

Reply to Referee 2

We thank the Referee for his appreciation of our work and his constructive and very useful comments. We think that the changes to the manuscript and the underlying dataset will improve the manuscript's quality and will meet the Referee's agreement.

Please find the Referee's comments (COM) and our reply (REP) including the according changes to the manuscript below:

Specific Comments

1) COM: I would like to see the currency conversions made by the authors for each country, as the homogenous joining of datasets needs to be consistent in the periods where there are hyperinflation; large changes in currency, or differing values per year.

REP: We created an appendix that now contains time series for each country considered and information about the country-specific conversion rates and their variability over time. We also added a paragraph in the manuscript discussing the sensitivity of our findings.

2) COM: Datasets: There appears to be some inconsistencies in the final year of the files with the ;; reading in errors. Despite this, a sanity check of a few countries seems plausible.

REP: The ";;" symbols in the final column were wrongly added when finalizing the data and overlooked at the final check. The updated version of the DOI source will be corrected for this error.

COM cont'd: The PPP conversions need to be better explained within the text and the assumptions made. The use of the SSPs is of course a key to why the PPPs were chosen in 2005, but why not use more than 1 year of PPP conversions, and what are the uncertainties? I am missing also the context as to the quality of the overlaps between the various datasets, which likely needs to be explained for a reasonably constant country i.e. New Zealand, and a very volatile country (Zimbabwe).

REP: We adapted and extended the manuscript at various instances to clarify the procedure and to inform about uncertainties of choices we have made when creating the dataset. We also created an appendix that now contains time series for each country considered and information about the country-specific conversion rates and their variability over time. Based on this new information, we discuss the sensitivity of our currency conversion methodology.

As noted by the Referee, the current dataset was primarily designed to be usable in combination with the SSP projections and thus uses the 2005 PPPs only. Creating a comparable dataset for different PPPs would be desirable but is beyond the scope of this current exercise that we leave to future work.

COM cont'd: Aruba (the first line) does not inspire me with confidence in this method - as it shows an 85% reduction in GDP in the period from 2005-2009, where Aruba was a reasonably constant country. A sensitivity analysis is required for the input datasets and the uncertainties in the overlaps.

REP: As stated in the original manuscript, Aruba is the largest outlier in the full sample when it comes to matching with the SSPs. After double-checking the original OECD SSP2 data

source, that was used for matching between 2005 and 2010, we convinced ourselves that the GDP of Aruba is not correctly stated there. As Aruba is not officially listed within IIASA's SSP archive (<https://secure.iiasa.ac.at/web-apps/ene/SspDb/dsd?Action=htmlpage&page=welcome>) (and we did not receive feedback from the OECD on their source), we therefore decided not to include SSP data for Aruba and provide only observational data until 2009 (as we also did for countries like Antigua and Barbuda (ATG), Bermuda (BMU), Dominica (DMA), Federated States of Micronesia (FSM), Grenada (GRD), Kiribati (KIR), Saint Kitts and Nevis (KNA), Marshall Islands (MHL), Nauru (NRU), Seychelles (SYC), Tuvalu (TUV), see manuscript for details). We also checked other potential candidates for faulty data (e.g. Zimbabwe) but could not detect any other issues.

COM cont'd: I also did not read much about border changes, and adjusting boundaries with respect to the GDP estimate adjustments, which should be alluded to and explained - "Existing discrepancies were harmonized and an interval between 2005 and 2010 was used to allow for a smooth transition to SSP projection" is not a reasonable explanation and details should be shown for the examples talked about (Yugoslavia, Colonial Africa etc.)

REP: Most of the occurring border changes are circumvented (but not fully excluded) through the use of GDP per capita instead of nominal GDP. Nominal GDP is calculated in the end from country-level GDP per capita and population data. To do so, we rely on the list of countries and country definitions as used in the PWT v8.1 in their current state. To make the calculation of GDP feasible, we adjusted, in particular, population data to match country-specific income data. Adjustments mostly affect former Yugoslavia and Israel/Palestine. As historical data is very scarce for the African continent and estimates are rather uncertain (see also the discussion in the manuscript) we only used the country borders / country names in their current state without further adjustments. Also note that "new" countries like South Sudan are not included in our database.

The revised manuscript now contains a more detailed discussion on the harmonization of data sources and the underlying assumptions.

3) COM: Quality of writing etc. The paper itself was coherently written, and although some of the figures are complicated and likely could be simplified for visual purposes (Fig 2), the writing is adequate. - issues like GPD (should be GDP) in the abstract, and another check as to units should be made.

REP: Figure 2 was completely revised and provides now a comparison of conversion factors for different world region, as suggested by the other Referee. Further, the typo in the abstract was corrected, and all units were double-checked.