), and 2017 prices. There are small discrepancies among these main sources. In order to harmonize these sources a three-step iteration was used:

- 1) The Angus Maddison data is in 1990 prices. There is also data from the World Bank in current (that is 1990) prices. I assumed that the World Bank, being produced at later time, is more correct. The Angus Maddison's data was adjusted accordingly:

If G1990-WB exists then

Do;

$$G1960\text{-Maddison} = G1960\text{-Maddison} * (G1990\text{-WB} / G1990\text{-Maddison})^{1/4};$$

$$G1970\text{-Maddison} = G1970\text{-Maddison} * (G1990\text{-WB} / G1990\text{-Maddison})^{2/4};$$

$$G1980\text{-Maddison} = G1980\text{-Maddison} * (G1990\text{-WB} / G1990\text{-Maddison})^{3/4};$$

$$G2000\text{-Maddison} = G2000\text{-Maddison} * (G1990\text{-WB} / G1990\text{-Maddison});$$

$$G1990\text{-Maddison} = G1990\text{-WB};$$

End;

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where

G1990-WB	per capita GDP at PPP in 1990 in prices of 1990 according to the World Bank
G1960-Maddison	per capita GDP at PPP in 1960 in prices of 1990 according to Angus Maddison
G1970-Maddison	per capita GDP at PPP in 1970 in prices of 1990 according to Angus Maddison
G1980-Maddison	per capita GDP at PPP in 1980 in prices of 1990 according to Angus Maddison
G1990-Maddison	per capita GDP at PPP in 1990 in prices of 1990 according to Angus Maddison
G2000-Maddison	per capita GDP at PPP in 2000 in prices of 1990 according to Angus Maddison

- 2) Generally, the historical data available from the World Bank is in 1990, 2010, and 2017 prices, and the historical data available from the UN is in 2010 prices. Where data is available both from the World Bank in 2010 prices and the UN in 2010 prices, I used the World Bank data. I used geometric average among Angus Maddison's data and 1990, 2010, and 2017 series of the World Bank/UN:

If G1960-WB exists then

$$G1970\text{-Maddison} = G1960\text{-Maddison} * ((G1970\text{-WB} / G1960\text{-WB}) * (G1970\text{-Maddison} /$$

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$G1960\text{-Maddison})^{1/2}$;
If $G1970\text{-WB}$ exists then
$$G1980\text{-Maddison} = G1970\text{-Maddison} * ((G1980\text{-WB} / G1970\text{-WB}) * (G1980\text{-Maddison} / G1970\text{-Maddison}))^{1/2}$$
;
If $G1980\text{-WB}_{2010}$ exists then
If $G1980\text{-WB}_{2017}$ exists then
$$G1990\text{-Maddison} = G1980\text{-Maddison} * ((G1990\text{-WB}_{2010} / G1980\text{-WB}_{2010}) * (G1990\text{-WB}_{2017} / G1980\text{-WB}_{2017}) * (G1990\text{-Maddison} / G1980\text{-Maddison}))^{1/3}$$
;
Else
$$G1990\text{-Maddison} = G1980\text{-Maddison} * ((G1990\text{-WB}_{2010} / G1980\text{-WB}_{2010}) * (G1990\text{-Maddison} / G1980\text{-Maddison}))^{1/2}$$
;
If $G1990\text{-WB}$ exists then
If $G1990\text{-WB}_{2017}$ exists then
$$G2000\text{-Maddison} = G1990\text{-Maddison} * ((G2000\text{-WB}_{2010} / G1990\text{-WB}_{2010}) * (G2000\text{-WB}_{2017} / G1990\text{-WB}_{2017}) * (G2000\text{-Maddison} / G1990\text{-Maddison}))^{1/3}$$
;
Else
$$G2000\text{-Maddison} = G1990\text{-Maddison} * ((G2000\text{-WB}_{2010} / G1990\text{-WB}_{2010}) * (G2000\text{-Maddison} / G1990\text{-Maddison}))^{1/2}$$
;
If $G2000\text{-WB}_{2010}$ exists then
$$G2010\text{-Maddison} = G2000\text{-Maddison} * ((G2010\text{-WB}_{2010} / G2000\text{-WB}_{2010}) *$$

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$$\begin{aligned} & (G2010-WB_{2017} / G2000-WB_{2017})^{1/2}; \\ \text{If } G2010-WB_{2010} \text{ exists then} \\ & G2015\text{-Maddison} = G2010\text{-Maddison} * \\ & ((G2015-WB_{2010} / G2010-WB_{2010}) * \\ & (G2015-WB_{2017} / G2010-WB_{2017}))^{1/2}; \end{aligned}$$

where

G1980-WB ₂₀₁₀	per capita GDP at PPP in 1980 in prices of 2010 according to the World Bank or UN
G1990-WB ₂₀₁₀	per capita GDP at PPP in 1990 in prices of 2010 according to the World Bank or UN
G2000-WB ₂₀₁₀	per capita GDP at PPP in 2000 in prices of 2010 according to the World Bank or UN
G2010-WB ₂₀₁₀	per capita GDP at PPP in 2010 in prices of 2010 according to the World Bank or UN
G2015-WB ₂₀₁₀	per capita GDP at PPP in 2015 in prices of 2010 according to the World Bank or UN
G1990-WB ₂₀₁₇	per capita GDP at PPP in 1990 in prices of 2017 according to the World Bank
G2000-WB ₂₀₁₇	per capita GDP at PPP in 2000 in prices of 2017 according to the World Bank
G2010-WB ₂₀₁₇	per capita GDP at PPP in 2010 in prices of 2017 according to the

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	World Bank
G2015-WB ₂₀₁₇	per capita GDP at PPP in 2015 in prices of 2017 according to the World Bank
G1960-Maddison	per capita GDP at PPP in 1960 in prices of 1990 according to Angus Maddison
G1970-Maddison	per capita GDP at PPP in 1970 in prices of 1990 according to Angus Maddison
G1980-Maddison	per capita GDP at PPP in 1980 in prices of 1990 according to Angus Maddison
G1990-Maddison	per capita GDP at PPP in 1990 in prices of 1990 according to Angus Maddison
G2000-Maddison	per capita GDP at PPP in 2000 in prices of 1990 according to Angus Maddison
G2010-Maddison	per capita GDP at PPP in 2010 in prices of 1990 according to Angus Maddison
G2015-Maddison	per capita GDP at PPP in 2015 in prices of 1990 according to Angus Maddison

- 3) After the first two adjustments, there are still general problems, which I would call a “cross-country statistical parallax.” These problems manifest themselves in the fact that, for any country, if we take per capita GDP at PPP for

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1950 (in whatever year's constant prices), multiply by the index of per capita GDP at PPP for the current year (in the same year's constant prices), the result will generally speaking be somewhat (and sometimes substantially) different from the direct estimate of per capita GDP at PPP for the current year (in the same year's constant prices). For example, it can be noticed that data for per capita GDP at PPP in constant prices of Switzerland would overestimate the GDP deflator of that country in comparison with the United States. So, if we take the ratio of per capita GDP at PPP of Switzerland to the United States in 1950, multiply it by the index per capita GDP at PPP of Switzerland for 1990 (or any other current year), the result would be consistently lower than the ratio of per capita GDP at PPP of Switzerland to the United States, when measured directly in 1990 (or any other current year). Some countries would vice a versa underestimate its inflation in comparison with the United States. Usually, however, for a given country, it is consistently either underestimation or overestimation of inflation in comparison with the United States. I assumed that the degree of such overestimation or underestimation of inflation for a given country would be constant for the entire period after 1950.

To adjust for the cross-country statistical parallax, I have been using logarithmic interpolation.

The reason I used logarithmic interpolation, as opposed to exponential interpolation is that exponential interpolation may often result in negative growth rates of per capita GDP, which seems unlikely. Logarithmic interpolation does not change the nature of the growth over an observed period: positive growth rates remain positive, negative remain negative. Moreover, the periods of faster growth remain periods of faster growth, the periods of slower growth remain periods of slower growth. The economic rationale for such an interpolation is that its most common use is when there is unaccounted inflation in the statistics of real growth. As a rule, such inflation is higher when economic growth is faster. So, it

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makes sense to assume that the unaccounted deflator should be proportionally higher with higher growth rates. To achieve an interpolation with such qualities I had to assume that over the period of 1950 to the current year there existed a constant degree to which the reported national growth rates should be raised in order to achieve the observed growth rates between 1950 and the current year. I weighted growth rates of every country relative to the growth rates of the United States. Such a hypothesis produces a more believable growth curve than the one which would have been acquired if exponential interpolation were used.

