Doi: https://doi.org/10.15407/dse2019.01.053
УДК 330.59(478)
JEL CLASSIFICATION: I32; I38

E.A. GRIGORAS
scientific researcher, PhD student
Centre for Demographic Researches
National Institute for Economic Research Republic of Moldova
MD-2064, Republic of Moldova, Chisinau, Ion Creanga, 45
E-mail: egrigoras88@gmail.com

PARTICULARITIES OF FERTILITY TRANSITION IN THE REPUBLIC OF MOLDOVA AND SELECTED FORMER-SOVIET COUNTRIES

The article provides the particularities of fertility transition in the Republic of Moldova and former Soviet Republics from European region (Russia, Belarus, Ukraine and the Baltic countries). The postponing fertility of younger women and the tendencies of recuperation of postponed fertility in the older group of women and the change in complete cohort fertility are examined.

The aim of the research is to distinguish the main particularities of fertility transition in the Republic of Moldova and selected former Soviet countries during the period 1971–2014. The main objectives are the delimitation of divergences and convergences among them, the determination of fertility transition stages, the assessment of births postponement level, and the quantification of fertility recuperation level in cohorts that have completed their reproductive period.

A postponement and recuperation model proposed by T. Frejka was used as the main method of analysis. The study is based on the Human Fertility Database (HFD) and the vital statistics for the Republic of Moldova. The period analysed is 1971–2014. The quantification of fertility postponement and recuperation was realised through the comparative analysis of the cumulated age-specific fertility of the 1960 cohort (the reference cohort) and the cumulated age-specific fertility of the 1975 and 1980 cohorts.

The results show that after 1990, the postponement index is in continuing increase in all countries. The Baltic countries have the highest index of postponement while the Republic of Moldova the lowest. Russia, Belarus and Ukraine register the medium level of postponement index.

A slower pace than in other countries characterizes the fertility transition in the Republic of Moldova. The fertility profile has an intermediate character, which moves from the early to the late model, recording the first and second phase The Baltic countries are characterized by a faster fertility transition and have been closer to the West European fertility model, especially Estonia, which reached the end of the fertility transition. The fertility transition in Russia, Belarus and Ukraine has been largely influenced by financial incentives for fertility, which are reflected in the pattern of the fertility transition and the shift through different phases.

***Key words**: fertility postponement, fertility recuperation, particularities of fertility transition, cumulative fertility rate, total fertility rate, cohort fertility rate.*

Е.А. Грігорас
наук. співроб., аспірант
Центр демографічних досліджень
Національний інститут економічних досліджень Республіки Молдова
MD-2064, Республіка Молдова, Кишинів, Іон Крянге, 45
E-mail: egrigoras88@gmail.com

ОСОБЛИВОСТІ ПЕРЕХОДУ НАРОДЖУВАНОСТІ В РЕСПУБЛІЦІ МОЛДОВА І ДЕЯКИХ ПОСТРАДЯНСЬКИХ КРАЇНАХ

Розглянуто особливості переходу народжуваності в Республіці Молдова і країнах європейського регіону, які утворились після розпаду Радянського Союзу (Росія, Білорусь, Україна і країни Балтії). Проаналізовано відкладання дітонароджень у молодих жінок і тенденції відновлення відтермінованих народжень у старшому віці, а також зміна підсумкової народжуваності когорт. Мета дослідження – розмежування основних особливостей переходу народжуваності в Республіці Молдова та названих країнах у 1971–2014 рр. Основними завданнями є окреслення розбіжностей та конвергенцій між ними, виділення стадій переходу народжуваності, оцінювання рівня відтермінування народжуваності та кількісного визначення рівня відновлення народжуваності у когортах, репродуктивний період яких минув. Основним методом аналізу обрано модель відтермінування і відновлення дітонароджень, яку запропонував Т. Фрейка. Дослідження засноване на даних Human Fertility Database (HFD) і статистиці природного руху населення Республіки Молдова. Період аналізу 1971–2014 рр. Кількісну оцінку відтермінування і відновлення народжуваності здійснено за допомогою порівняльного аналізу кумулятивної вікової народжуваності когорти 1960 року народження (контрольна когорта) і кумулятивної вікової народжуваності когорт 1975 і 1980 років народження. Отримані результати показують, що після 1990 року індекс відтермінування підвищується у всіх країнах, найбільше його значення властиве країнам Балтії, найменше – Республіці Молдова. Росія, Білорусь і Україна реєструють середній показник відтермінування дітонароджень. У Республіці Молдова перехід народжуваності відбувається повільніше, ніж в інших країнах. Профіль народжуваності має проміжний характер переходу від ранньої до пізньої моделі, перша і друга фази переходу вже минули. Країни Балтії характеризуються швидшим переходом народжуваності і найбільше наблизилися до західноєвропейської моделі народжуваності, особливо Естонія, яка досягла останньої фази переходу народжуваності. У Росії, Білорусі та Україні фінансове стимулювання народжуваності істотно вплинуло на її перехід, що відбилось у особливостях перебудови народжуваності і проходженні різних етапів переходу.

***Ключові слова**: відкладення народжуваності, відновлення народжуваності, особливості переходу фертильності, кумулятивний коефіцієнт народжуваності, коефіцієнт сумарної народжуваності, підсумкова народжуваність когорти.*

Е.А. Григорас
науч. сотр., аспирант
Центр демографических исследований
Национальный институт экономических исследований Республики Молдова
MD-2064, Республика Молдова, Кишинев, Ион Крянгэ, 45
E-mail: egrigoras88@gmail.com

ОСОБЕННОСТИ ПЕРЕХОДА РОЖДАЕМОСТИ В РЕСПУБЛИКЕ МОЛДОВА И НЕКОТОРЫХ ПОСТСОВЕТСКИХ СТРАНАХ

Рассмотрены особенности перехода рождаемости в Республике Молдова и странах европейского региона, образовавшихся после распада Советского Союза (Россия, Беларусь, Украина и страны Балтии). Проанализировано откладывание деторождений у молодых женщин и тенденции восстановления отсроченных рождений в более старшем возрасте, а также изменение итоговой рождаемости когорт. Основным методом анализа служила модель отсрочки и восстановления деторождений, которую предложил Т. Фрейка. Исследование основано на данных Human Fertility Database (HFD) и статистике естественного движения населения Республики Молдова. Период анализа 1971–2014 гг. Количественная оценка отсрочки и восстановления рождаемости осуществлена посредством сравнительного анализа кумулятивной возрастной рождаемости когорты 1960 года рождения (контрольная когорта) и ку-

мулятивной возрастной рождаемости когорт 1975 и 1980 годов рождения. Полученные результаты показывают, что после 1990 г. индекс отсрочки повышается во всех странах, наибольшее его значение характерно для стран Балтии, наименьшее – для Республики Молдова. Россия, Беларусь и Украина регистрируют средний показатель отсрочки деторождений. В Республике Молдова переход рождаемости происходит медленнее, чем в других странах. Профиль рождаемости имеет промежуточный характер перехода от ранней к поздней модели, завершены первая и вторая фазы перехода. Страны Балтии характеризуются более быстрым переходом рождаемости и более других приблизились к западноевропейской модели рождаемости, особенно Эстония, достигшая последней фазы перехода. В России, Беларуси и Украине финансовое стимулирование рождаемости оказало значительное влияние на переход рождаемости, что сказалось на особенностях перестройки рождаемости и прохождении различных этапов перехода.

