

Simulations to find out the influence of parity composition change of the Hungarian female population on the value of total fertility rate

Éva Berde – Petra Németh

Corvinus University of Budapest, Demography and Economics Research Centre

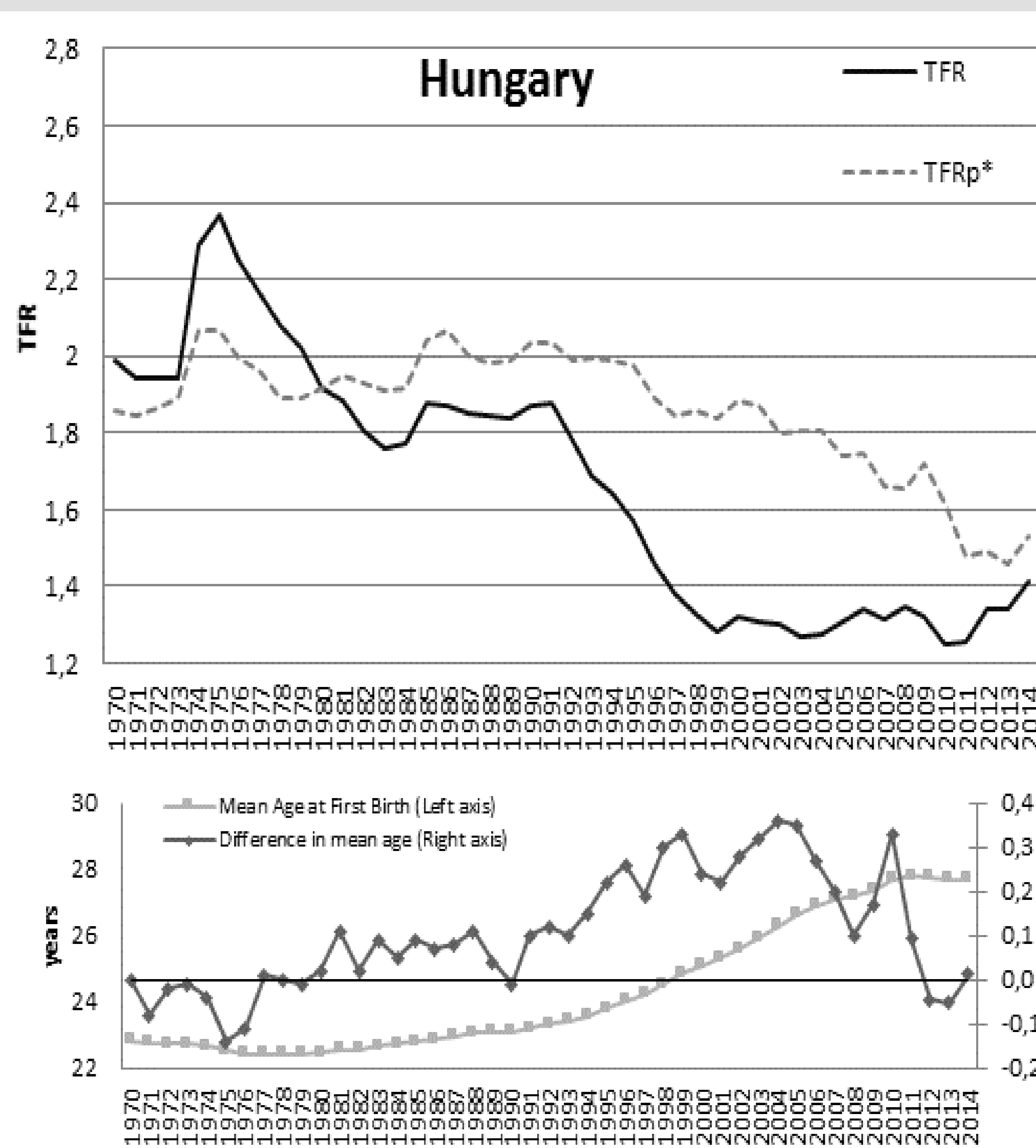
Total Fertility Rate (TFR)

Kuczynski (1932) pioneered a new approach in measuring the human reproduction → Still no better approach, only some corrections.

Female population structure in the year of observation and in the following years may differ, in that cases TFR has to be corrected.

Cause of the biases	Correction	Main literature
Postponement of child birth - Ryder (1956).	Using Mean Age at Birth for correction	Bongaarts – Feeney [2004; 2006]; Kohler – Ortega [2002]; Yamaguchi – Beppu. [2004]:
Outside push (e.g. migration, emigration)	Recalculation of TFR	???
Other structural changes (e.g. the childlessness ratio, willingness to have 3 or more children, number of young women, etc.)	Taking into consideration the possible trend	???

