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Contemporary cohort reproductive patterns in the Baltic countries
(Draft for discussion)

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1. Introduction

There have been numerous periods in the history of nations when political developments have had a profound impact on demographic trends. Arguably more frequently than in other parts of the world that was the case during the history of the autocratic systems of the Communist era in the 20th century in Central and Eastern Europe and in Asia. The demographic consequences of industrialization, collectivization and deportations in the Soviet Union during the 1930s and the effects of the Great Leap Forward in China in 1959-61 are among the well-known cases (Livi-Bacci 1993). That the populations of the Baltic countries were among the principal victims of Stalinist policies and the Soviet occupation, especially during the 1940s and 1950s, is not so well known. As this paper deals primarily with population developments of the second half of the 20th century in the Baltic countries, the tragic times of the 1940s are the starting point.

The paper is a part of a series emanating from an extensive project[1] exploring in detail cohort fertility behavior in approximately 30 populations of Europe, North America, Oceania and East Asia[2]. The rationale for the project, its principal content, methods, a general overview of trends in cohort fertility, three abbreviated examples of country analyses and preliminary conclusions were published in Frejka, Calot (2001a). Additional papers that have been completed to date explore trends in age patterns of childbearing (Frejka, Calot 2001b), in childlessness and parity distribution (Frejka et al.,

[1] The working title of the project is "Contemporary cohort reproductive patterns: Low fertility countries in the second half of the 20th and in the early 21st century." It is scheduled to be published as a book in 2002.
[2] The initial countries of the project were: Australia, Austria, Belgium, Bulgaria, The Czech Republic, Denmark, England and Wales, Finland, France, Greece, Hungary, Italy, Japan, The Netherlands, New Zealand, Norway, Portugal, The Slovak Republic, Spain, Sweden, Switzerland, Romania, Russian Federation, United States, Federal Republic of Yugoslavia, plus data for the former Federal Republic of Germany and for the former German Democratic Republic. We are still acquiring data for other countries, such as Canada, Hong Kong and Taiwan. The Baltic countries constitute a recent valuable addition to the project.

2001), and cohort reproductive patterns in the Nordic countries (Frejka, Calot forthcoming).

This paper explores various aspects of cohort fertility trends in the Baltic countries utilizing reconstructed cohort fertility data. We realize that the data applied in this paper are not definitive or perfect. Efforts are under way to further improve on the quality of these data. Consequently, certain changes in the data can be expected in the future. Nevertheless, the data applied in the present paper reflect well the basic levels and trends of fertility developments of the cohorts born during the 1930s through those of the 1970s.

The following section provides some insights into the history of the Baltic populations. Section 3 describes the data and methods applied in the research. In the fourth section levels and trends of various aspects of cohort fertility in the Baltic countries are described and analyzed[3], and these are compared with developments in other countries. The final part of the paper provides a summary of findings and conclusions.

2. Background

Ever since the Estonians settled by the Baltic Sea about 5,000 years ago and since the times when the Latvians as well as the Lithuanians followed later, namely around the 13th century, these nations have had a checkered history. For a while the Lithuanians established and maintained a large empire inhabited by Slavs to their East and South, but for the most part wars and subjugation to major powers prevailed. These apparently resulted in more frequent population crises than on average in other parts of Europe (Palli 1997).

Despite the travails of history the Baltic nations maintained a national identity and proved to be independent and distinct also in their demographic behavior. The Estonians and the Latvians were among the populations to adopt the "West European" nuptiality patterns of late marriage and low marital fertility (Hajnal 1965) already in the 19th century. The populations of Estonia and to some extent Latvia were among those with the lowest fertility in Europe in the late 19th and early 20th centuries (Katus 1994). Below replacement fertility was reached in Estonia during the 1920s and its population experienced the lowest fertility in Europe in the early 1930s together with Austria, Germany and Sweden, with net reproduction rates below 0.8 (Kirk 1946). Latvia was not far behind with a NRR equal to 0.82 (Kirk 1946). While the populations of Estonia and Latvia were among the populations of Europe to experience the demographic transition early, the population of Lithuania followed somewhat later, however, it did not reach below replacement fertility until the middle of the 20th century.

[3] We are working on detailed country studies, however, these were not completed in time to be included in the present draft of the paper.

The Baltic countries were among those who gained political independence after World War One which they enjoyed during the 1920s and 1930s. Their independence was short-lived and brought to an end by the "first" Soviet occupation in 1940 as a result of the Molotov-Ribbentrop Pact between Germany and Russia establishing their respective spheres of influence. During 1941 to 1944 the Baltic countries were under German occupation and subsequently in 1944 and 1945 the second Soviet occupation began which lasted for close to 50 years.

Already the first Soviet occupation entailed political terror, mass murders and deportations. The war and German occupation also brought about considerable suffering, population losses, including deportations, especially of citizens of Jewish origin. Following the war the Soviet government unilaterally established new boundaries transferring parts of Estonia and Latvia to the Russian Federation. The territory of Lithuania was expanded by the Vilnius region annexed from Poland. The Soviet regime intensified its grip by forcefully rearranging the entire societal organization and continued in the political terror and deportations. To escape this fate, considerable segments of the population fled to the West. The net result were major losses of population. Apparently the political upheaval accompanied by mass deportations and the escape of people to the West contributed to the unusually low levels of fertility in Estonia and Latvia during the 1940s and 1950s.

