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SELECTED RURAL GROWTH IN ESTONIA 1989–2000 – SUB- OR COUNTERURBANISATION? DIFFERENT ANALYSES – DIFFERENT RESULTS.

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Abstract. There are different visions of the future of regional development in more advanced countries. Some researchers have seen the continuous concentration of population on certain areas as quite plausible development strategy; some support the hypothesis of future dispersal of population over wider areas. The few studies carried out on the 1990s and 2000s do not support either of these directions. For the first time after eleven years the population census data offered the possibility to get a reliable picture of population development and internal migration in Estonia. The paper gives the first overview about population change and the role of internal migration in it. The municipality level internal net migration is compared with economic and geographical background data. Results show that different data processing can lead to different results. The overall internal migration pattern supports the suburbanisation hypothesis.

Introduction

There is no common understanding of the essence of suburbanisation and counterurbanisation (Berry 1976, Frey 1987, 1988, Champion 1989, Johnston 2000, Tammaru 2001). Both terms refer to a situation of population outflow from more densely populated towns, but the borderline between suburbanisation and counterurbanisation remains ambiguous. In this paper we will define counterurbanisation as an outflow of population from bigger towns into smaller towns and rural areas (sometimes also called deurbanisation, desurbanisation, or disurbanisation), and suburbanisation as an outflow of population mainly into the nearest hinterland of bigger towns (also called spillover, or seen as continuous growth of towns over their borders). Consequently, the distance of migration from bigger towns is an essential differentiator between suburbanisation and counterurbanisation.

Large amounts of literature have been dedicated to the essence and trends of urbanisation and counterurbanisation (Berry & Dahman 1977, Champion 1989,

1992). Although there are some reports about earlier signs of urban reversal of concentration in London and America (Korcelli 1984), the counterurbanisation process became well known and was most visible in the 1970s in USA. Many authors have stressed that the growth rate of rural areas was in favour of more peripheral regions, smaller settlements, or cities of intermediate scale (Champion 1992). After 1970, the process accelerated. According to Hall and Hay (1980; 87), "cores virtually ceased to grow and with continuing losses from the non-metropolitan areas – the rings actually accounted for more than the entire net growth of the population". These generalisations included rather substantial variations among individual countries analysed in the study by Hall and Hay. It was found that counterurbanisation was related to the hierarchy of towns. As the correlation between hierarchy rank and the rate of population growth was negative, the main contributors to counterurbanisation were revealed to be the towns in higher hierarchical order. Korcelli (1984) found that, despite the fact that metropolitan areas were still growing, they were decentralising people from cores into rings, mainly because of stagnation of older metropolitan centres. Using the USA population census data from 1990–2000, Lopez and Hynes (2003) got the same results. The sprawls index showed shifts towards a more equal population distribution. Later, large amounts of migration research (Fielding 1987, Findlay & White 1986, Champion 1989) have shown that, despite the fact that the changes took place in different countries at different times, the majority of countries have passed deconscentration stages at some period of development. In 1989, Fielding concluded that most of the countries in Western Europe have records of counter-urbanisation from the 1970s.

In the 1980s, signs of reurbanisation of towns were found (Ogden & Hall 2000). Although in 1990 the changes towards concentration occurred in many countries, there was no clear understanding of a general future trend. The question remained – was deconcentration a major shift in population redistribution (see Zelinsky 1971, Frey 1995, Long & Nucci 1997, Wardwell 1977, Johnston & Beale 1994, Champion 1992), a mere temporary exception in a long process of concentration (Champion 1989, Fielding 1993, Frey 1987, Frey 1988, Johnston & Beale1994), or something else. Once again, metropolitan centres had started to grow, and the reasons were diverse and complex, sometimes the growth was related to commuter dormitories, sometimes to retirement settlements. The latest Europe-wide research project (Rees & Kupiszewski 1999) reported different concentration and deconcentration results for different countries.

The picture has been unclear also in Estonia. Low reliability of data and different methods used to study migration, have given variable results. Some of the results support the concentration hypothesis (Sjöberg & Tammaru 1999, Rees & Kupiszewski 1999), but others are more in favour of the idea of deconcentration (Ainsaar 1999).

The aim of this paper is to give the first insight into migration trends between 1989 and 2000 using distance, population, and economic variables as explanatory indicators. Simultaneously with concentration, deconscentration direction, sub-

urbanisation, counter urbanisation alternatives are analysed. As the distinction between suburbanisation and counterurbanisation is often made according to settlement hierarchy rank and distance from centres, where the changes take place, we use both indicators in analyses. We will not present here the age structure of migration or comprehensive explanations for observed patters, as it requires different type of survey data, analysed somewhere else.

Assuming that the general regional development on municipality level has been rather linear in 1989–2000, and that the population change of recent years has a bit greater impact on net migration, data from 1995–2000 were used as background indicators.

