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COHORT FERTILITY PATTERNS IN POLAND BASED ON THE STAGING PROCESSES

EXTENDED ABSTRACT

The objective of the presented paper is the analysis on female fertility patterns in generations 1931-1986 in Poland based on stochastic fertility tables determined for five-year age groups compiled on the basis of the CSO data.

Fertility tables are the tool for the analysis on the changes in the fertility level and pace. They may be compiled for real cohorts, as well as the hypothetical ones. Fertility tables originate from traditional life tables which had come to demography straight from insurance statistics. The abundant review on methodology and history of the tables construction may be found in many works [Chiang, 1980, 1984; Chiang, Berg, 1982; Cigno, 1994; Namboodiri, 1991; Namboodiri, Suchindran, 1987; Frątczak, 1996].

Life tables are one of the oldest tools used in demographic analyses. If the processes are to be analysed with the use of life tables they must meet particular conditions: the events generating processes are localized in time and defined unambiguously, there is known the input population and the units entering and leaving it. The number of such processes is really high, e.g. economic activity processes (wider connected to the labour market), education processes, family/partnership formation and dissolving processes, processes of the clients' stay with the financial or insurance institutions, etc. Contemporary life tables are based on the probability theory, particularly the stochastic processes theory, thus they are referred to as stochastic ones. The selected events of the life cycle of an individual or family that are the subject of analyses (e.g. birth, death, marriage conclusion, having a child, migration) are perceived as the results of a particular stochastic process. The components of life tables are random variables, because the number and distribution of events are changing over time.

The survey range

The data comprising the base for the compilation of fertility tables come from the survey on "Female Fertility Survey" carried out with the National Census of Population and Housing conducted in Poland in 2002. The base for the survey, obtained from the Central Statistical Office, was prepared for the research project "Epidemiology of procreative threats in Poland – multi-centre, prospective cohort study"– through matching the information from the questionnaire D of the "Female fertility" with the selected results from the questionnaire A "National Census of Population and Housing 2002.[1]"

[1] Research project: Epidemiology of procreative threats in Poland – multi-centre, prospective cohort study/ Grant MNiSzW, decision No. K 140/P01/2007, Repro_PL, the Project Leader: Prof. dr hab. med. Wojciech

Estimation of fertility tables was carried out with the appliance of weights; therefore, the results may be generalized over the female population. The size of the sample used for the analysis on female fertility and cohort fertility in generations 1931-1986 comprised over 200 thousanda females. It allowed to generalize the results for the population Polish females in 2002[2].

The survey base in the presented paper consists of construction and analysis of stochastic fertility tables in five-year age groups for Poland. The stage probabilities for successive births were obtained on the basis of the available data with the use of the author's calculation program. They are presented in a graphic form and interpreted.

The survey method

The survey method derives from *stochastic demography*; the notion was introduced by Namboodiri [Namboodiri, 1991], and its roots may be found in probability theory. The analysis on random phenomena over time comes down to the analysis on random variables indexed with the parameter interpreted as time. Therefore, it is tantamount to the analysis on stochastic process. Detailed methodology is included in our paper.

The basic results and conclusion

Estimation of stochastic parameters of fertility tables was carried out with the use of the SAS system – the specially prepared author's program – preparing the software to the briefly presented in the text method of constructing tables.

According to the presented algorithm, there were determined stage probabilities for successive births in five-year age groups of women: 15-19 years , 20-24,…, 45-49 years and for five-year generations beginning from the oldest 1931-1915 to the youngest 1981-1986.
When analysing the presented values of stage probabilities by five-year age groups of women and five-year generations, we may observe for the majority of them an increase in the values of stage probabilities for the first and second births, and a drop in values for the births of further order; there is also observed a drop in the values of probabilities of staying childless, particularly when moving to the older age groups, which is a natural process. The highest changes in the values of staging probabilities concern the two last generations, i.e. 1971-1975 and 1976-1980, they are caused by the reaction to the socio-economic changes of the transition period.

The changes in real cohorts translated into the changes in fertility and cross-sectional fertility, which is manifested through the changes in the model of nuclear family in Poland. According to the estimation of the model of the family life tables in Poland (see Frątczak, Kozłowski 2005), in the pe-

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Hanke, the Nofer Institute of Occupational Medicine Łodź/. The period of the project implementation: the years 2007 – 2011.
Within the framework of the above Project, the Event History Analysis and Multilevel Analysis Unit, Institute of Statistics and Demography, Warsaw School of Economics has been carried out two research tasks:
Research action 1.1.1. Demographic and social determinants of low fertility and nuptiality in Poland (postponing procreation decisions – descriptive and model analyses). Past, current situation and perspectives.
Research action 1.1.2. Diagnosis on late fertility and nauptiality (postponing procreation decisions; plans and preferences) – prospective cohort surveys (quantitative and qualitative) on demographic, socio-economic and health-related determinants.
For the use of the Research Action 1.1.1 and the Team carrying out the action implementation, the necessary National Census 2002 data were obtained from the CSO z NSP.

[2] The detailed information concerning the construction of the data base, matching variables, generalization of the results, and the range of the carried out analysis on fecundity and fertility in Poland, the Reader may find in the works: E. Frątczak, A. Ptak-Chmielewska (ed.) Fertility in Poland – cohort analysis: birth cohorts 1911 – 1986. Volume I. Fertility in Poland – cohort analysis: birth cohorts 1911 – 1986. Volume I. SGH, Warszawa 2010; E. Frątczak, A. Ptak-Chmielewska (ed.) Fertility and nuptiality in Poland – cohort analysis: birth cohorts 1911 – 1986. Tom. II. Fertility and nuptiality in Poland – cohort analysis: birth cohorts 1911 – 1986. Volume II. WSE, Warsaw 2010.

riod of transition in Poland the model of nuclear family changed from the model with two children into the model with one child, with a high share of childless families in the overall structure.