MIGRATION, DEMOGRAPHY AND AGRI-FOOD SYSTEMS – CHALLENGES AND OPPORTUNITIES

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Introduction

- Rural transformation process shaped by evolving agri-food systems (AFS):
  - Large share of employment (incl. non-farm)
  - Increasing connection of rural and urban sectors
  - Success stories in some regions, others to be seen
- Demographic structures
  - Rural population still growing in some regions
  - “Youth bulge” expected in Africa

→What is the role of rural-to-urban (youth) migration?

Agri-food systems

- Include farming, food and fibre manufacturing and trade
- Embedded in changing economic system (globalisation, technological change, urbanisation, dietary change)
- Provide about 80% of the jobs in developing countries, where farming is still the dominant employer
- Connect rural and urban sector

This paper:

- Outline the interaction of changing demographics and rural-urban migration with AFS
- Utilize population data to project future migration patterns and how they relate to changing AFS
- Discuss role of climate change
- Identify research and data gaps
- Suggest areas for investment needs
- Focus on developing countries

Outline

1. Conceptual framework
2. Data and methodology
3. Descriptive analysis:
    1. Trends in demographic structures
    2. Trends in rural-urban migration
    3. Trends in AFS
4. Role of climate change
5. Conclusion

Traditional pathways

RURAL

Push Factors

Surplus Labor
(Dual-sector model, Lewis)

Low wages (Harris-Todaro)

Land constraints
Credit/Insurance constraints
(NELM)

