

# FERTILITY BY MARITAL STATUS IN SLOVAKIA

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## Abstract

In Slovakia, similarly as in most countries, both fertility and nuptiality have been radically declined in recent decades. At the same time, the number of children born outside marriage has grown both in relative and absolute figures (from 7% in 1990 to 41.2% in 2022). Despite it, as the paper shows, the close link between marriage and fertility persists, at least in the framework of the Slovak population. Thus, the recent decrease in births can be explained by the decrease in nuptiality. Therefore, population losses caused by a decrease in fertility cannot be simply replaced by the increasing number of births out of wedlock (at least in the near future). Marriage (and marital status) remains an important factor of demographic development. The article offers an explanation for why the more children born out of wedlock, the fewer children born overall. The study is based on empirical data collected by the Statistical Office of the Slovak Republic. The results are consistent with investigations of other authors.

**Key words:** Slovakia, fertility, nuptiality, marital status, illegitimacy rate.

**JEL Code:** J12, J13.

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## Introduction

In Slovakia, similarly as in most of the developed countries of the world, both fertility and nuptiality has been radically decreased in the recent decades. Subsequently, the traditional link between the marriage and the childbearing was getting significantly weakened. These are typical features of the Second Demographic Transition (SDT, see e.g. Van de Kaa, 1987, van de Kaa, 1996, Sobotka, 2008).

The current population development in Slovakia has been described and analyzed from various perspectives by many authors (e.g. Mládek et al., 2006, Potančoková et al., 2008, Bleha et al., 2014, and others). As is known, radical changes began in Slovakia after political changes at 1989 (Fig. 1). As a rule, the greatest attention is drawn to the sharp decline in fertility. Various reasons for this drop are considered in the literature (e.g. Píscová, 2002, Pastor, 2003, Potančoková et al., 2008, Sobotka, 2008). Ideational changes, the spread of contraception, new opportunities, the level of education. The drastic economic shocks in 1990's certainly belong

among them, as well (Pastor, 2001). Since then, the number of children born has fallen sharply, but the number of births outside marriage has increased both in absolute and relative terms (from 7,6 % in 1990 to over 41% today). Therefore, it might seem that marriage as an institution has lost its importance for demography and population development. Opinions emerged that marriage is obsolete and unmarried women will ensure the reproduction of the population in the future.

However, a careful study of empirical data from Slovakia shows that this intuitive conclusion needs to be corrected. As can be seen from the paper, the close link between marriage and fertility persists, at least within the Slovak population. Thus, it cannot be expected that the population losses caused by the decline in total fertility will (at least in the near future) simply be replaced by the increasing number of births outside of marriage.

Several current demographic works examine the intensity and timing of partnership formation as determinants of fertility. Those that examine marriage directly are relatively rare. One of such exception is the work of Fukuda (2020) that shows marriage as a key factor of fertility in East Asian settings. The aim of this paper is to show that, despite many differences, a similar conclusion also applies to Slovakia.

The presented paper is based on empirical data collected by the Statistical Office of the Slovak Republic (ŠÚSR) over the past decades. To what extent its findings could be generalized on other populations, as well, remains an open question. Namely, the Human Fertility Database currently does not collect data about the marital status of mothers.

## **1 Trends, crude rates and correlations**

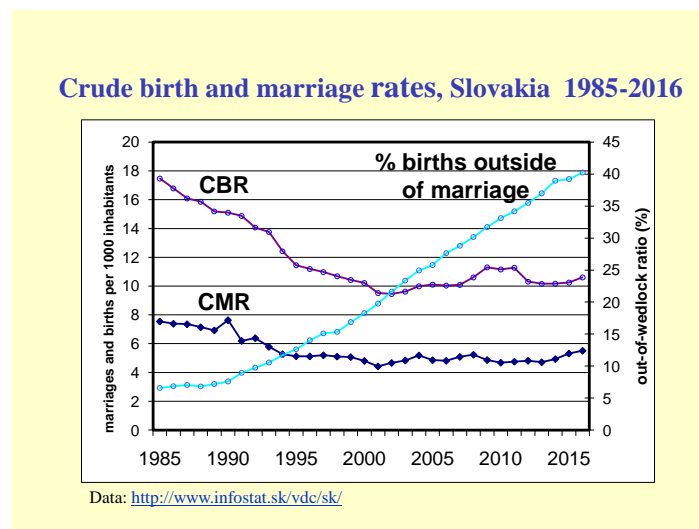
As the Fig.1 shows, time series of crude marriage and birth rates (CMR and CBR, respectively), have a similar shape. Their similarity is not surprising, family, marriage and children belong together. Also Slovak Family Act in Article 1 states, that “The main purpose of marriage is to start a family and raise children properly.” (Act No. 36 from 2005). For the period 1985 – 2016 the correlation between CBR and CMR is  $r = 0,945$ .

