GDP Projections under the Shared Socioeconomic Pathways: The 2023 Update

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The new IIASA-WU GDP Projections

- Methodological framework (as in Crespo Cuaresma 2017)
  - Aggregate production function with age and education-specific labour input

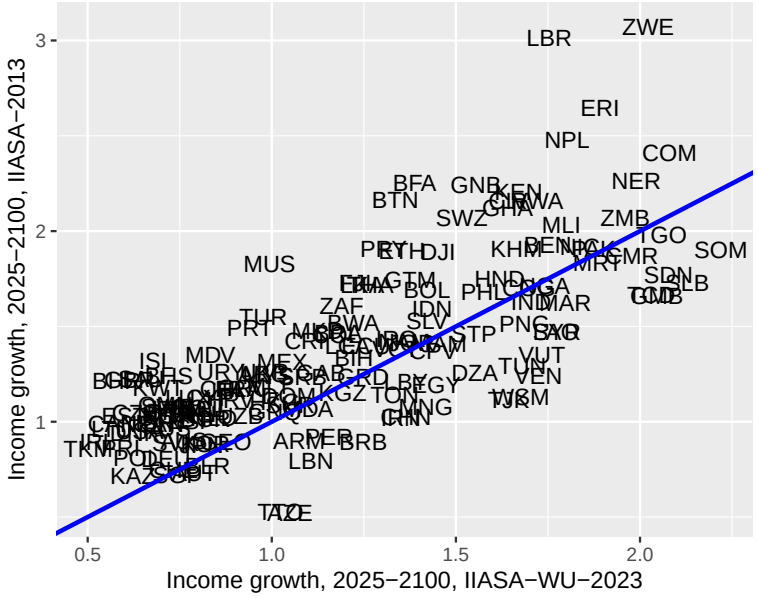
$$Y_{it} = A_{it} K_{it}^{\alpha} \prod_{jk} L_{i,jk,t}^{\beta_{jk}},$$

    where two age groups (up to 35, older than 35) and four education groups (no education to some tertiary education) are considered
  - Total factor productivity assumed to depend on age-structured human capital and the distance to the technological frontier (innovation and technology adoption effects)
  - Model parameters estimated using a panel regression model spanning 171 countries for the period 1970-2019, in 5-year intervals (sources: Penn World Table 10.1, Wittgenstein Centre)

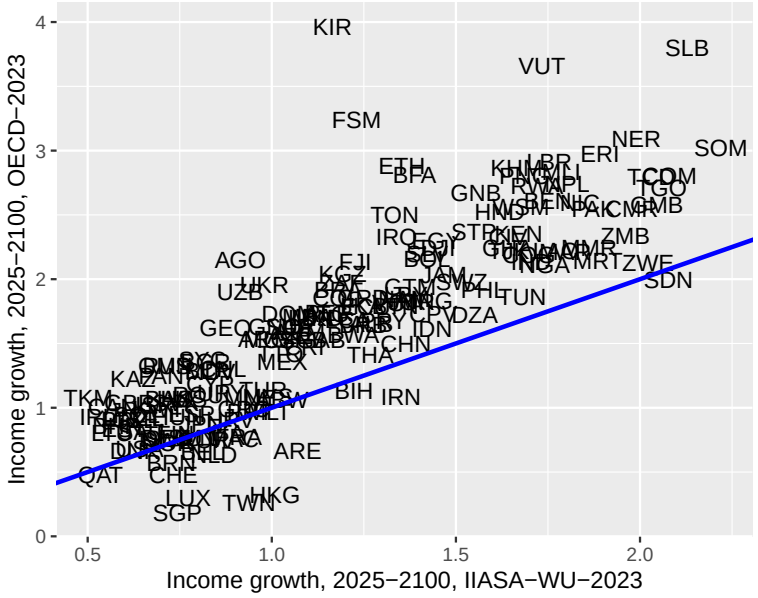
The new IIASA-WU GDP Projections

- Scenario assumptions (as in Crespo Cuaresma 2017)
  - Human capital dynamics based on SSP 3.0 population projections by scenario
  - Global convergence dynamics in capital accumulation rates (based on historical data)
  - Convergence in institutional characteristics following scenario-specific SSP narratives
- Differences with respect to the 2017 SSP projections
  - Parameter estimates based on a larger sample, with GDP in 2017 PPP-adjusted USD
  - Update in population projections
  - Scenario-based projections starting in 2025, IMF forecasts used for 2020-2025
  - Otherwise, the projection exercise is methodologically consistent with that of the 2013 SSPs

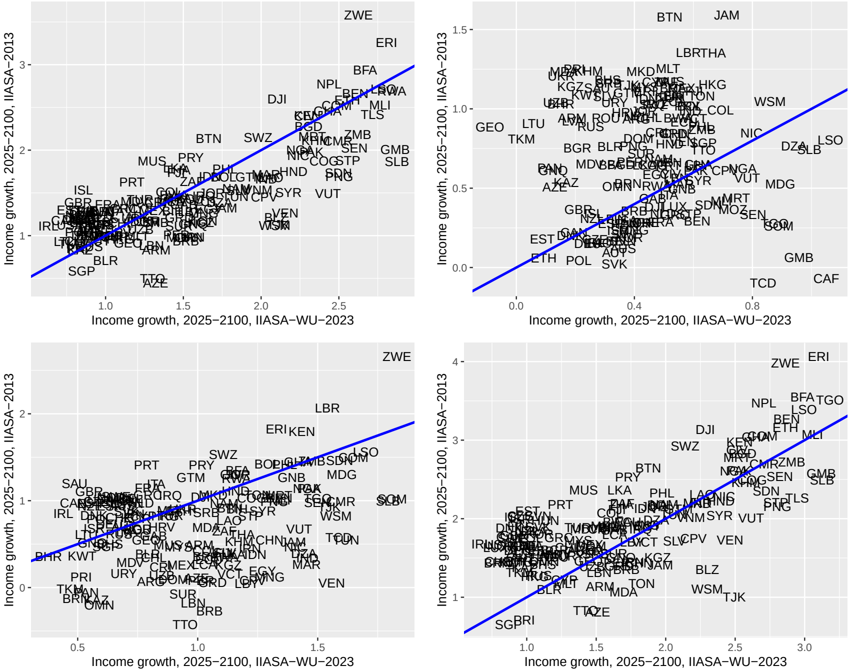
SSP2: Comparison of 2013 vs. 2023 IIASA-WU projections



SSP2: Comparison of IIASA-WU/OECD projections



SSP1, SSP3, SSP4, SSP5: 2013 vs. 2023 IIASA-WU projections



The 2023 update: Main features

- On average, GDP per capita projections are less optimistic across all scenarios
- On average, IIASA-WU projections are less optimistic than OECD projections (Dellink et al. 2017)
- The main drivers of the differences:
  - More pessimistic human capital accumulation scenarios in the new population projections
  - Slower and smaller productivity gains over the projection period
  - A smaller speed of income convergence across economies due to the lower level of human capital in developing economies

References

Crespo Cuaresma, Jesús. 2017. "Income projections for climate change research: A framework based on human capital dynamics." *Global Environmental Change* 42:226–236.

Dellink, Rob, Jean Chateau, Elisa Lanzi, and Bertrand Magné. 2017. "Long-term economic growth projections in the Shared Socioeconomic Pathways." *Global Environmental Change* 42:200–214.