

INTERNAL MIGRATION AND REGIONAL
POPULATION DYNAMICS IN ESTONIA

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The paper is a national study prepared in the framework of the international project *Internal Migration and Regional Population Dynamics in Europe*, under the aegis of Council of Europe (Population Committee, Directorate of Social and Economic Affairs) and European Commission (Directorate General V, Employment Industrial Relations and Social Affairs). In case of Estonia two specific features are important to take into account while analysing the population change and internal migration flows in the 1980-1990s. First, Estonia has experienced a long-lasting and strong influence of international migration on regional population growth as well as internal migration; post-war immigrants account for about 35 per cent of the total population with rather uneven regional distribution. Second, the quality of migration data requires careful assessment; the preservation of Soviet-type record-keeping has reduced data quality in the 1990s, already low.

Reflecting the turnaround in long-term population processes, migration development reached the advanced stage with more or less regionally balanced in- and out-migration flows and decreasing importance of net migration during the 1980s. Accordingly, to understand current trends and patterns, explanations must be sought from the 1980s which has served a starting point for the present trends rather than from the period of economic transition in the 1990s. As a part of the turnaround, the century-long depopulation has come to an end and the moderate growth of rural population has started reflecting natural population increase as well as deurbanisation. In the 1980s two developments have occurred in parallel: migratory increase of rural population led by a deurbanising native-born population, and continued urban population growth as a result of the population momentum of pre-transition immigrants. Each life-course stage was found to have its specific migration pattern, more stable than the pattern for the total population. In many cases the changes of internal migration are determined by the change in the proportion of population in different life-course stages. The life-course approach has been useful in demonstrating the features of the present Estonian internal migration pattern which appear closer to the countries comparable in demographic development, more or less regardless of the significant differences in the level of economic development.

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1. CONTEXT

This paper is a national report on population change and migration patterns in Estonia forming a part of the international project *Internal Migration and Regional Population Dynamics in Europe*, sponsored at its first stage by Council of Europe (Population Committee, Directorate of Social and Economic Affairs) and European Commission (Directorate General V, Employment Industrial Relations and Social Affairs). The Project aims to collect data on internal migration and build a comparative overview of the patterns of internal migration across the European countries.

In a broader perspective, the Project can be regarded as an element of the integration process between European countries, involving international organizations (such as the Council of Europe) and multi-country institutions (such as the European Union). Such cooperation and integration has evident roots going back for a couple of decades and has gained a dimension after political changes in Central and Eastern Europe at the beginning of the 1990s. In a modern society where the information has become the key resource everywhere, its relevance cannot be underestimated in the international co-operation. In terms of population statistics the Council of Europe has extended its long-term data collection activities now to all the countries of the European region: general data on population stock, age structure, fertility, mortality and international migration is published on annual basis [Council of Europe 1997]. Eurostat provides harmonized and in case of migration more detailed statistics on population development in the member state of the European Union [Eurostat 1994; 1995].

However, there is a major gap in these statistics with respect to internal migration and its role in regional population change. Directorate General XVI and Eurostat has developed regional population projections at NUTS 2 level incorporating the corresponding internal migration data (for a review see [Rees 1996]) but at the applied level regional units appear rather large. In order to understand the processes of migration and population change many national researchers have successfully used much smaller regional breakdown [Boudoul, Faur 1982; Dorling 1995; Kupiszewski 1996]. Moreover, for many non-EU countries the internal migration statistics are not equally available even on the referred large regions. In the feasibility study for the Council of Europe, Rees and Kupiszewski [1996] concluded that the reliable information, however, could be received from the national statistical institutions allowing for the study of population change and internal migration with a detailed level of regionalization. The current report presents the results of the relevant study on Estonia at *maakond* (county) and *omavalitsus* (community) levels.

In case of Estonia, and when examining regional population dynamics, discontinuities in political and societal development must be borne in mind. Estonia lost its independence in World War II: the Soviet occupation in 1940 was grounded on Molotov-Ribbentrop Pact and followed by the German and the second Soviet occupation. As a part of Sovietization, the population statistics became a matter of state security and responsibility for migration data was transferred from the Statistical Office to the Ministry of Interior. Serious restrictions on data availability and particularly the issue of migration data quality imposed serious limitations on demographic research throughout the Soviet period. In 1991 Estonia regained independence. In the context of Central and Eastern Europe the country has earned praise for its successful fight for independence with no human casualties and its

consequent and resulting economic reforms. The latter are reflected in the development of a market economy and a recent invitation to negotiate for accession to the European Union. However, at the same time the national statistical system has still not been fully reformed and largely follows the previous model. Thus, currently administrated by the Statistical Office, the migration data collection is continuously operated under the Ministry of Interior and the data quality has become even lower during the 1990s. Therefore, despite the intense discussion of quality issues in the Estonian report, the analysis of internal migration and its contribution to regional population change clearly suffers from deficiencies in the data.

Structurally, the report is divided into six sections. Section 2 reviews knowledge about the regional population change and internal migration processes in Estonia. Section 3 addresses the availability and quality of the data for the analysis of regional population dynamics during the recent decades as well as presenting the territorial units of Estonia and mapping methods employed. Section 4 discusses population change in the period 1970-1989 at county and community levels taking the advantage of census data. Section 5 concentrates on the patterns of internal migration and its contribution to regional redistribution of population. Section 6 provides a synthesis of findings.

2. INTERNAL MIGRATION AND POPULATION CHANGE REVIEWED

Estonia is the northernmost of the three Baltic countries with the population of 1,565.7 thousand (1989 census). Estonia was declared independent on February 24, 1918 and was defended in the Independence War (1918-1920) against Russian Federation as well as German military forces. In the course of the Second World War Estonia fell to the Soviet occupation (1940-1941) which was changed to the German one (1941-1944) and followed by the second Soviet occupation in 1944 which lasted for almost 50 years [Misiunas, Taagepera 1983]. Estonia regained its independence in 1991.

The demographic development of Estonia has been, to a great extent, influenced by the changing population composition during and after the WW II. During 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 to the Soviet Union in 1945) [Katus, Puur, Sakkeus 1997a]. Between 1940 and 1953 the population losses of Estonia, due to war activities and sovietization, have been estimated on the level of at least 17.5 percent of total population, and even currently the native-born population is still about 10 percent lower than its pre-war number. On another hand, these losses were exceeded in numbers by mass immigration from different parts of the Soviet Union, mainly from Russia, which started after WW II. As a result, Estonia developed from a socially and nationally homogeneous society (Estonians formed 97.3 percent of population in 1945) into the country with residents from more than a hundred different ethnic backgrounds. The foreign-born population together with their second generation comprised 36 percent of the total population according to the 1989 census [ESA 1998].

Studies on various dimensions of population development have revealed remarkable difference between the immigrant or foreign-born and native-born populations. Of underlying importance for understanding the present differences in demographic and social development of both subpopulations is the historical difference in the timing of the demographic transition (from a regime of high fertility and mortality rates to one of low fertility and mortality rates). In Estonia the beginning of the demographic transition could be traced back to the middle of the 19th century. The crude fertility and mortality rates had started to decrease already a century earlier. However, since the 1850s a continuous decrease in the intensity of both processes could be followed. The timing of the demographic transition has been synchronous with that in Northern and Western European countries, *inter alia*. Below replacement fertility and slow decline of generations was reached in Estonia in the 1920s [Katus 1990]. Estonia followed the demographic transition in the so-called French type with simultaneous mortality and fertility decline and, as a result, there was a relatively small increase in the number of population during the transition.

The postwar immigrant population of Estonia originates from the regions to the East from the Hajnal line [Hajnal 1965], and compared to the native-born population, with the 50-years time-lag in demographic transition processes [Vishnevski, Volkov 1983]. Regardless of the time passed since the completion of demographic transition and half-century experience of unifying Soviet rule, the native- and foreign-born background is still the most important characteristic for explaining the heterogeneity of demographic and social

behaviour in Estonia [EKDK 1995a; UN ECE 1998]. Additionally, due to the prevalence of young individuals among the immigrants, the foreign-born population has maintained a relatively young age structure throughout the entire period. However, as the first large wave of immigrants from the late 1940s and early 1950s has started to reach the old age, the foreign-born population is expected to age very rapidly in the coming decade [Katus 1995; UN ECE 1999]. Also, the continuously positive migration balance has assured population growth throughout the post-war period. It should be noted that without the direct and indirect contribution of immigration, the natural population decrease would have started already in the 1970s (as was the case with native-born population), in reality it was postponed until 1991. Currently, the drop in fertility combined with the advanced population ageing and a relatively low life expectancy is translated into one of the most rapid population declines in the world [Katus *et al.* 1997].