***Ключевые слова**: откладывание рождений, восстановление рождений, особенности перехода фертильности, кумулятивный коэффициент рождаемости, коэффициент суммарной рождаемости, итоговая рождаемость когорты.*

Introduction. In most European countries, the major changes by the age patterns of fertility represent an inherent part of the fertility trends following the second half of the twentieth century. The transition to low fertility in the European countries of the former Soviet Union was driven by social, political and economic crises, as well as changes in the norms and values associated with the modernization process that started a few decades ago. Therefore, life standards have changed, and control over reproductive behaviour has become a widespread practice among the population at this time. Fertility evolution in the Republic of Moldova and other countries of former Soviet Republics in the European region (Russia, Belarus, Ukraine, and the Baltic countries) has undergone similar socio-economic development, but after 1991, the trends differed. A comparative analysis allows us to highlight some particularities in the transition of fertility.

Therefore, both the Republic of Moldova and the former Soviet countries have long-term tendencies to adopt the ideological changes in certain demographic behaviours that have led to the emergence of "postmodern fertility preferences". Much later and slower than in the Western European countries, that have experienced this continuous process (named in literature, the second demographic transition) in the 1960s.

Fertility patterns, originally characterized by early childbirth and a family pattern of two children or even more, have changed rapidly since the 1990s. The new trend of fertility in selected countries is a declining fertility rates at younger ages and rising at older ages. This phenomenon was named the postponement of fertility and this is an important element of the concept of second demographic transition (Van de Kaa, 2001) [26]. The idea of "postponement" (proposed by the modern demographic researcher Hajnal) explains several cases of sharp, short-term, compensating movements in period fertility rates at different ages [19, p. 86]. Generally, researchers assert that postponement of births (usually the first births), will eventually lead to a decline in complete cohort fertility [12, p. 14; 7]. Although, the perception of postponing fertility means that what is postponed will be recovered in the future, namely a decrease in TPFR, balanced by a subsequent increase, whereby the size of the family remains relatively constant.

The recent sharp decline in fertility and the subsequent stabilization in many European countries have generated a new interest in identifying the solutions for increasing fertility in the future and, if possible, imposing an increase of fertility up to the replacement level [24, p. 250]. However, long-term trends in postponing fertility need a longer period to recuperate the replacement level.

Therefore, this article provides the particularities of postponing fertility of younger women and the tendencies of recuperation of postponed fertility in the older group of

women, as well as how they are reflected in the total complete cohort fertility. The method describes the internal mechanism of the postponement and fertility recuperation process. In this context, the term "mechanism" is used to describe the structural dynamics of fertility from a cohort perspective transposed into total period fertility rates.

To explain fertility transition was used a postponement and recuperation model proposed by T. Frejka, which implies comparison of the fertility of younger women with fertility of older women. In this context, the concept "model" is used to depict a generalised description of the completed postponement and recuperation process, against which, specific developments in any population can be compared. Model depicting phases of childbearing postponement and recuperation cumulated period fertility rate ages 15–28 and cumulated period fertility rate ages 29–49 [6, p. 938–940].

Analysis of recent studies and publications. The analysis of the theoretical framework on fertility transformation indicates that postponing the moment of becoming a parent is a result of social, economic and cultural transformation that has altered perceptions about the role of parents and the nature of the decision making process at the moment of birth. At the same time, studies analysing the occurrence of extremely low fertility in Europe elucidate the determinants of this process. These factors are the result of the combination of demographic and behavioural conditions. Economic and social changes have led to the rationalization of fertility delay; processes of social interaction affecting the fertility schedule; institutional settings in southern, central and eastern European countries have favoured a lower quantum effect of fertility [14, p. 641–642].

The postponement of births has become one of the most prominent characteristics of fertility models in developed societies. Lesthaeghe and Neels, believe that postponing fertility is a feature of the second demographic transition, arguing that the decline of fertility to sub-replacement values is the most important feature of this transition [6, 24, 17]. Instead, Kohler, Billari and Ortega have suggested that delaying births is a distinctive transition to "postpone" a late fertility model. In their view, this process could eventually lead to a concentration of fertility in an increasingly restricted age [14]. It is suggested that "finally" a convergence in demographic behaviour is expected in Europe, and the organization of family life will follow in a similar direction and as a result, there will be an increased similarity in the reproductive behaviour of Europeans [24].

Essential studies are those that describe both the model of fertility postponement / recuperation and the fertility postponement analysis, as well as the identification of changes in fertility rates of female cohorts which comparing to short term (conjuncture) indicators, reflect the most important changes in reproductive behaviour [27].

The idea of the impossibility of recuperation of postponed fertility of cohorts that have completed the reproductive period in the countries with low fertility (such as Central and Eastern Europe), and the definition of postponing fertility is presented by the scientific researcher T. Sobotka [23]. Other important works claim the idea that, now temporary the postponement of fertility in younger couples and rationalizing births (because they will have fewer children compared to previous cohorts), becomes a continuing process in most European countries [8].

It is important to mention also the contribution of works which analyses the factorial model in reducing fertility, including the level of education of women, participation in the labour market, [13, 10], as well as the result of a process that comes from beliefs, attitudes and intentions of behaviour [20, 18, 1, 16].

Purpose of research. The aim of the research is to distinguish the main particularities of fertility transition in the Republic of Moldova and selected former Soviet countries during

the period 1971–2014. The main objectives are the delimitation of divergences and convergences among them, the determination of fertility transition stages, the assessment of births postponement level, and the quantification of fertility recuperation level in cohorts that have completed their reproductive period.

Materials and methods. The current study includes the data based on the vital statistics of the National Bureau of Statistics on the number of births and their distribution, according to the mother's age, and birth rate for the years 1971–2014. For other countries was used data from the *Human Fertility Database* (HFD).

In order to reduce distortions in the calculation of the main fertility indicators for the Republic of Moldova, as "denominators" were used estimates of the age composition of the female population of reproductive age according to European standards (the present population that does not include the migrants who were outside the country for more than 12 months [21]).

Classical methods of demographic analysis of fertility were used in the paper. Also, a modern method was used – the decomposition method, which "decomposes" the female population of reproductive age in two segments, young (15–28 years) and older (29–49 years), in order to study the process of postponing and recuperation fertility.