The degree to which the reported national growth rate between 1950 and the current year should be raised is computed according to the following formula:

if $G_{\text{current}1990} = G_{19501990}$ then

$$r = 1;$$

else

$$r = \frac{\log((G_{\text{current}current} * G_{\text{UScurrent}1990}) / (G_{19501990} * G_{\text{UScurrent}current}))}{\log(G_{\text{current}1990} / G_{19501990})}$$

The vast majority of countries have $0 < r < 1$. The economic explanation for this fact is as follows. The relative weights of different goods and services vary from country to country and, in general, are different from that of the United States. As the result, the economy of a given country responds to its structure of prices by developing in the direction in the multi-dimensional space of goods and services somewhat different from the direction of the development of the economy of the United States. Naturally, when measured against its own price structure the economy of any country shows better cumulative development than when measured against the price structure of the United States.

However, if $r \leq 0$ or $r > 1$, then, to retain growth where there was observed growth with the reported national data (with $r \leq 0$) and to not exaggerate periods of

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downturn (with $r > 1$), we use the more commonly used exponential interpolation.

The corresponding formulas for the interpolation of per capita GDP are:

```
if r > 0
or r <= 1
then
    Gyearcorrected = Gyearcurrent * (Gyearcurrent /
    Gcurrentcurrent)
    ** r
else
do;
    if G19501990 exists then
do;
        Interpol = ((Gcurrentcurrent /
        G-UScurrentcurrent) /
        (Gcurrent1990 /
        G-UScurrent1990)) ** (1 /
        (current - 1950))
        for year = 1960, 1970, 1980, 1990,
        2000, 2010, current
        do;
            Gyearcorrected = Gyearcurrent /
            (interpol ** (year -
            1950))
        end;
    end;
else
    if G19601990 exists then
do;
        Interpol = ((Gcurrentcurrent /
        G-UScurrentcurrent) /
        (Gcurrent1990 /
        G-UScurrent1990)) ** (1 /
        (current - 1960))
        for year = 1970, 1980, 1990, 2000,
        2010, current
```


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```
do;
    Gyearcorrected = Gyearcurrent /
        (interpol ** (year -
            1960))
end;
end;
else
if G19701990 exists then
do;
    Interpol = ((Gcurrentcurrent /
        G-UScurrentcurrent) /
        (Gcurrent1990 /
        G-UScurrent1990)) ** (1 /
        (current - 1970)
for year = 1980, 1990, 2000, 2010,
current
do;
    Gyearcorrected = Gyearcurrent /
        (interpol ** (year -
            1970))
end;
end;
else
if G19801990 exists then
do;
    Interpol = ((Gcurrentcurrent /
        G-UScurrentcurrent) /
        (Gcurrent1990 /
        G-UScurrent1990)) ** (1 /
        (current - 1980)
for year = 1990, 2000, 2010, current
do;
    Gyearcorrected = Gyearcurrent /
        (interpol ** (year -
            1980))
end;
end;
else
if G19901990 exists then
```

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```
do;
    Interpol = ((Gcurrentcurrent /
                G-UScurrentcurrent) /
                (Gcurrent1990 /
                G-UScurrent1990)) ** (1 /
                (current - 1990))
    for year = 2000, 2010, current
    do;
        Gyearcorrected = Gyearcurrent /
            (interpol ** (year -
            1990))
    end;
end;
else
if G20001990 exists then
do;
    Interpol = ((Gcurrentcurrent /
                G-UScurrentcurrent) /
                (Gcurrent1990 /
                G-UScurrent1990)) ** (1 /
                (current - 2000))
    for year = 2010, current
    do;
        Gyearcorrected = Gyearcurrent /
            (interpol ** (year -
            2000))
    end;
end;
else
if G20101990 exists then
do;
    Interpol = ((Gcurrentcurrent /
                G-UScurrentcurrent) /
                (Gcurrent1990 /
                G-UScurrent1990)) ** (1 /
                (current - 2010))
    for year = current
    do;
        Gyearcorrected = Gyearcurrent /
```

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(interpol ** (year – 2010))

end;

end;

end;

where

$$G_{\text{year}_{\text{current}}} = G_{\text{year}_{1990}} * (G_{\text{current}_{\text{current}}} / G_{\text{current}_{1990}})$$

$$G_{1950_{\text{current}}} = (G_{1950_{1990}} / G_{\text{US}1950_{1990}}) * G_{\text{US}1950_{\text{current}}}$$

$$G_{\text{US}1950_{\text{current}}} = G_{\text{US}1950_{1990}} * (G_{\text{UScurrent}_{\text{current}}} / G_{\text{UScurrent}_{1990}})$$

$$G_{\text{UScurrent}_{1990}} = G_{\text{UScurrent}_{1990}} * (G_{\text{UScurrent}_{\text{current}}} / G_{\text{UScurrent}_{\text{current}}})$$

The notations are identified below:

GPCPPP	per capita GDP at purchasing power parities
G _{year_{corrected}}	GPCPPP for a particular year after the interpolation
G _{year_{current}}	GPCPPP for a particular year in the prices of the current year
G _{year₁₉₉₀}	GPCPPP for a particular year in the prices of 1990
G _{1950₁₉₉₀}	GPCPPP for the year of 1950 in the prices of 1990
G _{US1950₁₉₉₀}	GPCPPP of the U.S. for the year of 1950 in the prices of 1990
G _{current_{current}}	GPCPPP for the current year in the prices of the current year
G _{UScurrent_{current}}	GPCPPP of the U.S. for the current year in the prices of the current year
G _{1950_{current}}	GPCPPP for the year of 1950 in

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	the prices of the current year
$G-US1950_{current}$	GPCPPP of the U.S. for the year of 1950 in the prices of the current year
$G_{current1990}$	GPCPPP for the current year in the prices of 1990
$G-US_{current1990}$	GPCPPP of the U.S. for the current year in the prices of 1990

For the years prior to 1950, when direct estimates are available, I used the formula:

$$G_{year_{current}} = G_{year_{1990}} * (G1950_{current} / G1950_{1990})$$

In cases when direct estimates were not available, I used proxies to countries, for which direct estimates were available, corrected by logarithmic interpolation similar to the one described above for years after 1950.

My general rule was to take all available data from Angus Maddison and the World Bank (the emphasis here is on “all”: as the rule I did not skip any applicable data from Angus Maddison and the World Bank for any years where it existed). When the data from these sources was unavailable, I took the CIA data. And when the CIA data was unavailable, I took the UN data.

The above described three-step algorithm, worked well for all 262 countries with regard to the World Bank and CIA data. No exceptions with this year’s World Bank and CIA data were noticed.

Special care was taken for calculation of GDP of the former U.S.S.R. for the year of 1920. In order to calculate an index of GDP 1913-1920, I used partial data for two sectors of the economy: agriculture and industry. The production of grain in these years constituted (Davies(1994), p. 320):

Production of grain	
1913	79.7 million tons

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1920	44.5 million tons
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Gross industrial production constituted (ibid., p. 321):

Gross industrial production	
1913	8,431
1920	1,718

The share of agriculture in national income of 1913 constituted 50.7 percent. Assuming that non-agricultural sectors of the economy shrank by 1920 in the same proportion as the industrial production, I obtained the following putative index of GDP:

GDP Index	
1913	100
1920	38.354

Special care was taken for calculation of GDP Per Capita of the former U.S.S.R. for the year of 1890. The GDP Per Capita for Ireland for the year 1890 is available from an earlier work of Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for the former U.S.S.R., but published data only for the years of 1870 and 1913. This data is synchronized with earlier estimates of Maddison as follows:

Data	1870	1890	1900
GDP Per Capita of U.S.S.R. Maddison (1995)	1,023	925	1,218
GDP Per Capita of U.S.S.R. from later Maddison	943		1,237
GDP Per Capita of U.S.S.R.		879.50	

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synchronized with later Maddison (exponential interpolation)			
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Special care was taken for calculation of GDP Per Capita of the former U.S.S.R. for the year of 1880. The GDP Per Capita for Russia for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Russia Bairoch	250	224	182
GDP Per Capita of U.S.S.R. Maddison	943		879.50
GDP Per Capita of U.S.S.R. synchronized with Maddison (exponential interpolation)		956.35	

Special care was taken for calculation of GDP Per Capita of the former U.S.S.R. for the year of 1850. The GDP Per Capita for Russia for years 1830, 1840, 1850, and 1870 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1820	1830	1840	1850	1870
GDP Per Capita of Russia Bairoch		170	170	175	250

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Extrapolation of Bairoch 1830-1840 GDP Per Capita of Russia	170				
GDP Per Capita of U.S.S.R. Maddison	688				943
GDP Per Capita of U.S.S.R. synchronized with Maddison (logarithmic interpolation)				704.50	