The most blatant expressions of political oppression started to subside slowly following Stalin's death and a gradual process to more "normal" societal and personal life styles developed, albeit of an East European socialist model of a centrally planned economy and an autocratic political establishment. Eventually the liberalization of the Soviet regime under Gorbachev provided grounds for the restoration of independent statehood for the Baltic countries in 1991. However, having been in a state of occupation and dependence for half a century (Misiunas, Taagepera 1983) a difficult and complex period of transition to a western type democratic society and a market economy ensued during the 1990s.

3. Data and Methods

The research on which this paper is based used a cohort fertility series that was prepared specifically for the purpose at hand. The majority of European countries have had better conditions for data collection, organization and maintaining continuity than the Baltic countries. There is a legitimate concern regarding the quality of the data, which was impaired because of the interference imposed by the Soviet government in 1940 and after 1944, and due to the German occupation of 1941 to 1944. These issues are beyond the scope of this paper. Suffice it to mention that work is under way to rectify the situation. In any event, by the end of the 20^{th} century a sufficient amount of data on calendar year of births by single year of age of the mother had been accumulated in the Baltic countries to attempt to construct a cohort fertility series. These were calculated for cohorts since those born in 1934 in Estonia and Latvia and since those born in 1943 in

Lithuania. The parity specific data are at times available only for five-year age groups which required more elaborate recalculations as described below.

The data at our disposal consist of births from 1947 to 1998 for Estonia and Latvia together with January 1 populations. For Latvia, these data are supplied by birth order up to 10+ in single-years of age for 1947-1954 and 1978-1998 and in 5-year age detail over the interim period (1955-1977). For Estonia, the form of the data is similar, except that from 1994 onwards parity detail is provided only for 5-year age categories. For both of these countries we also have the annual series of total births irrespective of parity by single-years of age of mothers, 1947-1998. The (female) population data are provided annually 1950-1998 for Estonia and 1950-1999 for Latvia.

For Lithuania, we have single-year births 1950-1999 and female January populations by single-year age for 1959, 1965, and 1970-1999. Single-year detail for the intervening January 1 points in the 1960s was estimated by linear cohort interpolation. Parity detail begins for Lithuania only in 1970, in 5-year age categories for birth orders through 10+. As in the Latvian case, single-year age detail for births by parity begins in 1978 and continues through 1998. In practice, this means that relative to Estonia and Latvia, the data afford a limited range of observable birth cohorts for Lithuania, especially where birth order is concerned.

For each country, cohort age-specific fertility rates were calculated as the average of births in a single-year age category over a 2-year period divided by the mid-period (January 1) population in that age group. The age-specific rate in question corresponds to the cohort born in year $t\text{-}a\text{-}1$, where t is the year of observation of the January 1 population age a. Age-parity-specific rates are calculated similarly, only using births of the specified birth order instead of total births. Where parity data was available only for 5-year age intervals, the annual 5-year detail was subdivided into single-years using the following procedure. First, annual period 5-year age-parity-specific fertility rates were calculated in the usual manner as the ratio of births of the given order and (5-year) age interval to the midyear female population in the same age interval. Next, first-approximation single-year parity-specific rates were calculated by linear interpolation between the 5-year rates (assumed to refer to the midpoint of the respective 5-year age intervals); in this process the birth rates for ages 14.5 and 50.5 were taken to be zero.[4] The first-approximation rates were then smoothed by a Kernel smoother with a bandwidth of 5, using the normal distribution as the kernel.[5] Expected parity-specific births were then estimated as the product of the smoothed rates and the single-year, mid-year age distribution of women. Finally, the single-year detail of expected births within 5-year age categories was employed to subdivide the observed 5-year age-parity-specific births into single-years of age.[6]

[4] Any births occurring over age 49 were assigned to the 45-49 age category, and births below age 15 were assigned to the 15-19 category.

[5] A kernel smoother is a nonparametric smoother in which the bandwidth indicates the spread of points taken into account and the kernel is a function weighting the points (Eubank, 1988).

[6] The procedure described was implemented in an S-Plus program available upon request.

The cohort analysis presented below employs a methodology developed by Frejka and Calot (2001a). The majority of the analyses of cohorts that have completed their fertility and of incomplete cohort fertility is based on registered data. However, when a cohort has yet to attain a given age in the data, its rate for that age is taken to be that of the most recent cohort for which an age-specific or age-parity-specific rate is observed. In effect, this methodology fills out the future fertility of a cohort which has not completed its reproductive period with the age-specific or age-parity-specific rates in the most recent synthetic cohort. The methodology imposes a limit on the utilization of synthetic data. For most cohorts, especially those where registered data are available to the end of their thirties, only a small percentage (usually no more than up to 3 percent) of the total cohort fertility rate needs to be estimated. Thus the range of error is by definition limited. In all cases, the synthetic portion of a cohort's "extended fertility" never exceeds 15 percent of the cohort's total fertility rate or total parity-specific fertility rate. For details see footnote 3 in Frejka and Calot 2001a.

4. The Analysis

The analysis of post-war fertility developments in the Baltic countries has to be viewed in light of the political developments, namely the Soviet occupation and the extremely violent reorganization -- "sovietization" -- of the society. Contrary to practically any other country in Europe, there was no fertility increase following World War 2 (see Figure 1). Estonia and Latvia witnessed no "baby-boom" after the war. This is partly true also for Lithuania but this country did not experience fertility below the replacement level before WW 2 either.

