Human Capital Growth - with Region & Gender in Perspective

Barbara M. Fraumeni
China Center for Human Capital and Labor Market Research,
Central University of Finance and Economics
National Bureau of Economic Research
Muskie School, University of Southern Maine
IZA Institute for Labor Economics

World KLEMS

Alliance Manchester Business School

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Importance of Human Capital Measurement

- **Research shows that human capital has a significant effect on innovation, productivity growth, economic development, individual welfare, and country sustainability**
- **Understanding the role of human capital relies on the chosen measure of human capital**
- **We must understand human capital in interpreting results to form policy implications**

Overview

- **Barbara M. Fraumeni (ed.) *Measuring Human Capital*, editor and co-author of the introduction and three chapters, Academic Press, Cambridge, MA, 2021.**

- **Introduction by Gang Liu and myself, available as a NBER Working Paper and an IZA Discussion Paper**

Inclusive Wealth Report

- **Previous:**

  Urban Institute (Kyushu University) and United Nations Environmental Program, *Inclusive Wealth Report 2018*, Abingdon, Oxon, England, Routledge, 2018.

- **Latest forthcoming in 2022, IWR 2022, UNEP.**

- **Chapter by Gang Liu and myself:**

  "Human Capital Growth –
  with Region and Gender in Perspective"

Preponderance of HC Wealth

- **Inclusive Wealth Report (IWR)**
  - 165+ countries, 1990-2019
  - 58% of world wealth is HC in 2019
- **IWR includes**
  - Produced capital
  - Natural capital, and
  - Human capital
- **Uses PPPs to deflate**

IWR Methodology

- **Largely follows the model of Arrow,.et al. (2012)**

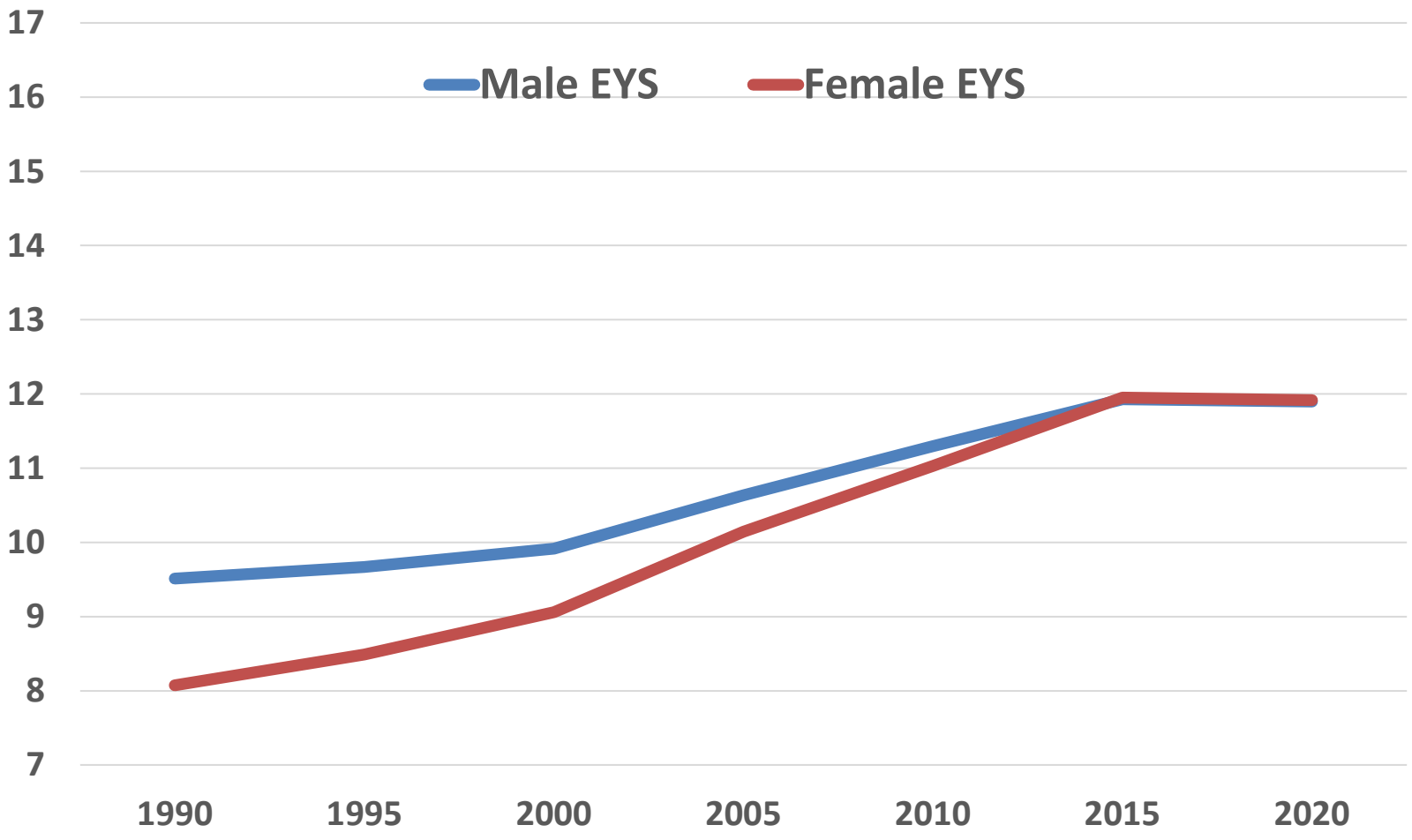
$$HC = \underbrace{e^{\rho \cdot Edu}}_{Term_1} \cdot \underbrace{P_{5+Edu}}_{Term_2} \cdot \underbrace{\int_0^T w \cdot e^{-\delta\tau} d\tau}_{Term_3}$$

where ρ is the return of years of schooling, *Edu* is the expected years of schooling (EYS), P_{5+edu} is the population who have just finished the EYS, T is the employee's expected remained working years, w is the average annual compensation, and δ is the discount rate

Expected Years of School (EYS)

- **Main change between previous IWRs**
- **EYS is also used by the Human Development Index**
- **Looks forward as opposed to the average number of years of school already completed, e.g., from Barro-Lee**
- **EYS as of those individuals just entering school (around age 5)**