Special care was taken for calculation of GDP Per Capita of Ireland for the year of 1920. The GDP Per Capita for United Kingdom for years 1913, 1920, and 1921 is available from Maddison. This data is synchronized with data for Ireland from Maddison as follows:

Data	1913	1920	1921
GDP Per Capita of United Kingdom Maddison	4,921	4,548	4,439
GDP Per Capita of Ireland Maddison	2,736		2,533
GDP Per Capita of Ireland synchronized with Maddison (exponential interpolation)		2,586.78	

Appendix: Methodology and Definitions

Special care was taken for calculation of GDP Per Capita of Ireland for the years of 1890 and 1900. The GDP Per Capita for Ireland for years 1890 and 1900 is available from an earlier work of Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for Ireland, but published data only for the years of 1870 and 1913. This data is synchronized with earlier estimates of Maddison as follows:

Data	1870	1890	1900	1913
GDP Per Capita Maddison (1995)	1,773	2,225	2,495	2,733
GDP Per Capita of Ireland from later Maddison	1,775			2,736
GDP Per Capita of Ireland synchronized with later Maddison (logarithmic interpolation)		2,227.47	2,497.75	

Special care was taken for calculation of GDP Per Capita of Ireland for the year of 1880. The GDP Per Capita for United Kingdom for years 1870, 1880, and 1890 is available from Maddison. This data is synchronized with data for Ireland from Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of United Kingdom Maddison	3,190	3,477	4,009
GDP Per Capita of Ireland	1,775		2,227.47

Appendix: Methodology and Definitions

Capita of Ireland Maddison			
GDP Per Capita of Ireland synchronized with Maddison (logarithmic interpolation)		1,933.63	

Special care was taken for calculation of GDP Per Capita of Ireland for the year of 1850. The GDP Per Capita for United Kingdom for years 1820, 1850, and 1870 is available from Maddison. This data is synchronized with data for Ireland from Maddison as follows:

Data	1820	1850	1870
GDP Per Capita of United Kingdom Maddison	1,706	2,330	3,190
GDP Per Capita of Ireland Maddison	877		1,775
GDP Per Capita of Ireland synchronized with Maddison (logarithmic interpolation)		1,245.96	

Special care was taken for calculation of GDP Per Capita of Bulgaria for the year of 1880. The GDP Per Capita for Bulgaria for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

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Data	1870	1880	1890
GDP Per Capita of Bulgaria Bairoch	220	210	250
GDP Per Capita of Bulgaria Maddison	840		1,131
GDP Per Capita of Bulgaria synchronized with Maddison (exponential interpolation)		872.79	

Special care was taken for calculation of GDP Per Capita of Romania for the year of 1880. The GDP Per Capita for Romania for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Romania Bairoch	210	230	246
GDP Per Capita of Romania Maddison	931		1,246
GDP Per Capita of Romania synchronized with Maddison (logarithmic interpolation)		1,100.83	

Special care was taken for calculation of GDP Per Capita of Hungary for the year of 1880. The GDP Per Capita for Austro-Hungary for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized

Appendix: Methodology and Definitions

with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Austro-Hungary Bairoch	305	315	361
GDP Per Capita of Hungary Maddison	1,092		1,473
GDP Per Capita of Hungary synchronized with Maddison (logarithmic interpolation)		1,156.38	

Special care was taken for calculation of GDP Per Capita of the former Yugoslavia for the year of 1880. The GDP Per Capita for Serbia for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Serbia Bairoch	230	240	250
GDP Per Capita of Yugoslavia Maddison	599		843
GDP Per Capita of Yugoslavia synchronized with Maddison (logarithmic interpolation)		713.14	

Special care was taken for calculation of GDP Per Capita of the former Czechoslovakia for the year of 1880. The GDP Per Capita

Appendix: Methodology and Definitions

for Austro-Hungary for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Austro-Hungary Bairoch	305	315	361
GDP Per Capita of Czechoslovakia Maddison	1,164		1,505
GDP Per Capita of Czechoslovakia synchronized with Maddison (logarithmic interpolation)		1,222.67	

Special care was taken for calculation of GDP Per Capita of Poland for the year of 1920. The GDP Per Capita for Czechoslovakia for years 1913, 1920, and 1929 is available from Maddison. This data is synchronized with Maddison as follows:

Data	1913	1920	1929
GDP Per Capita of Czechoslovakia Maddison	2,096	1,933	3,042
GDP Per Capita of Poland Maddison	1,739		2,117
GDP Per Capita of Poland synchronized		1,485.04	

Appendix: Methodology and Definitions

with Maddison (exponential interpolation)			
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Special care was taken for calculation of GDP Per Capita of Poland for the year of 1880. The GDP Per Capita for Austro-Hungary for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Austro-Hungary Bairoch	305	315	361
GDP Per Capita of Poland Maddison	946		1,284
GDP Per Capita of Poland synchronized with Maddison (logarithmic interpolation)		1,002.96	

Special care was taken for calculation of GDP Per Capita of Greece for the year of 1880. The GDP Per Capita for Greece for years 1870, 1880, and 1890 in 1960 prices is available from Bairoch (Bairoch (1976)). This data is synchronized with Maddison as follows:

Data	1870	1880	1890
GDP Per Capita of Greece Bairoch	250	260	290
GDP Per Capita of Greece Maddison	880		1,178

Appendix: Methodology and Definitions

GDP Capita Greece synchronized with Maddison (logarithmic interpolation)	Per of		950.50	
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Greece served as a proxy for Cyprus (which in turn served as a proxy for Northern Cyprus):

Year	GDP Capita Greece (Maddison unless specified otherwise)	Per of	GDP Capita Cyprus (Maddison)	Per of	GDP Capita Cyprus Greece (logarithmic interpolation)	Per of proxy Greece
0001	550		550			
1000	400		600			
1500	433				635.76	
1600	483				688.56	
1700	530				736.87	
1820	641				846.63	
1850	816				1,009.81	
1870	880				1,067.05	
1880	950.50 (as calculated above)	(as			1,128.81	
1890	1,178				1,320.29	
1900	1,351				1,459.23	
1913	1,592				1,645.04	
1920	1,873.85 (exponential interpolation between 1913 and 1921)				1,852.97	
1929	2,342				2,180.66	
1938	2,677				2,404.27	

Appendix: Methodology and Definitions

1950	1,915	1,882.59	
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Special care was taken for calculation of GDP Per Capita of Mexico for the year of 1850. The GDP Per Capita for Mexico for years 1820, 1850, and 1870 is available from an earlier work of Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for Mexico, but published data only for the years of 1820 and 1870. This data is synchronized with earlier estimates of Maddison as follows:

Data	1820	1850	1870
GDP Per Capita of Mexico Maddison (1995)	760	668	710
GDP Per Capita of Mexico from later Maddison	759		674
GDP Per Capita of Mexico synchronized with later Maddison (exponential interpolation)		647.13	

Special care was taken for calculation of GDP Per Capita of India for the year of 1850. The GDP Per Capita for India for years 1820, 1850, and 1870 is available from an earlier work of Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for India, but published data only for the years of 1820 and 1870. This data is synchronized with earlier estimates of Maddison as follows:

Data	1820	1850	1870
GDP Per	531	547	558

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Capita of India Maddison (1995)			
GDP Per Capita of India from later Maddison	533		533
GDP Per Capita of India synchronized with later Maddison (logarithmic interpolation)		533	

Special care was taken for calculation of GDP Per Capita of Bangladesh for the year of 1920. The GDP Per Capita for India for years 1913, 1920, and 1913 is available from Maddison. This data is synchronized with Maddison as follows:

Data	1913	1920	1929
GDP Per Capita of India Maddison	673	635	728
GDP Per Capita of Bangladesh Maddison	617		619
GDP Per Capita of Bangladesh synchronized with Maddison (logarithmic interpolation)		615.52	

Special care was taken for calculation of GDP Per Capita of Bangladesh for the years of 1850, 1870, 1880, and 1890. The GDP Per Capita for India for years 1820, 1850, 1870, 1880, 1890, and 1900

Appendix: Methodology and Definitions

saveis available from Maddison. This data is synchronized with Maddison as follows:

Data	1820	1850	1870	1880	1890	1900
GDP Per Capita of India Maddison	533	533	533	545.80	584	599
GDP Per Capita of Bangladesh Maddison	531					581
GDP Per Capita of Bangladesh synchronized with Maddison (logarithmic interpolation)		531	531	540.80	569.75	

Special care was taken for calculation of GDP Per Capita of Pakistan for the year of 1920. The GDP Per Capita for India for years 1913, 1920, and 1913 is available from Maddison. This data is synchronized with Maddison as follows:

