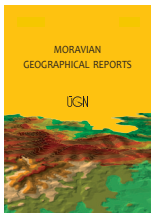

MORAVIAN GEOGRAPHICAL REPORTS

Institute of Geonics, The Czech Academy of Sciences

journal homepage: http://www.geonika.cz/mgr.html

doi: 10.2478/mgr-2018-0009

DE GRUYTER OPEN

A cohort perspective on the fertility postponement transition and low fertility in Central Europe

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Abstract

Fertility postponement and the concomitant decline in fertility levels are the most prominent trends in the demographic behaviours of the former Eastern Bloc countries in Central Europe. A number of studies have analysed period fertility development but the cohort perspective is often neglected. The postponement transition has evolved over a long time span and affected many cohorts, so the cohort approach is appropriate for studying long-term changes in fertility tempo and quantum. A cohort analysis engenders an analysis in detail of the onset, dynamics and ultimate extent of this process. Using the cohort benchmark model, we have been able to pinpoint differences in postponement and recuperation levels and have combined it with projection scenarios. Thus we have been able to model the hypothetical trajectory of the completed cohort fertility rate. Our analysis highlights differences in the timing of the onset of the postponement transition, its trajectory and extent, as well as in the recuperation of postponed childbearing. These findings suggest differences in completed fertility across the selected four Central European countries are likely to continue and perhaps increase.

Keywords: *cohort fertility, postponement transition, low fertility, Central Europe (the Czech Republic, the former GDR, Hungary and Slovakia)*

Article history: *Received 20 July 2017; Accepted 27 March 2018; Published 30 June 2018*

1. Introduction

The geographical and political division of Cold War Europe gradually gave rise to two types of population exhibiting two different reproductive paradigms (Decloly and Grasland, 1993; Monnier and Rychtaříková, 1992; Ní Bhrolchaín, 1993). By the mid-1980s, the populations east of the Iron Curtain were characterised by early motherhood and childbearing, a two-child family model, low levels of childlessness and short reproductive spans (e.g. Frejka et al., 2008; Sobotka, 2002, 2003).

In the last four decades, childbearing postponement has become the European norm (Frejka, 2008, 2011; Frejka and Sardon, 2004, 2006, 2007; Kohler, Billari and Ortega, 2002; Sobotka, 2004). Since the late 1980s and early 1990s, postponement has been a key aspect of reproductive behaviours in the former Eastern Bloc as well (e.g. Frejka and Sobotka, 2008; Sobotka, 2002, 2003, 2004, 2011; Křesťanová, 2016). The total fertility rate dropped to its 'lowest-low' (1.3 children per woman, see Kohler, Billari and Ortega, 2002; Billari and Kohler, 2004), and then stabilised at a very low level (up to 1.5 children per woman). This process began in Central European countries before spreading to other parts of Eastern Europe, and so they exhibit a specific pattern (e.g. Sobotka, 2004). The consequences of reproductive aging have been felt in Hungary and the former GDR for more than three decades, and for more than two decades in the Czech Republic and Slovakia. In the former GDR, the response to the collapse in living conditions following the fall of the Berlin Wall (Conrad, 1996; Dorbritz, 2008; Eberstadt, 1994; Witte and Wagner, 1995) was particularly severe, but other countries also saw fertility rates drop to below 1.5. These Central European countries now exhibit the low fertility patterns typically found both in Europe and across the world.

The long-term nature of the changes in the intensity and overall character of fertility indicates that these are not temporary transitions but rather long-term shifts in both the tempo and quantum of fertility (e.g. Sobotka et al., 2011a, 2011b). As Frejka (2008, p. 156) has noted, the transformation of family and reproductive behaviours in

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Central Europe can be best observed by looking at changing fertility age patterns in successive cohorts.

The primary goal of this paper is to analyse the changes and identify differences in cohort fertility associated with the consequences of the postponement transition affecting the generations born in the 1970s and early 1980s. We pinpoint the onset, extent and dynamics of these changes and look at the effects on overall completed fertility.

The decision to investigate Central European countries (the Czech Republic, the former GDR, Hungary and Slovakia) was made for a number of reasons. Firstly, we sought to assess the postponement transition in the former Eastern Bloc countries, as demographic behaviours there differ markedly from those in Western Europe. Early motherhood and relatively low fertility in the 30 and over age groups are particularly important. These two primary characteristics have undergone the most dramatic and dynamic changes in the past 25 years. The sampled Central European countries have been at the forefront of these demographic changes in the Eastern Bloc as a whole. Additionally, we wanted to focus on populations where the onset of the recuperation phase could be clearly identified, which is the case for all of these countries. Lastly, we required a full set of input data (see 3. Research methodology, below) so as to obtain as complete and detailed a picture as possible.

We expect to find that long-term changes in period fertility are reflected in a fall in the completed cohort fertility rate and in new fertility age patterns. Unlike the post-war convergence trend in family and reproductive behaviours (see Sobotka, 2002), we assume that the new conditions will result in increasingly diverse fertility patterns across the former socialist countries in Central Europe. The main differentiating factor is likely to be recuperation of deferred childbearing. Period fertility over the last quarter century would suggest that the recuperation process has probably been most successful in the Czech Republic and former GDR. Slovakia, and especially Hungary, are likely different.

2. Theoretical background

2.1 Fertility patterns in the socialist reproductive model

From the 1960s to the 1980s, reproductive behaviours in post-socialist Central and Eastern Europe were characterised by relatively stable, uniform and organised life patterns. The specific political, economic and social conditions of the second half of the twentieth century created very different family and reproductive environments – compared to Western Europe (see Brzozowska, 2015; Sobotka, 2002, 2004, 2011). The socialist state and lack of market forces created a relatively predictable and risk-free environment with guaranteed employment, job security, free education, health care and so forth (Frejka et al., 2008; Sobotka, 2002; Frejka, 2008). Self-realisation options outside family life were restricted by the authoritarian political régime (Kučera, 1992; Sobotka, 2002, 2004, 2011).