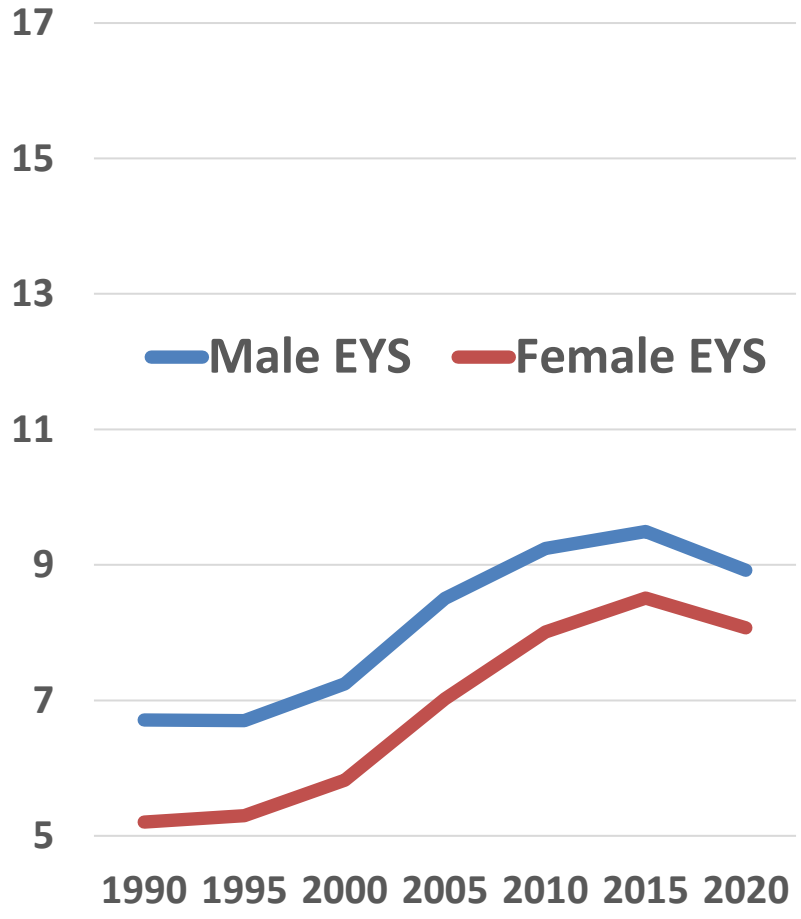
EYS for World by Gender



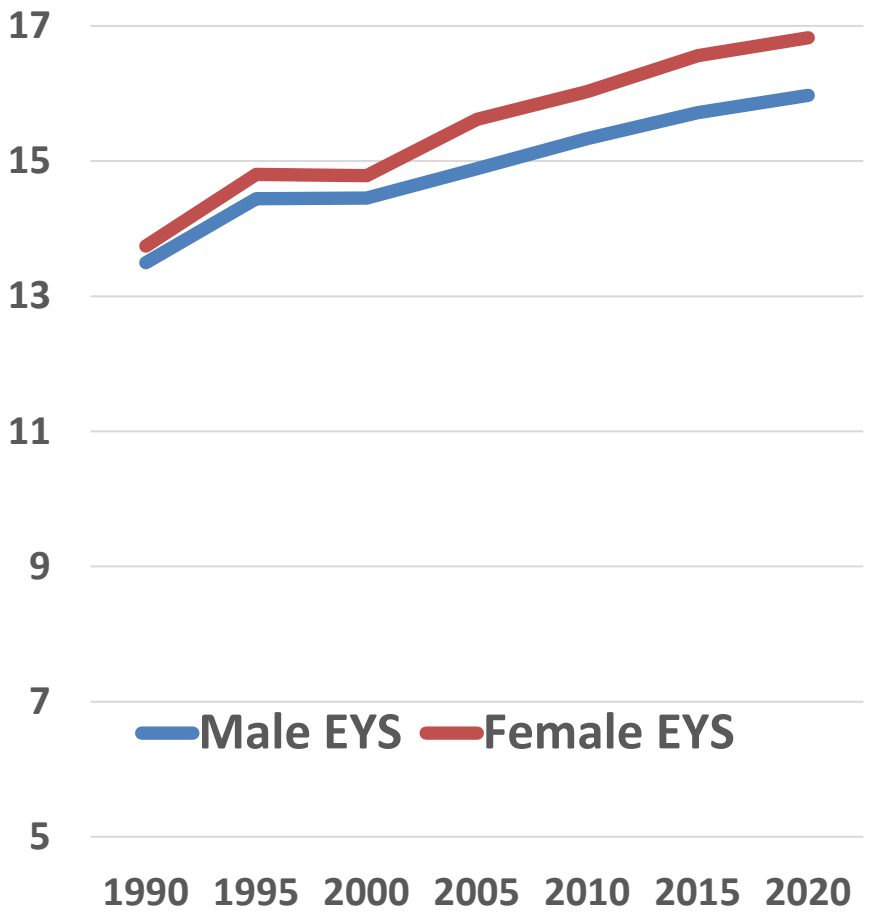
24 Advanced Economies Countries

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom of Britain and Northern Ireland, and the United States of America.