Data	1913	1920	1929
GDP Per Capita of India Maddison	673	635	728
GDP Per Capita of Pakistan Maddison	729		735
GDP Per Capita of Pakistan synchronized with Maddison		724.59	

Appendix: Methodology and Definitions

(logarithmic interpolation)			
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Special care was taken for calculation of GDP Per Capita of Pakistan for the years of 1850, 1870, 1880, and 1890. The GDP Per Capita for India for years 1820, 1850, 1870, 1880, 1890, and 1900 is available from Maddison. This data is synchronized with Maddison as follows:

Data	1820	1850	1870	1880	1890	1900
GDP Per Capita of India Maddison	533	533	533	545.80	584	599
GDP Per Capita of Pakistan Maddison	531					687
GDP Per Capita of Pakistan synchronized with Maddison (logarithmic interpolation)		531	531	559.54	649.61	

Special care was taken for calculation of GDP Per Capita of Sri Lanka for the year of 1850. The GDP Per Capita for India for years 1820, 1850, and 1870 is available from Maddison. This data is synchronized with earlier estimates of Maddison as follows:

Data	1820	1850	1870
GDP Per Capita of India Maddison	533	533	533
GDP Per Capita of Sri Lanka	550		851

Appendix: Methodology and Definitions

Maddison			
GDP Per Capita of Sri Lanka synchronized with Maddison (exponential interpolation)		714.67	

Special care was taken for calculation of GDP Per Capita of Indonesia for the year of 1850. The GDP Per Capita for Indonesia for years 1820, 1850, and 1870 is available from an earlier work of Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for Indonesia, but published data only for the years of 1820 and 1870. This data is synchronized with earlier estimates of Maddison as follows:

Data	1820	1850	1870
GDP Per Capita of Indonesia Maddison (1995)	614	657	657
GDP Per Capita of Indonesia from later Maddison	612		654
GDP Per Capita of Indonesia synchronized with later Maddison (logarithmic interpolation)		654	

Special care was taken for calculation of GDP Per Capita of Thailand for the year of 1900. The GDP Per Capita for Thailand for years 1890, 1900, and 1913 is available from an earlier work of

Appendix: Methodology and Definitions

Maddison (Maddison (1995)). In the later works Maddison slightly changed his estimates of GDP Per Capita for Thailand, but published data only for the years of 1890 and 1913. This data is synchronized with earlier estimates of Maddison as follows:

Data	1890	1900	1913
GDP Per Capita of Thailand Maddison (1995)	789	812	846
GDP Per Capita of Thailand from later Maddison	784		841
GDP Per Capita of Thailand synchronized with later Maddison (logarithmic interpolation)		807.00	

Special care was taken for calculation of GDP Per Capita of Japan for the year of 1850. Index of GDP Per Capita of Japan is available from Warwick (2011). This data is synchronized with Maddison as follows:

Data	1850	1870	1872
GDP Per Capita of Japan Warwick	100		108.3
GDP Per Capita of Japan Maddison		737	
GDP Per Capita of Japan synchronized	685.47		

Appendix: Methodology and Definitions

with Maddison (exponential interpolation)			
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The former U.S.S.R., Czechoslovakia, Yugoslavia, 14 Pacific Islands, Other East Asia, Sahel and West Africa, Rest of Africa, 3 African countries, Other North Africa, West Africa, 8 Caribbean countries, 30 Caribbean countries, Netherlands Antilles, Other Spanish America, and Other Latin America were used as special group country proxies. The data and calculations for them are as follows:

Former U.S.S.R.		
Year	GDP Per Capita	Source
0001		Calculated as 0001(MIN)
1000	400	1000(USSR(Maddison))
1500	499	1500(USSR(Maddison))
1600	552	1600(USSR(Maddison))
1700	610	1700(USSR(Maddison))
1820	688	1820(USSR(Maddison))
1850	704.50	PROXY(Bairoch) (logarithmic interpolation)
1870	943	1870(USSR(Maddison))
1880	956.35	PROXY(Bairoch) (exponential interpolation)
1890	879.50	PROXY(Maddison (1995)) (exponential interpolation)
1900	1,237	1900(USSR(Maddison))
1913	1,488	1913(USSR(Maddison))
1920	570.71	1920(USSR(Davies)) (special estimate)
1929	1,386	1929(USSR(Maddison))
1938	2,150	1938(USSR(Maddison))
1950	2,841	1950(USSR(Maddison))
1960	3,945	1960(USSR(Maddison))

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1970	5,575	1970(USSR(Maddison))
1980	6,426	1980(USSR(Maddison))
1990	6,878	1990(USSR(Maddison))
2000	4,351	2000(USSR(Maddison))

Czechoslovakia		
Year	GDP Per Capita	Source
0001	425	0001(Dunabian provinces (Maddison))
1000	400	1000(E. Europe (Maddison))
1500	453.95	PROXY(Greece) (logarithmic interpolation)
1600	540.44	PROXY(Greece) (logarithmic interpolation)
1700	626.77	PROXY(Greece) (logarithmic interpolation)
1820	849	1820(Czechoslovakia (Maddison))
1850	1,079	1850(Czechoslovakia (Maddison))
1870	1,164	1870(Czechoslovakia (Maddison))
1880	1,222.67	PROXY(Austro-Hungary (Bairoch)) (logarithmic interpolation)
1890	1,505	1890(Czechoslovakia (Maddison))
1900	1,729	1900(Czechoslovakia (Maddison))
1913	2,096	1913(Czechoslovakia (Maddison))
1920	1,933	1920(Czechoslovakia (Maddison))
1929	3,042	1929(Czechoslovakia (Maddison))

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1938	2,882	1937(Czechoslovakia (Maddison))
1950	3,501	1950(Czechoslovakia (Maddison))
1960	5,108	1960(Czechoslovakia (Maddison))
1970	6,466	1970(Czechoslovakia (Maddison))
1980	7,982	1980(Czechoslovakia (Maddison))
1990	8,513	1990(Czechoslovakia (Maddison))
2000	8,630	2000(Czechoslovakia (Maddison))

Yugoslavia		
Year	GDP Per Capita	Source
0001	425	0001(Dunabian provinces (Maddison))
1000	400	1000(E. Europe (Maddison))
1500	414.90	PROXY(Greece) (logarithmic interpolation)
1600	436.35	PROXY(Greece) (logarithmic interpolation)
1700	455.45	PROXY(Greece) (logarithmic interpolation)
1820	496.86	PROXY(Greece) (logarithmic interpolation)
1850	555.79	PROXY(Austro-Hungary (Bairoch)) (exponential interpolation)
1870	599	1870(Yugoslavia (Maddison))
1880	713.14	PROXY(Serbia

Appendix: Methodology and Definitions

		(Bairoch) (logarithmic interpolation)
1890	843	1890(Yugoslavia (Maddison))
1900	902	1900(Yugoslavia (Maddison))
1913	1,057	1913(Yugoslavia (Maddison))
1920	1,031	1920(Yugoslavia (Maddison))
1929	1,364	1929(Yugoslavia (Maddison))
1938	1,356	1938(Yugoslavia (Maddison))
1950	1,551	1950(Yugoslavia (Maddison))
1960	2,437	1960(Yugoslavia (Maddison))
1970	3,755	1970(Yugoslavia (Maddison))
1980	6,063	1980(Yugoslavia (Maddison))
1990	5,779	1990(Yugoslavia (Maddison))
2000	4,258	2000(Yugoslavia (Maddison))

For Bosnia, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Slovenia, 1980 GDP Per Capita is obtained from 1990 GDP Per Capita by the average ratio of Yugoslavia:

Bosnia		
Year	GDP Per Capita	Source
1990	3,737	1990(Maddison)
1980	3,920.65	Proxy(1980(Yugoslavia(Maddison)))

Croatia		
Year	GDP Per Capita	Source

Appendix: Methodology and Definitions

	Capita	
1990	7,351	1990(Maddison)
1980	7,712.25	Proxy(1980(Yugoslavia(Maddison)))

Macedonia		
Year	GDP Per Capita	Source
1990	3,905	1990(Maddison)
1980	4,096.91	Proxy(1980(Yugoslavia(Maddison)))

Slovenia		
Year	GDP Per Capita	Source
1990	11,404	1990(Maddison)
1980	11,964.43	Proxy(1980(Yugoslavia(Maddison)))

Indicator	Serbia	Montenegro	Kosovo	Serbia, Montenegro & Kosovo
Population in 1990, thousands (WB)	7,586	606.372	1,862	10,054.372
Population in 2000, thousands (WB)	7,516.346	604.950	1,700	9,821.296
GDP Per Capita in 1990 in 2010 prices (UN)	4,653	5,807	4,540	
GDP Per Capita in 1990 in 2010 prices calculated based on the above				4,701.67

