FERTILITY

COHORT FERTILITY IN BULGARIA: DYNAMICS AND MAJOR CHARACTERISTICS

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Abstract: *The present study aims at analyzing the changes in the cohort fertility models and the dynamics of their major characteristics. The analysis spans 40 generations of women born in the period 1930-1970 and having completed their reproductive cycle as well as generations still in fertile age as of the study completion date. The study used data on the cohort fertility in Bulgaria until 2009 available from the Human Fertility Database and subsequently new data on the completed and cumulative cohort fertility at age 40 was calculated. For this purpose, the distributions of women by generation, age and parity were reconstructed for the period 2009-2019 and their age-specific cohort fertility rates were calculated: both total and according to the rank of the children born.*

The dynamics of the completed cohort fertility indicators shows a clear trend towards a decrease in the fertility of the generations of women considered. The process of declining of second rank births began among the generations of the 1950s while in first-rank births, albeit less, the decline began among the generations of the 1960s. The most noticeable is the change in the age specific fertility patterns of first and second rank observed in the generations of the 1970s when the process of births postponement is assumed to have been starting. The births of younger fertile ages decrease and the births of the higher ages increased and were especially visible in the generations of women born in the mid-1970s showing a process of recovery of some of the postponed births for those generations of women.

Keywords: cohort fertility; age-specific fertility rate; low fertility; parity.

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INTRODUCTION

At the beginning of the 21st century, three quarters of the European population live in countries featuring a birth rate below the level needed for simple reproduction, irrespectively of whether period or measures concerning cohort fertility rate are studied. A number of European countries have been undergoing a transformation of the birth rate, characterised by a clear shift in births to higher fertile ages for women. The tendency to postpone births contributes significantly to the decline and fluctuations in the period birth rate levels. The transition toward birth postponing is a process advancing throughout a long period of time, in fact involving many cohorts and therefore the cohort approach seems both important and necessary while studying the long-term changes in fertility over the last few years. To better understand the changes in fertility and to what extent the trends observed are both long-term and predictable, it is of utter importance these to be studied longitudinally, i.e., from a cohort perspective. The reality is that the fertile model of one generation of women is formed by the indicators by age in the relevant cross sectional periods, which vary in their sets and dynamics, in their direction and impact caused by multiple socio-economic, political and other phenomena, processes and factors. Studying the processes from a cohort perspective is hardly ever fallen back to as there are multiple restrictions of informational nature: cohort studying would require the ensuring of many detailed and specific data covering too long time periods (where one cohort would span over 30 years). The actual fertility of a given generation might be observed only when this generation has ended its reproductive cycle, i.e., when the accepted upper fertility limit among women has been reached, i.e., the age of 49[1]. Bulgaria suffers lack of studies of fertility taken from a longitudinal perspective because of some informational obstacles in tracking the fertility history of the generations of women, which are the subject of such a study. Restoration and construction of the necessary indicators of the actual cohort fertility rate is a labour-intensive process requiring ready available data that needs to be processed spanning over an almost 35-year long period covering all fertile ages for each generation of women.

This analysis identifies the differences and examines the changes observed in the cohort fertility rate to do with the transition to childbirth postponing, which may affect generations in many ways, especially the generations born in the 1960s, 1970s and in the early 1980s. The purpose of this study is to analyse the changes produced in the models of cohort fertility rate and to give a picture of the dynamics of their key characteristics. The analysis encompasses those generations of women who have ended their full reproductive cycle as well as the generations of women who are still in their reproductive age. The 1970-born generation of women abandoned their fertile age in 2019. Forty generations of women with completed fertility are being studied, for whom the necessary data can be provided - the cohorts from 1930 to 1970. The study also covers the generations of women born in the period 1970–2006 who are still of fertile age. Fertility regimes have been studied in order to identify fertility trends in a cohort

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[1] Calculations show that over 90% of births are generated by women aged 40 and therefore it is acceptable to consider this limit as the upper limit for the completed cohort fertility rate.

perspective, to make comparisons and to draw conclusions and summaries about the changes that have taken place. Age indicators for the cohort fertility rate have been calculated, concerning both the quantitative aspect of the fertility and the changes in the age model of the observed generations of women. All calculations were performed for all births as well as separately for births of varying parities, which is especially important for understanding the changes in fertility patterns in different generations of women. To facilitate the interpretation of the huge amount of data[2], the groups of women in question were grouped into groups of 10 generations: conditionally perceived as generations from the 1930s, 1940s, 1950s, 1960s and 1970s. The processing of such a volume of data is necessary in the analysis to outline the fertile model of various generations. According to the accepted thesis of the present study, there are significant differences in the cohort fertility of the studied generations. Some of these changes are the beginning and unfolding of the transition towards childbirth postponing.

The study used data on the cohort fertility of women born from 1930 to 1959 in Bulgaria from the HFD database[3]. The time series have been supplemented for the period 2009–2019 according to the availability and accessibility of the necessary input information. To achieve the objectives of the present study in separate stages, the methodology used to construct the above-mentioned database has been modified and adapted. What is needed to restore the actual fertile history of the cohort of women born after 1959 is information on how those women are distributed by generations, one-year-step ages and number of children for each calendar year. Such information could be retrieved using some additional processing of data from the 2011 census and data from the current population statistics applying the method of construction of the so-called multi-status transitions in the years after the census, for the period ending in 2018, inclusive. Based on that method, a calculation was made of how women were distributed by the respective attributes in 2010, to add it to the data time series. Moreover, such multi-status transitions accounts for mortality of women at a certain age having the respective number of children while such women advance into the subsequent age in the next calendar year. In one calendar year, a maximum of one transition is presumed possible to be made, i.e. either one confinement or the occurrence of the event called death. This model does not take into consideration population's migration movements, which over the period upon 2011, according to NSI data, reduce their intensity versus the period between the 2001 and 2011 censuses, however they continue to be an essential factor for the changing age structure of this country's population and, more specifically in this case, cause some deep impacts on the distribution of women in fertile age. Therefore, the data retrieved should be construed quite carefully, and upon the 2021 census, data should be recalculated taking into consideration the edited information on population and deducing the indirectly calculated net migration for the period[4].

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[2] The results of the calculations are presented only in graphical form, due to the limited volume of this work.

[3] Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [03.03.2020]).

[4] Detailed information on what work has been done on methodology and construction of the database used in this study makes part of a larger project, the results of work under which will be published additionally upon its conclusion.