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Demographic Changes in the Time of Industrialization (1750–1918)

The Example of the Habsburg Monarchy

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(Personal photo archive of Rudolf Gräf)

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PÉTER ŐRI
LEVENTE PAKOT

1. Introduction: purposes, sources and methods of the analysis

FORMER DEMOGRAPHIC analyses could demonstrate that Hungary was a special example of the demographic transition in the late 19th and early 20th centuries. Great variability and strong regional differences could be pointed out in the level of fertility from the end of the 18th century. In some villages within some areas—first of all in Southern and Western Hungary—birth control began as early as the late 18th, early 19th century, while in other areas fertility decrease did not start until the second half of the 19th century (Andorka, 1998: 435–436). In the 1820's birth control was probably no more than an isolated phenomenon, on the national level fertility was high, although it showed strong variations by region, type of settlement and religion (Hablicsek, 1991: 77). Fertility decline, while strong differences persisted, became noticeable from the 1850's onwards on the national level too (Dányi, 1991b: 127). Thus we can suppose that fertility slowly decreased and fluctuated in the 19th century and birth control, which was a sporadic phenomenon at the beginning of the period, continuously spread throughout the country. Hungarian fertility was one of the lowest in Europe in 1880, which date is traditionally regarded as the starting point of the demographic transition of the country. This fertility decrease was accompanied by a high level of nuptiality (early marriage and a low proportion of never married people). The decline of fer-

* The research has been supported by OTKA (National Scientific Research Foundation) project no. K 73237.

tility observable before 1880 was not smaller than that of the period 1880–1910 (Tekse, 1969: 44; Dányi, 1991b: 123). Therefore 1880 as a starting point of demographic transition can be regarded rather as a date of technical characteristics fixed by the available sources than a real turning point of the demographic development. Due to the relatively low fertility in 1880, the decline of fertility between 1880 and 1910 was smaller than in other European countries. But considering the period 1880–1960, we witness that fertility decreased by 70%, which was the strongest decline in Europe (Dányi, 1991a: 12–16). At the same time mortality was relatively high in the 19th century and it decreased very slowly. Periodically returning mortality crises hindered the population development until the 1870s. Mortality improved basically after 1873, the last great country-wide cholera epidemic. Mortality decrease did not precede and lead to fertility decrease, which was rooted in early 19th century and in rural conditions, and it was not connected to the decrease of infant mortality.* Because of these facts, as it is generally supposed, Hungary's modern demographic development at the turn of the century does not fit into the theory of classical demographic transition.

In this paper we tried to separate the local types and patterns of demographic transition in Hungary before World War I. In the analysis we used the data of two counties (Pest-Pilis-Solt-Kiskun and Udvarhely) of different demographic characteristics. After having described the main contours of the demographic development in the two counties, we tried to point out the demographic differences between and within the two administrative units, and to explain the local variability by the help of the denominational and ethnic character or the spread of modernisation (level of literacy and changing occupational structure).

Trying to separate the different types of demographic behaviour we used two kinds of the sources. First of all the work of the separation was carried out on the basis of the settlement level data of population movement relating to the period 1901–1910 (data published by the Hungarian Statistical Office in 1913**). The interpretation of the separated types of demographic behaviour was based on the data of population censuses carried out between 1869 and 1910 (mainly on those of censuses 1900 and 1910).

We separated the different kinds of demographic behaviour by the help of hierarchical cluster-analysis of the settlement level variables of the two counties. The different groups of the settlements resulted by the cluster-analysis were regarded as the basic types of demographic development in the two examined territorial units. The analysis was carried out with special respect to the variances in birth and death rates representing the state of demographic change at the beginning of the 20th century. The ethnic, denominational, educational (level of literacy) and occupational structure of the 'clusters' could help us to interpret the demographic diversity explored by the former statistical analysis.

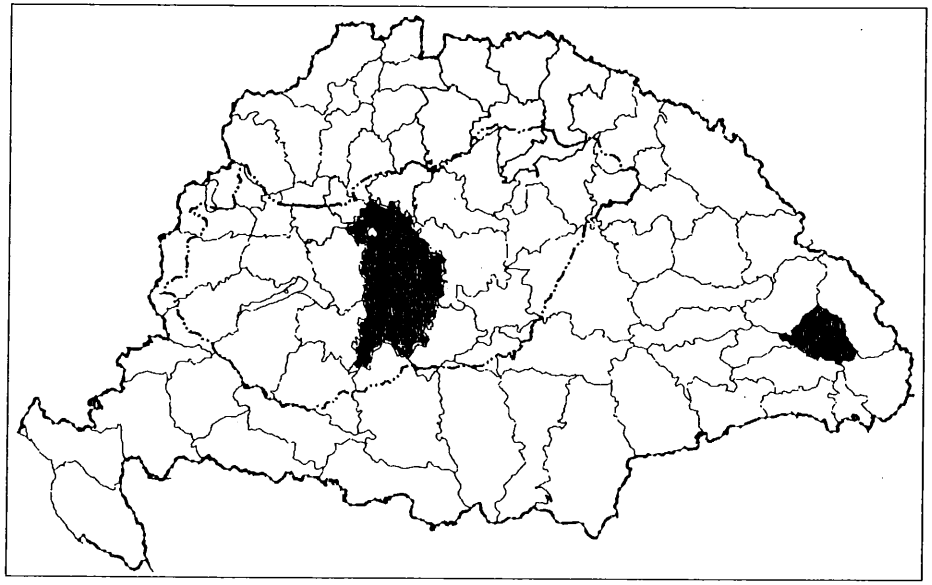
* About this see: Őri, 2007: 22.

** Population movement 1901–1910.

2. Pest-Pilis-Solt-Kiskun and Udvarhely counties around 1900

One of the two examined administrative units Pest-Pilis-Solt-Kiskun was situated around Budapest, the capital of the country, on the present territory of Hungary. Because of its central position and relatively well-developed status, it can be an example of classical, modernisation-led type of demographic transition, while the other county, Udvarhely in the eastern part of Transylvania,* can give an opportunity to examine the 19th century demographic changes in rural circumstances, far from the centres of industrialisation and modernisation. At the same time, the two territorial units themselves were very varied in terms of ethnicity, religion, geographic conditions and farming. This heterogeneity makes the analysis of the local and social variations of demographic transition possible.

Map 1. Pest-Pilis-Solt-Kiskun and Udvarhely Counties around 1900



Pest-Pilis-Solt-Kiskun was one of the largest counties of Hungary both in terms of area and population before World War I. Its territory was 10,711 km² before 1876 and 12,010 km² after that. The number of its inhabitants was above one million (1,094,687) in 1910. Udvarhely was much smaller both in terms of area and population size (it had 123,712 inhabitants in 1910 and its territory was 2,937 km² in 1900).

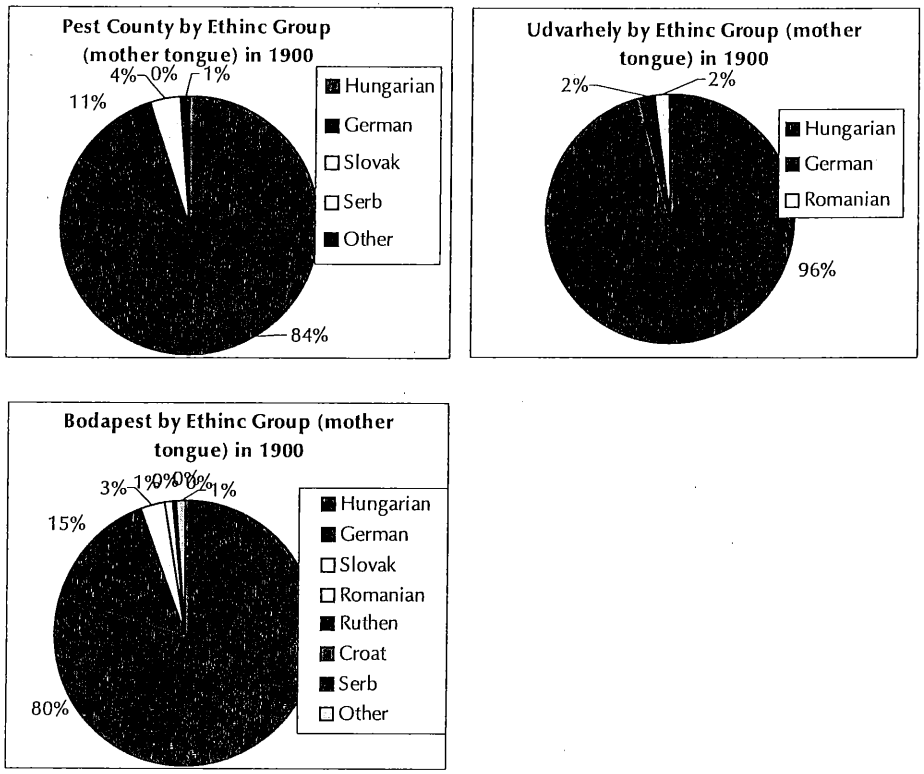
* Since 1918 Udvarhely has belonged to Romania.