The absence of a post-war baby-boom in Estonia and Latvia has obviously been an exceptional feature of fertility trends among forerunners of fertility transitions. Almost all such countries having experienced fertility below replacement during the 1920s-1930s, then experienced a post-war baby-boom (see Daguet 1996). In the western countries these fertility increases lasted for over a decade or more often up to the middle of the 1960s [Festy 1984; Sardon, Calot 1997]. The fertility increases were quite considerable, substantially above replacement. Estonian and Latvian fertility, on the contrary, remained systematically below replacement for an additional 20-25-year period. From the late 1940s through the 1960s the populations of Estonia and Latvia had the lowest fertility in Europe and correspondingly in the world (see Figure 1).

Trends of cohort fertility

The extraordinarily low fertility in Latvia and Estonia is clearly reflected in the completed cohort fertility rates of the generations which started their childbearing in the mid-1940s and whose prime childbearing periods were in the late 1940s and in the 1950s. These were the cohorts born in the 1930s. The total cohort fertility rates (TCFRs) of the cohorts born in 1930-31 in Estonia and Latvia were about 10 to 15 percent below those of

the Czech Republic and Hungary, and 25 to 30 percent lower than the corresponding cohorts in Denmark, Finland and Norway (see Table 1).

From the cohorts of the 1930s to those born in 1960-61 total cohort fertility was increasing modestly in Estonia from about 1.8 children per woman to 2.0, and in Latvia from above 1.7 to 1.9 (see Table 1). In Lithuania between the cohort of 1943-44 and that of 1960-61 there was a small decline. Possibly more important than the trends was the fact that in all three countries the TCFRs were continuously below replacement. Starting with the cohorts born around 1960 a sharp decline in the TCFRs set in. Estimates of the TCFRs for the cohorts born in 1966-67 were 1.75 for Estonia, 1.71 for Latvia and 1.70 for Lithuania, respectively.

Table 1
Total cohort fertility rates, Baltic, Nordic and Central and East European formerly socialist countries, birth cohorts 1930-31, 1940-41, 1950-51 and 1960-61

Country	*Total fertility rate (TCFR) of birth cohort*				*Change of TCFR compared to older cohort (in percent)*		
	1930-31	*1940-41*	*1950-51*	*1960-61*	*1940-41/ 1930-31*	*1950-51/ 1940-41*	*1960-61/ 1950-51*
Baltic countries							
Estonia	1.84a	1.93	1.98	1.98	5	3	0
Latvia	1.78a	1.76	1.90	1.89	-1	8	-1
Lithuania	n.a.	1.97b	2.00	1.87	n.a.	2	-6
Nordic countries							
Denmark	2.37	2.22	1.90	1.90	-6	-14	0
Finland	2.45	2.00	1.85	1.94	-18	-8	5
Norway	2.51	2.43	2.09	2.09	-3	-14	0
Sweden	2.13	2.04	2.01	2.02	-4	-1	0
Central and East European formerly socialist countries							
Czech Republic	2.14	2.06	2.10	2.01	-4	2	-4
Hungary	2.07	1.92	1.95	2.02	-7	2	4
Poland	n.a.	n.a.	n.a.	2.16	n.a.	n.a.	n.a.
Russian Federatio	n.a.	1.93	1.87	1.82	n.a.	-3	-3

Note: a = 1934; b = 1943

With regard to trends there was a considerable difference between the Baltic and the Nordic countries. Relative stability in the former compared to a decline of cohort fertility in the latter, in particular from the cohorts born around 1930 to those born in 1950-51 (see Table 1). The level of the TCFRs of the 1950s were within a very narrow range slightly below replacement in both groups of countries.

The levels and trends of the TCFRs in the formerly socialist countries of Central and Eastern Europe were quite similar to those in the Baltic countries (see Table 1). There were subtle differences. For instance, the TCFRs in the Russian Federation from the cohorts of the late 1930s to the 1960 cohort display a minor decline compared to the

subtle increase in the Baltic countries. In the Czech Republic the long-term trend exhibited a moderate decline up to the cohorts of the late 1950s. Both sets of countries had in common a decline in completed cohort fertility among the cohorts of the 1960s.

The young generations

The next step is to analyze fertility behavior of the cohorts which are in the middle or at the onset of their reproductive periods. This is done by comparing cumulated cohort fertility rates (CCFRs) up to a certain completed age with the same measure in a cohort which is 10 years older. For the purpose of international comparison the cumulated rate is taken for the respective cohort up to an age for which data are available for all the countries.

The overview presented in Table 2 demonstrates that cumulated fertility up to completed age 37 in the 1960 cohorts in Estonia and Latvia was higher by about five percent than in the 1950 cohorts. The respective cohorts in the Nordic countries and the formerly socialist countries of Central and Eastern Europe had experienced either minor increases or decreases of CCFRs.

The CCFR of the 1965 cohort up to age 32 in Latvia was moderately higher than that of the 10 years older cohort, in Estonia this cohort experienced a moderate decline while in Lithuania the decline was 13 percent. CCFRs up to age 27 in the 1970 cohorts were lower by about 20 percent in all the countries concerned. Finally, among the cohorts born in the mid 1970s the CCFRs up to age 22 were between 15 and 30 percent lower in the Nordic countries. In the CEE countries and in the Baltic countries, with the exception Russia and particularly of Lithuania, these CCFRs were lower by 35 to 55 percent (see Table 2).