The census data used in this study are undoubtedly the most reliable source for migration studies during the last ten years to analyse internal migration in Estonia. Evaluation of population census data are presented by Tamm (2001).

In order to analyse the regional reasons of migration, several background data describing the municipality are used to explain the migration pattern. Since most of the migration researchers view the role of different settlement types as an essential factor in migration studies, the paper analyses the results according to settlement size and hierarchy types.

Data

To get a picture of population shifts during the last eleven years, we compare periods between two population censuses from 1989 and 2000. During the census of 2000 the present place of permanent residence was recorded, so the differences are not reverberations of overall migration, but represent the total net migration during 11 years. The respondents were asked if they were living in the same place as in 1989. If the answer was “no”, the question about previous place of living was asked. Change of the name of the residence place is not considered as a change of residence. Because of the character of population census we can record only the movement of those people who have not emigrated and are alive at the end of the period (year 2000). Population census data include information about people, who have immigrated during this period, but in most cases we will not use this information for analysing internal net migration and, therefore, it provides only background data. All population movement data are recalculated according to municipality borders in 2000.

Independent regional database was created to analyse internal migration and background indicators on municipality level. For that purpose indicators from different authorities describing the economic and social conditions were included in the database in addition to demographical data. In this paper we shall use total municipality prosperity indicators (resources per one inhabitant, new dwelling sq m per inhabitant built during the 1990s), the inhabitants’ prosperity (average income of a person, social assistance per inhabitant, unemployment rate), distance indicators (distance from county centre, distance from capital), and municipality

population indicators (population density, population size). Assuming that the general regional development on municipality level has been rather linear since 1989, and that the population change in the late 1990s had a greater impact on total net migration, data from 1996–2000 were used as background indicators. Many previous studies show that the population development depends on functions and geographical position of settlement (see Tammaru 2001). Capital and other centres often fulfil the role of economic growth centres. According to this presumption we could expect that a distance from those centres can have some influence on the overall spatial processes.

In order to analyse the differences in geographical hierarchy of settlement, we used two types of classifications. First, the more conventional, was based on rural-urban typology and size of urban municipalities, and the second, more sophisticated, on urban-rural type and settlement function indicators. According to the second classification we got nine types of municipalities – (1) capital, (2) county centres and Narva (one of the biggest towns), (3) satellite towns, (4) other towns, (5) rural municipalities in the hinterland of the capital and county centres, mainly determined by the neighbourhood of big towns, (6) rural municipalities in the hinterland of smaller towns or rather urban type municipalities, mainly determined as neighbouring municipalities, (7) rural municipalities with bigger roads, (8) rural municipalities with the sole advantage of railway connection, (9) periphery, or all the rest of rural municipalities without any previous advantages. Every municipality could belong to only one group. In case of several fitting positions the higher hierarchy group was selected.

Results

Population census data revealed that between 1989 and 2000 the total population diminished by 12,5 %. The decrease of population was greatest in towns with large non-Estonian population, and in small towns. Total increase of population took place only in the hinterlands of bigger towns (Figure 1).

Altogether 199 000 persons, or 14.5 %, did not live in the same municipality in 2000 compared with 1989. The comparison of men and women revealed that, despite the fact that there were more women among internal migrants, the crude total internal migration ratio was higher for men – 175 0/00 compared to women's 165 0/00. The greater proportion of women in internal migration was a result of their prevalence in total population (only people who have stayed in Estonia during the whole period are taken into account).

Internal migration has played a rather unsubstantial role in the overall population change (Figure 2). The main determinants of population size have been international migration and natural increase. Internal migration is slightly more important only in rural areas where internal migration supported population growth while the natural growth and international migration diminished it.

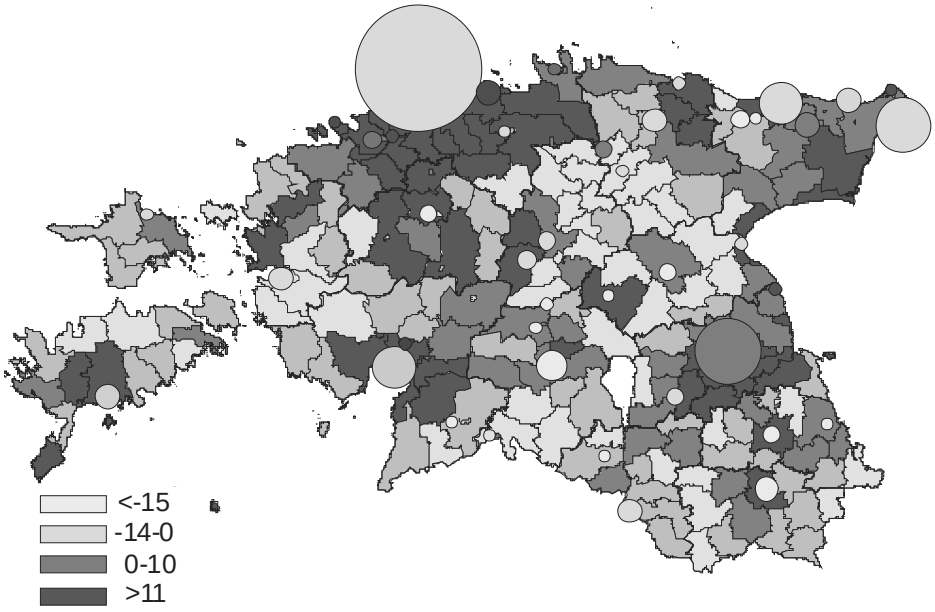

Figure 1. Net internal migration rate 1989–2000.

