DEVELOPMENT OF POPULATION STATISTICS: BALTIC COUNTRIES

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The present paper outlines the characteristics features of national systems of population statistics in the Baltic countries: Estonia, Latvia and Lithuania. The paper addresses three major sources of population data — vital registration, census and sample surveys. The timeframe of study takes start from the onset of modern vital registration in the region in the late XVII century and covers the major stages in the development of population statistics up to the turn of millenium. With respect to recent period, the paper pays attention to three aspects of population statistics — availability of population data, quality and consistency of population data, and the efforts to achieve the comparability of population data over time and space. The last section of the paper provides a concise overview of major demographic trends in the Baltic region.

In a broader framework, the paper originates from the research project *Change and Continuity of Demographic Development: Comparative Study of Baltic and Caucasian Countries* which examined, in the context of long-term population development and current societal transition, the trends and patterns of demographic development in two respective regions. The paper has benefitted from the results under research theme 0132703s05 and the Estonian Scientific Foundation grant No.5981.

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1. INTRODUCTION

Estonia, Latvia and Lithuania are situated on the eastern coast of the Baltic sea. The Gulf of Finland in the north, the Baltic Sea in the west, Russia-Belorussia in the east and Poland in the south form the frontiers of the region. Estonians have inhabited the existing territory for more than 5,000 years, Latvians and particularly Lithuanians have moved towards the seaside later. In the 8-9th centuries the major west-east trade routes were transferred from the Mediterranean to the Baltic Sea, and consequently, the region became the focus of interest for different European powers.

In the beginning of the 13th century, after several decades of fighting Estonia, Latvia and Livonia lost their independence to combined attacks of Germans, Danes, Swedes and Russians. Among others, the consolidation of efforts was marked by the blessing of crusade by the Pope Innocentious III and the consecration of newly conquered lands to Saint Mary. As a result Estonia, Livonia and Latvia were divided between the conquerors and divided into a number of small states. Taken together, the Teutonic Order, ecclesiastical bishop states and several free Hansaeatic cities formed the Livonian confederation which for centuries served for the political, economic, religious and cultural demarcation area between Western and Eastern Europe [Seilart 1998]. Although rooted deep in history, this divide has maintained its validity until today.

Compared to Livonian confederations, the historical destiny of Lithuania has followed somewhat different path of development in the 13-14th centuries. Being situated aside from the major trade routes Lithuania not only maintained its independence, but also managed to conquer large Slavonic territories east- and southward. Already in the 14th century Lithuania established the union with Poland, loosing finally its independence in the framework of Rzeczpospolita, constituted in 1569. Differences between the Polish state and Livonian confederation were further strengthened by the Reformation which introduced the Catholic-Lutheran divide in the Baltics. From that perspective, the south-eastern parts of Latvia developed into a kind of internal bordering area, merged with Poland after the fall of Livonian confederation.

The geopolitical situation of the Baltic region started experienced a major transformation in the beginning of 15th century when the conquest of neighbouring Novgorod and Pskov republics by Ivan III brought the Moscovian state at the frontiers of Baltics. Following several decades of small-scale clashes at the border, the Livonian war started from the assault of Moscovian forces against Livonian confederation in 1558. In the following years major neighbouring powers, entered the war, which lasted for almost thirty years. As a result, the Baltic area became divided between Poland and Sweden, however, military conflicts in the region did not cease but continued until the mid-17th century. This century of wars introduced the most severe demographic crises documented in the region, implying five-fold decline of population in Estonia, for example, and disappearance of Livonians, a dominant nation in north-west of modern Latvia. In comparative perspective, the frequency of wars gave rise to much higher population losses than average in Europe [Palli 1973; 1996].

During the Great Northern War, the houses of nobility in Estonia and Livonia surrendered to Peter the Great in 1710, in return the nobility was endorsed the continuity of their privileges. Estonia and Livonia were included into the Russian

Empire under a special Baltic order, retaining the autonomy of its court and justice systems, land-use and local government. Also, the Lutheran Church in Estonia and Livonia maintained its position. In the late 18th-early 19th century, the remaining areas of Baltic region were included in Russian Empire. In 1795 the Dutchy of Courlandia became the part of Empire as the third province under special Baltic order. The three provinces — Estonia, Livonia and Courlandia — remained largely autonomous in their internal affairs for another hundred years, until the russification programme begun by Alexander III in the 1880s. The Lithuanian territories fell under Russia following the division of Poland in 1795 and 1815. Administratively Kauno and Vilno *gubernias* were formed which covered most of the modern territory of Lithuania. Those two *gubernias*, however, were not considered Baltic provinces with corresponding autonomous status. Another part of modern Lithuania — the Memel (today Klaipeda) region remained under Prussia until modern times.

Similarly to several other European regions, the beginning of the 20th century has marked been marked by the emergence of national states also in the Baltic region. Following the collapse of empires in the course of the First World War, the Republic of Estonia was declared on February 24, 1918, and defended in the Independence War (1918-1920) against the Russian as well as German military forces. The Republic of Latvia was declared on November 18, 1918, however, occupied followingly. Riga was temporarily in the hands of Russian army (Latvian soviet republic was declared) as well as in German authorities, who attempted to establish the pro-German Livonian Duchy. The Republic of Lithuania was declared on February 16, 1918, under the occupation of Germany, which became the first state to officially recognise Lithuania. Soon after the defeat of Germany, the east and south regions of Lithuania became the arena of battles between Russia and Poland. At that stage, also the Lithuanian soviet republic was declared in Vilnius (1918), as a part of Belorussian-Lithuanian state, and recognised by Russia. In 1923 Lithuania took over the Klaipeda region, formerly under (local) German control.

The establishment of independent states involved, among others, the definition of national boundaries of all the three Baltic countries, for the first time in the modern history. As a rule, the new boundaries were built on the principle of ethnic territory, as opposed to the previous *gubernia* division of the Russian Empire. Estonian and Latvian boundaries were recognised in peace treaties with Russia (1920), however, Lithuania carried on disagreement with Germany (Klaipeda region), and particularly with Poland (Vilnius region). These unsettled boundary issues, among others, had evidently a discouraging influence on the cooperation of Baltic countries with Scandinavia and Poland between the two world wars.

The Molotov-Ribbentrop Pact by Russia and Germany divided eastern Europe into spheres of interest and, as a result, Estonia, Latvia and Lithuania were occupied by the Soviet Union in 1940. In 1941-1944, the Baltic countries were under German occupation, and in 1944-1945, the second Russian occupation began which lasted for almost fifty years. The Soviet Union unilaterally redefined the existing boundaries and transferred part of Estonia's and Latvia's territory were to the Russian Federation. Lithuanian territory, on another hand, was expanded by the transfer of Vilnius region from Poland.

The new regime introduced forceful rearrangement of the entire societal organisation by means of political terror and mass deportations. To escape this fate, a large proportion of population fled from the region. The combined losses resulting from the war and its aftermath have been extensive — disregarding the large amount of

immigrants which have increased the number of total population, Estonia and Latvia are the only countries in Europe where the prewar population number has not been reached. The population losses in Lithuania including the minorities were even higher, however, the stage of demographic development (characterised with relatively high fertility and young age-structure), supported the replacement of losses and increase of population above its prewar number.

The position of the Baltic countries under the Soviet rule can be characterised as a state of occupation or dependence [Misiunas and Taagepera 1983; 1993]. Although the methods of implementation of this dependence changed over time, political, economic, social and cultural development in Baltic countries served the aims of another country. Unlike Central Europe, the loss of statehood involved not only the absence of independent policies, but also the dismantling of national institutions. The changes according to the unified soviet model occurred in virtually all areas of society, including economy, education, housing, health and social care, culture etc. Although in the Soviet framework, Baltic countries were considered relatively advanced, a broader comparison witnessed an increasing lag with Northern and Western Europe. In case of Estonia, for example, the level of economic development was comparable to Finland in the interwar period but lagged clearly behind in the postwar decades [Lugus and Vartia 1993].

From another viewpoint, somewhat paradoxically, the period of Soviet rule has strengthened the links and solidarity between the three Baltic countries. This holds particularly for Lithuania which had geopolitical and cultural orientations different from its two northern neighbours. In fact, the way towards the consolidation was paved already by the outcomes of the First World War, in particular the withdrawal of great powers from the region. In a broader framework, it marks the revival of regional identity in the area of Baltic sea which has been defined as Baltoscandia [Kant 1934], or the Nordic dimension in the modern EU terminology. Whereas the Russian occupation of the Baltic countries halted the referred consolidation across the sea, it obviously contributed to the "baltification" of Lithuania.

Taking the advantage of the liberalisation of the regime by Gorbatchev which accelerated the collapse of Soviet Empire, the aspirations towards the restoration of independence gathered force in the Baltic region. Building on the legal continuity and non-recognition of Soviet occupation by the Western world, Estonia, Latvia and Lithuania re-established their statehood in 1991, which was recognised among others, once again, by Russia. Currently the countries are in the process of restoring civil society, rebuilding their institutional framework, and regaining the positions within the international community. Despite relatively disadvantaged starting position, particularly in comparison to transition countries of Central Europe, Estonia, Latvia and Lithuania have made significant progress in this direction, reflected in the candidacy to full membership in the European Union and North Atlantic Treaty Organisation.

2. AVAILABILITY OF POPULATION DATA

The turbulent political history of the Baltic countries, among others, has had its impact on the development of statistical system, including the population data registered and statistics produced. This fact is particularly important to notify when dealing with longer time periods and trends of demographic phenomena. Therefore, before turning to the availability of population information timeframe immediately covered by the RSS

project, it is appropriate to provide a concise outline of the evolution of population statistics in the region. Among others, this places the recent and current developments in the field into a wider perspective and provides better understanding of similarities and dissimilarities between each of the three countries.

Civil registration of vital events — one of the two cornerstones of modern population statistics — has a long tradition in the Baltic region. In 1686, the Swedish king Karl XI enforced the Church Act according to which all deaths (burials), births (baptisms) and marriages (weddings) had to be registered by parish authorities. Understandably, the registration of vital events dates back much longer, and not exclusively for the upper strata of society, but until the referred act there was no particular aim to cover all the events, including those regarded out of law and/or prevailing moral of that time. In view of the universal coverage, the Church Act of 1686 is regarded the beginning of modern vital registration worldwide.

The Church Act was introduced in Estonia and Livonia (northern and western parts of modern Latvia) which in the 17th century belonged to the overseas provinces of Sweden, and implemented by the Lutheran church. In the parishes special church books were introduced to keep the records, if not already introduced earlier [Palli 1980; 1996]. This was not the case with the Catholic church in the Baltic region, and understandably, there was no similar system implemented neither in the Catholic parts of the Baltic region (Lithuania and Latgalia, i.e. the south-east of Latvia) nor in Lutheran Courlandia which was affiliated to Poland at that time. Registration of vital events became regular somewhat later in those parts of the region.

Following the entry of Estonia and Livonia into the Russian Empire, the Lutheran church maintained the registration system, although the devastation of Great Northern War (1700-1721) and the population crises accompanying it introduced the discontinuity of record-keeping and/or loss of records in many parishes. The completeness of registration was gradually restored, and regarding Estonia the complete records of vital events, covering the modern territory of the country, has been preserved for all parishes starting from 1834. Additionally, many parishes have the records going back for an additional 150 years [Palli 1995]. The urban parishes usually started registration earlier compared to rural ones, particularly in free merchant cities, belonging to Hanseatic League [Pullat 1992; 1997]. The family reconstruction methods applied by historians have demonstrated that the parish registration was kept at a rather high quality. Three parishes — Karuse in Estland *gubernia* and Otepää and Rõuge in Livland *gubernia* — are monographically studied with the coverage of long-term period [Palli 1973; 1984; 1988]. The study by Hyrenius on Swedish population in Estonia deserves the special attention as the first application of the family reconstruction method later developed by Henry and others [Hyrenius 1942].

The general situation with the parish registration data currently available is expected to be similar in the north and west Latvia, however, no comprehensive survey on the issue is known to the authors. On another hand, however, the availability of records for Riga population has been well documented, going back to the end of the 17th century at least [Hausmann 1882; Heyking 1867; Jung-Stilling 1866; Koeppen 1847 etc]. Also, no targeted research has been accomplished on Lithuanian sources to determine the exact historical coverage of the country by vital registration.

Although historical demography, in particular the method of family reconstruction, has made significant progress since the works Henry, Fleury and Hyrenius, the wealth of individual records in the archives of Baltic countries does not necessarily imply that information required for generalisations about population

development is readily available. In the study of long-term trends demographers are still dependent on aggregated tabulations summarising the results of vital registration, prepared decades and centuries earlier. In case of Baltic countries, the contradiction between the calamity of the latter and early registration of vital events is evident in a long-term perspective.

The most important explanation for the contradiction between relatively good system of vital registration and poor statistics stems from geopolitical change. When Estonia (1710), Latvia (1710 and 1795) and Lithuania (1795 and 1815) were incorporated into the Russian Empire the church registration was poor in the Empire, and continued to be out of the interest of the authorities at least up to the mid-19th century. Although, the first legislative acts on the matter were issued already in the 1722, they were not consistently followed for a long period. According to Novoselski, for example, vital registration remained largely disordered up to the end of the Empire, in particular for non-Orthodox population [Novoselski 1916a].

Correspondingly, there was no need for statistical system to summarise vital registration accounts neither at the imperial nor at provincial level up to the middle of the 19th century. It was only in 1865 when the authorities ordered to compile aggregate reports on the basis of parish registration, by *gubernias* for all religions combined, i.e. for total population. The obligations to produce statistics were put on statistical committees at *gubernia* administration, established upon the 1860 law. Conditionally, the referred date could be regarded as the start of vital statistics in the Russian Empire, however, in some regions the local statistical committees and, consequently, statistical reporting took start much later. Compared to other countries with early vital registration, under the Russian Empire Baltic countries were late with the statistical organisation for about a hundred years, or even for a longer period, if compared to Scandinavian neighbours which had started the registration system also in 1686.

Looking back from the historical perspective, statistical committees in the Baltic provinces were more advanced, particularly in Livland and Estland, evidently because of professional and enthusiastic leaders — Friedrich von Jung-Stilling in Livland and Paul Jordan in Estland *gubernia*. Courland was closely integrated with two northern *gubernias* regarded together as the Baltic province at that time. In cooperation with the St.Peterburg statistical committee the majority of initiatives in the statistical field were introduced by this very region. Among others, the population census in the Baltic region, covering Estland, Livland and Courland, was carried out in 1881, decade and a half before the first all-Imperial census of 1897. Before the major undertaking, the censuses of urban population had taken place in Livland (1867) and Estland (1871). Also, summary tables on vital statistics were prepared in the Baltic region somewhat earlier and above the standard scope.

The vital statistics took start from 1847 in Livland, 1854 in Estland and 1860 in Courland *gubernias*. Starting from the 1860s the data on vital statistics was regularly published in the yearbooks which step by step progressed towards standardised format and became known under general title “overviews” [SCE 1867-1916; SCK 1860-1915; SCL 1863-1915]. In addition to *gubernia* statistical committees, similar institution was founded in Riga — by the time the third largest city in the Russian Empire. That committee also published its yearbooks under various titles containing population data from 1866 [SC Riga 1868-1914]. No less importantly, the availability of statistics gave rise to various scientific studies, partly or fully based on the reports of the statistical committees, summarising the population development. Either published in the 19th

century or later, most of these studies address the population development in the Russian Empire systematically from the middle of the 19th century.

Among general studies on (European) Russian population at least four deserve attention as an important source of historical population statistics for the Baltic region [Besser and Ballod 1897; Novoselski 1916b; Ptuha 1960; Rashin 1956]. Focusing more specifically on the Baltic region, Tartu school of biostatistics is the most outstanding to be referred. The biostatistics in Tartu university — the only university in the Baltic region at the time — was developed under the leadership of Bernhard Körber. During the period of 1860-1886 several case studies analysing mortality and fertility were prepared and defended, mostly as Dr.Med. dissertations. Those works covered, among others, the population of Tartu, Tallinn, Liepaja, Narva and other cities as well as several rural parishes, often from 1834 onwards [Haller 1886; Huebner 1861; Kaspar 1883; Kluge 1861; Körber 1883 etc].

Despite the achievements, statistical committees had limited mandate and few resources to produce statistics. The central institutions in St.Petersburg, understandably, gave preference to the activities covering all (or at least European) *gubernias* of the Empire. With respect to vital statistics, for example, official summaries included only absolute numbers of events, without any breakdown by age. As a result, relatively reliable data from parish registration in Baltic provinces remained largely unused for statistical and analytical purposes. In other words, the inconsistency between the coverage/quality of registration and poor statistics persisted up to the end of the Russian rule in the Baltic countries in 1918. In a broader perspective, this points to the crucial importance of statehood for the development of national statistical system which could appropriately consider the needs of society for population-related information.

The period of independence was marked by rapid progress in the development of national statistical systems in all three Baltic countries. An important milestone in this direction was the establishment of central statistical offices in Estonia (1921), Latvia (1920) and Lithuania (1920). The newly established offices put strong emphasis on the introduction of modern methodology, classifications and procedures, and hence international comparability of statistical data. On the other hand, however, the development considered the needs of society for statistical information which was used for various practical purposes of nation-building. No less importantly, statistical offices coordinated the activities of other agencies of central and local government, related to the collection of statistical information.

As an example of such coordination, in case of Estonia the 1926 reform of vital registration could be mentioned. The reform transferred the responsibility for the keeping of vital records from church authorities to the newly established government agency — Civil Registration Office. Among others, the change implied the introduction of new forms and procedures, in close cooperation with CSO, ensuring the registration of characteristcs in full compliance with international recommendations. Aside the completeness of vital registration, Civil Registration Office assumed the responsibility also for the quality of registration [Teder 1939]. In the late 1930s, the office started to operate population register, based on the cumulative recording of various demographic events (birth, marriage, divorce, change of residence) on the individual level. In Latvia and Lithuania, the organisation of vital statistics did not follow exactly similar model but the general direction of development was the same.

Regarding census statistics, the enumerations varied between countries by the date of occurrence and to some extent also in methodology. In Estonia the CSO took three population censuses — in 1922, 1934 and 1941, the latter was carried out already

during the war in a brief interim between the Soviet and German occupations. In Latvia, censuses were held in 1925, 1930 and 1935. To be more precise, the first census of the independent Latvia was carried out already in 1920 but it covered only part of the territory, and considerable number of refugees had yet returned to the country by that time. In Lithuania there had been the census only once (1923) but the enumeration did not cover Klaipeda as well as Vilnius regions. In Memel-Klaipeda, after taking the control over the region the Lithuanian authorities carried out the special census-like enumeration in 1926.

Already in the early 1920s, considerable efforts were invested into the harmonisation of statistics in order to comparable time series on major characteristics of population. This task could be set explicitly in former Baltic provinces which possessed richer sources of population information. In Lithuania, as far as one can conclude upon published materials, the steps towards harmonisation of census and vital statistics for earlier periods were not undertaken. Estonian CSO, for example, recalculated the 1881, 1897 and 1922 censuses into comparable boundaries [RSKB 1924-1927; 1937]. Of course, due to resource limitations, the exercise was based on available aggregate data — even though the countries are relatively small, the comprehensive retrieval and use of individual records from parish registration forms an enormous task even today.

Understandably, the population statistics was publicly made available and published on regular basis. In addition, more detailed or specific tables could be requested from the statistical offices. In case of Estonia, regular reports in the monthly statistical journal [Eesti Statistika Kuukiri 1921-1943] and in case of Latvia and Lithuania in corresponding statistical yearbooks [LCSB 1927-1940; LVSP 1920-1939]. In short, in the 1920s-1930s Baltic countries managed to develop relatively national statistical systems of high quality standard which in several respect still remains to be achieved, despite the galloping technological progress.

Geopolitical rearrangements accompanying the Second World War and the incorporation of Baltic countries into the Soviet Union introduced a discontinuity to national statistical systems. The central statistical offices in all three countries were dissolved already in 1940-1941 and replaced by subordinate branch under planning committee. Strictly speaking, in the period of dependence no statistical institutions were remained in Baltic countries. Among others, this can be judged upon the functions which were restricted to the implementation of instructions from Moscow, with neither substantive input nor any other initiative locally required. Under strong centralisation, the methodological work was concentrated almost exclusively in Moscow where the central statistical office was paralleled with specialised research institute. One of the two branches of the latter was established in Riga which equipped Latvian statistics with somewhat better position. Similarly to other areas of administration, already during the first Soviet occupation the new regime made extensive changes in the staff and from 1944 onwards only few statisticians remained at service who had worked earlier in CSOs. Typically, the statistical offices were managed by Communist Party officials rather than by statisticians.

