

## **PATTERNS OF DEMOGRAPHIC BEHAVIOUR IN LATE 18<sup>TH</sup> CENTURY HUNGARY**

An attempt to reconstruct the demographical conditions of Pest-Pilis-Solt county in the 1770's and 1780's<sup>1</sup>

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### INTRODUCTION

Experiences of French and, to some extent, of British research into demographic history have shown that grand scale summaries overarching a long period of time on a national or regional level are best founded upon micro-examinations on the local (town or village) level. Standards of local level historical demographic micro-examinations became clarified in the 1950's and 60's – till this very day this mainly means the application of Henry's family reconstitution method. The problem of representativeness can only be solved through the most careful choice of samples; however, this requires serious knowledge regarding the regional differences of demographic behaviour and the causes for these differences. In England and France a great number of family reconstitutions and a great amount of research into social history, economic history, demography, sociology, historical geography, ethnology, etc. have provided a rich store of experience and a firm basis for such a choice of samples. This served as a basis for a methodological strain of historical demographic research and for attempts at long term historical demographic reconstructions.<sup>2</sup>

In Hungary, research findings do not offer such a solid anchoring point for interpreting different samples of demographic behaviour, while it is obvious that the country must have offered quite a complex picture in demographic as well as other terms. The few local level research pieces, which also include family reconstitution (e.g. Andorka 1988, 1991, 1998), are partly based on the examination of some specific demographic phenomenon (e.g. emergence of birth control) and partly choose the probability of denominational and ethno-cultural differences as a basis for selecting the townships examined. In the case of family reconstitutions or examinations of parish registers based on a differ-

<sup>1</sup> This paper is based on my Ph.D. thesis (Öri 2003a) and some of my other writings (Öri 2002, 2003b and 2004).

<sup>2</sup> See Dupâquier 1995; Wrigley and Schofield 1981; Wrigley et al. 1997; Bardet and Dupâquier 1997–1999.

ent method of sampling (Dányi 1991; Hablicsek 1991) we might face the problem of representativeness in terms of time period. However, we must also take into account the increasing scepticism that has come to surround macro-surveys using aggregated statistical data over the last few decades (including, in the final balance, family reconstitution itself). The approach that the present author finds most promising is the '*approche multiscopique*' that has been developed in the French social history. This approach does not deny the relevance of macro-level analyses but states that the results of the micro-historian, whose research takes place on a different scale, draw a different picture of the same phenomenon – just like different scales of maps. Thus an examination is best carried out on a multiplicity of scales at one time, and it is beneficial to compare the macro and the micro level findings and to appraise each in the light of the other (Revel 1996).

#### LOCATION

On the basis of what I stated earlier, my starting point is the local level analysis, within one and the same county (Pest-Pilis-Solt), of a few late 18th century conscriptions. The complex and varied geographic, topographic, hydrographical, agricultural, social, ethnic and denominational conditions of this county could in some sense be seen to offer a small-scale representation of the entire country.

Pest County was one of the largest counties of Hungary both in terms of area and of population at the end of the 18<sup>th</sup> century. In geographical terms it is a highly varied entity, divided into two parts by the North-South flow of the Danube while the Northern, hilly part of the county is also markedly different from the southern part which is 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, centres of administration and market. The geographical environment, however, is only one decisive element of sustenance. The climate, the topography, the waters and vegetation of the region, the ecological landscape unit, as well as its commercial opportunities define the economic activity of the people who live there and who are exposed to more or less the same events (economic booms and recessions, natural disasters, epidemics, wars). At the same time, the geographic region is the home to communities of different languages, religions and cultures, it is a scene for the communication between these communities, the exchange of goods and cultural wealth and it never acts as a completely determining force. Within its framework we often