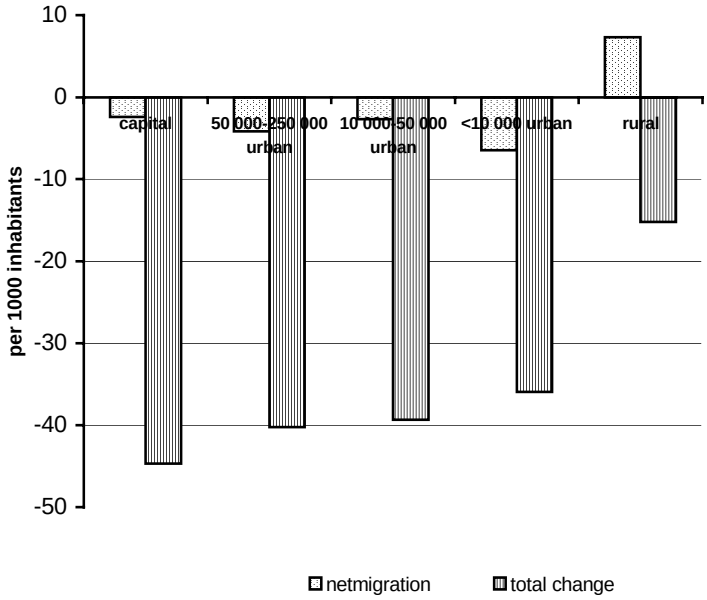

Figure 2. Population change and internal migration change rate 1989–2000 by municipality types.

Figure 3 shows a crude ratio of in- and outmigrants at the end of the period according to the size and type of settlement. Crude net migration draws a quite even picture of the loss of population due to internal migration in all urban settle-

ment types, and the growth of population due to migration in rural municipalities, typical of counterurbanisation. The loss was most significant in small urban settlements.

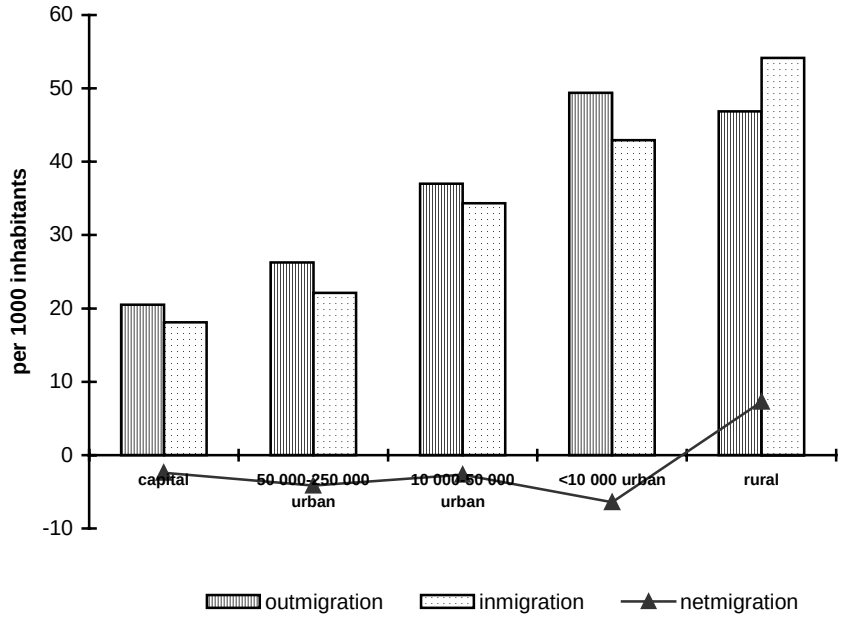

Figure 3. Settlement type and internal migration rate 1989–2000.

Overall migration intensity has been higher in rural areas, but the correlation between the size of settlement types and migration intensity is at least partly the result of statistically smaller size of the rural municipalities. What is interesting is the relatively large outmigration from the towns with less than 10,000 inhabitants. A more scattered picture is revealed after the classification of settlements according to their functions and geographical location.