According to Sobotka (2004, 2011), the stability of the socialist demographic model was based on a combination of institutional and cultural factors. Education was completed at a relatively early age and few attended tertiary education (university places were limited, e.g. Kantorová, 2004), while the absence of unemployment, low wage differences and labour force shortage all reduced economic uncertainty. The family constituted a safe area in which people could express themselves and become an important source of social capital. It led to very strong norms in family life and children (Kučera, 1992; Sobotka, 2011). For many young people in socialist Central Europe, early marriage and motherhood were the only means of achieving independence (Frejka, 1980; Kučera, 1992; van de Kaa, 1994). The specific character of the socialist reproductive model was also encouraged and reinforced by numerous pro-natalist social and population policies (e.g. Brzozowska, 2015; Frejka, 1980; Kocourková, 2002; Kučera, 1992; Sobotka, 2011). These varied widely from one country to another and considerably reduced the cost of raising children (David and McIntyre, 1981; Frejka, 1980, 2008). Frejka (2008, p. 155) points out that early marriage and motherhood were encouraged by various other factors, such as the limited career options, restricted choice of leisure activities, lack of travel opportunities and the difficulties of obtaining large-item consumer goods.

Furthermore, in Central Europe, sexual morals and behaviours were liberalised under socialism (Sobotka, 2011). The early age of sexual debut, related to the lack of knowledge of and availability of modern contraception, led to a high proportion of pre-marital conceptions (Sobotka, 2011), while non-marital births were rare. Abortion rates were high as abortion became a "special form of ex-post contraception" (Frejka, 1983; Kučera, 1992). Its long-term use led to the emergence of a specific abortion culture (Stloukal, 1999). These and other factors meant that childbearing postponement held little appeal (Sobotka, 2002, 2011). Consequently, one of the main features of the socialist reproductive model was early family life (e.g. Šprocha, 2016) and early childbearing. In this relatively homogenous fertility profile, childbearing was concentrated within a narrow maternal age span (Potančoková et al., 2008; Sobotka, 2004). Although the two-child family model dominated, in several Central European countries (for example in Hungary and Slovakia) a significant number of women had more than two children. This was partly a result of the higher fertility of the Roma population (e.g. Sobotka, 2002; Šprocha, 2017).

According to Monnier and Rychtaříková (1992), in the mid-1980s there were large demographic differences between Eastern and Western Europe. The Hajnal Line that ran from St. Petersburg to Trieste and had divided Europe historically, culturally and in terms of nuptiality and family behaviour, came to be replaced by political boundaries (Ní Brolcháin, 1993).

2.2 Postponement transition and rapid fertility change

The collapse of state socialism in 1989 and the subsequent social and economic transformation caused profound and dramatic changes. The demographic response to the new conditions was prompt. Fertility rates fell in all of the former socialist Central European countries during the first years of post-communism (e.g. Dorbritz, 2008; Kotowska et al., 2008; Potančoková et al., 2008; Sobotka et al., 2008; Spéder and Kamarás, 2008). The Czech Republic, the former GDR, Slovakia and Hungary experienced several years of lowest-low fertility (see Kohler et al., 2002). This dramatic transformation in reproductive behaviour led to them being categorised amongst the countries with the lowest fertility in the world (Sobotka, 2004, 2011).

There were two main sets of factors behind this rapid and radical transformation in reproductive and family behaviour (see Frejka and Sobotka, 2008; Sobotka et al., 2003; Sobotka, 2004,). The first set of factors relates to the abrupt

change in living conditions (Philipov, 2003) following the collapse of the state bureaucracy, caused by the social and economic crisis of the 1990s (Philipov, 2003; Philipov and Dorbritz, 2003; Sobotka and Frejka, 2008). The second set concerns the impact of the combined political, social, cultural and normative changes (often referred to as the second demographic transition, e.g. Lesthaeghe, 2010; van de Kaa, 1987, 1997) which brought the post-communist countries closer to those in Western Europe (Billingsley, 2010; Sobotka, 2004; Sobotka and Frejka, 2008). As many researchers have noted (e.g. Frejka and Sobotka, 2008; Lesthaeghe and Surkyn, 2002; Sobotka, 2004), structural and cultural factors often act simultaneously or in tandem with each other.

Changes in norms and values do not take place in isolation from broader economic and social developments (Frejka and Sobotka, 2008, p. 10). Lesthaeghe and Surkyn (2002) add that the impact of 'crisis factors' and cultural factors may change over time. When the economic situation improves, norms and values can become more important – and vice versa. According to Frejka and Sobotka (2008), this pathway was typical of the former Eastern Bloc countries. Initially – and especially among socially disadvantaged segments – the change in structural conditions in society led to different family behaviour patterns. These gradually became accepted and were adopted by other social groups, which in turn led to wider changes in attitudes (Frejka and Sobotka, 2008, p. 10–11).

The postponement of the reproductive transition and emergence of new life paths – leaving the parental home, domestic and economic independence, marriage and parenthood – became widespread among young people born in the 1970s and 1980s in the former Eastern Bloc (e.g. Frejka and Sardon, 2004; Kotowska et al., 2008; Potančoková et al., 2008; Sobotka et al., 2008). Prolonged education, female emancipation and changing family behaviours made early motherhood unattractive in the new social, political and economic conditions (Sobotka, 2010). Fertility and first-birth postponement have now become the most prominent features of fertility patterns in developed societies (Sobotka, 2004). As indicated by several researchers (e.g. Frejka and Sardon, 2004, 2005, 2007; Kohler et al., 2002; Sobotka, 2004, 2011) delayed parenthood is now a universal European fertility trend in countries with very diverse cultural, social and economic conditions (Sobotka, 2010, p. 129). In addition, Kohler et al. (2002) have pointed out that childbearing in later life is a distinctive character of a 'postponement transition' towards a late-fertility regime. The main feature of the second demographic transition is no longer a decline in fertility to below replacement level, but the postponement of fertility (Lesthaeghe and Neels, 2002).

In comparison with Western European countries, delayed parenthood is a relatively recent phenomenon in post-communist Central Europe, where early childbearing was the reproductive norm until the 1980s (Sobotka, 2004). Although all former socialist countries have been affected by the fertility postponement transition, change has been most rapid in Central Europe and the Baltic countries (Frejka and Sobotka, 2008; Sobotka, 2004, 2011).