Comparison: Sub-Saharan Africa vs. Advanced Economies

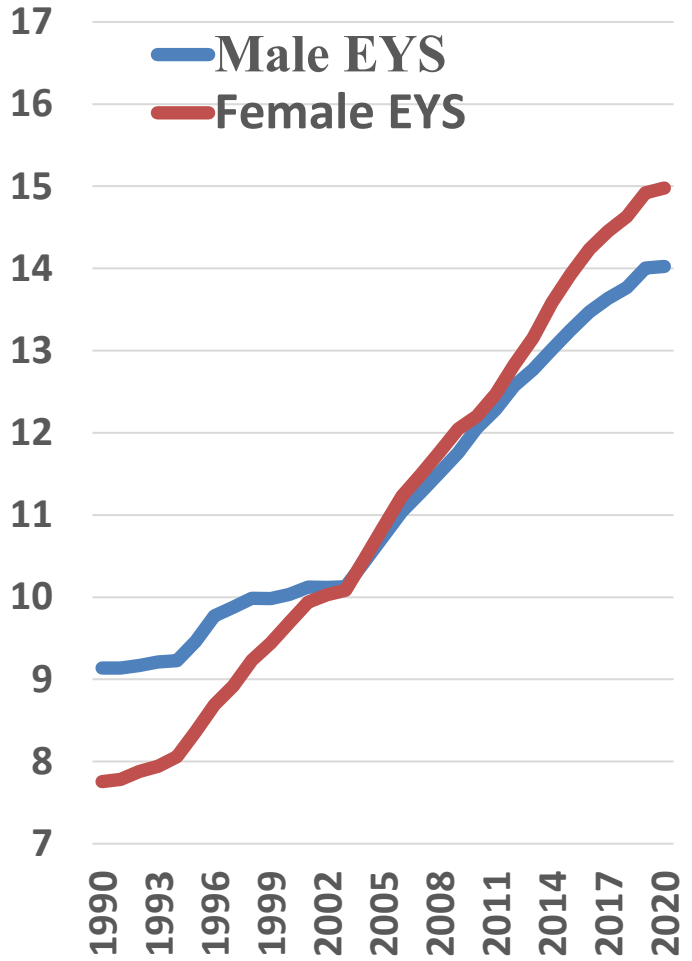


Sub-Saharan Africa

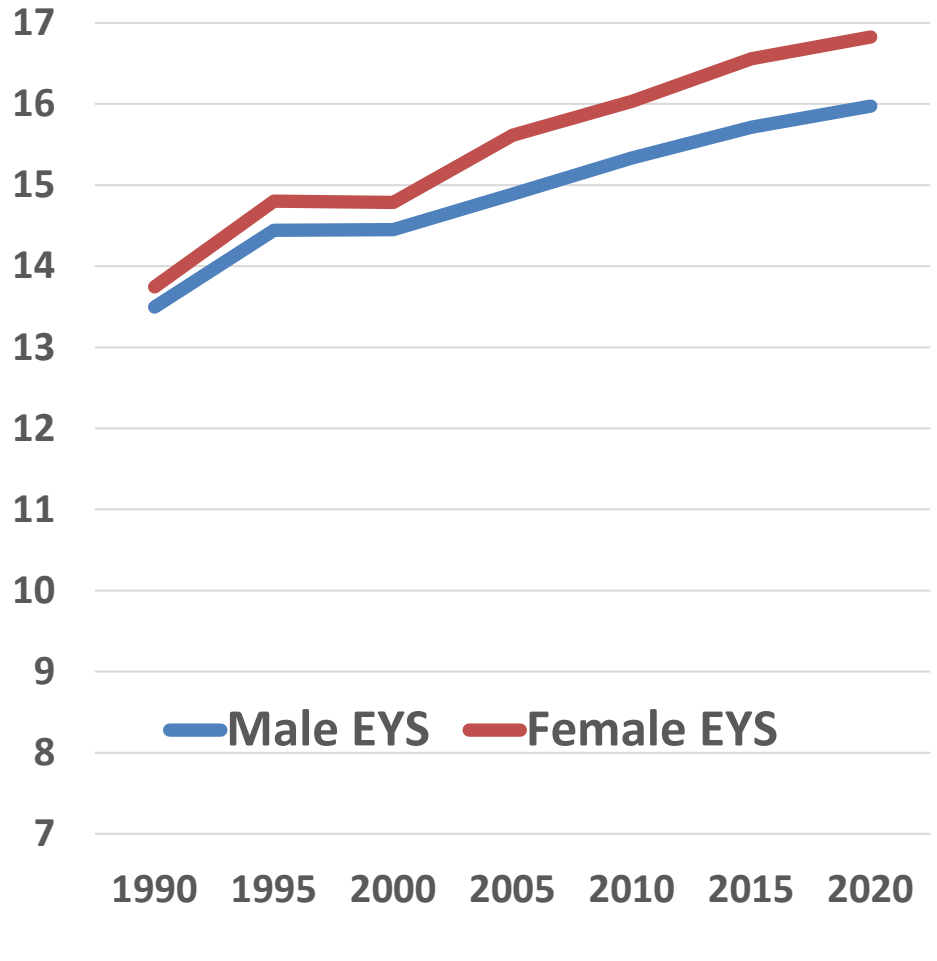


Advanced Economies

Comparison: China vs. Advanced Economies

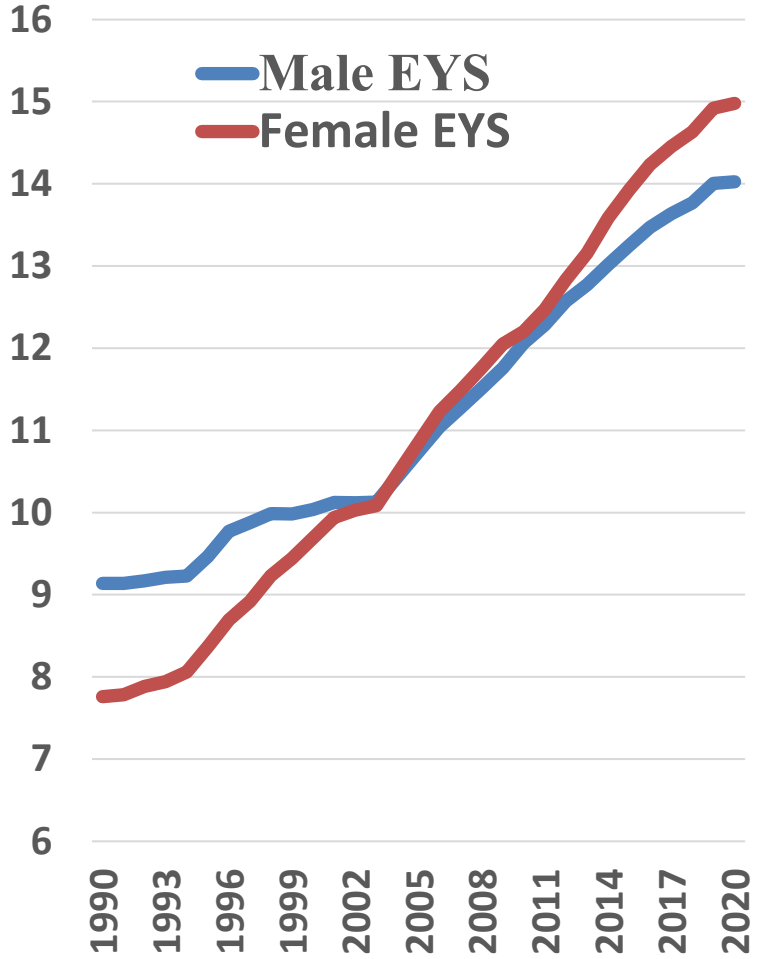


China

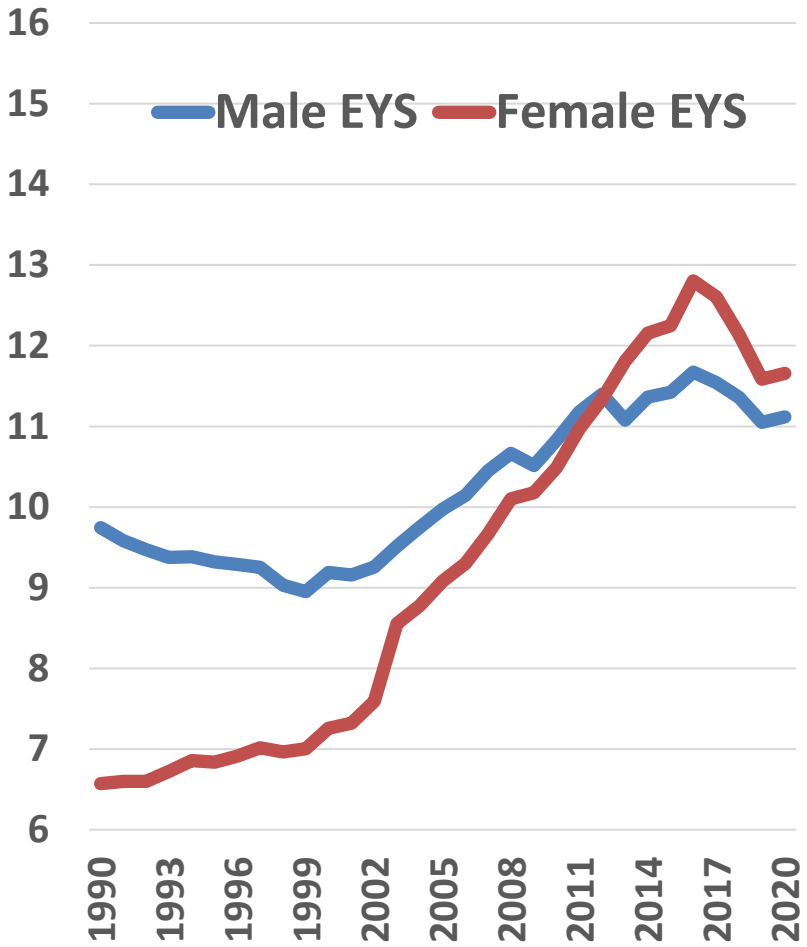


Advanced Economies

Comparison: China vs. India

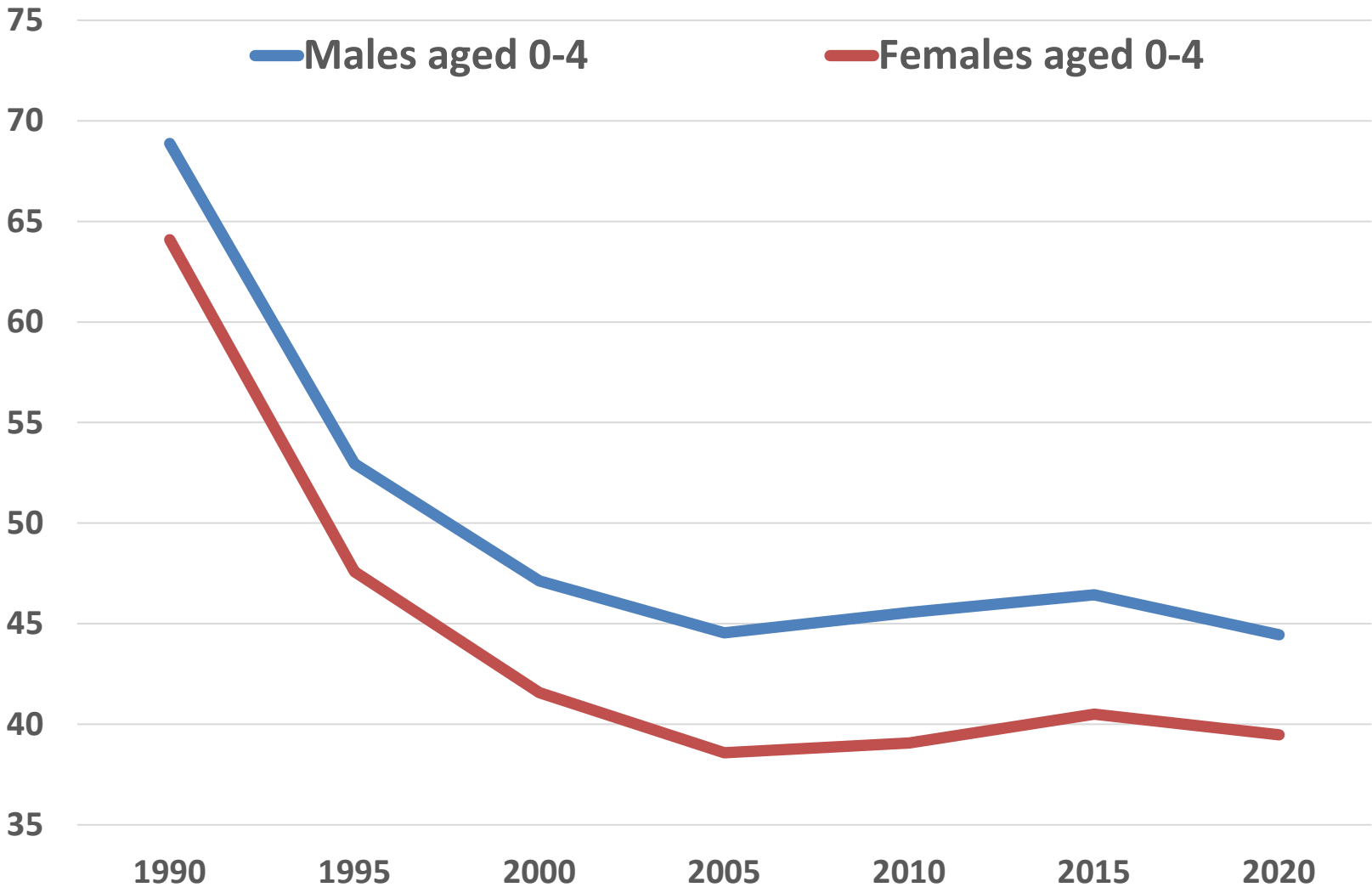


China

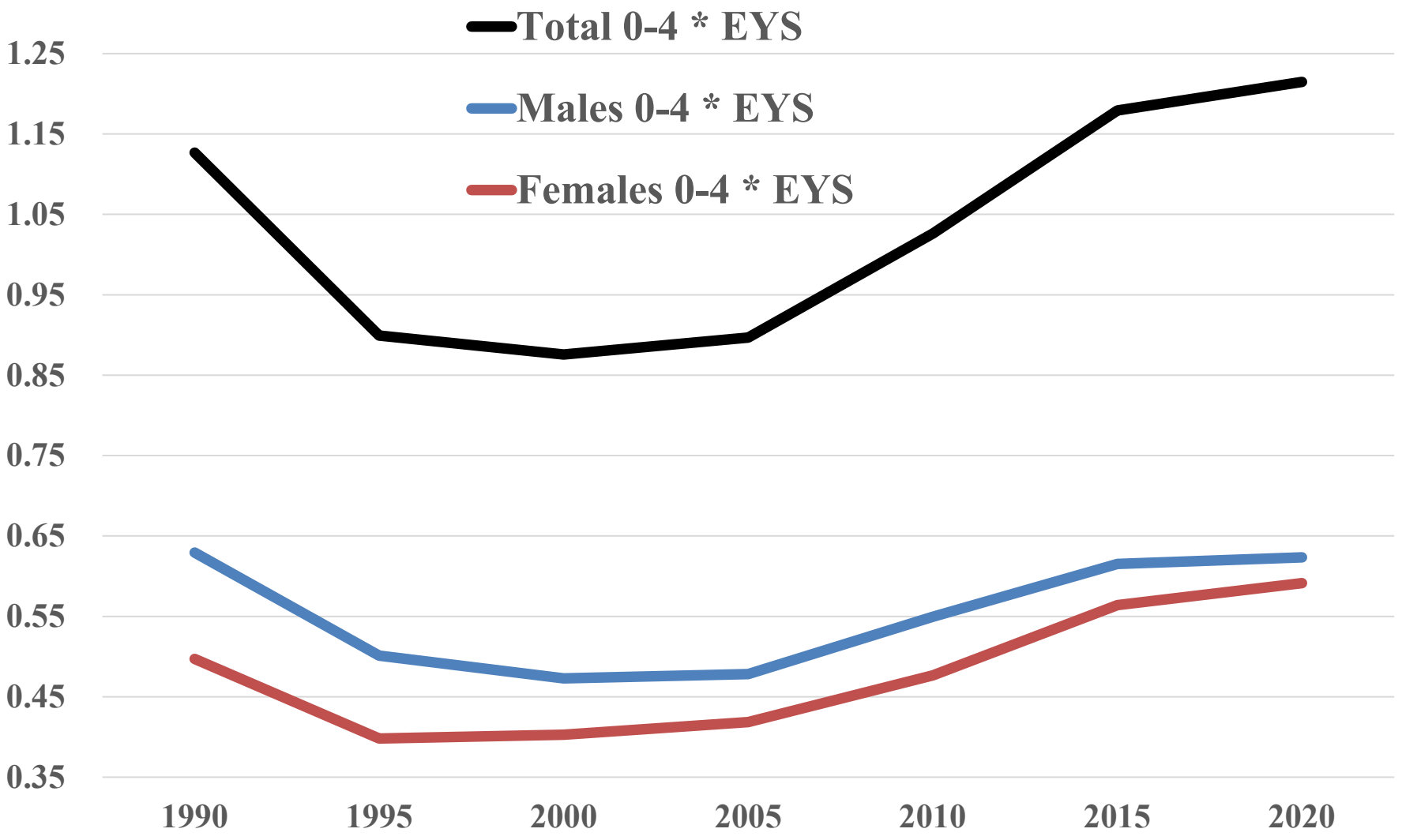