In geographical terms Pest-Pilis-Solt-Kiskun was highly varied, divided into two parts by the North-South flow of the Danube, while the Northern, hilly zone of the county is also markedly different from the southern one, which is a part of the Great Plain of Hungary. From an agricultural point of view the presence of the great river and the difference in topography and vegetation between North and South are highly important, as is the closeness of Buda and Pest (Budapest after 1873), centres of administration and market. The county united scattered flatlands of the Great Plain of Hungary, the frequently flooded, marshy meadows and floodplain forests of the Danube, as well as some medium high mountains covered in forest. Farming ranged from extensive stock breeding through traditional crop cultivation to forestry, fishing, vine-growing and vine-making. Especially on the Great Plain the characteristic type of settlement was the great, privileged market town with several thousand inhabitants, which served as a market place for the neighbouring agricultural area, and was a centre of the agricultural development in the second half of the 19th century. The low density of settlement, the big size of the market towns of totally rural character was the inheritance of the Turkish wars, and sometimes described as backwardness or peripheral position. At the same time, the market towns of the area can be the examples of special kind of modernisation in the agrarian sphere in the second half of the 19th century. On the other hand, Budapest and its rapidly growing suburban zone was the centre of industrial development in the region. In the northern hilly part of the county or along the Danube in the south one could find smaller villages in the traditional sense of the word (with some hundred inhabitants).

The historical Udvarhely County lay in the eastern part of the Transylvanian basin, west of the Hargita Mountains. The surface of the area declines from the mountains of 1200–1800 metres altitude situated in the north-east towards south-west through plateaus (at 900–1000 metres), hills (at 600–1,000 metres) and valleys and basins (at 500–600 metres). The territory is broken up by several creek valleys descending from the mountains partly southwards, partly westwards. There were huge forests on the territory of the county, thus forestry was the most important possibility for subsistence before the 20th century. Of the 135 settlements of the county Székely-udvarhely (Odorheiu-Secuiesc) was the only one with urban status (market town and centre of the local administration). Regarding the villages by population size, small ones were dominant (75% below 1,000 inhabitants) continuously in the second half of the 19th century. There were some larger villages particularly in the northern, north-eastern part of the county, or in the valleys of the creeks Vargyas and Nagy-Homoród.

Udvarhely county was much more homogenous in ethnic sense than Budapest or the neighbouring county. There most of the population had Hungarian as mother tongue, the proportion of the inhabitants with Romanian or German mother tongue was very low around 1900. On the other hand, in the centre of the country, around Budapest and on the Great Plain the depopulation during the Turkish Wars in the

Figure 1. The population of Pest-Pilis-Solt-Kiskun, Budapest and Udvarhely by mother tongue (1900)

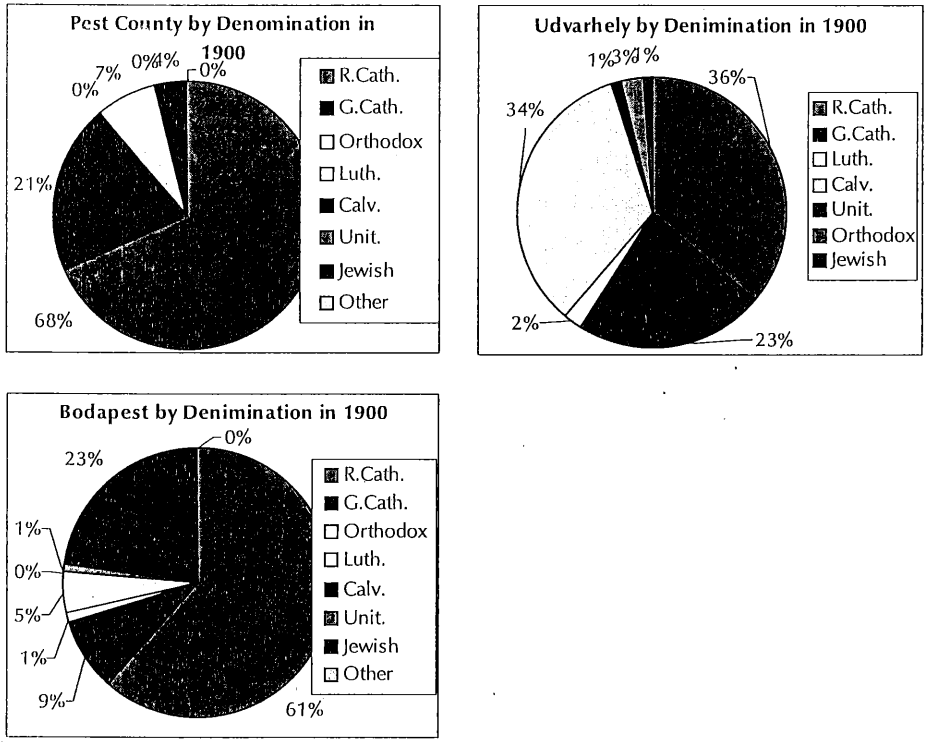


Source: Census 1900c.

16–17th centuries, the repopulation of those areas in the 18th century and the continuous immigration in the 19th century (the main region of destination was the capital and its suburban zone) significantly altered the ethnic (and denominational) character of the countryside. Beside Hungarians, a considerable German and Slovak community lived both in Budapest and in the county, and in some places important Southern Slave minority groups could be found.

Regarding the denominational structure of Udvarhely County, it is clear that the Hungarian majority was not homogenous in this respect. They were divided in three large denominational groups (Roman Catholics, Calvinists and Unitarians), while Romanians belonged mainly to the Orthodox, Germans to the Lutheran church. In Pest-Pilis-Solt-Kiskun and Budapest there was a strong Roman Catholic majority, in the county a fifth part of the population was Calvinist while in the

Figure II. The population of Pest-Pilis-Solt-Kiskun, Budapest and Udvarhely by denomination (1900)



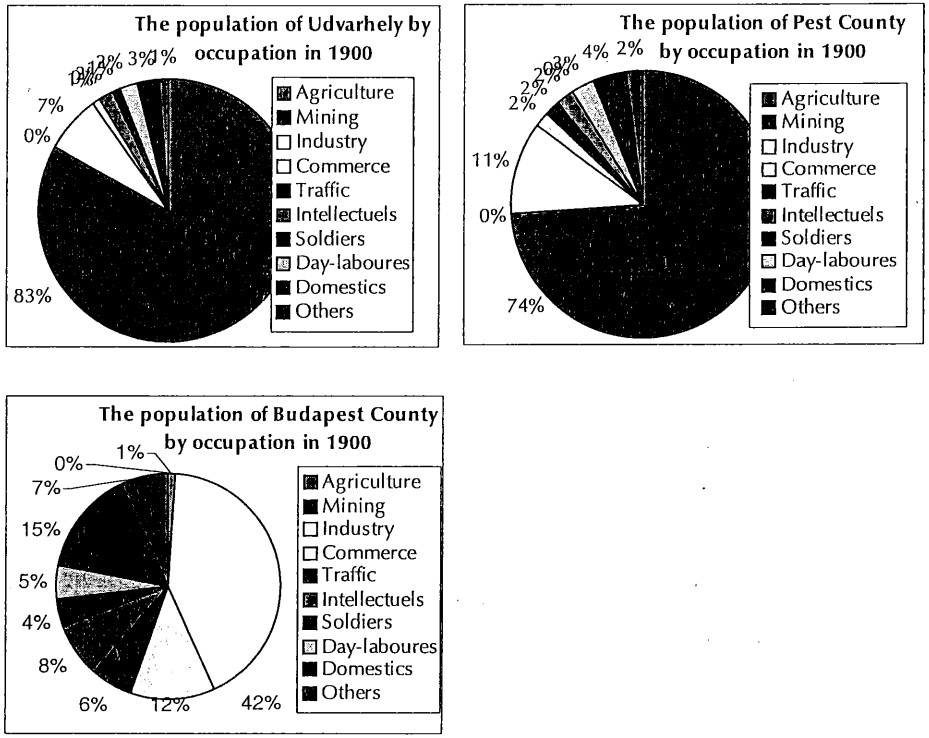
Source: Census 1900c.

capital a fourth part belonged to the Jewish denomination. Beside that, in the county there were significant Lutheran and Jewish communities, and in some places (especially in Szentendre) the proportion of the Orthodox Serbs was also considerable. Roman Catholics were Hungarians, Germans, Slovaks, or in some villages Croats, Calvinists were entirely Hungarians, Lutherans were mainly Slovaks or sometimes Germans, while Jews were partly of German, partly of Hungarian mother tongue.

The weight of agriculture was dominant both in the case of Pest-Pilis-Solt-Kiskun and Udvarhely, but the role of industry and that of other occupations was much more important in the neighbourhood of the capital at the beginning of the 20th century. At the same time, the occupational structure of Budapest was entirely different, the share of agriculture was insignificant which shows the central position of the capital in industry, commerce and social change as well.