The existence of two rather different but numerically comparable subpopulations in Estonia has had a direct impact on migration processes and population (re)distribution. Particularly strong has been the effect of immigration on the urbanization pattern and the development of settlement system. In Estonia, the urbanization has taken place as a two-wave process: the regular wave of urbanization prior to the WW II was generated by internal migration whereas the post-war immigration gave rise to the second wave [Katus, Sakkeus 1986]. In terms of settlement system, the second wave was channeled into a few selected cities, located mostly in Harjumaa and Ida-Virumaa counties. For the time being, the demographic development of those cities appears rather different from others which had not participated in the second growth wave [Kümmel, Roosve 1986]. Additionally, like elsewhere the internal migration patterns of native- and foreign-born population have been rather different; national surveys have revealed the distinction to be marked in Estonia [EKDK 1995a; 1995b; Noorkõiv, Puur 1996; UN ECE 1998; 1999].

Despite the importance of migration processes in post-war Estonia, they have not been studied sufficiently. As discussed in the following section, the serious restrictions of data availability limited research in the Soviet period; in modern Estonia the same is true because of very low quality of the data. Nevertheless, a number of research activities and publications on migration processes deserve attention, particularly on three themes: migration processes involving larger cities in the urban settlement system, rural depopulation and commuting processes. In these studies, which started at the end of the 1960s, the initiative role of the Department of Geography, Tartu University must be acknowledged.

More general issues concerning the study of urban settlement system, have been covered by Ann Marksoo [Marksoo 1975; 1985; 1995b]. The impact of migration processes on urban settlement system has gained importance recently as a result of the economic transition [Marksoo 1995a; Sjöberg, Tammaru 1998]. To study the problems of two largest cities special research units were established (for Tallinn 1976-1995, for Tartu 1984-1993). In case of Tallinn migration processes and population growth were studied [Sakkeus 1986; Katus, Sakkeus 1986; Marksoo 1990] and a set of population projections were prepared [Katus 1987; Katus *et al.* 1994]. Some studies have also focused on the development of an urban agglomeration around the capital city and the emergence of suburbanization [Kümmel 1987; Kümmel, Roosve 1986]. Studies of the smaller towns have concentrated mostly on examining population change [Liiber 1988; Marksoo 1988a].

Because of the long-term depopulation in rural areas and the rearrangements of the rural infrastructure, there has been a continuous interest in the development of rural settlement system [Murel 1976; Marksoo 1988b; 1992]. The studies of this theme were concentrated more in the 1970s and 1980s rather than in 1990s and mostly the attention was paid from the socio-economic viewpoint. Partly these studies also reflect the emerging suburbanization but usually not as a distinct process. Concerning the types of movement, separate attention was paid to commuting process. Studies on commuting were characterized by data collection activities, independent from official statistics. Commuting movement was mainly analyzed from the aspect of labour force [Marksoo 1977; 1984; Kõre 1984; Marksoo, Kaljulaid 1986]

3. DATA AND METHODS USED

3.1. Data Availability and Registration System

The study of regional population growth builds on the 1979 and 1989 census data, supplemented also by the 1970 census statistics. The further investigation on internal migration patterns exploits the data on registered migration moves.

3.1.1. Census Data

When addressing the regional population (re)distribution, particularly its long-term trend, census data should be preferred to statistics on registered migration moves for at least two reasons. Firstly, the coverage of census data is complete compared to the registration of migration moves which depends on the applied definition and procedures, covering only part of all moves. Secondly, in the census the place of residence referred to the real location of person's permanent residence (applying the international *de jure* population concept, see also [Anderson, Silver 1985]) whereas migration statistics counted the *propiskas*, residence permits which functioned in the former Soviet Union as “internal” passports which have only indirect connection to the real residence [Katus, Puur, Sakkeus 1997b]. For the latter reason in Estonia every successive census has revealed a difference between the migration moves by the intercensal estimates, based on *propiska* records, and the corresponding census results, necessitating the periodic recalculation of migration statistics.

The census data, partially recalculated for comparability purposes are derived from the Estonian Population Databank¹. In particular, the availability of individual-level data of the two most recent censuses has made it possible the restoration of data on the community level, which previously was neither tabulated nor published. Thus, it becomes possible to extend the study of the population change to the community level whereas migration statistics does not support such geographical scale of analysis. The intercensal period of 1979-1989 has been divided into two subperiods 1979-1983 and 1984-1989, in order to outline the turnaround in the population growth during the 1980s in Estonia. The timing of the turnaround, reflecting century-long processes, has been different from most of the Central European countries, falling at the end of the decade rather than at the start. The data on the subperiods is derived from the recalculated intercensal estimates of population stock [EKDK/EKMI 1994a; 1994b].

3.1.2. Registration of Migration Moves

¹ The Estonian Population Databank systematically assembles census, vital and survey statistics. For the purposes of comparability in time and space the data undergo harmonisation in terms of methodology and definitions as well as regional disaggregation. The Databank has been developed and is maintained by the Estonian Interuniversity Population Research Centre (EKDK 1992a; 1992b). It should be noted that due to the political discontinuity the publication of the original census data has been dispersed over a range of different sources. Relevant to the current report, the data of the 1970 and 1979 Soviet censuses were published in two parallel series, one for public, the other for classified use (TsSU ESSR 1972-1974; TsSU SSSR 1980-1983). The full publication of the census data of 1989 by county volumes is in progress (EKDK 1996-1998).

In Estonia, the registration of internal migration moves has been based on the system of legal permissions (so-called *propiska*) issued by authorities which entitled citizens with rights to live at the specified address (dwelling). Operated by the militia (police) under political guidance, the *propiska* system was meant to control the population rather than to perform the role of statistical registration. The system was introduced in the Soviet Union in the 1930s [Matthews 1993], and extended to Estonia after the WW II. 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 for certain categories of population. A propiska for temporary stay was issued for a residence during a limited time period for the purposes of study or work. However, it could also imply a change of residence for several years, i.e. involving long-term migration according to the international definition. Even worse, in many cases of temporary residence the in-migration moves were recorded while the recording of respective out-migration moves was not compulsory. This led to the underestimation in the volume of internal out-migration. Because the propiska was connected to entitlement for several social benefits (eligibility for new dwellings, receiving work in specific branches of industry, availability of medical service etc.) manipulations of the propiska were common, and frequently, the official and actual place of residence did not coincide.

Regarding the migration statistics, 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. In the ideal situation, the two records were identical and 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 at its highest in the 1940-1950s, following the introduction of the Soviet concept of residence registration with the net difference accounting for 15-20 percent of all in-migrations. Attention was paid to the discrepancy and the local statistical offices were ordered to balance the flows of internal migration. Successive efforts yielded results and in the 1970s-1980s the difference was reduced to 1-2 percent of the volume. When the difference started to increase again, the Estonian Statistical Office took a decision [1988] to base the statistics of internal migration exclusively on the registration of in-migration moves and this practice has been maintained throughout the 1990s. 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, subsequent years have demonstrated the similar difference in the opposite direction.

Another aspect, which affects the consistency of migration statistics over time is the recording of moves among rural population. According to the Soviet system, only those migration moves of rural population which occurred across county borders or between urban and rural settlements were reflected in the statistics. Migration moves of the rural population taking place between rural communities of the same county were not included. In 1992 registration was extended to all moves of the rural population which allowed for the estimation of the previously unregistered fraction: in the recent years the migration

moves within county borders account for approximately 45 percent of total moves among the rural population. To be consistent with earlier data, the present analysis omits the intra-county migration moves of rural population, except in the last sub-division of the fifth section concerning the community-level analysis. Regarding the durations of migration, since 1992 the migration statistics of Estonia do not include any moves with predetermined duration, even if they stretched over several years. Mostly, this omission concerns migration moves for educational purposes. As the higher education tends to be rather centralized in Estonia, it has introduced the most severe problems in the counties of Harjumaa and Tartumaa.

In 1992, the Soviet-type propiska system was abolished by the Estonian Parliament. However, relevant authorities have continued the registration system on the previous basis and alternative mechanisms for collecting migration statistics have not been developed. Moreover, as a result of a special appeal by the Statistical Office, the responsibility was withdrawn from the Office and migration registration was transferred to a commercial computing centre (*AS Andmevara*) under the auspices of Ministry of Interior. The Statistical Office is provided the data files on registered migration moves which does not support any individual record-checking. Anyway, for the current report the individual-level data on migration moves 1987-1996 were made available by Population Department of the Statistical Office, making quality analysis possible. It should be noted that the analysis of the change in migration patterns and corresponding population maps are based exclusively on a set of new tabulations, not necessarily coinciding with previously published data.