Two peculiarities are visible in Fig. 1. The first is a temporary increase in the number of marriages in 1990 as a reaction to the announced abolition of the state loan for newlyweds. Therefore, many couples who were planning a wedding in early 1991 rushed to get a loan. The second irregularity is in CBR around 2010. After Slovakia joined the EU in 2004, foreign migration for study and work increased significantly. However, according newly adopted

methodology used by Statistical Office, since 2012 the number of births does not include children born to Slovak mothers temporarily abroad.

A significant correlation between CMR and CBR also exists at the regional (NUT3) and district (NUT4) levels (e.g. in 2022 it was 0.66 and 0.58, respectively). The exceptions are the districts in southern Slovakia with high share of the Roma population with traditionally high fertility and cohabitation rate. See e.g. Potančoková et al. (2008).

**Fig. 1: Crude rates of marriage and birth rates and the illegitimacy rate in Slovakia**



Source: authors' calculations based on data from VDC

As Fig.1 shows, the lower CMR, the lower CBR and higher illegitimacy ratio (correlation is -0,88). Also, the higher the illegitimacy ratio is, the lower the CBR and CMR (correlation -0.75). By other words, decrease in marriages results to decrease of births and increase of extramarital births. Šprocha (2015) by using das Gupta's decomposition method has obtained similar results. However, this leads to a paradoxical conclusion: the more children are born outside of marriage, the fewer children are born overall. An explanation of this paradox will be given in Section 4.

## 2 Age patterns

Of course, crude rates are influenced by the structure of population, and therefore they are not very explanatory. But, as the data shows, the age specific fertility and marriage rates in each calendar year have also similar shape and important statistical indicators (average and modal age, variance) and their development (Konderlová D. and Pastor K., 2016). For this reason, they can be fitted by the same mathematical models with similar quality of fit. The initial estimates

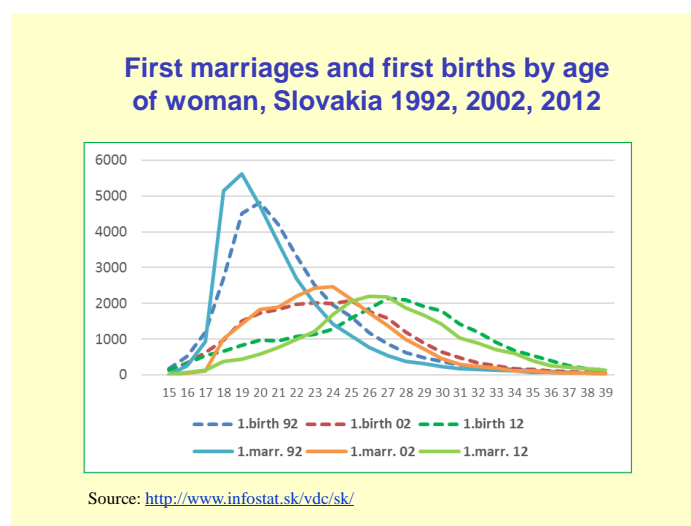
of parameters in these models can be obtained by the moment method, then they need to be improved e.g. by minimizing the SSE. For the earlier data (at the beginning of SDT and before) the best fit was achieved by the models with greater curvature (Jastremski, Gompertz, Coale-McNeil), for the latter years (at the end of SDT) the more symmetric models (Gamma) were more accurate. The most universal models from this point of view seem to be the Hadwiger and the very similar Lognormal model (Peristera, P., Kostaki, A., 2007). Investigating the time development of this data, the corresponding parameters have developed similarly.

These models allow us to predict future development. If the sample variance of observed data has a tendency slowly to decline, then the corresponding age patterns could stabilize themselves.

### 3 First marriage and first birth

The close connection between processes of nuptiality and fertility is particularly remarkable when we study the first marriage and the first birth by age of woman (see Fig2). The age patterns are not only similar, but they approximately coincide in absolute numbers, as well. In Slovakia, each year there is an average of one first birth per one first marriage. Of course, they are not necessarily the same women, and there is no telling which event came first. First births are usually preceded by first marriages (of course not always).

**Fig. 2: Age specific rates for first marriage (solid line) and first birth (dashed), Slovakia, selected years.**



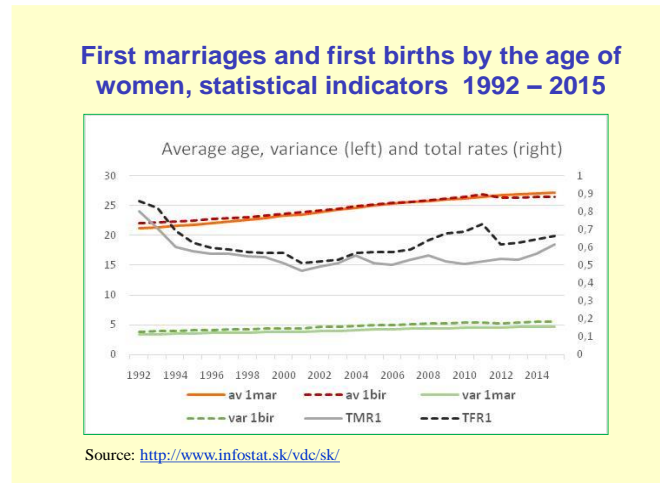
Source: authors' calculations based on data from VDC

According to a study (Polášek 2005) carried out in the Czech Republic at the turn of the millennium, about half of unmarried mothers will marry and give birth to other children up to

10 years, and a similar situation may also exist in Slovakia. Potančoková et.al. (2008) describe similar customs especially in segregated communities of Roma ethnic minority.