Some important demographic data (population size, birth and death rates) also prove the entirely different character of the two regions (See Figure IV). Being the

Figure III. The occupational structure of the two counties and Budapest (the distribution of the bread-winners by main occupational groups) (1900)



Source: Census 1900b.

centre of in-migration, Budapest and its neighbourhood show a very considerable population growth in the second half of the 19th and at the beginning of the 20th century. In the consequence of the very strongly declining death rates and high and modestly decreasing birth rates the role of natural population growth was also significant, particularly from the second half of the 1870s onwards. On the other hand, Udvarhely shows a relative demographic stability in the whole period. Birth and death rates were low and stable with small oscillation, therefore natural and total population growth remained modest, the role of out-migration was considerable and can be proved in the case of almost every settlement.

In Pest-Pilis-Solt-Kiskun there was a significant change in traditional mortality pattern after 1873, the last great cholera epidemics. This change—together with a strong in-migration—resulted in a very high growth rate, and was connected with the transformation of the occupational structure of the population. Therefore, the county seems to be an example for the classical demographic transition model where

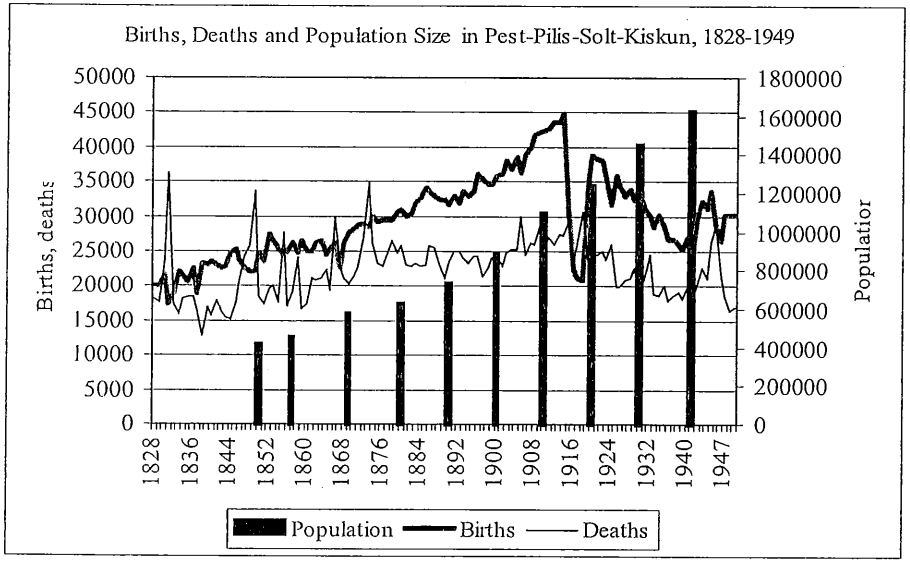
Table 1. Birth and death rates and population size in Pest-Pilis-Solt-Kiskun and Udvarhely (1869–1910)

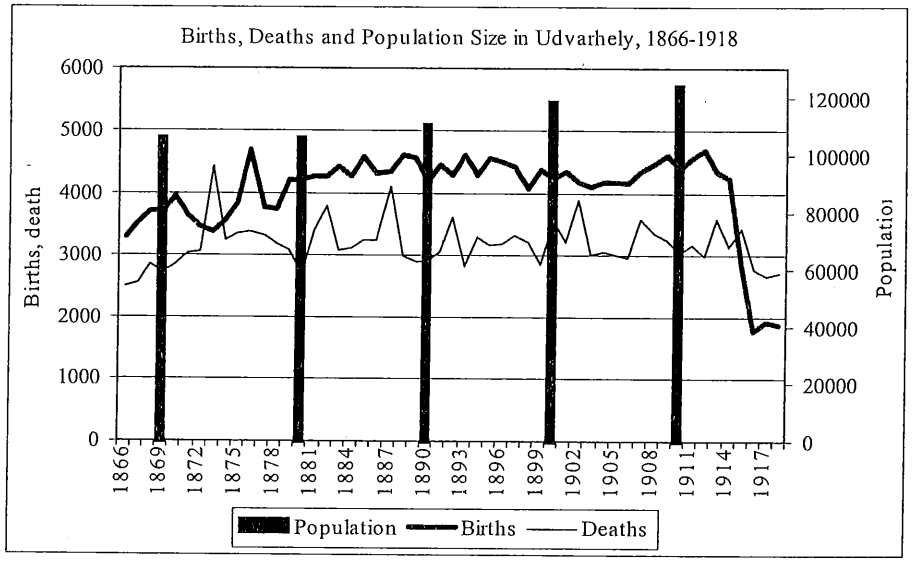
	1869	1880	1890	1900	1910
	Population size				
Pest-Pilis-Solt-Kiskun	576,624	627,981	732,786	880,793	1,094,687
	100	109	127	153	190
Udvarhely	105,467	105,520	110,132	117,850	123,712
	100	101	105	112	118
	Crude birth rate (‰)				
Pest-Pilis-Solt-Kiskun	46.7	48.6	44.5	41.1	38.6
Udvarhely	35.2	39.7	37.9	35.9	36.3
	Crude death rate (‰)				
Pest-Pilis-Solt-Kiskun	42.2	38.1	32.7	27.1	24.2
Udvarhely	25.7	25.3	26.3	30.1	25.0

Source: Census 1910; Klinger, 1969; Klinger, 1972–1984., Yearbook 1874–1891., Yearbook 1894–1914.

mortality decline is the starting point of the change, and the whole process appears to be in causal relation with modernisation (social and mental changes, industrialisation, urbanisation etc.). On the contrary, Udvarhely appears to be a stagnating region without significant demographic changes in this period. The Princeton indices of fertility and nuptiality presented in Table 2 complete this observation with some important details.

Figure IV. Number of births and deaths and population size, Pest-Pilis-Solt-Kiskun and Udvarhely





Source: Yearbook 1874–1891, Yearbook 1894–1914, Population movement 1901–1910a, Population movement 1911–1920, Klinger, 1969; Klinger, 1972–1984.

It is clear that Budapest represents an entirely different model of demographic change. The level of general fertility was relatively low in the second half of the 19th century, and we can suppose that it was the case in former periods too. Besides the low marital fertility the very low level of nuptiality (the proportion of married women in fertile age groups) was the main cause of this phenomenon. Low nuptiality was the consequence of strong in-migration, and its index kept decreasing after 1890—together with marital fertility. In the other three cases (Hungary and the two examined counties) we can observe relatively high and stable nuptiality indices ("eastern marriage pattern"—using the terminology of John Hajnal).* Marital fertility was the lowest in Udvarhely, its indices are very close to those of Budapest and are not much lower than those of Hungary in 1880 and 1890. After 1890 the difference became more pronounced, Hungary's marital fertility began to diminish, while its value rather increased in the case of Udvarhely. In the case of Pest-Pilis-Solt-Kiskun the fertility indices are very high at the starting point in 1880, compared to each other example. But we can observe a continuous decline both in general and marital fertility, the decrease of the latter was particularly strong in the 1880's and in the first decade of the 20th century.

Summarising these observations we would say that Pest-Pilis-Solt-Kiskun showed a very rapid population change in the second half of the 19th century. The stating

* About this see: Hajnal, 1965; 1982. Tamás Faragó examined the relevance of Hajnal's thesis by the help of Hungarian data (Faragó, 2003).

Table 2. Indices of fertility and nuptiality, 1869–1910

Year	Hungary			Budapest		
	I_f	I_g	I_m	I_f	I_g	I_m
1869				0.369		
1880	0.440	0.582	0.692	0.328	0.521	0.460
1890	0.443	0.581	0.713	0.331	0.522	0.464
1900	0.419	0.573	0.670	0.260	0.428	0.444
1910	0.384	0.541	0.665	0.202	0.346	0.426
Year	Pest-Pilis-Solt-Kiskun County			Udvarhely County		
	I_f	I_g	I_m	I_f	I_g	I_m
1869	0.591			0.410		
1880	0.561	0.830	0.625	0.443	0.530	0.749
1890	0.549	0.676	0.750	0.481	0.548	0.781
1900	0.501	0.667	0.695	0.463	0.581	0.703
1910	0.461	0.606	0.705	0.442	0.561	0.694

Source: Andorka, 1998: 437; Dányi, 1991c: 190; Kamarás, 1991: 174; Census 1910; Klinger, 1969; Klinger, 1972–1984; Population movement, 1901–1910; Census 1900d.—Census 1880, Census 1890, Census 1900d, Census 1910a, own calculations.