India

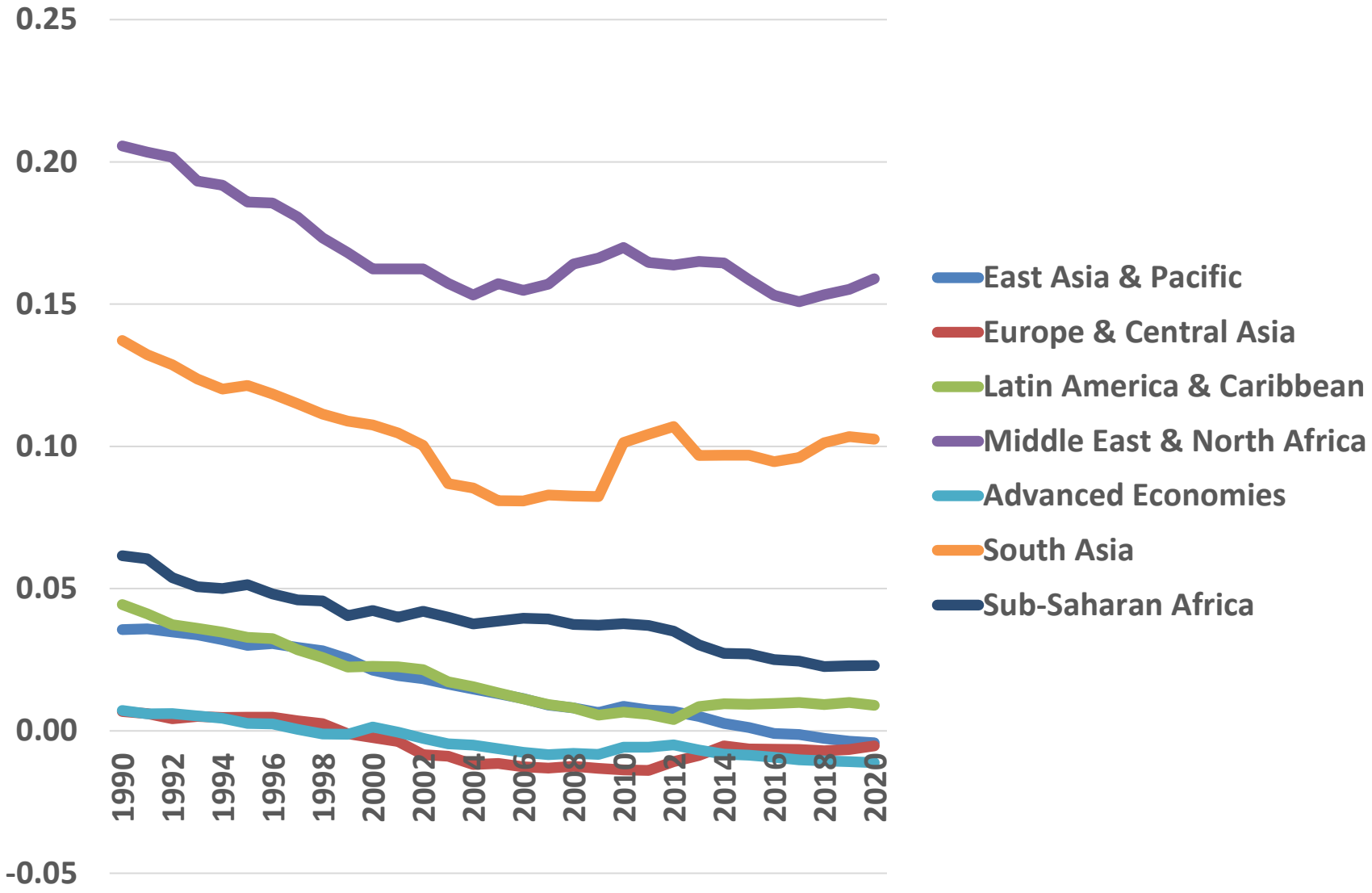
Population aged 0-4 in China by Gender Every Five Years (Millions)



For China, by Gender, Net Effect of Decrease in Age 0-4 with an Increase in EYS, Every Five Years (Billions)



Gini Coefficient by Region



Decomposition of HC

$$HC = \underbrace{e^{\rho \cdot Edu}}_{Term_1} \cdot \underbrace{P_{5+Edu}}_{Term_2} \cdot \underbrace{\int_0^T w \cdot e^{-\delta \tau} d\tau}_{Term_3}$$