find plurality, a division of labour and complementary forms of sustenance.<sup>3</sup> The original structure of the population and its towns and villages changed a great deal during 150 years of Turkish rule (in the 16<sup>th</sup> and 17<sup>th</sup> centuries). The region around Buda and Pest became more scarcely populated and in the flat part of the county this condition continued to prevail in the long term, even after the war of liberation. Thus the original density of villages and towns was never restored. Part of the population was destroyed, some escaped or moved to safer towns or villages which enjoyed privileges. Thus a typical set of geographic, social and economic conditions developed on the Plain, which is characterised by large flat stretches of bare land, poor in wood, with little rain, where the soil is not well suited for cultivation as it is often sandy or sodic. The Turkish rule led to the increase and consolidation of features such as a low population density, widely scattered, relatively large towns and villages. This state of affairs was not fundamentally altered by the in-migrations of the 18<sup>th</sup> century – the previous, even originally scarce network of townships was not restored (Beluszky 1999. 88–89), and right up to the middle of the 19<sup>th</sup> century the most profitable economic activity was extensive stock breeding. These conditions also had their social aspect. Most of the population inhabiting the plain were free peasants and craftsmen (*polgár*) of the market towns in a relatively loose dependence on the landlords and thus in a rather favourable legal position. The unique conditions of the Plain can be described in categories of backwardness, peripheral position or a frontier type existence (Beluszky 1999). What appears significant from our point of view is that those districts of the county which are on the Plain show a marked difference from the hilly sections, even at first sight and this suggests the existence of a unique demographic structure.<sup>4</sup>

The original Hungarian population of the county, which had mostly converted to Calvinism in the 16<sup>th</sup> century, only survived in the large market towns of the Plain and on the protected, marshy islands and floodplains of the Danube. In the southern part of the county this is where we find smaller villages in the traditional sense of that word (under a 1000 inhabitants). In those parts of the county which are close to Buda and Pest, as well as in the Northern, hilly parts, partially or fully depopulated villages were repopulated after the liberating wars (from the late 17<sup>th</sup> century onwards). The new settlers significantly altered the ethnic and denominational character of the area: the organised repopulation of the Buda and Pest region resulted in Catholic German villages, other parts became populated by Catholic and Lutheran Slovaks, Catholic Croats, and Orthodox Serbs, while several of the estate centres (e.g. Óbuda) saw the emergence of major Jewish communities in the 18<sup>th</sup> century.

<sup>3</sup> In Pest County in Pilis District: Faragó 1985.

<sup>4</sup> Similar conclusions have been reached by Attila Melegh investigating the population history of Kiskunhalas (Melegh 2000b).

Thus this is a county, the territory of which unites rambling flatlands which are part 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. Of the major denominational groups of Hungary the only one we do not find here are the Greek Catholics, of all its ethnic groups only Romanians and Rusins are not represented.

#### SOURCES

The time boundaries of this research project were shaped by the available sources. In Hungary we have population conscriptions from the 70's and 80's of the 18<sup>th</sup> century which covered the greater part, and later the whole, of the non-aristocratic section of the population in the service of partly political-demographic and partly military purposes. My analysis is mainly based on the village level summary tables of population conscriptions (*Conscriptio Animarum*) launched by the central government. For Pest County these date back to between 1774 and 1783. To supplement these, I used the village level summary tables of the census ordered by Joseph II in 1785 (mainly with the purpose of source criticism and in order to calculate a few indicators which describe social composition and household structure), and also the data of the cadastral survey published in 1789 under orders from Joseph II, which allow us to reconstruct the composition of the fields of the villages in terms of branches of production.

The conscriptions of the second half of the 18<sup>th</sup> century fit in with the reforms aimed at modernizing the provinces of the Empire and thus their history is inseparable from the population conscriptions introduced in all the Hereditary Provinces. While relatively regular conscriptions had been launched with regard to the Hereditary Provinces in the 1750's and these eventually also covered the nobility, in Hungary the beginnings took place in the 1760's and the total Hungarian population was not covered by the conscriptions until 1784. In Austria the system of conscriptions intended for partly demographic purposes was replaced from the 1770's onwards by conscriptions which concentrated openly on the military point of view, in harmony with the military reforms that were introduced at the time (Gürtler 1909; Durdik 1973; Horska 1998; Fügedi 1966; Dányi 1980, 1985, 1993; Óri 2002, 2003a,b). In Hungary, conscriptions were tested from 1763–64 onwards at the estates of the chambers and eventually these procedures were introduced from the late 1760's onwards as a continuously maintained system of registration. It served for recording changes in the number of the population, the examination of its composition in some respects and gaining insights into the various components of population devel-