As a result of these changes, statistical data started to deteriorate in virtually all aspects of quantity and quality. In case of Estonia, the occupations and war implied also losses to primary data collected during previous period — the files of 1940-1941 were evacuated to Russia and lost afterwards, the 1944 mass bombing of Tallinn inflicted the irreplaceable loss of materials, including the individual lists of 1922, 1934 and 1941 censuses [Kivimäe and Kõiv 1997]. From the viewpoint of data availability,

particularly important was the redefinition of principal responsibility of statistical institution from data dissemination to imposing and monitoring the restrictions on data access, based on political and ideological motives of those at the very top of society. It was generally accepted that the publication or distribution of real data could be dangerous for the Communist regime. These considerations resulted in two parallel series of statistical data, one for open use and the other for official use only, i.e. restricted for public dissemination and scientific analysis. Typically only very aggregated data, virtually useless for research, could be published openly.

A great deal more data were collected and made available for internal use by party and government officials or by a limited number of approved specialists. The closed data were typically more detailed and often contained information that was regarded as a state secret or that revealed inconvenient facts about Soviet reality and the performance of regime and its leadership. The controls were reinforced by Glavlit and so-called First Section which was the special unit within the statistical office that controlled the access to information and determined who was eligible to use it and for what purpose. Over time, it is also interesting to note certain changes in data access. Thus, up to 1959 all population data was not simply classified (for official use) but considered state secret. After relatively liberal period of 1961-1973, more or less all age-specific population data was again classified starting from the 1974. The new regulations were motivated primarily by the desire of the regime to prevent the public from seeing the decline in life expectancy which occurred in the 1970s. The strict regulations were in force until the societal reforms (glasnost) at the end of the 1980s, however, complete disappearance of restrictions is related to the collapse and dissolution of the Soviet Union.

Following the cessation of restrictions it turned out that the information at the disposal of statistical offices has been relatively poorly documented and scattered across departments, archives etc. Understandably, these difficulties were not reduced by inevitable re-establishment of central statistical offices and rebuilding of national statistical system. In Estonia, for example, the archives of the First Section were wholly destroyed upon the instructions from Moscow, and locally there was only indirect information left on the coverage of these materials. For the RSS project, these features of statistical environment added a set of specially targeted activities. The aim of these activities was to bring develop an inventory of statistical data on population over the period addressed by the project, starting from the year 1945 for Baltic countries. The importance of inventory is further stressed by the comparative stance of the project and existing dissimilarities between the countries. Although the methodology, definitions, classifications and regular outputs were supposed to be similar, the data quality and partly accessibility varies more than one expect under the formally unified statistical system.

2.1. Vital statistics

To provide a systematic account of data availability, it is recommendable to start from the system of vital registration. Following the incorporation of Baltic countries into Soviet Union, also the functioning of Civil Registration Offices was revised according to the unified model. In case of Estonia, for example, the operation of population register was canceled and the responsibility for the registration of migration event was transferred to the Ministry of Interior. The civil registration offices (ZAGS) was

administered by the Ministry of Justice, registry offices were located in each county centre, responsibility for the registration of vital events was imposed also on rural communities. Although the procedures of registration were enforced by the decrees of the Council of Ministers in each republic, they were basically similar across the entire USSR.

Registration of vital events covered four kinds of events — birth, deaths, marriages and divorces, and correspondingly, the civil registration offices compiled birth, death, marriage and divorce records [ENSV MN 1986]. According to the procedure, the registration of birth was based on medical certificate of birth from the hospital. Generally, child had to be registered by parents during one month after the birth of child. Registration of death or stillbirth was based on medical death certificate (a more detailed version of death record, including information of deceased newborn as well as mother, was used in case of perinatal deaths). As a rule, the responsibility for the registration of death stayed with the relatives of the deceased — funerals could not be arranged without registering the death. The deadline for registration was generally three days, in case of violent deaths 24 hours. If there was no reasonable excuse, delay in meeting the established deadline could be punished. Registration of marriage was based on the application of bride and groom, generally marriage was registered after a certain waiting period. For the registration divorce written application or court sentence was required (in case the divorcees has children pr property dispute). As a rule, registration was performed at the administrative unit where person resided.

The content of birth, death, marriage and divorce records filled in upon corresponding event is summarised in appendix tables 2.1.1-2.1.4 The nomenclature of characteristics recorded did not undergo any major change during the period under consideration. Among minor amendments, for example, the inclusion of educational attainment in 1979 could be mentioned. In comparative perspective, the scope of characteristics registered is considered quite extensive and basically compliant with relevant international recommendations. Reflecting the governing ideology which anticipated the fusion of population into a unified Soviet nation, however, the information about the country/place of origin/birth was considered irrelevant and not included in vital registration.

According to the procedure, vital records were filled in always in two copies. On monthly basis, county registration offices collected the records and transferred the second copies to central civil registration office, in Tallinn, Riga and Vilnius respectively. The first copy of the record was retained in the county civil registration archive. Together with civil registration acts from earlier periods, the complete set of individual birth, death, marriage and divorce records, covering the entire countries, has been stored special central archive (for example, at the Ministry of Internal Affairs in Estonia and at Ministry of Justice in Latvia). Notably, in case of Estonia also the complete set of medical death certificates has been preserved for the period starting from 1963, at present these documents are archived in Statistical Office of Estonia.

Before being stored in the central republican archives, the second copies of registration acts were transmitted to statistical offices for coding and data processing. Processing was based on standardised tabulation programme, compiled by central statistical authorities in Moscow. Until the beginning 1980s, technically, the processing was performed on mechanical tabulation machines, summary tables from Estonia, Latvia and Lithuania were sent to Goskomstat on quarterly and annual basis. The computerised processing of vital records started only as late as in 1981, implying event stronger centralisation — the responsibility of branch offices in each country was

limited to data input merely whereas tabulation and calculation of indicators were performed almost exclusively in Moscow.

From the analytical viewpoint, for most of the period under consideration, the possibilities to address the development of fertility, mortality, nuptiality and divorciality in Baltic countries are determined by the scope of centralised programme of tabulations. Although there have been series of classified vital statistics publications in all three countries — four issues in Estonia, in 1975 for the period 1965-1973, with time series going partially back to 1950, in 1978 for 1971-1976, in 1982 for 1976-1980 and in 1987 for 1981-1985 [TsSU Estonii 1975-1987]; in Latvia and Lithuania these series became annual or bi-annual, in 1965 and 1966 respectively, and continued up to the end of the Russian rule [TsSU Latvii 1965-1989; TsSU Litvi 1966-1990] — for demographic research, it is strongly recommendable to derive the information directly from primary tabulations. First of all, it allows to avoid any mistakes involved in reproducing the information, however much more importantly, for the period under consideration primary tabulations represent the most detailed information available (of course, disregarding the access to microdata for the end of period, discussed below).

In Latvia and Lithuania, annual files with primary tabulations for earlier years are archived in the Central State Archive, the files for later years in Statistical Office, either in the archive or directly in the population department. In Estonia, all the annual files are kept in the Statistical Office. Tables 2.2.1-2.4.3 provides the inventory of vital statistics tabulations contained in these files for all three Baltic countries from 1945 to 1989. First of all, the data reveals close similarity in data availability across countries. Understandably, the data is available for the total number of events — births, deaths, marriages and divorces. For each year, the tables include systematic disaggregation of events by age and sex of persons concerned, separately for urban, rural population and capital city. Understandably, the tabulations also include characteristics which are relevant for specific events. Thus, the number of live birth is disaggregated by gender of the newborn, parity and marital status of mother, complemented single and multiple deliveries. Regarding deaths, this primarily refers to cause of death, infant and child mortality, regarding marriage and divorce, event-specific characteristics include the order of union. These characteristics cover the period 1945-1989 more or less completely.

At the same time, other characteristics are represented much less systematically. For example, education, economic activity and social class are tabulated only for few years. Even ethnicity for births is not available for the entire period but starts from the late 1950s. Variation also concerns the detailness of age scale used in tabulations, thus for earlier years mostly five-year age groups were used whereas single year grouping is available for later years. When comparing the content of registration forms and summary tables it becomes evident that the unavailability does not stem from the fact that relevant data were not collected. The main reason stems from the tabulation programme which did not foresee the production of more detailed tabulations. Notably, the referred limitations were not overcome even in the 1980s when computerised processing of vital records started. Temporarily, the situation got even worse due to difficulties in mastering the new technology but more importantly because of for-profit orientation of computing centres. The latter had been formed as separate units within statistical offices but by the 1980s computing staff already outnumbered the statistical staff.

To this end it is important to note that to a large extent the mental and institutional gap between statistical and computing staff averted the progress opened in

modern technology. As put vividly by Anderson and colleagues — each side was proud about the lack of knowledge about the other [Anderson *et al* 1994]. Statistical staff gave commands to computing centre and supervised the results they gave orders and received results back on paper. On the other hand, the computing staff was frank about their lack of population data and substantive issues. They just did what they were asked to do. Due to the lack of cooperation between the two parties, despite the access to new technology the culture of statistical production remained basically unchanged. Among others, this situation had direct consequences on data availability — after having accomplished the production of assigned tabulations, the tapes were typically recycled for other purposes, implying the loss of computerised microdata.

The breakthrough in the referred direction was achieved only in the beginning of 1990s with the introduction of PC technology. In Estonia, the coding and computerisations of vital records on personal computers started in 1992, in Latvia and Lithuania the switch to new technology took place a couple of years later, in 1993-1994, and from that date onwards, the microdata has been preserved. Still, in case of Estonia, computerised vital records since 1986 have been transferred to PC-format and preserved. For Lithuania also, the computerised death records are available since 1988.

Understandably, the access to microdata introduces a principal change into the issue of data availability. Most importantly, it implies that the analysis is no more limited to predefined set of tabulations but can count on flexible and user-friendly data manipulation. Databases on the level of records of vital events in PC are kept now in all Baltic states and the tabulation programs according to which the data processing is accomplished for the 1990s could be very detailed including breakdown by all characteristics recorded. This development has been complemented by the start of new publications series, including the annual publication of mortality statistics, most comprehensively in the demographic yearbooks [CSBL 1993-; ESA 1995-; LSD 1992-]. In addition to current data, considerable part of the data from old classified editions have become publicly available in these new publications. For the same reason, the inventory of tabulations is stopped in 1989, and correspondingly, the scholarly interest in population data shifts more explicitly to quality and consistency.

2.2. Migration statistics

As already mentioned, in the course of Sovetisation registration of migration moves was transferred from civil registration offices to the Ministry of Interior. Registration system which was installed in the Baltic countries after the Second World War was developed in Soviet Union in the 1930s [Matthews 1993]. The registration of migration moves was based on legal permissions issued by authorities which entitled citizens with rights to live at the specified address (dwelling). Operated by the militia (police) under political guidance, the system was meant to control the population rather than to perform the role of statistical registration. The registration at one's place of residence was obligatory and corresponding note (so-called *propiska*) was entered in person's passport.

In the early postwar years persons were obliged to register the new place of residence during 24 hours after removal, later the deadline was extended to three days in urban settlements and seven days at rural settlements. Regarding the duration of validity, the procedure distinguished between permanent and temporary *prpopiska.* The latter was issued for certain categories of population/circumstances — for example, for

purposes of study or contract work. Propiska for permanent stay meant that the person was granted a permit for residence at a certain address for a period lasting more than six months. The system could also produce a temporary propiska or a special propiska When registering in, the eligibility to settle in the new place of residence was thoroughly checked. On the other hand, p*ropiska* was checked in various occasions normally not related to residence, for example, in admission to job or school. The absence of *propiska* not only prevented the access to social benefits but could imply criminal punishment, if it become apparent that the rules of registration had been violated.

According to registration procedure, each move was supposed to be recorded twice: first, when a person moved out from old residence (canceling the old propiska), and secondly, when his in-migration was registered (issuing the new propiska). In both cases the place of destination and origin as well as all personal characteristics were registered. Its should be noted that in case adults moved together with children no statistical forms were filled in for children under 14 years. Information on accompanying children (sex and age) was entered on the form of the parent/adult. Children migrating independently from adults made and exception to this rule and in their case, full information was recorded. The set of characteristics recorded on the in-registration and out-registration forms was somewhat simpler compared to vital records, however, more importantly, the quality of recording much worse compared to Civil Registration Office, mainly due to poor supervision and large number of registrars. The list of characteristics recorded on the forms of in- and out-migration is available from annex tables 2.1.5-2.1.6.

Similarly to the records of vital registration, the forms of in- and out-migration were sent to statistical offices in Riga, Tallinn and Vilnius, where the coding and data entry took place. The procedures/technology was basically similar as in case of vital records — until the beginning of 1980s the data were processed on mechanical tabulation machines, starting from 1981 the task was accomplished on mainframe computers. As a result, each year a pre-defined set of tabulations on migration was prepared, the inventory of information included in annual tabulations is presented in annex tables 2.5-2.7. The inventory clearly shows how poor and sketchy has been the available migration data in Baltic countries for the period under consideration which indeed makes the analysis of migration flows rather complicated task.

Inconsistencies in existing data are in detail addressed in the following section but even a short glance on the table points to several problems which relate to the availability of migration data. Although the series Estonia has migration postwar data since 1946 and Latvia data since 1947, the data the beginning of the period refer to urban population exclusively. Annual tabulations of migration flows distinguished inflow, outflow and net migration according to the place of origin and destination. Place of origin and destination allows the distinction between administrative regions of USSR (republics, kray, oblast etc). For internal migrants in the Baltic countries it implied that only urban and rural area and the capital city could be distinguished, data on international migrants (outside ex-USSR) were available only as total numbers, with no breakdown by individual countries. Migration statistics also included so-called special migration which refers to the moves of population population into closed territories military and prisons, although the flows of special migration were quite extensive, extremely limited information was produced on the latter.

From the analytical viewpoint it is important to note that destination-specific statistics did not consider any population characteristic, except for gender which is

available since 1981. Data by age and sex have been processed for total flows for the most of years — even for internal and external migration flows of the republics the data are typically limited just to total number of migrants. Moreover, age groupings vary a great deal when comparing different subperiods under consideration. In 1946-1950, for example, single year age groups were available only for young adults (18-24 years). During the next ten-year period data were tabulated by single ages for all migrants younger than 20 years. For all others five-year grouping was applied, up to aggregate age group 60+. Starting from 1961 the single year grouping was extended up to age 60 with five-year groups in older ages.

Although other population characteristics were also included in migration registration forms, they have been used only exceptionally during the period 1945-1989. The inventory of migration data show that generally more tables with some additional characteristics — reason for migration, economic activity, social group, ethnicity, marital status, education and duration of residence — were produced for the 1970 and 1979 census years. In Estonia, for example, the tables by marital status, education and duration of living were first time available for 1979 and for some successive years within the period when data were processed on mainframe computers, tables by reason for migration, type of activity and ethnicity were first time produced for 1970 and then for 1975 migration flows. In general, it seems that the transfer to computerised processing has introduced some extension of tabulation programme, however, from the analytical point of view the change was not well considered. Thus, despite extension no tables were produced which would have allowed the distinction of foreigners and natives, i.e. migrations and return migrations. Due to very extensive migration turnover of Baltic countries with other regions of the former Soviet Union, the lack of migration tabulations by place/country of birth is especially regrettable.

Important difference of migration registration concerns the archivation of individual records. Differently from Civil Registration Office, Ministry of Interior did not care about the archivation and after coding in statistical offices forms were simply destroyed after production of annual tabulations. Regarding migration, this holds also in case not for statistical forms but also parallel records which were compiled for each residential and used by the address bureau — once the records stopped to be useful for administrative purpose, they were destroyed. From today's viewpoint, differently from births, deaths, marriages and divorces, this prevents scientists from reference to collected primary data.

As an exception from this rule, researchers from Tartu University under leadership of prof Ann Marksoo reached and agreement with Statistical Office, and instead of being destroyed, individual records of 1980, 1981, 1986, 1987 and partly 1988 were given to university. Of course, this refers to registration forms on paper since even at the end of the 1980s, the rules excluded the access of academia to any microdata produced in statistical office. Registration forms for later years, 1988-1992, have been also preserved and just recently transferred from Statistical Office to Estonian Interuniversity Population Research Centre. With respect to so-called special migration, individual forms have been preserved since 1984. Regarding microdata, in case of Estonia computerised migration records are available since 1986, for Latvia and Lithuania microdata on migration are available starting from 1993-1994.

2.3. Census statistics

In the postwar period, four censuses have been conducted in Baltic countries, based on Soviet methodology — in 1959, 1970, 1979 and 1989. It has been generally acknowledged that the general background of statistical system in the former USSR, the planning for censuses was very thorough. The central statistical authorities in Moscow managed to secure the implementation of their instructions rather successfully which resulted in rather good data though not without problems [Clem 1986]. In addition to these four census, it should recalled that also the all-Imperial census of 1897 had covered three Baltic countries by comparable census information , and the Baltic census in 1881 had covered the territory of Estonia and (most of) Latvia. These circumstances, among others, support the comparisons across the Baltic region in over a century-long time-span.

The summary of census programmes, presented in table 2.8, reveals gradual extension of census programmes. Thus, in the 1959 census each person was asked 15 questions besides address; in 1970 the programme included 11 questions addressed to entire population and in addition to those a 25 per cent sample of resident population was asked 7 additional questions. In 1979 the extension of the programme did not occur and the census had 11 questions addressed to each enumerated person and 5 questions were asked from 25 percent sample.

In the 1989 population census the entire population was asked 13 questions and 25 per cent sample additional 5 questions. Reflecting the emerging changes in society, the 1989 census programme was extended compared to earlier postwar enumerations, incorporating the concepts and issues which had never before been included in the Soviet statistical system [Goijer and Draajer 1992]. Among others, for the first time information place/country of origin was recorded which makes it possible to distinguish the foreign-born population in a consistent manner for the first time since the disruption of national statistical system in Baltic countries. Additionally to personal characteristics, the 1989 census collected information on housing conditions of the population (altogether 7 questions), also for the first time since Baltic censuses of the 1930s.

Table 2.8 reveals that there were 14 common questions asked in all four censuses: sex, age, place of permanent residence, period of temporary absence from the permanent place of residence, duration of stay at temporary residence, marital status, ethnic nationality, citizenship, native language, educational attainment, school enrollment, place of work, occupation, social group. In the in 1970, 1979 and 1989 censuses, the three latter questions were asked of 25 per cent sample. In addition in three censuses out of four, another six common questions were asked: relation to the head household, cause of temporary absence from permanent place of residence, date of birth, second language, source of livelihood and duration of residence. The latter question was asked from the inhabitants of every fourth dwelling.

Turning to the outputs of the censuses, tabulations were prepared according to unified tabulation programmes, which were common for all three Baltic countries. For the 1970 census the programme included seven themes and 60 different tables, for 6 themes for 1979 and 1989 censuses, with 54 and 70 tables respectively. Since these tabulation programmes have been publicly available, they have been not reproduced in this volume. Only for the 1970 census data, some additional tables were processed by special request of Statistical Office in Estonia. For all four postwar census the coding and data entry was accomplished in statistical offices in Riga, Tallinn and Vilnius. The

scheme for data processing and producing tabulations, however, has varied from census to census. The processing of the 1959 and 1970 censuses was organised locally in each country and performed on mechanical tabulation machines, however, the processing of 1979 and 1989 censuses was computerised and centralised in Moscow.

Primary tabulations produced according to the programme were prepared in very small number of copies. In case of Estonia, Statistical Office has transferred the tabulations of 1959 and 1970 censuses to National Archive, the tabulations of later censuses are kept in Statistical Office. In Latvia and Lithuania, the also the 1979 census tabulations have been deposited in national archive. Apart from primary tabulations, in all three countries census materials were published in the series for official use — the list of these publications is presented in the appendix of the present chapter. In Estonia, for example, the local publication of 1959 census results was accomplished in eight volumes, for later censuses, except for 1989, the amount of publication has been limited to 3-4 volumes. Aside local publications, the data on Baltic countries can be found also in census publications covering the entire USSR. In the 1990s, the data of 1959, 1970, 1979 and 1989 censuses have been partly re-published in all three countries.

In the Soviet statistical system, individual census records were not meant to be preserved permanently. As a rule, upon the instruction from Moscow individual census lists were destroyed following the completion of data processing. In case of Estonia, however, these instructions were not followed and the individual records of 1959 and 1970 censuses were stored in National archive. Individual records of the 1989 census are presently maintained in the archive of Statistical Office, and only for the 1979 census, the census lists have not been preserved. In Latvia and Lithuania, the census lists of 1959-1989 censuses have not been preserved. Regarding computerised microdata, in case of Estonia complete datasets of 1979 and 1989 censuses is available, additionally microdata has been preserved also from 1985 microcensus which covered five per cent of population. In Latvia and Lithuania the microdata availability is limited to 1989 census exclusively.