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GDP Per Capita in 2000 in 2010 prices (UN)	3,193	4,368	1,765	
GDP Per Capita in 2000 in 2010 prices calculated based on the above				3,018.98
GDP Per Capita in 1990 in 1990 prices (Maddison)				5,249
GDP Per Capita in 1990 in 1990 prices calculated based on the above	5,194.66	6,483.00	5,068.51	
GDP Per Capita in 2000 in 1990 prices (Maddison)				2,354
GDP Per Capita in 2000 in 1990 prices calculated based on the above	2,489.69	3,405.88	1,376.23	

Serbia			
Year	GDP	Per	Source

Appendix: Methodology and Definitions

	Capita	
1990	5,194.66	As calculated above
1980	5,449.94	Proxy(1980(Yugoslavia(Maddison)))

Montenegro		
Year	GDP Per Capita	Source
1990	6,483.00	As calculated above
1980	6,801.60	Proxy(1980(Yugoslavia(Maddison)))

Kosovo		
Year	GDP Per Capita	Source
1990	5,068.51	As calculated above
1980	5,317.59	Proxy(1980(Yugoslavia(Maddison)))

14 Pacific Islands (American Samoa, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, New Caledonia, Northern Mariana Islands, Palau, Solomon Islands, Tonga, Vanuatu, Wallis and Futuna, and (Western) Samoa)		
Year	GDP Per Capita	Source
0001	425	AVG(Other E. Asia(Maddison))
1000	425	AVG(Other E. Asia(Maddison))
1500	565	1500(Indonesia(Maddison))
1600	572.45	Indonesia (INTERPOL(Maddison:1500 - 1700))
1700	580	1700(Indonesia(Maddison))
1820	612	1820(Indonesia(Maddison))
1850	654.00	Indonesia (INTERPOL(Maddison:1820 - 1870))
1870	654	1870(Indonesia(Maddison))
1880	662	1880(Indonesia(Maddison))
1890	660	AVG(Indonesia(Maddison))
1900	743	1900(Indonesia(Maddison))
1913	904	1913(Indonesia(Maddison))
1920	945	1920(Indonesia(Maddison))
1929	1,170	1929(Indonesia(Maddison))

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1938	1,175	1938(Indonesia(Maddison))
1950	1,348.23	1950(14 Pacific Is (Maddison))
1960	1,507.12	Logarithmic interpolation proxy(US(Maddison))
1970	1,814.79	14 Pacific Is (INTERPOL (Maddison:1950 – 1973))
1973	1,897.52	1973(14 Pacific Is (Maddison))
1980	1,885.12	Logarithmic interpolation proxy(US(Maddison))
1990	1,961.84	1990(14 Pacific Is (Maddison))
2000	2,158.29	(00(WB(2))/90(WB(2)))*90(Maddison(1))

Pacific island small states (Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu)			
Year	GDP Per Capita	Source	Calculated GDP Per Capita (Logarithmic Interpolation)
0001	425	AVG(Other E. Asia(Maddison))	425
1000	425	AVG(Other E. Asia(Maddison))	425
1500	565	1500(Indonesia (Maddison))	605.24
1600	572.45	Indonesia(INT ERPOL(Maddison:1500-1700))	615.16
1700	580	1700(Indonesia (Maddison))	625.25
1820	612	1820(Indonesia (Maddison))	668.36
1850	654.00	AVG(Indonesia a)	725.78
1870	654	1870(Indonesia	725.78

Appendix: Methodology and Definitions

		(Maddison))	
1880	662	1880(Indonesia (Maddison))	736.82
1890	660	AVG(Indonesia (Maddison))	734.05
1900	743	1900(Indonesia (Maddison))	850.36
1913	904	1913(Indonesia (Maddison))	1,084.83
1920	945	1920(Indonesia (Maddison))	1,146.25
1929	1,170	1929(Indonesia (Maddison))	1,494.32
1938	1,175	1938(Indonesia (Maddison))	1,502.25
1950	1,348.23	1950(14 Pacific Is (Maddison))	1,781.96
1960	1,507.12	Logarithmic interpolation proxy(US(Maddison))	2,046.32
1970	1,814.79	14 Pacific Is (INTERPOL (Maddison:1950 – 1973))	2,577.17
1980	1,885.12	Logarithmic interpolation proxy(US(Maddison))	2,701.75
1990	1,961.84	1990(14 Pacific Is (Maddison))	2,838.94
1990	2,838.94	1990(Pacific island small states(WB))	

Other East Asia

Year	GDP Per Capita	Source
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0001	425	0001(Other E. Asia (Maddison))
1000	425	1000(Other E. Asia (Maddison))
1500	554	1500(Other E. Asia (Maddison))
1600	564	1600(Other E. Asia (Maddison))
1700	561	1700(Other E. Asia (Maddison))
1820	568	1820(Other E. Asia (Maddison))
1850	582.02	Logarithmic interpolation proxy(US(Maddison))
1870	594	1870(Other E. Asia (Maddison))
1880	639.51	Logarithmic interpolation proxy(US(Maddison))
1890	688.48	Logarithmic interpolation proxy(US(Maddison))
1900	749.16	Logarithmic interpolation proxy(US(Maddison))
1913	842	1913(Other E. Asia (Maddison))
1920	775.72	Exponential interpolation proxy(US(Maddison))
1929	817.39	Exponential interpolation proxy(US(Maddison))
1938	615.47	Exponential interpolation proxy(US(Maddison))
1950	771	1950(Other E. Asia (Maddison))

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1960	1,025.24	Other E. Asia (INTERPOL (Maddison:1950 – 1973))
1970	1,363.31	Other E. Asia (INTERPOL (Maddison:1950 – 1973))
1973	1,485	1973(Other E. Asia (Maddison))
1980	1,875.70	Logarithmic interpolation proxy(US(Maddison))
1990	2,621.37	Logarithmic interpolation proxy(US(Maddison))
2000	3,503.43	Other E. Asia (INTERPOL (Maddison: 1973 – 2003))
2003	3,854	2003(Other E. Asia (Maddison))

Sahel and West Africa		
Year	GDP Per Capita	Source
0001	400	0001(Sahel & W. Africa(Maddison))
1000	415	1000(Sahel & W. Africa (Maddison))
1500	415	1500(Sahel & W. Africa (Maddison))
1600	415	1600(Sahel & W. Africa (Maddison))
1700	415	1700(Sahel & W. Africa (Maddison))
1820	415	1820(Sahel & W. Africa (Maddison))
1850	456.34	Logarithmic interpolation proxy(US(Maddison))
1870	494.01	PROXY(Africa (Maddison))
1880	520.03	Logarithmic interpolation proxy(US(Maddison))
1890	547.35	Logarithmic interpolation proxy(US(Maddison))

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1900	580.40	Logarithmic interpolation proxy(US(Maddison))
1913	629.42	PROXY(Africa (Maddison))
1920	646.15	Logarithmic interpolation proxy(US(Maddison))
1929	730.85	Logarithmic interpolation proxy(US(Maddison))
1938	683.22	Logarithmic interpolation proxy(US(Maddison))
1950	879.40	PROXY(Africa (Maddison))
1960	1,072.07	PROXY(INTERPOL(Africa:1950-1973 (Maddison)))
1970	1,306.95	PROXY(INTERPOL(Africa:1950-1973 (Maddison)))

Rest of Africa		
Year	GDP Per Capita	Source
0001		Calculated as 0001(MIN)
1000		Calculated as 1000(MIN)
1500	400	1500(Rest of Africa (Maddison))
1600	415	1600(Rest of Africa (Maddison))
1700	415	1700(Rest of Africa (Maddison))
1820	415	1820(Rest of Africa (Maddison))
1850	456.34	Logarithmic interpolation proxy(US(Maddison))
1870	494.05	PROXY(Africa (Maddison))
1880	520.03	Logarithmic interpolation proxy(US(Maddison))
1890	547.35	Logarithmic interpolation proxy(US(Maddison))
1900	580.40	Logarithmic interpolation proxy(US(Maddison))
1913	629.42	PROXY(Africa (Maddison))
1920	646.15	Logarithmic interpolation proxy(US(Maddison))
1929	730.85	Logarithmic interpolation proxy(US(Maddison))

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1938	683.22	Logarithmic interpolation proxy(US(Maddison))
1950	879.40	PROXY(Africa (Maddison))
1960	1,072.07	PROXY(INTERPOL(Africa:1950-1973 (Maddison)))
1970	1,306.95	PROXY(INTERPOL(Africa:1950-1973 (Maddison)))