point was a traditional demographic regime, which can be characterised by a high level of fertility and mortality (and in this case by that of nuptiality). The decline of fertility and mortality (here that of death rate) started from the 1870's onward, in this process mortality decline must have played the leading role, but fertility decrease also followed it very closely. At this point we have to modify our former statement: we witness an alternative local pattern of demographic transition even in this case where—independently of the measure of decrease and the high level of natural population growth—mortality and fertility decline went hand in hand around the turn of the century. It was clearly not the case in Udvarhely where—under much more unfavourable circumstances—a special demographic regime appears to function in the 19th century, which we could call a 'low pressure system.' Geographic and economic conditions did not make a significant population growth possible, so fertility was relatively low and stable, out-migration was considerable, and maybe not independently of these elements mortality was also low. Here marital fertility in 1880 was lower than on the Great Plain in 1910, and death rate in 1869 was the same as in Pest County before World War I. Relatively low fertility (and mortality) were the elements of the traditional demographic regime or developed in the course of the 19th century, but in both cases it had important consequences in the last third of the century. The impact of social and economic changes in Udvarhely county (the developing 'modernisation') or in other regions of the country (through the increasing possibility of migration) appeared to work in another way than for example in Pest-Pilis-Solt-Kiskun. Changing economic conditions and/or possibilities of migration resulted in increasing marital fertility before 1900, which began to decrease only after the turn of the century. These differences

can be described as the consequences of some kind of backwardness in harmony with the theory of demographic transition, which is a par excellence modernisation theory. But as we have already referred to it, these alternative demographic patterns must not be regarded without taking the economic and social relations between the different regions into consideration, for example the role of the division of work and migration etc. Different regions in the Carpathian basin were the parts of the same economic system and belonged to the same migratory space, but they had their special roles and hierarchies in that system, which directly influenced—among other phenomena—the demographic behaviour too.*

3. Different patterns of demographic behaviour in Pest-Pilis-Solt-Kiskun County between 1901 and 1910**

Summarising what we have learnt from our former examinations,*** we may say that the turning point of mortality is obviously 1873, after that the disappearance of the great epidemic crises basically changed the old mortality regime, independently of its former level. The level of fertility must have been very different in the 19th century, as it had been relatively high in the northern part of the county and perhaps in the bigger part of the Great Plain and low in Budapest, on the Danube-bank and in the Danube bend since at least the end of the 18th century. All our former experiences call the attention to the fact that market towns had generally different demographic characteristics (for instance a high proportion of unmarried people, and that of the non-family households etc.). Denominational differences also seem to have been important besides regional ones. The Roman Catholics were generally of much higher fertility than the Protestants, while the Calvinist and Orthodox communities showed relatively low fertility as early as the end of the 18th century. There was a turning point in fertility in every region and denominational groups, it was generally around 1880–1890, but in some regions (The Plain, the northern hilly parts) it began later, around World War I, while in other ones or in the case of some religious groups it started much earlier than 1880 (settlements situated along the Danube, the Calvinists, the Orthodox). There is a possibility of a double fertility decline in these latter cases, or more exactly there was a turning point in fertility changes at the end of the 19th century, a first or in some cases a newer wave of decrease maybe caused by mortality decline and modernisation. But that turning point was preceded by a gradual, much older fertility

* Many thanks to Attila Melegh who called our attention several times to this aspect. (See for example: Melegh, 2002).

** The complete version of this chapter see in Őri, 2007: 38–47.

*** About the analysis of the long run series of births and deaths in Pest county by regions and denominational groups see Őri, 2007: 25–38.

decrease, which spread along the Danube in the course of the 19th century and got mixed with the later wave totally transforming the demographic feature of the county by the time of World War I. It is not yet clear whether the first wave of fertility decrease was caused by culture and religious mentality or it was produced by economic and regional characteristics (Őri, 2007: 37–38.).

To better understand the background of our results, we try to analyse several demographic settlement-level variables in order to separate different sorts of demographic behaviour. Since the data of population movement relating to the period 1901–1910 were published by the Statistical Office together with a lot of important demographic ratios (Population movement 1901–1910) in 1913, we have analysed this set of data with the help of hierarchical cluster-analysis. Having separated different types of demographic conditions (clusters of settlements), we tried to explain the differences using the data of ethnic, denominational and occupational distribution.

The result of the analysis was 10 groups of settlements. Table 3 demonstrates the characteristics of the variables used in the analysis.

Table 3. Characteristics of the variables used in the cluster-analysis

	Pest-Pilis-Solt-Kiskun County (1901-1910)					Pest-Pilis-Solt	Hungary
	Mean	Standard deviation	N	High'	Low'	1774-1783*	1821-1830**
Crude marriage rate (‰)	9.0	1.4	218	>10.4	<7.6	11.3	
Crude birth rate (‰)	40.7	7.0	218	>47.7	<33.7	56.8	48.6
Crude death rate (‰)	26.7	5.0	218	>31.7	<21.7	45.8	38.4
Rate of migration (‰)	2.7	16.9	218	>19.6	<-14.2		
Infant mortality (%)	22.3	4.7	218	>27	<17.6		24.1
Rate of illegitimacy (%)	7.5	4.0	218	>11.5	<3.5	0.6	

Note: 'High' values > mean + standard deviation; 'Low' values < mean—standard deviation; Annual mean values.
Source: Population movement 1901–1910; * Őri 2003; ** Hablicsek 1991. 73.

Comparing our data of 20th century to those of 18th and 19th centuries, it is clear that certain demographic changes started well before the beginning of the 20th century, while others just began at the turn of the century—at least on county level. The frequency of marriages had got lower, and we can also observe a significant decrease in birth rates, though they were still rather high. There was a very strong decrease in death rates too. Infant mortality remained rather high, while the rate of

illegitimacy increased to a very large extent. At the same time, we have to recognise that changes were slow and gradual, and reached only one part of the settlements. It is clear that there were a lot of settlements at the beginning of the 20th century, where fertility and mortality decrease had not started yet. In those settlements fertility and mortality were not lower than in the first half of the 19th century. Therefore, we can conclude that the demographic transition already started in the neighbourhood of the capital at the beginning of the 20th century, but it did not reach all communities of the county, and its timing and form also seems to have been different on settlement level.

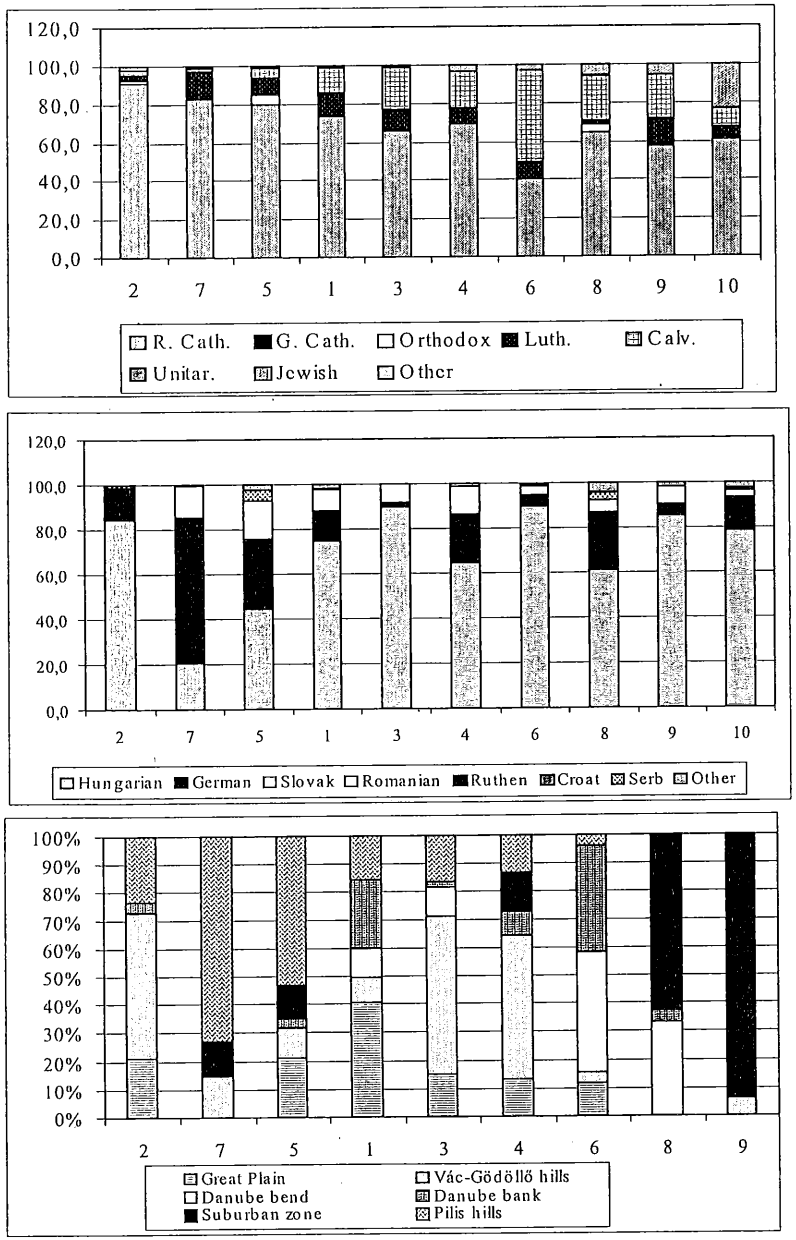
Cluster-analysis demonstrates our points.