2.4. Survey statistics

The understanding of statistical environment and data availability is not complete without considering survey statistics. In the former Soviet Union, starting from the 1960s, a series of demographic surveys were carried out, covering also the Baltic countries. According to the review compiled by dr.Andrei Volkov, the central vehicle for survey data collection in the period under consideration were periodic income surveys [Volkov 1997]. These surveys were developed and implemented by the Department of Budget Statistics of Central Statistical Office in Moscow.

The first survey of this kind was carried out in 1967, covering the families of workers and employees, the second one in 1968 focused on the families of collective farmers — these three categories represented the officially acknowledged social strata. At the initiative of the Department of Demography of the TsSU Research Institute a number of questions related to nuptiality and fertility were included in the programme of the surveys. Among others, entry into marriage, timing of childbearing, parity progression and intergenetic intervals could be addressed, the survey also supported the application of modern analytical approaches, including the study of fertility by birth and marriage cohorts, calculation of nuptiality and fertility tables etc.

Referring to the month of data collection, the surveys were labeled *September* surveys. Since 1972 surveys on nuptiality and fertility became regular in every three years: 1972, 1975, 1978 and 1981. In 1984 and 1989, the regular September surveys focused on young families [Volkov 1986; 1992]. Needless to say, an important advantage of the September surveys lies in their common methodology which allows for comparability over time. The 1967/68 all-Soviet surveys of nuptiality and fertility provided data on women aged 18-54, from 1972 onwards the age-span was 18-59.

Sample size of September surveys ranged at 300-350 thousand families. This size was more or less sufficient to calculate reliable indicators also in Baltic countries — in 1978, for example, 3,313 women aged 18-59 (of them 2,371 married) were interviewed in Estonia, 4,119 (2,867) in Latvia and 4,084 (3,010) in Lithuania —, however, the sampling procedure casts doubt about the representativeness of the results. Thus, the sample was based on the systematic selection of enterprises by main branches, in the second stage employees of selected enterprises were sampled (ca 25 persons per enterprise) and their families interviewed. Hence, only those families where at least one member of worked in selected branch of economy had a change of being selected.

The data processing of these surveys was centralised and performed in Moscow. Despite large amount of tabulations prepared, systematic tabulations from these surveys were never published and has remained only in the archives of Goskomstat. Neither is the microdata from these surveys available for secondary analysis for researchers in Baltics, the authors have no information whether the microdata has been preserved outside the Baltic countries. The results which are available are contained in articles and monographs [Belova *et al* 1983; 1988; Belova and Bondarskaya 1988; Bondarskaya 1977; Sifman 1974].

In Latvia, the Latvian branch of the TsSU Research Institute (Zvidrinsh and Rudzat) conducted a fertility survey which stands somewhat separate in this array of surveys. It was carried out in the late 1966-early 1967 in cooperation with the Ministry of Health of the Latvia (Shlidman). In this survey 12.6 thousand women married in 1959 (excluding those divorced in postcensal years) were interviewed. This was the largest survey at republican scale at that time. Among others, in this survey data was collected on marital histories of the respondents. In the late 1967-early 1968 another survey was taken of women currently hospitalised because of seeking induced abortion. Besides the socio-hygienic factors of fertility, this survey dealt with the issues of birth control and contraception. Results of both surveys were published by Shlidman and Zvidrinsh [1973].

To this end it is important to note that there was quite large number of sociological surveys carried out in Baltic countries in the period of consideration. However, as a rule these surveys were non-representative and focused on selective target groups, sometime only married women, sometimes newly-wed, sometimes the population of specific regions, students etc [Eglite *et al* 1984; Stanaitis and Stankuniene 1983; Tamre 1966; Tavit 1980; Vaitekunas 1981; Zvidrinsh and Lapinsh 1975; Zvidrinsh 1986 etc]. Sometimes, the methodology of the surveys is poorly documented, particularly with respect to sampling schemes. To sum up, for the reasons referred above, until the 1990s survey statistics played secondary or event tertiary role as a part of national statistical system in Baltic countries, and consequently, demographic analysis can hardly make strong stake on survey statistics collected during the period of dependence.

3. QUALITY AND CONSISTENCY OF POPULATION DATA

Limited access to population data in the former Soviet Union supported the genesis of a widely spread illusion that the authorities had more or less complete population statistics of relatively good quality, particularly to cover the needs of central planning. Despite certain deficiencies of the Soviet population statistics (both the public and the classified statistics) which had been discussed by some Western scholars [Anderson and Silver 1985a; 1989; Blum and Chesnais 1986; Feshbach and Friendly 1992; Kingkade 1985; 1989], it was generally believed that the major problem in the field was related to data availability.

Due to political transformation, restrictions concerning the access to population data vanished more or less in an instant. Following the cessation of restrictions, however, it became apparent that the information existing on Baltic countries is heavily deficient. From the scientific point of view, the poor data quality implies primarily the lack of comparability. Being a complex issue, the lack of comparability involves at least three relatively separate dimensions — first, limited comparability with international concepts, definitions and classifications, second, limited comparability over time, and third, limited comparability across various levels of regional hierarchy.

3.1. Comparability with international concepts, definitions and classifications

The installation of Soviet statistical system in the Baltic countries implied the departure from internationally recommended methodological standards and procedures. Although peculiar features can be found across the entire spectrum of conceptual issues, the specificity of the Soviet statistics has been obvious only in few cases like of social structure and household/family. More often the differences definitions have been less apparent, and under deficient documentation such discrepancies could be easily overlooked.

The referred hidden peculiarities begin from the most fundamental demographic indicator — the population number — which is used as denominator in most demographic and many other population-based indicators. In Soviet terminology, the denominator usually refers to the concept of permanent population which is close to *de jure* concept, however, having specific modulations in the Soviet application [Anderson and Silver 1985b]. On the operational level, the concept of permanent population relies on the system of *propiska*. As discussed already in the previous section, propiska formed a permission of issued by authorities which provided a citizen with legal rights to live at specified address (dwelling). Apart from regular procedures, there was a special propiska for some categories of population, particularly military personnel, which could make a remarkable difference between the permanent and *de jure* population for smaller regions.

In Estonia, for example, conscripts drawn to the borderguard corps (operating under KGB command) were included in the permanent population by their place of service, while conscripts serving in regular army units were counted according to their residence prior to service [Katus and Puur 1993]. Besides having the implications on the number and structure of population in small regions, the principles of recording military personnel must also be considered in case of other statistics. For instance, against the background of very limited international migration (in- and out the former

Soviet Union), Estonia was characterised by considerable migration exchange with Mongolia. The analysis has revealed that the peculiar pattern stems from the inclusion of the moves of military personnel among civil migration statistics [Sakkeus 1994].

On the other hand, also the definitions of major events such as live birth and (infant) death did not follow the international recommendations established by World Health Organization's (WHO). According to the USSR Ministry of Health, product of delivery with birthweight less than 1,000 grams, or with gestational age less than 28 weeks, or with length less than 35 cm, were not considered live birth unless surviving the first seven days. At the same time, in the WHO definition, the corresponding criteria were at 500 grams for birthweight and 22 weeks for the duration of gestation and 25 cm body length. If a child born alive but did not meet the criteria of higher birthweight, longer duration of gestation and bodylength and died within seven days, the case was omitted in Soviet statistics as live births and considered late fetal death (miscarriage).

To somewhat lesser extent, the discrepancy also concerned stillbirth. If a newborn gave no evidence of live (breathing, heartbeat, pulsation of umbilical cord, definite movement of voluntary muscles) after the delivery, it was considered stillbirth. According to Soviet practice, breathing was considered the decisive evidence of life which implies the neglect of others. The impact of these discrepancies has been clearly demonstrated in various studies: whereas its impact on fertility statistics has been minor, the level of infant mortality has proven considerably underestimated [Anderson and Silver 1986; Courbin and Masuy-Stroobant 1993; Dmitrieva and Andreev 1987]. Anderson and Silver, for example, have estimated that due to the application of modified definition, infant mortality rate has been underestimated by 22-25 per cent for the period under consideration.

Beside the explicit difference, there was a concealed methodological discord which has probably been more important. Thus, according to WHO birthweight is regarded as the main criterion to distinguish between birth and miscarriage, gestational age and body length serve for an additional criteria for borderline situations. In Soviet practice, none of the three criteria was given the priority which open possibility for manipulations in distinguishing between birth and miscarriage. For example, this provided medical personnel with the possibility to leave newborn weighing more than 1,000 grams but the estimated duration of gestation less 28 weeks unregistered. The latter can be estimated with lower accuracy and hence the estimate, often just because of insufficient attention, has always been somewhat subjective.

Once applied, this manipulation resulted in the underregistration of underweight and premature children who were stillborn or who died at hospital within the first six days. It must be stressed that the general orientation in health care sector during Soviet period favoured the use of such possibilities. As the operation of medical establishments including maternity clinics was evaluated on the basis of a few quantitative measures, reporting "too high" number of stillbirth and infant death was clearly disadvantageous for maternity clinics. Although it is difficult to estimate the extent of such manipulations in the Baltic countries, it could be assumed that due to lower levels of infant mortality and better registration of vital events less manipulations took place in the region. On the other hand however, qualitative information from practicing gynecologists supports the presence of manipulations.

With respect to cause-specific mortality, the causes of death were aggregated to an extent which restricts the comparability to the level of broad groups of International Statistical Classification of Diseases and Related Health Problems (ICD). Among

others, the abridged coding scheme on causes of death was called to disguise specific causes such as homicides, suicides, certain infectious diseases etc. To be more precise, however, the statement refers only to information collected by statistical offices. Medical statistics which was operated by the Ministry of Health did not suffer from the simplification of the cause-of -death classification — statistics compiled by the Ministry of Health were compliant with ICD.

In a broader framework, the situation reflects the lack of coordination and cooperation between different agencies characteristic to the Soviet system — in our case, both agencies cared only about their own needs. Quite expectedely, ultimately this resulted in deficient outcome in both cases. Statistics compiled by the Ministry of Health were compliant with ICD, however, lacked even the most basic population characteristics such as age which makes it virtually worthless for any demographic analysis. The summaries prepared by statistical office were more consistent in the latter sense but internationally incomparable. To some extent, the situation was even justified with the need to avoid the duplication between the functions of ministry and statistical office.

The problem related with comparability of nuptiality statistics appears more complex. Among native populations of Estonia and Latvia, the prevalence of new family forms, primarily consensual unions appears close to pioneering Scandinavian countries [UNECE 1996-2000]. In case of Estonia, for example, less than one tenth of younger cohorts follow the traditional model of family formation where the start of union and official registration coincide. Neither the census nor the vital statistics — geared to much more traditional nuptiality patterns characteristic to Russia, Ukraine and Belorussia, not talking about the Central Asia — have paid the necessary attention to these emerging phenomena. From the viewpoint of statistics, this implies that estimates of nuptiality and marital status composition of the population, based on “old” methodology do not provide a realistic account of referred processes. Among others, the extent of distortions became evident when matching individual level records from the census and the Estonian Family and Fertility Survey [EKDK 1995a].

Regarding the comparability divorce statistics, it should be noted that divorces settled by the court (court proceedings was obligatory when couple had minor children) were recorded not upon the court decree. According to registration procedure, these divorces got registered only when divorcees turned to civil registration office. Usually, it happened when either of the ex-spouses intended to register a new marriage or restore the (maiden) name. Often such registrations took place significantly later than marital dissolution, and in quite large number of occasions, the divorce was never registered. In case of Estonia, the evidence from Family and Fertility Survey suggests that delay of more than one year between the event and registration could account for nearly half of all divorces, in older cohorts born in the 1920s about quarter of divorces have been characterised by delay of five or more years [EKDK 1995b]. Besides the international comparability of divorce statistics, the discrepancy has obstructed also the consistency between census and vital statistics.

As regards to household and family, in the Baltic countries likewise in the Soviet Union, the internationally comparable concept of household was not applied. Instead, the definition of the family combined some aspects of household. For example, a special category family member living apart was introduced in the 1959, 1970, 1979 and 1989 censuses which has no parallels in international statistics. Several other specific features of the family concept should also be considered when dealing with

respective characteristics of the population [Anderson 1986; Bondarskaya and Darsky 1990; Volkov 1986; 1991].

Typically there is considerably less comparability in migration statistics between countries than in other fields of population statistics — for internal migration even no international recommendations exist. These considerations holds also for the Baltic countries, however, differently from vital recording the comparability of migration statistics for the Soviet period has not been extensively discussed.

In the period under consideration, migration statistics, as mentioned above, became completely reliant on administrative procedures, and in essence, reflected not the number of migration moves of the population but rather residence permits issued. The censuses, however, which provided a baseline for population estimates referred always to actual residence rather than *propiska*, introducing significant discord into the system of population accounting. Over time, this discrepancy between the complementary sources showed a tendency towards increase, reflecting the softening of the regime and connection of several social benefits to residence permit, discussed in detail elsewhere [Katus *et al* 1998]. Due to the impact on population numbers and structure, and in this way to the majority of population-based indicators, this discrepancy should by no means be underestimated.

Further a major inconsistency was embedded in the system of migration moves itself. According to the system, each move was supposed to be recorded twice: first, when a person moved out from old residence (canceling the old *propiska*), and secondly, when his in-migration was registered (issuing the new one). In both cases the place of destination and origin as well as all personal characteristics were recorded. In the ideal situation, the two types of records should have resulted in equal volumes of inflow and outflow in internal migration. In the practice, however, the flows never coincided with the difference between the number of registered internal in- and out-migrations varying over time.

The difference was highest in the 1940-1950s, with the net difference accounting for 15-20 percent of all in-migrations. Of course, such a massive discrepancy could not go unnoticed and the local statistical offices were ordered to fix the disbalance. The efforts yielded results and in the 1970s the difference was reduced to 1-2 percent of the volume. Reflecting the deterioration of registration system towards the end of the periood, statistical offices took a decision (first in Estonia in 1988) to base the statistics of internal migration exclusively on the registration of in-migration moves. The comparison of the flows for both directions reveals that in the current decade the discrepancy has returned to the levels of the 1940-1950s. It must be noted that while in 1992 (to a lesser extent also in 1993) the difference accounted for more than 11 percent in favour of out-migration moves.

The referred fundamental discrepancies have been accompanied by a number of others which similarly reduce the international comparability of migration statistics in the Baltics. First, the temporal criterion underpinning the data collection were not internationally comparable. According to the applied definition, any individual with a residence permit valid for more than six months was considered a long-term migrant. Internationally, the criteria of one year duration of (intended) stay is recommended. Second, a number of migratory flows were not reflected. Thus, for the entire period under consideration, migration flows between rural communities which did not cross county border were not recorded. For the first years following the Second World War the coverage was even poorer — migration moves were recorded only if they crossed

the border of an urban settlement. As a result, this implies that the volume of migration flows has been much higher than reflected in statistics

Third, there were specific categories of migrations that were never covered by registration: migrations in and out from closed territories of military forces and prisons. At the same time these people were registered when they departed from or returned to their previous place of (civil) residence or to other settlement after being in the closed territory. The so-called "extraterritorial units" spread all over the Baltic countries and administrated by the Ministry of Defense implied the presence of a significant number of military personnel, accompanied by supporting staff as well as families. The whole cities (in Estonia, for example Sillamäe and Paldiski) were considered closed because of military industries or army base. In these towns registration of migration was completely under the control of the Ministry of Defense of USSR and the access to this information was generally impossible. It should be noted that vital events as birth, marriages, divorces and deaths of the persons living in theses settlements were registered by civil registration system which introduces inconsistency between migration and vital statistics.

From the viewpoint of individual countries, an additional contribution to incomparability of migration statistics was introduced by the fact that the whole territory of USSR was declared a single country, and hence, all the migrations within its borders were considered internal. Accordingly the registration of migration within republics was not systematically distinguished from migrations between the republics. From substantive viewpoint, this prevents one from distinguishing the arrival of immigrants from the cross-border movement of native population, including the deportations and subsequent return of surviving deportees.

Departure from internationally recommended approaches has concerned also characteristics recorded at vital registration and/or censuses. As noted above, country/place of origin/birth was considered irrelevant and removed from census programmes as well as from vital statistics (except for 1989 census). At the same time it is important to note that migration characteristics *per se* were not ignored — to serve the needs of central planning, censuses starting from the 1970 collected information on the duration of residence as well as the type of previous residence for migrants, in addition the 1970 census included a special module on commuters. The lack of relevant characteristics forms a major obstacle for consistently defining the stock of immigrant population and developing time series over the postwar period in all three Baltic countries [Haug, Courbage and Compton 2002]. Regrettably, this obstacle is in explicit contradiction with the large foreign origin populations in the region, particularly in Estonia and Latvia.

Turning shortly back to place of birth which (re)appeared in the end Soviet period, the information was coded with the precision of republic/oblast, additionally capital cities of republics and autonomous units were distinguished [Puur 1994]. From the viewpoint of Baltic countries, the applied classification was too far crude to analyse an internal redistribution of population. Characteristic to a closed society, all the population born outside the Soviet Union was aggregated into a single category, with rather small size.

Basically the same holds to characteristics which are used to define national minorities and distinguish them, on one hand, from the majority population, and from immigrants on the other hand. From the set of five characteristics recommended for the task by European Population Committee — individual ethnic identification (self-declaration), language, religious affiliation, place of birth and citizenship — only ethnic

self-definition has been consistently used in the postwar statistics in the Baltic countries [Haug, Courbage and Compton 2000]. Further, although individual ethnic identification was registered, but the concept was given legal meaning through recording it in a passport by the authorities. For the purpose of vital statistics namely this "legally determined" ethnicity was used, whereas population census recorded individual self-declaration. Information derived from these two different concepts did not necessarily coincide and the discrepancy could be particularly large for national minorities.

The population censuses also recorded language information, but since the primary interest here was in demonstrating the spread of Russian language, ensuing limitations should be kept in mind when studying of language profile of the Baltic populations. The citizenship was recorded but its notion was essentially lost in a closed society, where virtually everyone was a Soviet citizen — in Estonia, for example, the 1989 census enumerated just 132 foreign citizens out of 1.5 million population. And last but not least, religion was a remnant of bourgeois society according to the Soviet ideology and, naturally, religious affiliation was fully eradicated from official statistics.

Specific problems of comparability stem from economic characteristics of the population. These problems have been caused mainly by specific classifications which did not aim at international comparability at all. For example, the official social structure was classified into three main categories — workers, collective farmers, and the intelligentsia — which was useless not only for international comparison but also for any scientific analysis. Classifications of occupations applied in the census can be mapped into International Standard Classification of Occupations (ISCO) only with rough approximation.

3.2. Comparability of population data over time

Another aspect of poor data quality and comparability is related to temporal dimension of population statistics. Following the time horizon of central planning, statistical institutions like other institutions were oriented to work with one-year or maximum five-year perspective. When receiving an order from to prepare specific materials, usually short deadlines were considered to accomplish the task. Those requesting the data were interested in quick and clear answers and had little understanding or concern for longer trends. Even on the contrary, data on more distant periods was usually considered as "old" and of little interest.

In case of Baltic countries, the discontinuity of statistical system ensuing from the incorporation of countries to the Soviet Union, significantly strengthened the incomparability over time. As a result of this transformation, Soviet definitions and classifications were introduced, which meant breaking the time series. In this framework, population data in the first decade of the three successive occupations of 1940-1950 in the Baltic region constitute the special case — gap in the data accounting for nearly two decades. While the gaps in statistics for the period of societal crisis are not surprising and can be found also elsewhere, in case of Baltic countries the secrecy of statistics and restrictions of data access imposed on Soviet authorities have evidently made an additional contribution both to the depth and duration of the discontinuity.

To give an idea on discrepancies, even the dynamics of total population starting from the first Soviet occupation from 1940 onwards is still open to discussion, despite the series of extensive studies directly or indirectly addressing the issue which have been accomplished during the recent decade in each Baltic country. It should also be

noted that the number of population of the Baltic countries before the 1959 census, published by the Moscow statistical authorities, has proved to be a simple posterior extrapolation without any linkage to real population development. Needless to say, the uncertainty of the denominator makes the attempts to calculate any population-based measure premature. The reason for the referred uncertainty stems to an important extent from direct and indirect population losses, inflicted to Baltic populations during the war and its aftermath.

Concerning the direct population losses, several categories need to be approached separately. The key issue are the losses under the Soviet repressions (during the first as well as the second occupation) which exceed several times all other losses taken together. These losses from repressions themselves could be divided into groups, particularly from the viewpoint of data sources: people murdered (with as well as without court sanction) by the authorities, killed in resistance fight 1940-1953, perished in concentration camps and died in deportation, mostly in Siberia. The age and sex composition of the victims has proven to vary to a great deal, and understandably, the evidence on particular groups has been very deficient. Although the last decade has witnessed a growing interest in population losses, the investigations are still mainly at the stage of collecting and systemising the scattered information. Among others, special institutions have been established which include the Genocide Institute in Lithuania, Occupation Museum in Latvia, and S-Center and Memento in Estonia. The published and unpublished materials of the referred institutions as well as various publications on official documents on repressions, lists of arrested/deported persons (mostly by regions), case studies, memoirs etc which are gathered, piece by piece, contain also the information required for the estimation of population losses.