URBAN

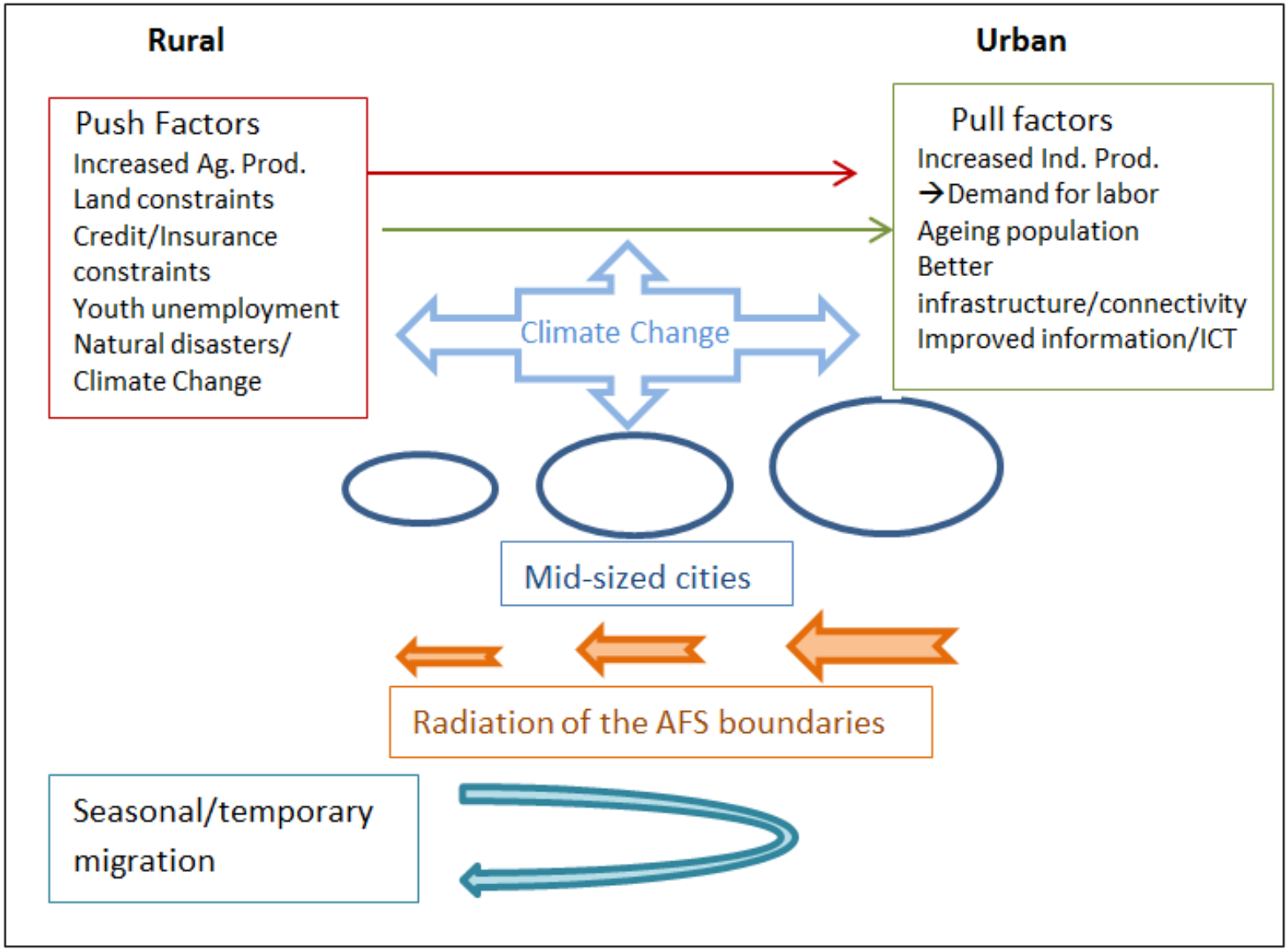
Pull factors

Increased Ind. Prod.
→Demand for labor

Higher wages

Income diversification

Emerging trends



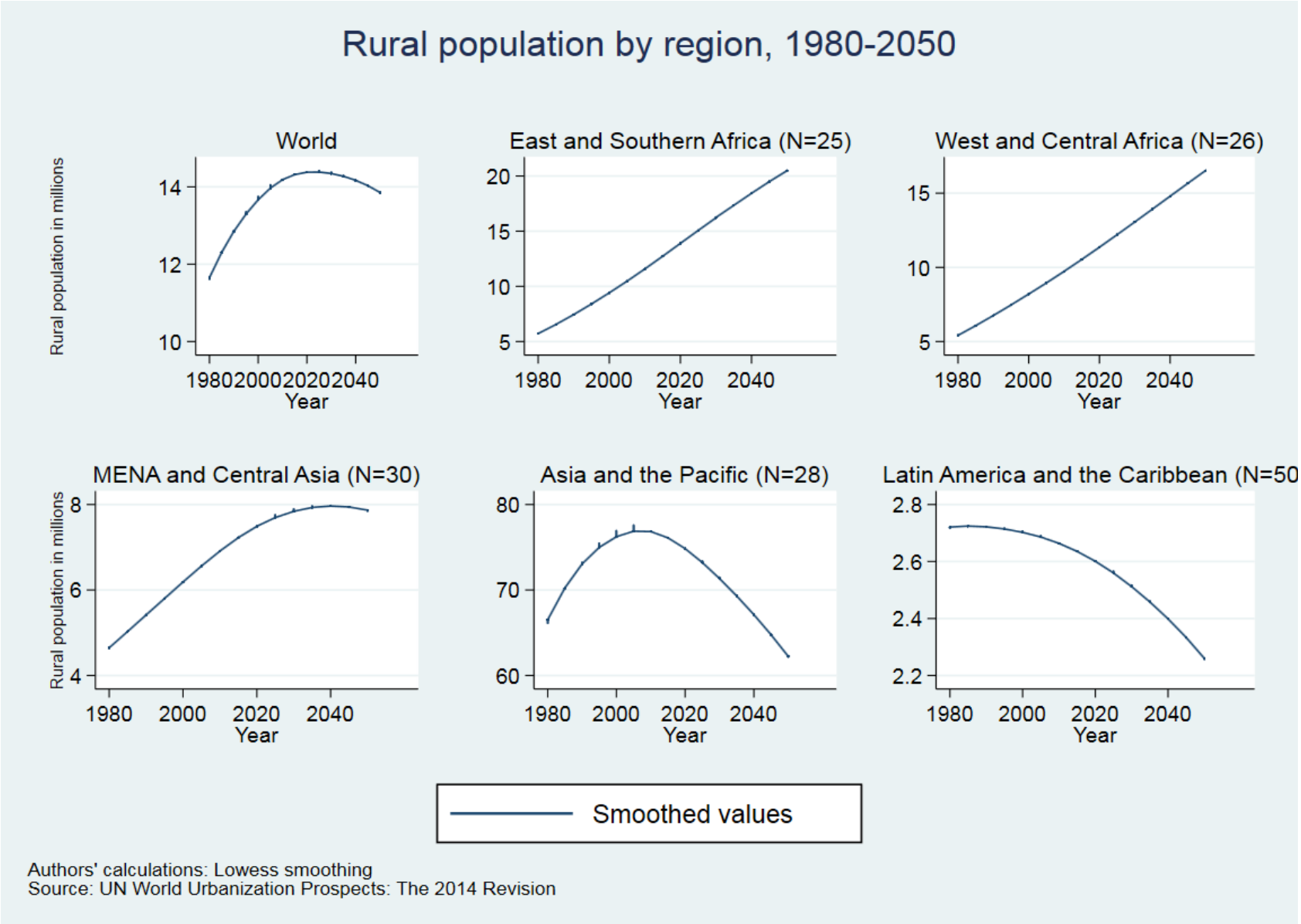
Data

- Rural and urban population by age 1980-2015 (URPAS, UN)
- Total and rural population 2015-2050 (WUP, UN)
- Total population by age 2015-2050 (WPP, UN)
- Life expectancy at birth, total (in years) (World Development Indicators (WDI), World Bank)
- Agricultural productivity (value added per worker, RDR IFAD 2016)