Table 4. Result of the cluster-analysis, Pest-Pilis-Solt-Kiskun (1901–1910)

Cluster	N	Crude marriage rate	Crude birth rate	Crude death rate	Migration rate	Infant mortality	Rate of illegitimacy	Demographic conditions
2	25	9.63	47.59	35.28	4.86	30.42	4.92	premodern
7	4	8.38	47.28	30.70	-4.69	28.46	15.03	pre-modern with changing death rate
5	29	8.15	44.59	29.06	2.15	25.10	7.24	pre-modern with changing death rate
1	56	10.46	44.25	27.81	-6.41	21.59	6.21	transitional
3	24	8.01	41.74	23.04	-7.68	18.76	5.44	transitional
4	28	8.19	39.30	22.65	20.33	20.07	9.50	transitional
6	40	8.98	30.60	24.60	-1.87	19.94	7.93	strongly changing rural
8	4	8.60	32.18	21.48	15.05	18.27	19.81	strongly changing suburban
9	6	7.00	32.35	17.92	62.44	20.09	12.73	strongly changing suburban
10	Budapest	9.20	27.20	19.10	27.98	15.08	26.76	strongly changing urban

Examining the 10 clusters from the perspective of demographic transition, we formed three larger types. In clusters 2; 7; 5 changes did not started yet or just began in the first decade of the 20th century. Decrease in death rates led the process, which fact refers to the relevance of classical demographic transition theory in the case of those settlements. We would say the same about clusters 1; 3; and 4, or more or less the same about clusters 8; 9; 10, where the decrease of death rates obviously preceded that of birth rates in the second half of the 19th centuries (Őri, 2007: 31–32). But the forty settlements in cluster 6 represent an alternative model in this respect. Some villages and small towns lying along the Danube or some typical market towns on the Great Plain (Őri, 2007: 56) were the forerunners of birth control in the region as former research could demonstrate it (Melegh, 2000; Őri, 2003). In those cases

FIGURE V. STRUCTURE OF THE CLUSTERS BY DENOMINATION, MOTHER TONGUE AND REGION (1900)



SOURCE: Census 1900c—own calculations.

the decrease in death rates did surely not precede that of birth rate. There fertility and mortality slowly and gradually decreased together in the 19th century.

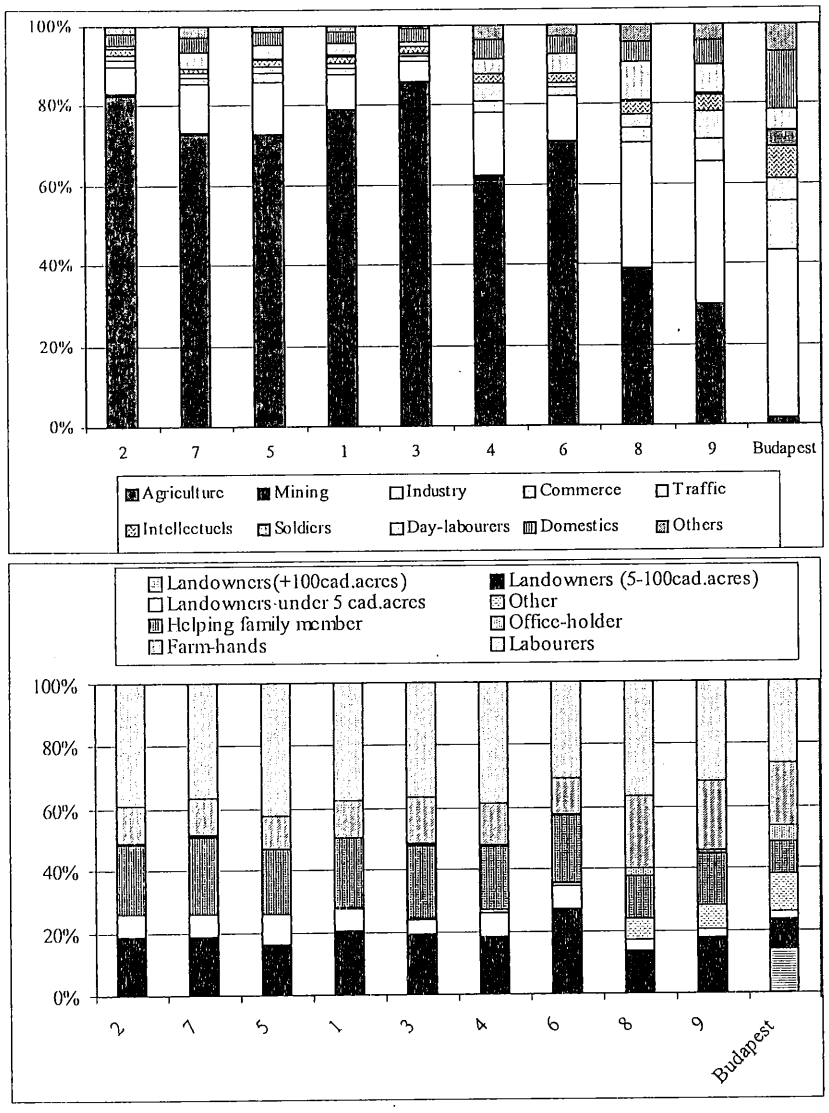
Regarding the ethnic, religious and regional composition of the clusters,* we can conclude that the distribution of their populations by mother tongue does not seem to be in correlation with changing demographic conditions. As for denominational conditions we can find a stronger correlation, e.g. in the traditional, premodern clusters (2, 5, 7) the proportion of Roman Catholics were the highest, on the other hand, much more protestants—especially Calvinists lived in the changing clusters. The very high proportion of Jews in Budapest, in the most rapidly changing settlement, is particularly remarkable (Figure V). But denominational differences might conceal social differences, and for instance two different phenomena (the demographic changes and the strong presence of Jewish population) could be the result of the same modernisation process. Thus we cannot reach firm conclusions, we need more research on the social-professional differences to understand those relations better. The regional factor proved to be much stronger than denomination or ethnicity: 'premodern' type of demographic behaviour was characteristic in the northern hilly zone of the county, while demographic changes were especially spectacle in the case of Budapest, its suburban zone and the settlements lying along the Danube (Appendix, Map II). But regarding one part of the cases it is not yet clear what this 'regional factor' implies, we cannot decide whether it means cultural differences or the differences of farming, professional structure etc.

In this decision the examination of the clusters by professional distribution can help us. It is clear that demographic changes can be explained by occupational transformation only in the case of Budapest and the suburban zone (Clusters 8, 9). Therefore, we can conclude that demographic transformation was caused by modernisation only around the capital, while in other regions it began mainly among rural circumstances. As a next step it is worth examining the structure of agricultural breadwinners by clusters in order to better understand the demographic differences among clusters of mainly agricultural characteristics.

We have to focus on clusters 1–7 where the proportion of agricultural breadwinners is really significant. The proportion of farm-hands and helping family members is more or less stable, we can see important differences in the proportion of landowners and labourers without land. Between the traditional group (clusters 2, 7, 5) and the category of changing pattern (clusters 1, 3, 4) there are no important differences, cluster 6 however slightly differs from them in this respect. In this case—mainly along the Danube north and south of the capital—fertility decline started at the beginning of the 19th century. There the proportion of Calvinist population was high and that of smallholders (between 100 and 5 cadastral acre) was higher than in other settlements. It means that Rudolf Andorka's hypothesis (1998.

* The analysis by the rate of literacy could not point out any difference between the clusters thus we do not show its result here.

FIGURE VI. OCCUPATIONAL STRUCTURE OF THE CLUSTERS (1900)
(DISTRIBUTION OF THE BREAD-WINNERS BY MAIN OCCUPATIONAL GROUPS AND DISTRIBUTION OF THE AGRICULTURAL BREAD-WINNERS)



SOURCE: Census 1900b—own calculations.