Although there is no generalising studies based on the summary of collected primary information yet available in none of the Baltic countries, still some preliminary estimations could already be made. The 1941 and 1949 large-scale deportations and political arrests have been investigated resulting in the lists of repressed in Lithuania [Burauskaite 1998; Gadeikis 1992], in Latvia [Latvijas Valsts Arhivis 1995a; 1995b; 1995c] and in Estonia [Salo 1993; Õispuu 1996-1998]. In addition, there are similar publications on parish/county level, for example in Estonia [Kotkas 1999; Nurk 1999; Piir 1991-1997], and on various professional groups, for example medical personnel [Merila-Lattik 2000]. In the county case study of Tartumaa on the 1949 deportation the basic characteristics of deportees as well as general population have been reconstructed, including age and sex. Most importantly, this has given the possibility to calculate proportions of politically repressed by demographic characteristics which can be used further for corresponding estimates at national level [Rahi 1998].

Another kind of materials offer estimates on the magnitude of human losses in the Baltic countries. Basically such estimates can be divided into two groups. First, the studies published either under Soviet or German rule. Although such summaries were often produced with the aim to mask one's own repressions and stress the losses inflicted by the adversary, the critical use of the that kind of publications, nevertheless, could provide useful results. Among more comprehensive overviews, a special demographic study on Latvia with relatively rich population data on human losses could be mentioned [Lempert 1946]. On Estonia, a comprehensive overview on the years 1940-1941 is also less ideologically biased but puts less emphasis on demographic aspects [Eesti Omavalitsus 1943]. There is a number of strongly ideological publications, presenting the estimates on population losses, however, these are relatively weak connection to factual evidence.

Another set of estimates can be found in studies carried on the other side of Iron Curtain during the period of Soviet rule in the Baltics. In addition to ideologically-biased, several scientific studies providing the estimates on population have appeared. Among the latter one of the most comprehensive is the study compiled by Misiunas and Taagepera which covers all the three Baltic countries [Misiunas and Taagepera 1983; 1993], but also several others could be mentioned [Damushis 1990; Eesti riik... 1954-1962 etc]. In these studies, the estimates of losses during the first Soviet and German occupations are more detailed and reliable than for the period of the second Soviet occupation. Lacking the access to primary data, usually the total number of losses has been exaggerated. Summing up the issue of uncertain population numbers, the investigations on the human losses 1940-1953 based on primary data are in progress in the Baltic countries but the comprehensive quantitative summary still needs to achieved.

Concerning vital statistics in the 1940-1950s, the situation is evidently better. Most importantly, despite the war and societal discontinuity the operation of civil registration system did not cease in neither of the Baltic countries, and individual records were kept without interruption. According to the registration procedures under the Soviet rule, the death cases of persons in prisons, camps etc were sent to the place of usual residence. This arrangement has resulted in the coverage of a major component of population processes of Baltic people taken away from the region. But understandably, these are the individual-level cases which can be used after work- and time-extensive computerisation of archival records.

The need to turn to individual records is stressed by the fact that aggregate tabulations on vital events are much more scarce for the 1940-1950s than for the later decades. For example data on the time series of age-specific mortality data are available from 1945 in Estonia but from 1952 and 1953 in Latvia and Lithuania, respectively. There is no explanation for such prolonged gap in Latvia and Lithuania, probably the data could be lost somewhere in the archives. On the other hand, in Estonia the data for the period of 1940-1944 is missing because of other reasons — statistical materials of the years of the first Soviet occupation were evacuated in 1941 and lost somewhere in the Soviet Union, in 1944 unpublished population statistics on the period of German occupation was destroyed in the bombing of Tallinn. Very limited information for these years is available in statistical series (for official use) issued by German authorities [Eesti Statistika Kuukiri 1941-1943; Statistiche Berichte... 1941-1943].

In Latvia and Lithuania, statistical archives were neither evacuated nor destroyed during the war, at least no such notifications have been referred to in literature. Latvian statisticians managed to publish, at least once for the year 1941, the data according to prewar programme, i.e including disaggregation by age groups [Statistikas Biletens 1942]. The data on vital events without the age disaggregation were published in Riga by comparative programme for all three Baltic countries [Statistiche Berichte... 1941-1943].

Compared to birth, deaths, marriages and divorces, the state of migration statistics is much worse with respect to immediate postwar decades. As noted above, in the 1940s-1950s the registration did not cover the residential moves of rural population in Latvia and Lithuania. In Estonia, coverage was restored/ extended to rural population in 1956, being the first in the Soviet Union [Katus 1989; Sakkeus 1991; 1996]. From substantive viewpoint, it implies that the most intensive immigration as well as the moves of population initiated by repressions and deportations is left uncovered. Differently from vital records, the primary data is not available from the archives for

none of the Baltic countries. Understandably, the lack of data of one principal component of population change, which for these decades played a leading role in shaping the number and composition of Baltic populations makes the trend-building task much more difficult. Despite these difficulties, however, population developments of the 1940-1950s are extremely important to bridge the gap with prewar period and restore the continuity of Baltic nations in statistical terms.

From the viewpoint of comparability, an important milestone in population data of all three countries was formed the 1959 census which for the first time over two decades provided reliable estimates on the stock of population, followed by the census of 1970, 1979 and 1989. Between the censuses population stock was estimated by means of component method — by adding births and immigrants, and deleting deaths and emigrants. As the results of the procedure were less accurate than census — primarily due to inaccuracies in recording migration — the estimation procedure was repeated and population number/age-sex composition corrected after each new census round. Similarly to all countries belonging to the former USSR, the estimation was accomplished by statistical authorities in Moscow.

The major problem with the centrally prepared intercensal estimates is the fact that calculations were produced on the basis of the data on two census points applying indirect techniques. Without consideration of available vital and migration data for the same years. In case of Estonia, the referred calculations have been evaluated, and noticeable inaccuracies discovered, particularly for the period of 1970-1979. To some extent this can be explained by the procedure of estimation. Up to the 1979 census, post-censal population estimates were based on the present (*de facto*) population. Later on they were based on the permanent population. From the methodological point of view, updating census counts of present population with vital events of the permanent population is highly inconsistent.

With respect to crude rates calculated for the country as a whole such inconsistency was limited, however, for more detailed measures the violation of consistency became clearly visible, particularly in regard smaller regions and specific age groups, including older population of either sexes and the age groups of military service among males [EKDK 1994a; 1994b]. To this end it is important to note that inconsistency embedded in population stock unwillingly affected the entire system of demographic indicators and population-based measures. Moreover, although the population estimates on republic level were revised after each census, time series of demographic indicators were never *posteriori* updated.

The consistency of vital records in Baltic countries stayed much higher than that of population stock also for the period discussed. Differently from some southern regions, the coverage of records had been nearly complete already in the end of 19th century, including the infant deaths. To assess the data quality one is recommended, for example, to examine the date of birth in death records, particularly with respect to the source from which the latter piece of information is derived. In the 20th century in the Baltic countries the birth date is usually derived from official documents like passports, and correspondingly, depends on the data quality of those documents.

Under the Odensee project on the mortality of oldest old population, Dr. Väino Kannisto has analysed the data quality for oldest old deaths in Estonia (aged 80 and above), from 1950 onwards, separately for the native and immigrant population. The outcome of his inquiry witnessed that the accuracy of birth date was were generally good but noticeably better for native population compared to postwar immigrants [Kannisto 1993]. The same conclusion can be reached on the basis of census age

stuctures which display relatively limited extent of age heaping already in the late 19th century, in particular against the background of many other regions of the Russian Empire for which the data quality has been found notoriously deficient [Coale, Anderson and Härm 1979]. In other words, data quality issues related to vital records in the Baltic region for the 20th century are linked to characteristics other than age.

The consistency of migration statistics has remained more or less on the same level following the 1959 census — there were principal changes neither in the coverage nor in the procedure of registration. As noted above, according to several indications the quality made improved during this period. In Estonia, for example, the discrepancy between registered (internal) in-migrations and out-migrations gradually decreased reaching the minimum in the 1970s. Although part of migration moves went unregistered, the stability of registration procedure supports the analysis of migration for the referred period.

Although undoubtedly progressive, under general neglect of trendkeeping a specific discontinuity was introduced by new definitions, classifications and analytical techniques. Under normal circumstances, the change in the latter is accompanied by careful evaluation of the corresponding effects on the consistency of time series. In Soviet statistics, however, such evaluations were hardly done and the extent of potential problems remains to a large extent unknown [Andreev, Scherbov and Willekens 1993; Meslé, Shkolnikov and Vallin 1992]. Recent recalculation of Estonian life tables using primary data and similar method for all census years since 1897 displayed that the change in the methods used by the Central Statistical Office in Moscow to compute official life tables, had significant effect on the results [Katus and Puur 1991; 1997]. Another example of methodological discontinuity in the field of mortality statistics relates to cause-of-death classification which was repeatedly changed. In most cases the changes were introduced by the need to move from one ICD revision to the next, however, with no attempts to harmonise the existing time series.

The situation was further aggravated by strong centralisation of Soviet statistical system. Most demographic indicators and rates as well population estimates and projections were made not at country statistical office but by Goskomstat of USSR and the methodology was not well known for statisticians in country statistical offices. According to the procedure the raw data, either on paper on later on tapes, were shipped to Moscow where the calculation of indicators was performed. For example, total fertility rates and gross and net reproduction rates were never calculated in Statistical Office in Tallinn during the Soviet period; a life table was calculated only once, for the 1959 year. Typically, the Central Statistical Office in Moscow provided little or no detailed information about the methodology employed in their calculations. For, example, only rarely methodological reports were published on the construction of life tables, and even if published, the reports often lacked some critical information [Kingkade 1985].

The experience in Estonia demonstrates that even relatively minor technical issues could influence the data comparability over time. In case of Estonia, for example, computerised vital and migration records have been preserved since 1986, however, the analysis of these datasets has reveal several deficiencies. Most importantly, often in the process of data manipulations the original variables have been replaced with derivatives — date of birth was replaced with age, place of residence with place of registration of the event. The same can be observed with respect to microdata which survived from the Soviet censuses — for example, in the 1979 census microdata the coding of regional units has been simplified in a way that communities

cannot be distinguished among the rural population. These simplifications seemed to have no effect on data quality according to Soviet standard but from today's viewpoint, the limitations imposed are significant and in several cases they have rendered the microdata virtually useless. Thus, despite having the computerised records preserved, Statistical Office of Estonia has decided to re-computerise the birth and death records for several years up to 1991.

In the recent decade, the developments with respect to data comparability have been contradictory. While the consistency with international concepts and definitions has been significantly improving, the case with comparability over time appears more complex. Somewhat paradoxically, namely the harmonisation of statistical methodology with international recommendations has introduced a new discontinuity in time series. The introduction of new discontinuities can be easily illustrated on the example of infant mortality. In 1991-1992 Estonia, Latvia and Lithuania switched from Soviet definition of live birth to the internationally comparable one. In Estonia, calculations made parallely for the years 1992–1993 revealed significant increase of infant mortality due to the change in methodology — according to the WHO definition infant mortality rate appeared 16.6 per cent higher, the stillbirth rate increased even for 25.6 per cent. Similar, or even stronger incomparabilities can be found in virtually all field of statistical data collection. Understandably, such abrupt changes need to carefully considered when building the longer time series, however, reflecting the heritage of the past, statistical offices of Estonia, Latvia and Lithuania have been rather reluctant to include data harmonisation among their routine tasks.

From the viewpoint of data quality, perhaps even more important that the change in statistical methodology has been the influence exerted by social dislocation. In post-soviet countries, the fall of totalitarian regime has generally witnessed the deterioration in the completeness and quality of population statistics — the decline of old system tended to outpace the development of a new one to replace it [Anderson *et al* 1994]. To an important extent, the poor capacity of statistical offices in republics, inherited from the previous system, made an important contribution to such outcome. At least at the beginning, these offices found it very difficult to play a leading methodological and supervisory role in the development of population data systems for their newly independent countries. The situation was further aggravated by the scarcity of resources imposed by new economic conditions which necessitated significant cuts in the number of staff. Even the contacts and cooperation with neighbouring republics, facing similar problems, had to be (re)established since earlier contacts had been mediated almost exclusively by Moscow.

Not surprisingly, the effects of societal transformation can be found also in population data systems of the Baltic countries. Starting from vital statistics, direct effects are clearly visible, for example, in the sharp increase of death cases with unstated personal information — mostly violent deaths with criminal background. Despite such observations, however, however, vital registration systems in the Baltic countries have largely withstood the pressures of societal transformation and risks of degradation. Most importantly, the completeness of registration of births, deaths, marriages and divorces has not been significantly compromised, although there were some critical moments. In 1993-1994 in Estonia, for example, part of municipalities refused to continue to fill in civil registration records unless specially targeted funds are allocated.

Turning to the changes in the system, in all three Baltic countries new document forms for vital registration have been introduced, the list of characteristics included in

the new forms is presented in table 2.9.1-2.9.6. Basically, the list of characteristics is consistent with relevant international recommendations, with the exception of some unfortunate omissions like educational attainment in case of death registry in Latvia. Appreciably there have been certain improvements in the procedures of vital registration. For example, under new system only doctors are authorised to fill in the medical death certificates, divorces settled by the court are automatically counted at civil registration office etc.

At the same time, however, there has been a clearly visible tendency towards disintegration of administrative (juridical) and statistical underpinning of vital registration, unfortunately to the detriment of the latter. In case of Estonia, this disintegration has resulted in the explicit split of the civil registration record into two distinct documents: civil record and statistical registration form since 1994. The split was supported, among others, by the Ministry of Justice which emphasised the difference between the information requested by the newly introduced Family Law and derived from the documents, and statistical information recorded on the basis of self-declaration. In their view, the former information was considered not only "legal" but also more reliable. According to the new system, the second copy of new civil registration record and statistical form are sent to statistical office for coding and data entry, later both documents are directed to the archive Civil Registration Office.

Despite the information is formally not lost after the split of documents, there has evidently been a negative impact on the quality of recording statistical characteristics which have received certain flavour of "second-rate information". In case of Estonia, the deficient accuracy of information has been demonstrated by the comparison of birth data from two complementary sources — civil registration records and Medical Birth Registry. The latter represents new registration system started in 1992, followed by Abortion Registry in 1994 [EKMI 2000]. Medical Birth Registry receives regular data from the hospitals which render obstetric services, aside comprehensive medical information the information covers also characteristics recorded in civil registration system. Both records of Medical Birth Registry and statistical database on births can be linked using personal identification number included in both sources. Although the aggregate distributions of characteristics have proven largely identical, linked data have demonstrated quite extensive discrepancies between the two datasets on the individual level [ESA 1995].

In other words, the quality of vital registration has become clearly the major problem in the Baltic countries. In case of Estonia, an additional hindrance to the improvement in the field has emerged in the capacity of data protection. Under the former system, there were no rules to protect individuals or others providing data for statistical purposes. Special services could request economic or financial data on specific enterprises, or information about individuals.

Following the practice of democratic countries, in the 1990s relevant legislation has been passed by the Parliament and the data protection inspectorate established at the Ministry of Interior. Aside safeguarding the rights of citizens, the inspectorate has demonstrated explicit miscomprehension and even hostility towards the use of individual level data for statistical purposes. Among others, the inspectorate has initiated criminal case against Statistical Office for storing the personalised census records for internal purposes of consistency checking, against the Ministry of Social Affairs for including personal identification numbers in the abortion registry etc. In fact, these interventions have not been accidental but represents the lobby of the former computing centres.

In the process of societal transformation, which coincided with the rapid progress of PC technology, the huge computing centres together with their mainframe facilities proved obsolete and redundant [Anderson *et al* 1994]. Understandably, this made their staff very eager to find new tasks. These people had experience with computerisation of simple but large data sets and basic calculations. In particular in Baltic countries, the staff of the computing centres became the advocates for the idea of establishing registers, including population registers.

The major problem in this respect is the fact that computing centre staffs had little, if any, concern about data quality, or for the mechanisms how registration data could be disseminated and used for analysis and/or policy-making. The lack of interest in substantive issues left them only with interest in making profit from operating their low quality databases, and in the latter field they have been rather successful. To protect themselves from potential competitors with better understanding of population data, among others the lobby of computing centres has used data protection inspectorate in their interest.

Turning to migration statistics, the situation in even worse. This has been explicitly demonstrated by the comparative study "Internal Migration and Regional Population Dynamics in Europe" conducted under the auspices of European Population Committee, Council of Europe (Directorate of Social and Economic Affairs, Population and Migration Division) and for the European Commission (Directorate General V, Employment, Industrial Relations and Social Affairs, Unit E1, Analysis and Research on the Social Situation). Estonia was selected among ten participant countries, and aside substantive analyses, a specially targeted quality evaluation of available migration data was performed. The evaluation was based on the microdata records on both in-migration and out-migration moves starting from 1987. The analysis by the direction of migration flows was performed on the level of county level, separately for urban and rural population.

The analysis revealed that over the period under consideration, the volume of migration flows has experienced a significant reduction in all directions. The decrease in numbers of registered migration moves has been so extensive that the reduction in coverage is obvious. At the same time, the analysis demonstrated that underregistration is evidently dissimilar across directions, regions as well as population groups [Katus *et al* 1998]. Regarding directions, the decrease has been relatively sharpest in the number of rural-rural migration moves. It is important to note that this fact goes often unnoticed because the decline was counterbalanced with the extension of registration in 1992 to all moves of the rural population, including the moves not crossing county borders which were systematically omitted during the Soviet period.

Consistent with the general decrease, the data reveal a corresponding decline in age-specific migration intensities. Until 1992 the reduction appears more or less similar over all ages, however, since that year a significant selectivity has been introduced. Compared to the second half of the 1980s, migration rate for age group 15-19 has been reduced for more than six times while the intensity of migration moves in family ages, but especially in the older working ages has displayed an increase of up to 60 percent. These two shifts result in a principal modification of migration age-curve — even a short glance is sufficient to understand that the new curve reflects mostly the extremely large under-registration of educational migration. Regionally, this deficiency affects disproportionately the counties where most of the tertiary education is concentrated. Under such circumstances it has become hard if not impossible to distinguish substantive changes in migration processes from statistical artifacts.

The underregistration of migration moves stems from the disintegration of the previous registration system which has not been replaced by new procedures appropriate for democratic society. In 1992 the propiska system was justifiably dismantled by the Parliament. The registration of migration moves, however, continued along the old principles, except for lacking the mechanisms which had previously enforced the population to obey the procedure. Moreover, the responsibility of coding the migration registration forms was withdrawn from the Statistical Office and transferred to a commercial computing centre (*Andmevara Ltd*) — the former computing centre of the State Planning Committee.

Starting from 1994 Statistical Office receives no individual registration forms but only microdata which does not allow for record-checking on the individual level. In response to a growing discrepancy between registered in- and out-migration, the production of statistics was switched exclusively to in-migration records. This was, however, no remedy to the principal problems of registration which have still not been resolved. Instead, as a reminiscence of old times, Statistical Office of Estonia canceled the publication of migration statistics [ESA 2001].

The deficiency of migration registration has regrettably compromised also the accuracy of population number and age-sex composition, and hence, introduced uncertainty into all population-based indicators. For example, the population projection for capital city Tallinn in the mid-1990s indicated that underreporting accounted for about 10 percent of total population [Katus *et al* 1994].

The following estimations for the entire country prepared by the Statistical Office and Estonian Interuniversity Population Research Centre showed considerable discrepancy in the number of total population exceeding 5 percent [ESA 1998]. Unfortunately, also the census of 2000 did not resolve the issue — the census has demonstrated significant undercount. As a result, population numbers for Estonia are currently available in two parallel series [ESA 2001]. The difference between the series accounts for 5 per cent in total population, in specific age groups the discrepancy is even larger. To a varying extent the underregistration of migration appears the most serious concern also in Latvia and Lithuania during the past decade, however, detailed analysis of the issue goes beyond the scope of the present study, as goes the analysis of the new round of population census.

To sum up, the main reason behind the contradicting developments in data quality during the recent decade is considered the lack of coordination between different institutions involved in data collection and production of statistics. Most importantly, this reflects the weakness of statistical offices in the Baltics which have not yet fully overcome their subordinate position during the Soviet rule. Greater awareness about the importance of trendkeeping and investment of systematic efforts into data comparability over time will be one of the most important indications about the extent to which the statistical offices in Estonia, Latvia and Lithuania have assumed the responsibility and mastery for the development of statistical systems in their respective countries. So far, the respective initiatives have been generated overwhelmingly by research community, discussed further below.