In line with traditional measures of fertility rates for real and hypothetical generations, were used some specific indicators. Thus, the postponement and subsequent recuperation of births was estimated by calculating cumulative age fertility rates (CASFRs) for studied cohorts. They were compared with those of older cohort who served as the reference cohort. In addition, total cohort fertility rates (TCFRs) were lagging by 40 years in all populations and over time, the model uses this way to reach useful results, which can be comparable between countries. Given that, ASFR at the age of 40 and over are usually insignificant and do not have an important contribution to the formation of the downward fertility of the cohort. At the same time, the model proposed by T. Frejka for postponing / recuperation fertility, which provides four phases of the fertility transition, has been applied:

1. Declining total period fertility rate (TPFR), (phase 1): Young women (aged 15–28) postpone the birth, for about 10 years, thus their fertility is declining. At this time, fertility rates for women aged 29–49 do not change and are stable, because these are the women of older cohorts that do not yet have births to recuperate, however, towards the end of this phase there may be an incipient childbearing recuperation. At the end of this phase, the TPFR is at its lowest level.
2. Initial TPFR increase (phase 2): Childbearing postponement of young women continues, possibly at a slower rate. TPFR begins to increase because the cohorts of older women recuperate their deferred births that go beyond the continuous postponement of births in young ages. TPFR is usually increasing in phase 2, but there can be periods during which the TPFR trend may be more or less stable.
3. Final TPFR increase (phase 3): Fertility of young women stabilizes over time, while of the older continues to increase, stimulating TPFR increase.
4. Stabilised TPFR (phase 4): Childbearing recuperation has ended and there is no childbearing postponement among young women. The total period and cohort fertility rates settle at roughly the same level [6, p. 938–940].

Research outcomes. The particularities of fertility evolution during 1971–2014 in analysed countries, has occurred unevenly, with some increases of fertility followed by deep falls. This is because of policies promoted by socialist governments and the compensatory dynamics of birth rates in the coming period. Whereby natural evolution of fertility in described countries was interrupted by family policies promoted by the soviet government in the 1980s,

which caused considerable increase in period fertility rates, especially in the mid-80s and their sudden countervailing fall in the 1990s. For most countries of former Soviet countries, the postponement of fertility started around 1990 was considerable and proceeded at a rapid pace from one birth cohort to the next. Because of the multiple determinants associated with socioeconomic transformations, economic uncertainty, inadequate social and family policies faced by the former Soviet society, the parents change their value orientations and adopt a strong trend towards postponement of parenthood.

Postponement and recuperation of the childbearing in the countries with a low level of fertility implied significant demographic evolutions in the last decades. Changing fertility models were components integrated into the evolution of family formation, the diversity of forms and trends of marriage and cohabitation, and the characteristics of the "second demographic transition".

There was a noted uniqueness in the evolution of fertility trends observed in these countries which was an unexpectedly dramatic speed of decrease in fertility. Similarities in trends in fertility evolution between countries during the 1990s and 2000s are remarkable.

Until the 1990s, low levels of fertility were not registered in the European countries of the former Soviet Union. In the early 1990s, TPFR varied within the limits of 2.36–1.85 births per women.

In the majority of selected countries, the declining of TPFRs registered "lowest-low" levels of fertility: 1.09 in Ukraine in 2001, 1.12 in Latvia in 1998, 1.16 in Russia in 1999, 1.23 in Lithuania and Belarus in 2002 and 2003, and 1.27 in Estonia in 1998. Except the Republic of Moldova, which registered below the replacement level fertility, TPFR was 1.44 children per women of reproductive age in 2002 (Figures 1, 2).

During 2000–2010, the first increase in TPFRs was registered in the analysed countries. However, the Republic of Moldova experienced this increase later in 2003. This trend is an inversion of fertility decline achieved by most countries in the 1990s or early 2000s (for the Republic of Moldova in 2003) (Fig. 1, 2).

The Republic of Moldova, registered the end of phase 1 through a rapid decline in fertility at young women (15–28 years) during 1990–2002 (Fig. 1), and TPFR at the end of this phase registered a minimum value – 1.44 children per woman. At the same time, there is also a decrease in fertility of older women (29–49 years) because of the early realization of reproductive intentions. Towards the end of this phase (1997–2001), cumulative period fertility rate (CPFR) of older women remained relatively stable, which also offers a specific distinctiveness to the Republic of Moldova compared to other studied countries. In the second phase, young women continue to postpone births, but at a slower rate (2003–2015). CPFR of older women is increasing, demonstrating the recuperation of postponed births at younger ages. As older women recuperate their births, the overall fertility rate, which has remained relatively stable in the last few years, reaches a value of 1.6–1.65 children per woman. The Republic of Moldova, has not yet registered the third and the fourth phase of transition fertility, where the values of the total fertility rates stabilize after the final increase. This allows us to see a slow evolution of the fertility transition.

Fertility transition in Belarus, as in the former Soviet countries, registered when most of these have started transition to a market economy in the early 1990s, and the TPFRs in most these countries have dropped to levels below those in the developed European countries. The major factor behind the fall in fertility was due to the decline of the contribution of the large generation of 1980's. Other factors include decline of child mortality, delay in having births and the changing role of woman in the family [29]. Although the researches highlights the political, economic and social causes that are characteristic of the former Soviet space,

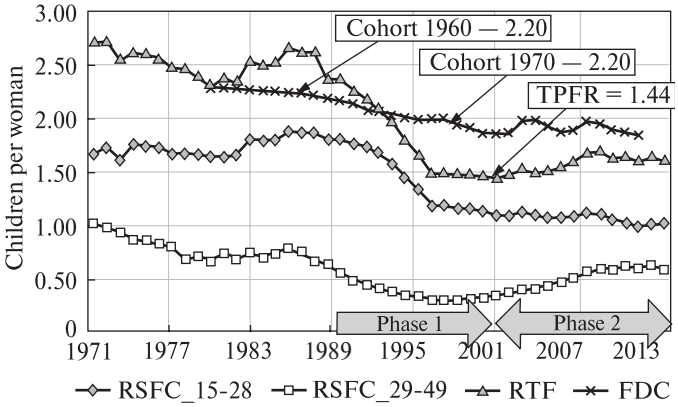

Fig. 1. **Total period fertility rate (TPFR), cumulative period fertility rates (CPFR) for the age groups 15–28 years and 29–49 years, total complete fertility rate (TCFR), Republic of Moldova**

Source: author's calculations.

some papers strongly affirm the ecological factors, namely the Chernobyl catastrophe, which had a negative impact on fertility and as a result the couples, postponed their births [22, 15]. The postponement of fertility started at young women between 1989s and 2003s, this was reflected in TPFR, which in 1989 was 1.91 children per woman in a reproductive age. In 2003, it registered the lowest value – 1.23 children per woman (Fig. 2). The initial fertility growth period began around 2005, with a strong recuperation wave among older women, while CPFR at young women are in a slower decline, which define Belarus in the third phase of postponement and recuperation process. Thus, TPFR raised to 1.70 children per woman in 2014.