As Frejka (2008, p. 157) has noted, during the political and economic transition childbearing strategies changed rapidly from one generation to the next. Fertility among women born in the first half of the 1960s was only marginally affected by the fall of communism, as childbearing had largely been completed in this group by the end of the 1980s. Cohorts born in the second half of the 1960s, especially those born towards the end of that decade, had started childbearing under socialism but had adopted different reproductive strategies to previous generations (Frejka, 2008, p. 156). In general, it is thought that there was no pronounced transition effect among this group. The situation regarding the cohorts born in the first half of the 1970s was quite different. Women born in the second half of the 1970s and the early 1980s started their reproductive period under very different conditions. The family and reproductive behaviours exhibited by this group show a significant decline in fertility rates at a younger age, a strong propensity to postpone important life transitions and to catch up on delayed reproductive intentions later in life (Frejka, 2008; Sobotka et al., 2011a; Šprocha, 2014).

As noted above, the postponement transition in the former Eastern Bloc countries has been ongoing for almost three decades and has affected many cohorts. This means that a cohort approach is a useful method of analysis. Postponement and recuperation are interconnected and embedded in the complex unfolding of the life cycle (Sobotka et al., 2011a, p. 10). The cohort perspective has been used to analyse the postponement transition in Western countries (e.g. Bosveld, 1996; Frejka and Calot, 2001; Frejka and Sardon, 2004; Lesthaeghe, 2001). In this paper we use the latest benchmark model developed by Sobotka et al. (2011a); the next section provides greater details.

3. Research methodology

3.1 Database

Two types of data are used in this analysis. The main part concerns the cohort approach and for that, cohort rates for ages 15–49 were obtained from the Human Fertility Database (2018). There are data available for the Czech Republic and Hungary up to 2014, for the former GDR up to 2013 and for Slovakia up to 2009. But there are serious problems with the data for other post-communist Central European countries (Poland and Slovenia). As noted above, our analysis is based on data from the Human Fertility Database (HFD), which is a repository of high quality that has been subjected to data checks. For Poland, the HFD website indicates that high levels of outward migration have rendered the official population statistics problematic, and warns that fertility indicators for cohorts born after 1965 should be used with caution as they are likely to be underestimated[1]. Moreover, the data on Slovenia lacks cohort age-specific fertility rates for women born in the 1950s and 1960s. We were therefore forced to eliminate Poland and Slovenia from our analysis.

The database does not include the most recent data for Slovakia; however, the Slovak Statistical Office (SO) provided cohort age-specific fertility rates up to 2014. In the end, we were able to assemble time series data sets containing cohort age-specific rates for the 1935 generation and onwards for the Czech Republic, Slovakia and Hungary, and for 1937 onwards for the former GDR.

The second type of data comprises information from the Human Fertility Database (2018) on cohort mean age at first birth. We then used the cohort age specific rate time

[1] http://www.humanfertility.org/cgi-bin/country.php?country=POL&tab=si [cit. 08.01.2018]

series to calculate the cohort completed fertility rates for each country. Considering the very low fertility rates in the 40 and over age groups, we have assumed that the 1974 cohort is the boundary cohort with the presumed completed fertility. Additionally, we used the cohort age specific rates to calculate mean age at birth, the lower- and upper-quartile and the inter-quartile range, in order to analyse the age-concentration of cohort fertility and associated intergenerational changes.

3.2 Research methods

In our analysis of the cohort fertility transition in relation to fertility postponement, we employed a basic version of the more sophisticated benchmark cohort model used by Sobotka et al. (2011a, 2011b). This approach assumes that the fertility postponement transition occurs in two subsequent and interconnected stages: postponement and recuperation (see Fig. 1). The postponement phase is characterised by a decrease in the fertility rate compared with the benchmark cohort. It is then assumed that deferred reproduction occurs during the recuperation phase (Sobotka et al., 2011a, 2011b). This approach thus enables us to analyse the stages of fertility postponement, to identify both the rate at which fertility was postponed and the rate at which recuperation took place, and finally to ascertain the level of total decline in completed fertility at the end of the reproductive lifespan.

Following Sobotka et al. (2011a), as our benchmark cohort we selected the cohort in which fertility postponement can clearly be identified, because one of the primary signs of fertility postponement is a change in the timing of cohort fertility. Sobotka et al. (2011a) suggest that the benchmarking should be performed against a cohort exhibiting stable growth in cohort mean age at first birth. We calculate this to be the 1965 cohorts in Slovakia and the Czech Republic. Fertility postponement began earlier in Hungary and the former GDR, so we selected the 1960 cohort for these countries (see also Sobotka et al. 2011a, 2011b).

In the model of postponement fertility transition, the gap in cohort fertility between the analysed cohort and the benchmark cohort gradually increases in the lower age brackets until it reaches its maximum point. The model then assumes that the postponed births materialise later on, during the recuperation phase. Depending on how pronounced the postponement phase is and how successful the recuperation phase is (as measured at the end of the reproductive period), there is (or may be) a difference in completed fertility. The nature of the process thus provides us with four indicators to analyse it. Following Sobotka et al. (2011a, 2011b) we constructed four indicators:

1. The postponement measure is the maximum difference in cumulated fertility between the benchmark cohort and the analysed cohort.

$$P_a = \sum_{x=12}^{m-1} (f_x^a - f_x^b)$$

where P_a is the postponement measure, f_x^a is the age-specific fertility rate of cohort a (analysed) at age (x), f_x^b is the age-specific fertility rate of cohort b (benchmark) at age (x), m is the age at which the gap between the cumulated fertility rate of the benchmark cohort and the analysed cohort reaches the maximum (Sobotka et al. 2011a).