3.3. Comparability of regional population data

The third aspect of population data comparability in the considered period is related to the limited comparability between different levels of administration. The system

installed in the Baltic countries had strongly hierarchical makeup and consequently little, if any, statistics was produced on smaller administrative units compared to larger ones. Regarding vital statistics and migration, only the total number of demographic events without breakdown by sex/age or any other characteristic, and respectively only crude rates were available below oblast level. In case of Estonia, Latvia and Lithuania with no oblast division, this resulted practically in the absence of regional vital statistics. With respect to census the situation was not much better — on community level the information limited to just to the number of total population. Consequently, the analysis of regional heterogeneity/homogeneity of population development was virtually impossible.

To understand the reasons behind such situation, two main factors could be outlined. Most importantly, under the Soviet regime statistical information was not meant to support decision-making which departed mostly from ideological considerations and subjective preference of Communist Party leaders. Major decisions were made on the very top, and for the latter purpose no detailed regional data below the republican division was required. In addition, the tradition of operating with microdata were very poor in statistical institutions due to split of functions with computing centres, discussed earlier.

In addition to very limited availability of population statistics on regional level, even the existing scarce data were characterised by severe methodological inconsistency. The problem was introduced by the two-stage scheme of producing inter-censal population estimates. While population numbers and age structures of the republics were recalculated after each new census, data for regional units — raions and selsovets — were not. The referred approach eliminated the possibility to reach consistency between population indicators between national and subnational level. In case of Estonia, the population numbers and particularly the age structure, when recalculated at the regional level and balanced with national aggregates, differ considerably from official figures proceeding from the national level only [EKDK 1994a; 1994b; 1996-1998].

The system was quite vulnerable to consistency violations also because of the practice to start the production of whatever indicators first produced for the whole country, and only later for the regions. As a result, if an error was discovered at a later stage, it was already impossible to make corrections, because national figures had already been published. In such cases, the regional data were usually “adjusted”, making the errors permanent. For example, using the referred scheme, in the 1959 census the population of Loksa, a small town in Estonia, stands at ca 200 per cent of its real number [TsSU ESSR 1960].

Even as late as in the 1989 census, the number of population for the whole Estonia was adjusted by adding 7,000 individuals to the permanent population. The Central Statistical Office in Moscow justified it with a claim that certain number of permanent residents of Estonia were counted in other republics. However, actually 7,000 temporary residents, enumerated at the time of census in Estonia, were recoded into permanent, supposedly with the aim to secure the match between the counts of present and permanent population for the Soviet Union as a whole. The same kind of adjustments can be found also in vital statistics.

From the perspective on long-term trends, the existing regional population data for the considered period are even more seriously handicapped. The main reason for that stems from the fact that Soviet statistics did not apply the concept of statistical regional units (NUTS). Regional data on population always referred to current

administrative division, and consequently, once administrative units or their boundaries were redefined, regional statistical data became incomparable.

In case of Baltic countries, the changes of administrative division were particularly extensive in the 1950s. In Estonia, for example, the existing division of eleven counties was replaced by the division into 3 oblasts, 4 so-called republican cities, 39 rural raions and more than six hundred selsovets. The development during the following four decades can be shortly characterised as step-by-step return to the previous system [Uuet 2002]. While the changes of administrative units themselves have been systematically documented in the decrees of the Council of Ministers, accompanying changes in population are not. The information is scattered across several sources which tend to be incomplete, methodologically inconsistent and frequently controversial with each other [EKDK 1996-1998].

In the Baltic countries, basically the same holds to the definitions of urban and rural population. The urban and rural population have been defined according to administrative rather than some objective — whether or not the administrative unit was entitled to the status of urban or rural settlement. The inconsistency of the system has become particularly evident under the reforms of local government which are under way in all three countries.

4. HARMONISATION OF POPULATION DATA

After the disappearance of regulations limiting the availability and publication of population and social statistics, it became possible for the scientific community to make an evaluation of the existing data. Among three Baltic countries, most systematically the steps in this direction were undertaken in Estonia where the reports covering different domains of population and social statistics were prepared and repeatedly discussed at the sessions of the Estonian Demographic Association [Katus, Puur and Sakkeus 1992].

As a result of these investigations and meetings, a general understanding emerged that population data available for the Soviet period are of unsatisfactory quality, particularly with respect to the comparability issues discussed above. For the same reason, it was concluded that most of the social and population statistics in their existing quality are not sufficiently consistent for the basis of valid scientific conclusions. Besides research, the state of population data was regarded a hindrance for information-based decision-making, especially when the heterogeneity of population development and various behavioural patterns were concerned.

Multivarious tasks of harmonise different data sources over fifty-years period have been brought together in the framework of the national *Programme for Population Data Comparability.* The harmonisation programme aims at reintroduction of international definitions and classifications, building consistent time series to bridge the gap with pre-war statistics, securing comparability at regional level and integrating vital, census and survey statistics. Accomplishing these tasks involves evaluation and harmonisation of aggregate data, if available, recoding and re-processing of microdata, if endured, and computerisation of archived vital and census records, if aggregated and/or microdata is not available.

The accomplishment of the Program has been until the present stage carried out by the Estonian Interuniversity Population Research Centre. Due to the extent of the tasks, the realisation of the Programme and its tempo in particular has been, of course,

dependent on the availability of funding and cooperation of relevant governmental institutions. Aside the general support, the progress has also encountered unwillingness of relevant institutions to consider the long-term objectives of the Programme as constituent element of national statistical system. Nevertheless, over the past decade several tasks have been in diverse project frameworks, including those provided by the Governmental Commission for Population and Social Statistics, Estonian Science Foundation, IREX, John D. and Catherine T. MacArthur Foundation, Research Support Scheme of Open Society and others.

The principal international frameworks of population data harmonisation have included cooperation with institutions responsible for methodological coordination in the field of population data, including European Population Observatory, UN Population Division, UN Statistical Division, UNECE and Eurostat. Although harmonisation efforts have been somewhat more systematical in Estonia, right the beginning the referred programme has been coordinated and a number of initiatives shared with fellow institutions Latvia and Lithuania. Accordingly, the following section presents a concise overview of the major activities in the field of data harmonisation, with reference to all three Baltic countries.

4.1. Harmonisation of age structures

Reflecting the key role of age structures for the consistency of most demographic measures, one of the first major undertakings in the framework of Estonian Programme for Population Data Comparability was the harmonisation of age structures. The core of the referred activities consisted of the recalculation of population age structures for three intercensal periods: 1959-1970, 1970-1979 and 1979-1989. The relative stability of administrative division since 1965 allowed the harmonisation of age structures for the two latter periods to be accomplished on county-level (NUTS3), separately for urban and rural population.

From the technical point of view, the calculations were accomplished in two stages. First, the estimation of annual population age structures was performed, from one census point up to the next. These estimations were made on the basis of cohort-component method, using single-year step and taking into account all vital and migration data available for the period. In the second stage, adjustment and smoothing of the results was performed. The Lexis matrix of adjustment ratios was based on the difference between estimated and census-based age structures at the end of the period, but embedded also additional information such as total numbers of reported vital events by counties etc.

The results as well as methods of calculation have been presented in two publications [EKDK 1994a; 1994b]. To this end it is important to emphasize that the harmonised series of annual population stock data refers to “permanent population” for the whole period 1959-1989 whereas the previous estimations embedded discontinuity: the concept of “present population” was changed to “permanent population” in the 1970s without the corresponding data harmonisation [Anderson and Silver 1985b]. Harmonised age structures are used by Statistical Office, scientific community as well as international agencies.

In Latvia and Lithuania no similar harmonisation programme was launched, and the population stock for the intercensal periods have been available only as calculated by Moscow. Relying on the Estonian experience, however, it was decided to accomplish the recalculation, covering two intercensal periods of 1959-1970 and 1970-

1979. For the first period no data was available, and regarding the second, the data had proven inconsistent due to conceptual switch from “present” to “permanent” population. The statistics for the intercensal period 1979-1989 had demonstrated much better consistency already in the case of Estonia, and national experts of Latvia and Lithuania preferred to keep using it for their countries. Concerning the methods, the procedures were similar to those applied on Estonian data, with the exception that harmonisation was limited to national level data.

Over a couple of recent years, the needs of comparative analysis, particularly with respect to mortality has advanced far beyond the period 1959-1989, and correspondingly, brought up the need to develop data on population stock which has not been available on regular basis. Because of societal discontinuity and major changes in population, it has been particularly challenging to move down to the 1950s. The population stock data of 1950-1959 were calculated for all three Baltic countries applying the comparable procedures. The basic tool was backwards cohort-component method by single-year step using all vital and migration data available. The latter, however, was limited, especially with respect to migration and the quality of vital statistics varied to a large extent, across years as well as across countries. Due to the more complete migration statistics, the results are more consistent for Estonia, and the most ambiguous in case of Lithuania.

The results of the reconstruction of population age structures by single-year age groups in the Baltic countries for the 1950s should be considered as preliminary, and undoubtedly they need further elaboration to satisfy the requirements to fundamental statistics. From the analytical viewpoint, however, stock data by five-year age groups could be regarded of sufficient quality for various calculations, including the construction of abridged life tables. It is noteworthy that previous research on the 1950s has never advanced beyond crude rates for the Baltic countries, which could probably be explained by very limited data up to the first postwar census in 1959. Upon the newly reconstructed age structures the set of age-specific measures can be calculated for mortality, fertility, nuptiality and divorciality, and partly for migration.

Further, an attempt has been undertaken to reconstruct population stock also for the interwar period. In case of Estonia, the new estimates cover the years 1922-1940, based on the 1922 and 1934 census data as well as vital statistics of the corresponding years. Concerning Latvia, similar calculations have been accomplished for the period 1925-1940. The reliability of vital and census statistics in the interwar period, and small scale of international migration compared to postwar years forms a good basis for the consistency of results. Concerning Lithuania, unfortunately, there had been the census taken only once in the interwar years (1923), without the complete coverage of the country's territory (excl Klaipeda-Memel region). These limitations did not allow the referred exercise in case of Lithuania.

In Estonia, in cooperation with Statistical Office, also a revised series of post-censal age structures has been constructed for the period 1989-1998 [ESA 1998]. The new series confirmed significant deterioration in the accuracy of stock data during the 1990s, with selective pattern across regions and age groups, and noticeable effect on the recent demographic trends. For conclusive analyses, however, the evaluation of the data quality of the 2000 census and construction of new stock estimates for the entire intercensal period is required.

4.2. Harmonisation of census and vital statistics

Harmonisation of census statistics involves activities in several directions, however, from the viewpoint of all three Baltic countries participation in the programme *Dynamics of Population Ageing and Status of Older Population in the ECE Countries* (DPA) has been a central undertaking. The programme was initiated by UN Economic Commission for Europe as a response to diverse challenges raised by the process of population ageing in the European region.

The core of the DPA programme (1992-1999) has been the preparation and analysis of microdata samples on older population, based on the 1990 round of population censuses. In particular, the project foresaw drawing the samples of ca one million individual records in each participant country, including persons aged 50 and over, together with their family members. According to sampling scheme, higher inclusion probabilities were applied to oldest old population. Following the sampling, the census microdata from more than dozen countries needed to be harmonised, in order to allow comparative analysis of marital and living arrangements, work and retirement, income sources, housing conditions and other major characteristics of the elderly population [UN ECE 1992-].

In the Baltic countries, activities related to DPA programme had to be started virtually from scratch. As mentioned above, the census microdata had been centralised in Moscow, and in case of Estonia, the first step was to secure the return of the 1989 census data, in cooperation with relevant authorities in both in Estonia and Russian Federation. Following the return of the census, efforts were taken to bring the microdata into scholarly circulation. Among others, this has included a lot of technical work: the transfer of data from the mainframe to PC format, extensive consistency checking, going back to census lists in the archive. The central task, however, was not of technical but methodological nature — the harmonisation of census data, based originally on the Soviet methodology, with internationally recommended concepts, definitions and classifications.

This part of harmonisation work was done in close cooperation between Estonian Interuniversity Population Research Centre and Population Activities Unit at UN ECE. Later the procedures developed on Estonia were applied to the transformation of Latvia and Lithuania. It is important to note that the Baltic countries appeared to be the only countries of the former Soviet Union which participated in the DPA programme and deposited their harmonised census samples in the international database at UN ECE. Russian Federation was also willing to participate but due to the problems of data availability, it failed to complete the harmonisation and make the microdata accesible to international demographic community.

The results of DPA national subprojects are available in several publications. In Estonia, for example, the set of publications includes methodological materials documenting the dataset, definitions and coding schemes [Katus and Puur 1993; Puur 1994], national and international standard tabulations [EKDK 1996; Botev *et al* 1995], numerous analytical publications on various aspects of population ageing [Katus 1995; 1997; 1999; Puur 1999; Sakkeus 1995; Põldma 1999; 2000]. The summary of the national subproject is available from thematic monograph [Katus *et al* 1999], the publication of the international monograph is in progress at UN ECE.

In the following years, the efforts to bring the microdata from other censuses into scholarly circulation have continued in Estonia. Recently, similar work has been accomplished on the microdata of the 1979 census, the data have been transferred to PC

format, checked for consistency and as far as possible, harmonised. Also, a feasibility study has been undertaken to assess the possibilities to computerise the records of the 1959 census which have been preserved in National Archive of Estonia and, when available for analysis, could present invaluable account about the Sovetisation in the Baltic countries during the 1940-1950s. As noted above, among the countries of the ex-USSR the individual records of the first postwar are available in Estonia. Appreciably, the feasibility study revealed the completeness of census records; in the course of the study relevant methodology and procedures were developed and applied to the computerisation census records for Läänemaa county (ca 21 thousand cases) [Sakkeus 1998]. Compared to original census file, the application of parallel coding schemes etc has almost tripled the number of characteristics which will be available for the analysis.

Based on the initiative of historical demographers, the harmonisation of census records has been extended to earlier periods in Estonia. In particular, a special study has focused on the 1897 census of Russian Empire in the city of Tartu. Taking advantage of the preserved census lists (municipal authorities were allowed to prepare copies of census lists for their own use, altogether more than 40 thousand cases), the records have been computerised and analysed [Berendsen and Maiste 1997; 1999]. Aside substantive results, the analysis, particularly the comparison between new and original returns, provided highly interesting information about the methodology and procedures of the 1897 census. Evidently, the relevance of these results goes beyond not only the city of Tartu but also Estonia.

Understandably, the harmonisation of census statistics has not been limited to microdata. In the framework of the programme for population data comparability, in Estonia the series of census data starting from the 1881 — the first census covering the Baltic provinces of Russian Empire — have been harmonised, considering, among others, repeated redefinition of national borders throughout the period.

Regarding vital statistics, the harmonisation has also proceeded on the level of both aggregate and individual-level data. Following the harmonisation of age structures for intercensal periods 1959-1989, discussed in the previous sections, corresponding series of demographic rates have been revised starting from crude rates and including more refined measures. For example, in the framework of preparations to International Population and Development Conference (Cairo 1994), a special subprogramme was launched to harmonise the times series on infant and late foetal mortality, including the analysis, addressing the effect of the transfer to internationally recommended definition of infant mortality [EKDK 1994c].

In the framework harmonisation programme, special attention has been paid to the recalculation of life tables. As a first step, a new set of life tables was calculated for all census years starting from 1897, the results of the recalculation provided a consistent basis for analysis of long-term mortality trend in the country [Katus and Puur 1991; 1997]. Already such moderate exercise indicated that in some cases the new calculations provided results significantly different from the existing official life tables. In the same framework, also the set of regional life tables for Estonian counties has been prepared, separately for urban and rural population, aggregating death cases from the period 1986-1991 [EKDK 1994d]. Notably, these were the first regional life tables ever produced on Estonia.

The second stage of the referred activity was already coordinated between all three Baltic countries, with the particular aim to secure comparability across the region. New set of life tables covers the period of 1922-1939 and 1950-1997 for Estonia, 1925-1939 and 1952-1997 for Latvia, and 1953-1997 for Lithuania. The calculations were

based on central mortality rates by sex and 5-year age group, which were also subjected to the re-calculation procedures, based on age-specific death and revised population stock data, discussed above. From the methodological point of view, the analysis revealed significant but more importantly varying over time discrepancy with the "old" series of life tables, substantive results of the exercise are presented later in this volume. The harmonisation of mortality statistics has also been extended to cause-of-death statistics, the harmonisation has been performed by the team of INED. The harmonisation has resulted in time consistent trends of cause-specific mortality stretching back to the 1950s [Meslé and Vallin 2002].

In case of Estonia, the harmonisation of fertility statistics has advanced to the stage of work with birth individual-level records. A special subprogramme aims at bringing into scholarly circulation the information from individual birth records, among others, the launching of the programme was motivated by the sharp fertility decline of the 1990s. In the course of the subprogramme, birth records are computerised, securing the consistency of data over time and space, and introducing modern internationally comparable definitions. The ultimate goal is to cover the period since the reform of civil registration in 1926.

The subprogramme is accomplished in several stages, moving from one intercensal interval to the next. The work started from intercensal interval 1959-1970, and has subsequently shifted to census interval 1970-1979. For the period 1959-1970 the records have been computerised and harmonised. Data have been newly tabulated according to programme, and for each year, a separate volume of annual standard tabulations is prepared. Differently from official tabulations, information is provided also in regional breakdown, covering county as well as community level. Additionally, intercensal birth data have been recalculated to the regional division of the 1970 census, to provide comparable time series both on county and municipal level. Harmonised birth statistics for each intercensal period are published in separate volume, accompanied with CD-ROM, carrying annual tabulations [EKDK 2002].

Aside providing time consistent and internationally comparable basis for the analysis on fertility trend, the subprogramme has also revealed numerous discrepancies with "old" data. The number of births exceeds the corresponding number in official statistics — although the difference is fairly small, it appears systematic and is repeated in almost all years considered. The discrepancies grow bigger when the regional breakdown is concerned. Interestingly, the subprogramme has provided information also on the population in military areas, not covered by other branches of statistics. As persons residing in these closed territories registered their births at civil registration offices, it could be possible to develop estimates on the number, dynamics and regional distribution of military population during the postwar period.

The unavailability of census and vital statistics statistics on regional level called into being a separate subprogramme on regional data harmonisation. The subprogramme addresses the vital and census statistics on county and municipality level, in its first stage in the period 1965-1990. The project foresees the recalculation of available vital and census statistics to provide counties and municipalities with consistent population information. The core of the project is newly processing and tabulation of the 1989 census, for the first time covering the counties and municipalities in equal amount of information. The data of earlier census is also matched with the set of standard tables, due to the access to microdata, the 1979 census is represented more completely than the two earlier censuses, for which only the aggregate data are readily available.

The project has proceeded countywise, the results of recalculations are presented in county-specific volumes. By now, the publications have appeared on five counties (Viljandimaa, Lääne-Virumaa, Järvamaa, Jõgevamaa and Valgamaa). Recalculations have been completed for six additional counties (Tartumaa, Saaremaa, Raplamaa, Pärnumaa, Ida-Virumaa and Põlvamaa). In addition to data, county volumes discuss relevant statistical concepts and definitions, administrative transfers as well as presents a short analytical overview on the development of county populations. When prepared for all counties, the set will provide the complete 1989 national census publication.

Harmonised vital and census statistics data have been included in the Estonian Population Databank (ERA), started by Estonian Interuniversity Population Research Centre in the late 1980s. Comparing to ERA to other databases, two issues should be particularly underlined. First, the ERA is not limited to computerised data on population indicators but covers also various methodological information concerning definitions, classifications, procedures etc. Correspondingly, the release of information from ERA does not mean so much the release of data but the data accompanied with appropriate methodological explanations. Secondly, different sections of the databank have not been developed in isolation but interact with each other. New input in one section usually leads to the upgrading in other sections, for example the introduction of adjustments in age structures, leads to recalculation all population-based indicators. The ERA serves the needs of various national and international users, including the Statistical Office of Estonia and European Demographic Observatory.

4.3. Development of integrated survey statistics

Until the recent decade survey statistics was generally neglected as a part of national statistical system in the Baltic countries. Such secondary status compared to vital registration and population censuses was reflected in several features. As discussed in the previous sections, local statistical institutions developed no appropriate procedures for nationally representative surveys, including sampling frame and professional interviewer network covering the entire country. The existing sociological surveys, although quite numerous in Estonia, Latvia and Lithuania, stood apart from the statistical system, and were not harmonised in terms of concepts, definitions, classifications etc.

The transformation of statistical system in the 1990s changed the situation profoundly and created the need to develop and integrate sample surveys as constituent of national statistics. First, surveys have the capacity to support human-centred information on the phenomena that are not covered by traditional sources, e.g. patterns of employment and economic activity beyond the official registration with relevant authorities, incomes and expenditures of households, new family forms such as consensual unions, family planning, health status and behaviour, various attitudinal information etc. Second, and no less importantly, survey statistics have the capacity to provide the in-depth insight into processes under study which are not available from other sources. And last but not least, the advancement of survey statistics has been closely related to the progress of population science.