- Term 1 = education effect
- Term 2 = educated population
- Term 3 = HC compensation
- In term 3, *w* is held constant over 1990-2020 and is the same for males and females because of the lack of public data to do otherwise, only T varies by year and gender

Decomposition of HC by Gender for China

(1) $\mathrm{HC}_{\mathrm{gender}} = \prod_{term} Term_{term,gender}$,

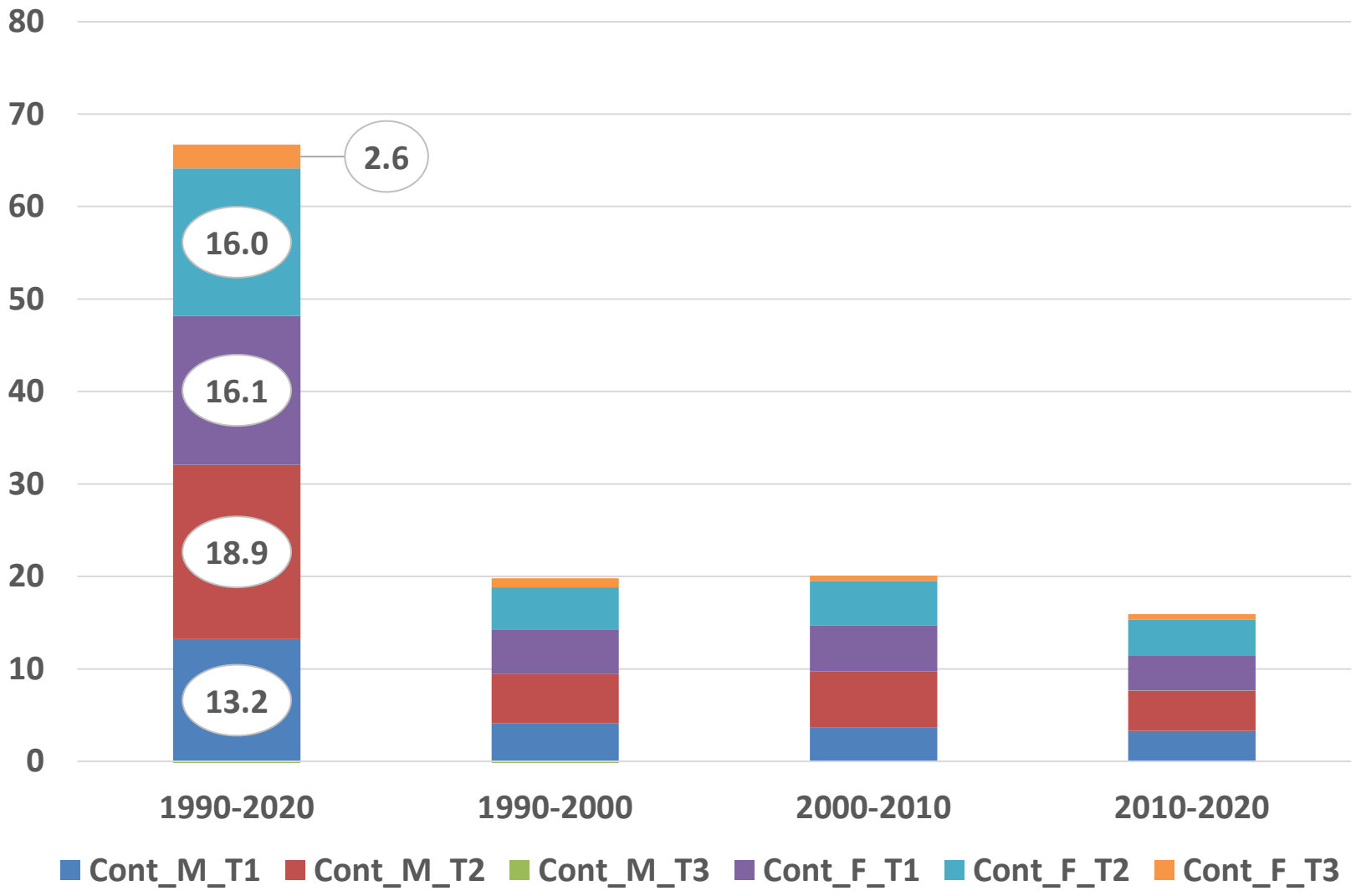
where term = 1, 2, 3;