Figure 4 shows that the influence of internal migration has not been uniform in all urban and rural areas, and the differences are rather significant. In the overall group of towns that generally lost population due to internal migration, satellite towns are an exception. Despite rural settlement in the hinterland of towns, these towns have grown most remarkably due to internal migration starting from 1989, and the rural periphery has shrunk. Internal immigration has been most remarkable during 1989–2000 in the hinterland of county centres and in satellite towns. Outmigration shows slightly less differences.

Comparisons of absolute (Figure 5) and rate indicators (Figure 4) show that Tallinn, the county centres, and the hinterland of towns prevail on the migration picture with reference to absolute numbers. These areas determine the migration

picture in absolute numbers. On the other hand, the county centres, their hinterland, and Tallinn also had more remarkable absolute net migration. On relative terms (per 1000 inhabitants), more remarkable changes have occurred in the rural hinterland of bigger towns and in satellite towns (Figure 4).

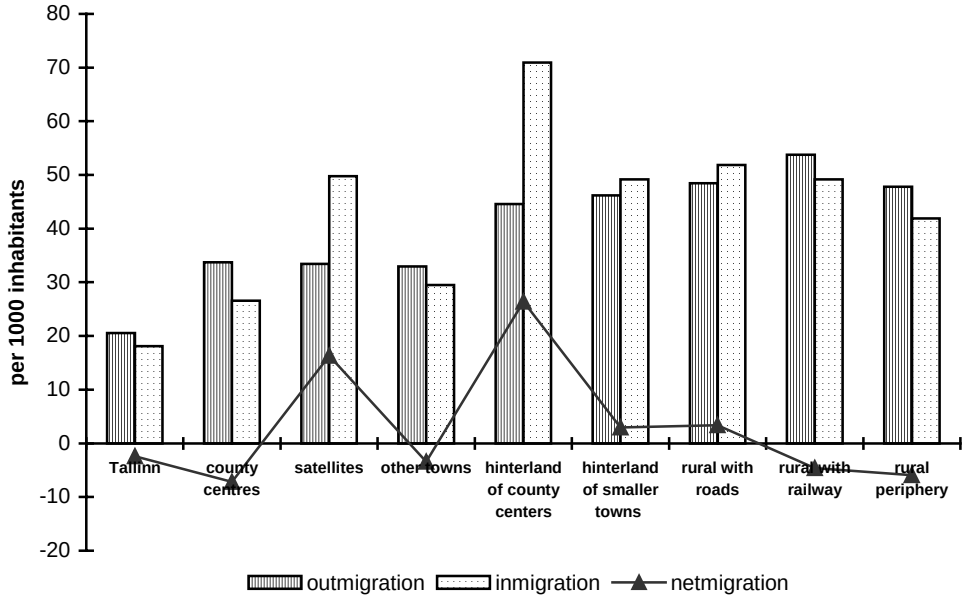

Figure 4. Internal migration by settlement types.

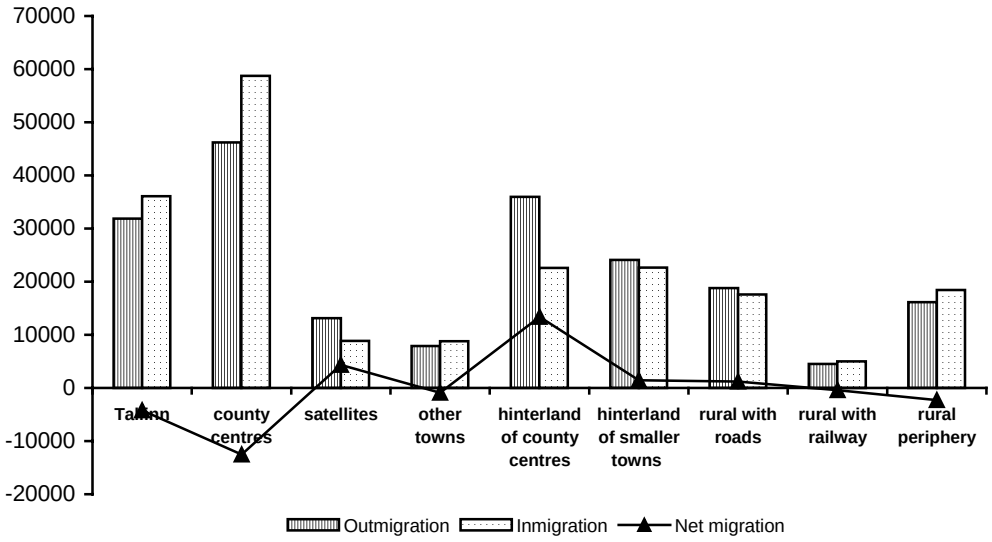

Figure 5. Internal migration in absolute numbers.

Figure 6 shows the place of residence, in 1989, of people who have moved between two population censuses. We are particularly interested in the sources of growth of four settlement types which grew because of internal migration between 1989-2000 – satellite towns, the hinterland of big and small towns, and the rural municipalities with roads. Although these data do not allow drawing final conclusions about the sources of net migration growth, it seems that the remarkable growth of the hinterland of the county centres and satellite towns has occurred because of outmigration from towns. While the new human resources in the closer hinterland of bigger towns have come mainly from the urban outmigrants of the same county, the growth sources of more remote rural municipalities have been more distant towns.