3.2. Quality of Migration Data

For the evaluation of data quality on registered migration, individual-level data on both in-migration and out-migration moves 1987-1996 has been used. Data are not available for years earlier than 1987 because the computerized records as well as the original data collection forms have not been preserved by the Statistical Office. Regarding the data for 1987-1996 both the in- and out-migration files include place of origin, place of destination, birth year (or age), sex, ethnicity, educational attainment, marital status, and in some years main activity status is added as well as the reported reason for the move. In other words, all the major characteristics implied by the Project on Internal Migration and Regional Population Dynamics are included. Until 1991 the analysis by the direction of migration flows can be performed not going below the county level, in the following years the smallest geographical unit is the community.

The total number of migration moves can be compared across different directions between urban and rural. Data in Table 1 reveal that over the years 1987-1996, the volume of migration flows has experienced a significant reduction in all directions. Over the decade, the decrease in the volume has been two-fold with the sharpest relative reduction in the number of rural-rural migration moves. The decline in migration moves for all directions should be regarded as the principal trend. However, the direction-specific structure of migration flows has also been modified. While in 1987 the largest volumes characterized migration flows between urban areas, they have not only decreased more than twice, but dropped below the number of moves between rural and urban settlements. In 1996 the largest flow was from urban areas to rural areas.

Table 1. Migration moves, Estonia 1987-1996

Direction	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
In-migration										
Rural-urban	12362	10715	8839	7604	6562	5776	5799	5296	6889	8030
Urban-rural	12476	10711	9374	9075	8152	10309	8036	7027	9311	10617
Urban-urban	15159	13012	10651	9890	8392	8894	8483	6522	7044	7708
Rural-rural	9109	8669	8360	7386	6307	4654	3563	2785	3691	3484
Total	49106	43107	37224	33955	29413	29633	25881	21630	26935	29839
Out-migration										
Rural-urban	13322	9397	9742	7604	6562	7202	5927	4577	5817	7033
Urban-rural	11048	11574	8665	9075	8152	10793	8671	6031	8053	10762
Urban-urban	14911	12708	11051	9890	8392	10697	8303	5734	6123	7518
Rural-rural	8466	8168	7592	7386	6307	4692	3311	2442	3028	3074
Total	47747	41847	37050	33955	29413	33384	26212	18784	23021	28387

The decrease in numbers of registered migration moves in all flow directions has been so extensive that the reduction in coverage is obvious. Unfortunately, it is hard to tell whether there has been any substantive change in migration processes, and what kind of structural shifts are more important. On one hand, it seems that the decrease has been the sharpest in those areas where the migration previously has been more intensive. On the other hand, in these counties, where the residence registration has not been over-estimated, the data are likely more correct. While the official statistics are produced exclusively on the basis of in-migration data, comparison of in-migration and out-migration records reveal increasing discrepancy between them. Evidently, persons moving out of previous residence keep recording as out-migrants, but when in-migrating into larger cities, particularly the capital, they do not register themselves. When returning some years later, such persons are likely to register as in-migrants again. Thus, a specific stratum of the population is created who are counted only as out-migrants in one year and only as in-migrants in another year. Over the longer run such a situation produces rather extensive cumulative error. For example, the population projection for Tallinn in 1994 indicated that underreporting accounted for about 10 percent of total population [Katus *et al* 1994]. The recent estimations by the Statistical Office show the discrepancy in the number of total population in Estonia had exceeded 5 percent by 1997 [ESA 1998].

The present project foresees the analysis of migration processes across life-cycle with the distinction of six stages: childhood ages (0-14), adolescent ages (15-24), young adult ages (25-29), family ages (30-49), older working ages (50-64) and retirement ages (65 and over). In such case the changes in age pattern of internal migration appear more important than the trend in total numbers. To evaluate the consistency of migration statistics for the life course perspective, the comparison of age-specific migration rates over 1987-1996 has been accomplished. The comparison builds on single-year age groups for total in- and out-migration records, and five-year age groups for direction-specific comparison. The results are presented in Figure 2 and Figures 3-6 respectively. To make the shift in the age pattern clearly visible, the data from different years are plotted by using a similar scale of migration intensity. Regarding the shape of the curve, it should be noted that for the initial years the highest intensity of migration has been characteristic to the age group 15-19, starting from 1992 the maximum has shifted to the age group 20-24. Acknowledging no

principal

change

in location of educational institutions in the 1990s as well as in number of students the decrease of migration intensity in the adolescent age is evidently a statistical artifact.

Consistent with the general decrease, the data reveal a significant decline in age-specific migration intensities. Until 1992 the reduction appears more or less similar over all ages, since that year a significant selectivity has been introduced which culminated in 1994 (see Figure 7). Compared to the second half of the 1980s, migration rate for age group 15-19 (young adolescent age) has been reduced for more than six times while the intensity of migration moves in family ages, but especially in the older working ages is displaying an increase of up to 60 percent. These two shifts result in a principal modification of the age-curve of migration, however, 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 mainly Harjumaa and Tartumaa counties where most of the university education is concentrated. This is also the reason why the adolescent and young adult age group is defined as 15-24 in the Estonian case study instead of more common 15-29.

The quality analysis has also been carried out on the county level, but it is beyond the scope of this report to present it in detail. Considering the results of general as well as county level analysis, three basic implications of the revealed data quality for the substantive analysis can be outlined.

(1) The decline in the coverage of migration statistics has been highly selective. Due to the omission of registration of educational moves since 1992, the age range 15-24 should be excluded from the analysis of migration patterns.

(2) Two counties are particularly affected by the under-registration of educational migration as well as education-related post-graduation re-migration processes, namely Harjumaa and Tartumaa. These two counties report the sharpest decrease in the number of moves and, correspondingly, the lowest coverage of migration by current time. These two counties are responsible for the majority of the decrease in the total number of migrations in Estonia, particularly in the adolescent ages.

(3) Data on Ida-Virumaa display a controversial pattern and should be treated with great caution. South-East Estonia and island counties demonstrate a better quality of migration statistics.

In general, one has to be very cautious when relating migration data to population change for the 1990s. As discussed above, the deficiency of residence registration has resulted in the cumulation of inaccuracy in the number of population. By 1997 the discrepancy in population estimates had reached 5 percent for total population, and in specific age groups the differences account already for 10-12 percent. Still, the analysis might shed some light to the general structural changes in the internal migration patterns of Estonia. Considering these circumstances it was decided to concentrate on the analysis of migration by age and county, separately for urban and rural population, not engaging in any further analysis of migration against other variables.

3.3. Variables

The census data applied for the analysis of population change refer to the permanent population and are tabulated by 5-year age groups on county and community levels. The

intercensal period of 1979-1989 has been broken into two subperiods; the population stock statistics at year 1984 are postcensal estimates based on the corrected migration data. The total population change is broken to natural and migration growth, making use of vital registration. It should be underlined that the data on deaths and births is complete in Estonia. The migration change, however, is not derived from the registration of moves but from the postcensal correction close to the difference between the total and natural change. The analysis of internal migration data is based on the registration on both in- and out-migration moves within the country. Only those moves are taken into account which cross the county border, and/or involve the change between rural and urban settlements within or between counties. In the calculation of net-migration, the number of out-migration moves from a given county (to all directions in accordance with the limitations mentioned earlier) is compared to in-migration moves from all other regions into a given county. As explained above the total number of internal in-migrations and out-migrations do not necessarily match.

3.4. Geographic Units

During the period under study Estonia has been divided into fifteen *maakond* (counties). Figure 1 shows Estonia and its regional division into counties. The counties are presented in the map, supplemented by the full list of communities. The boundaries of counties have been stable without no territorial changes. However, it should be noted that the present division does not correspond to the historical division into ten counties (the eleventh Estonian county, Petserimaa, was annexed by Russian Federation in 1944). The county boundaries were redefined in 1950. Changes in the 1950-1960s have moved Estonia step by step back towards the historical county division, although the process is not complete. Therefore, four existing counties of postwar origin are without historical centres. As a result, the proportion of urban population in Jõgevamaa, Põlvamaa, Raplamaa and Hiiumaa is less than 40 per cent of the average in Estonia. Migration patterns in those counties with few and small urban settlements might differ noticeably from others with more developed and balanced settlement system.

The size of rural population by counties varies from 7.0 thousand (Hiiumaa) to 78.8 thousand (Harjumaa, 1989 census data). However, the difference in population density between the counties is much less. The rural population from the viewpoint of settlement system appears relatively homogeneous in Estonia. There are no sparsely inhabited or remote regions: altitude-related and/or climate-related concentration-deconcentration does not exist and only swamps and lowlands play a local role in affecting the rural settlement system. Compared to rural population, the patterns of urban population over the counties are much more diverse. The capital city, Tallinn, which is situated in Harjumaa, accounts for more than 40 per cent of the total urban population of Estonia. The second biggest city Tartu, is about four times smaller, but it is enough to bring the Tartumaa into the number of most urbanized counties. Ida-Virumaa features also a higher proportion of urban population, reflecting the concentration of typical industrial centres. The other historical counties are characterized by the most balanced settlement system in contrast to the highly urbanized as well as to the above-mentioned counties of post-war origin.