opment (the number of births, deaths, marriages and migrants). The contents of the conscription tables changed continually just as does the relevant method of implementation. The organisational framework and contents developed by 1772, and from 1774 onwards we have repeated conscriptions from Pest County using more or less the same contents. Conscription sheets were transformed again in 1780 and used in the new form until 1783 when the Empire's own system of conscription was introduced into Hungary, too ('Joseph II's conscriptions' or the first Hungarian census 1784–1787). Despite the changes, a continued common feature was that the conscription mainly followed demographic purposes. Instead of simply replicating the Austrian system, which was used before the 1770's, that used in Hungary differed in its organisation and contents. Also, the Hungarian bodies of the central government (the Chancery and the Regent's Council) were allowed to take part in developing the system (Fügedi 1966; Dányi 1993; Öri 2003a). The independent Hungarian regime of conscriptions and the chance of the Hungarian governing bodies to interfere ended in 1784 with the introduction of Joseph II's conscription. The conscription system and its changes follow precisely the changes that took place in the 1770's and 1780's in the country's public law position and system of government: from an independent system of conscriptions or dialogue about such they reached the introduction of a unified imperial census and population records.

Thus Hungarian conscriptions have to be seen in the context of the Empire's reform policies. Their demographic character followed from the intention to understand and influence processes of population change. Their contents bespeak familiarity with and reliance on the works partly of Süssmilch and, more directly, of Sonnenfels (Fügedi 1966; Dányi 1993; Öri 2003a). At the same time, behind the changes of 1780 we can sense the increasing influence and subsequent rule of Joseph II. In the sense of the above, the conscriptions can be discussed either in a traditional interpretative frame (as part of the reform policy of enlightened absolutism) or as the emergence of a new technique of power: that of controlling and influencing the processes of population change (Foucault's bio-politics)<sup>5</sup>. These two interpretative frames are not necessarily conflicting – reform policies in this case meant the enhancement of control. The difference is one of emphases: the former approach stresses the positive, modernising character of the reforms, the latter focuses on growing institutional control as a necessary implication of the modern world. All this can easily be traced in the changes of contents in the conscription sheets, as well as in the accompanying documentation. In the 1770's the lines of these questionnaires were the means of classifying people and their movements according to denomination and such social categories as were deemed important from the point of view of population policy. The categorisation contains some features that

<sup>5</sup> Attila Melegh has raised the possibility of using the interpretative framework of Foucault with regard to population enumerations in Hungary (Melegh 2000a,b, 2002).

reflect the system of the feudal estates (absence of aristocracy, separate listing of priests), but the chief guiding principle is partly to separate the indigenous and the foreign population, in an attempt to control migration, and partly to separate two layers of the non-aristocratic population. The first of these included working people with a relatively solid living who were seen as useful for the public (plebeians, extraneans) The second consisted partly of people who, reliant of support, were seen as a burden (people living in charity homes and workhouses, beggars), and partly of those who did not participate in the reproduction of the population (priests and monks) (Óri 2003a 99–104.).

#### SOURCE CRITICISM

As a first step in processing the data, I calculated altogether 32 variables for each township and for each available year. I supplemented these with a further 5 on the basis of Joseph II's census and with a further 7 on the basis of the cadastral survey of Pest County. Two further indicators (differences) were generated by comparison of the conscriptions against the population number of Joseph II's census (Appendix I.). The next step was extremely important from the point of view of source criticism: I compared the population numbers of conscriptions with the non-aristocratic population data of Joseph II's population numbers. First I calculated a probable population number for 1785 on the basis of the growth that could be estimated from the conscription (the time of the census in the county), then, by way of control, I compared the 1783 data of the conscriptions with the data of the census. In both cases I used a 10% shortage as a limit, and the range of townships not considered was roughly the same. To this I added the examination of the fertility ratios (number of births over the mid-year number of married women) and considered villages which showed improbably high rates as incomplete in their conscription (assuming that married couples were improperly registered). Thus from the original 194 villages that have data in the conscription, 121 were eventually left as suitable for demographic analysis. The data of the total 194 villages were only used for calculating some county and district level indicators.