438.) seems to be strengthened, according to which low fertility and the beginning of birth control can be associated with villages which were confined to a limited space and for which the opportunity to increase further could not be found. Among mainly Calvinist smallholders living in these conditions we can find the first steps towards conscious birth control. But similar behaviour could occur under similar circumstances—independently of ethnic or denominational conditions (e.g. among Roman Catholic Germans or Orthodox Romanians in Southern Hungary and Transylvania—Andorka 1998.). This custom probably spread in the 19th century, and got a newer rise between 1880 and the World War I. Due to this strengthening custom the differences in religion or region and to some extent in profession seem to be important when we try to analyse the demographic conditions at the turn of the century, since the denominational and regional relations, traditions, and the similar socio-occupational status must have had a decisive role in spreading the new forms of behaviour. By this time the early demographic changes and their 'second wave' had got mixed, thus we can find similar processes under different circumstances. But behind the similarity there are important differences, behind the similar demographic developments there can be different causes. We can conclude that in County Pest-Pilis-Solt-Kiskun two types of demographic change or two alternative models of demographic transition can be described. One of them started under rural conditions at the end of the 18th century, independently of any changes in mortality or society. Its cause can be found in the special geographic, economic and social conditions of some micro-regions. Demographic changes spread towards the big market towns of the Great Plain (e.g. Kecskemét, Nagykőrös, Kiskunhalas), through the channels of common religion, but the main factors of the change are more complex (agrarian development in the second half of the 19th century, one kind of agrarian modernisation, or the maintenance of privileged social status in certain social strata). At last in the second half of the 19th century a newer and more spectacular wave of demographic change began produced by modernisation in the capital and its surrounding suburban zone.

4. Different patterns of demographic behaviour in Udvarhely county between 1901 and 1910

FIRST WE try to summarise the general tendencies of demographic development in the county between 1869 and 1910. We can observe a relatively modest population growth of 18% in county Udvarhely in the period. It was a low level of population growth even in comparison with other counties of Transylvania: Udvarhely stands between the two extreme values (county Nagykükülló with 9% and county Kolozs with 41 %), and the growth rate of nine counties of the 14 Transylvanian ones was higher than that of Udvarhely.

The examination of the population growth on settlement-level shows considerable micro-regional differences (Appendix, Map III). In the villages of the north-western and north-eastern districts (districts Parajd and Udvarhely) the decade values of population growth was well above 10%. The villages in those districts generally had a population of more than 2,000 people. The villages lying close to the mountains and having large forests and extended pastures became specialized in stock-breeding and tree-felling. Around most of them, in the outskirts scattered farmsteads were established, and sometimes they became independent villages at the beginning of the 20th century (Bárth 2001).

The smaller villages in the south-western or south-eastern districts of the county—having had less forests and smaller pastures along the middle and lower reach of the river Nagy-Küküllő and the lower reach of rivers Kis- and Nagy-Homoród and Fehér-Nyikó and in the narrow side valleys—show a different pattern of demographic development. Those villages having had a population of mostly less than 1,000 people can be characterised by the stability of population size (by modest population increase or decrease). In the latter case the decreasing tendency became more pronounced decade by decade.

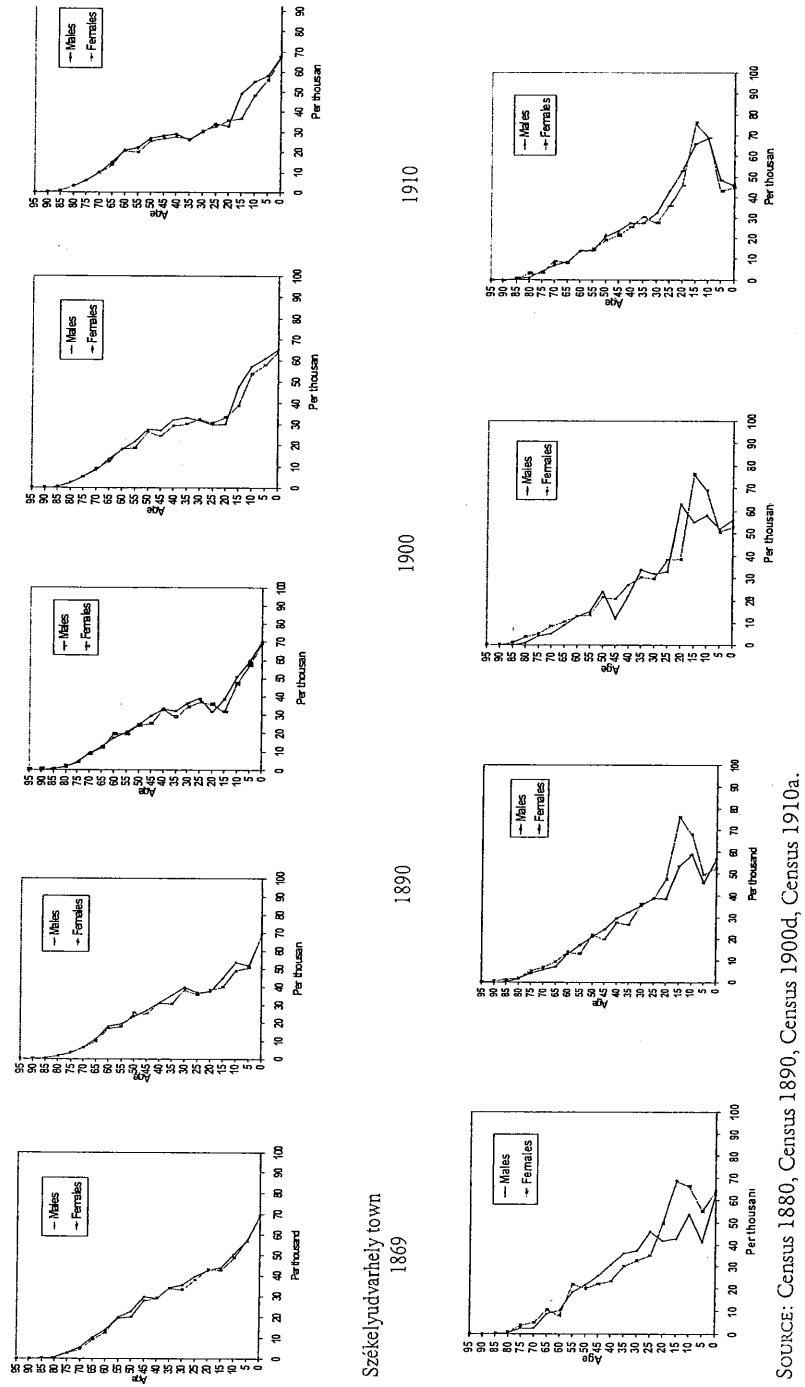
In the case of the only town of the county, Székelyudvarhely (Odorheiu-Secuiesc) we witness a considerable growth of 92% during the examined period. The population growth of Székelykeresztúr, a settlement of urban character in the south-western part of the county, was close to that of the northern villages lying among the mountains. Handicraft industry had a significant role in both settlements.

The diagrams of the age structure (Figure VII) help us in examining the county's population development showing the number of males and females per thousand persons in each age-group. Regarding the age-structure of the rural population in 1869, one can see that the number of people per thousand gradually and evenly decreases age-group by age-group, since the impact of fertility exceeded that of mortality. From 1880 onwards the ratio of those in age-group 15-29 decreased which fact indicates a considerable out-migration towards urban and industrial centres. Examining the diagrams we can observe that from the villages females out-migrated in a younger age (between 15–19) than males (20–24).

The age-structure of Székelyudvarhely was the opposite of that of the county's villages: here the presence of just those age-groups was spectacular which were absent from the villages. One part of young people living in the town came in all probability from the villages of the county, they were students, industrial workers or domestic servants in the middle-class families (Dányi 2000).

The examination by broad age-groups (0–14; 15–54; 55–) demonstrates a slow change in the age structure of the population (ageing). It is visible at the top of the diagrams indicating the age structure, while we cannot observe any change in younger age-groups. Age-group 0–14 was 35% of the entire population on the average, in the category of the active population we witness a smaller change from 54.3% in 1869 to 49.6% in 1910, while the proportion of the elderly rose from 10.4% to 15.1%.

Figure VII. The age-structure of the population of Udvarhely county and Székelyudvarhely town (1869-1910)



Source: Census 1880, Census 1890, Census 1900d, Census 1910a.

The rise of the index of ageing (number of those aged 65 and over compared to that of the aged 0–14) has strengthened the above-mentioned observations. It was 10.9 in 1869, after that we can notice higher and higher values census by census (12.8 in 1880, 15.9 in 1890, 17 in 1900, and 19.2 in 1910).