In Estonia the counties are subdivided into communities, 254 in total number. Currently the 47 of them are urban and 207 rural communities. The first stage of the ongoing

regional reform has returned the communities their historical rights of self-government, however, the re-definition of boundaries is just beginning. Currently, the size of communities is representing rather closely the situation in the 1930s: during the Soviet period the role of communities in local decision-making was virtually abolished and there was no need to principally redefine the size of the units during sixty years. However, compared to the situation in the 1930s the rural population has decreased almost twice which makes most of the present rural communities very small in terms of population number. The size of urban communities vary from small settlements comparable to typical rural ones up to the capital city Tallinn.

The current distinction between urban and rural communities in Estonia is based exclusively on administrative definitions, and the notion of urban settlement has been changing over time. Taking into consideration that the pre-war population of Estonia was about 10 percent higher than the current number of native-born population, the uneven distribution of immigrant population and beginning of depopulation in several regions already 30 years ago, it is not surprising that some of the decreasing urban settlements have become relatively small by today. On another hand, some relatively large rural settlements have been administratively not granted the status of urban settlement. There has been an attempt of harmonization of urban-rural status of settlements in 1994 but still the administrative-based definition of urban and rural communities is not satisfactory. From the point of the current study, the partial re-definition in 1994 is introducing some inconsistency over time which is important for some counties though relatively insignificant at the national level. Therefore, to secure the consistency in the present analysis of the population change 2,000 inhabitants has been applied as a dividing line between urban and rural settlements. The same definition has been also used in national surveys [EKDK 1995c; 1999; EKMI 1998]. The experience of the referred surveys reveals that this dividing line seems to be appropriate for Estonian urban population.

3.5. Mapping Methods

Mapping methods of the project have been described by Rees, Durham and Kupiszewski [1996]. Following the general concept, the maps for the Estonian case study have been designed and prepared at the Estonian Interuniversity Population Research Centre. The main mapping technique used is choropleth shading but in the maps showing both urban and rural parts of counties, the urban part is represented by a circle, which is placed within the county boundaries and shaded appropriately.

4. POPULATION CHANGE 1979-1989

4.1. Approach

In the present section the population growth is analyzed at the county level, separately for rural and urban populations. The data for rural population is visualized on the maps through shading the area, urban population through shading the corresponding circle. Total number of units under analysis, thus, numbers for 30.

4.2. Total Change of Population

The total change of population for the period 1979-1989 indicates that the urban population of all counties has increased except Valgamaa (Figure 8). Table 3 shows how the largest places gained substantially in share of Estonia's population between 1970 and 1979, gained rather little between 1979 and 1989, and lost share between 1979 and 1995. The reverse occurred for the smallest settlement categories. Generally, the increase has been somewhat smaller in the South-West of Estonia, where the impact of international migration has been less significant and the settlement system appears more balanced. Urban growth during the period has been relatively moderate compared to the intensive urbanization in the earlier post-war decades. The latter was caused mainly by long-lasting and massive immigration from other parts of the former Soviet Union, almost entirely directed to the urban areas. Returning to the 1980s, the county variation in urban growth has been not very extensive, for example, the capital city, Tallinn and Jõgeva, the centre of a new county, about fifty times smaller, were growing at the same rate. Noticeably the highest growth rates could be found for some smaller towns compared to the large or medium-sized ones. On the other hand, the same group of the smaller towns also includes the majority of urban settlements with decreasing population.

A more diverse pattern in population change in the intercensal period 1979-1989 can be found for the rural population. In four counties, rather different from each other (Harjumaa, Hiiumaa, Järvamaa and Lääne-Virumaa), rural population was growing. In three counties a minimal decrease could be observed. The rest demonstrated somewhat more extensive decrease in total population change. However, this pattern, representing the change over the whole decade, really conceals than explains the course of population change.

Table 3. Percentage distribution of population number, Estonia 1970-1995

Size of locality	1970	1979	1989	1995
Up to 2,000	36.7	31.6	28.6	30.0
2,000-9,999	8.6	9.0	8.8	10.2
10,000-49,999	12.0	13.1	11.3	10.2
50,000-99,999	16.0	9.9	13.5	12.9
100,000+	26.7	36.4	37.8	36.7
Total	100.0	100.0	100.0	100.0

Dividing the intercensal interval into two sub-periods, respectively 1979-1983 and 1984-1989, reveals quite different patterns, particularly concerning the rural population (Figure

8). During the first sub-period 1979-1983, only the rural population of Harjumaa demonstrates growth (which is relatively high), while the rural population of all other counties is decreasing relatively rapidly. During the second sub-period 1984-1989, completely different picture is revealed. The increase of rural population has spread and in the second half of the 1980s more than half of the counties featured population growth in rural areas. In four of them (Harjumaa has been joined by Hiiumaa, Järvamaa and Lääne-Virumaa), the increase in rural population is equal to that of urban or even exceeds it. Such a shift from decrease to growth of rural population in the 1980s indicates a principal turnaround both in absolute and relative terms, following more than a century-long rural depopulation.

4.3. The Migration Component of Population Change

In Estonia, the principal turnaround in population growth occurred in 1980s, clearly before the societal transformation processes got under way. The explanation for this turnaround has to be sought by examining long-term population development, including internal migration and urbanization-deurbanization processes. Not going beyond the time frame of the current study, the general understanding could be derived from simple disaggregation of the total change of population into two components: natural increase and migration increase.

Starting from migration increase, differently from most countries in Estonia this component has been dominated by international migration throughout the whole post-war period and, during a couple of recent decades, the influence of international migration has become almost exclusive. In the post-war period, Estonia, like other European countries at the similar stage of demographic development, turned from an emigration to an immigration country. However, because of the geopolitical change stemming from the incorporation of Estonia into the Soviet Union, immigration processes to Estonia appeared much more intensive and started at least a decade earlier [Sakkeus 1994]. Immigration originated from different regions of the Soviet Union which at the time were characterized by the mobility transition and featured high migration potential. Partly, this potential was directed towards newly incorporated territories, including Estonia. As noted above, the effect of immigration in Estonia was strengthened by extensive war casualties, societal rearrangements and deportations of local population to Siberia. Thus, in Estonia the classical pattern of emergence of an immigration stage after the long-term emigration period can be clearly followed with immigration stage being more strongly expressed. Altogether the post-war immigrants account for 36 per cent of the total population.

Quite typically, the immigration flow was directed to the urban areas, maintaining the growth of population in them throughout the post-war decades. From the viewpoint of the Estonian settlement system, immigration introduced the second wave of urbanization [Katus, Sakkeus 1986]. Regionally, that second urbanization wave was highly selective, affecting mainly about one third of the Estonian cities. Most of those cities were located in Northern Estonia, including the capital. The population structure of the cities of those affected and those not affected by the second wave of urbanization became increasingly different. From the viewpoint of total population change, this differentiation became visible in the 1980s and more explicitly in the 1990s. The dominance of international migration in urban growth as well as its varying role across counties, means it is necessary

to

divide

the

migration component into international and internal migration. The lack of relevant data on the county level, however, prevents us from displaying both subcomponents separately. Still, taking the migration component as a whole, the interesting changes in its contribution could be followed in the 1980s.

Migration-based change in population growth is closely consistent with the above-discussed pattern of total population change over 1979-1989 (Figure 9). The urban population experienced migration growth except in four counties (Lääne-Virumaa, Valgamaa, Viljandimaa and Võrumaa). However, moving from South to North, the growth tends to become more pronounced. In Southern Estonia, where international migration was less important, the urban population is either decreasing or demonstrating minimum growth from net migration. In the North-West of Estonia the growth rate of urban population is in general higher. Addressing the two sub-periods separately, in 1979-1983 migration-based growth of urban population is much more pronounced than in the second sub-period, particularly against the background of the developments among rural population (Figure 9). In 1984-1989, less than half of the counties with the previously highest growth rate of urban population due to migration component (4 and more per thousand) have maintained the rapid migration growth. This is a combined result of declining international migration and the beginning of deurbanization. Most of the counties are displaying moderate growth or feature the initial stage of urban depopulation.

Regarding the corresponding development among rural population, the county variation appears higher. In 1979-1983, all counties, except Harjumaa, demonstrated a decrease of population due to migration. This decrease varies over counties, being somewhat smaller in islands as well as in Järvamaa, Jõgevamaa Lääne-Virumaa, Raplamaa and Tartumaa. In 1984-1989, all those counties (except Jõgevamaa) together with Läänemaa and Pärnumaa displayed already the growth of rural population from migration component. This is clear evidence of the strengthening tide of deurbanization, reversing the century-long concentration of population into cities. Notably, this new trend started in the middle of the 1980s, i.e. before the economic transition and societal transformation began in Estonia. Simultaneous migration growth of both urban and rural populations may seem contradictory, however, the urban growth was continued by international migration whereas native-born population had already entered the deurbanization stage. This kind of a complex pattern should be kept in mind when dealing with the period of economic transition while the contribution of growth components undergoes modification. It is important for the comparisons with other Central and East European countries which generally feature the different stage of demographic development, and correspondingly other types of interactions between societal and economic changes.