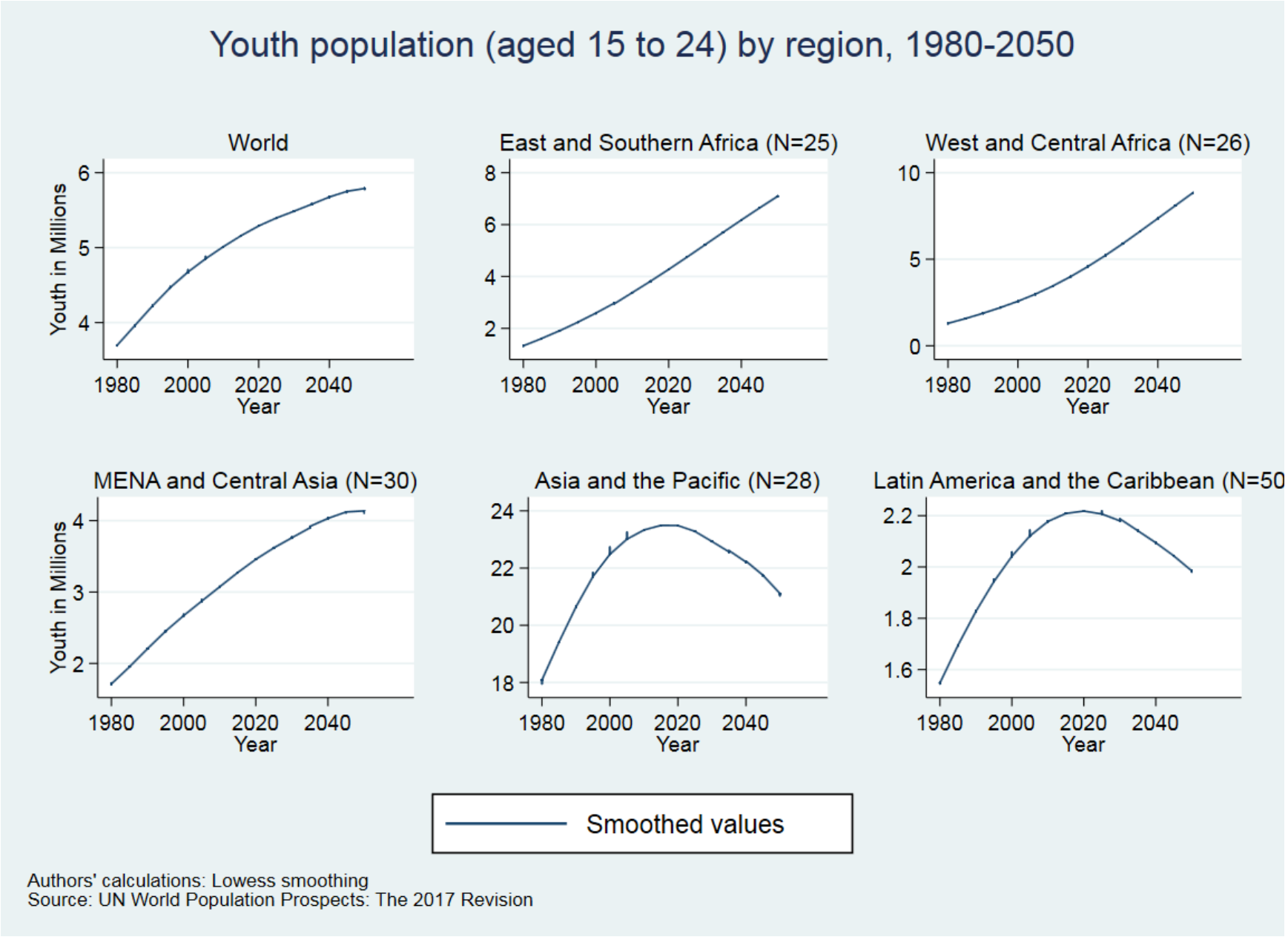
Country groupings

- By region:
  - East and Central Africa (ECA) (N=25)
  - West and Southern Africa (WSA) (N=26)
  - Northern Africa, Middle East and Central Asia (MENACA) (N=30)
  - Asia and the Pacific (APR) (N=28)
  - Latin America and the Caribbean (N=48)
  - *North America and Europe (NAEU) (N=54)*
  - *Oceania, Australia, New Zealand (OC) (N=21)*

Rural transformation pathways and demographic structures



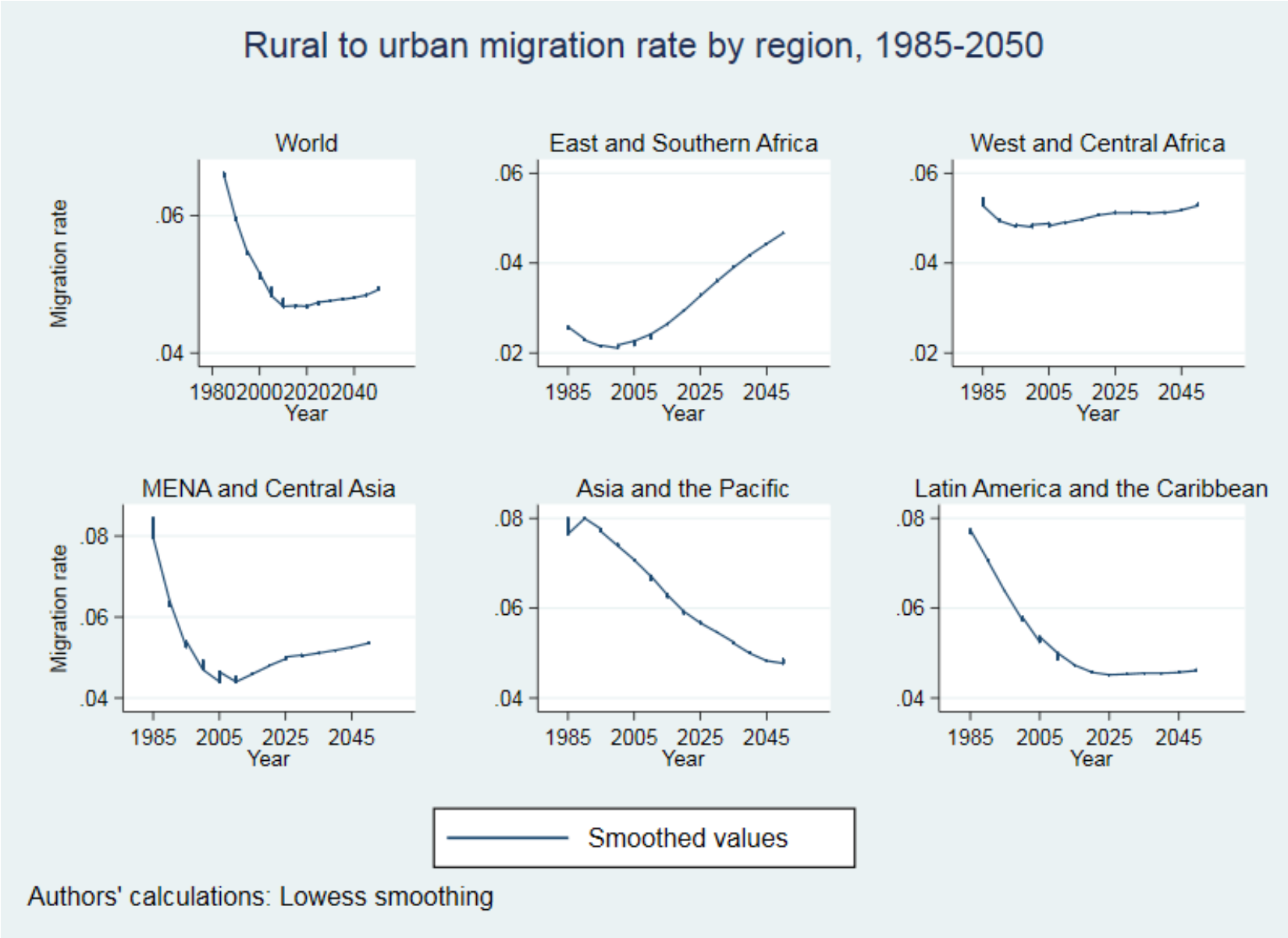
Rural transformation pathways and demographic structures