If we examine the characteristics of the 121 townships that stood the test of source criticism, we find that the ethnic and denominational composition of our sample does not differ considerably from the totality of the county. It appears that I have successfully filtered out the majority of townships where the conscription was incomplete, but this reduction, as the majority of historical demographic surveys, also entails a distortion. While in terms of ethnicity and denominations these 121 villages give a good representation of the whole of the county, in social terms they push the picture towards a population more stable, less migrant, living in larger, more clearly established and consolidated com-

munities. Random comparisons with the data of the parish registries show that by filtering out places with incomplete conscriptions I also lose those villages where there are significant differences between registries and conscriptions. A precise filtering of this kind, however, seems impossible on the grounds of the registry entries and the random testing only leads to further uncertainties. Three things seem certain, however: the demographical tables of the conscriptions were definitely made on the basis of the registries; in the 80's they seem far more accurate owing to the conscription routine and, perhaps, because simpler sheets were used; and yet, comparisons remain very difficult as the two sources had a different aim and character. The annual variations in the data, which partly flow from changes in their accuracy and the range of those involved in the conscription, may be partly counterbalanced by the fact that for village level analyses I always used the average of the available data.

#### VARIATION IN DEMOGRAPHIC BEHAVIOUR IN THE LATE 18<sup>TH</sup> CENTURY

##### *Fertility*

Family reconstitutions and sampling based surveys of registry data done on a village level (mainly the works of Rudolf Andorka, for summary results see Andorka, 1991; 1998) and on a national sample in Hungary (Ágnes B. Lukács and Dezső Dányi – see: Andorka 1988. 13–14.; Dányi 1991. 99–103.; Hablicsek 1991. 47–48.) have led to the following results concerning fertility.

- The level of fertility shows a strong territorial difference in the 18<sup>th</sup> and 19<sup>th</sup> centuries, well before birth control became wide spread (Andorka 1998. 435.; Hablicsek, 1991. 77.; Dányi 1991. 133.), which is in line with international research findings (Osamu Saito 1996; Bardet 1997. 330–342.; Livi-Bacci 1998. 109–111).
- In certain areas, such as Ormánság, Sárköz and Órség (Southern and Western Hungary) birth control began as early as the late 18<sup>th</sup>, early 19<sup>th</sup> century (Andorka 1991. 37–40., 1998. 436.), in other areas decrease in birth rates did not start until the second half of the 19<sup>th</sup> century (e.g. Pócsmegyer in Pest County) and marital birth rate even increased in the second half of the 19<sup>th</sup> century (Andorka 1991).
- In the 1820's birth control was probably still no more than an isolated phenomenon, on the national level fertility was still high, although it shows strong variations according to region, type of township and, occasionally, to religious denomination (Hablicsek 1991. 77).
- Decline in fertility, while strong differences persisted, became noticeable from the 1850's onwards (Dányi 1991. 127).

- Village level family reconstitutions seem to refute all previous assumptions which tie in early birth control with religious denomination or ethnicity (Andorka 1991. 38).

In this experimental survey I analysed (marital) fertility by comparing the number of births to the number of married women. Our indicator carries the distortions which arise from the possibly different age structure of the villages examined, therefore our analysis is based primarily on the multi-aspect comparison of groups of villages which show extremely high (average increased by one unit of standard deviation) and extremely low (average minus one unit of standard deviation) values and on examining the connection between the fertility indicator and other indicators (Pearson's correlation coefficients and multi-variant linear regression analysis).

Villages which show a high fertility rate usually have a Catholic majority in Pest County, while those with a low rate are predominantly Protestant, but the two groups cannot be sharply divided according to denomination. Those with low fertility do not include even one real village from the Plain, some of them are from the hills surrounding Buda, another typical section is along the Danube, scattered between Pest and Baja, but this group also includes a few villages from the low hills of the Vác district. At any rate it seems that high or low levels of fertility cannot be clearly explained either by ethno-cultural conditions, or by the date of in-migration, nor by the geographic position of the villages, thus it is probably influenced by other factors. Perhaps the most important facts we can learn from this are that at this time we find no villages on the Plain with lower than average fertility, at the same time, the typical zone of low fertility consists of a group of villages to the South of Pest lying along the Danube. All of this put together means that Rudolf Andorka's hypothesis seems to be proving sound, according to which low fertility and perhaps the beginning of birth control can be associated with villages which are confined to a limited space and lack the opportunity to spread further. This is not clearly connected to ethno-cultural or denominational conditions and may occur in different natural settings (frequently flooded riverside areas such as Sárköz and Ormánság, possibly the other side of the Danube opposite Sárköz, as well as hill countries such as Órség or, according to our examples, the Gödöllő hills and the Cserhát region). However, we must also be aware that even in these areas, even among roughly identical natural surroundings, the limitation or possibly conscious control of fertility was only one possible strategy, and even villages close to each other can choose different ways of adapting to their circumstances. Naturally, it is also possible that micro-level examinations could be used to show the individual differences of agricultural practice, social status or wealth between the different communities which lead to these differences, or possibly the