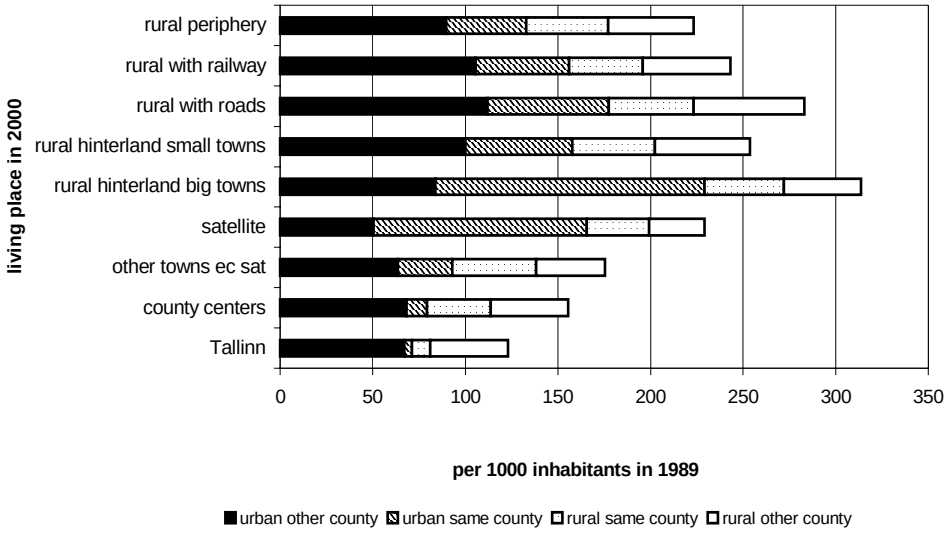

Figure 6. Origins of people who have moved in 1989–2000 (probabilities per 1000 inhabitants).

In order to test the homogeneity of the settlement types we classified all settlements according to their net internal migration (positive or negative) and the total change (positive or negative) into four groups (Tables 1 and 2), and presented the results by settlement types. The total population grew only in 14 municipalities from 247 during the observed period. The net internal migration growth was observed in 111 municipalities. More than half of the municipalities belonged to the group where both internal migration and total population growth were negative. Municipalities with total positive growth and positive internal migration were very rare – 3% (Table 1). Distribution according to the size of settlements offers a rather homogeneous picture of towns as declining municipalities from which only less than 1/3 experienced positive net internal migration (Table 1). Also rural municipalities lost their population, but half of them had positive net internal migration.

Table 1. Settlements according population size in 1989 and internal migration combined with total population growth between 1989–2000 (number and % of all settlements belonging to this group)

Municipalities by internal migration and total population growth	>250 000 urban	50 000–250 000 urban	10 000–50 000 urban	<10 000 urban	Rural	Total
+ internalm,+ total growth	–	–	–	–	7	7
					3,4%	2,8%
+ internalm, – total growth	–	1	4	6	93	104
		25,0%	30,8%	25,0%	45,4%	42,1%
– internalm,+ total growth	–	–	–	2	5	7
				8,3%	2,4%	2,8%
– internalm ,– total growth	1	3	9	16	100	129
	100,0%	75,0%	69,2%	66,7%	48,8%	52,2%
Total N	1	4	13	24	202	247
%	100,0	100,0	100,0	100,0	100,0	100,0

Table 2. Settlement types according functions, geographical position and internal migration combined with total population growth between 1989–2000 (number and % of all settlements belonging to this group)

Municipalities by internal migration and total population growth	Tallinn	County centres	Satellite towns	Other towns	Rural close to county centres	Rural close to smaller towns	Rural with large roads	Rural with railway	Rural periphery	Total
+ internalm	–	–	–	–	6	–	1	–	–	7
+ total gr					17,1%		2,4%			2,8%
+ internalm	–	2	5	5	26	25	17	5	19	104
– total gr		12,5%	50,0%	31,3%	74,3%	53,2%	41,5%	41,7%	27,5%	42,1%
– internalm	–	2	–	–	–	2	1	–	2	7
+ total gr		12,5%				4,3%	2,4%		2,9%	2,8%
– internalm	1	12	5	11	3	20	22	7	48	129
– total gr	100,0%	75,0%	50,0%	68,8%	8,6%	42,6%	53,7%	58,3%	69,6%	52,2%
Total N	1	16	10	16	35	47	41	12	69	247
%	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Once again, larger diversities were revealed after analysing groups of municipalities by functional ranks. Table 2 shows internal differences within functional municipality groups. Although almost all towns belonged to the group with declining total population and the majority also to the negative internal migration group, the group of satellite towns was an exception. Half of satellite towns had grown because of internal migration. Almost all rural municipalities that grew and had positive internal migration were situated in the hinterland of bigger towns (Table 2). Positive internal migration was characteristic of the majority of the "close to town" type settlements. 91% of the municipalities in the hinterland of bigger towns had positive internal migration. The opposite margin among rural

settlements was the periphery. Internal negative migration was reported in 71% of municipalities in rural periphery.

