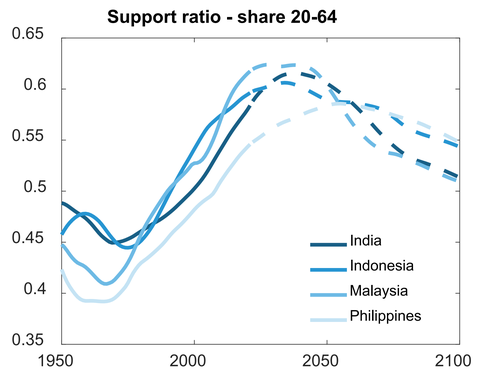
Wittgenstein Centre
FOR DEMOGRAPHY AND GLOBAL HUMAN CAPITAL
IIASA ÖAW universität wien

LIFESPAN INEQUALITY AND THE FIRST DEMOGRAPHIC DIVIDEND

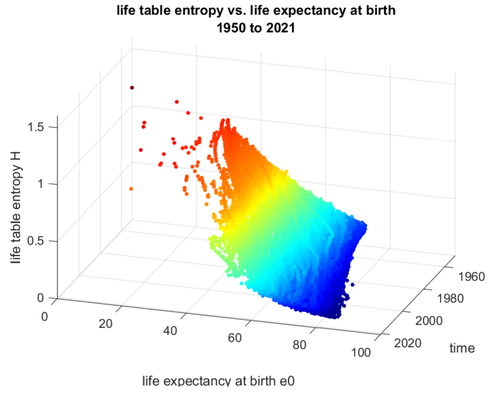
Thomas Fent

1 Research Question

- What is the influence of lifespan inequality?
- How to measure the dividend?
- When does it start?
- How long does it last?
- When does support ratio peak?
- What is the maximum support ratio?



2 Lifespan Inequality



Life table entropy H vs. life expectancy at birth $e0$ for all life tables provided by UN

- negative relationship between H and $e0$
- increase in life expectancy associated with decrease in lifespan inequality
- 1950 to 2021: life expectancy increased and lifespan inequality decreased
- cross–country differences in life expectancy and in inequality in life expectancy both decreased

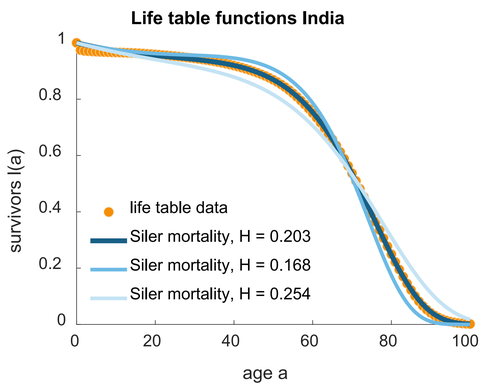
3 Analysis

Mortality law of Siler

$$\mu(a) = \alpha e^{\beta a} + \gamma + \delta e^{-\zeta a}$$

Vary α and β to

- modify lifespan inquality H
- keep life expectancy $e0$ constant

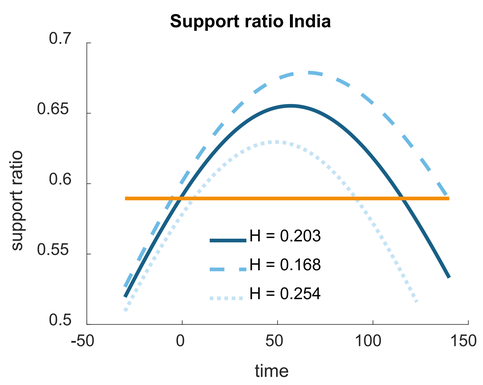


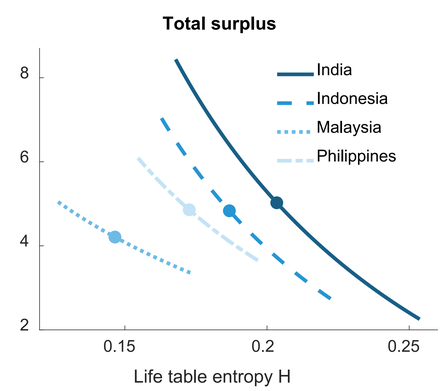
Peak time of support ratio

$$t^* = \frac{(A_0 - A_{W,0})\frac{\mu}{k} + t_0\sigma_0^2 - t_{W,0}\sigma_{W,0}^2}{\sigma_0^2 - \sigma_{W,0}^2}$$

with $\quad t_0 \approx A_0\theta - \frac{\mu}{2} \qquad \theta = \frac{\frac{L_3}{L_1} - \frac{L_2}{L_0}}{2\sigma^2}$

4 Results





Lifespan inequality decreases

- Peak support ratio later
- Advantageous age structure earlier
- Maximum support ratio increases
- Duration increases
- Total amount (working years) increases