Ultra-Low Fertility in South Korea: The Role of Tempo Effect

Sam Hyun Yoo\(^1\) and Tomáš Sobotka\(^2,3\)

\(^1\) International Institute of Applied Systems Analysis, \(^2\) Wittgenstein Centre (IIASA, VID/OAW, WU), and \(^3\) Vienna Institute of Demography of the Austrian Academy of Sciences

Contact: yoosam@iiasa.ac.at

Background

- Sustained ultra-low fertility in advanced economies of East Asia: Hong Kong, Japan, Taiwan, and South Korea
- In Europe, the shift of childbearing to later ages driving the fall of the period total fertility rates (TFRs) below 1.4 in many countries in the 1990s
- Little is known about the extent to which delayed childbearing depresses period TFRs in East Asia

Context: South Korea

- One of the lowest TFRs in the world: 1.24 in 2015
- Rapid fertility transition, TFR falling around 6.0 in 1960 to sub-replacement level in 1983, and then to the “lowest-low” level below 1.3 since 2001
- Delayed childbearing since the early 1980s: women’s mean age at first birth increased from 25 in 1981 to 31 in 2014
- A universal marriage pattern remains until recently while non-marital births are still rare
- Shifts in policy: Government abolished the long-lasting anti-natalist policy in 1996 and has launched a set of pro-natalist policies since 2006
- Discussion on the role of tempo effect in fertility decline is largely missing

Research Questions

- Has the period TFR in South Korea been depressed by tempo effect?
- If so, how much of the decline in the period TFR is attributable to tempo effect?

Data

- We combine two different sources:
- We construct order-specific period fertility tables based on the 1985 census, and then update these tables with age-and-order-specific fertility rates forward until 2014 and also backward to 1981

Result 1: Tempo Effect in Fertility

Period fertility measures and mean age at first birth

Result 2: Decomposition Analysis

Change in the period TFRs for all birth orders

Methods

- Period fertility measures
- The conventional TFR: \( \text{TFR}_{(0)} = \sum \text{TFR}_{i(0)} \)
- Tempo-adjusted TFR (TFR*) suggested by Bongaarts and Feeney (1998)
  - \( \text{TFR}_{(i)} = \sum \text{TFR}_{i(0)}(1 - \gamma_{(i)}) \)
- Tempo-and-parity-adjusted TFR (TFRp*) suggested by Bongaarts and Sobotka (2012)
  - \( \text{TFRP}_{(i)} = \sum \text{TFRP}_{i(0)}(1 - \gamma_{(i)}) \) = \[1 - \exp\left(-\frac{\text{Tempo effect}}{\text{Tempo-and-parity adjustment}}\right)\]
- Measuring tempo and parity composition distortions
  - Tempo effect = TFRP_{(i)} − TFR_{(i)}
- Decomposition analysis
  - \( \text{TFR}_{(i)(t)} - \text{TFR}_{(i)(t-1)} = \frac{\text{TFR}_{(i)(t)}}{\text{TFR}_{(i)(t-1)}} - 1\)
  - Quantum change and Tempo effect

Conclusions

- The period TFR in Korea has been negatively affected by tempo effect since the early 1980s
- Tempo effect was the main force pushing the TFR to the “ultra-low” levels below 1.3 since the early 2000s.
- Tempo-and-parity-adjusted TFR (TFRp*) shows more gradual, but continuous decline, for the first time to a 1.5 threshold in 2013.
- Three distinct phases of the period TFR decline:
  - 1981-1991: Quantum-driven; falling 3rd and higher-order fertility rates (TFRp*)
  - 1991-2001: Strong tempo effect (1st + 2nd births)
  - 2001-2013: Quantum-driven; gradual decline in 1st order fertility rates & faster decline in 2nd order fertility rates
- If the current trend continues, Korean fertility would recover only slightly and would stay very low (TFR below 1.5) even once the postponement of childbearing comes to an end.

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\(^*\) = \begin{align*} 
\text{TFR}_{(i)(t)} & = \sum \text{TFR}_{i(0)}(1 - \gamma_{(i)}) \\
\text{TFRP}_{(i)} & = \sum \text{TFRP}_{i(0)}(1 - \gamma_{(i)}) \\
\gamma_{(i)} & = \frac{\text{Tempo effect}}{\text{Tempo-and-parity adjustment}} \\
\end{align*}