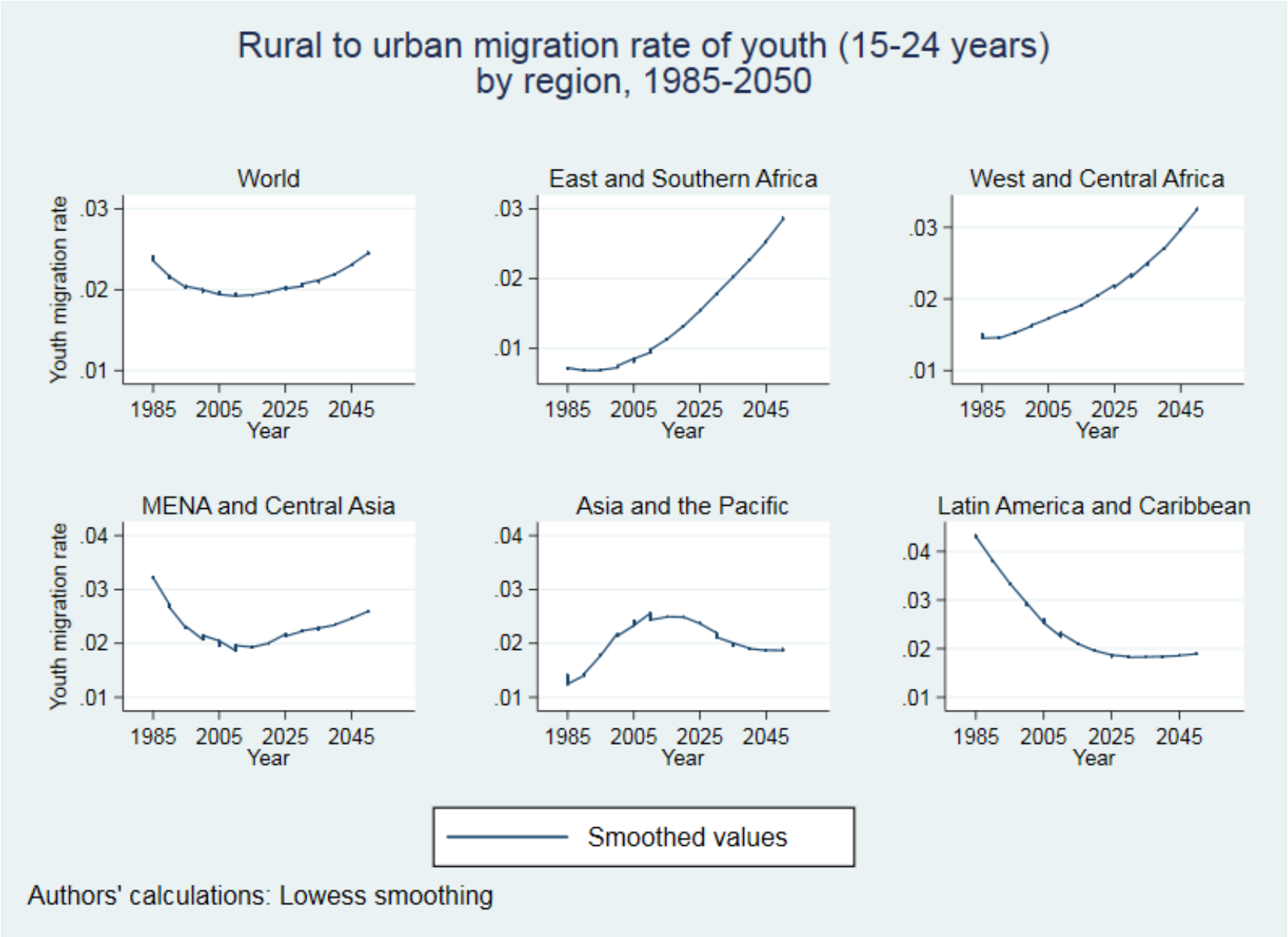
Methodology to project rural-urban migration rates: Survival ratio method

- $SR_{t+5} = (Pop_{t+5} - Pop_t)/Pop_t$
- Net migrants = difference between predicted rural survivors and actual rural population
- Youth migrants:
  - compute cohort survival
  - adjust for fertility transition stage
  - Predict youth migrant share with linear regression
- Assumptions / shortcomings:
  - Rural mortality above urban mortality
  - No international migration from rural areas
  - Urban re-classification