4.4. Natural Change of Population

Natural component of population change demonstrates even more intriguing pattern, particularly among the rural population (Figure 10). Whereas in 1979-1983 the natural increase of rural population appeared positive only in one county, Harjumaa, in the second sub-period it has become positive already in seven counties. Also, in the remaining counties the scale of natural decrease has become less in the second sub-period. This principal change in the growth components of rural population which became visible in the 1980s, particularly towards the end of the decade, presents an outcome of long-term

trends

rather

than impact of some contemporary conditions. Historically, alongside the second stage of demographic transition occurring in the last decades of the 19th century, rural population of Estonia peaked at about one million. From that point onwards it has steadily decreased reaching 700 thousand by the end of 1930s and about 430 thousand in the 1980s. The out-migration of rural population started to decrease in 1970s and after the normalization of its age structure in the 1980s, the number of rural population started to grow. Additionally, the fertility increase in the late 1960s facilitated the process [Katus 1994].

Considering the start of deurbanization and decrease in international migration, future growth in urban population may occur only due to natural increase. More precisely, it results from the population momentum as the fertility of the urban population has been continuously below the replacement level for about ninety years already. In the 1980s the population momentum was still sufficient to maintain the urban growth, but the 1990s display clear signs of its oncoming exhaustion, i.e. the beginning of depopulation. In fact, such a course of developments had been predicted already 15 years ago in a set of projections, which included the capital city [Katus 1983]. The beginning of depopulation is coinciding with the intensive ageing process of the urban population; the most rapid ageing has been predicted for the decade 1995-2004. It should be noted that the degree of ageing as well as rapid depopulation is expected to be particularly intensive in those cities, which previously had received the largest inflow of international migration, destabilizing their age structure.

4.5. Population Change at Community Level

For the intercensal period 1979-1989 taken as a whole the pattern of total population growth can be followed at community level. For the purposes of comparison, data has been presented also for the previous intercensal period 1970-1979 (Figure 11).

Both maps demonstrate in greater detail the same pattern as described on the county level. One after another, communities either have moved towards a lesser decrease or have featured the end of population decline in the 1970s and have experienced population increase in the 1980s. This process seems to be the major trendforming development all over the country, clearly not limited to regions of suburbanization. In some counties the growth appears even larger in remote communities than in those surrounding regional centres. It should be remembered that the figure presents the whole intercensal period, the discussed trend would have been even more pronounced for the second half of the 1980s.

It has been widely assumed in the economic literature, particularly on the Central European countries, that economic processes are responsible for the change in regional patterns of population growth in the 1990s. In case of Estonia it is evident that the principal change, as shown above, has occurred clearly before the transition to market economy had started. Naturally the societal transformation has introduced additional features, but the current trend of the processes was defined in the 1980s in Estonia. It is also the reason why, paradoxically, for understanding the patterns of internal migration and population re-distribution under the current economic transition one should concentrate not so much on the 1990s but rather on the 1980s which in case of Estonia has served a starting point for the present trends.

5. INTERNAL MIGRATION PATTERNS

In this section internal migration is studied in three steps. First, the general pattern of internal in-, out- and net-migration is analyzed at county level for 1987 and 1995. Second, for the same years the life-course patterns are followed on the basis of net-migration, separately for urban-urban, urban-rural, rural-urban and rural-rural directions of internal migration flows. The third section makes use of community level data to analyze the older working age migration moves in urban-rural interchanges in 1995.

5.1. Internal Migration: General Pattern

The maps of overall internal migration in 1987 and 1995 combining all age groups and migration directions are presented in Figures 12 and 13. In addition to net-migration, in-migration and out-migration flows are also mapped. The latter data provides a possibility to examine the regional variation in the intensity of internal migration processes which could remain uncovered when looking only at net-migration. The latter could be particularly true in case of balanced in- and out-migration flows which is rather typical to Estonian counties with lower proportion of immigrant population. Also it should be noted that the comparison of in- and out-migration flows with net-migration in a given year is less dependent on data quality than the comparison of the two data points over time.

5.1.1. In-migration

The data reveal substantial variation in the intensity of in-migration, displaying more than four-fold differences across counties (Figures 12 and 13). In 1987 the highest intensity was found in Järvamaa. Most of the other counties with the next higher intensity are concentrating close to Järvamaa in the central part of the country. Põlvamaa in South-East and island-county Hiiumaa are also belonging to that group with relatively intensive in-migration. It is noteworthy that the in-migration to Saaremaa, another island-county is at considerably lower level. All the counties featuring higher in-migration flows are characterized by lower proportion of urban population and smaller shares of immigrant population. The correspondence between the composition of population and in-migration pattern is highly matching, except for Saaremaa and Võrumaa. The same relationship is hold also for another end of the spectrum: counties with the highest proportion of urban population and large stock of immigrants are characterized by the less intensive inflows of internal migrants.

The relationship described is surprising at first glance, particularly when compared to general pattern of population change. In reality, however the pattern seems quite logical. As stated before, the second half of the 1980s represented in Estonia the deurbanization stage and therefore namely the primarily rural counties were those which received internal migrants. This finding is rather different from the pattern of general population growth due to migration component discussed above (Figure 9). In case of the latter, urban population of Harjumaa and Ida-Virumaa as well as rural communities of Harjumaa represented not the lowest but the highest growth rate. This reverse picture results from the international immigration: its substantial size (about one third of the total in-migration flow) and high

regional selectivity to the counties referred to. The role of the international migration should be taken into account when dealing with migration pattern of the 1990s when the international migration flows (immigration as well as emigration flow) have substantially decreased.

Turning to the regional pattern of the in-migration in eight years later the large decrease of the intensity is the first thing to consider. Data quality analysis provides the explanation. Nevertheless, the previous regional pattern seems still to hold. The highest internal in-migration flow characterizes Järvamaa followed by Jõgevamaa, Lääne-Virumaa, Põlvamaa and Raplamaa. The same counties have been in the top of the list also in 1987. Additionally, the lowest intensity is represented by Ida-Virumaa exactly like the situation before the economic transition started. The only major change in the regional pattern is presented by Hiiumaa: now the island is characterized by very low in-migration unlike the situation earlier. Also, the positions of two island counties have been reversed and Saaremaa presents the higher in-migration now. Despite these minor differences the pattern is very much the same as previously and finds its explanation from the long-term population development rather than the current societal and economic transition.

5.1.2. Out-migration

The regional pattern of out-migration flow is rather similar to that of in-migration (Figures 12 and 13). In 1987 again Järvamaa shares the highest intensity with Jõgevamaa. The next cluster of counties comprises Läänemaa, Põlvamaa, Raplamaa, Valgamaa and Viljandimaa, i.e. almost the same regions as in case of in-migration flow. Also similarly, the lowest intensity of out-migration is characteristic to Harjumaa and Ida-Virumaa. Between 1987 and 1995 the regional pattern of out-migration has changed somewhat more than regarding the in-migration flow. Particularly, Pärnumaa has entered the group of the lowest intensity of out-migration together with Ida-Virumaa and Hiiumaa. Also Võrumaa has a relatively higher out-migration intensity compared to the situation in 1987.

The principal similarity of the regional patterns of in-migration and out-migration flows, i.e. the counties in the highest as well as the lowest categories in both maps coincide, supports the conclusion about the relatively balanced internal migration development in Estonia. In other words, because of internal migration no principal shifts in spatial population distribution are expected. This conclusion is supported, for example, by the case study of Järvamaa (1965-1990) which represents the most intensive internal migration. In that county the migration flows have been balanced with other counties as well as between the communities of the county [EKDK 1997]. The cited study concludes that the balance of migration flows is closely related to high proportion of native-born population in the region.

Looking back to earlier decades the balance of migration flows has certainly been not typical to Estonia generally. Primarily the direct effect of international migration, and the corresponding indirect effect of the redistribution of foreign-born population within the country should be taken into account. These two factors are responsible for the post-war spatial population re-distribution in Estonia. However, also the internal migration flows of the native-born population have been much less balanced than observed in the 1980-1990s. Evidently, the study focuses on the period under which the regional differences in

migration potential have already levelled out. Due to relatively advanced population development that stage was reached in Estonia already in the 1980s, i.e. before the current societal transition took start. In many other Central European countries the levelling of the spatial migration potential has occurred later, and particularly its synchronicity with the transition to market economy could lead to false conclusions.