Ukraine registered the same circumstances leading to very low fertility rate. Researches tend to confirm that the influence of education on family formation changes during a period of rapid political, social and economic transformation have a strong effect on fertility [2, p. 6]. More than that, Ukraine adopted a new type of family formation, and registered a difference of the time of first births and the postponement, or reduction in the next births [3, p. 1146]. The postponement of fertility was consistent evidence around the year 1989, with a considerable decline in fertility of young women (15–28 years) towards 2001, while the fertility of older women (29–49 years) was essentially stable in the period 1996–2001. This is the first phase of the fertility transition that reflects a remarkable decrease in TPFR (Fig. 2). Phase one ends in 2001, when TPFR reaches the lowest low fertility level – 1.09 children per woman. Ukraine does not record the second phase of the fertility transition, as during 2002–2008, the fertility level in the group of young women is slightly increasing (with 0.13 children per woman), when the model supposes a slowdown of fertility in this group. Perhaps, the increase of fertility in young and older ages is determined by the improvement of the macro-economic situation of Ukraine. These improvements have reduced overall economic uncertainty on the individual level but, more importantly studies of the relationship between fertility and economic uncertainty on the individual level have been inconclusive [3, p. 1162].

Due to a stable trend of increasing births in the older group of women in the period 2001–2013, Ukraine reached the third phase of the fertility transition (2008–2013). An increase in TPFR to 1.51 births per woman in 2013, on the background of rising CPFR among older women and the cease of birth postponement of young women, is apparent.

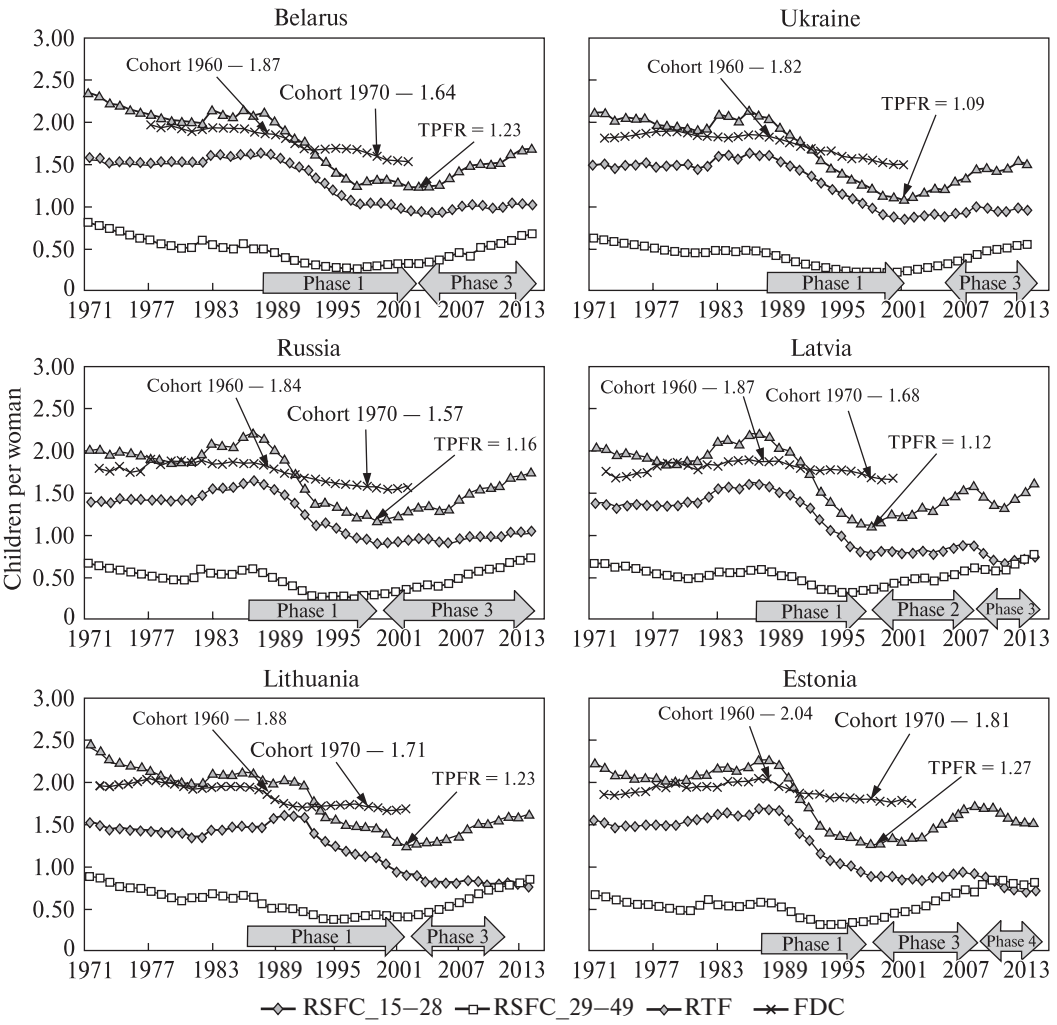

Fig. 2. **Total period fertility rate (TPFR), cumulative period fertility rates (CPFR) for the age groups 15–28 years and 29–49 years, total complete fertility rate (TCFR)**

Source: for the Republic of Moldova author's calculations, for other countries, Human Fertility Database.

Russia's fertility trends were influenced by a number of policy interventions since 1980s that made it difficult to define the period of starting childbearing postponement [27]. The end of the first phase is marked with a decline of fertility during the late 1990s to 1.16 births per woman (1999) and a stable fertility among older women by the end of the 1990s, so that is no longer postponement of births in young ages (Fig. 2). The final increase in TPFR to 1.75 is determined by the recovery of postponed fertility, which has been steadily rising in recent years, and signals the cease of birth delay. CPFR in the age group of young women is stable, which determines the third phase of fertility transition according to the standard model. In agreeing with some researchers, this is due to new government policies that encouraged larger families which entered into force in 2007 [4, p. 6], but others think that the little increase in TPFR, observed in the recent years, is due to the slowing down of births [9, p. 18].

The main factor of Latvia's low birth rates is the rapid transition from socialism to capitalism since the early 1990. Researchers affirm that the cause of the low fertility is largely economic combined with the high level of migration. Latvia records three sequential phases of the fertility transition, which were not found in the Republic of Moldova, Ukraine, Russia and Belarus. Thus, phase one ended earlier than in the other studied countries, whereby in 1998 the TPFR recorded a lowest-low fertility rate – 1.12 children per woman (Fig. 2). The second phase of the fertility transition begins with the increase of the TPFR, the slower decrease of CPFR in young women and an initial increase of CPFR in older women. The third phase of fertility transition was registered between 2009–2014. This is a continuation of the second phase, characterized by continuing growth of TPFR to 1.64 children per woman in 2014. CPFR in young women show no more birth postponement during this period, and CPFR in the 29–49 age group continues to recuperate postponed births.

In Lithuania, as in all former socialist countries of Central and Eastern Europe, rapid fertility decline started at the beginning of the 1990s. Researches show that changes in childbearing dynamics and family planning have also been accelerated by intensifying short-term migration flows between Lithuania and Western countries. Lithuanian society has been absorbing and adopting the lifestyles, value orientations, and norms of behaviour prevailing in more advanced Western countries [25].