Table 2

Differences in cumulated cohort fertility rates (CCFRs) compared to cohorts born 10 years earlier, Baltic, Nordic, Central and East European countries, birth cohorts 1960-61, 1965-66, 1970-71 and

Birth cohort	Completed Age	Difference in CCFRs compared to cohort born 10 years earlier in per cent in									
		Estonia	Latvia	Lithuania	Denmark	Finland	Norway	Sweden	Czech Rep	Hungary	Russia
1960-61	37	5	4	n.a.	-2	3	-2	1	-4	3	-1
1965-66	32	-3	2	-13	-5	-7	-7	-5	-9	-1	-10
1970-71	27	-26	-23	-13	-21	-16	-18	-16	-23	-20	-19
1975-76	21	-45	-36	-2	-15	-17	-26	-31	-54	-43	-21
1960 TCFR	50	1.98	1.89	1.87	1.90	1.94	2.09	2.02	2.01	2.02	1.82

Data in Table 2 provides the first indication that fertility of the cohorts born around 1960 is eventually not likely to be much different than completed fertility of the 1950 cohorts in all the countries being considered in this paper.

Age patterns of cohort fertility

A simple first approximation to observe changes in age patterns of fertility is to compare the proportion of the TCFR that is realized in the first half of the reproductive period with that realized in the second half.

In the Nordic countries starting with the cohorts of the 1940s through those of around 1960 fertility has been shifting from early in the reproductive period, i.e. when women are in their teens and lower twenties, to later in their life when they reach their upper twenties and thirties. In contrast, in the Baltic countries the proportion of women having children early in the reproductive period was increasing from one generation to the next. In Estonia and Latvia the cohorts born around 1940 were having only slightly over half of their children by age 27, whereas those born 20 years later realized almost 70 percent of their eventual TCFR by that age (see Table 3). The Nordic countries were having only about 40 percent of their children during their teens and early to mid-twenties. In this respect women in the Baltic countries were behaving similarly as in the formerly socialist countries of Central and East European countries.

Table 3
The proportion of childbearing realized by completed age 27, selected countries, birth cohorts 1930-31, 1940-41, 1950-51 and 1960-61

Country	*Proportion of childbearing of birth cohort by completed age 27*				*Relative change of proportions between cohorts 10 years apart (in percent)*		
	1930-31	*1940-41*	*1950-51*	*1960-61*	*1940-41/ 1930-31*	*1950-51/ 1940-41*	*1960-61/ 1950-51*
Baltic countries							
Estonia	n.a.	54.6	62.1	69.9	n.a.	14	13
Latvia	n.a.	53.2	61.2	68.8	n.a.	15	12
Lithuania	n.a.	n.a.	59.9	65.5	n.a.	n.a.	9
Northern Europe							
Denmark	56.3	65.0	60.3	40.1	15	-7	-33
Finland	51.8	61.9	51.0	39.2	19	-18	-23
Norway	46.1	61.3	60.3	43.6	33	-2	-28
Sweden	52.2	59.3	52.5	39.2	14	-11	-25
Formerly socialist countries (Central and Eastern Europe)							
Czech Republic	68.9	71.1	73.8	74.6	3	4	1
Hungary	65.7	62.7	68.5	65.3	-5	9	-5
Russian Fed.	n.a.	59.1	62.3	71.8	n.a.	5	15

The differences between the fertility behavior of the 1950 and the 1960 cohorts demonstrate in greater detail what was taking place (see Table 4). In the Baltic countries a comparison of the CCFR up to completed age 27 of the 1960-61 cohort with that of the 1950-51 cohort indicates an increase in all three countries. This means that women of the 1960-61 cohort in the Baltic countries were bearing an increased number of children earlier in life. When the women of the 1960 cohorts in the Baltic countries became older,

namely in their late twenties and in their thirties they decided to have less children than their ten years older compatriots.

In contrast to the Baltic countries, women of the 1960 cohorts in the Nordic countries where having fewer children than the 1950 cohort during the first half of their reproductive life. When they became older they were having more children than the 1950 cohort. The 1960 cohorts were thus compensating later in their reproductive periods for the deficits incurred when they were young.

Because in most Western countries a trend of lower fertility in the first half of the reproductive period is commonplace, it is of significant interest whether the lower fertility when the women are young is compensated when they become older. In the Nordic countries women of the 1960 cohorts were among those where the fertility deficits incurred early in life were later totally compensated. The extent to which fertility when women are older compensated early fertility deficits is shown in the last column of Table 4. In Denmark and Norway, the whole fertility deficits incurred early in life were compensated by higher fertility later in life. This is expressed in the last column of Table 4 where the difference between the CCFRs of the 1950 and 1960 cohorts fertility before and after completed age 27 are compared. The number 100 for Denmark means that 100 percent of the deficit incurred before reaching completed age 27 was compensated later in the reproductive period. In Finland 148 percent of the deficit before the 1960 cohort reached age 27 was compensated after that age.

In the Central and East European countries age patterns of childbearing differed from one country to another. Women in the Russian Federation were behaving similarly to women in the Baltic countries. The 1960 cohort was bearing more children when young, but less after completed age 27. This is labeled as the "reversed" type of compensation in the last column of Table 4, namely it was the reverse of what was happening in the Nordic countries. The surplus of children before age 27 is compensated by a deficit after that age. In the Czech Republic fertility was declining in the 1960 cohort before and after age 27. In Hungary the fertility decline when women were young was very small compared to the increase when they were older. In numerical terms this appears as a huge overcompensation in the last column of Table 4.