3 African countries (Mayotte, St. Helena, and Western Sahara)		
Year	GDP Per Capita	Source
0001		Calculated as 0001(MIN)
1000		Calculated as 1000(MIN)
1500	400	1500(Rest of Africa (Maddison))
1600	415	1600(Rest of Africa (Maddison))
1700	415	1700(Rest of Africa (Maddison))
1820	415	1820(Rest of Africa (Maddison))
1850	450.20	Logarithmic interpolation proxy(US(Maddison))
1870	481.90	PROXY(Africa)ACCEL
1880	503.54	Logarithmic interpolation proxy(US(Maddison))
1890	526.14	Logarithmic interpolation proxy(US(Maddison))
1900	553.26	Logarithmic interpolation proxy(US(Maddison))
1913	593.08	PROXY(Africa)ACCEL
1920	606.57	Logarithmic interpolation proxy(US(Maddison))

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1929	674.12	Logarithmic interpolation proxy(US(Maddison))
1938	636.28	Logarithmic interpolation proxy(US(Maddison))
1950	790	1950(3 African cs (Maddison))
1960	1,047	1960(3 African cs (Maddison))
1970	1,076	1970(3 African cs (Maddison))
1980	1,237	1980(3 African cs (Maddison))
1990	1,374	1990(3 African cs (Maddison))
2000	1,385	2000(3 African cs (Maddison))

Using Rest of Africa as a proxy for logarithmic interpolation, the following data is received for Somalia:

Somalia		
Year	GDP Per Capita	Source
0001	361	Estimate
1000	380	Estimate
1500	400	Estimate
1600	418.58	Logarithmic interpolation of 1600(Rest of Africa (Maddison))
1700	418.58	Logarithmic interpolation of 1700(Rest of Africa (Maddison))
1820	418.58	Logarithmic interpolation of 1820(Rest of Africa (Maddison))
1850	476.24	Logarithmic interpolation of 1850(Rest of Africa (Maddison))

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1870	519.02	Logarithmic interpolation of 1870(Rest of Africa (Maddison))
1880	556.36	Logarithmic interpolation of 1880(Rest of Africa (Maddison))
1890	596.38	Logarithmic interpolation of 1890(Rest of Africa (Maddison))
1900	639.29	Logarithmic interpolation of 1900(Rest of Africa (Maddison))
1913	699.70	Logarithmic interpolation of 1913(Rest of Africa (Maddison))
1920	756.50	Logarithmic interpolation of 1920(Rest of Africa (Maddison))
1929	836.35	Logarithmic interpolation of 1929(Rest of Africa (Maddison))
1938	924.64	Logarithmic interpolation of 1938(Rest of Africa (Maddison))
1950	1,057	1950(Maddison(Somalia))

Special care was taken for calculation of GDP Per Capita of Ethiopia and Eritrea. The GDP Per Capita for combined Ethiopia and Eritrea is available from Maddison. We assumed that in the year of 0001 GDP Per Capita of Ethiopia and Eritrea was the same and had diverged after that. This data is synchronized with Maddison as follows:

Data in 2000	Population in 2000, WB	GDP Per Capita in 2000, 2017 prices, WB	GDP Per Capita in 2000, 1990 prices, Maddison	GDP Per Capita in 2000, 1990 prices, calculated

Appendix: Methodology and Definitions

Eritrea	2,292.416	1,611.53		1,327.80
Ethiopia	66,224.804	727.77		599.64
Ethiopia & Eritrea, calculated	68,517.220	757.34	624	

Year	GDP Per Capita of Ethiopia & Eritrea, Maddison, for 0001-1938 proxy Rest of Africa (logarithmic interpolation), Maddison, after that Maddison
0001	361
1000	380
1500	400
1600	401.39
1700	401.39
1820	401.39
1850	405.01
1870	408.05
1880	410.03
1890	412.02
1900	414.30
1913	417.48
1920	418.52
1929	423.41
1938	420.73
1950	390
1960	439
1970	591
1980	642
1990	581
2000	624

After that, we used after that a logarithmic interpolation of Eritrea and Ethiopia for period 0001-1960 using Rest of Africa as a proxy.

Special care was taken for calculation of GDP Per Capita of Sudan and South Sudan. The GDP Per Capita for combined Sudan

Appendix: Methodology and Definitions

and South Sudan is available from Maddison. We assumed that in the year of 0001 GDP Per Capita of Sudan and South Sudan was the same and had diverged after that. This data is synchronized with Maddison as follows:

Data in 2015	Population in 2010, WB	GDP Per Capita PPP in 2010, current prices, WB	GDP Per Capita in 2000, 1990 prices, Maddison	GDP Per Capita in 2000, 1990 prices, calculated
Sudan	34,545.013	3,168.55		1,001.07
South Sudan	9,508.013	3,020.95		954.43
Sudan & South Sudan, calculated	44,053.377	3,136.69	991	

Year	GDP Per Capita of Sudan & South Sudan, for 0001-1938 proxy Sahel & W. Africa (logarithmic interpolation), Maddison, after that Maddison
0001	400
1000	413.67
1500	413.67
1600	413.67
1700	413.67
1820	413.67
1850	455.12
1870	485.03
1880	510.62
1890	537.55
1900	565.91
1913	605.02
1920	640.90
1929	690.39
1938	743.61

Appendix: Methodology and Definitions

1950	821
1960	1,024
1970	888
1980	931
1990	743
2000	991

Special care was taken for the following regions and groups of countries, which in turn were used as a proxies for a number of countries:

Other North Africa		
Year	GDP Per Capita	Source
0001	430	0001(Other N. Africa (Maddison))
1000	430	1000(Other N. Africa (Maddison))
1500	430	1500(Other N. Africa (Maddison))
1600	430	1600(Other N. Africa (Maddison))
1700	430	1700(Other N. Africa (Maddison))
1820	430	1820(Other N. Africa (Maddison))
1850	472.84	Logarithmic interpolation proxy(US(Maddison))
1870	511.90	PROXY(Africa (Maddison))
1880	538.82	Logarithmic interpolation proxy(US(Maddison))
1890	567.13	Logarithmic interpolation proxy(US(Maddison))
1900	601.37	Logarithmic interpolation proxy(US(Maddison))

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1913	652.17	PROXY(Africa (Maddison))
1920	669.51	Logarithmic interpolation proxy(US(Maddison))
1929	757.26	Logarithmic interpolation proxy(US(Maddison))
1938	707.92	Logarithmic interpolation proxy(US(Maddison))
1950	911.19	PROXY(Africa (Maddison))

West Asia		
Year	GDP Per Capita	Source
0001	522	0001(W. Asia (Maddison))
1000	621	1000(W. Asia (Maddison))
1500	590	1500(W. Asia (Maddison))
1600	591	1600(W. Asia (Maddison))
1700	591	1700(W. Asia (Maddison))
1820	607	1820(W. Asia (Maddison))
1850	677.16	Logarithmic interpolation proxy(US(Maddison))
1870	742	1870(W. Asia (Maddison))
1880	797.27	Logarithmic interpolation proxy(US(Maddison))
1890	856.62	Logarithmic interpolation proxy(US(Maddison))

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1900	930.02	Logarithmic interpolation proxy(US(Maddison))
1913	1,042	1913(W. Asia (Maddison))
1920	1,086.51	Logarithmic interpolation proxy(US(Maddison))
1929	1,322.27	Logarithmic interpolation proxy(US(Maddison))
1938	1,187.58	Logarithmic interpolation proxy(US(Maddison))
1950	1,776	1950(W. Asia (Maddison))

8 Caribbean countries (Anguilla, Aruba, Cayman Islands, Montserrat, St. Pierre and Miquelon, Turks and Caicos Islands, U.S. Virgin Islands, and British Virgin Islands)			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000			Calculated as 1000(MIN)
1500	400	30 Caribbean cs (Maddison)	400
1600	430	30 Caribbean cs (Maddison)	430
1700	650	30 Caribbean cs (Maddison)	650
1820	636	30 Caribbean cs (Maddison)	636
1820	646	1820(Brazil (Maddison))	
1850	686	1850(Brazil (Maddison))	719.87 (logarithmic interpolation)