Lithuania finished the first phase in 2002 (like the Republic of Moldova and Russia) with a TPFR of 1.23 children per woman of childbearing age (Figure 2). Lithuania did not register the second phase and went straight into the third phase. This was caused by the increase in CPFR in the age group 29–49 in 2003, which also increases TPFR to 1.63 children per woman. The specificity of this phase is the cease of postponing births in young women.

After gaining its independence, Estonia has undergone major social and political changes, which affected fertility behaviour. The first phase of fertility decline started around 1989 and finished in 1998, when TPFR indicates a historic minimum value – 1.27 children per woman (Fig. 2). Authorities started their efforts to reduce the fertility decline since 1990, but in 2004, the new Parental Benefit Act (both parents could use parental leave without losing previous income and could return to their full-time jobs) was adopted. In addition, the Estonian Health Insurance Fund in 2004 started to compensate women aged under 35 for in vitro fertilization treatment. Researchers describe that these changes together with the recovery of the levels of employment and the emergence of new career possibilities may contribute to the increase in fertility rates. Thus, Estonia registered the 3rd phase of fertility transition during 1999–2010, when fertility of young women stabilized over time, while of older women continued to increase, stimulating TPFR increase. Estonia is the only country that registers the fourth (last) phase of the fertility transition. In the fourth phase, childbearing recuperation has come to the end and there is no childbearing postponement among young women, total period fertility rates stabilized around 2011–2014.

Comparative analysis of fertility transition in the former soviet countries permit us to conclude that the considerable childbearing postponement among young women during the 1990s was combined with moderate recuperation during 2000s. In contrast with Western countries, where populations passed through all (or have been experienced in conclusion) the phases of postponing and recuperation process, the postponement of births had ceased and TPFRs were coming very close to the levels of corresponding total cohort fertility rates (for example, Italy, France, Germany, Netherlands). In selected former Soviet countries, populations experienced initial phases of childbearing postponing and recuperation model, where recuperation had only just started, and still register a gap between the TPFRs and the corresponding TCFRs.

Against the specific particularities, the Republic of Moldova (being in the second phase of fertility transition) is in line with the common trends for European countries, having a common way as Russia, Ukraine and Belarus, where the maternity profile is still much younger. More rapidly, the transition of fertility started in Russia and Belarus. They registered the phase one and rapidly passed into the third phase. Ukraine is apart of the pattern, because after phase one it moved slower to the third phase. A faster process of fertility transition characterizes Baltic countries and the most eloquent example is Estonia, which has reached the end of the transition (where fertility rates are stabilizing). It records Phase 1, Phase 3 and Phase 4 according to Frejka's model. Latvia and Lithuania are in the third phase, but the first has also passed through the second phase of the fertility transition.

After 1990, the postponement index has been continuingly increasing. The Baltic countries have a higher level of postponement, up to 0.90 children per woman until 2014. The medium level is registered for Russia, Belarus and Ukraine (around 0.60 children per woman). The Republic of Moldova has a separate position with lowest postponement index (0.40 children per woman), (Fig. 3).

One final methodological question in the context of recent fertility declines is the relevance of studying period fertility. If it is just a temporary phenomenon, lowest-low fertility may not lead to particularly low cohort fertility [14]. Therefore, the way to demonstrate the absolute or relative decline of fertility and absolute or relative increase of fertility is to compare the proportions of childbearing by age for any cohort of interest, which is compared with an older reference cohort (the reference cohort).

In our study, the quantification of fertility postponement and recuperation was realised through the comparative analysis of the cumulated age-specific fertility of the 1960 cohort (the reference cohort) and the cumulated age-specific fertility of the 1975 and 1980 cohorts.

The reference cohort is the women born in 1960, whose reproduction activity took place naturally and was not influenced by any family policy. The level of complete cohort fertility rate of 1960s register different values for selected countries, but have fertility close to two and more children per woman. The Republic of Moldova and Estonia have higher CCFR – 2.20 and respectively 2.06 children per woman, than Lithuania, Latvia and Belarus with 1.87–1.91. Russia and Ukraine registered lower values of the CCFR – 1.85 and 1.83 children per woman (Table 1). By the age of 40, total fertility rate of 1960's cohorts is almost

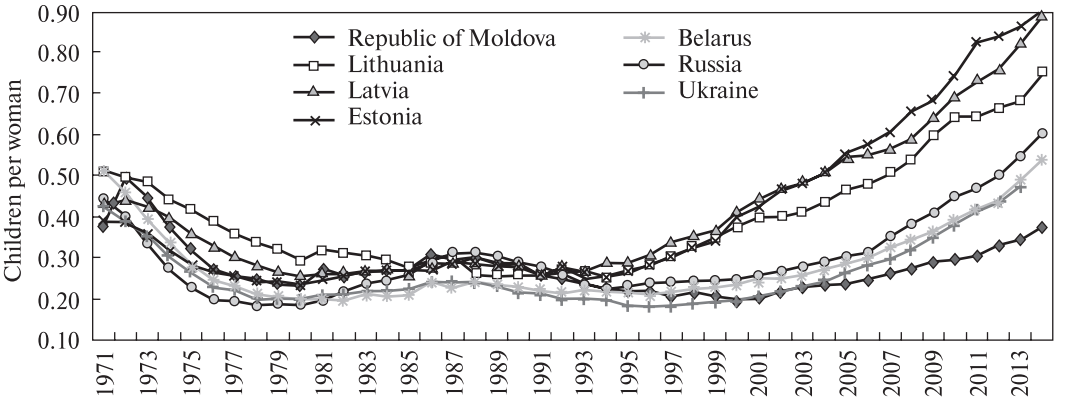

Fig. 3. **Postponement index, 1971–2015**

Source: author's calculations.

Table 1. **Fertility of the cohorts 1960, 1975**

	CCFR (cohort 1960)	Cohort 1960 (TFR up to the age of 40)	Cohort 1975 (TFR up to the age of 40)
Republic of Moldova	2.20	2.18	1.81
Lithuania	1.91	1.88	1.69
Latvia	1.90	1.86	1.57
Estonia	2.06	2.03	1.76
Belarus	1.87	1.86	1.54
Russia	1.85	1.83	1.56
Ukraine	1.83	1.82	1.48

Source: author's calculations based on Human Fertility Database.

accomplished, the difference between CCFR and fertility at the age of 40, being insignificant. Thus, the quantification of fertility postponement and recuperation of younger cohorts from 1975 and 1980 can be realised.

The comparative analysis of the reference cohort and younger cohorts, determine the convergences and divergences of fertility transition process in the selected countries, which identify a different speed and depth determined by the socio-cultural and socio-economic framework.

In the Republic of Moldova, the increase of fertility in very young ages up to 20 years (+0.13) for the 1975 cohort, implies the increase of births at the age of adolescence since 1990s, being a consequence of the liberalization of sexual behaviour, transformation of social values and the lower level of contraceptive culture. For the 1980 cohort a decrease of adolescent fertility is observed, the difference with the reference cohort being only +0.07 children per woman.