To better demonstrate the regional differences we show the decade values of population growth in percentage (1869=100) and the index of ageing by micro-regions (Table 5). Regrouping the micro-regions by the values of the used variables it is clear that, while the ageing of the population was everywhere a common phenomenon, the process was more pronounced in some micro-regions.*

Table 5. The ageing index and population growth index, Udvarhely county micro-regions (1880-1910)

Micro-region nr.	Nr. of settlements	Population number		Ageing index				Population growth*
		1869	1910	1880	1890	1900	1910	1869-1910
19	5	9,678	12,396	9.55	10.88	12.28	12.15	128
17	5	6,004	8,396	8.71	11.98	12.92	13.47	140
8	3	6,377	7,590	8.55	11.98	12.14	14.05	119
15	5	5,735	6,972	11.48	16.84	16.67	18.15	122
12	7	4,651	6,102	10.76	14.23	14.36	17.73	131
16	11	5,695	6,200	12.25	16.69	16.43	19.38	109
2	2	2,155	2,398	10.63	11.99	17.40	18.67	111
18	4	2,093	2,262	12.97	15.17	15.33	18.82	108
11	9	6,438	6,230	10.94	14.73	16.54	21.30	97
4	3	2,232	2,378	13.68	18.50	21.42	20.71	107
6	5	3,250	3,701	13.73	15.69	14.98	20.18	114
3	9	8,772	9,773	12.91	17.09	19.75	21.45	111
13	6	4,475	4,458	13.47	16.66	19.89	22.74	100
1	14	5,982	6,273	15.81	18.76	20.33	23.94	105
5	5	5,236	5,993	17.14	19.69	19.79	21.00	114
7	7	3,870	3,898	17.38	18.99	20.74	25.04	101
20	3	1255	1,232	17.95	21.31	21.24	31.36	98
9	17	6,350	6,544	16.19	20.61	20.41	24.11	103
14	9	4,732	5,066	14.78	19.78	19.86	24.60	107
10	5	5,312	5,922	19.03	20.42	24.82	24.05	111
21	1**	5,173	9,928		13.03	14.32	14.87	192

Note: * 1869=100; ** Székelyudvarhely town.
Source: Census 1880, Census 1890, Census 1900d, Census 1910a.

* The micro-regions of the Udvarhely county (Appendices, Map IV.) we created following the work of Elekes Tibor and Hermann Gusztáv Mihály (Elekes & Hermann 2008).

Table 6. The results of the demographic analysis, Udvarhely county micro-regions (1901-1910)

Micro-region nr.	N	Crude marriage rate (‰)	Crude birth rate (‰)	Crude death rate (‰)	Natural growth (‰)	Population growth (‰)	Migration rate (‰)	Infant mortality (%)	Rate of illegitimacy (%)	Ig*	Cluster nr.
6	5	9.71	40.17	28.32	11.85	3.52	-8.33	22.93	7.46	0.627	
8	3	9.51	44.06	33.08	10.99	6.12	-4.86	25.15	7.09	0.694	
12	7	8.28	39.25	27.40	11.85	6.55	-5.30	25.96	5.74	0.661	1
17	5	8.74	44.79	31.50	13.29	9.00	-4.29	22.28	7.39	0.733	
18	4	9.10	42.43	33.06	9.37	-2.92	-12.28	26.49	8.42	0.666	
19	5	9.36	41.61	29.65	11.96	6.37	-5.59	21.40	10.62	0.684	
15	5	7.44	33.87	25.95	7.92	8.82	0.90	18.35	16.71	0.623	2
5	5	8.63	34.48	25.27	9.21	4.50	-4.71	19.00	16.63	0.577	
11	9	8.36	35.04	29.04	5.99	-0.83	-6.83	21.58	15.92	0.590	3
10	5	8.00	33.88	26.25	7.62	3.77	-3.85	18.99	16.46	0.581	
1	14	9.42	32.85	23.28	9.57	2.11	-7.46	17.21	17.90	0.519	
7	7	8.60	31.45	24.11	7.34	-3.35	-10.69	17.24	19.65	0.492	4
13	6	8.62	34.17	26.95	7.21	-4.47	-11.69	19.00	22.79	0.491	
9	17	9.21	31.52	21.84	9.68	1.84	-7.85	16.63	9.44	0.476	
14	9	9.01	31.87	23.60	8.27	2.94	-5.33	18.35	14.52	0.469	5
3	9	9.48	32.65	23.59	9.06	3.75	-5.31	16.95	12.96	0.497	
2	2	12.51	33.12	25.94	7.18	1.34	-5.84	20.91	13.43	0.500	
4	3	8.05	32.41	26.71	5.70	-0.59	-6.29	15.39	19.53	0.411	6
20	3	11.35	28.06	24.36	3.71	-5.75	-9.46	24.16	13.20	0.390	
21	1**	6.61	24.14	23.53	0.61	24.86	24.25	18.39	10.55	0.484	7

Note: * Princeton index of marital fertility; ** Székelyudvarhely town.
Source: Population movement 1901–1910, Census 1900d.

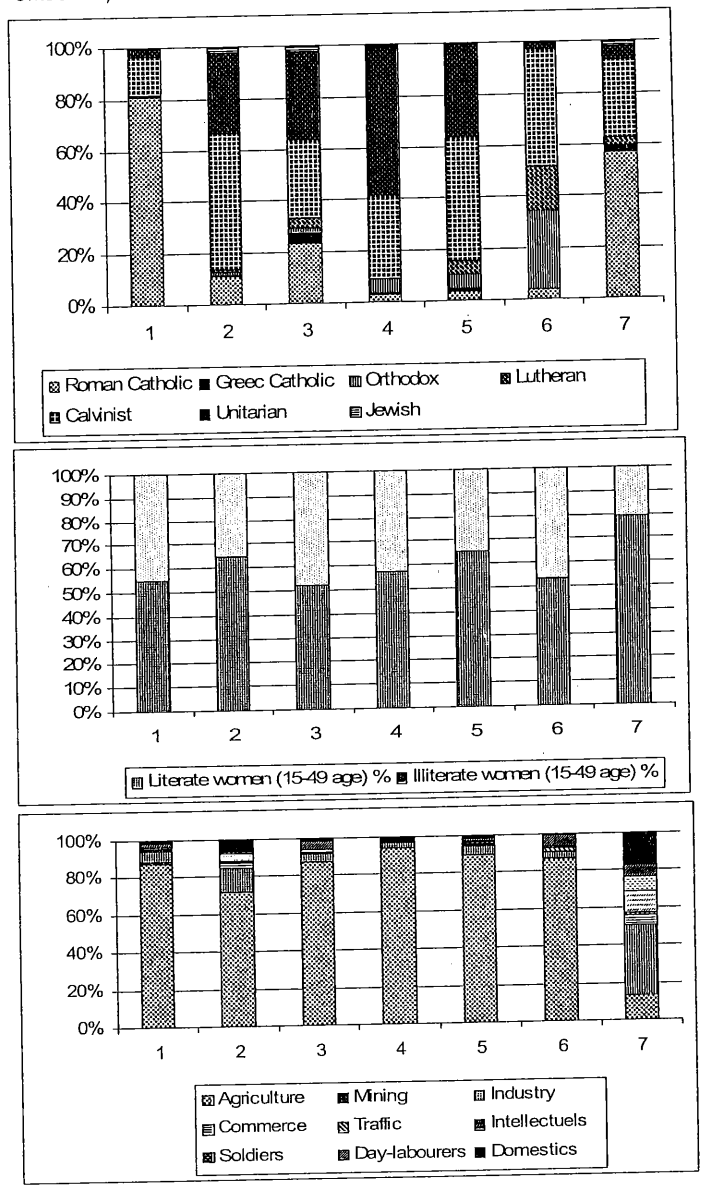
Having used the data of the vital statistics for the period of 1901–1910 (Population movement 1901–1910) we have modified a bit our former groups of settlement (clusters of settlements in table 6, figure VIII and Map V). A basic tendency is the increase of the number of migrants and—in accordance with that fact—the decrease of deaths and births. One can describe marked regional differences: the above mentioned north-western, north-eastern groups sharply differ from the other regions with respect to their relatively high marital fertility, high death rates and infant mortality. In those villages a bigger part of the surplus of births remained, and comparing to the county average the rates of out-migration and illegitimate births were lower.

The villages characterised by lower birth and death rates form further groups. We can observe everywhere that a relative decrease in marital fertility was accompanied by a high rate of migratory loss and a declining death rate, except for the town of Székelyudvarhely, where the surplus of in-migrants was considerable. At the same time, the relatively higher marital fertility was in correlation with smaller migratory loss, higher death rates and infant mortality.

Regarding the figures indicating the differences between the clusters of settlement by denomination, occupational structure and the literacy of females aged 15–49 (Figure VIII) we can conclude that in the groups of urban character (2; 7) mortality declined, while the presence of Protestants (Lutherans, Calvinists and Unitarians) was strong in those clusters, where the values of marital fertility and infant mortality proved to be lower. At the same time, in those groups, where marital fertility and death rate were relatively high, and the rate of illegitimacy were relatively low, the proportion of Roman Catholics was considerably high. The literacy of females in fertile age-groups does not show any significant difference among the analysed groups of settlement, the high rate of literacy indicates some correlation mainly with lower infant mortality. The figure showing the occupational structure of the clusters did not prove to be useful in apprehending the causes of demographic differences, which causes must be found in all probability in the differing ways of subsistance, the differing possibilities of farming in the micro-regions.

At last we can conclude that the analysis by micro-regions proved to be useful in separating characteristic groups of settlement which can be regarded as compact territorial units even with respect to their demographic, economic, cultural similarity and that of their ways of life. Focusing on demography the different forms of migration were the key elements in the functioning of the demographic systems in county Udvarhely. Migration was important in regulating population pressure, and it was in permanent interaction with fertility and mortality. The functioning and the mutual connections of the different micro-regional demographic and economic regimes can be apprehended only on the basis of further micro-analyses.