5.1.3. Net Migration

Compared to in-migration and out-migration flows, the regional pattern of net migration is notably different in both periods under discussion (Figures 12 and 13). It should be underlined, once more, that in this section the net migration statistics are the balance of internal inflows and outflows, whereas in section 4 the migration statistics contributing to population change included both internal and international migration (Figure 9). Additionally, there are also differences because the migration data in the previous section referred to the 1979-89 decade between censuses while in the current discussion the migration data are for the single years 1987 and 1995.

Net migration is not necessarily highest in the counties with the highest intensity of in-migration flow. In 1987 Järvamaa experienced a high level net migration similar to its high level of in-migration while some others like Jõgevamaa, Läänemaa and Viljandimaa do not. Harjumaa has moved to the group with relatively high net migration, however, Ida-Virumaa has stayed in the category with the lowest net migration, together with Valgamaa and Võrumaa. It should be noted that the same tendency, net migration loss in the South-East as well as in Ida-Virumaa, found in the analysis of population change, is also evident in the internal migration data. The map of net migration in 1995 appears rather different from that of the earlier decade. In short, there seems no systematic regularity. For example, Põlvamaa has moved into the group of the highest migration gain whereas neighbouring Võrumaa is losing population. From the social and economic point of view the conditions in the two counties are rather similar, including the problems of economic transition. On the other hand, the inconsistency of the pattern is not surprising as net migration data is much more sensitive to data quality problems than flow data. Additionally, the variation in internal net migration is relatively small.

5.2. Net Internal Migration: the Life-Course Pattern

As individuals progress through successive stages of life-course, the propensity to change the place of residence varies. Also the direction of moves differs reflecting the change in the determinants of migration. People do not necessarily go through the same life stages exactly at the same chronological age but the simple age classification has proved to be the best operational means for examining the life-course pattern on migration, including internal migration. The present report approaches the life-course pattern by distinguishing six age categories:

- (1) childhood ages, 0-14,
- (2) adolescent ages, 15-24,
- (3) young adult ages, 25-29,
- (4) family ages, 30-49,
- (5) older working ages, 50-64, and

(6) retirement ages, 65 and over.

The life course has been divided into stages of unequal length. In doing so, the shape of migration curve [see Rogers and Willekens 1986] is taken into account. Starting from the youngest end, in childhood ages the change of residence is usually determined by parental decisions. Whatever the pattern of childhood migration, the explanation should be sought in the preferences and behaviour of the parental age adult population. The family stage used in the report encompasses ages 30-49, at which residential decisions take into account not only the needs of adult members of the family but also those of their children. Estonia has a much lower population density compared to the majority of European countries, and therefore, the family decisions to secure the appropriate environment for children are likely somewhat different from those in the named countries.

The adolescent and young adult ages concentrate a set of crucial life-course events like leaving the parental home, completing the education and entering labour market, starting a family, and in many cases having a first child. Not surprisingly, the migration intensity appears highest during that stage of life. In Estonia, the number of migration moves at ages 15-24 exceeds the total number of residential changes during all other life-course stages. In most other case studies, the young adult ages are extended to age 30. However, in the present report, the adult ages 25-29 is separated from adolescent young adult ages. This has been done mainly for the reasons of data quality: in the 1990s data on adolescent and young adult ages displayed the lowest quality and have therefore been removed from the 1995 migration series, while the moves occurring at ages 25-29 could be retained in the analysis. Considering the migration curve, the ages 25-29 correspond to the sharpest decline in migration intensity, reflecting the completion of initial stages in family and labour careers. During the current economic transition, the timing and conditions of both these careers have been in rapid flux which has probably affected migration behaviour of young adults in Estonia.

The older working ages are universally characterized as the stage with the lowest migration intensity. At those ages, the working career is approaching its end and people are not usually taking advantage of new opportunities. Household size is typically shrinking and family structure simplifying as children are in the process of leaving the parental home. Despite the relatively low official retirement age, 60 for males and 55 for females up to 1994, the Estonian migration curve has been characterized by decline up to the age of 65 for several decades [Sakkeus 1991]. Turning to the last stage of the life-course, the retirement age is characterized by an increase in migration intensity. In Estonia the migration curve displays a continuous increase towards the end of the age scale. The curve features the upward slope and not the temporal peak around retirement.

The regional pattern of internal net migration is presented for each life course stage on a separate map. The geographical scale of the maps follows the county level. The urban and rural populations are presented separately, i.e. altogether the country is divided into 30 regions. The set of life course migration patterns for 1987 are presented in Figure 14 and for the year 1995 in Figure 15. In latter case the pattern for the adolescent and young adult ages is dropped for data quality considerations discussed earlier.

5.2.1. The Childhood Ages

Although the regional pattern of internal migration at the childhood ages reflects the parental decisions, its social policy aspects, particularly in relation to education and child-care, are rather important. According to corresponding maps in Figures 14 (1987) and 15 (1995), there are somewhat more children-gaining than children-losing counties in Estonia, both in respect to urban and rural population. Notably, the observation seems to be true for both 1987 and 1995. In other words, on the general background of slight deurbanization, the concentration of children appears rather weak which is consistent with the advanced stage of migration development discussed earlier. It is also evident that the disaggregation of net migration into four separate directions has proved very useful. For example, the urban population of Hiiumaa is losing childhood age population in urban-rural population exchange but gaining it in urban-urban migration, in both cases the categorized intensity of migration is positioned at the extreme of the scale.

The variation of net migration seems to be somewhat more pronounced in urban-rural exchanges than in moves within rural settlements and urban settlements separately. There are eleven regions of the highest gain (seven) or loss (four) category in the map of urban-rural and rural-urban migration direction in 1987 whereas the corresponding urban-urban and rural-rural migration directions outline only three such regions. The pattern has remained the same in 1995, with nine regions gaining against two losing (four regions had non-applicable data i.e. the total number of regions is 26). The regional differentiation itself seems to have no strong regularity, particularly because of small range of variation in net migration. However, in 1987 the urban settlements in Northern Estonia tended to lose childhood age population in opposition to the South-Eastern counties in rural-urban exchange. In 1995 the situation had become to much more irregular. Comparing the situation in 1987 and 1995, the urban-urban and rural-rural directions of migration present even greater change of pattern but, similarly, with no clear tendency.

At the level of individual counties, Viljandimaa and to lesser extent Hiiumaa are the two regions where urban childhood age population displays the highest decrease whereas the corresponding rural population shows the continuous gain. Neighbouring (to Viljandimaa) Valgamaa, however, demonstrates the opposite situation. Both island counties tend to gain children in urban-urban and rural-rural directions. This is particularly true in 1987 but also in 1995 with the exception of Saaremaa urban population. Comparing the patterns of 1987 and 1995, Ida-Virumaa has somewhat increased its attraction to children (more precisely to parents with children), both regarding rural and urban settlements. It should be noted that the study of likely reasons for the process should also consider the fertility development in 1965-1995 which has influenced the number of children in every county.

5.2.2. The Adolescent Ages

The migration of the population at adolescent and young adult ages represents a rather different pattern compared not only with childhood age but also with all other life course stages (Figures 14 and 15). From the viewpoint of population re-distribution this is the stage of intensive concentration of population in cities: rural areas in all counties are losing the adolescent population and the urban settlements with a few of exceptions can be found in the category of biggest gain. Moreover, also in urban-urban migration most of the

counties with smaller cities and towns are losing adolescent and young adult population to larger ones: Tallinn in Harjumaa and Tartu in Tartumaa. Somewhat surprisingly Kärddla in Hiiumaa county was also gaining but the absolute numbers were very small in that case.

The prevailing urbanization and concentration of population into the top of urban hierarchy in the adolescent and young adult ages is a universal process across Europe and reflects the regional distribution of higher educational institutions. Above that, the adolescent population tends to value the city environment with its known variety of opportunities and entertainments. It is the life stage characterized by the interest towards everything yet inexperienced combined with the lowest social commitment. The city environment with high intensity of social interactions is evidently the most suitable for that stage. Low data quality in 1995 necessitated the removal of corresponding map on adolescent migration. However, other statistics, particularly survey data, suggests that the basic regional pattern has remained the same or even strengthened in Estonia in the 1990s, against a background of increasing motivation for advanced education and the further concentration of the corresponding institutions during economic transition to the larger urban centres.

5.2.3. The Young Adult Ages

Compared to adolescents, the young adults aged 25-29 present a rather different regional pattern (Figures 14 for 1987 and Figures 15 for 1995). This is the stage with the sharpest decrease in migration intensity following the beginning of family and work careers. The adolescent interests towards various social opportunities are still important. However, growing personal and generational responsibilities are shaping behavioural patterns, including migration. By that age the massive concentration of population in urban settlements has passed and the deurbanization dominates among this age group. In 1987 the rural areas of only three counties experience a decrease of young adult population whereas the corresponding number among urban areas is eight, when considering the urban-rural and rural-urban migration directions (Figure 14). In particular, the larger cities are among population losers and counties with predominantly small towns like Jõgevamaa, Saaremaa and Läänemaa are among gainers. Regarding the urban-urban and rural-rural migration patterns, the situation is less regular but in Harjumaa and Tartumaa counties the urban population is losing young adults to urban settlements of most other counties.