Rural-urban migration trends



Rural-urban migration trends of youth

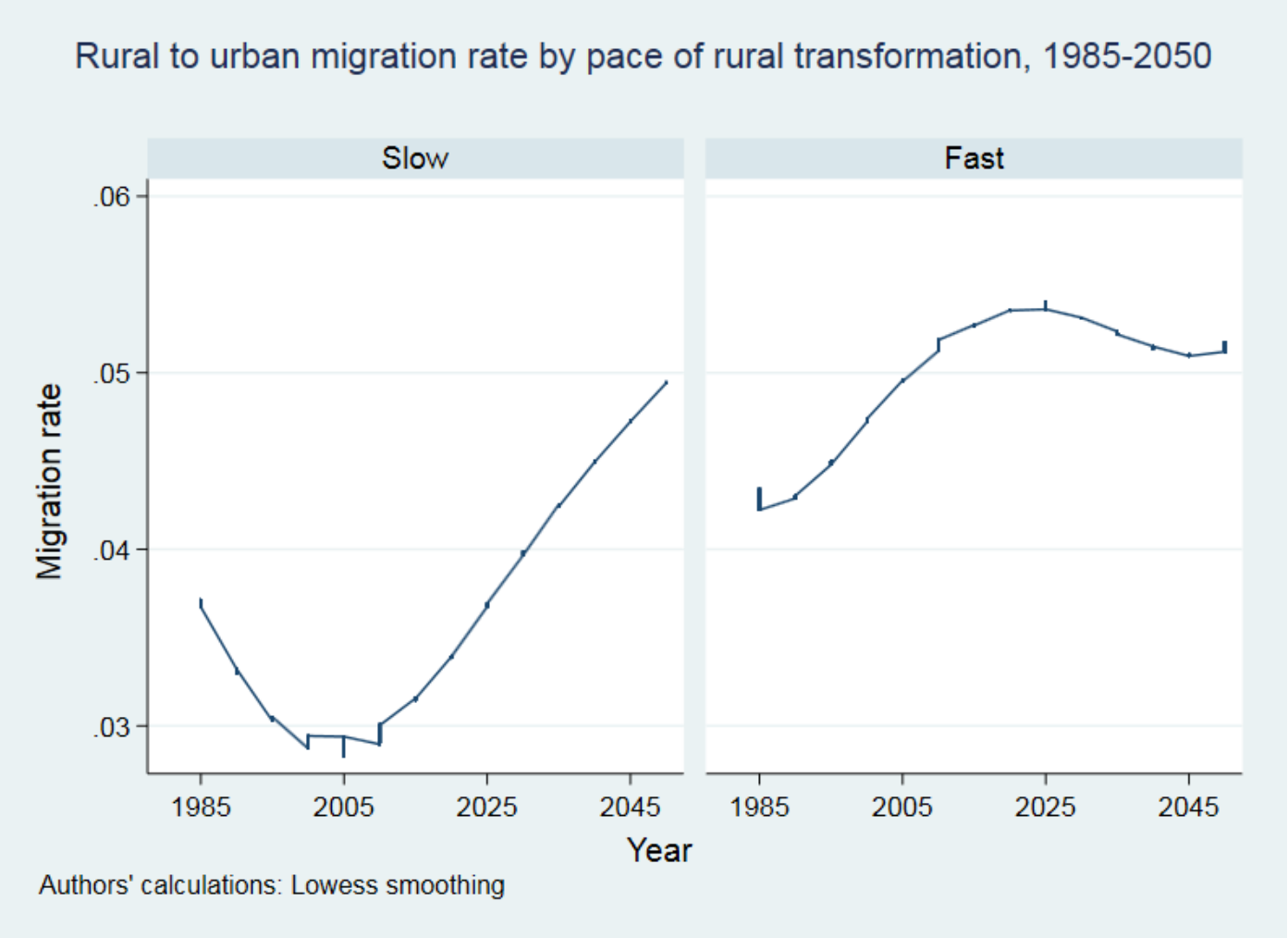


Evidence on changing AFS

- Lack of globally comparable data to measure AFS
- Regional evidence:
  - Proximity to cities associated with higher agricultural production in Ethiopia (Vandercasteelen and Swinnen 2016)
  - If agro-processing sector is larger, faster agricultural GDP growth expected under a scenario of increased urbanization in Uganda → poverty reduction (Dorosh and Thurlow 2012)
  - Farming share of employment in African countries expected to decline , AFS non-farm sector rapidly growing, but small share of total employment (Kwame Yeboah and Jayne 2017, Tschirley et al. 2015)

Rural transformation and migration trends

Rural transformation speed: Fast if average annual growth rate of agricultural productivity was above regional average based on 1990-2014 data (Value added per worker) (RDR IFAD 2016)



Summary graph

Note: Thickness of lines represents number of countries in connected categories. Graph created using http://rawgraphs.io

Climate change, migration and AFS

- Evidence for impact of CC on migration:
  - Increased temperatures in middle-income countries significantly increase international and rural-urban migration, more pronounced in agriculture dependent countries
- Impact of CC on AFS:
  - Small and mid-sized cities are found to be most vulnerable to extreme events
  - Potential to offer alternatives for rural farmers who are affected by slow-onset changes
- Rural areas in Africa expected to suffer from combination of reduced crop productivity and increased variability → implications for (youth) migration?