What is shown in Fig.2 for three selected years holds similarly, with small deviations, for other years as well. Corresponding statistical indicators are in Fig.3.

**Fig. 3: Statistical indicators for average age at first marriage (solid line) and first birth (dashed), Slovakia, 1992-2015.**



Source: authors' calculations based on data from VDC

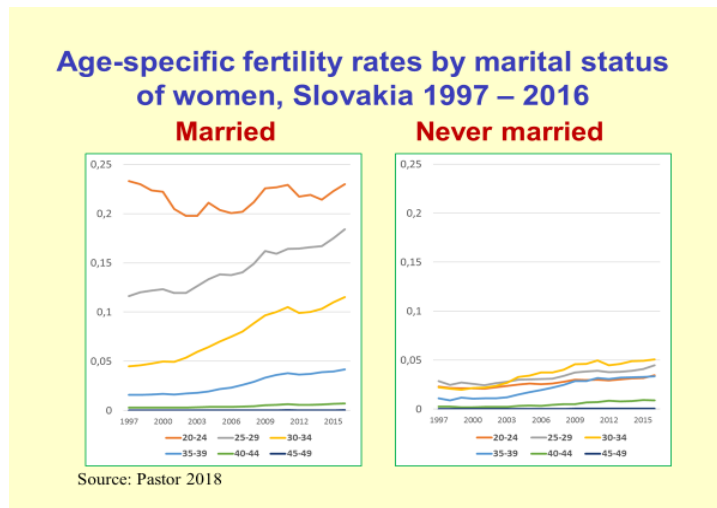
In the examined period, the average age of the first birth and at the first marriage of woman increased almost identically (Fig. 3). An increase in variance corresponds to an increase in the plurality of patterns of reproductive behavior. However, as the data show, unification of patterns has already begun. The development of corresponding total rates has analogical shape as the development of crude rates on Fig1.

#### 4 Fertility by marital status

The most considerable changes in fertility and nuptiality have occurred in Slovakia in the decade 1990 – 2000. Although age-specific fertility rates declined significantly in all relevant age groups for all women regardless of marital status, these fertility rates changed only slightly when married and unmarried women were examined separately (Fig.4) and later these rates even grew somewhat. The youngest age group 15-19 is not on this picture, because there are only few married women at this age, which could distort the analysis. Note also, that age specific fertility rates for married women are substantially larger than those for unmarried ones.

Similarly, according to (Potančoková et al., 2008), the completed fertility of never-married women in all educational groups is very low (around 0.5) except for women with primary education.

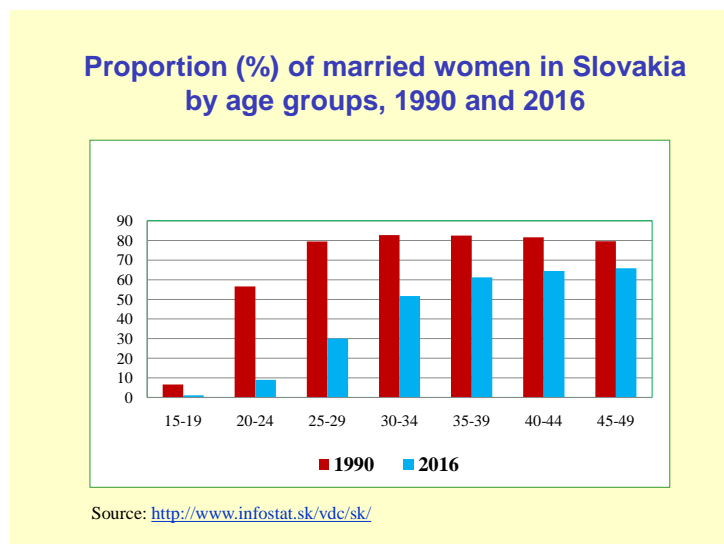
**Fig. 4: Age specific fertility rates by marital status, Slovakia, 1997-2016.**



Source: Pastor 2018

Thus, what has changed in the examined period is the share of married women of reproductive age, which is related to the postponement of starting a family (Fig.5). It can therefore be said that the decline in total fertility is primarily a consequence of the decline in nuptiality (Pastor, 2003).

**Fig. 5: Share of married women in Slovak woman population by age groups, years 1990 and 2016.**



Source: authors' calculations based on data from VDC

## Conclusion

Despite the fact that both the number and share of children born out of wedlock in Slovakia is increasing and the link between childbearing and marriage is weakening, the importance of marriage for the reproduction of human capital continues to play its irreplaceable role. This should be noticed not only by demographers, sociologists, educators, but also by politicians when planning social policy.

## Acknowledgment

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