Appendix: Methodology and Definitions

1870	713	1870(Brazil (Maddison))	779.51 (logarithmic interpolation)
1880	752	1880(Brazil (Maddison))	869.98 (logarithmic interpolation)
1890	794	1890(Brazil (Maddison))	973.14 (logarithmic interpolation)
1900	801.35	Brazil (INTERPOL (Maddison: 1890 – 1913))	991.81 (logarithmic interpolation)
1913	811	1913(Brazil (Maddison))	1,016.59 (logarithmic interpolation)
1920	963	1920(Brazil (Maddison))	1,448.68 (logarithmic interpolation)
1929	1,137	1929(Brazil (Maddison))	
1929	1,639	1929(Cuba (Maddison))	2,040.35 (PROXY(Cuba))
1938	1,358	1938(Cuba (Maddison))	1,690.54 (PROXY(Cuba))
1950	2,046	1950(Cuba (Maddison))	
1950	2,547.01	1950(8 Caribbean cs (Maddison))	2,547.01
1960	3,110.16	Logarithmic interpolation proxy(US(Maddison))	3,110.16
1970	4,339.45	8 Caribbean cs (INTERPOL (Maddison: 1950 – 1973))	4,339.45
1973	4,700.51	1973(8 Caribbean cs (Maddison))	
1980	4,984.29	Logarithmic interpolation	4,984.29

Appendix: Methodology and Definitions

		proxy(US(Maddison))	
1990	5,764.00	1990(8 Caribbean cs (Maddison))	5,764.00
2000	6,041.95	8 Caribbean cs (INTERPOL (Maddison: 1990 – 2001))	6,041.95
2001	6,070.47	2001(8 Caribbean cs (Maddison))	

30 Caribbean countries			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000			Calculated as 1000(MIN)
1500	400	30 Caribbean cs (Maddison)	400
1600	430	30 Caribbean cs (Maddison)	430
1700	650	30 Caribbean cs (Maddison)	650
1820	636	30 Caribbean cs (Maddison)	636
1850	719.87	1850(8 Caribbean cs)	707.02 (logarithmic interpolation)
1870	779.51	1870(8 Caribbean cs)	756.79 (logarithmic interpolation)
1880	869.98	1880(8 Caribbean cs)	831.25 (logarithmic interpolation)
1890	973.14	1890(8 Caribbean cs)	914.79 (logarithmic interpolation)
1900	991.81	1900(8 Caribbean cs)	929.77 (logarithmic interpolation)

Appendix: Methodology and Definitions

			interpolation)
1913	1,016.59	1913(8 Caribbean cs)	949.58 (logarithmic interpolation)
1920	1,448.68	1920(8 Caribbean cs)	1,285.27 (logarithmic interpolation)
1929	2,040.35	1929(8 Caribbean cs)	1,722.28 (logarithmic interpolation)
1938	1,690.54	1938(8 Caribbean cs)	1,466.56 (logarithmic interpolation)
1950	2,547.01	1950(8 Caribbean cs (Maddison))	2,081.74 (logarithmic interpolation)
1960	3,324.55	8 Caribbean cs (INTERPOL (Maddison: 1950 – 1973))	2,614.01 (logarithmic interpolation)
1970	4,339.45	8 Caribbean cs (INTERPOL (Maddison: 1950 – 1973))	3,282.37 (logarithmic interpolation)
1973	4,700.51	1973(8 Caribbean cs (Maddison))	
1980	5,112.33	8 Caribbean cs (INTERPOL (Maddison: 1973 – 1990))	3,775.92 (logarithmic interpolation)
1990	5,764.00	1990(8 Caribbean cs (Maddison))	4,183.62 (logarithmic interpolation)
2000	6,041.95	8 Caribbean cs (INTERPOL (Maddison: 1990 – 2001))	4,355.44 (logarithmic interpolation)
2001	6,070.47	2001(8	4,373

Appendix: Methodology and Definitions

		Caribbean cs (Maddison))	
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Small Caribbean states (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago)			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000			Calculated as 1000(MIN)
1500	400	30 Caribbean cs (Maddison)	400
1600	430	30 Caribbean cs (Maddison)	430
1700	650	30 Caribbean cs (Maddison)	650
1820	636	30 Caribbean cs (Maddison)	636
1850	719.87	8 Caribbean cs (calculated)	720.40 (logarithmic interpolation)
1870	779.51	8 Caribbean cs (calculated)	780.45 (logarithmic interpolation)
1880	869.98	8 Caribbean cs (calculated)	871.60 (logarithmic interpolation)
1890	973.14	8 Caribbean cs (calculated)	975.60 (logarithmic interpolation)
1900	991.81	8 Caribbean cs (calculated)	994.43 (logarithmic interpolation)
1913	1,016.59	8 Caribbean cs (calculated)	1,019.42 (logarithmic interpolation)

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1920	1,448.68	8 Caribbean cs (calculated)	1,455.77 (logarithmic interpolation)
1929	2,040.35	8 Caribbean cs (calculated)	2,054.51 (logarithmic interpolation)
1938	1,690.54	8 Caribbean cs (calculated)	1,700.37 (logarithmic interpolation)
1950	2,547.01	8 Caribbean cs (Maddison)	2,568.06 (logarithmic interpolation)
1960	3,324.55	8 Caribbean cs (INTERPOL (Maddison: 1950-1973))	3,357.33 (logarithmic interpolation)
1970	4,339.45	8 Caribbean cs (INTERPOL (Maddison: 1950-1973))	4,389.17 (logarithmic interpolation)
1980	5,112.33	8 Caribbean cs (INTERPOL (Maddison: 1973-1990))	5,175.94 (logarithmic interpolation)
1990	5,764.00	1990(8 Caribbean cs (Maddison))	5,839.87 (logarithmic interpolation)
1990	5,839.87	1990(Small Caribbean states(WB))	

Netherlands Antilles			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000			Calculated as 1000(MIN)
1500	400	30 Caribbean	400

Appendix: Methodology and Definitions

		cs (Maddison)	
1600	430	30 Caribbean cs (Maddison)	430
1700	650	30 Caribbean cs (Maddison)	650
1820	636	30 Caribbean cs (Maddison)	636
1850	719.87	1850(8 Caribbean cs)	741.95 (logarithmic interpolation)
1870	779.51	1870(8 Caribbean cs)	819.17 (logarithmic interpolation)
1880	869.98	1880(8 Caribbean cs)	939.06 (logarithmic interpolation)
1890	973.14	1890(8 Caribbean cs)	1,079.51 (logarithmic interpolation)
1900	991.81	1900(8 Caribbean cs)	1,105.34 (logarithmic interpolation)
1913	1,016.59	1913(8 Caribbean cs)	1,139.79 (logarithmic interpolation)
1920	1,448.68	1920(8 Caribbean cs)	1,770.81 (logarithmic interpolation)
1929	2,040.35	1929(8 Caribbean cs)	2,711.32 (logarithmic interpolation)
1938	1,690.54	1938(8 Caribbean cs)	2,145.75 (logarithmic interpolation)
1950	2,547.01	1950(8 Caribbean cs (Maddison))	
1950	3,572.73	1950(Neth. Antilles)	3,572.73

Appendix: Methodology and Definitions

		(Maddison))	
1960		Neth. Antilles (INTERPOL (Maddison: 1950 – 1973))	4,680.27
1970		Neth. Antilles (INTERPOL (Maddison: 1950 – 1973))	6,131.14
1973	6,648.48	1973(Neth. Antilles (Maddison))	
1980		Neth. Antilles (INTERPOL (Maddison: 1973 – 1990))	6,001.63
1990	5,185.19	1990(Neth. Antilles (Maddison))	5,185.19
2000		Neth. Antilles (INTERPOL (Maddison: 1990 – 2001))	5,003.65
2001	4,985.85	2001(Neth. Antilles (Maddison))	

Other Spanish America			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000	400	Other Latin America (Maddison)	400
1500	412	Other Sp. America (Maddison)	412
1600	432	Other Sp.	432

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		America (Maddison)	
1700	498	Other Sp. America (Maddison)	498
1820	683	Other Sp. America (Maddison)	683
1820	646	1820(Brazil (Maddison))	
1850	686	1850(Brazil (Maddison))	724.50 (logarithmic interpolation)
1870	713	1870(Brazil (Maddison))	752.49 (logarithmic interpolation)
1880	752	1880(Brazil (Maddison))	792.88 (logarithmic interpolation)
1890	794	1890(Brazil (Maddison))	836.34 (logarithmic interpolation)
1900	801.35	Brazil (INTERPOL (Maddison: 1890 – 1913))	843.94 (logarithmic interpolation)
1913	811	1913(Brazil (Maddison))	853.91 (logarithmic interpolation)
1920	963	1920(Brazil (Maddison))	1,010.80 (logarithmic interpolation)
1929	1,137	1929(Brazil (Maddison))	1,189.84 (logarithmic interpolation)
1938	1,276	1938(Brazil (Maddison))	1,332.50 (logarithmic interpolation)
1950	1,672	1950(Brazil	1,737.49