2. The recuperation measure (R_a) is the absolute fertility increase in the cohort analysed, from the age at which maximum postponement is reached until end of reproductive age (or age 40). In cohort analyses, age 40 is often used as the upper limit, since fertility rates are very low in older age groups.

$$R_a = \sum_{x=m}^{40} (f_x^a - f_x^b)$$

3. The final difference (FD_a) is the total difference in completed fertility of the analysed cohort at end of reproductive age (or at age 40) compared to the benchmark cohort.

$$FD_a = P_a - R_a$$

4. The recuperation index (RI_a) is the degree of recuperation relative to fertility decline at younger ages, computed as:

$$RI_a = \frac{R_a}{|P_a|} \cdot 100$$

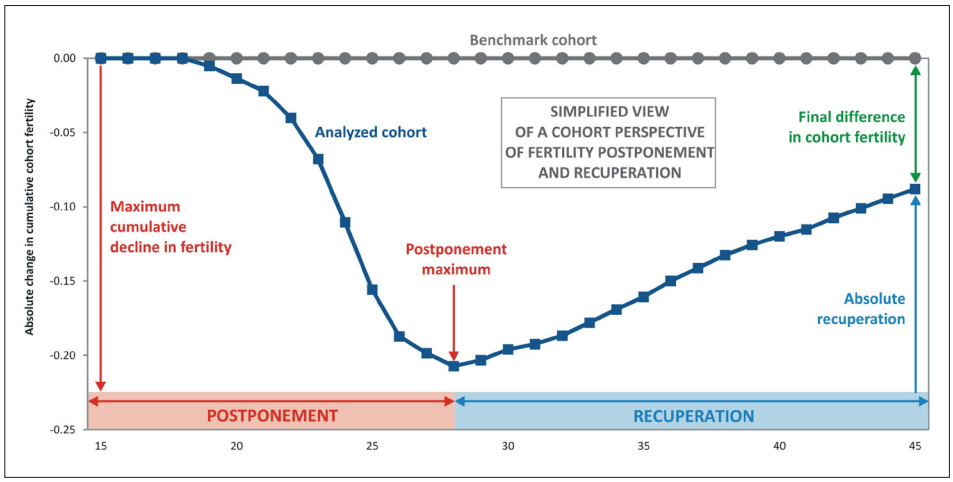

Fig. 1: Simplified view of a cohort perspective of fertility postponement and recuperation
Source: Sobotka et al. (2011a)

This indicator runs from 0–100%, where 0% indicates that none of the deferred births materialise and, conversely, 100% indicates full recuperation of postponed reproduction among women in that cohort. In certain cases, the recuperation index can exceed 100%. This is referred to as "overcompensation" (Sobotka et al., 2011a).

Country, (benchmark cohort; completed cohort fertility)	Cohort	Absolute fertility decline (children per woman)	Absolute recuperation at age 40 (children per woman)	Recuperation Index (%)	Permanent decline (children per woman)
Czech Republic (1965; 1.95)	1967	− 0.08	0.04	50.4	− 0.04
	1970	− 0.23	0.16	67.8	− 0.07
	1972	− 0.39	0.27	68.7	− 0.12
	1974	− 0.54	0.39	71.3	− 0.16
	1976	− 0.72	.	.	.
	1978	− 0.85	.	.	.
	1980	− 0.91	.	.	.
	1982	− 0.96	.	.	.
	1985	− 0.99	.	.	.
Former GDR (1960; 1.80)	1962	− 0.11	0.03	32.8	− 0.07
	1964	− 0.25	0.09	37.1	− 0.16
	1966	− 0.40	0.18	44.5	− 0.22
	1968	− 0.54	0.28	52.4	− 0.26
	1970	− 0.67	0.36	54.3	− 0.31
	1972	− 0.74	0.45	61.4	− 0.29
	1974	− 0.79	0.49	63.5	− 0.28
	1976	− 0.85	.	.	.
	1978	− 0.87	.	.	.
	1980	− 0.87	.	.	.
	1982	− 0.88	.	.	.
	1985	− 0.89	.	.	.
Hungary (1960; 2.02)	1962	− 0.04	0.06	142.2	0.02
	1964	− 0.08	0.06	74.3	− 0.02
	1966	− 0.11	0.07	60.4	− 0.04
	1968	− 0.18	0.08	46.2	− 0.10
	1970	− 0.30	0.15	47.8	− 0.16
	1972	− 0.44	0.20	44.8	− 0.24
	1974	− 0.57	0.25	42.8	− 0.33
	1976	− 0.69	.	.	.
	1978	− 0.77	.	.	.
	1980	− 0.86	.	.	.
	1982	− 0.92	.	.	.
	1985	− 0.98	.	.	.
Slovakia (1965; 2.04)	1967	− 0.06	0.03	57.5	− 0.02
	1970	− 0.20	0.10	49.4	− 0.10
	1972	− 0.34	0.16	46.1	− 0.18
	1974	− 0.48	0.24	48.7	− 0.25
	1976	− 0.66	.	.	.
	1978	− 0.79	.	.	.
	1980	− 0.87	.	.	.
	1982	− 0.93	.	.	.
	1985	− 1.00	.	.	.

Tab. 1: Selected indicators of postponement and recuperation of cohort fertility
Note: (.) data cannot yet be calculated
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

These four key indicators of the postponement transition (see Tab. 1) were used to formulate projection scenarios of cohort fertility. Four model scenarios of the recuperation index were created for any female cohort and any country for which we know the recuperation measure. The first is a constant scenario using a fixed recuperation index from the last known cohort (1974, or 1973 for the former GDR). The remaining three scenarios model the development of completed cohort fertility based on the hypothetical continued rise of the recuperation index from the last empirically derived value up to the 1985 cohorts. Three linear inter-cohort gradual growth rates of the recuperation index were used. In the 10% model, the recuperation index had increased by 10% by the 1985 cohort (compared to 1974, or 1973 for the former GDR). A similar approach was also applied in the 25% and 50% models (with an adequate rate of growth). We only considered scenarios in which the recuperation index increases because changes in fertility over the last decade do not suggest a further decline.

4. Empirical analysis and findings

4.1 Differences and changes in cohort fertility

Marked differences in completed cohort fertility can be observed in the oldest cohorts in the countries analysed. At one end of the spectrum is Slovakia (see Fig. 2), where women born in the first half of the 1930s had on average 2.7–2.8 children. At the other end of the spectrum are Hungary and especially the former GDR, which both exhibit much lower and stable completed cohort fertility rates below the threshold of 2.0 children per woman (Dorbritz, 2008; Frejka and Sardon, 2004; Frejka and Sobotka, 2008; Sobotka et al., 2008; Spéder and Kamaras, 2008). Fertility in the younger cohorts also differs by country. Similar trends can be seen in cohorts as late as those of the 1960s and early 1970s.