The described pattern can also be observed in 1995. In urban-rural exchanges the South-Eastern counties have somewhat lost their attraction, particularly the urban settlements of the region. The same is generally true for Hiiumaa and quite strongly expressed for Läänemaa. There are two counties, Järvamaa and Lääne-Virumaa, which rank highest among counties gaining young adult population for both urban and rural population in 1987 as well as in 1995 (except for the urban settlements of Järvamaa in the urban-urban migration exchanges). Those counties are definitely not the recipients of large capital investments or otherwise the leaders in the current economic transition. They have a relatively balanced settlement system, a low proportion of foreign-born population and competitive agricultural activities. Compared to the end of 1980s the island counties changed their position in urban-urban as well as rural-rural migration directions: in both cases the counties have become losers of young adults.

5.2.4. The Family Ages

Compared with previous two age groups, the family ages are experiencing lower migration intensities, and hence, have less influence on the regional redistribution of population (Figures 14 and 15). Notably, the regional pattern on internal migration in the family ages does not coincide with the pattern of childhood age in Estonia. The latter to some extent reflects the relatively earlier timing of family formation, partly because of widespread cohabitation combined with early childbearing.

In 1987 the family age migration implies slight deurbanization towards the Central-Estonia and island counties. Harjumaa and Ida-Virumaa as two most urbanized and industrialized counties were definitely losing this group of population. Regarding the urban-rural exchange the pattern seems to be rather irregular. On the background of decrease in Northern Estonia, Tartu as a second city belonged to gainers. Also, among counties with mainly small towns there was a group of losers but also another group of gainers. It is interesting to note that among the family age population the urban-urban and rural-rural migration directions were displaying more pronounced differentiation than urban-rural migration exchange. The opposite situation occurs among young adults.

Another feature of family age population that deserves attention is the notable growth in the intensity of deurbanization. In the earlier year (1987) only the Hiiumaa rural population was situated in the highest category of growth in urban-rural migration exchange whereas by 1995 the number of such counties had increased to nine. Correspondingly, the number and particularly intensity of urban losers had increased. The pattern of deurbanization of family age population is also stressed in comparison of urban-urban and rural-rural migration directions which, in contrast to the situation in 1987, has demonstrated lesser contribution to regional population re-distribution.

5.2.5. The Older Working Ages

The older working ages typically correspond to the life stage with the lowest migration intensity. In Estonia, this has been true during at least the three or four recent decades. It should be noted that the migration curve does not rise before age 65 despite the official retirement age being five (males) or even ten (females) years lower. However, taking into account that the actual retirement age had exceeded the official age by 5-7 years, and the rather untypical growth of this difference in the 1980s [Puur 1997], the age-pattern of migration becomes understandable also from this point of view. Nevertheless, the regional re-distribution of population seems to be not smaller compared to previous groups, and probably having become even higher by 1995. In other words, the regional re-distribution has been somewhat stronger in older working age.

Differently from many other European countries the older working age population in Estonia is not displaying the deurbanization pattern observed for the young adult and family ages in 1987 (Figure 14 for 1987 and Figure 15 for 1995). Regarding the urban-rural migration exchange, the number of counties gaining and losing rural population in that age are equal (seven and eight counties, respectively). However, among urban

population there are eleven counties demonstrating growth and only four with decrease. Most of the latter are located in Northern Estonia, Harjumaa and Ida-Virumaa among them. In urban-urban and rural-rural directions the regional pattern is rather irregular, however, not representing the extreme categories on both ends. With a few exceptions, the urban and rural areas belong to the categories with lowest growth or increase representing one of the smallest differentiations.

During the time frame of the report, the regional pattern of the older working age migration has changed radically, representing the largest change among discussed life stages. In 1995 the strongly expressed deurbanization is the dominating feature of the pattern. Concerning the rural areas, the regional pattern in urban-rural migration exchange is flat: all counties except Hiiumaa are clustered in the category of the highest growth. The mapping scale of net-migration is clearly "not working" for describing the regional pattern of older working age migrations itself but is very informative in comparison with other life stages as well as the corresponding pattern in 1987. In a following section the same pattern is chosen to examine the situation at community level using a more appropriate spatial scale to outline the existing differences. The general deurbanization in older working age can also be stressed relative to population re-distribution in urban-urban and rural-rural directions which seems to be much weaker.

5.2.6. The Retirement Ages

In the retirement ages the propensity to change the place of residence usually increases, either temporarily, forming a specific retirement peak in age curve, or more steadily throughout the entire old age. There are basically two different processes behind these age-patterns. First, retirement ends many forms of social dependence, particularly the dependence on the time-schedule determined by work obligations, and people are freer to choose the life-style preferred by themselves, and sometimes fulfill their aspirations for hobbies accumulated over a longer period. In economically developed countries retired persons usually have the means to realize their plans which may involve the change of residence. This is particularly the case when the ties with the region of origin are maintained throughout life and re-migration does not involve a major change in living standards. Second, people in older age are characterized by worsening health, and may need to join another of their household children or an institution, even if preferring to live separately otherwise. In the latter case the regional distribution of units of institutional care proves rather important to understand the pattern of migration at retirement age.

In 1987 the retirement age migration demonstrated concentration into urban centres (Figures 14 and 15). In urban-rural migration exchange urban regions of all counties were gainers and most of the rural areas lost retired population. This is rather different pattern compared to European countries but could be easily explained by two main factors. First, the set of institutional care units had been seriously underdeveloped during socialism and therefore people moved to live with or near to their children in old age, a large proportion of whom were residing in urban settlements. Also medical services were more easily available in urban settlements. The second factor was related to the prevailing housing policies. Namely, no housing market existed under socialist system and the new dwellings were provided to households according to certain administrative criteria. For those applying for a new flat, there were long waiting lists and therefore it was rather important

to express the need more obviously. The most important criteria of eligibility was the number of square meters per person in current dwelling, and respectively, the only possibility to increase the chance of getting a flat was to increase the household members. Under the propiskas control system there were rather strong restrictions on moving into already overcrowded flats. A few exceptions were made for dependent family members like children and/or old parents in need of support. In other words, some retirement age migration into urban areas is explained simply by the need to increase the opportunities for their children's family to receive a (new) dwelling.

Regarding urban-urban and rural-rural migration directions, there is no clear pattern in 1987 but noticeably the retirement age migration seems to match with old working age migration pattern rather closely. The latter holds also true for 1995 (Figures 38 and 39). However, in the urban-rural migration exchanges the situation has been completely modified. The urbanization processes of the elderly have completely stopped and deurbanization was in progress in 1995. In Northern Estonia the rural regions of all counties are positioned in the highest growth category but also in Southern Estonia rural areas are universally gaining the retirement age population. Urban settlements of all regions except Järvamaa and Lääne-Virumaa are losing population of those ages. Compared to the 1980s, the network of old age institutions has been somewhat improved but naturally it could not explain the observed deurbanization pattern. The end of migration into urban settlements because the changed housing policies has had its clear influence but could also hardly explain the change of such scale. Another new factor is the living cost which has become a real economic burden to older people and is clearly lower in rural settlements [UN ECE 1999].

5.3. Net Internal Migration: Life-course Pattern at Community Level

All previous maps and analysis could be repeated for the NUTS 5 geographical scale. However, for the different reasons this is impractical for the current study. One of that reasons is the absence of previous research on the patterns of internal migration which requires maintaining of more general perspective before going to the level with hundreds of small units and numerous details. Another reason, specific to Estonia, is the very small size of many rural communities, and correspondingly, the specificity of migration processes. Particularly, the life-course stages could not be followed in many cases for too small number of registered events. Obviously, the analysis at community level would also have demanded a closer look on the numerous boundary changes as a background than has been possible in this study. The most important argument, however, is low data quality which in case of very small numbers will increase its influence to the results. The analysis of data quality at community level is a rather time-consuming task under the project framework.

Still, the community level analysis has been accomplished for one specific case: regional migration pattern of old working age population in 1995. The old working age population has been chosen because of the universally flat urban-rural exchange pattern at county level, and the strongest force of deconcentration processes compared to other life stages. In the map, also the communities of Harjumaa and Tartumaa are presented, the data for which counties was discarded at the aggregated geographical scale. As discussed earlier, the old working age migration has been much lesser influenced by the underregistration of

residential moves. Additionally, many communities of those counties have better quality data. The poor quality of data for some larger urban communities have created the problem for the county as a whole. From the methodological point of view it should be noted that in this case all migration moves between communities are considered, the net migration rate is computed by using the corresponding number of total population as a denominator. In the map the migration pattern in rural communities is visualized through their territory whereas the urban communities are represented by circles (Figure 16).