The postponement of births is between ages 22 and 31 in the cohort with the 1975 birth year, the difference in CASFR compared to the reference cohorts –0.49 children per women. The recuperation of delayed childbearing after 31 years is insignificant and the difference with the reference cohort at 40 years is –0.38 children per woman (or 22 %).

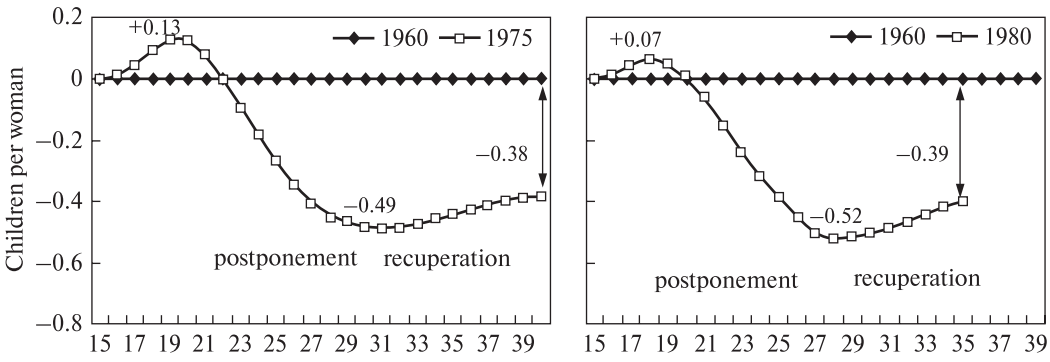

Fig. 4. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, the Republic of Moldova**

Source: author's calculations.

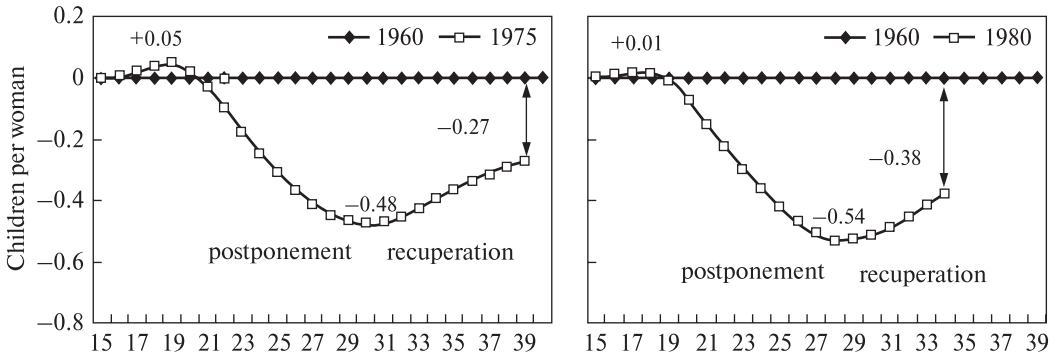

Fig. 5. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Russia**

Source: author's calculations based on Human Fertility Database.

Similar changes are also specific for the female cohort of the birth year 1980. The postponement is observed between ages 20 and 28 years, the decrease in CASFR constitutes –0.52 children per woman. The difference in recuperation of postponed births at 35 years relative to the reference cohort is –0.39 and the recuperation constitutes only 25 %. This cohort has not yet ended its reproductive period, but over the age of 35 ASFR normally decreases considerably, signifying the postponement of births which can`t be recuperated completely.

In Russia, the postponement of births is observed between ages 22 and 30 in the 1975 cohort, the differences in CASFR compared to the reference cohort is –0.48 children per woman. The recuperation at the age of 40 is about 43 % and the difference in CASFR is –0.27.

Compared to the 1960 cohort, the peak of the fertility declining curve recorded significantly higher values, up to –0.54 at the age of 29, meaning more intensive birth retrieval. The difference in CASFR at the age of 34 years is –0.38 children per woman and the recuperation is only 29 %.

The comparative analysis of the CASFRs of the young cohorts and the reference cohort of Ukraine for the year 1960, as in the case of the Republic of Moldova and Russia, shows the increase of CASFR in very young ages, which takes place to the age of 20 (Fig. 6).

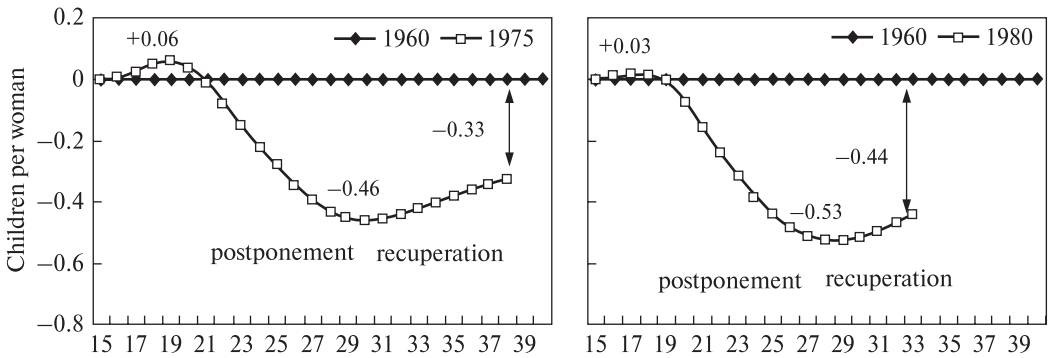

Fig. 6. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Ukraine**

Source: author's calculations based on Human Fertility Database.

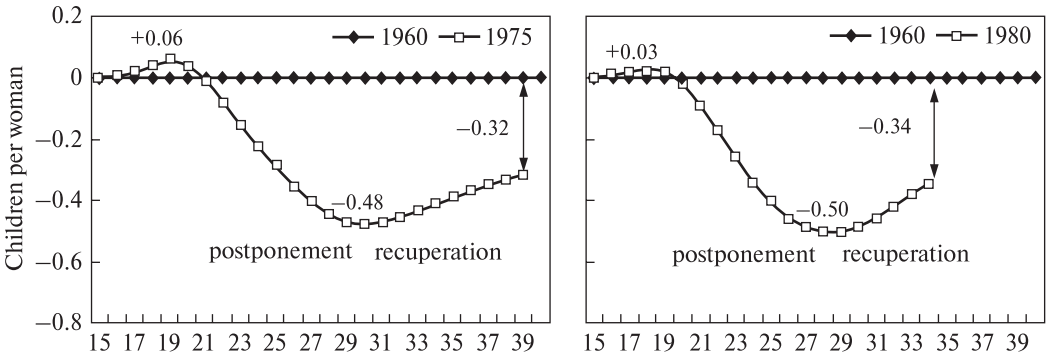

Fig. 7. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Belarus**

Source: author's calculations based on Human Fertility Database.

For the female cohort of 1975, this increase is estimated at 0.06 children per woman of reproductive age and less for that of 1980 – 0.03. In Ukraine, fertility decrease achieved –0.46 children per woman at age of 30. The postponed births have recovered to around 28 %, the difference with the reference cohort is –0.33 births. For the cohort born in 1980, the differences in CASFR (postponement) at age 28 years are –0.53 children per woman and the recuperation at the age 33 is 17 %.