In the former GDR, the completed cohort fertility rate for women born in the 1930s and 1940s began to drop from 2 children per woman to 1.8 in the cohorts born in the late 1940s and early 1950s. It increased slightly, partly because of the pro-natalist measures adopted in 1976, but only to a limited extent (see Frejka and Sardon, 2004). After the fall of the Berlin Wall, nearly all the cohorts born in the 1960s and early 1970s exhibited substantial changes (see Dorbritz, 2008). Completed cohort fertility rates dropped to below 1.5 and stabilised to become the lowest of all the countries analysed (Fig. 2).

In the Czech Republic, the completed cohort fertility rate held at 2.0–2.1 children per woman for much of the cohort and did not fall below 2.0 until the cohorts of the early 1960s (Sobotka et al., 2008). The decline is also evident in younger cohorts and in women born in the first half of the 1970s, ultimately dropping to 1.8 children per woman (Fig. 2). In Hungary, the completed cohort fertility rate remained at levels below 2.0 children per woman for the 1940s cohorts and did not recover until the cohorts born in the late 1950s and early 1960s, with the introduction of the government's pro-natalist policies in 1973 and even then only slightly (Spéder and Kamarás, 2008).

In contrast, Slovakia remained in the group of countries with the highest completed cohort fertility rate in Europe (Frejka and Sardon, 2004). Nonetheless, the completed cohort fertility rate in Slovakia was declining slowly (Potančoková et al., 2008). The 1968 cohort exhibited levels below 2.0 children per woman.

One of the primary characteristics of reproductive behaviours in the Eastern Bloc countries had been early motherhood (Fig. 2). This long-term trend was first disrupted by the cohorts of the early 1960s (Hungary and the former GDR: see Sobotka et al., 2011a, 2011b) and then by the generations born in the mid-1960s (Slovakia and the Czech Republic). Subsequent cohorts exhibited a sharp increase in cohort mean age at first birth.

Women born in the 1950s and most of the 1960s typically concentrated reproduction into a brief period when they were in their twenties (between 20 to 24 years of age) (see Fig. 3). While there were some differences between the 20-24 and 25–29 age groups in terms of completed cohort fertility (see for example the former GDR), 80–90% of all reproduction in the late 1950s and early 1960s cohorts had been completed by the age of 30. This changed, however, with subsequent cohorts. Firstly, there was a significant drop in fertility among women younger than 25. This was even more dramatic in the former GDR, where cohort fertility also fell temporarily in the 25–34 age group (see also Dorbritz, 2008). This was a reflection of the impact on fertility of the profound political and societal shifts in the late 1980s and early 1990s.

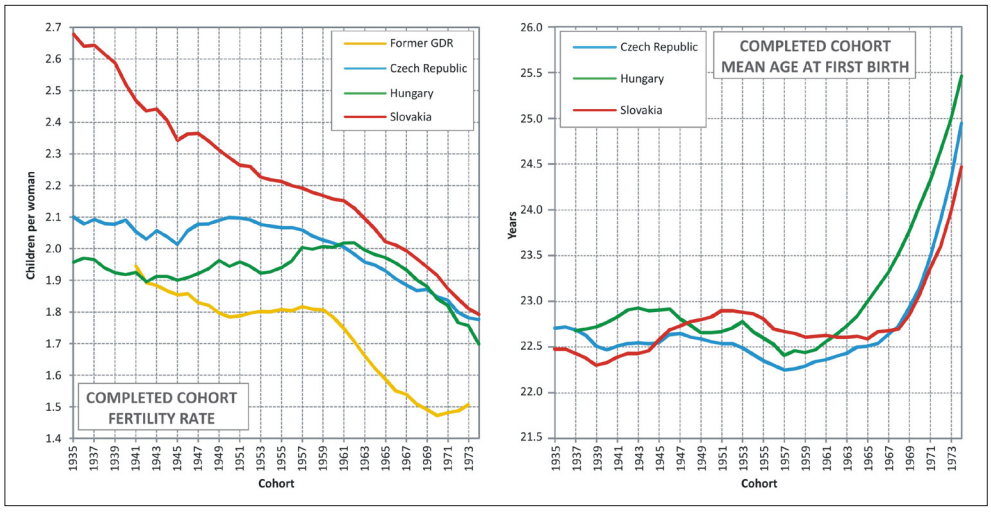

Fig. 2: Completed cohort fertility rate and cohort mean age at first birth
Note: Cohort mean age at first birth not available for the former GDR
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

This phenomenon was specific to the former GDR. Fertility ceased to decline in younger age groups in the former GDR, however, stabilising somewhat earlier (in the early 1970s cohorts) than in the other countries in the late 1970s and early 1980s cohorts.

All the populations show a gradual increase in fertility among the older age groups. There are, however, differences in the pace and extent to which this occurred: at one end of the spectrum is the Czech Republic (and to some degree the former GDR) where women seemed able – for the most part – to catch up on deferred reproduction; at the other end of the spectrum are Slovakia and Hungary where this was not always the case (see below). This is reflected in the change in the cohort fertility maximums: in the Czech Republic, these were reached by the 30–34 age group, whereas in the other countries, the cohort fertility rates for the 25–29 and 30–34 age groups were equalised.

This is also evident in the changes in the extent to which the various age groups contribute to completed cohort fertility. The role played by the 30 plus age group is used as an indirect indicator of fertility postponement (e.g. Lesthaeghe and Moors, 2000). In the former GDR, the contribution of