From the viewpoint of population research, particularly the role of Estonian, Latvian and Lithuanian Family and Fertility Surveys should be underlined which were undertaken as national projects in the framework of the 1990 round of Family and

Fertility Surveys in the ECE Region [UNECE 1988-]. The FFS programme was the central undertaking in the field of population activities in the past decade, and from the future perspective, its scientific contribution could be well compared to the path-breaking Princeton project on fertility transition in Europe [Coale and Watkins 1986]. The initiative to start the programme originated from the task force of leading NPIs in the region, officially the FFS was called into being by intergovernmental population conference in Budapest. Under general coordination of UN Economic Commission for Europe, altogether 25 countries from the European region participated in the programme. Notably, Estonia, Latvia and Lithuania were the only countries from the former Soviet Union which managed to participate in the programme.

From scientific point of view, the FFS stands out for several important features. Most importantly, the survey builds systematically on life course approach and event history methodology which has become the main analytical framework for modern population science [Blossfeld, Hamerle and Mayer 1989; Blossfeld and Rohwer 1995; Courgeau and Lelièvre 1997; Tuma and Hannan 1984; Yamaguchi 1991]. This is not an accidental trend nor does it reflect a prevailing type of fashion in survey research or statistical analysis. Instead, it indicates a growing recognition among social scientists that event history perspective is often the most appropriate empirical representation one can get on the substantive processes under study. It is interesting to note the contribution of population science to the conception of the frawework — modern event history analysis was born from the union of classic demographic methods and multivariate statistical techniques [Cox 1972]. Thus, life course approach and event history methodology forms a natural extension of long-established record of quantitative measurement and analysis, in which demography has excelled among social sciences.

When speaking about the scientific merits of event history framework, its universality, inherent interdisciplinary nature and the linkage between macro- and micro-level are usually referred [Hareven 1978; Elder 1995; Dykstra and Wissen 1999]. Life events are universal, they are found everywhere, and irrespective of time and place, the timing, sequencing and spacing of life events always constitute a skeleton of human life. In the practice of research, event history framework has demostrated its usefulness particularly in uncovering or mapping out causal relations which forms an essential although difficult part of scientific endeavour. The link to causal understanding is natural because in event history framework future behavioural outcomes are related to conditions in the past. In this view, event history analysis is clearly opposed to cross-sectional designs which by the very nature do not allow the distinction between correlation associations and causation.

Turning back to the FFS, the survey covered all main life careers of the population family formation, childbearing, residential mobility and migration, education and labour force participation etc. In case of Estonia, the integrative stance of the survey was further strengthened in two major dimensions of the survey — the programme and target population [EKDK 1995a; 1995b; 1999]. First, several modules were added to those foreseen by the UNECE core questionnaire, and second, instead of addressing the population in currently fertile age-span, the upper age limit of the target population was extended by twenty years, i.e the sample covered broad fifty year range of birth cohorts (1924-1973). Additionally, the Estonian FFS also covered the numerous foreign-origin population residing in the country.

The main aim of these extensions to regular programme was to contribute to filling the information gaps which exist in the population information — on one hand

this refers to the immediate postwar decades for which the data is particularly deficient, and on the other hand, the processes and issues which have not been covered/are poorly covered by vital statistics and population censuses. Although these extensions put greater pressure on survey implementation, the evaluation performed by INED for all participant countries, including Estonia, Latvia and Lithuania, indicates that the data quality was not compromised [Festy and Prioux 2001].

The analysis of FFS data has shown the capacity of the event-history survey to support both applications. In particular, the survey has enabled to reconstruct time-consistent cohort trends for a broad range of demographic and social processes, covering the entire postwar period [Katus, Puur and Põldma 2002; UNECE 2000]. With respect to processes for which continuous time series have not been available, for example labour force participation and internal migration, similar exercise has been accomplished also for period indicators [Pungas 2001; Puur 2000]. The results from these analyses have been highly innovative or often surprising not only against the background of cross-sectional analyses, still prevailing in social research in the Baltic countries, but also against the background of many Western countries which applied short cohort range in their surveys.

Aside substantive results, it is important to note the broader contribution of FFS to the development of national survey statistics in the Baltic countries. In Estonia, for example, the FFS happened to be the first nationally representative survey following the restoration of independence in 1991. The FFS has contributed, among others, to the development of census-based sampling frame and procedures, establishment and training of interviewer network at Statistical Office, procedures of coding, data entry, data cleaning, analyses of representativeness, non-response, interviewer performance and other aspects of data quality etc, standard publication programme and last but not least to the introduction of funding practices securing the continuity of survey across several budget years. Due underdeveloped statistical environment, instead of applying the existing routines, these tasks turned out to be innovative, requiring extensive scholarly input. In order to secure the latter, the efforts of interested researchers and institutions were brought together into national FFS working group which has beared the responsibility for all aspects of the survey.

Although being a major survey, FFS was not considered an isolated undertaking but maintained close link to other sources of population data. Accordingly, in case of Estonia, the female survey of FFS (1994) has been followed by additional four event history surveys which represent major societal domains: the Labour Force Survey in 1995 [Noorkõiv and Puur 1996], Health Survey in 1996 [Leinsalu *et al* 1998], National Minority Survey in 1997-1998 [Katus, Puur and Sakkeus 2000a] and the male survey of the Estonian FFS in 1997-1998 [EKDK 1999]. The methodological consistency of major definitions, classifications and procedures applied in different surveys, allowing their integration; following data quality evaluation and harmonisation, into an integrated database of 24 thousand individual event history records [Katus *et al* 2000].

Similarly to the FFS, also in the referred surveys event history methodology has been used for the reconstruction of population trends and filling in the existing information gaps. Although survey statistics cannot compensate the absence of regular trendkeeping when absolute numbers are concerned, these applications clearly demonstrated sufficient capacity to outline the fundamental patterns and developments. Thus, the LFS has been used for the reconstruction of consistent quarterly and monthly series of labour market indicators right from the beginning of economic transition in 1989 — an opportunity which is missing in most countries of Central and Eastern

Europe [Puur 1997a; 1997b]. On the other hand, in the framework of Council of Europe study on the demographic development of national minorities in 1910-1995, long-term trends in development of national minorities in Estonia were reconstructed, based on internationally comparable definitions and bridging the gap with pre-war statistics [Katus, Puur and Sakkeus 2000a].

Aside the system of integrated event history surveys, equally important has been the linkage to vital and census statistics. The individual-level linkage of survey responses to census records, available from the sampling frame, has allowed detailed analysis of the definitions applied in Soviet censuses. The results identified population categories who have been dissimilarly represented in two sources (e.g. cohabiting partners, employed in small-scale agricultural sector etc), additionally the record linkage with census has proven useful for the estimation of recall accuracy in retrospective questions. Starting from 1992, the re-organisation of vital statistics allows the linkage with survey data on the individual level, supporting the follow-up of the respondents through registration system.

In the year 2000, the preparations for the second round of European FFS (2000-2008), also known under the title of GGP (Gender and Generations Programme), started. The preparations to this leading programme of comparative research in the population field in Europe, have started parallely in two frameworks — the cooperation via UN Economic Commission for Europe has been supplemented by the Network for Intergrated European Population Studies (NIEPS). The Baltic countries are actively involved in both frameworks. Compared to its predecessor, the FFS2 aims towards more integrated approach extending the focus to later phases of life careers and demographic, social and cultural heterogeneity of immigrant populations. As both these extensions were applied in the Estonian FFS, the experience of Baltic countries has attracted careful attention and discussion in relevant meetings of NIEPS network [Katus, Puur and Sakkeus 2000b; Katus and Sakkeus 2000; Katus and Puur 2001]. On the other hand, the GGP will be a first nation-wide exercise for some Central and East European countries like the FFS was in the Baltics. For those countries the experience gained in Estonia, Latvia and Lithuania could be useful in a direct way.

5. MAIN TRENDS IN POPULATION DEVELOPMENT

From the viewpoint of demographic development, the Baltic countries, particularly Estonia and Latvia have traditionally belonged to pioneering nations, most importantly with respect to demographic transition. Although being a universal process, its timing has varied to a large extent across Europe, with tremendous impact on population, and correspondingly, on social, economic and political development of nations. The referred influence is still of great importance in the modern world, its impact manifesting itself in virtually every field of population development.

In this context, the European marriage pattern is widely acknowledged as the phenomenon introducing the first principal divide in the demographic development among European nations [Hajnal 1965]. This concept relatively late marriage with remarkably high proportion of population of never marrying has proven causally related to the onset of demographic transition and can hardly be overlooked when dealing with long-term trends. In the Baltic countries, the development of European marriage pattern can be traced back to the aftermath of Northern War, to the first half of the 18th century [Palli 1988; 1997]. Leaving aside the Ingermanland which was historically inhabited by

Fenno-Ugric nations (Votians, Ingerians, Finns and Estonians) but repopulated in 18th-early 20th centuries, Baltic countries and Finland formed the eastern boundary of the spread of the phenomenon.

With respect to geopolitical division it is important to note that the Hajnal line explicitly ignored the political and administrative boundaries in the region. When the pattern was introduced, Estonia and northern Latvia belonged to Russia, eastern part of Latvia as well as Lithuania belonged to Poland, and Finland was part of Sweden. Additionally, about a century later the Hajnal line in this part of Europe progressed into the largest difference in timing of fertility transition between two neighbouring countries. This difference, particularly when it comes to Estonia and Russia, has been estimated to be up to half a century [Katus 1990; Vishnevski and Volkov 1983] exceeding in length, for example, another well-known division of that type, the one between the Flemish and Walloon populations in Belgium [Lesthaeghe 1977; Coale and Treadway 1986].

In Estonia and Latvia, the beginning of demographic transition could be traced back to the mid-19th century. Judging upon the spread of parity-specific family limitation and related characteristics, the emergence of modern type of population reproduction in Estonia and Latvia has been the earliest among the countries included in the Russian Empire and synchronous with pioneering nations of fertility transition in Northern and Western Europe [Coale, Anderson and Härm 1979; Katus 1994]. Similarly to the latter countries, Estonia and Latvia approached the underreplacement fertility and slow alteration of generations already in the 1920s. In case of Lithuania the demographic transition took start several decades later, however, in the first decades of the 20th century the progression towards modern population reproduction was very intensive, literally speaking, catching up the time lag with the northern neighbours.

From the viewpoint of social and economic situation, Estonia, Latvia and Lithuania have been characterised by a discontinuity of societal development. Similarly to the countries of Central and Eastern Europe, the end of the 1980s witnessed the onset of fundamental changes which aimed at restoration/building of democracy and market economy, in case of Baltic region those changes have coincided with the restoration of statehood. In a broader timeframe, however, the recent societal transition appeared not the first of its kind experienced in the 20th century. About fifty years earlier, the principles of societal organisation to which the countries are now returning, were declared obsolete and violently replaced. Both the first and second transition have had multiple effects on Estonian, Latvian and Lithuanian societies which deserve careful consideration. In particular, the disruption should be considered in the analysis of social stratification, economic well-being, intergenerational mobility etc.

In comparative perspective, the explicit discrepancy between demographic and societal development makes Baltic countries unique and particularly appealing for research, especially with respect to Estonia and Latvia. These two are the only countries in Europe which belong to the group of forerunners of demographic transition but in the period of antagonistic partitions were entrapped behind the Iron Curtain. From the demographic point of view, such situation offers an interesting opportunity to test the robustness of patterns embedded in long-term demographic development against the influences of social and economic environment.

In the following, a concise outline of major trends in mortality, fertility, nuptiality, divorciality, migration as well as number and composition of Baltic populations is presented. In the following chapters, selected issues are elaborated in greater detail.

5.1. Population growth and structure

In all three Baltic countries the period following the Second World War has been marked by extensive population growth. The newly calculated time series indicate the growth of total population in each country in the period 1950-1989 as follows: 1.53 times in Estonia, 1.41 times in Latvia and 1.52 times in Lithuania. In absolute terms, during the referred four decades the population number increased from 1.022 millions to 1.566 millions in Estonia, from 1.888 millions to 2.666 millions in Latvia, and from 2.417 millions to 3.707 millions in Lithuania. Although slowing down in the 1970s and 1980s, compared to immediate postwar decades, it should be noted that in all three countries significant population growth until the beginning of 1990s. Taken together, at the turn of the decade the population of Baltic countries accounted for almost eight millions.

Persistent population growth at a rate exceeding one per cent on average is understandably rather exceptional for the countries which have reached the post-transitional stage of demographic development. From the analytical point of view, population growth consists of two rather different components — natural increase and migration balance. Following the completion of demographic transition, the general trend has been towards the gradual slow-down of natural growth rates along with the exhaustion of population momentum gained during change of reproduction regimes. In other words, persistently high population growth refers to substantial contribution of migration, discussed in detail in one of the following chapters.

The contribution of migration has been particularly decisive in Estonia and Latvia which had reached the post-transitional stage of demographic development already by the period of the Second World War. The analysis undertaken on both countries have shown that aside direct contribution, indirectly the positive net migration has been responsible for most of (positive) natural increase in the postwar period. Namely this double contribution of migration explains why population growth in the two countries has been so extensive compared to other nations of early demographic transition. Notably, the native populations of Estonia and Latvia have been characterised either by very limited excess of birth over deaths or natural decrease of the population over the postwar period.

In addition to the advanced stage of demographic development, the referred outcome was strengthened by political repressions deportations and escape to the West which have exceeded population losses due to direct war activities. In Latvia, the deportation and repressions during the first years of the Soviet regime involved about 260 thousand people according to Zvidrinsh and Reuderink [1992], repatriation and forced emigration to Germany involved another 100 thousand, and about 100 thousand had fled to other Western countries [Latvijas Valsts Arhivis 1995a; 1995b; 1995c; Misiunas and Taagepera 1993]. Taken together, these losses account close to one third of the prewar population number.

In Estonia, according to the 1941 census the population losses of the years 1940-1941 accounted for 104 thousand [Salo 1993]. Emigration to the West was greatest in 1944 and has been estimated at approximately 70 thousand people [Reinans 1985]. As a result, by 1945 the population of Estonia had been reduced by about 207 thousand persons or 18.5 percent [Kaufmann 1967]. The second wave of deportations in 1949 and arrests took a toll of approximately 50 thousand [Kotkas 1999; Nurk 1999;

Piir 1991-1997]. Leaving aside the number of persons who disappeared during the war, this brings the direct losses of Estonian population due to Soviet terror to the level of 20 percent. Due to the cumulation of extensive population losses and the already low natural increase, these losses inflicted by the demographic crises have not been compensated and today Estonians and Latvians form the few nations in Europe which have not reached their prewar number.

The losses inflicted by war and repressions have been indeed huge also in Lithuania — according to the estimates 10-12 percent (230-270 thousand) were deported, while repatriation and emigration involved another 250 thousand (320 thousand) [Burauskaite 1998; Damushis 1988; Gadeikis 1992; Truska 1988]. Compared to Estonia and Latvia, however, the later timing of demographic transition implied fairly rapid population growth up to the 1960s which allowed Lithuania to fully compensate the losses. Moreover, due to sustained growth of population, it could also avoid very high volumes of economic immigration. Although the strategy of economic development was basically the same in all three — vast expansion of industrial production, including the priority of heavy industries over other sectors — Lithuania could itself provide much of the required labour input which was unavailable locally in Estonia and Latvia.

These consequences of the referred distinction among the Baltic countries, rooted in the timing of demographic transition, is understandably not limited to population growth but has exerted a major impact on the structure of population, whatever the aspect concerned. In this connection, a reference to the transformation of ethnic composition is usually made, however, it is interesting to note that at first there was a shift in the opposite direction in all three countries — although there had been noticeable differences in the number and proportion of national minority populations between Estonia, Latvia and Lithuania, in all countries the Second World War implied disproportionate losses among national minorities, bringing about the shift towards ethnic homogenisation.

In the course of the war and successive occupations, Estonia lost four out of five national minorities (Germans were repatriated in 1939-1941, Jews were exterminated by 1942, Swedes escaped in 1944, Russians and Latvians living in mixed-populated areas were annexed by the Soviet Union in 1945) [Katus, Puur and Sakkeus 2000]. It has been estimated that by 1945, ethnic Estonians formed more than 97 per cent of the total population in the country. In Latvia, the change was related to the repatriation of Germans as well as the elimination of Jews and Gypsies during the war, in case of Lithuania the largest losses were suffered by the numerous Jewish minority. In both countries the proportion of titular nationalities accounted for more than 80 per cent of the total population [Zvidrinsh 1995].

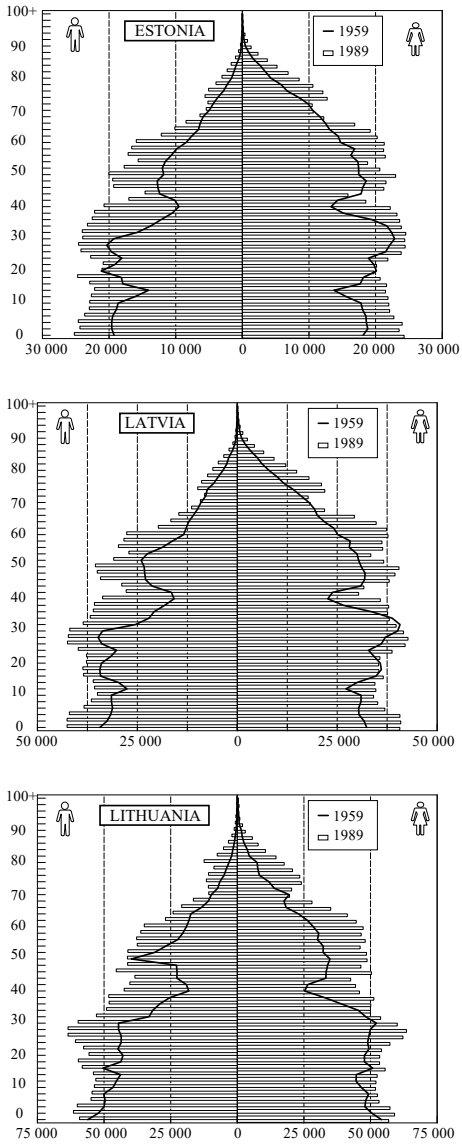
In Estonia and Latvia the massive immigration that continued throughout more than five decades brought the referred proportion to a rapid change. The proportion of non-titular nationalities reached the highest level in Latvia — in 1959 non-titular ethnic groups comprised 38 per cent of total population, by 1989 the corresponding proportion had almost reached the parity with Latvians (48 per cent). In Estonia, the 1959 census indicated the share of non-titular groups 25 per cent, by 1989 it was close to 39 per cent. Although the corresponding figure was eight percentage points lower compared to Latvia, in relative terms, the change in ethnic composition and hence the impact of immigration had been more extensive in Estonia. In Lithuania, the proportion of titular nationality remained almost unchanged, in fact it increased from 79.3 to 79.6 between the 1959 and 1989 censuses.

The differences between the three countries are clearly identifiable also with respect to age structure. Not being an independent demographic process, age structure is shaped by the trends in fertility and mortality, and in case of open population, also by migration. Although these processes never remained completely stable, the principal transformation in the age structure has been brought about demographic transition. As it is well known, shifts in the proportions of young, middle-aged and older generations transform the shape of age distribution from a pyramid typical to pre-transitional regime to rectangle or pillar characteristic to modern population reproduction. This development, together with its broad spectrum of societal implications has been the under way also in the Baltic countries.

Owing to the later timing of demographic transition, the age pyramids presented on Figure 1 reveal expectedly somewhat more advanced degree of population ageing process in Estonia and Latvia on one hand, compared to Lithuania on another hand. Interestingly, at eve of the Second World War, Estonia and Latvia had the "oldest" populations in Europe, lagging clearly only behind France which is well known for its pioneering role in population development [RSKB 1937]. To an important extent, the advanced ageing in northern part of the Baltic region can be explained by the fairly synchronous decline in both mortality and fertility which resembles closely the so-called Franch model of transition.

Figure 1

Age structure,
Baltic region, 1959 and 1989



Quite differently from the earlier period, the emergence and explosive expansion of immigrant populations during the postwar decades with remarkably high prevalence of young individuals halted the progression of population ageing for almost fifty years: the ageing of native-born population which peaked in the 1970s with the ever-largest birth cohorts of Estonians and Latvians from the end of the 19th century reaching the old age, was almost completely overshadowed by a continuously increasing stock of immigrants. In case of Estonia, for example, the period 1941-1989 added only one per cent to the proportion of elderly, while the intercensal periods 1941-1959 and 1970-1979 were characterised even by decline in the proportion of the elderly. Perhaps even more remarkably, despite various fluctuations, the median age of the population in 1989 was still below the level of 1941 census [Katus 1997]. In the European context, this should probably regarded as one of the main peculiarities of postwar population development in the Baltic region.