demographic features (e.g. differences in age structure) which may hijack our analysis on occasion.

If instead of geographical areas we examine the number of births per married woman according to ethno-cultural types of villages, we arrive at a more refined picture. Besides the mainly Calvinist villages of the Danube bank which had proved low in fertility as a geographic region, further units with low fertility were the two Catholic units consisting of German villages along the Danube (Dunaharaszti and Soroksár: 246.4/1,000 married women), the Hungarian-Croatian Calvinist-Catholic unit of Csepel island (in the Danube) (Szigetszentmiklós, Tököl, Makád: 247/1,000 married women), as well as Szentendre, Pomáz and Csobánka near Buda which are Serbian-Hungarian in ethnicity and Orthodox – Roman Catholic in denomination (246/1,000 married women). All this, however, only shows that communities of different ethnic identity and religious denominations (or a part of them) give the same kind of reaction to similar conditions or to other momentary factors not perceptible to our methods at this moment.

We find an extremely significant difference if we conduct separate examinations concerning purely Catholic and Protestant villages (+90%). Among Catholics the indicator of marital fertility was 301.3 while among Protestants it was 254.6 per 1,000 married women thus on average (!) they nearly approach the county average reduced by the standard deviation. At first sight this suggests that fertility is strongly determined and rendered extremely different by religious denominations. However, the problem is more complicated. Protestant villages which show low fertility rates mainly include the Protestant locations of the Danube bank and the Lutheran communities of the hills. Thus it is possible that the Protestant identity of a place is not really determining and the decisive factors are the local characteristics and the natural environment as well as, possibly, the differences in social composition. This is suggested by the fact that the proportion of peasants and craftsmen among adult non-noble population does not differ significantly in the two denominational groups (with Catholics it is 33.6%, with Protestants it is 38.8%), but, for instance, the ratio of the servant population is 9.3% with the former and 5% for the latter).

Examining fertility according to the time of in-migration, we find that only a part of the continuously inhabited villages are low in fertility – continuity alone does not lead to low fertility. It is a different question that few of the villages with high fertility have been continuously populated, but there are examples of such cases, too. On the other hand, villages that were repopulated after 1740 do indeed show higher than average fertility rates, but the ten villages with highest fertility only include Törtel and Újszász from this group. If, however, we identify Hungarian villages with a Calvinist majority (+90%) as villages that had survived the Turkish rule, the image becomes clearer, and does not include villages of high fertility. Of villages with an over the average

level only Tök and Pataj will be included. In other words, continuity, Calvinism and Hungarian ethnicity often co-occur with low fertility, but this connection is not exclusive and does not seem to be causatory in nature. Catholic villages (Haraszti, Pilisszentlászló) and even freshly populated villages (Iklád) can have a relatively low fertility compared to average. Low fertility, reformation, Hungarian nationality and continuity in the community can co-occur in certain regions (e. g. along the Danube) but each feature is connected precisely among unique natural, economic (and possibly hereditary and household structure) conditions. At the same time, it is clear that the fertility of newly populated villages is usually high. The remarkable exception here is Iklád whose Lutheran German in-migrants either brought along with them the habits which resulted in low fertility or had a particular age structure which led to this result or perhaps found conditions at their new home such as to encourage them to restrain their fertility.