Altogether, the rural hinterland of the county centres was the most homogeneous settlement type, according to the criteria of total population growth and internal migration.

We can conclude that the population census internal migration data showed a decline of population because of internal migration on the top of settlement hierarchy, a prosperous situation in the middle, and a declining population situation towards the direction of periphery, which indicates more to suburbanisation, rather than counterurbanisation.

Figure 7 presents the net internal migration growth according to the distance from capital and county centres. A great loss of population due to migration was visible in all centres. The population has grown both in the closer hinterland of the capital and of the county centres. This is an obvious sign of suburbanisation. There has been some growth also in more remote municipalities, but this growth is more occasional and smaller in numbers.

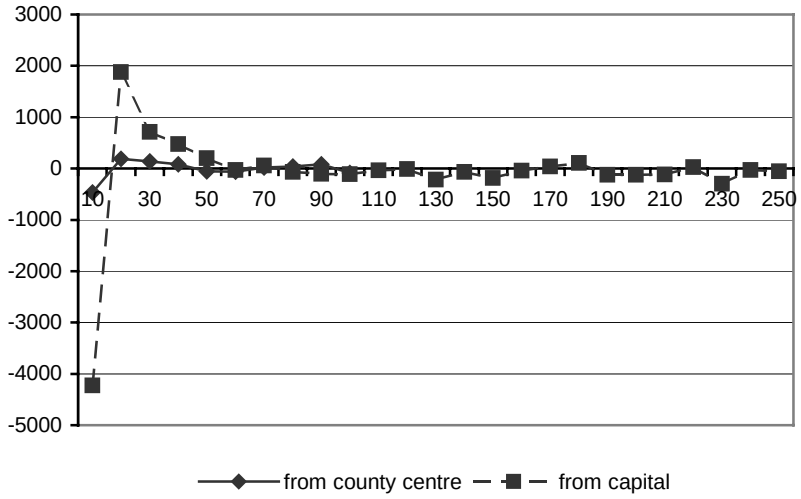

Figure 7. Net internal migration and distance from capital and county centre 1989–2000.

In order to analyse the determinants of internal migration, correlation analyses of crude net migration rate[1], total net migration, and crude total change were carried out with the municipality background indicators (new dwelling units per inhabitant by sq m built in 1991–2000, municipality budget per inhabitant, unemployment ratio in 1995–1996, population size in 2000, distance from the county centre, distance

[1] Crude rate is used here because of the particularity of dataset – population census internal migration sample. We use net migration, not just migration indicator. At the same time our aim is to standardise the net migration results according to settlement population size, in order to evaluate the real impact of net migration to settlement.

from the capital, inhabitants per 1 sq km) and the population indicators (average income of an employed person in 1996, poverty assistance per person in 1997). Correlation analyses were used mainly as the first step of analyses, because of probable danger of multicollinearity of data. As it was conceivable that in different settlement groups different forces can shape migration situation, all correlation analyses were also applied to all settlement types separately (Table 3).

Net migration rate can be interpreted as a general attractiveness of place. Correlation analyses show that the crude internal net migration had strong positive correlations with population change rate, new housing built during the period, average incomes, strong negative correlations with unemployment ratio, poverty assistance per inhabitant, and municipality resources by inhabitant. Distance from Tallinn and municipality population size had weaker but also significant correlations.

During 1989–2000, municipalities with less unemployment and poverty, less municipality resources per inhabitant, with more new residential space built per capita, bigger individual incomes and more distant from capital, rather than the opposite, experienced a bigger growth of the population due to internal migration. Distance from the county centre and population density did not have any statistically significant correlations with internal migration rate.

Correlations of net internal migration indicators were similar to the migration rate correlations, but with some minor exceptions. Predictors of overall population growth were quite similar, except for the fact that the distance from the county centre had a strong negative correlation, and the distance from Tallinn did not have a correlation with total population growth. A disappearance of correlation with incomes was the most significant change in case of net migration data.

Quite unexpected was the missing statistical bind with distance from county centres, which is visible on the map. The reason is the fluctuating essence of this distance. At the time when the closer hinterland of county centres enjoyed a clear growth rate, 50 km from centres experienced decline and rather distant areas once again a rise (Figure 7).

In different settlement categories, different factors seemed to play important roles. New housing stock and unemployment were related with internal migration rate most frequently while the other indicators had occasional importance. Rural hinterland of bigger towns had best described internal migration growth indicators that were quite similar to the overall predictors of the country. However, the small number of statistically significant correlations within settlement types might be a sign of either a high unity within group (missing differences) or a diversity of relationships.