gender = male, female.

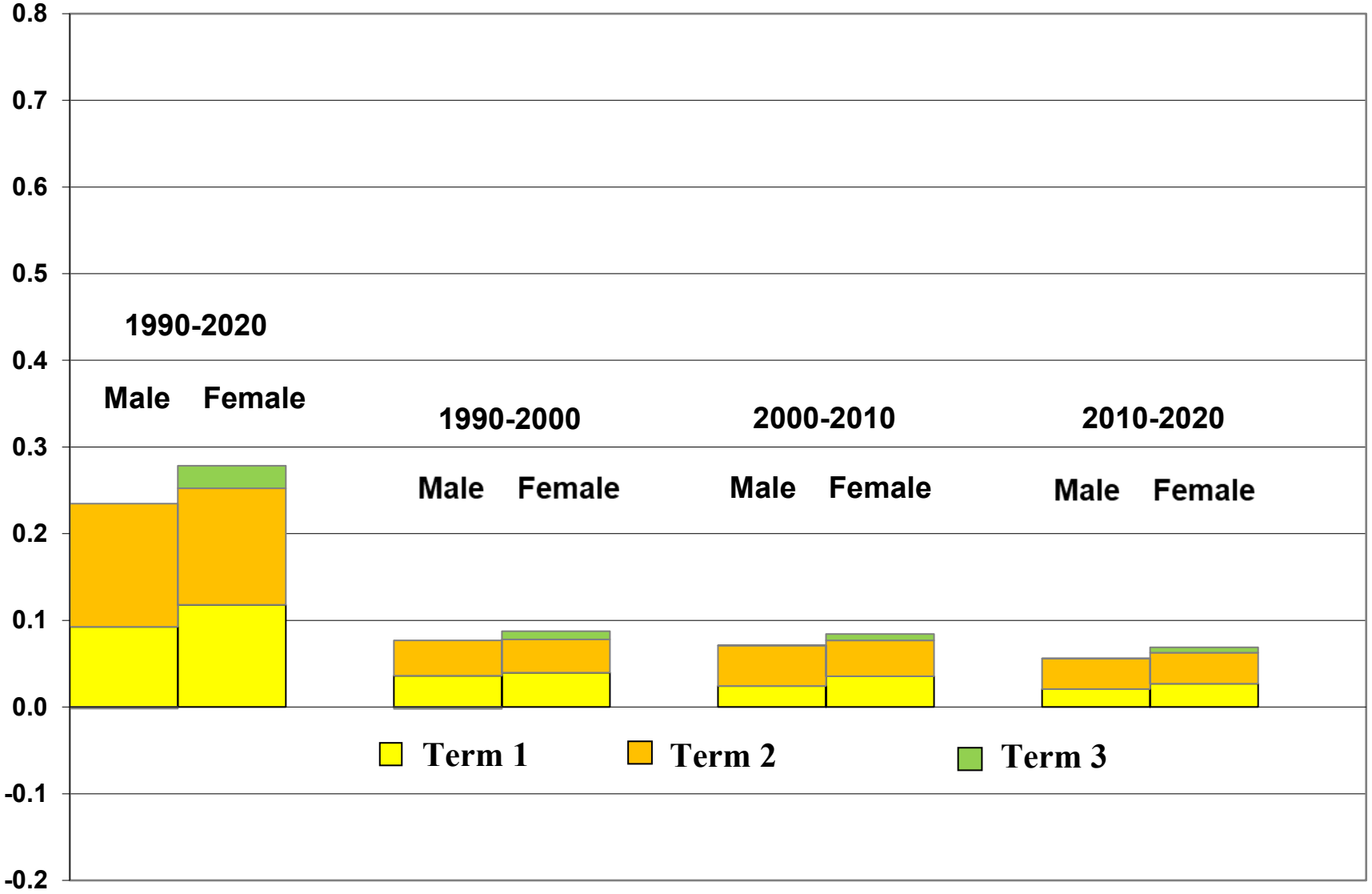
(2) Contribution (term, gender) =

$$\left(\frac{\Delta HC_{gender}}{\Delta\left(lnHC_{gender}\right)} \Delta lnTerm_{term,gender}\right) / HC$$