Due to lesser impact of immigration, in Lithuania the stagnation of population ageing appears the least expressed of the three countries.

Turning to the recent decade, the 1990s have witnessed major transformation in the regime of population reproduction. As regards to population growth, reflecting the sharp decline of fertility, emergence of the excess of deaths over births and negative balance of migration, it turned negative in all three countries — in Estonia and Latvia in 1991, in Lithuania starting from 1993. Aside later onset, in Lithuania population decline has been very moderate, due to slightly lesser extent of fertility decline and more favourable proportions between age major groups. In cumulative expression, in the 1990s according to official statistics the number of population has more or less maintained the level of 1989 in Lithuania but declined at least 8-9 per cent in Estonia and Latvia. If true the decline appears one of the most extensive in Europe, however, the deterioration of the coverage of migration statistics observed in all Baltic countries means that the extent decline could be exaggerated.

The 1990s have been also characterised by the rapid acceleration of population ageing. As elsewhere in Central in Eastern Europe, the proportion of the elderly has started to increase primarily as a response to fertility decline; the stagnation of mortality has limited the process mainly to the bottom of age pyramid. Noticeably, in Estonia and Latvia the ageing of the population has been additionally fueled by the large immigrant cohorts passing to their old age in the decade 1995-2004. In the European perspective, the temporary intensification of the process is comparable by the forthcoming entry of baby-boomers' into retirement, however, in case of the Baltic countries corresponding development occurs under scarce resources of transition economy and already low pension rates. For Europe, the Baltic experience in this field may serve as an example of gains and losses from an accomplished scenario of replacement migration [Katus and Puur 2001].

With respect to ethnic composition, the proportion of titular nationalities has been increasing in all three countries. Most importantly, this common development has reflected the (partial) departure of population related to Soviet army. At the same time there have been strong selective emigration of specific and relatively small groups, for example, Jewish and German population. According to Zvidrinsh and his colleagues, the number of both referred groups were practically halved during the 1990s [Zvidrinsh *et al* 1998]. Selective emigration of Jews to Israel, USA and Western Europe has been noted also for Lithuania [Stankuniene *et al* 2000].

5.2. Fertility

The timing of demographic transition implies significant differences in fertility development among the Baltic countries. In Estonia and northern parts of Latvia, the transition to modern population reproduction begun already in the middle of the 19th century and a continuous fertility decline in the following 70-80 years. Belonging to pioneering nations of fertility transition, Estonia and Latvia reached below-replacement fertility by the 1920s [Katus 1989; Zvidrinsh 1996]. As noted above, until the Second World War fertility development in Estonia and Latvia was closely similar to Sweden, and a couple of decades ahead of Finland [Hofsten and Lundström 1976; Strömmer 1969]. In the postwar period, however, fertility development in Estonia and Latvia deviated from the common patterns observed in European nations which had

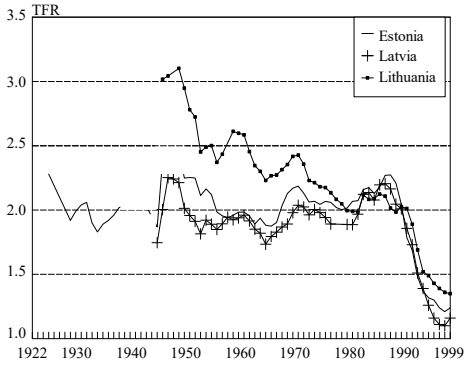
experienced underreplacement fertility level during the interwar decades. Among all the differences, two features need to be underlined.

First, Estonia and Latvia witnessed no baby-boom after the Second World War — the period fertility near replacement at late 1940s and early 1950s reflects remarkably higher fertility among immigrants who arrived in large number in that period (Figure 2). The absence of a post-war baby-boom in Estonia and Latvia has obviously been the exceptional feature among the forerunners of fertility transition. To this end it is important to note that baby-boom has been neither a short-term nor a minor increase: it lasted for two decades, until the mid-1960s, and during that period all the low-fertility countries reached the replacement fertility during the baby-boom [Festy 1984; Sardon and Calot 1997]. The Estonian and Latvian fertility, however, remained systematically below replacement during that period. Moreover, those two countries demonstrated constantly the lowest fertility in Europe and correspondingly in the world. As an hypothesis, the lack of baby-boom could be attributed to extremely harsh societal conditions in the immediate postwar decade [Katus *et al* 2002].

The second deviant feature is introduced in the Estonian and Latvian fertility at the end of the 1960s [Katus 1991a; 1991b]. Again contrary to the general trend in pioneering countries of fertility development which entered the phase which later became labeled as the "second demographic transition", Estonian and Latvian period fertility surprisingly began to rise. The increase was rather substantial, in Estonia, for example, more than 17 per cent by total period fertility rate in four years (1971 compared to 1967). Moreover, the increase also proved to be a long-term change, and the period fertility in Estonia remained higher compared to the previous forty-year interval of 1928-1968 up to the end of the 1980s. Period fertility indicators peaked in 1987-1988, when the population with an immigrant background caught up with the fertility level of the native population in both countries. For a few years, the period total fertility rate was even above 2.26, in Latvia the corresponding figure reached 2.20.

Figure 2

Total fertility rate, Baltic region, 1922-1999



To sum the long-term fertility trend up to the beginning of 1990s, Estonia and Latvia have witnessed remarkably stable level of fertility, with relatively minor drops below replacement. This pattern is repeated also in cohort fertility supported by cohort data from FFS [Katus *et al* 2002; Zvidrinsh *et al* 1998]. Compared to its northern neighbourgs, fertility trend in Lithuania appears clearly different. Consistent with later timing of demographic transition, the period following the Second World War has been marked with more or less continuous decline — from the level of total fertility rate over 3.0 at the beginning of 1950s to 2.0 around 1980. In the eighties, Lithuanian fertility level increased somewhat but more importantly, for the first time since the beginning of demographic transition, the level had converged with that of Estonia and Latvia.

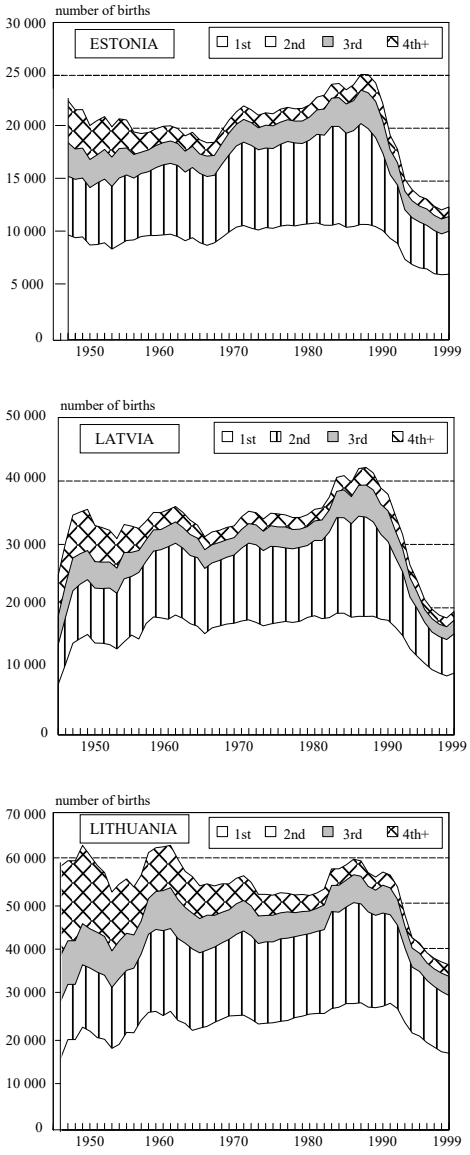
At the turn of the 1990s, as elsewhere in Central and Eastern Europe, the fertility turned to a rapid decline also in the Baltic region. By the late 1990s, the period TFR had dropped to very low levels in all three countries — 1.10 in Latvia, 1.25 in Estonia and 1.35 in Lithuania. By the end of the decade, the levels had evidently

reached the bottom, and in Estonia and Latvia the measure demonstrated a minor increase in 1999. Still, despite established low levels of fertility, it is not yet fully clear to what extent the recent decline reflects a new pattern of low and/or delayed reproductive behaviour, and to what extent the recent change could be regarded as a period effect. Regardless of its origin, however, the fertility decline has already caused a serious discontinuity in the age structure of the population.

The referred features are basically repeated in parity distribution of births, presented on Figure 3. In case of Estonia and Latvia, the distribution reveals a relative stability in the proportion of first, second, third and higher order births. In addition to early introduction of parity-specific family limitation, the stability reflects also the absence of baby boom and "second demographic transition", mentioned above. Against that background, starting from the 1950s both countries demonstrated continuous increase in the proportion of second births in the background of more or less stable proportions of the first and third parity. In terms of family formation, this means the growth in the preference towards the two-child model. The decline of fourth and higher order births continued until the mid-1950s, in the following years the proportion of these births has fluctuated at the level of 5-6 per cent.

Figure 3

Parity distribution of births, Baltic region, 1945-1999

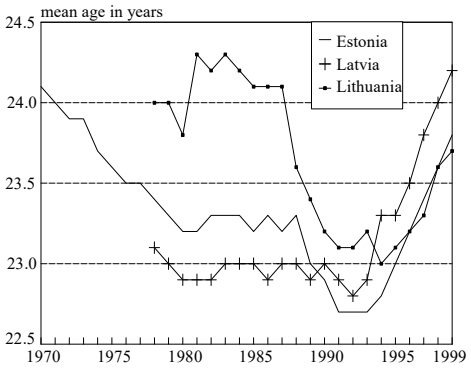


In Lithuania, the pattern reveals much greater heterogeneity of parity distribution. In the beginning of postwar period, the fourth and higher order births outnumbered any other parity, accounting for more than one third of all births. The decline in the corresponding proportion continued until the 1980s, i.e for about three decades longer than in Estonia and Latvia. Additionally, there has been a decrease in the proportion of third birth up to the 1980s which lacks a parallel in two other countries. To this end it must be noted that parity distribution of births does not reveal another major characteristic of long-term fertility trend in all three Baltic countries — the decline in the proportion of childless women. Referring to cohort data on completed fertility, ultimate childlessness, which has declined from around 25 percent in female cohorts born at the end of the 19th century to 8-9 per cent in the later ones [Katus 1997]. Regarding the recent decline of fertility, the largest reductions have occurred among second and third births.

Another salient feature of post-transitional fertility development has been the change timing of childbearing, sometimes it has been considered even more important

than the level, when following the similarities and dissimilarities of fertility development in the longer run. Similarly to the majority, if not all countries characterized by the European marriage pattern and early fertility transition [Festy 1984], Estonia, Latvia and Lithuania have also experienced the fertility rejuvenation starting from the middle of 20th century, particularly during the 1940s-1960s.

Figure 4
Mean age of women at first birth, Baltic region, 1970-1999

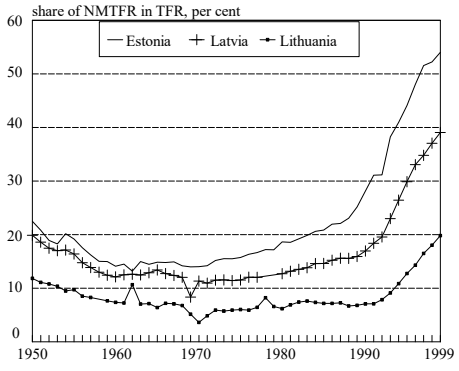


The gradual shift of reproduction towards younger ages has been the major driving force also in transforming the fertility curve — up to the early 1960s, the maximum fertility level was falling in the 25-29 age group; later, the continuous increase in younger ages has shifted the maximum to the 20-24 age group [Katus 1990]. During the entire post-transitional period of low fertility, the intensity of childbearing in the 35-49 age groups has been declining and the active reproductive age-span has shortened, which could be described as fertility homogenisation with respect to age. To take this factor into account it is common to focus more specifically on the timing of first birth.

Figure 4 reveals juvenation also with respect to the (first) entry into motherhood. Similarly to the countries of Western and Northern Europe the trend towards earlier motherhood was clearly prevailing until the 1970s. For that decade onwards, however, in the Baltic countries the rejuvenation trend did not change towards the ageing of fertility but rather levelled of with mean age of women at first birth around 23-24 years (close to 23 in Estonia and Latvia and somewhat higher in Lithuania).

One possible reason for the deviation, which can be found commonly in Central and Eastern Europe has been hypothesised the housing policies exercised during the Soviet period. Under those policies a person could not buy a dwelling but was given a state flat/house upon fulfilling certain preconditions. Since the birth of a child enlarged the size of the family and results in an increased number of persons per square metre, it considerably improved the chances for qualifying for a new dwelling. The ongoing ageing of the first birth in all the Baltic countries also supports this hypothesis, since the introduction of a housing market has eliminated this incentive for childbearing. Whatever the reason, however, it should be noted that a long-time trend toward earlier childbearing has biased the period indicators of fertility systematically towards the higher end.

Figure 5
Share of nonmarital fertility in overall fertility, Baltic region, 1950-1999



In terms of non-marital fertility, Estonia and Latvia have followed the Baltoscandian pattern throughout the whole period of post-transitional fertility (Figure 5). This pattern of non-marital fertility had already been very high during the period 1945-1955 (about 0.5 by non-marital TFR),

followed by a declining trend up to the mid-1960s, and then growing again until the end of the 1980s. Evidently, the high but declining proportion of nonmarital fertility in the 1940s and 1950s reflects the impact of societal discontinuity. In the 1990s, the share of non-marital fertility turned to rapid growth in all three countries — as in the previous decades, the level has highest in Estonia, followed closely by Latvia. In the middle of the 1990s, together with Iceland, Sweden, Norway and Denmark, Estonia belonged to five countries where the proportion of non-marital births exceeds the level of 40 per cent.

To this end, it should be noted that very high non-marital fertility does not necessarily tell very much about the growth of birth to single mothers. Cohort data from the Estonian FFS showed that in fact, 90 per cent of non-marital births were in fact to cohabiting couples [EKDK 1995b]. From the life course perspective, the referred pattern implies that the sequence of marriage and first birth in life course has been altered as a mainstream behaviour. The true single motherhood has remained at the level of 7-10 per cent across the whole period of low fertility and has not shown a tendency towards principal increase also during the recent. The patterns of non-marital fertility are discussed in detail in one of the following chapters.

In a broader context of fertility regulation, it is yet important to note that fertility transition and the under-replacement fertility were achieved in the Baltic countries largely through traditional methods of family planning. During the Soviet period, the unavailability of contraceptives and a lack of relevant education resulted in an increasing reliance on abortion as a method of fertility control. As a result, the number of abortions exceeded the number of live births and the extremely large number of abortions became the major reproductive health concern in Estonia, Latvia and Lithuania. In recent years, easier access to modern contraceptives has led to a rapid change in the patterns of family planning. Younger cohorts, particularly the native population, are becoming less exposed to the risk of abortion but still, the decline in fertility has proven to be yet more rapid and the abortion ratio had even increased compared to the late 1980s in Estonia and Latvia.

5.3. Marriage and divorce

The Baltic countries have historically belonged to European marriage pattern [Hajnal 1965]. This pattern of relatively late marriage, with a high proportion of the population never marrying, had been established in Estonia by the 18th century, prevailed in Estonia, Latvia and Lithuania until the Second World War. In Estonia, for example, the mean age at first marriage stood at 29 years for males and 26 for females in the 1930s, confirming that the late marriage/low prevalence marriage pattern was present in Estonia before the war [Eesti Statistika Kuukiri 1930-1939].

During the post-war period, this pattern was replaced by a tendency towards higher marriage rates and earlier family formation. In the 1960s, the total first marriage rate approached 1.0, and suggesting a sharp drop in the age of marriage, exceeded that level in the second half of the decade (Figure 6). During the next two decades the total first marriage rate declined slightly but did not drop below the level of 0.9 until the end of the 1980s. In Latvia the trend of total first marriage rate has been closely similar but the level has been somewhat higher throughout the period under consideration. As regards, to Lithuania, the 1980s witnessed a slight decline in the indicator but evidently

this reflects the continued change in the timing rather than intensity of nuptiality process.

In all three countries, the 1990s have witnessed a sharp decline in the number of registered marriages and marriage rate. Towards the end of the decade the total first marriage rate has fallen to the levels of 0.4 for Latvia and 0.35-0.37 for Estonia, and is, along with Iceland, Latvia, Norway and Sweden, among the lowest in Europe [Council of Europe 2000]. In Lithuania, the rate has dropped below 0.6 in 1997, and similarly to Estonia and Lithuania, tends to stabilise around that level.

Does this decline in marriage rates describe the rapid disintegration of the family as a social institution or a deliberate choice to remain outside family ties, as it has been the case for large segments of Baltic population during the glorious period of European marriage pattern. The answer seems to be negative for both alternatives: the existing family patterns are simply changing, particularly concerning the first union. A sharp drop to very low levels of total first marriage rate has occurred due to the postponement of marriage as well as the increase in non-marital cohabitation.

Considering family formation in a broader context, the decline in marriage rates has, however, not implied a decrease in partnerships. The recent evidence from Estonian FFS showed that cohabitation has shown a steady increase since the 1960s and, among women born in the early 1970s, it accounts for approximately 95 per cent of first unions [EKDK, 1995; Katus *et al* 2002]. Younger cohorts of the native Estonians have entered consensual unions at a rate comparable with Sweden, a country well-known as the forerunner of new family forms. The same development can be observed also in Latvia and to a lesser extent in Lithuania [Stankuniene *et al* 2000; Zvidrinsh *et al* 1998]. By removing the former mechanisms of housing distribution and providing young couples the access to modern contraceptives, these recent societal changes have contributed to further establishment of cohabitation as a distinct life cycle stage. Among immigrant population of the Baltic countries, marital behaviour appears to be more traditional and non-marital cohabitation is much less common.

Although consensual unions have increasingly gained popularity, over a longer run it is still unlikely that more than a half of a generation would remain unmarried, which would occur if the very low current marriage rate continues for longer periods. It is more likely that the marriage rate will recover when the level of later marriages has reached equilibrium, though it would probably never reach the levels observed in the 1970s and 1980s. To follow the ongoing developments, however, it is necessary to reconsider the statistics on family formation and dissolution, and extend the coverage beyond the present link to legal procedures. Given the similarity of behavioural patterns to Scandinavia, this task seems particularly urgent in Estonia and Latvia.

Figure 6

Total first marriage rate, Baltic region, 1960-1999

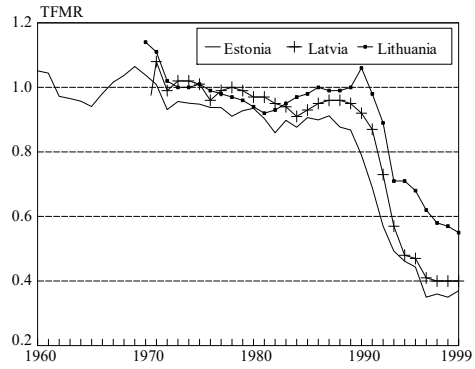
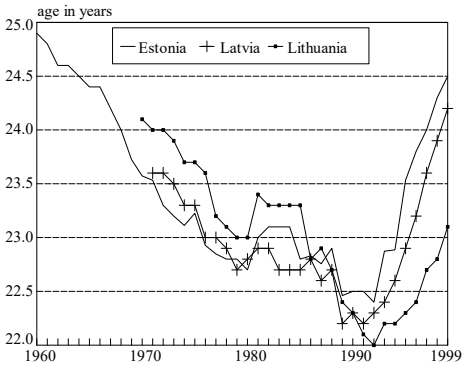


Figure 7 presents the trend in the age at first marriage. Despite earlier marriage in the 1940s-1950s, marriage still occurred relatively late during the early 1960s. The mean age at the first marriage was around age 27 for males and 25 for females. In the 1960-1970s, the mean age at first marriage further declined in all three countries. Understandably, decrease in the age at first marriage contributed to the increase of

Figure 7

Mean age of women at first marriage, Baltic region, 1960-1999



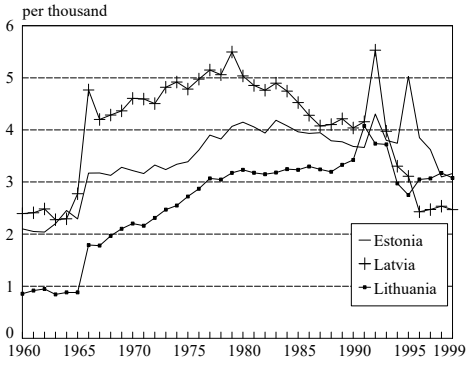
already high levels of the total first marriage rate at that time. In the 1980s, however, the diversity within the region started to increase with respect to marriage timing. In Latvia and particularly in Estonia, the tempo of juvenation decreased, however, in Lithuania the 1980s demonstrated the continuation of previous trend. Notably, the change has been reflected in the change in the ranking of the countries. Whereas prior to the referred decade, Estonia had been characterised by the earliest and Lithuania by the latest family formation, in the 1980s the order became reversed.