Table 4
Cumulated cohort fertility rates (CCFRs), by completed age 27 and after completed age 27, selected countries, birth cohorts 1950-51 and 1960-61

Country	*CCFR of birth cohort at completed age 27*			*CCFR of birth cohort after completed age 27*			*Measure of compensation of fertility after age 27*
	1950-51	*1960-61*	*1960-61 minus 1950-51*	*1950-51*	*1960-61*	*1960-61 minus 1950-51*	
Baltic countries							
Estonia	1.205	1.376	0.171	0.736	0.592	-0.144	reversed
Latvia	1.144	1.295	0.151	0.725	0.587	-0.138	reversed
Lithuania	1.201	1.210	0.009	0.804	0.638	-0.166	reversed
Northern Europe							
Denmark	1.143	0.761	-0.382	0.754	1.135	0.381	100
Finland	0.946	0.761	-0.185	0.907	1.180	0.273	148
Norway	1.258	0.908	-0.350	0.828	1.177	0.349	100
Sweden	1.052	0.793	-0.259	0.953	1.230	0.277	107
Formerly socialist countries (Central and Eastern Europe)							
Czech Republic	1.547	1.502	-0.045	0.550	0.510	-0.040	fertdecl >&<27
Hungary	1.336	1.317	-0.019	0.615	0.701	0.086	453
Russian Fed.	1.166	1.307	0.141	0.707	0.514	-0.193	reversed

In absolute terms, in the Baltic countries young women were bearing considerably more children when in their teens and early to mid-twenties than in the Nordic countries, and roughly equally as many as in the formerly socialist countries of Central and Eastern Europe. In the Baltic countries by completed age 27 women of the 1960 cohorts had borne 1.2 to 1.4 children compared to 0.8 to 0.9 in the Nordic countries, a difference of 30 to 80 percent.

There were numerous powerful motivations in the societal milieu of the formerly socialist countries for women and couples to marry early and to bear children when relatively young. To name but two of the arguably more important ones. In all of the formerly socialist countries there was a shortage of housing and most of it was government owned, controlled and distributed. The prospects for obtaining an apartment for rent was infinitely better for those young people who were married and had a child or children.

There was one incentive for early marriage and childbearing in the Baltic republics of the former Soviet Union which was not present in the Central European countries that were relatively less politically dependent on Moscow. Young men in the Baltic republics who were married and especially those with children were less likely to be drafted into the Soviet army. And many young Estonian, Latvian and Lithuanian men did all they could in order to avoid the obligation to serve for 2 to 3 years in the Soviet army.

It is impossible to predict what kind of fertility behavior women of the 1970s are going to practice when they will be older. It is already known, however, that in all the countries that are being analyzed, fertility of the 1970 cohorts when women were below

age 27 was lower by around 20 percent compared to the 1960 cohorts (see Table 5). There was an equally noteworthy decline in cumulated fertility of young women in all the formerly socialist countries, including the Baltic countries, as well as in the Nordic ones. Apparently the incentives to bear children early had disappeared and conceivably reasons to consider the option of having children later or even of not bearing any children were appearing in the formerly socialist countries.

Table 5
Cumulated cohort fertility rates (CCFRs) by completed age 27, selected countries, birth cohorts 1950-51, 1960-61 and 1970-71

Country	*CCFR of birth cohort by completed age 27*			*Difference of CCFRs between birth cohorts (in percent)*			*Difference of CCFRs between birth cohorts (in children per woman)*		
	1950-51	*1960-61*	*1970-71*	*1960-61/ 1950-51*	*1970-71/ 1960-61*	*1970-71/ 1950-51*	*1960-61/ 1950-51*	*1970-71/ 1960-61*	*1970-71/ 1950-51*
Baltic countries									
Estonia	1.205	1.376	1.038	14	-25	-14	0.17	-0.34	-0.17
Latvia	1.144	1.295	0.986	13	-24	-14	0.15	-0.31	-0.16
Lithuania	1.201	1.210	1.081	1	-11	-10	0.01	-0.13	-0.12
Northern Europe									
Denmark	1.143	0.761	0.600	-33	-21	-48	-0.38	-0.16	-0.54
Finland	0.946	0.761	0.638	-20	-16	-33	-0.19	-0.12	-0.31
Norway	1.258	0.908	0.743	-28	-18	-41	-0.35	-0.17	-0.52
Sweden	1.052	0.793	0.665	-25	-16	-37	-0.26	-0.13	-0.39
Formerly socialist countries (Central and Eastern Europe)									
Czech Republic	1.547	1.502	1.160	-3	-23	-25	-0.04	-0.34	-0.39
Hungary	1.336	1.317	1.054	-1	-20	-21	-0.02	-0.26	-0.28
Russian Fed.	1.166	1.307	1.062	12	-19	-9	0.14	-0.25	-0.10

Furthermore, it is also already known that fertility below the age of 22 was considerably lower in the 1975 cohorts in the Baltic countries as well as in the Nordic ones and in the countries of Central and Eastern Europe (see Table 6). The difference in early childbearing of cohorts only five years apart, i. e. between the 1970 and the 1975 cohorts, in the Baltic countries as in the Central and East European ones is substantial and the rate of decline is on average at least double if not more compared to the Nordic countries.