In order to examine the internal migration determinants on macro level we applied binary logistic regression model with all background indicators as independent variables and positive/negative migration as dependent. After the exclusion of insignificant predictors, the final statistically significant models were achieved (Table 4). Models show that five indicators had influenced migration: new dwelling, incomes, population density, distance from capital and unemployment in some groups of settlement.

Table 3. Correlations of crude netmigration rate, net internal migration, crude population change with municipality background data (Spearman correlation, correlation coefficients and level of significance)

	Crude net internal migration rate									Net internal migration N = 247	Crude population change rate N = 247
	County centre N= 16	Satellite town N= 10	Other town N = 116	Rural close to county centre N = 34	Rural close to smaller town N = 47	Rural with large roads N = 41	Rural with railway N = 12	Rural periphery N = 69	Total 247		
Crude population change rate 1989–2000	–.55* .03	.84** .00	–.15 .59	.86** .00	.63** .00	.67** .00	.81** .00	.61** .00	.64** .00	.59** .00	11
New dwelling 1991–2000	–.09 .75	.95** .00	–.11 .69	.71** .00	.44** .00	.15 .35	.20 .53	.35** .00	.42** .00	.42** .00	.45** .00
Municipality resources per inh 1996–2000	–.38 .15	–.20 .58	–.42 .10	–.18 .32	–.01 .95	–.09 .58	–.62* .03	–.01 .94	–.23** .00	–.23** .00	–.19** .00
Average income of a person 1996	–.29 .30	.06 .88	.11 .69	.66** .00	.12 .41	.45** .00	.30 .34	.12 .34	.23** .00	.12 .06	.19** .00
Poverty assistance per person 1997	–.55* .03	.21 .56	.19 .47	–.29 .10	–.11 .47	–.13 .43	.07 .83	–.13 .28	–.18**	–.17** .01	–.17** .01
Unemployment rate 1995–96	–.43 .09	–.04 .91	–.10 .70	–.53** .00	.12 .47	–.36* .02	.12 .75	–.26* .03	–.26** .00	–.21** .00	–.28** .00
Distance from county centre	.02 .94	–.03 .93	.19 .71	.26 .14	–.19 .18	–.15 .36	.02 .95	.00 .99	–.13 .06	–.07 .26	–.21** .00
Distance from Tallinn	–.24 .38	–.47 .17	–.38 .15	–.53** .00	–.15 .32	–.09 .56	–.06 .85	.21 .08	–.13* .04	–.16* .01	–.10 .13
Inhabitants per 1 sq km 1989	–.30 .28	–.08 .83	–.24 .36	.46** .01	–.08 .61	.13 .41	.14 .68	.13 .31	.00 .99	–.10 .12	.02 .82
Population size 2000	.58* .02	.24 .51	.14 .60	.42* .01	–.05 .74	.13 .42	.43 .17	–.01 .96	.15* .02	.03 .65	.14* .03

** Significant on level 0.95

Table 4. Models for positive/negative netmigration by settlement types (binary logistic regression, best models for positive/negative net migration, Exp (B) negative net migration = 0)

Type of municipalities / Arguments	All municipalities	All urban	All rural	Rural close to smaller town	Rural with large roads	Rural periphery
New dwelling 1991–2000	1.008	–	1.008	1.014	–	1.009
Average incomes 1996	1.001	–	1.002	–	1.005	–
Unemployment rate 1995–96	–	–	–	–	–	0.376
Distance from Tallinn	–	0,985	–	–	–	1.026
Inhabitants per 1 sq km 1989	0.998	–	0.997	–	–	–
Nagelkerke R	0.341	0.193	0.349	0.437	0,370	0.401

In the country as a whole, the more new living areas were built, with less densely populated municipality and higher incomes, the higher was the probability for expected positive migration. The all-country model was more suitable to predict negative net migration in municipalities than positive one.

Different urban groups separately did not give any clear results for models. Unemployment was the only important variable for all urban internal migration growth, but the model was quite weak. For all rural areas new dwelling, income and population density formed a significant model. Still, within different rural settlement types, the predictors of growth vary. The most interesting was the model for peripheral areas where the distance from the capital had a positive impact on migration, and unemployment had a very strong negative influence.