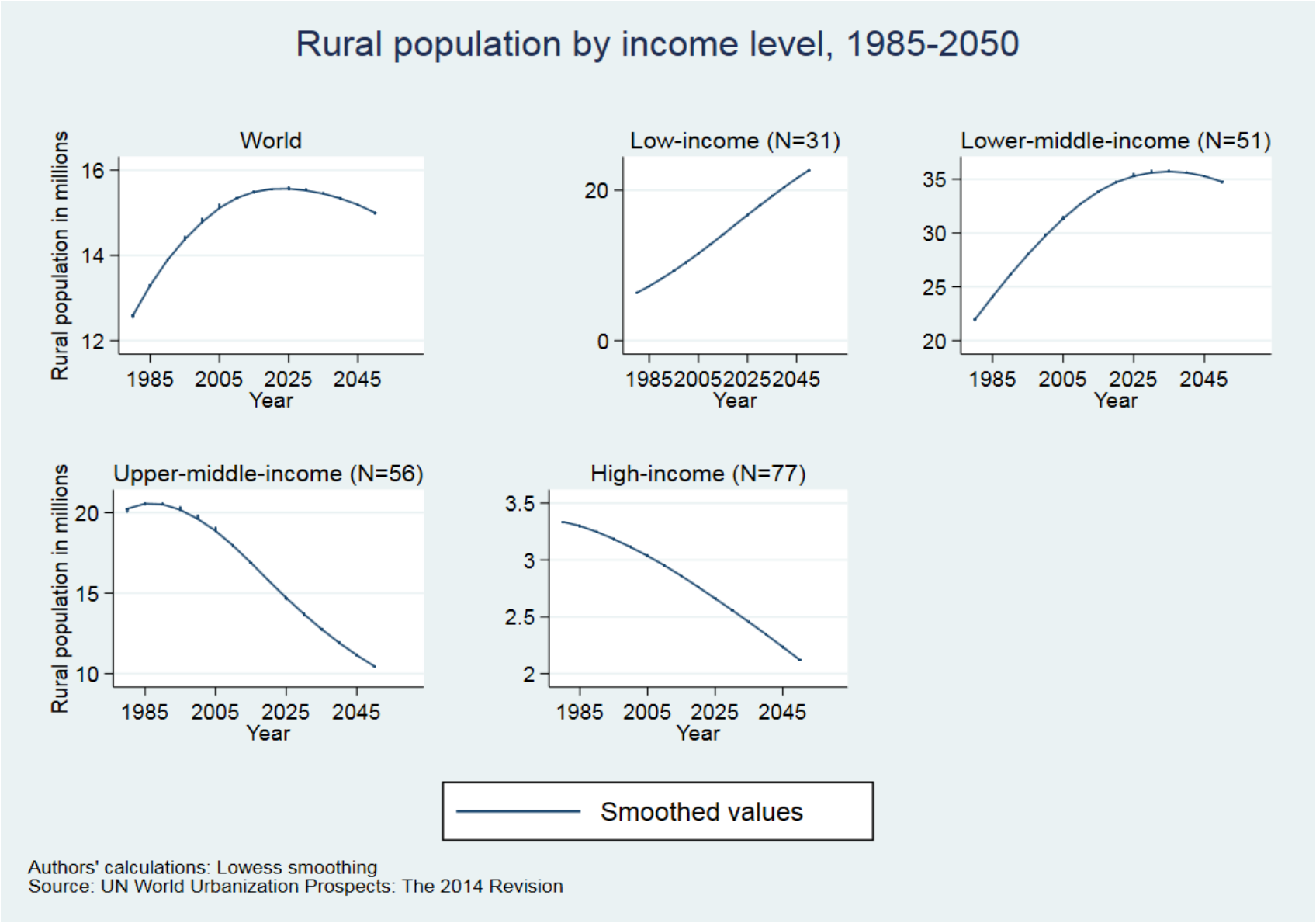
Conclusion

- Expected increase in rural-urban migration rate in Africa while other regions show declining or steady migration rates

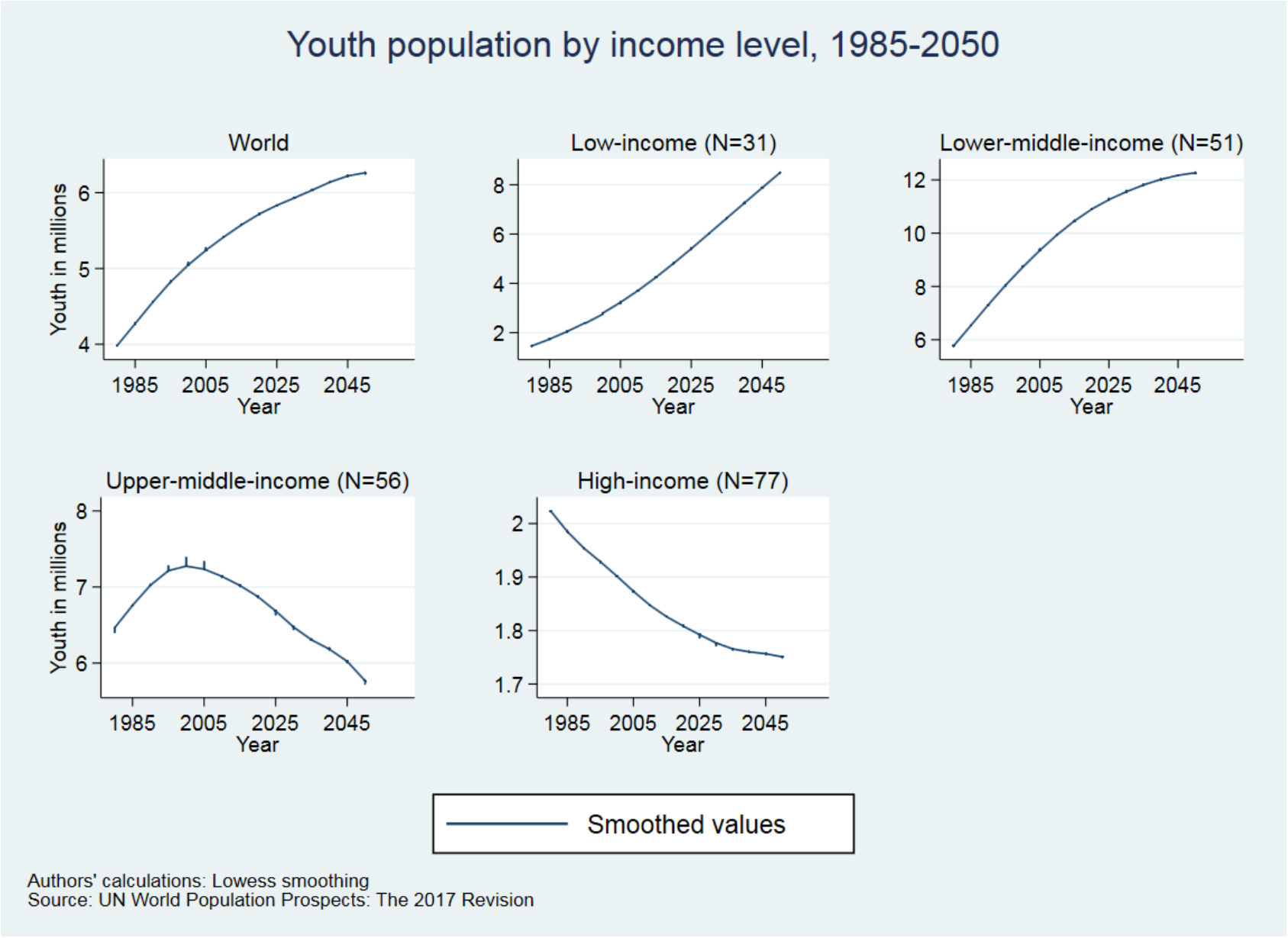
  → migration is not disappearing, pattern of convergence
- Climate change impacts on rural livelihoods can trigger migration, but changing AFS yield opportunities to strengthen resilience.
- Rural-urban migration is part of the rural transformation process and it remains the challenge for public and private investors to shape this transformation.
- Gaps:
  - Seasonal migration – a blank page
  - Re-classification of rural to urban areas
  - Impacts of climate change on migration especially youth