The postponement effect has probably almost disappeared:



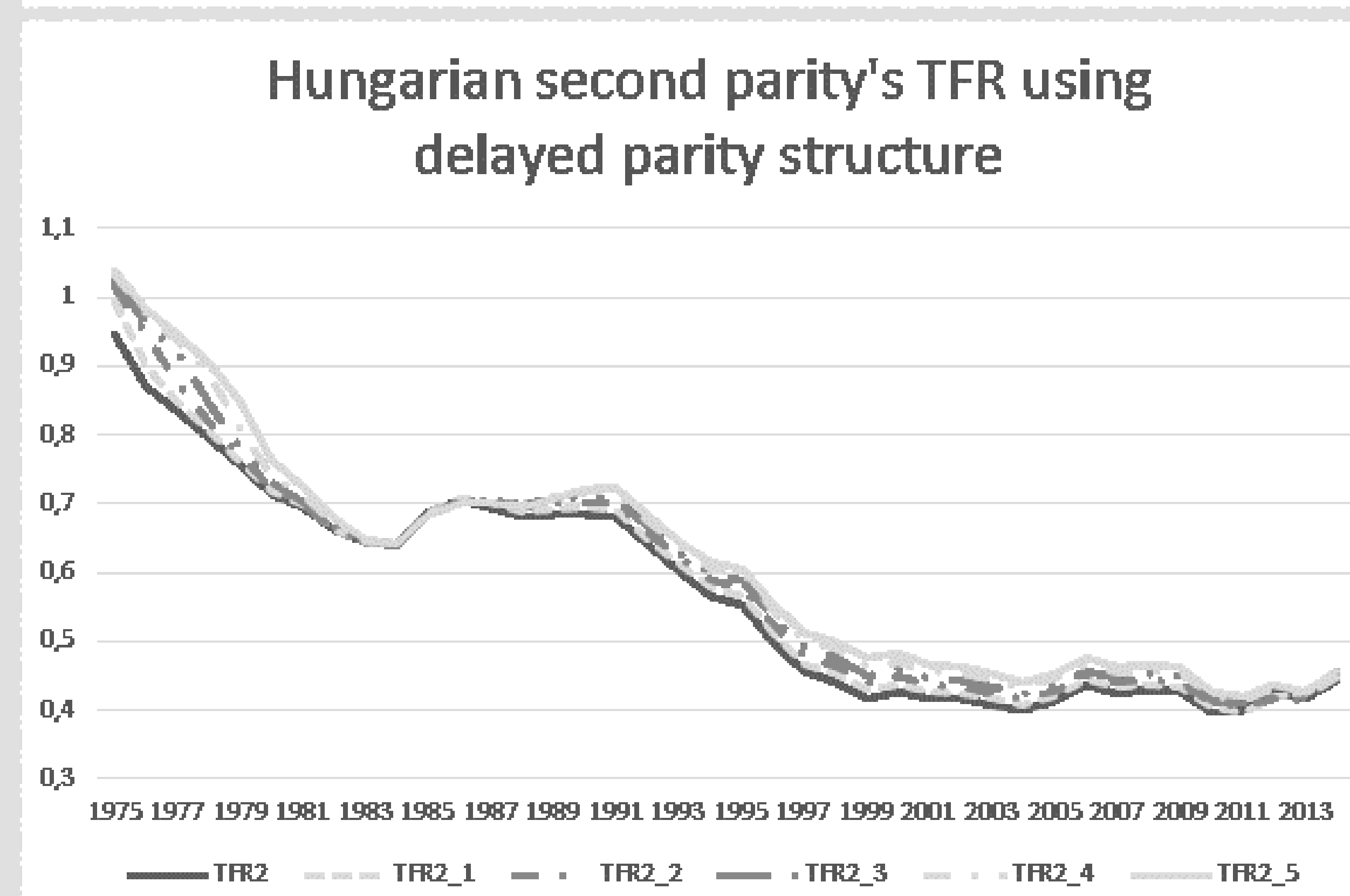
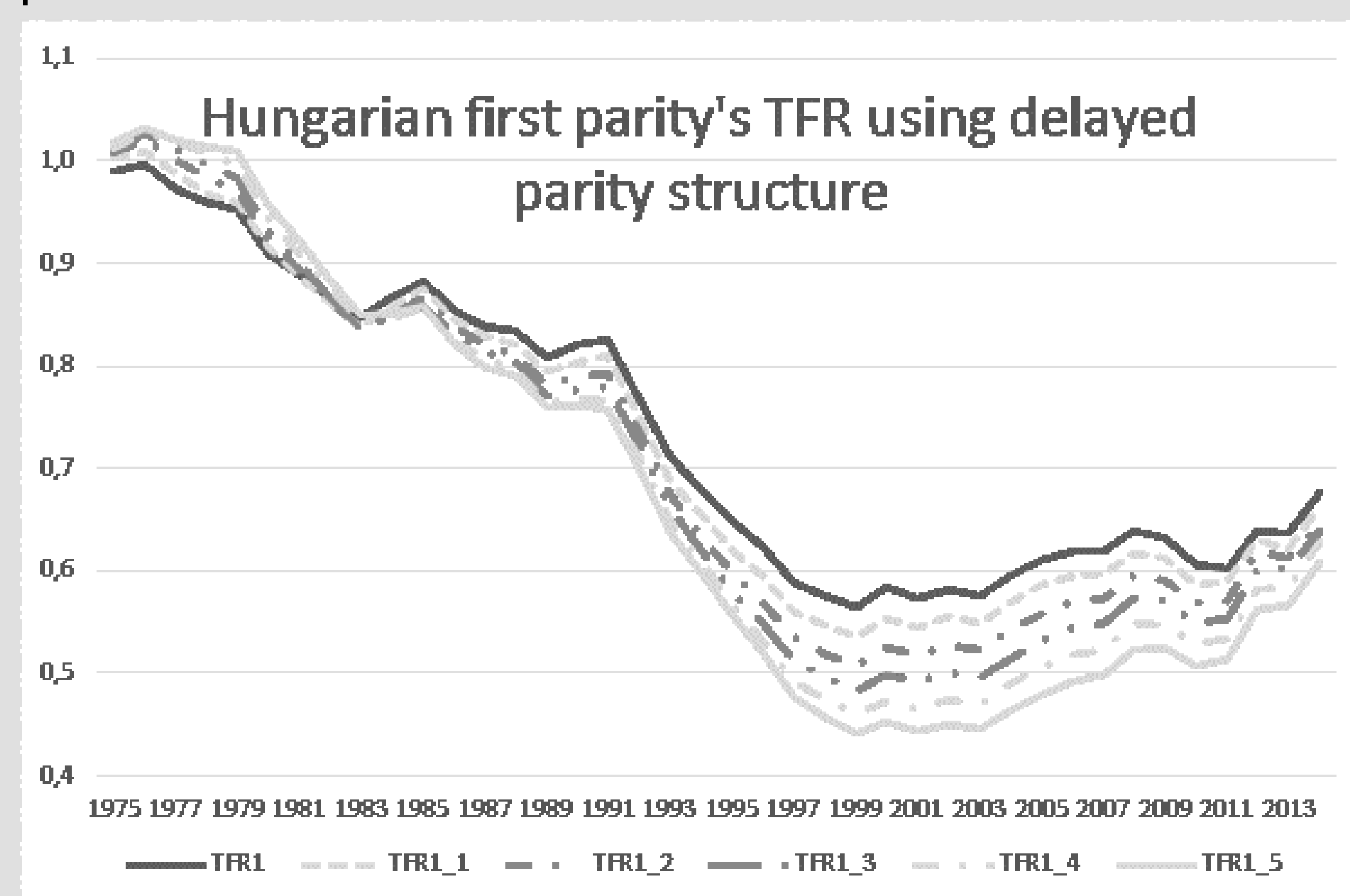
Go back to TFR

For the i^{th} parity:

$$TFR_i(t) = \sum_a \left[\frac{B_i(a, t)}{E_{i-1}(a, t)} \frac{E_{i-1}(a, t)}{E(a, t)} \right] = \sum_a [m_i(a, t)p_i(a, t)]$$

Ortega and Kohler (2002) (Equation No. 1)

Using lagged parity structure and taking the sum of the products:



Leaning on the factors of the total product, on $m_i(a, t)$ and on $p_i(a, t)$ special simulations could be conducted:

- Locking the real (or hypothesized) values of $m_i(a, t)$ (conditional probability) the results of changes in $p_i(a, t)$ (parity structure) could be traced in the TFR values.
- Locking the real (or hypothesized) values of $p_i(a, t)$ the results of changes in $m_i(a, t)$ could be traced in the TFR.

In case ii. we found much larger decrease in the Hungarian TFR than other forecasts described. Taking into consideration the diminishing female population as well, it suggests that woman will give birth to less and less newborns in the future 10-20 years.

References

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