Virtual Event 15-18 June 2020

2020 Asia-Pacific Statistics Week

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Health Inequality and Growth in Developing Countries: Experiences from Indonesia, Pakistan and Philippines

Action Area A. Collective Vision and Framework for Action Area

Engaging users and investing in statistics

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Research Problem

1. Global Goals of Human Development
2. Challenges of developing countries: Indonesia, Pakistan and Philippines
3. Health inequality and Economic Growth
4. Monitoring of progress on Sustainable Development Goals (SDGs)

Material and Methods

GDP per capita (current US Dollars)

Life Expectancy at birth

Under-five Child Mortality per 1000 births

Generalized Additive Model (Bayesian Model)

$$y = \delta_0 + \sum_{k=1}^{p} f_k(x_k) \; \ldots.(1)$$

B-Splines

$$B_j(x; v) = \frac{x - t_j}{t_{j+v-1} - t_j} B_j(x; v-1) - \frac{x - t_{j+v}}{t_{j+v} - t_{j+1}} B_{j+1}(x; v-1) \; \ldots..(2)$$

Time period 1980-2018

Cont. Material and Methods

Referring to Model (1) is rewritten into several models to facilitate understanding:

- $le = intercept + pb(gdp)$ (3)
- $le = intercept + pb(gini)$ (4)
- $mru5 = intercept + pb(gdp)$ (5)
- $mru5 = intercept + pb(gini)$ (6)

*where: le is life expectancy at birth; gdp is GDP per capita; $mru5$ is mortality rate under 5 age; $gini$ is Gini ratio; $pb(gdp)$ is the P-Splines function on the GDP per capita variable, refer to $f_k(x_k)$ in the model (1); $pb(gini)$ is the P-Splines function on the Gini Ratio variable, referring to $f_k(x_k)$ in the model (1); *Intercept* is a constant of the model, referring to δ_0 in the model (1).

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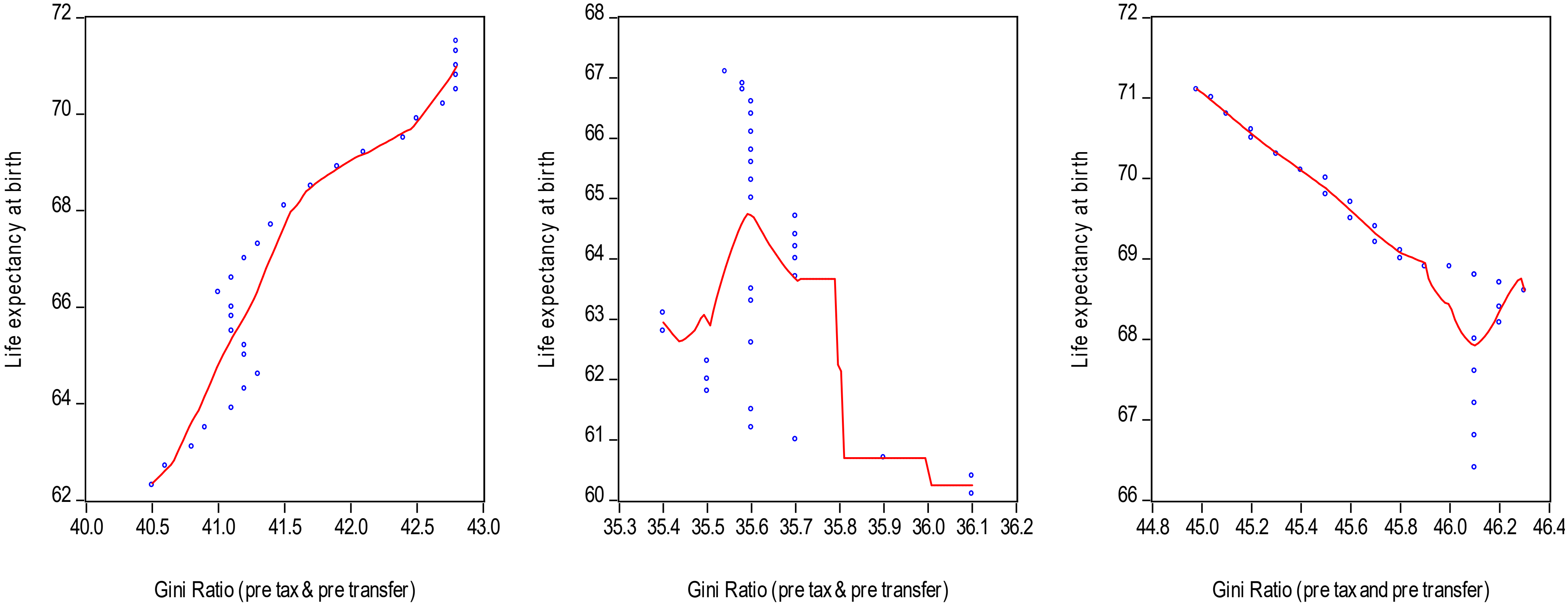
GDP Per Capita and Under-five Mortality (1980-2018) across three Countries: Gini-Ratio Movement