Appendix: Methodology and Definitions

		(Maddison))	(logarithmic interpolation)
1960	2,335	1960(Brazil (Maddison))	2,411.78 (logarithmic interpolation)
1970	3,057	1970(Brazil (Maddison))	3,142.10 (logarithmic interpolation)
1980	5,198	1980(Brazil (Maddison))	5,291.43 (logarithmic interpolation)
1990	4,923	1990(Brazil (Maddison))	5,016.44 (logarithmic interpolation)
2000	5,556	2000(Brazil (Maddison))	5,649.02 (logarithmic interpolation)
2001	5,570	2001(Brazil (Maddison))	
2001	5,663	2001(Other Sp. America (Maddison))	5,663

Other Latin America			
Year	GDP Per Capita	Source	Calculated GDP Per Capita
0001			Calculated as 0001(MIN)
1000	400	1000(Other L. America (Maddison))	400
1500	410	1500(Other L. America (Maddison))	410
1600	431	1600(Other L. America (Maddison))	431
1700	502	1700(Other L. America	502

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		(Maddison))	
1820	661	1820(Other L. America (Maddison))	661
1820	646	1820(Brazil (Maddison))	
1850	686	1850(Brazil (Maddison))	670.70 (logarithmic interpolation)
1870	713	1870(Brazil (Maddison))	
1870	677	1870(Other L. America (Maddison))	677
1880	752	1880(Brazil (Maddison))	924.44 (logarithmic interpolation)
1890	794	1890(Brazil (Maddison))	1,270.40 (logarithmic interpolation)
1900	801.35	Brazil (INTERPOL (Maddison: 1890 – 1913))	1,340.76 (logarithmic interpolation)
1913	811	1913(Brazil (Maddison))	
1913	1,438	1913(Other L. America)	1,438
1920	963	1920(Brazil (Maddison))	1,644.59 (logarithmic interpolation)
1929	1,137	1929(Brazil (Maddison))	1,872.51 (logarithmic interpolation)
1938	1,276	1938(Brazil (Maddison))	2,049.11 (logarithmic interpolation)
1950	1,672	1950(Brazil (Maddison))	

Appendix: Methodology and Definitions

1950	2,531	1950(Other L. America (Maddison))	2,531
1960	2,335	1960(Brazil (Maddison))	3,161.42 (logarithmic interpolation)
1970	3,057	1970(Brazil (Maddison))	3,782.68 (logarithmic interpolation)
1973	3,882	1973(Brazil (Maddison))	
1973	4,435	1973(Other L. America (Maddison))	4,435
1980	5,198	1980(Brazil (Maddison))	5,284.25 (logarithmic interpolation)
1990	4,923	1990(Brazil (Maddison))	5,114.65 (logarithmic interpolation)
2000	5,556	2000(Brazil (Maddison))	5,499.77 (logarithmic interpolation)
2001	5,570	2001(Brazil (Maddison))	
2001	5,508.08	2001(Other L. America (Maddison))	5,508.08

Special care was also taken for calculation of GDP of North Korea for the years after 1990. The available CIA estimates are inexact and tend to underestimate North Korean GDP at PPP. Our calculations are as follows:

Appendix: Methodology and Definitions

Year	GDP Growth Rate	Source of GDP Growth Rate	GDP Index	WB US GDP Deflator	GDP, Bil. Current US Dollars	GDP, Bil. 1990 US Dollars	WB Population, Thousands	GDP Per Capita, 1990 Prices	GDP Per Capita, Current Prices
2015	-1.1	CIA	65.938	109.029	62,830.67	38,015.70	25,243,917	1,505.94	2488.94
2014	1.0	CIA	66.671	107.876	62,857.65	38,438.52	25,116,363	1530.42	2502.66
2013	1.1	CIA	66.011	105.873	61,079.76	38,057.95	24,985,976	1523.17	2444.56
2012	1.3	CIA	65.293	104.047	59,373.40	37,643.99	24,854,034	1514.60	2388.88
2011	0.8	CIA	64.455	102.089	57,508.41	37,160.86	24,722,298	1503.13	2326.18
2010	-0.5	CIA	63.943	100	55,884.16	36,865.66	24,591,599	1499.12	2272.49
2009	-0.9	CIA	64.264	98.793	55,486.79	37,050.73	24,463,021	1514.56	2268.19
2008	3.7	CIA	64.848	98.049	55,569.38	37,387.44	24,335,146	1536.36	2283.50
2007	-2.3	CIA	62.534	96.162	52,555.18	36,053.32	24,203,289	1489.60	2171.41
2006	-1.1	CIA	64.006	93.670	52,398.26	36,901.98	24,061,097	1533.68	2177.72
2005	1.0	CIA	64.718	90.878	51,401.94	37,312.48	23,904,167	1560.92	2150.33
2004	1.0	CIA	64.077	88.045	49,306.32	36,942.92	23,729,498	1556.84	2077.85
2003	1.0	CIA	63.443	85.688	47,511.58	36,577.40	23,538,540	1553.94	2018.46
2002	1.0	CIA	62.815	84.013	46,121.72	36,215.33	23,336,681	1551.86	1976.36
2001	-3.0	CIA	62.193	82.743	44,974.73	35,856.72	23,131,810	1550.10	1944.28
2000	-3.0	CIA	64.117	80.899	45,332.76	36,965.99	22,929,075	1612.88	1977.09
1999	1.0	CIA	66.100	79.099	45,694.95	38,109.26	22,731,985	1676.46	2010.16
1998	-5.0	CIA	65.446	77.907	44,561.04	37,732.20	22,537,336	1674.21	1977.21
1997	-3.7	CIA	68.890	77.071	46,402.67	39,717.81	22,335,638	1778.23	2077.52
1996	-5.0	CIA	71.53	75.77	47,37	41,24	22,11	1865.	2142.

Appendix: Methodology and Definitions

Year	GDP Growth Rate	Source of GDP Growth Rate	GDP Index	WB US GDP Deflator	GDP, Bil. Current US Dollars	GDP, Bil. 1990 US Dollars	WB Population, Thousands	GDP Per Capita, 1990 Prices	GDP Per Capita, Current Prices
			7	4	4.72	3.90	3.548	10	34
1995	-17.0	Maddison	75.302	74.415	48,973.67	43,414.57	21,862.299	1985.82	2240.10
1994	0.0	CIA	90.725	72.895	57,799.02	52,306.54	21,577.982	2424.07	2678.61
1993	0.3	CIA	90.725	71.376	56,594.59	52,306.54	21,265.834	2459.65	2661.29
1992	-7.7	Maddison	90.454	69.717	55,114.04	52,150.30	20,937.404	2490.77	2632.32
1991	-2.0	CIA	98.000	68.163	58,380.86	56,500.87	20,609.150	2741.54	2832.76
1990			100.000	65.968	57,653.95	57,653.95	20,293.054	2841	2841

Angus Maddison postulated that GDP per capita in purchasing power parities cannot be less than 400 dollars in 1990 prices. However, if you look at some African countries in recent decades you would see that many countries had GDP per capita in PPP less than that for prolonged periods of time. So, I decided to use a modified Angus Maddison's postulate, namely that around per capita GDP of 400 1990 dollars, growth rates of GDP per capita becomes very slow. I postulated that below the level of 400 1990 dollars annual growth rate would be decelerating and be as follows:

$$\text{GDP}_{1600} = 0.95 * \text{GDP}_{1700}$$

$$\text{GDP}_{1500} = 0.95 * \text{GDP}_{1600}$$

$$\text{GDP}_{1000} = 0.95 * \text{GDP}_{1500}$$

$$\text{GDP}_{0001} = 0.95 * \text{GDP}_{1000}$$

The future year estimates (for 2020, 2030, 2040, 2050, and 2060) are based on the IMF GDP PPP projections. The IMF GDP at PPP projections are in current prices. To obtain GDP at PPP projections in constant prices, the IMF GDP at PPP projections were divided by average annual U.S. GDP deflator rate as it existed since 1990. For 2020, 2030, 2040, 2050, and 2060, the IMF GDP at PPP

Appendix: Methodology and Definitions

at current prices is used; they are again adjusted using annual U.S. GDP deflator rate since 1990. To obtain GDP at PPP per capita for 2030, the gross GDP numbers are divided (principally) by Encyclopedia Britannica population projections (and where such are not available, by population projections from other sources). To obtain GDP at PPP per capita for 2040 and 2050, the gross GDP numbers are divided (principally) by the IDB population projections (and where such are not available, by population projections from other sources). To obtain GDP at PPP per capita for 2060, the gross GDP numbers are divided by my population projections.

The IMF GDP projections suffer from the same problem as regular GDP statistics — “cross-country statistical parallax”. For example, the IMF GDP projections for China are apparently based on official Chinese statistics and are, therefore, overly optimistic. To cater for that effect the IMF GDP projections are adjusted using the same procedure as for 1950-2015.

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