The differences observed in the cumulative age specific fertility rates in Belarus between the reference cohort and the young cohort are highlighted by recording the peak of the declining curve of the cohort born in 1975, which is at the age of 30 –0.48 children per woman (Fig. 7). The recovery of fertility at the age of 39 is about 33 %, the difference in CASFR being –0.32. For the cohort born in 1980 fertility decrease (the postponement) constitutes –0.50 children per woman at the age of 29, and recuperation at the ages 33 – 32.

In the case of Latvia (Fig. 8), the postponement of fertility is performed within the limit values –0.54 children per woman at the age of 29 for the cohort born in 1975, and -0.61 children per woman at the age of 28, for the cohort born in 1980. The value of absolute recuperation of postponed fertility is about 46 % for the cohort of 1975, compared to an estimation of 26 % for the cohort of 1980, which may still be changed until the end of the reproduction period.

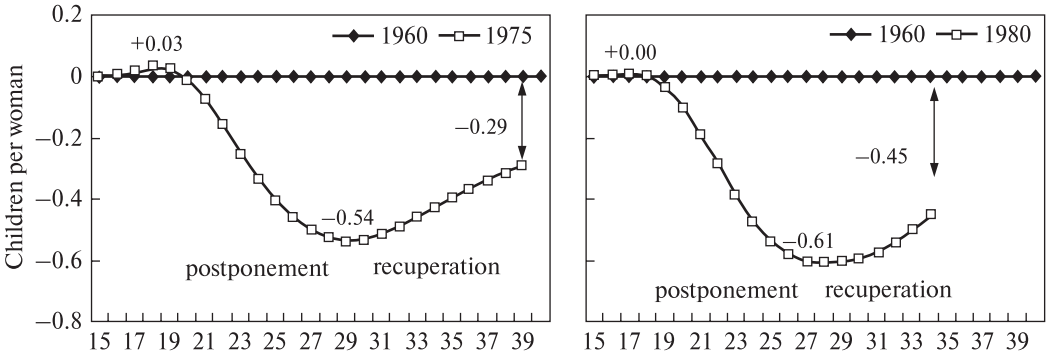

Fig. 8. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Latvia**

Source: author's calculations based on Human Fertility Database.

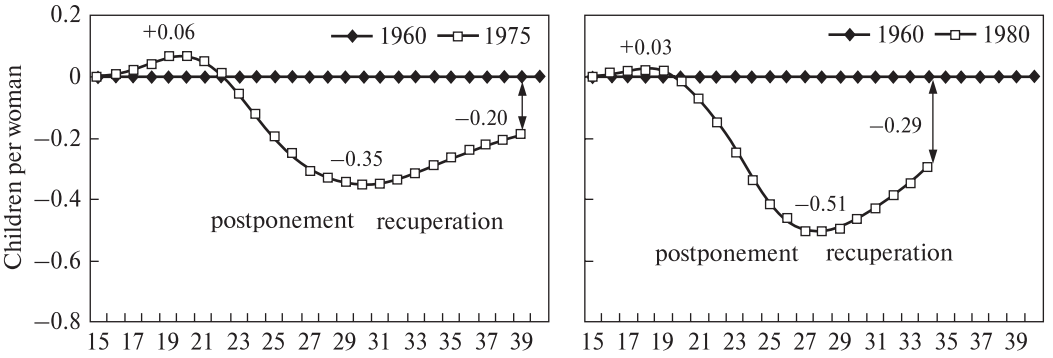

Fig. 9. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Lithuania**

Source: author's calculations based on Human Fertility Database.

In Lithuania, we notice the differences in the cumulative specific fertility rates significantly higher compared to Latvia. Thus, postponement of fertility is achieved within the limit values –0.35 children per woman at the age of 30, for the cohort born in 1975 and –0.51 children per woman at the age of 27 for the cohort born in 1980. The final value of the curve at the age of 34 is –0.29 children per woman, which is the final outcome of the postponement and recuperation process in the 1980 compared to the reference cohort. The index of recuperation births registered 43 % for the 1975 cohort, as well as for the cohort born in 1980.

As in the case of Latvia, Estonia does not record significant increases in CASFRs at young ages. The postponement of births takes place at a faster pace than in the other studied countries, being observed between the ages 20 and 29, in the cohort born in 1975. The difference in CASFR compared to the reference cohort being –0.62 children per woman of reproductive age. For the cohort born in 1980, the postponement started at the age of 19 to the age of 28, where CASFR registered –0.70 children per woman. Until the age of 39, recuperation for the 1975 cohort is realized more than half for Estonia, around 55 %, (–0.28 children per woman), than at the 1980 cohort which is achieved 34 % at the age 34 (–0.46 children per woman).

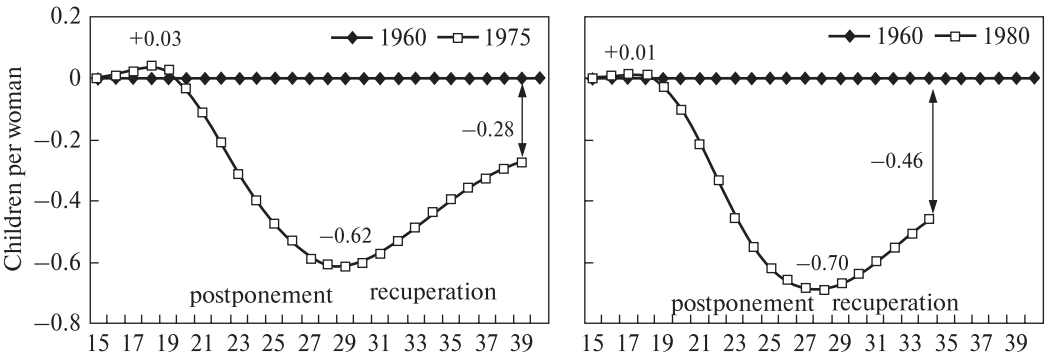

Fig. 10. **Differences in CASFRs between female cohorts born in 1960 and 1975/1960 and 1980, Estonia**

Source: author's calculations based on Human Fertility Database.

The cohorts born in the 1980s were at the most active reproductive age after the collapse of the Soviet Union during the profound socio-economic crisis and dramatic decline in the living standard of the population. In response to these changes, families significantly reduced births (or even stopped them), postponing the births for better times, respectively for older ages. As a result, the model emphasizes a higher degree of postponement for the cohort born in 1980 for all selected countries, especially for Estonia and Latvia, than for the cohort born in 1975. Thus, a relative deficit of fertility is registered. The process of fertility recuperation for the cohort born in 1980 is of less intensity and has not been even half achieved in any of the analysed countries. However, Estonia and Lithuania are in the lead of countries with a higher recuperation of births. The case of Lithuania is noteworthy. Cohort from 1980s even though registered a higher degree of postponement than at the 1975 cohort, at the age of 34 records the same proportion (43 %) of the recovered births as 1975 cohort at the age of 39, signifying that woman of the younger cohorts had their children later in life than women of the older cohorts.