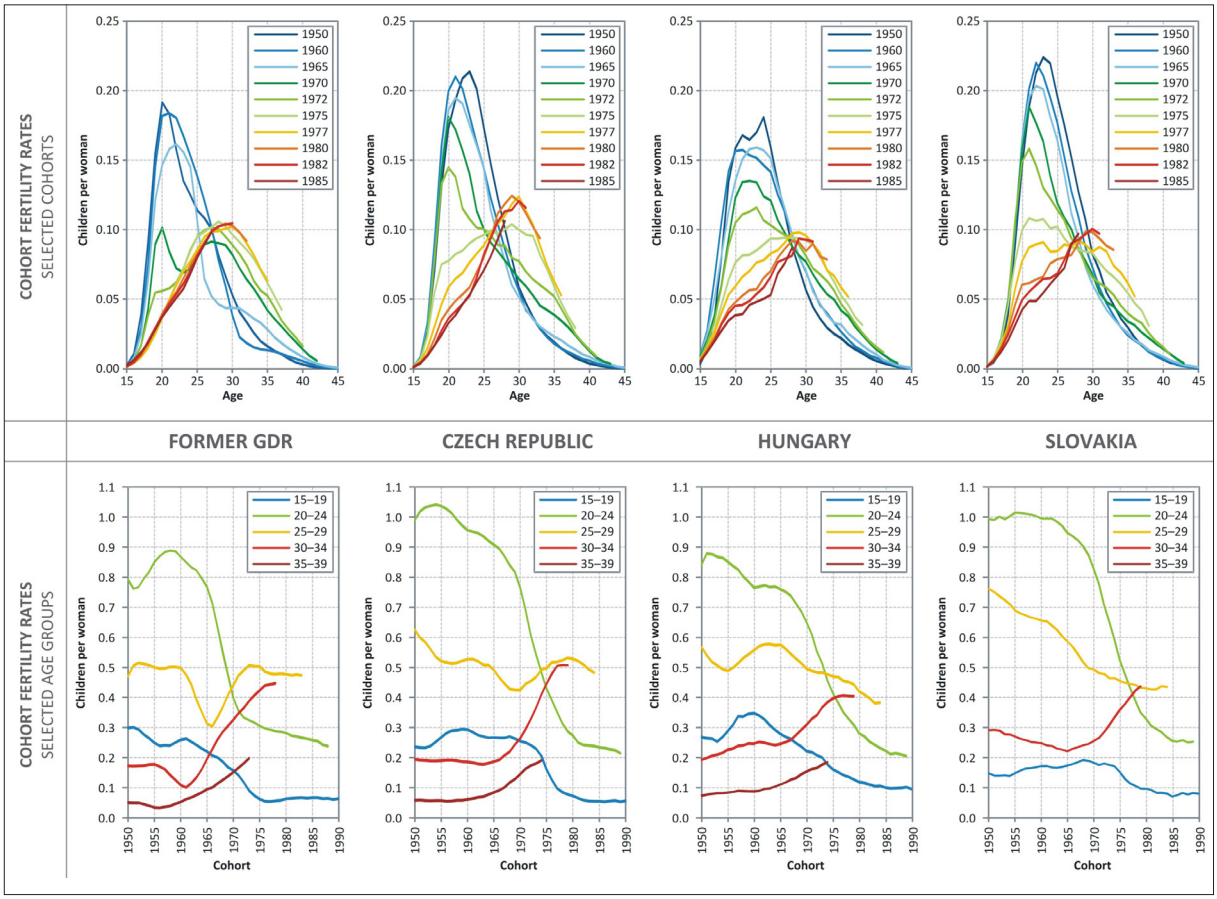

Fig. 3: Cohort fertility rates for selected cohorts and long-term cohort fertility rates for five age groups
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

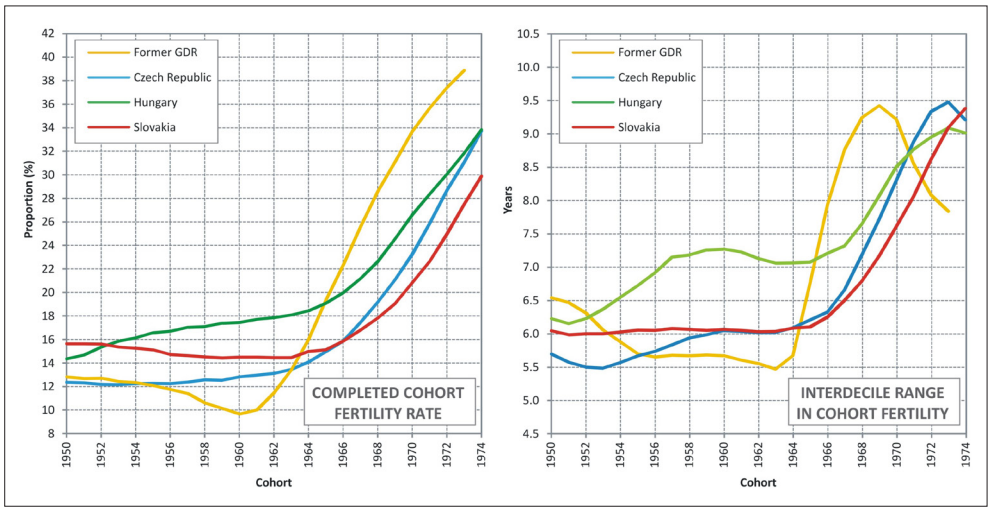

Fig. 4: Contribution to completed cohort fertility rate at age 30 and over and the inter-decile range in cohort fertility
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

this age group rose from 10% in the 1961 cohort to 39% in the 1973 cohort. Similar, albeit smaller, increases can also be observed in the Czech Republic and Hungary (34%), as well as in Slovakia (30%) (see Fig. 4).

The inter-quartile range data confirm our earlier observation that the cohorts born in the 1950s and the early 1960s largely concentrated their fertility into a narrow age span (see Fig. 4). With the younger cohorts, however, the picture begins to change, and starting with the early 1970s cohorts clear differences in reproductive strategies can be observed. The inter-quartile range shifts also reflect the changing dynamics of the postponement transition. For example, 50% of cohort fertility among Czech women born in the early 1950s occurred within the narrowest time span recorded for all the countries analysed (approximately 5.5 years). The concentration of fertility in Central Europe culminated in the early 1960s cohorts in the former GDR (an inter-quartile range of 5.4–5.6 years). This was partly a result of the pro-natalist measures adopted in 1976 which shifted fertility into even younger age groups, but which also – somewhat paradoxically – led to a significant drop in fertility among the 30 plus age groups, which occurred after the fall of the Berlin Wall.

These cohorts also exhibit the lowest cohort mean age at birth of all the populations in question and the lowest contribution of their age group to the completed cohort fertility rate (Fig. 4). On the other hand, the cohorts from the second half of the 1960s in the former GDR and the early 1970s in the Czech Republic were among the populations with the most marked age differences in cohort fertility.