Table 1

*A few characteristics of villages that represent 'low' and 'high' values in the number of births per 1,000 married women (average=289.3) 1774–1783*

	Low	High
	(<253,5)	(>325,1)
Number of births per 1,000 married women	227,5	338,9
Catholics (%)	29,2	80,2
Protestants (%)	63,9	19,5
Greek Orthodox (%)	6,4	0
Number of married men per household	1,1	1
Fertile land per capita (in cadastral acres; 1 cadastral acre = 1.42 acres)	4,1	6,6
Plough land (%)	27,9	40,5
Vineyard (%)	4,7	3,5
Gardens (%)	5	3,6
Meadows (%)	14,2	11,6
Pastures (%)	26,4	24,4
Forests (%)	21,7	16,4

*Source:* Conscriptio Animarum, our calculations.

In the regression analyses only four variables were found which proved to be significant in explaining differences in married fertility. These, however, account for more than 80% of the variance. The explanatory power of the crude birth rate is self-evident. Besides this, the effect of the ratio of plough lands plays an important role. The proportion of married men has a strong negative influence on marital fertility. This might be explained by the fact that age com-

position is older as the rate of married men increases. If we leave crude birth rate out of the regression model, than the explained proportion of variance remains essentially unchanged, the role of the remaining variables also stays similar but the role of the birth rate comes to be played by the rate of natural increase and crude death rate. Denominational identity could not explain a significant proportion of variance in marital fertility in this case, either.

Table 2  
*The explanation of marital fertility in Pest county 1774–1783*  
(linear regression)

Variables significant in explaining the variance of the dependent variable	Beta	Sign
Crude birth rate (‰)	0.852	0.000
Proportion of plough lands (%)	0.106	0.013
Ratio of married men (%)	-0.495	0.000
Number of deaths per 1 (one) birth	-0.096	0,025
R <sup>2</sup>	0,809	

According to our analysis, great differences in fertility cannot be explained by any one of such differences as denomination, regional characteristics, size of arable land, method of cultivation, social structure or date of in-migration. Our findings lead more to the hypothesis that fertility in the county is generally high among the most varied denominational, ethnic, social, regional or cultivation conditions, but in cases when several of these factors exerted an influence in the same direction, this could give ground to extremely high or almost 'suspiciously' low levels of married fertility. Both high and low fertility could have several scenes and patterns. A doubtlessly extreme form of these was the typical stock-breeding village populated in the mid-18<sup>th</sup> century on the Great Plain, whose mainly Roman Catholic population did not fit into the traditional frames of the feudal structure. The other type consisted of the largely (but not exclusively) Calvinist population on the left shore of the Danube and that of Csepel island close to Buda and Pest which was caught in a space too narrow for its farming demands, or a few villages of the forest areas of the Vác district and the Pilis mountains (North-West of Buda and Pest). Birth control is not likely to have characterised even a part of the examined villages, but we cannot rule out the possibility that it occurred on occasion or that some groups of the population in larger villages or towns may have used it consciously (e.g. the Greek Orthodox Serbian population of Szentendre, North to Buda and Pest). It is likely that the significant differences in married fertility are caused by changing

lengths of time elapsing between births, while the age at first marriage did not vary widely among women. Causes for varying levels of fertility did not prove accessible. What our data did reveal is the topography of the phenomenon – in any given space high and low fertility occur right next to each other, and differences in agricultural practice, social and cultural factors behind the differences could not be grasped at this level of analysis.

### *Mortality*

In Hungarian historiography it is a well-established fact that mortality in this country was higher both in the 18<sup>th</sup> and the 19<sup>th</sup> century than in Western Europe. The crude death rate only went under 30‰ at the end of the 19<sup>th</sup> century. Average life expectancy at birth was around 24 years in the 1840's and only rose to over 30 years in the second half of the century. The really significant improvement in mortality did not start until the 1880's (Katus 1987. 1122). The basic reasons for this were the long persistence of the traditional demographic system, primarily high fertility and mortality, and the periodically returning mortality crises (Katus 1987. 1120). The last were mainly due to epidemics (in the 18<sup>th</sup> century mainly the plague, in the 19<sup>th</sup> century cholera which was still strong enough in 1872–74 to cause a demographic catastrophe). Further causes include contagious diseases which did not occur in epidemics but were constantly present, as well as famines which contributed to the emergence of mortality crises in the 1790's, in 1816–17 and in 1847, partly as a direct cause and partly, in accordance with Malthus's explanation, as a preparatory condition to epidemics (Benda 1983; Vörös 1983). At the same time, it also became obvious through our results that population development was far from even, either in time or in space. There were strong differences in growth between North Hungarian counties and those of the Great Plain. Also, population growth seems to have been slower after Joseph II's census (1784–1787) than before that time (Vörös 1983). Besides the different direction and intensity of migration this may also have been due to differences in mortality which were confirmed by examinations on the village level: after the 1740's, following the last nation-wide epidemic of the plague, mortality conditions improved and natural fertility must have leapt up considerably. From the 1780's onwards this development must have stopped for a while, mortality worsened again, the first half of the 1790's brought bad weather conditions, poor harvests, famine and epidemics and the same was repeated in the 1810's (particularly in 1816-17, and mainly in the hilly areas). The 1820's were better once more, but from 1831 onwards cholera epidemics and returning difficulties in agricultural production led to far worse mortality rates, which persisted until the 1880's