Appendix

Rural transformation pathways and demographic structures



Rural transformation pathways and demographic structures



Methodology to project rural-urban migration rates: Survival ratio method

SR: survival ratio, t: time period, Pop: population, r: rural,

Mig: number of migrants, ^: estimated/predicted value

X=rural SR adjusted for mortality diff

$$SR_{t+5} = (Pop_{t+5} - Pop_t)/Pop_t \qquad (1)$$

$$SR^r_{t+5} = X * SR_{t+5} \qquad (2)$$

$$\widehat{Pop}^r_{t+5} = SR^r_{t+5} * Pop^r_t \qquad (3)$$

$$Mig^r_{t+5} = \widehat{Pop}^r_{t+5} - Pop^r_{t+5} \qquad (4)$$

$$MR^r_{t+5} = Mig^r_{t+5}/Pop^r_t \qquad (5)$$

Methodology – Youth migration rates

a: age group

$$SR_{a+5,t+5} = \left(Pop_{a+5,t+5} - Pop_{a,t}\right)/Pop_{a,t} \quad (6)$$

$$\widehat{Pop}^{r}_{a+5,t+5} = SR^{r}_{a+5,t+5} * Pop^{r}_{a,t} \quad (7)$$

$$sM^{r}_{a,t} = Mig^{r}_{a,t}/Mig^{r}_{t} \quad \text{for t=1985-2015} \quad (8)$$

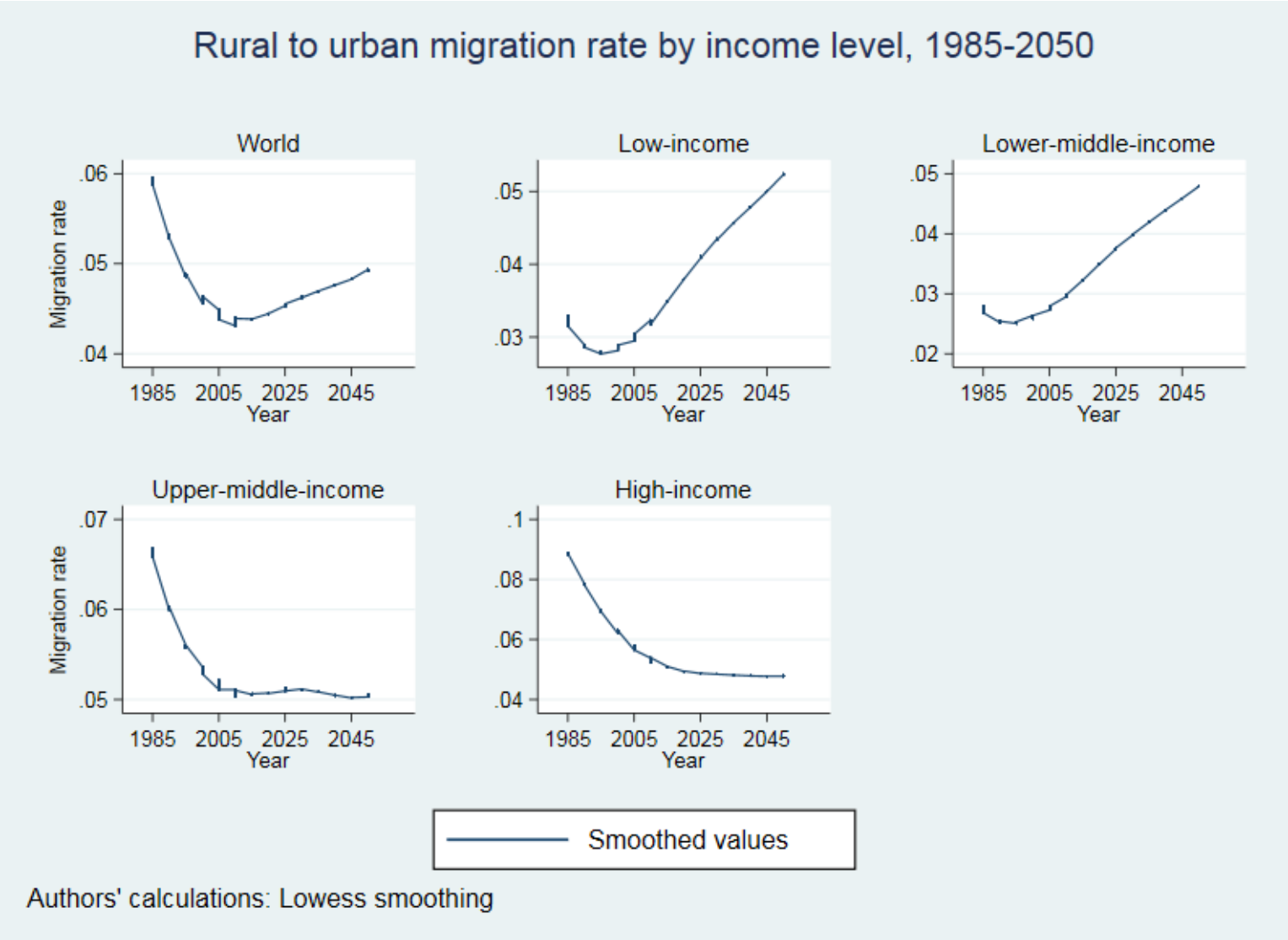
Regress: $sM^{r}_{a,t} = \alpha + \beta t + \varepsilon$ (9)