The general impression is that despite the disaggregation the pattern still remains rather flat. There are many communities losing the old working age population but those are prevalingly urban settlements. About one fourth of urban settlements belong to the category of steepest decrease while the same is true only for four rural communities out of 207. Deurbanization seems to be universally strong but somewhat less evident in the Northern Estonia: most of the urban communities in the region are losing old working age population but not with the highest intensity. The pattern of rural growth is giving some evidence of slight suburbanization: most of the communities with the highest growth rate are situated near to larger and medium size cities. The communities farther from the cities tend to have lower growth rates. On the other hand, if the map is supporting the evidence of suburbanization, the regional pattern is not typical. There are communities with the highest growth near Tallinn, Tartu as well as Narva but they are not forming the typical circle-like formations around the cities.

6. RELATIONSHIP OF MIGRATION TO POPULATION DENSITY AND UNEMPLOYMENT

The analysis in sections 4 and 5 of the report has relied principally on the net migration data. The innovatory feature of the analysis, compared to that for the other case studies the project, is the introduction of a classification of migration balances into those between urban areas, rural areas or involving rural-urban exchanges. However, for comparison with the results of parallel studies of other European countries, it is useful to look at the relationship between all age net internal migration for Estonian counties and two indicators of residential and economic environment respectively, population density and level of unemployment. This is done in the current section, bearing in mind earlier caveats about the quality of migration information from the 1995 register and the likelihood that the migration of young adults, in particular, was underenumerated.

6.1. Correlations Between Net Internal Migration, Population Density and Unemployment

Using the statistics for Estonian counties assembled in Table 4, simple correlation coefficients between the variables were computed and are given in Table 5. Naturally, the unemployment data were available only for 1995 as the phenomenon was not applicable in 1987. So the correlation of net internal migration in 1987 is with economic conditions post independence - in essence we look at whether there was any association of migration with areas of potential economic stress. Population densities (per square kilometre) do differ between 1987 and 1995 because of population change but this alters their magnitude very little. Hence the almost perfect correlation of population densities in the two years.

Table 4. Population indicators

County	Population 1987	Population 1995	Net migration, per 1000 1987	Net migration per 1000 1995	Population density psk 1987	Population density psk 1995	Unemploy- ment rate, per 100 1995
Harjumaa	592175	559106	-1.09	-1.37	131	124	8.2
Hiiumaa	10617	11953	-15.07	-3.35	10	11	7.6
Ida-Virumaa	219864	206418	3.33	-0.31	63	59	10.7
Jõgevamaa	42479	42146	1.72	-3.01	16	16	14.3
Järvamaa	43136	43639	-7.26	3.02	16	16	10.7
Läänemaa	33027	32586	-1.51	0.61	13	13	15.8
Lääne-Virumaa	79035	75533	1.20	5.02	22	21	7.6
Põlvamaa	36155	36315	-2.41	4.08	16	16	7.7
Pärnumaa	98965	99563	0.02	6.17	20	20	7.5
Raplamaa	39626	40058	-1.72	4.77	13	13	7.7
Saaremaa	38828	40759	-2.76	2.06	13	13	5.3
Tartumaa	159797	154483	0.81	-0.91	51	50	7.2
Valgamaa	41605	40014	2.93	-1.40	20	19	14.1
Viljandimaa	65326	64377	1.99	-3.73	18	18	11.7
Võrumaa	45669	44633	3.24	-3.07	19	18	16.2
Estonia	1546304	1491583					

Table 5. Correlations

Variable	Net internal migration rate 1995	Population density 1987	Population density 1995	Unemployment rate 1995
Net internal migration rate, 1987	-0.03	0.20	0.19	0.38
Net internal migration rate, 1995		-0.19	-0.19	-0.51
Population density, 1987			1.00	-0.17
Population density, 1995				-0.18

The correlation coefficients are presented in Table 5, and the following points can be made based on that data:

(1) There is no association between the net migration pattern in 1987 and that in 1995. In part, this represents genuine transformation and in part, problems with the 1995 data.

(2) The relationship between net migration and population density, though not strong in either year, changes from positive (+0.20) to negative (-0.19), confirming a turnaround in the structure of the migration system. This has been shown in earlier analysis to be in train in the 1980s and is not just a product of the societal transition from Soviet system after 1989.

(3) The relationship between net migration in 1995 and the unemployment rate in 1995 is moderately negative. The higher the unemployment rate in a county, the lower was the net internal migration balance. This was a new relationship as the correlation between 1987 net internal migration and 1995 unemployed was positive.

(4) Density and unemployment show a small negative correlation only, suggesting that they form different influences on the pattern of migration.

6.2. Net Internal Migration by Density Class and Unemployment Band

Correlations tell us only part of the story about relationships. Table 6 report grouped statistics for the counties of Estonia, aggregated into population density classes and unemployment rate bands.

Table 6. Population density and unemployment

Density class, psk	Net internal migration rate, 1987	Net internal migration rate, 1995
- 15	-3.15	2.03
15 - 30	0.37	1.60
30 - 100	2.27	-0.57
100+	-1.09	-1.37
Unemployment band, percent		
- 7	-2.76	2.06
7 - 10	-0.72	0.40
10 - 14	1.67	-0.55
14+	1.80	-1.88

In 1987 counties in the lowest and highest density band lost population through internal migration to middle density counties. In 1995 the relationship was one of greatest loss in the highest density class progressing to greatest gain in the lowest density class. This is the pattern we identified in section 4 as deurbanization, with the strong caveat that the migration of young people from low to high density

areas has been severely undercounted.

Table 6 reveals a remarkable turnaround in the relationship between migration and employment conditions. In 1987 migration was positive into those areas which would later experience high unemployment and out of areas that would later fare better. In 1995, the relationship is a classical one of systematic net transfers into low unemployment counties from counties with high rates.

Although we cannot be certain of these results, they do suggest that the political and economic transformations that have taken place in the past dozen years in late-Soviet and post-Soviet times have had their parallels in the transformation of the “spatial population system” from traditional urbanization to urban deconcentration coupled with migration responsive to differential economic development.

7. SYNTHESIS AND CONCLUSION

1. In the European context Estonia has been a country with long-lasting and strong influence of international migration on regional population growth. The post-war immigrant population accounts for about 36 per cent of total with highly uneven spatial distribution (concentrated in larger cities of Northern Estonia). Regionally, the relative proportions of two sub-populations (native-born and immigrant origin) are important for the understanding of population change and internal migration flows in the 1980-1990s.

2. To outline the internal migration patterns, the application of more detailed geographical scale than county division is necessary. However, this is difficult to implement because of very small size of many rural communities in Estonia. Still, it has proved technically feasible and also very useful to disaggregate the county population into rural and urban components, and correspondingly, the migration flows into four directions (urban-urban, urban-rural, rural-urban and rural-rural).

3. In Estonia, the quality of migration data requires careful attention. The conservation of the Soviet-type record-keeping has reduced the already low data quality in the 1990s, and any attempt to use the data should start with an assessment of quality. Otherwise, false conclusions can be reached.

4. During the 1980s the pattern of population growth and internal migration has changed in Estonia. Reflecting the turnaround in long-term population processes, migration development reached the advanced stage with more or less regionally balanced in- and out-migration flows and decreasing importance of net migration. Accordingly, to understand current trends and patterns, explanations must be sought from the 1980s which has served a starting point for the present trends rather than from the period of economic transition in the 1990s.

5. As a part of the turnaround, the century-long persistent rural depopulation has come to an end and the moderate growth has started reflecting natural population increase as well as deurbanization. In the 1980s two developments have occurred in parallel: migratory increase of rural population led by deurbanizing native-born population, and continued urban population growth as a result of the population momentum of pre-transition immigrants. In future decades, the urban deconcentration will probably be the underlying trend in Estonia.

6. Each life-course stage was found to have its specific migration pattern, more stable than the pattern for the total population. In many cases the changes of internal migration are determined by the change in the proportion of population in different life-course stages. Additionally, the life-course approach has been useful in demonstrating the features of the present Estonian internal migration pattern which appear closer to the countries of comparable in demographic development, more or less regardless of the significant differences in the level of economic development.

7. Among life-course groups, in Estonia the older working age population was characterized by the strongest deurbanization intensities in 1995. The same group has also

undergone the largest modification of migration pattern during the economic transition (1987-1995).

8. In Estonia, noticeable proportion of territory and population is located in islands, however, the island population does not show any systematic difference in the type of internal migration. Particularly, the depopulation of island populations, observed in several comparable European cases, is not occurring.

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