brought a decisive change (Benda 1983; Vörös 1983; Katus 1987; Hablicsek 1991; Andorka 1998).

In order to measure mortality we used not only the number of deaths but also crude mortality rates and the number of deaths per one birth, which again gives information about the level of mortality due to a relative stability in the number of births. Pest County data indicate that in the second half of the 18<sup>th</sup> century (similarly to the 19<sup>th</sup> century) Hungary's mortality was higher than that of the Western European countries, mortality crises followed each other with relatively high frequency but they differed less sharply from average than a few decades earlier. It appears that, even if this happened at a far higher level of mortality, the second half of the 18<sup>th</sup> century also brought a significant change in this field, manifesting mainly in the decline of epidemics which used to bring mortality catastrophes. It is quite likely, however, that the 1780's meant the beginning of a less favourable period which brought higher mortality and several 'mini crises'. It is also probable that the epidemics were harsher in the Northern part of the county, which may distort the examination of the territorial differences in mortality. On the total balance, the flat part of the county shows better mortality conditions and higher natural population increase than the Northern, hilly part of the county, but the epidemics of the 80's and the shortness of the period under examination preclude us from taking sides clearly in this question. If we examine mortality according to geographical regions, we find three units where the average number of deaths for the available years reached or even exceeded that of births. These units are the right bank of the Danube (1.1 deaths per birth), two villages to south-west of Buda (1.1) and the region of the Cserhát hills (1). If we look for shared characteristics, for the first two groups we notice the low rate of peasants and craftsmen ('*paraszt, polgár*') as well as the emphatic role of vine-growing, in other words it is characterised by the high rate of vinegrower, day labourer population as a decisively social factor. For the third group, a noticeable feature is the high proportion of forests, the hilly landscape which is a geographic characteristic.

Regions that show under-average mortality ( $\leq 0,8$  deaths per birth) within this county are the area of Tápiósáp, Cserhátalja, Tápiómente, the area between the Danube and the Tisza rivers, the banks of the Danube and the Danube valley (i.e. the whole left bank to the South of Pest), as well as the only village that was included in our sample from the Szentendre island, Szigetmonostor. It is difficult to draw general conclusions, there are one or two villages in several regional units which stand out from the rest. The reason for this is not easy to identify, yet it seems that areas which offered better opportunities for agriculture (crop cultivation or stock breeding) and were characterised by lower population density showed more favourable mortality figures and this characterisation more or less coincides with the flat part of the county.

Looking at the mortality rate of market towns separately, we found that market towns of the Plain show a more favourable picture (probably also in the long term) than more densely populated urban type towns (Vác and Szentendre) where urban mortality shows higher rates.<sup>6</sup>