by stage of fertility transition, predict $\widehat{sM^{r}_{a,t}}$ for t=2020-2050 and then

compute $Mig^{r}_{a,t} = \widehat{sM^{r}_{a,t}} * Mig^{r}_{t}$

$$MR^{r}_{a+5,t+5} = \widehat{Mig}^{r}_{a+5,t+5}/Pop^{r}_{t} \quad (10)$$

Rural-urban migration trends



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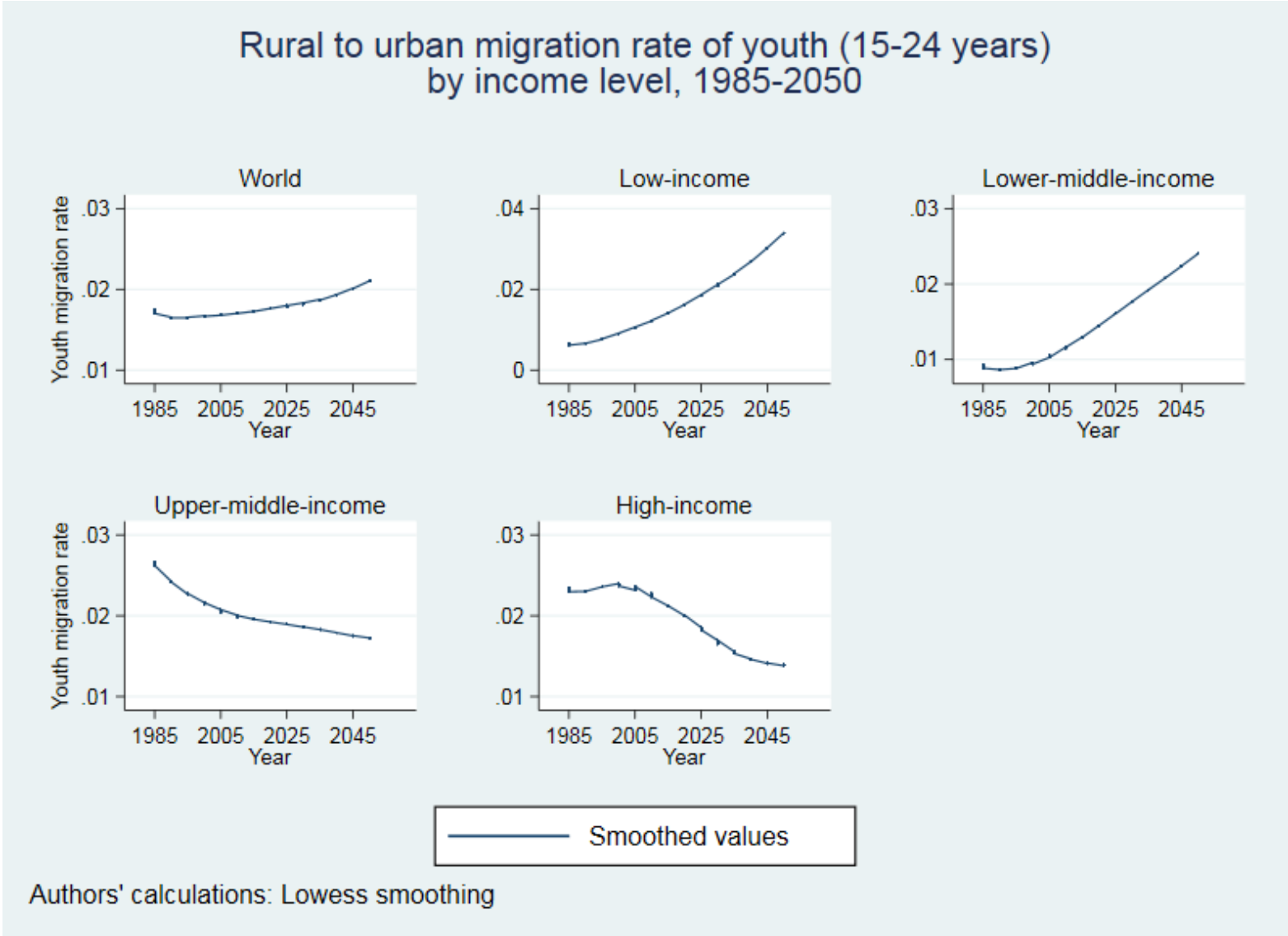

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