Conclusion. All the countries pass through the fertility transition but have different speed and depth in analysed countries. The divergences are caused by multiple economic and social factors, as well as policies promoted. It is confirmed that reproductive behaviour is susceptible to the external environment, traditions, and specifics of each country determine the different levels of postponement and recuperation of fertility. The similarities between the countries have the trends to recuperate fertility at the higher childbearing ages.

A slower pace than in other countries characterizes fertility transition in the Republic of Moldova, due to the prevalence of the rural population that have a more traditional reproductive behaviour as asserts O. Gagauz. The fertility profile has an intermediate character, which moves from the early to the late model, recording the first and second phase.

The Baltic countries are characterized by a faster fertility transition and have been closer to the West European fertility model, especially Estonia, which reached the end of the fertility transition.

The fertility transition in Russia, Belarus and Ukraine has been largely influenced by financial incentives for fertility, which leads to the distortion of the birth calendar and the natural evolution of fertility. This phenomenon is reflected in the pattern of the fertility transition and the shift through different phases.

REFERENCES

1. Billari, F.C. and H.-P. Kohler. (2004). Patterns of low and very low fertility in Europe. *Population Studies*. 58 (2), 161-176.
2. Brienna, P.H. (2008). Family Formation in Post-Soviet Ukraine: Changing Effects of Education in a Period of Rapid Social Change. Social Forces. Vol. 87, No. 2, December 2008, 767-794, University of North Carolina Press. doi: 10.1353/sof.0.0140.
3. Brienna, Perelli-Harris. (2008). Ukraine: On the border between old and new in uncertain times. *Demographic Research*. Vol. 19, art. 29, 36 p.
4. Elizarov, V., Levin, V. (2015). Russian Federation aging project family policies in Russia: could efforts to raise fertility rates slow population aging? World Bank Group, September 12, 37 p.
5. Frejka, T. (2010). Cohort overlays of evolving childbearing patterns: How postponement and recuperation are reflected in period fertility trends. *Demographic Research,* (revised, November 2010), 53 p.
6. Frejka, T. (2012). The role of contemporary childbearing postponement and recuperation in shaping period fertility trends. *Comparative Population Studies.* No. 36 (4), 927-957.
7. Frejka, T. and G. Calot. (2001). Cohort reproductive patterns in low fertility countries. *Population and Development Review.* No. 27 (1), 103-132.

8. Frejka, T. and G. Calot. (2001). Cohort childbearing age patterns in low-fertility countries in the late 20th century: Is the postponement of births an inherent element? MPIDR Working Paper WP 2001-009, Max Planck Institute for Demographic Research, Rostock.
9. Frejka, T., Zakharov, S. (2012). Comprehensive Analyses of Fertility Trends in the Russian Federation during the Past Half Century. *Max Planck Institute for Demographic Research*, working paper, p.18.
10. Gagauz, O., Buciuceanu-Vrabie, M. (2011). *Rolul parental și rolul profesional: oportunitati de echilibrare pentru femeia contemporana [Parental role and professional role: balancing opportunities for contemporary woman].* Chișinau: "Tipografia – Sirius" SRL, 136 p. [in Romanian].
11. Gagauz, O. (2018). Fertility in the republic of Moldova: European trends and national particularities [Рождаемость в Республике Молдова: европейские тенденции и национальная специфика]. *Demographic review.* No. 5(3), 57-80. doi: https://doi.org/10.17323/demreview.v5i3.8135 [in Russian].
12. Andersson, G., Lisbeth B. Knudsen et al. (2009). Cohort fertility patterns in the Nordic countries. *Demographic research.* Vol. 20, art. 14, 313-352.
13. Jejeebhoy, S.J. (1995). *Women's Education, Autonomy and Reproductive Behaviour: Experiences from Developing Countries.* United Kingdom: Clarendon Press.
14. Kohler, H.-P., F. C. Billari, and J. A. Ortega. (2002). The emergence of lowest-low fertility in Europe during the 1990s. *Population and Development Review.* No. 28 (4), 641-680.
15. Kucera, T., Kucerova, O., Opara, E. (2000). *New demographic faces of Europe: the changing population dynamics in countries of Central and Eastern Europe.* Berlin; Heidelberg; New York; Barcelona; Hong Kong; London; Milan; Paris; Singapore; Tokyo. 422 p.
16. Lesthaeghe, R. (2001). Postponement and recuperation: Recent fertility trends and forecasts in six Western European countries. *Paper presented at the IUSSP Seminar "International perspectives on low fertility: Trends, theories and policies"*, Tokyo, 21-23, March 2001.
17. Lesthaeghe, R. and J. Surkyn. (2002). New forms of household formation in Central and Eastern Europe: Are they related to newly emerging value orientations? *Economic Survey of Europe* 2002/1. Economic Commission for Europe, United Nations, New York and Geneva, pp. 197-216.
18. Lesthaeghe, R. and P. Willems. (1999). Is low fertility a temporary phenomenon in the European Union? *Population and Development Review*. 25 (2), 211-228.
19. Bhrolcháin, Máire Ní and Laurent Toulemon. Does Postponement Explain the Trend to Later Childbearing in France? Vienna Yearbook of Population Research. 2005, pp. 83-107.
20. Miller W.B., Pasta D.J. (1995). Behavioural Intentions: Which Ones Predict Fertility Behavior in Married Couples? *Journal of Applied Social Psychology.* 25 (6), 530-555.
21. Penina, O., Jdanov, D.A., Grigoriev, P. (2015). *Producing reliable mortality estimates in the context of distorted population statistics: the case of Moldova*. Max Planck Institute for Demographic Research, working paper, 35 p.
22. Shakhotska, L., Bobrova, A. (2014). Impact of structural and socio-economic factors on the number of births and deaths in the Republic of Belarus. Demography and social economy, 2014, 2(22), 101-111. doi: https://doi.org/10.15407/dse2014.02.101
23. Sobotka, T. (2004). *Postponement of Childbearing and Low Fertility in Europe.* Dutch University Press: Amsterdam.
24. Sobotka, T. (2011). Fertility in Central and Eastern Europe after 1989: Collapse and Gradual Recovery. *Historical Social Research.* Vol. 36, No. 2 (136), 246-296.
25. Stankuniene, V., Jasilioniene, A. (2008). Lithuania: Fertility decline and its determinants. *Demographic research.* Vol. 19, art. 20, 705-742. doi: 10.4054/DemRes.2008.19.20.
26. Van de Kaa, D. J. 2001. Postmodern fertility preferences: From changing value orientation to new behavior. Global Fertility Transition, R.A. Bulatao and J.B. Casterline (eds.). *Supplement to Population and Development Review.* Vol. 27, 290-331.
27. Zakharov, S. (2008). Russian Federation: From the first to second demographic transition. *Demographic research.* Vol. 19, art. 24, 907-972.

Стаття надійшла до редакції 21.11.2018

Article submitted on 21.11.2018