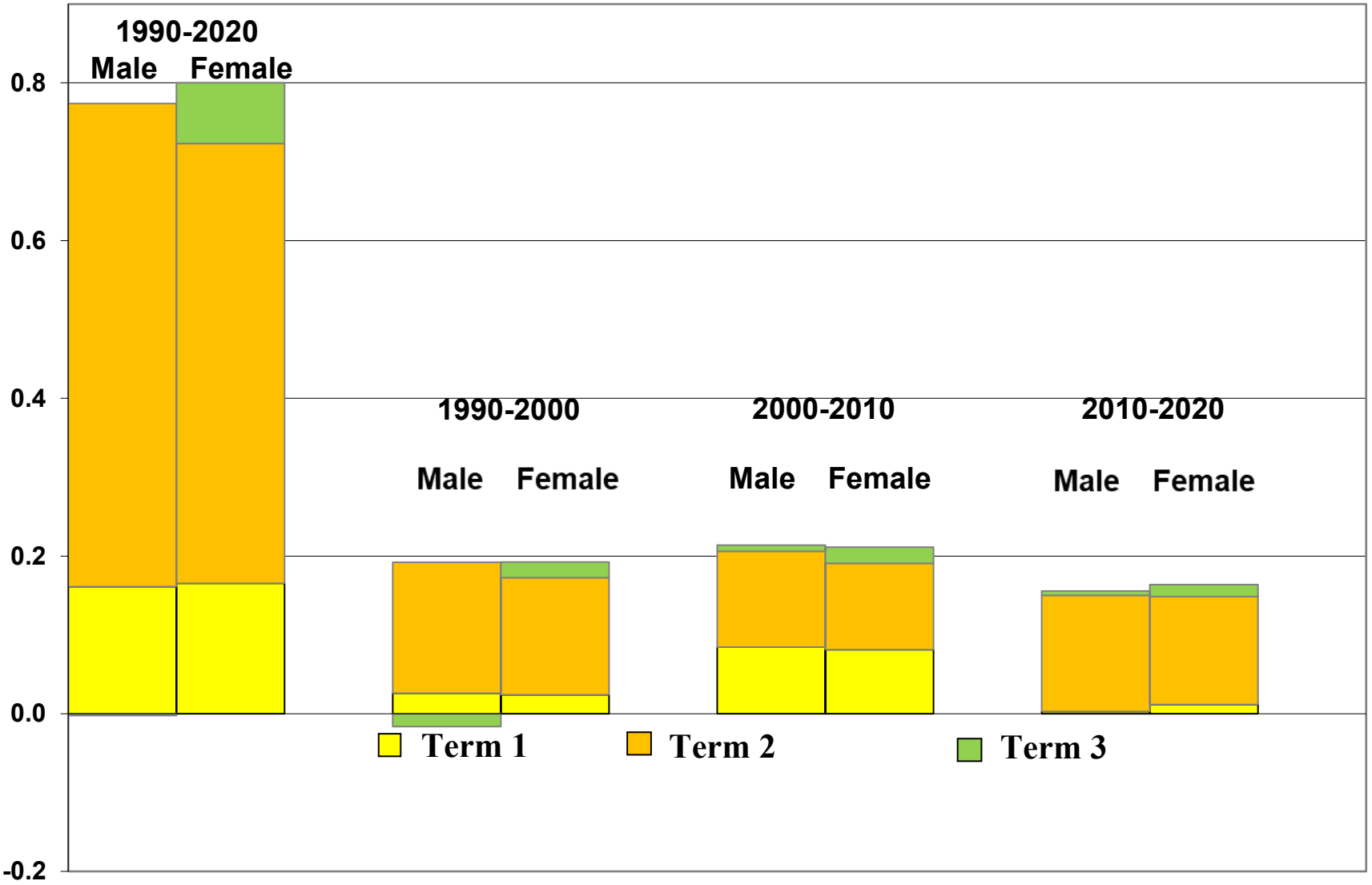
Contributions, World



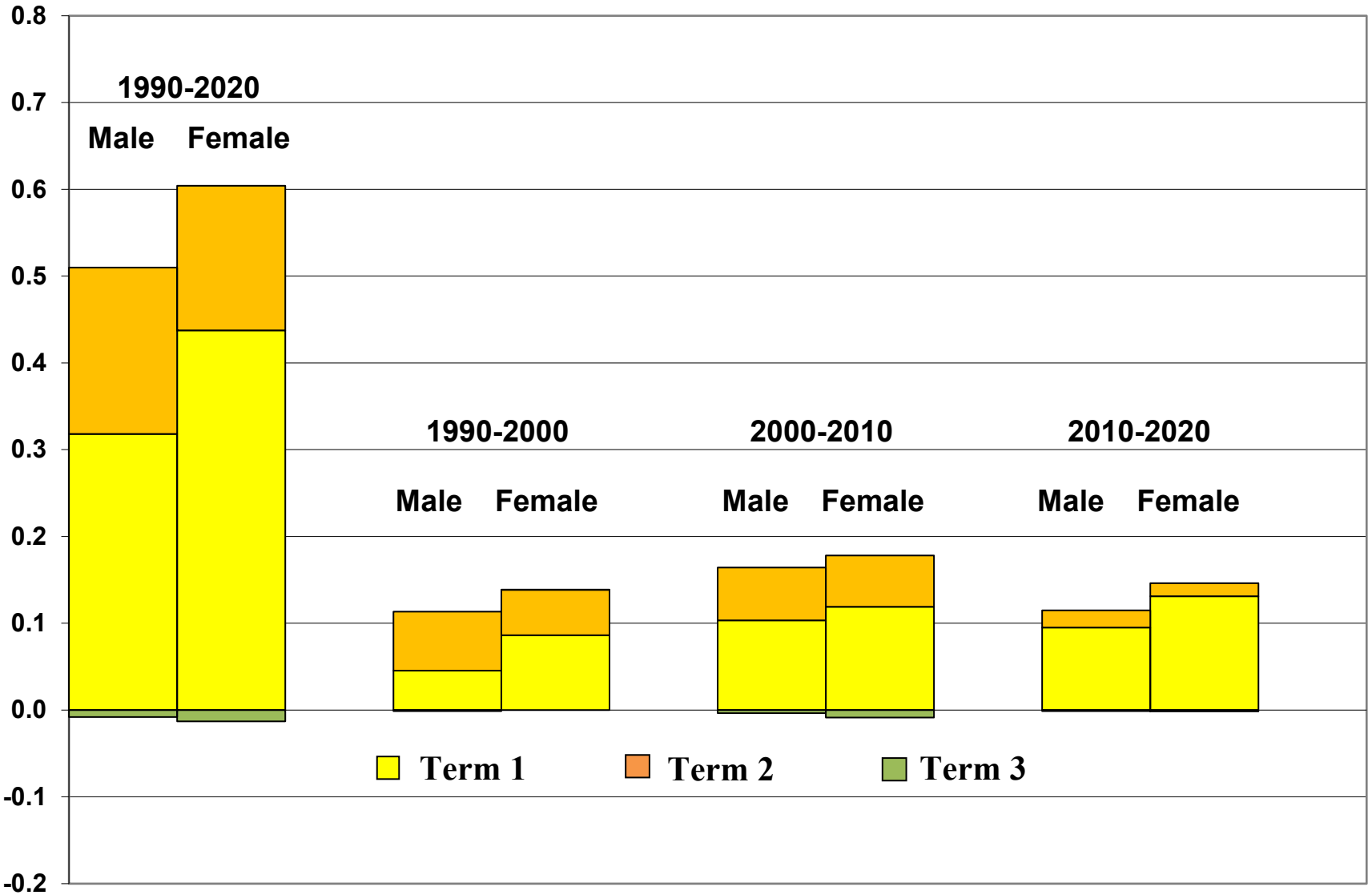
Contributions, Advanced Economies



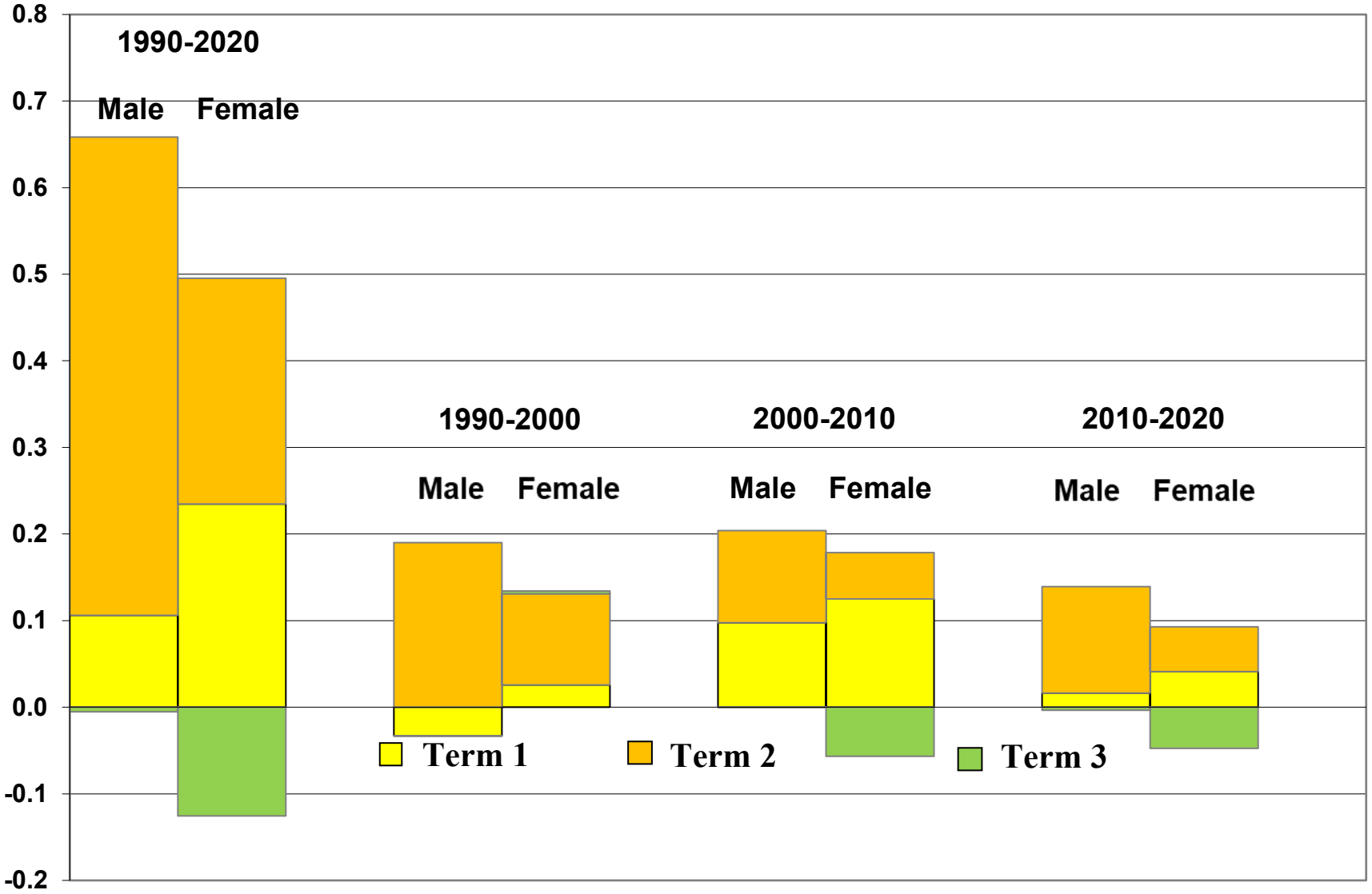
Contributions, Sub-Saharan Africa



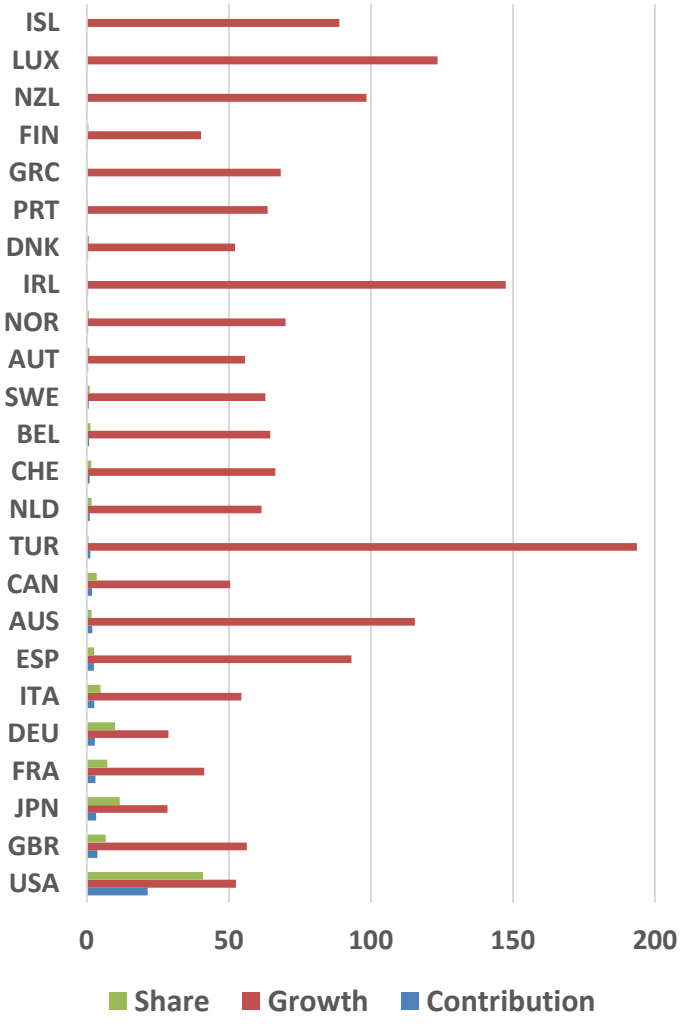
Contributions, China

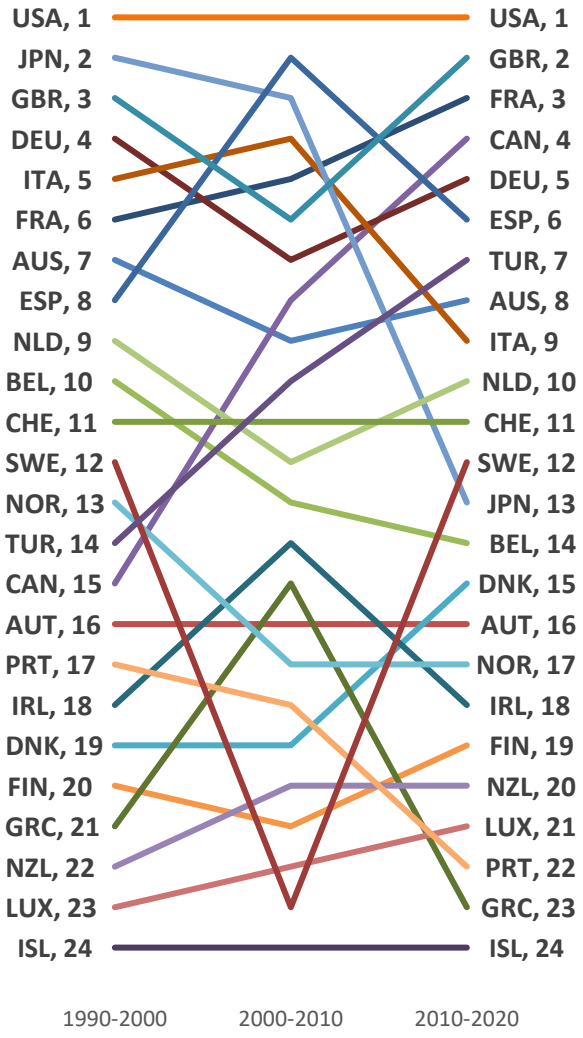


Contributions, India



Advanced countries HC by country: rank change (right panel) & share, growth & contribution (left panel)





Conclusion

- **Human capital is very important "asset" of any country**
- **There is a great variation in HC in countries or regions with high population or higher rates of population growth compared to advanced economies: China, India, and Sub-Saharan Africa**
- **In most countries and regions, gender differences and female trends in HC are an important aspect of understanding the HC of countries**