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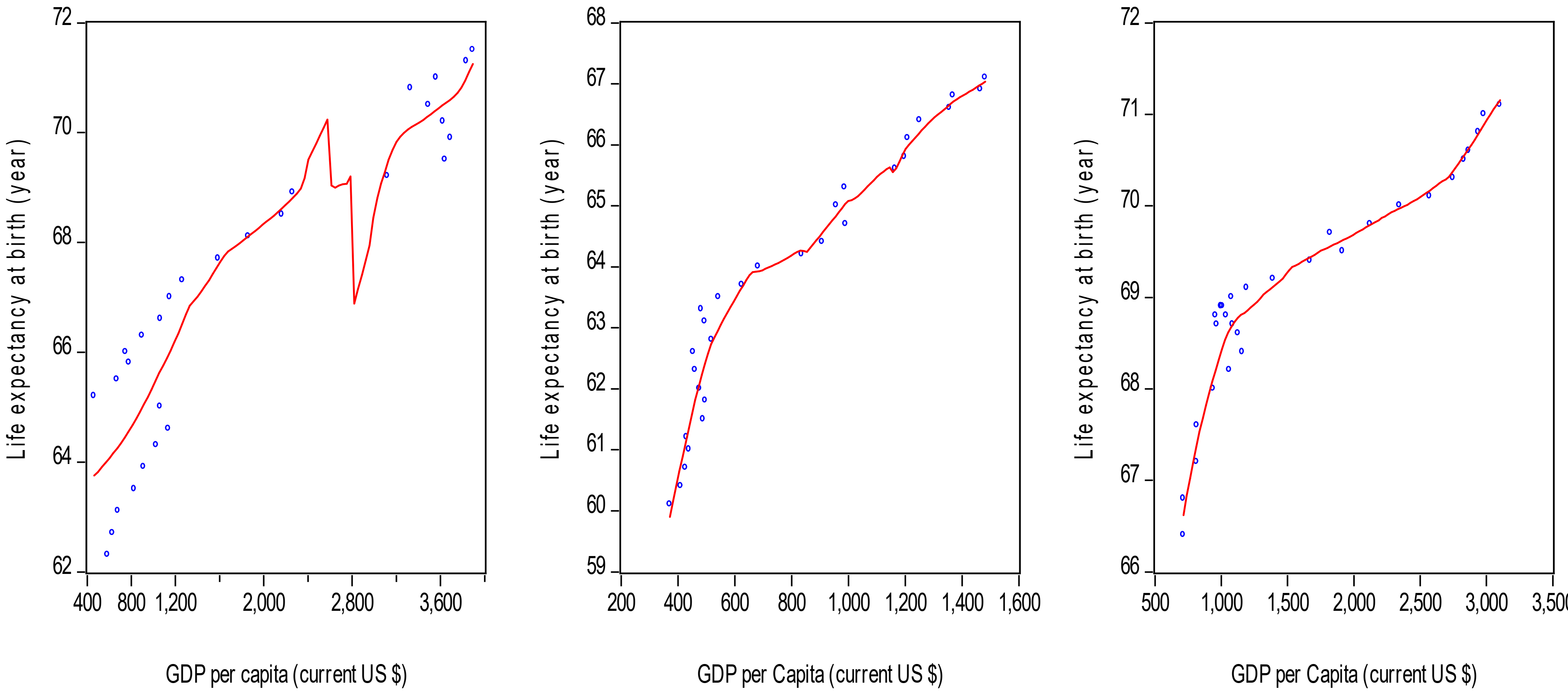
GDP Per Capita and Life Expectancy at Birth (1980-2018) Across Three Countries



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Research Findings

1. Increasing disparity in child mortality among the three countries since 1980s
2. Decreased inequality in life expectancy among countries from early 1980s until the late 1990s and increasing inequality thereafter
3. Inequality in per capital GDP has effect on life expectancy in Indonesia but not found significant for Pakistan and Philippines
4. The inequality in GDP per capita income has a negative and significant effect on mortality rate under 5 years' age in Indonesia, positive effect on U5 mortality in Pakistan and Philippines.
5. GDP per capita has negative and significant effect on Under five mortality in all three countries.

Way forward

1. Inclusive and sustainable income growth
2. Prioritization of child healthcare and services
3. Reduce socioeconomic and regional disparities in income
4. Increase budget allocation and access to Healthcare services