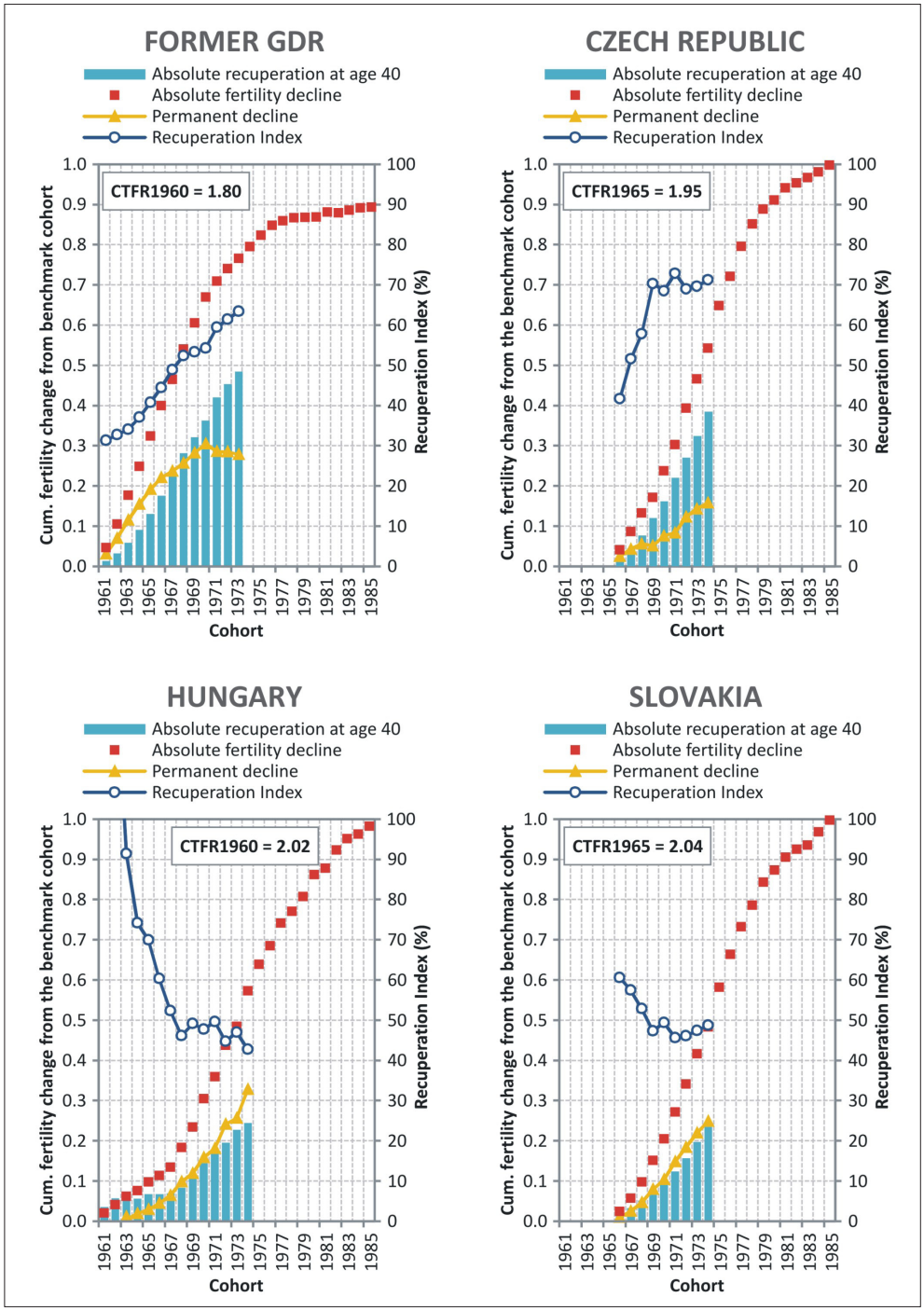

Fig. 5: Graphs showing postponement and recuperation
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

As Figure 4 shows, Hungary exhibited age differences in reproduction relatively early on. It should be noted that over the long-term, the width of the inter-quartile range has been affected by shifts in the upper quartile of cohort fertility, with the lower quartile remaining stable and at a low level in all the populations analysed (19.9–22.5 years).

Once again the former GDR is the only exception here: its lower quartile values rose sharply in the 1971–1973 cohorts, which caused the inter-quartile range to narrow. We can assume that the shifting of the lower quartile into later age groups is the result of childbearing postponement in subgroups of women who would traditionally have become mothers at a very early age. It is likely that the bimodal distribution of cohort fertility rates in the youngest cohorts in both Hungary and Slovakia is due to the size of this group and its specific reproductive behaviour (containing mainly Roma women) (see Fig. 3).

4.2 Cohort perspective on postponement transition

In the countries analysed, cohort fertility postponement can first be observed in Hungary and the former GDR. But, there seems to be no connection between the timing and total extent or rate. In the former GDR, the differences between the analysed cohort and the benchmark cohort clearly broaden out until the early 1970s cohorts and from that point on postponement slows down (Fig. 5). This confirms our observation that the post-1989 political and social changes had the most profound impact on reproduction among women born in the 1960s and the early 1970s. In Hungary (Fig. 5), fertility postponement among women born in the first half of the 1960s began slowly and only picked up speed in the generations born in the early 1970s. This increase in the rate of fertility postponement is especially pronounced in these cohorts in Slovakia and the Czech Republic, but younger cohorts also experienced a moderate slowing of postponement rates. Generally speaking, in all the populations analysed, the younger the cohort is, the slower the rate of postponement. This leads us to conclude that in these Central European countries fertility postponement is now slowing.

By the age of 27 or 28 (postponement maximum), women born in the mid-1980s in the Czech Republic, Slovakia and Hungary had on average one child less than women in the benchmark cohorts (1965 or 1960). By comparison, the difference was 0.9 in the former GDR (Fig. 5).