Figure VIII. Structure of the clusters by denomination, female literacy and occupational structure, the clusters of Udvarhely county's micro-regions (1900)



5. Conclusions

Analysing the demographic transition in the Hungarian Kingdom before World War I we choose two entirely different patterns of demographic development in the second half of the 19th century. One of them (in county Pest-Pilis-Solt-Kiskun around Budapest) can be characterised by the relatively high level of birth and death rates, a significant in-migration and rapid population changes at the end of the 19th century. The other (in county Udvarhely in the eastern part of Transylvania) shows stability both in birth and death rates, but on a considerably lower level. Within both basic patterns we can find sub-models of demographic change, the coexistence of different micro-regional demographic systems, the examples for classical transition theory and alternative models too. In county Pest on the basis of the used cluster-analysis we could separate three basic groups of demographic development. One of them was still at the beginning of modern demographic change, and other one, Budapest and its surrounding sub-urban area with some towns on the Great Plain and some rural micro-regions close to the Danube was the core of demographic transition in the county, while the third one represents a transitional type. In Udvarhely we could show the existence of a stagnating group of settlement (with low level of fertility and mortality, and significant out-migration) and that of a dynamically growing population (where fertility and mortality was high but the rate of migration was low). In the case of Udvarhely it is not clear that the low level of mortality and fertility in one part of the county was the result of the normal functioning of a 'low pressure' demographic regime or was the result of a slow and gradual demographic change in the 19th century. On the other hand, it is clear that in county Pest one part of the settlements in strong transition represents an alternative model of demographic change: here fertility decline preceded mortality decline from the end of the 18th century under rural economic conditions, and even the 19th century change was not the result of the modernisation of rural economy or society. Our analysis could show some differences among the examined groups of settlement by denomination, occupation or the level of literacy, but micro-regional geographic, economic, cultural and social conditions seem to be the decisive factors of demographic differences. It is also clear on the basis of the analysis that only detailed micro-analyses can explore the real functioning of those micro-regional demographic systems.

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Abstract

Demographic Transitions in the Carpathian Basin. Pest-Pilis-Solt-Kiskun and Udvarhely Counties in the Late 19th and Early 20th centuries

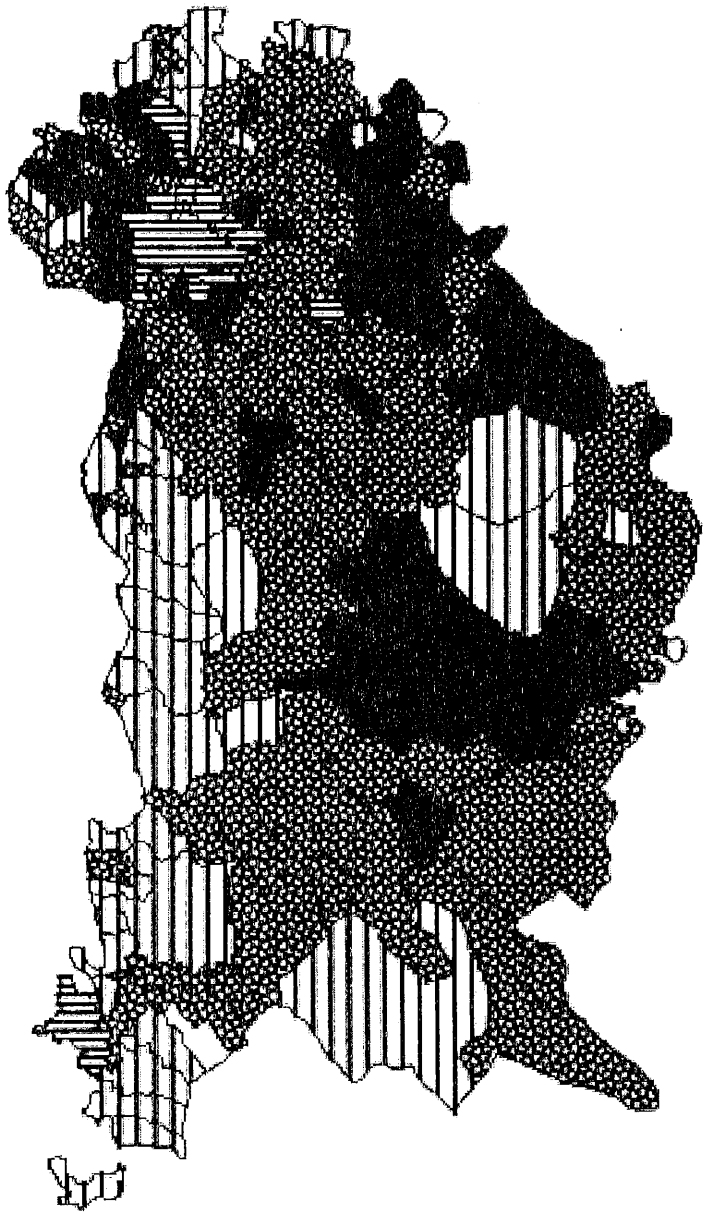
In this paper we tried to separate the local types and patterns of demographic transition in Hungary before World War I. In the analysis we used the data of two counties (Pest-Pilis-Solt-Kiskun and Udvarhely) of different demographic characteristics. After having described the main contours of the demographic development in the two counties, we tried to point out the demographic differences between and within the two administrative units, and to explain the local variability by the help of the denominational and ethnic character or the spread of modernisation (level of literacy and changing occupational structure). On the basis of the analysis it is clear that the two examined counties represent two different demographic patterns: a rapidly changing one (Pest-Pilis-Solt-Kiskun) and a relatively stable one (Udvarhely). Behind the two general models we could prove the existence of several micro-regional demographic systems. The existence of regional and micro-regional demographic patterns makes our models of the demographic change in the 19th century more complex which complexity is concealed by the country-wide analyses.

Keywords

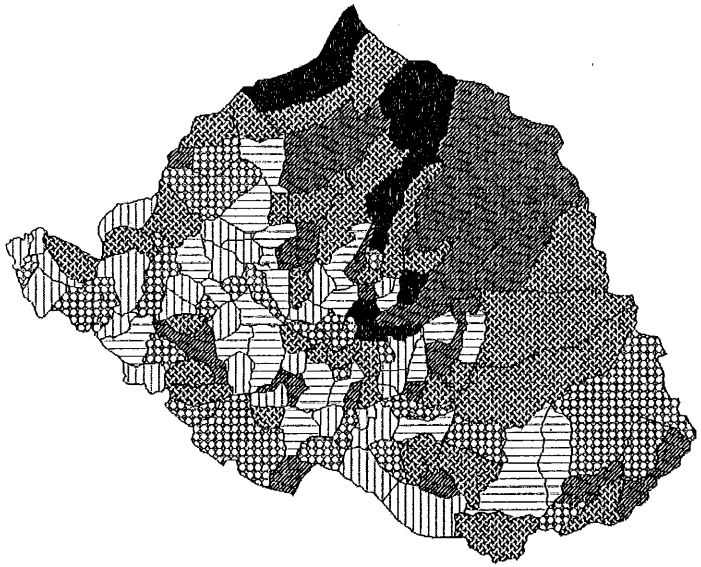
demographic transition, micro-regional demographic regimes, cluster-analysis

Annexes

Map II. State of Demographic Changes, Pest-Pilis-Solt-Kiskun (1901-1910)

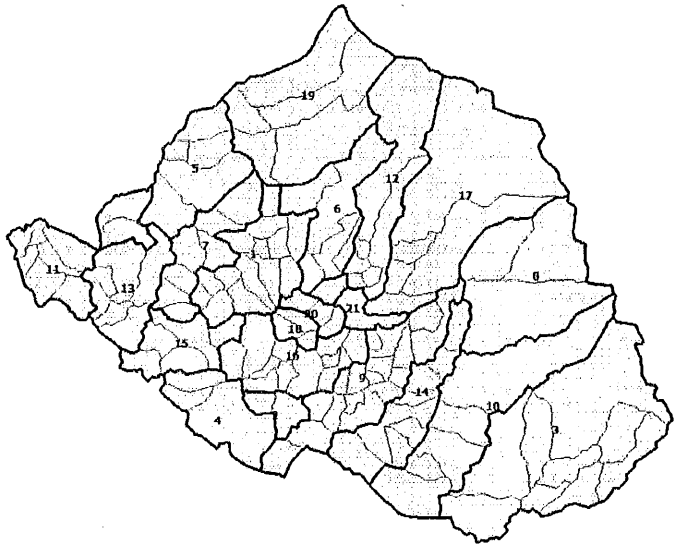


Map III. The characteristics of population growth (%), Udvarhely county by settlements (1869-1910)*



Note: * We express our thanks to Tibor Elekes, who created the basic map of Udvarhely county.

Map IV. Udvarhely county's micro-regions used in the analysis



Map V. The principal clusters of settlements, Udvarhely county (1901-1910)