Table 6
Cumulated cohort fertility rates (CCFRs), completed age 22, selected countries, birth cohorts 1950-51, 1960-61, 1970-71 and 1975-76

Country	*CCFR of birth cohort by completed age 22*				*Difference of CCFRs between birth cohorts (in percent)*		
	1950-51	*1960-61*	*1970-71*	*1975-76*	*1975-76/ 1970-71*	*1970-71/ 1960-61*	*1960-61/ 1950-51*
Baltic countries							
Estonia	0.447	0.557	0.540	0.344	-36	-3	24
Latvia	0.410	0.489	0.518	0.327	-37	6	19
Lithuania	0.403	0.385	0.504	0.404	-20	31	-4
Northern Europe							
Denmark	0.403	0.224	0.132	0.120	-9	-41	-44
Finland	0.352	0.236	0.162	0.140	-14	-31	-33
Norway	0.515	0.307	0.216	0.174	-19	-30	-40
Sweden	0.387	0.220	0.189	0.118	-38	-14	-43
Formerly socialist countries (Central and Eastern Europe)							
Czech Republic	0.600	0.694	0.585	0.294	-50	-16	16
Hungary	0.509	0.585	0.413	0.274	-34	-29	15
Russian Fed.	0.453	0.532	0.582	0.453	-22	9	17

Parity distribution

It is rather remarkable how steady the parity distribution has been in the Baltic countries since the birth cohorts of the 1930s through those born around 1960 (see Figures 2 and 3). In Estonia almost 50 percent of all women were having two children and in Latvia this proportion was a little less, namely it was between 40 and 45 percent[7]. The two-child family was the norm for all these cohorts. Not too far behind in both countries were women who were having one child -- around 30 to 35 percent.

In the Nordic countries parities two and one were also the dominant ones but at lower levels (see Figures 4 and 5). In the Central and East European countries the trends were more similar to the Baltic countries although not quite as steady (see Figures 6 and 7).

It is difficult to detect from Figures 2 and 3 that the relatively low levels of childlessness in the Baltic countries among the cohorts of the 1940s and 1950s were about to start increasing in the cohorts of the 1960s (see Table 7). It is estimated that in the cohorts of the 1970s between 16 and 19 percent of women will remain childless. This is a major change and indicates that the stable parity distribution of the past is about to undergo significant changes. It is, however, too early to be able to demonstrate these numerically.

[7] We wish to remind the reader that the data are not perfect and that a process of reevaluation and recalculation is in progress. It is, for instance, impossible for parity zero to be non-existent, i. e. for all women in a cohort to have had at least one child, as the data indicate in the 1960 cohort in Estonia. Nevertheless, the data are believed to be good enough for an analysis of general levels and trends.

Table 7
Proportion of women childless, Baltic countries, ages 30 and 40, birth cohorts 1935 to 1970

Cohort	Estonia	Latvia	Lithuania	Denmark	Finland	Norway	Sweden	Czech Republic	Hungary	Russian Federation
1930					11.3					
1935	10.4	10.5			9.1	9.8		6.7	9.4	
1940	4.9	9.8			9.0	9.7		7.7	9.3	
1945	3.0	6.0			9.2	9.2		8.1	9.9	
1950	4.3	5.2		11.0	11.8	9.7		6.8	9.3	
1955	9.7	12.5	6.0	13.6	16.5	11.6	13.7	6.4	8.7	
1960	0.0	3.1	8.2	12.8	18.8	12.3 b	14.3	6.6	7.8	6.1
1965	6.1	7.0	15.5		21.7		15.2	7.7	10.3	8.6
1970	16.4	18.3	18.7		22.8 c		16.9 c	12.8	16.9	10.0

Sources: Estonian Interuniversity Population Research Centre; Observatoire Demographique Europeen; for Norway Lappegard (1999) Notes: a 1968; b 1958; c 1967

5. Summary and conclusions

Since the early 1940s political circumstances profoundly affected fertility behavior of the populations in the Baltic countries. Total cohort fertility rates of the cohorts born in the 1930s through the 1950s were among the lowest in Europe. The Baltic countries did not experience a post-war fertility increase presumably due to the Soviet oppression and mass deportations of the population. The birth cohorts of the late 1950s did experience modestly higher fertility than previous cohorts, however, subsequently the TCFRs of those born during the 1960s were showing a notable decline.

During the socialist era there was a continuous shift of fertility into the young ages. In all three Baltic countries about 70 percent of children of the 1960 cohorts were borne by women younger than 27 years. This was a substantial increase in comparison to the cohorts born in 1940. Apparently there were good reasons for early marriage and childbearing. For instance, the prospects for obtaining an apartment were infinitely better for young married couples with children than for single people. Also young married men with children were not obliged to join the army. Avoiding recruitment to the Soviet army was a prevailing strong desire among many young men in the Baltic countries.

These motivations disappeared after the Baltic countries gained independence which is among the reasons why fertility is declining in the 1990s, especially among young cohorts. Furthermore, the desire to become increasingly educated and to firmly establish oneself in a profession might be motivations reinforcing the fertility decline among young people.

The parity distributions of the Baltic populations were among the most stable in Europe for all the cohorts born since the 1930s through those born in the late 1950s. Two- and to some extent one-child families were most prominently represented. This is apparently about to change. Childlessness is increasing at a rapid rate among the cohorts born in the late 1960s.

It is obvious that the rapid fertility declines experienced by the young cohorts of women are going to have a considerable impact on the age structure of the population. The generations born during the 1990s are going to be relatively small. Furthermore, it appears that fertility is not going to increase in the near future.

A clear challenge for the social and behavioral sciences in the countries concerned is to gain a better understanding of the various circumstances that impinge on fertility behavior of young people in the beginning of the 21st century.