Age structure of migration reveals that the capital (Figure 8) has grown at the expense of 15–30-year olds. Young families and older people had rather left

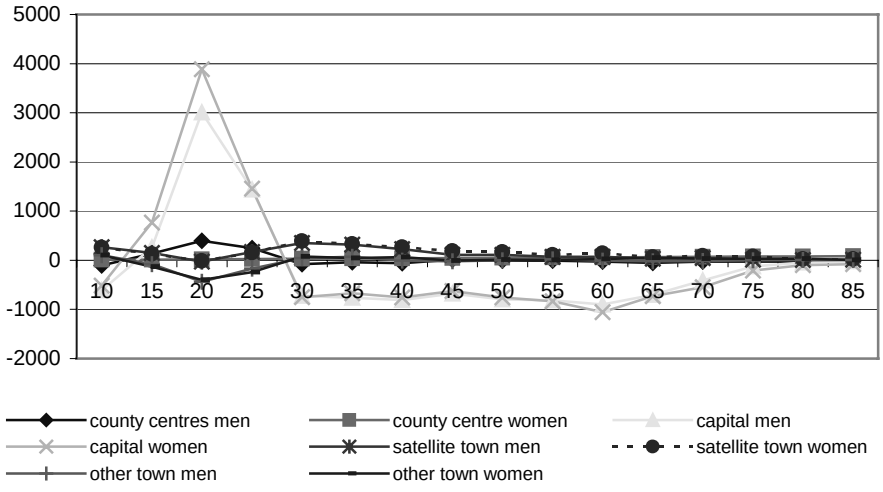

Figure 8. Net internal migration by age in different types of towns 1989–2000.

Tallinn than arrived during last 10 years. Satellite towns have won the population in all age groups, but especially among young families. Quite similar to the migration age structure of satellite towns is the growth of rural hinterland of bigger towns (Figure 9). County centres and other towns, on the other hand, had been the source of outmigration in all age groups, but especially a place of outmigration of young people. Only the group of 10–15-year-old women (female students) has increased because of migration during the last tens years in county centres. Interesting is the migration structure of more remote rural areas. Despite the loss of up to 30-year-old people, a considerable number of older immigrants aged between 45 and 65 have arrived in the countryside.

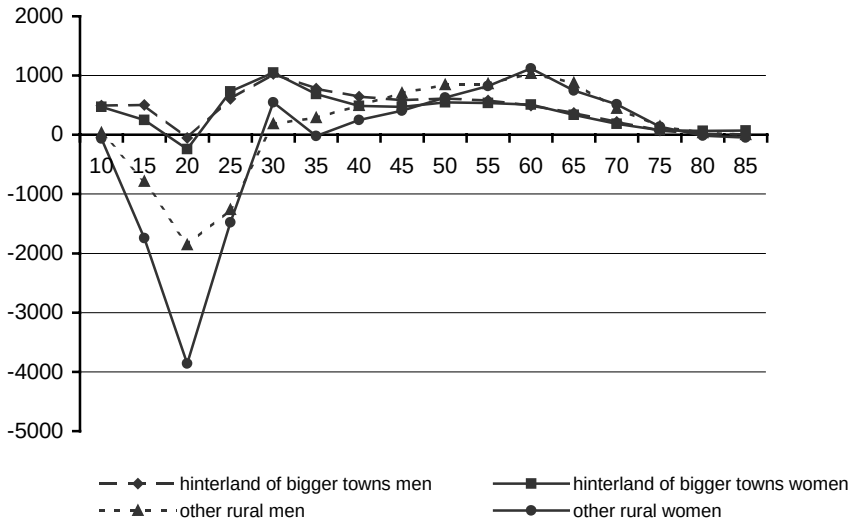

Figure 9. Net internal migration by age in rural areas 1989–2000.

Conclusions

An insight into the internal migration between population censuses from 1989 and 2000 revealed that internal migration has been rather unimportant as a factor of population change. It is slightly more important only in rural areas.

Empirical results from the population census proved the outflow of people from towns into rural areas. This confirms the results of several previous survey based studies (Ainsaar 1999, 2002) and official statistics that predicted a slightly positive net migration in favour of rural areas. Population census data showed a clear depopulation of bigger towns and an inflow of people into the nearest rural hinterland of towns.

The classification of settlements according to their functions and geographical location provided a more precise picture about the differences of internal migration between towns and rural areas. Different classification showed a slightly

different picture. Data of absolute numbers of net migration showed that Tallinn and the county centres experienced the greatest change. On relative terms, the greatest changes took place in the hinterland of county centres and in satellite towns.

Internal migration supported the population growth of closer rural hinterland of towns with better economic indicators, and of rural municipalities with roads. Satellite towns were the only type of towns that grew because of internal migration. The periphery of rural areas suffered from population loss. Models of migration revealed also the dependency of migration from settlement density.

A large number of people settled from county centres into the closer hinterland of these towns. This process can be labelled suburbanisation. The main age group supporting suburbanisation were 25 and older men and women in closer hinterland of bigger towns, and 30 and older in more distant areas. From the capital, which was the second urban outflow source, most people moved into satellite towns and into the hinterland of bigger towns, but some also into rural areas. Peripheral rural areas lost their population to bigger towns. This process of urban depopulation and rural growth can be labelled mainly as suburbanisation in Estonia reaching the distance of up to 60–70 km from the centres.

New housing was the most significant determinant of internal migration. Important income and unemployment data revealed that deconscentration? had an economically selective character.

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