Mean age at first marriage reached the lowest levels in the years 1992-1993: 23.0 in Estonia, 22.2 years in Latvia and 22.0 years in Lithuania (data for females). In the Baltic region, these years also marked the reversal of the trend in timing of marriage. Accordingly, during the past 6-7 years, mean age at first marriage has increased for two years in Estonia and Latvia, and for about one year in Lithuania. The data for a couple of more recent years reveal the clear continuation of the trend.

Like elsewhere in Europe, there has been a rise in divorce over recent decades in Estonia, Latvia and Lithuania (Figure 8). This rise continued until the 1980s, stabilising at a high level. Particularly high divorce rate was characteristic to Latvia (about 5 divorces per 1000 population), followed by Estonia (4 per 1000) and Lithuania (3 per 1000). The level observed in the 1980s indicated that in Latvia and Estonia half of all marriages end in divorce. In comparative perspective, only Denmark and Sweden had demonstrated equally high divorce rates among European countries [Council of Europe 2000]. Since short-term fluctuations of divorce are sensitive to legislation, several discontinuities of the trend occurred over the 1960–1995 period and can easily be spotted on the graph. The first of these changes, towards easier legal procedures, took place in December 1965 and resulted in a marked rise in the number of divorces in the following year. In Estonia, there was yet another increase in divorce in 1995 associated with a change in legislation: according to the new law, a couple divorced in court was registered immediately and no longer after one of the spouses turned to the Civil Registration Office. In other words, the total duration of divorce proceedings was reduced and the cumulative number of divorces was recorded in that year. In the following year, 1996, the number of divorces returned to the previous level. Evidently, a similar explanation can be found for the upsurge of divorce rate in Latvia in 1992.

Figure 8

Crude divorce rate, Baltic region, 1960-1999



In addition to the problems related to the sensitivity to legislative change, available divorce statistics do not tell us anything about the stability or instability of the increasingly commonplace consensual unions. There is some evidence that consensual unions tend to be even less stable than marriages, and these of

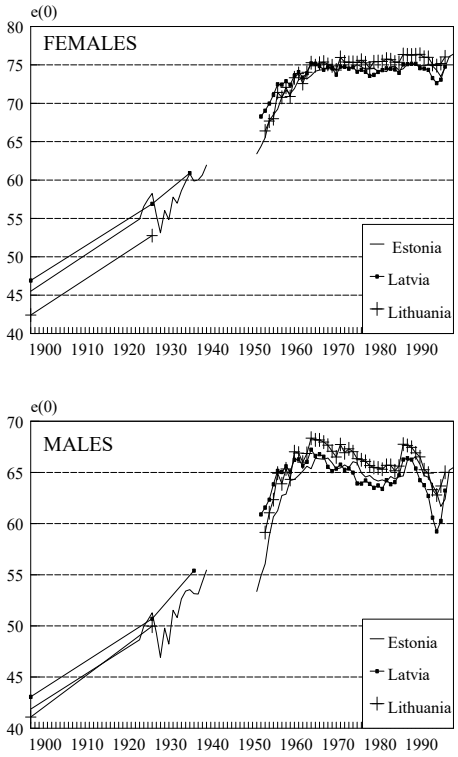
course are not recorded in vital statistics. Taking those dissolutions into account, the high dissolution rates in Latvia and Estonia would be even higher. From a life course perspective, this implies a substantial diversity of living arrangements and household patterns in the Baltic region.

5.4. Mortality

The mortality development of the 19th century (at least the second part) and the first half of the 20th century was dominated by the epidemiological transition among those European nations who pioneered in demographic transition [Caselli 1993, Schofield, Reher and Bideau 1991 etc]. The same is characteristic of the Baltic region at that time. In the northern part of the Baltic region, covering the modern territory of Estonia and Latvia (with the exception of Latgale), the early timing of the demographic transition should, once again, be underlined [Katus 1982, 1990; Stankuniene 1989, Zvidrinsh 1983, 1986]. Concerning the general mortality trend, the corresponding decline in mortality levels occurred more or less simultaneously with other North European nations.

Figure 9

Life expectancy at birth, Baltic region, 1897-1999



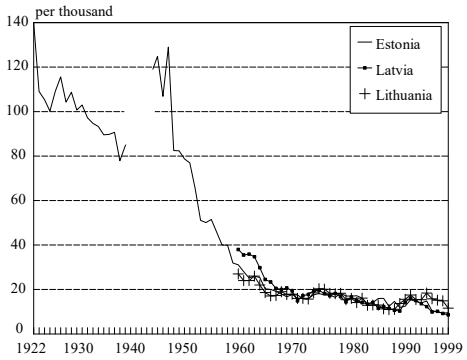
Compared to the Eastern and South-European countries, Estonia and Latvia continuously came first in the low level of mortality throughout the whole period [Krumins 1993; 1994]. In Lithuania, the mortality transition took place with a certain time lag compared to northern neighbours in the Baltics, and the mortality levels were somewhat higher in the region in every given time point in the 19th–early 20th centuries [Stankuniene 1989].

The transitional mortality decline in Estonia proceeded until the end of the 1950s, disregarding several short-term fluctuations as well as differences between the countries. In all three countries the life expectancy at birth has increased roughly by 25 years for males and 30 years for females during the period of 60 years (Figure 9). At that time, the country ranked quite favourably by mortality indicators, featuring one of the highest levels of life expectancy in Central Europe. With respect to societal discontinuity, particularly noteworthy is the continuation of mortality decline in the 1950s. Although the analyses, presented in the following chapters, indicate serious mortality crises in the second half of the 1940s and early 1950s, the latter decade demonstrated the most rapid increase of life expectancy during the whole century which overrun the immediate influence of repressions, and sharp deterioration of low living standards.

Starting from the end of the 1950s or early 1960s, the dynamics of life expectancy in the Baltic countries could be summarised as mortality stagnation. There had been only a negligible improvement of life expectancy at birth in the 1960s, and even this stems mainly from the improvement of infant mortality, which continued to decline for about decade, after the stagnation of general mortality had begun (Figure 10). Like in the previous period of mortality decrease, there have also been several fluctuations in mortality levels, including rather significant ones during the last decade. These should be considered separately, but the long-term trend is evidently stagnation [Katus and Zakharov 1997]. In this respect the mortality development has been rather similar in all three Baltic states.

Figure 10

Infant mortality rate, Baltic region, 1922-1999



Compared to the countries of Central and Eastern Europe, the early demographic transition has contributed to a particularly prolonged mortality stagnation in the Baltic region. It has been one of the longest or even the very longest in Europe up to the present day. Although the phenomenon of mortality stagnation has been internationally well documented, nevertheless, its underlying cause still remains hypothetical [Bourgeois-Pichat 1984, Meslé and Vallin 1993]. It should be stressed that the explanation for mortality stagnation should be sought in the change of age pattern of mortality rather than in its level. In other words, it seems too simple to seek direct causal linkages from specific socio-economic indicators. Likewise, the explanation is not embedded in causes of death — leaving aside, disproportionately high frequency of violent deaths the corresponding structure in the Baltic countries broadly reflects the patterns generally found in developed countries [Hertrich and Meslé 1999]

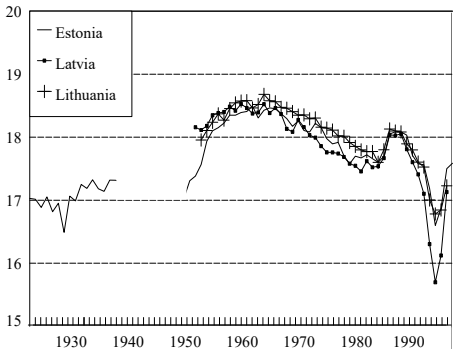
The age pattern of mortality, prevalent in Estonia, Latvia and Lithuania might be described as one with relatively low infant and child mortality levels under a relatively low overall life expectancy owing to high adult mortality rates. This pattern, an unusual one compared to Western age-specific mortality data, as well as to the model life tables (the Coale-Demeny and UN like), had been established by the end of the 1950s and strengthened in following decades. In other words, the mortality stagnation could be characterised not so much by the absence of progress in the mortality level, but by the deterioration in the age-specific mortality pattern. Considering the whole period, the deterioration is particularly evident for working age males. Figure 11 illustrates this development by presenting the number of person years lived in age interval 40-59. Reaching the level of about 18.5 years in the early 1960s, the trend turned to decline and until today has not reached the previous level. Understandably, high and deteriorating levels of male mortality have brought about particularly extensive gender gap in life expectancy which have numerous implications extending from living arrangements to housing and income maintenance of the elderly.

In comparative perspective, one of the major consequences of the prolonged mortality stagnation has been a noticeable transformation of the position of the Baltic countries among European nations. Due to the absence of progress in the region, all the Western, Northern as well as South-European countries, characterised by comparable or higher mortality levels to those in the Baltics at the end of the 1950s, have surpassed

the Baltic countries one after another. Also, in many countries of Central and Eastern Europe likewise characterised by the mortality stagnation, life expectancy reached somewhat higher levels compared to the Baltic states [Council of Europe 2000]. And last but not least, starting from the 1980s a growing number of developing nations are showing higher life expectancy than Estonia, Latvia and Lithuania, particularly for male population.

Figure 11

Person-years lived in age interval 40-59, Baltic region, males, 1922-1999



Turning to mortality development during the recent decade, in Estonia, Latvia and Lithuania the situation has worsened and life expectancy has decreased in the 1990s. For example, in Estonia, life expectancy for males dropped from 66.1 to 61.6 years and from 75.0 to 74.2 for females between 1989 and 1994 (the extent of the decline partly reflects the deterioration of data accuracy). Contrary to some expectations, the biggest increase in mortality appeared not among the groups traditionally most vulnerable (children and the elderly), but rather was concentrated in the active age-span, particularly among middle-aged men. The sharpest increase was related to the already high number of violent deaths, with rates more than doubling in six years. On the other hand, however, the general mortality pattern remained unchanged and, therefore, the observed decline in life expectancy can be regarded simply as an aggravation of old tendencies, rooted in long-term mortality stagnation.

In 1995, without any noteworthy intervention by governmental institutions, mortality began to decrease at a relatively high rate [Katus and Puur 1997]. It is likely that the present advancement returns the life expectancy back to the "stagnation level" rather than introduces a rapid improvement and entry into the fourth stage of epidemiological transition [Olshansky and Ault 1986]. This expectation is consistent with the basic features of post-transitional mortality, according to which deaths due to endogenous causes result from a gradual accumulation of adverse impacts of the social environment. These accumulation mechanisms are particularly relevant for cardiovascular diseases and cancer, accounting for more than three fourths of all deaths under the modern mortality regime. If this hypothesis holds true, it will take several decades to completely overcome the legacy of mortality stagnation, regardless of the speed of societal normalisation and advancement of economic opportunities. The principal improvement is likely to start in the younger age groups, as is suggested by the ongoing decline in infant mortality below 10 promilles in Estonia and Lithuania, and close to that level in Latvia..

5.5. Migration

Migration development of the population has followed closely along the theory of mobility transition [Zelinski 1971]. According to the theory, the decline of mortality and fertility during demographic transition is followed, with time-lag of a few decades, by the growth of the territorial mobility of the population, directed to urban settlements in the native regions, and emigration from the ethnic territory.

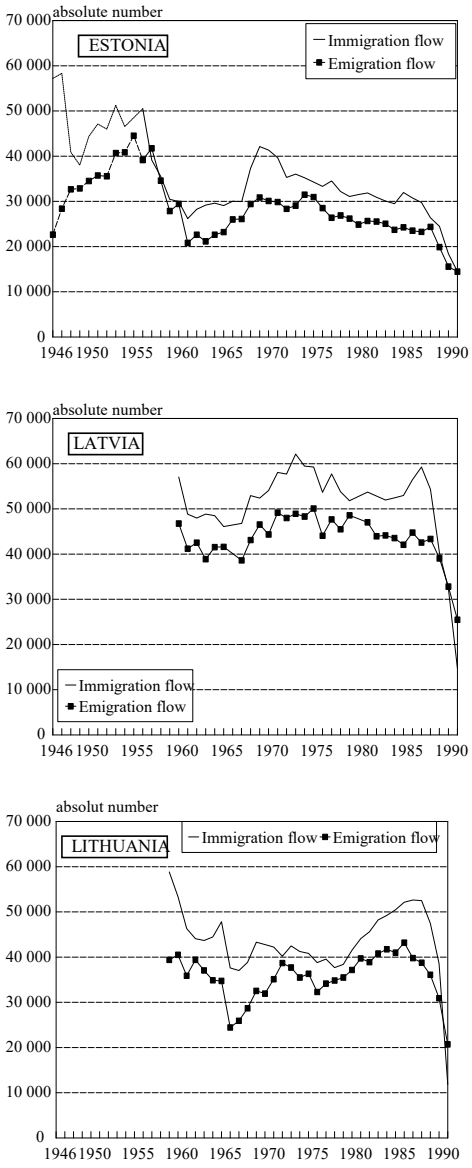
Estonia and Latvia entered the stage of mobility transition in the last quarter of the 19th century. In Estonia, the rural population started to decrease at the turn of the century. In less than 60 years, the proportion of the population in urban places tripled — from 11.8 percent (1881) to 32.8 percent (1939). In Latvia, by the beginning of the First World War urban population comprised 38 percent of the total population. Riga served as an unofficial capital for the Baltic region in the Russian Empire and at that time had the third largest population after Moscow and St. Petersburg.

The emigration from historical ethnic settlement areas was intensive especially in case of Estonia, and directed mainly towards the east and favoured by official policies of the Russian Empire. By the end of the 19th century, Estonian settlements had sprung up in many regions. as discussed in greater detail in the following chapters, Lithuania lagged behind in these developments until the early 20th century.

By the eve of the Second World War, Latvia and Estonia had entered the regime of below-replacement fertility and the migration potential in these countries became gradually exhausted. In the post-war period, both countries, similar to other nations of post-transitional demographic development, transformed from an emigration to an immigration country. In that respect. the Baltic-Soviet migration exchange can be treated as part of East-West migration, with many typical features observed in Western and Northern Europe. At the same time, there have been several specific characteristics in the postwar migration development in the Baltic region, most importantly the earlier onset and extremely high volumes in case of Estonia and Latvia.

Figure 12

Migration flows, Baltic region, 1946-1991



A key to the understanding of migration processes between Estonia and Latvia on one hand, and the Soviet Union on another hand, lays in the different of demographic development. From the viewpoint of migration potential, while Estonia and Latvia had turned to the immigration countries, Russian Federation as well as most other regions of the Soviet Union reached the peak of migration potential. In addition, migration from the latter to the former was strengthened by heavy population losses in the Baltic countries and administratively directed migration in the 1940s and early 1950s, higher living standards in the Baltic region as well as immigration-favouring economic policies in the later decades.

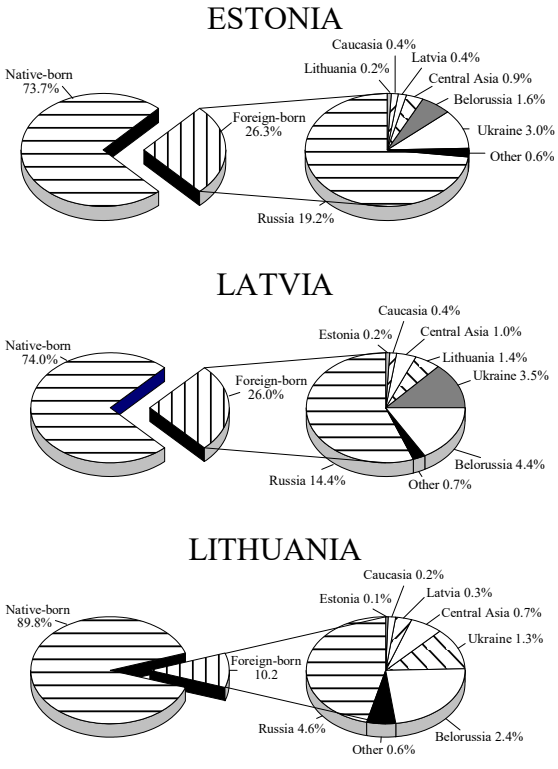
The later timing of the demographic transition has to a great extent, determined the different path of migration development in Lithuania. In Lithuania, the rural population started to decrease only after the Second World War, the decrease reached its peak during the 1970s. As a result, the rural population, rather than immigration from outside the country, was the main source of growth of the urban population of Lithuania during the whole post-war period [Sipaviciene 1989, 1990; 1995]. Hence, during the period of maximum immigration into the Baltic states in the 1960s and 1970s, rural-urban migration in Lithuania was a larger contributor to urban growth rather than immigration.

The data available on postwar migration flows are presented on figure (Figure 12). The data allow the inspection of the longest trends in case of Estonia, revealing the presence of two major migration waves. The first occurred in the immediate post-war period, including forced migration (administrative and military immigration from the Soviet Union, deportations of local population etc). After some decrease, the second peak of immigration emerged in the late 1960s, followed by a gradual decline in migration intensity. From population perspective, the decreasing trend followed the exhaustion of migration potential in the regions from which the bulk of immigrants had arrived.

Characteristic in similar extent to Latvia as well as Lithuania, an important feature of migrations between the Baltic countries and the USSR has been extremely large turnover which means that the overwhelming majority of immigrants used Estonia, Latvia and Lithuania only for a temporary residence. In case of Estonia, approximately only one out of seven immigrants remained in Estonia [Sakkeus 1996]. Such a high turnover is related to the extensive military component of migration as well as to a small family component. Since a large part of military moves went unrecorded in statistics, the actual turnover could have been even higher than reported.

Figure 13

Place of birth,
Baltic region, census 1989



The 1990s have been accompanied by a rapid reduction in the migration volume between Baltic countries and the former Soviet Union, compared to earlier decades. According to official records, immigration flows began to decrease sharply in the late 1980s, at first due to cessation of drafting the conscripts from Estonia, Latvia and Lithuania. In 1990-1991, migration balance became negative between the Baltic countries and the former Soviet Union. The negative net migration peaked shortly after the dissolution of the USSR and was maintained towards the end of the decade. In the recent years, there is considerable evidence from all three

countries that the negative balance will cease. In 1999 for example, Estonia and Lithuania had reached again positive migration balance with Russian Federation, and Latvia was approaching it. It must be noted that foreign origin populations in the Baltic countries have large stock of relatives living abroad, who may become immigrants under family reunification.

As regards to the impact, the postwar immigration has left the Baltic countries with disproportionately large stock of immigrant population (Figure 13). In particular, this refers to Estonia and Latvia. According to the 1989 census, 26.3 per cent of the population of Estonia was foreign-born, and 36 per cent, including the second generation, are from immigrant origins [Katus, Puur and Sakkeus 2002]. In comparison, the proportion of Russian and Ingerian national minorities — which according to CoE definition have lived in the country for at least three generations — appears more than tenfold smaller. In Latvia, the proportion of foreign-born population accounted for 26.0 per cent in 1989. Taking into account the ethnic composition of the populations, this refers to about three times higher proportion of historical national minorities than in Estonia. In the European context, Estonia and Latvia ranks as one of the highest according to these indicators. Reportedly, only Luxembourg features relatively bigger segment of foreign origin population [Council of Europe 2000].

In Lithuania, the proportion of foreign-born population is limited to 10 per cent. Although in all three countries the majority of immigrants have originate from Russia, the distribution by country of origin differs to a noticeable. Moving from north to south, the proportion of immigrants from Russia decreases from nearly 75 per cent in Estonia to less than 50 per cent in Lithuania. Mostly, this reflects the increase in the proportion of two other Slavic countries — Ukraine and Belorussia. Notably, the share of persons born in one but living in another Baltic country appears very low — the maximum of 1.5 per cent can be found in Latvia which closely resembles the corresponding figure for the European Union [Poulain 2002].

Understandably, the presence of large immigrant populations has had a strong impact in virtually every aspect of population development in the Baltic region, particularly in Estonia and Latvia. Among others, this refers to population growth and age structure, fertility, nuptiality, mortality, ethnic and language composition etc. In greater detail, these features have been discussed in the following chapters, but from the viewpoint of the future one essential feature still deserves attention. In contrast to other European immigration countries, the second generation of the foreign-born has not displayed noticeable signs towards adaptation or integration in spite of a very low intention to return to the homeland. As a result, the currently high heterogeneity of the population is likely to persist and will have a strong bearing on societal development in the Baltic region. Quick and easy fixes to concerns related to immigrant population are hardly available, and as in other similar situations, much of the responsibility is left for the individuals and population groups involved.

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