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Figure 1. Total period fertility rates, Baltic countries, 1950-1998

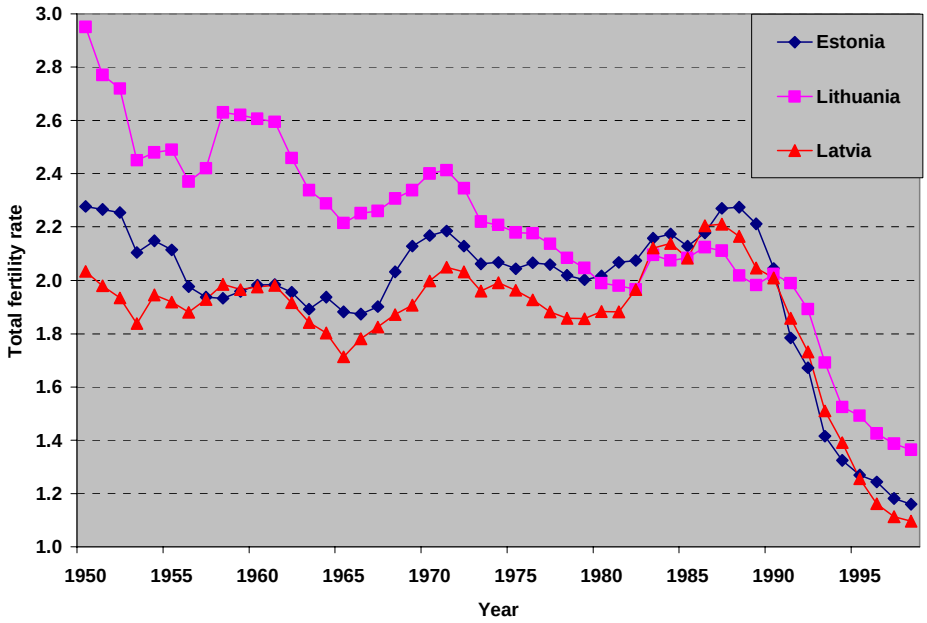

Figure 2. Parity distribution, Estonia. birth cohorts 1935-1960 at age 40

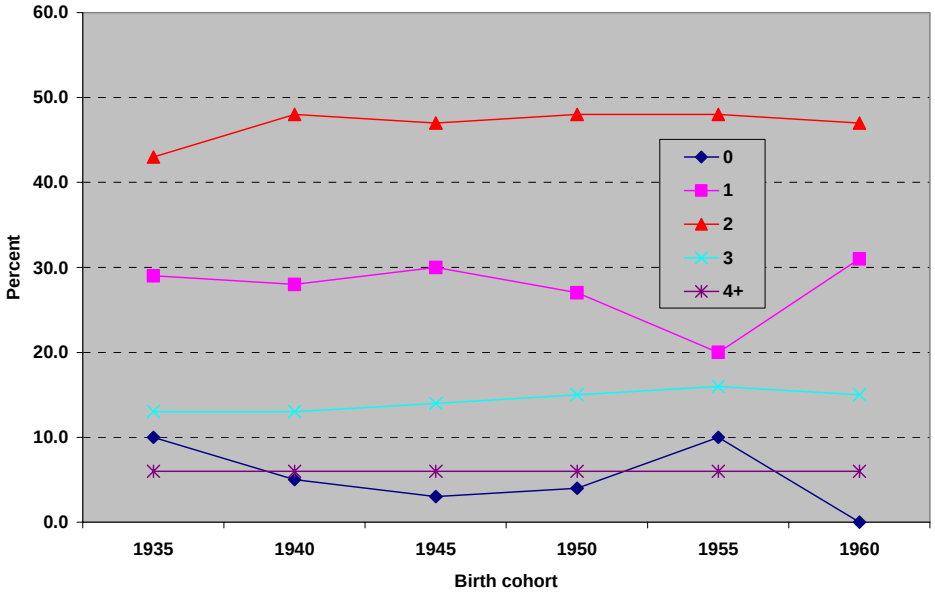

Figure 3. Parity distribution, Latvia, birth cohorts 1935 - 1960 at age 40

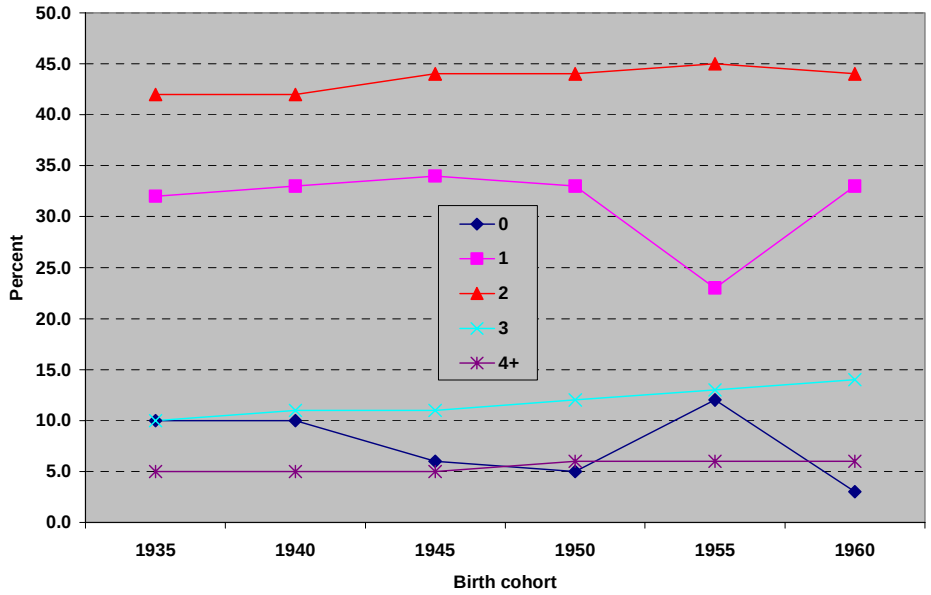