It is apparent that the difference between the completed cohort fertility rate of each cohort analysed and the completed cohort fertility rate of the benchmark cohort relates to the recuperation rate. Given the age of the cohorts, however, we can only analyse the recuperation index and absolute recuperation at age 40 for cohorts starting in the early 1970s. The highest recuperation index percentages (70–73%) can be found in the Czech Republic in the generations born in the late 1960s and the early 1970s (Fig. 5). In comparison, the lowest recuperation index values are found in Hungary and Slovakia (both 43–50%). Absolute recuperation is very similar. The most significant increase in cohort fertility among the older age groups was observed in the former GDR and the Czech Republic, while the weakest recovery in reproduction is found in Slovakia and Hungary. The smallest total decline in cohort fertility can be observed in the Czech Republic as it has the highest recuperation rate. The distinctive long-term postponement of cohort fertility age in the former GDR (when compared with Hungary) led to the largest decrease in completed cohort fertility being achieved by women born in the 1960s and the very early 1970s. Where the younger cohorts are concerned, however, Hungary seems to have experienced the largest permanent decline in cohort fertility. It is worth noting that the level of permanent decline in completed cohort fertility is also increasing significantly in Slovakia (Fig. 5).

Having analysed the total postponement rates for the generations of women born between 1975 and 1985, we can now turn to the calculations of permanent decline and the cohort total fertility rate, which relate primarily to recuperation levels.

It is immediately apparent that had there not been a change in recuperation (constant scenario), the completed fertility rate would have continued to decline in the 1975–1985 cohorts in all the populations. That decline would have been slowest in the Czech Republic and the former GDR, but would have accelerated considerably in Slovakia and Hungary. In this scenario, the youngest cohorts in Hungary would have had the lowest completed cohort fertility of all the countries (Fig. 6). Whereas in the Czech Republic and former GDR, a gradual 10% increase in the recuperation index among the 1975 to 1985 cohort would have stabilised completed cohort fertility and led to a slight increase in the 1980s cohorts. In Hungary and Slovakia, though, it would merely have slowed the decline (Fig. 6). It

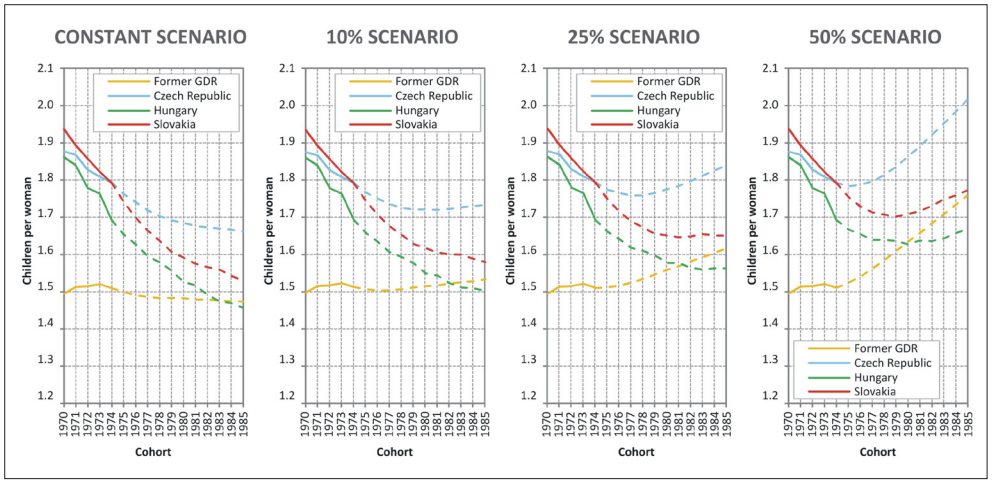

Fig. 6: Observed and projected completed cohort fertility rate in various scenarios
Note: Dashed line indicates projected values
Sources: Human Fertility Database (2018), SOSR (2014); own calculations

seems that a faster rate of recuperation would be required for a noticeable increase in completed cohort fertility to have occurred in the Czech Republic and former GDR, and indeed this is borne out by the data obtained from the scenarios where we increased the recuperation index until the 1985 cohort by 25% and 50% respectively (in comparison with the 1974 cohort). In Hungary and Slovakia, the 25% scenario would have stabilised completed cohort fertility among women born in the first half of the 1980s. Only a very high increase in the recuperation rate would have resulted in a significant rise in completed cohort fertility (still lower than that in the Czech Republic and former GDR).

5. Conclusions

This analysis has indicated stable long-term differences in completed cohort fertility in the Central European countries, as well as a number of common features in reproduction among women who largely fulfilled their reproductive plans. These are early motherhood, the predominance of the two-child family model and the concentration of fertility into a narrow age span. After the collapse of the Eastern Bloc, these reproductive patterns were disrupted by changes in life conditions and norms, and new ones emerged involving fertility postponement.

These significant changes in fertility rate and onset can be observed in all Central European countries after 1989 and they are also reflected in the cohort indicators, especially the increase in cohort mean age at first birth. Despite the inter-country differences in the onset, rate and ultimate extent of fertility postponement, it has evidently affected all the populations and increasingly so with each cohort. In general, the fastest rates of fertility postponement can be found in those generations of women who were in their reproductive prime when the collapse of communism triggered large-scale societal changes. In the younger cohorts (especially the mid-1980s ones), the postponement rate decreases and the first phase of the postponement transition concludes. Completed cohort fertility seems to depend on how successful the 1975–1985 cohorts will be in fulfilling their deferred reproductive plans. Despite other differences in the extent of fertility postponement, the rate of recuperation seems to be the primary differentiator here. Of the countries analysed, the populations of the former GDR and the Czech Republic have been most successful in that respect, while in Hungary and Slovakia there is still a risk of a sharp decline in cohort fertility for the generations of women born in the late 1970s and early 1980s.

Acknowledgements

This research paper was supported by VEGA No. 2/0057/17: "The highest education achieved and its influence on transforming family and reproduction behaviour of women in Slovakia", and by the Czech Science Foundation (GAČR), project No. 15-09443S: "Risks of childbearing postponement: A new role for family policies?".

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Please cite this article as:

ŠPROCHA, B., TIŠLIAR, P., ŠÍDLO, L. (2018): A cohort perspective on the fertility postponement transition and low fertility in Central Europe. Moravian Geographical Reports, 26(2): 109–120. Doi: 10.2478/mgr-2018-0009.