Figure 4. Parity distribution, Finland, birth cohorts 1930-1960 at age 40

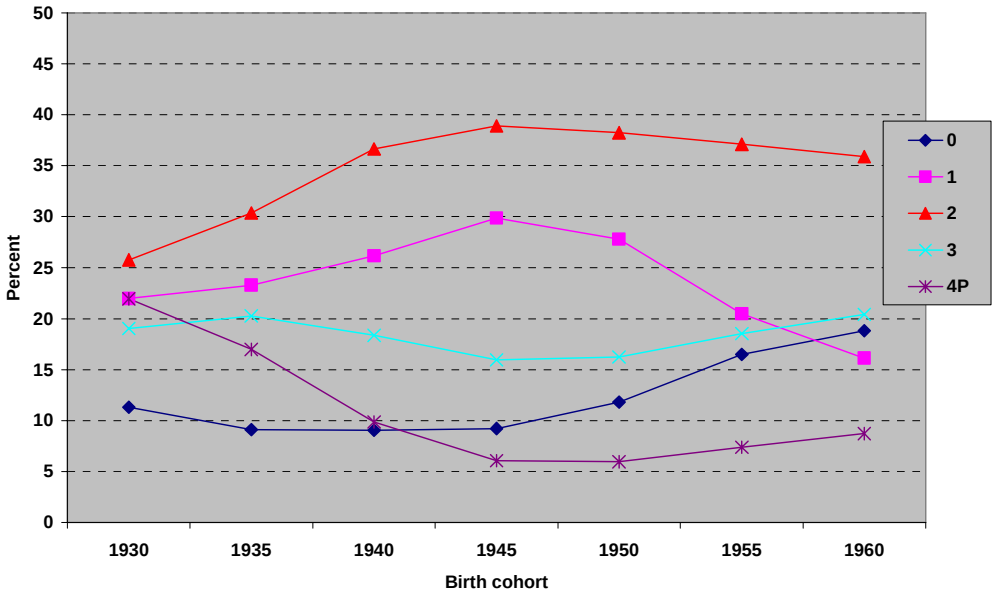

Figure 5. Parity distribution, Norway, birth cohorts 1935-1960 at age 40

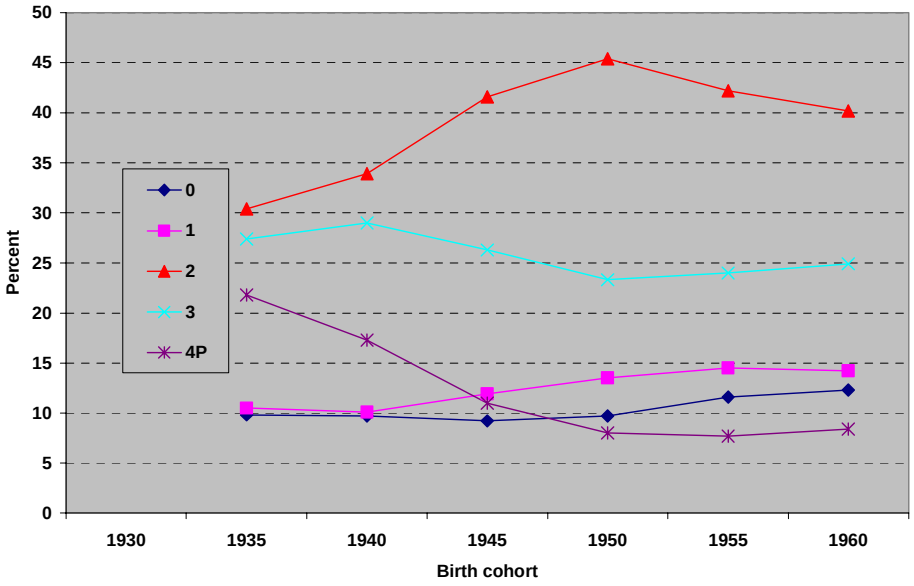

Figure 6. Parity distribution, Czech Republic, birth cohorts 1935-1970 at age 30

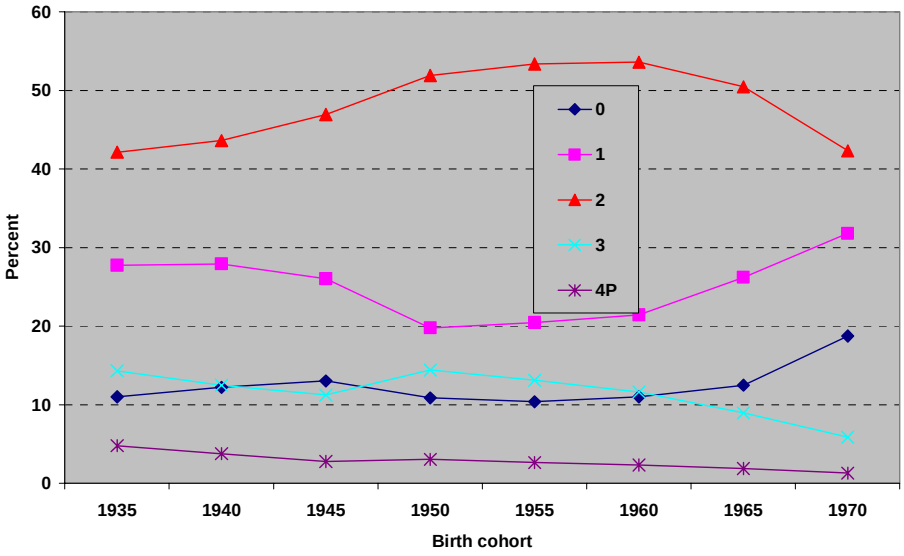

Figure 7. Parity distribution, Hungary, birth cohorts 1935-1960 at age 40