If we look at places with a high mortality (for the sake of simplicity here we do not set the limit by adding one unit of standard deviation to the average but by seeing whether or not the number of deaths reaches or exceeds that of births) we can see that denomination or ethnicity are not factors of any importance, nor does any demographic variable of significance related to high mortality, e.g. the proportion of women (near average), the rate of servants (under average) or the intensity of in-migration (under average) seem an important explanatory factor. The only consideration that appears to be of importance is the under average (34.6%) rate of craftsmen and free peasants and the geographic position itself. The role played by the individual factors is not quite clear, for example, whether vine growing entails a special social composition which leads to increased mortality or whether we are talking of a monoculture which forces the population to purchase its food and thus exposes it to the variations in the prices of grains and other foodstuffs. (It probably does, its correlation with the rate of peasants and craftsmen is  $-0.261$ , a high rate of vine-growing is usually associated with that of servant population.) Nor is it clear why among similar geographic conditions we find extremely varied rates of mortality. Just as in the case of fertility the possibility emerges that the character and relative poverty of our sources prevent us from seeing the kind of differences in social composition, agricultural practice, cultural features or mentality, the different strategies of adaptation among roughly similar conditions which influence mortality. We can also see that with most villages that show a high mortality rate, the unfavourable conditions can be retraced to a few years of crisis, even though the remaining years, yielding a natural population increase, are not very favourable, either. There are also marked differences in social and economic structure between the six settlements that show a dominance of mortality for all but one of the years examined. In those villages of our sample where mortality is low (under the average reduced by standard deviation) the rate of peasants and the craftsmen is slightly over the average, but so is that of servants which renders it rather difficult to interpret the influence of the social composition. The only possible conclusion is that these factors are not essential: low mortality figures which stay well under the number of births are found in fast growing villages with a high fertility where, incidentally, the proportion of servants is also higher. In the case of these villages we can make the following assumptions: the number of deaths is low because of the favourable circumstances or because epidemics are rare, possibly the registration of deaths was incomplete, the

<sup>6</sup> Some results can be found in Faragó 1993, 2000 and Melegh 2000b.

number of births may have been high and in many cases this may have caused the mortality rates to appear lower. On the other hand, in these cases a high level of fertility must be connected to fresh in-migration, young age composition, which can mean a very favourable adult mortality level.

There exists no unified pattern for low or high cases of mortality. Our findings thus far point toward the probable influence of geographic position, the method by which people sustain themselves and social composition, but there are very important factors that we are not familiar with. The spread and frequency of epidemics also clearly appears to be one decisive factor in the short term variation and geographic differences of mortality.

#### *Marriage and household structure*

Research in Hungary has partly justified certain elements of Hajnal's East/West model particularly in terms of early marriage and this is even followed by differences according to nationality. It has also emerged that the population increase of the second half of the 18<sup>th</sup> century may have led to overpopulation in certain regions. The increase in complex household types between 1787 and 1828 (Faragó 1977; Andorka and Faragó 1983), and its coincidence at particular places (Sárköz) with conscious birth control (Andorka and Faragó 1983) point toward this possibility and fit in well with Hajnal's model as well. Birth control seems to have taken over the role of more flexible marriage habits and household formations: at the villages examined, early marriage and partible inheritance seem to have been norms that they were reluctant to change, entering service or migrating away from the location were not acceptable or available options for the members of land owning peasant families. At the same time, customs did not oppose the co-habitation of parents with their married children, thus when prevented from increasing the number and territory of farms, they could increase the complexity of households and the number of members. After a while, however, they went on to a practice of conscious birth control in order to avoid impoverishment and social degradation. Thus the South Trans-Danubian type large family model with conscious birth control became more or less a polar opposite of the North-Western marriage model (Andorka and Faragó 1983). It is also clear, however, that this system does not lack flexibility or rationality, either. At the same time, it has also become clear that the majority of the Hungarian population (not only the Germans) lived in nuclear family households, at least during a part of their lives. This led to assuming the possibility of an intermediate zone between the Western and the Eastern marriage model, in accordance with the country's intermediate position and its political, economic, social and cultural development (Andorka and Faragó 1983). At a later stage Tamás Faragó drafted a more complex picture

than Hajnal's dichotomic model by analysing the county level data of the 18<sup>th</sup> century conscriptions, Joseph II's census and the 19<sup>th</sup> century conscriptions of the non-aristocratic population (Faragó 2001). According to this, the boundary between the Eastern and the Western type could not be sharp, Hungary (and probably the whole of Eastern Europe) was the meeting place of 'Eastern' and 'Western' populations, cultural assets, family and household formation structures which mingle in this region creating a position which appears intermediate from a bird's eye view. The age at which first marriages were contracted, or the characteristics of servant use show a transition from West-East on the county level, as if they reproduced the Hajnal line on a lower level and pushed it further East (Faragó 2001. 36). This picture, however, becomes confused if we examine the complexity of households (Faragó 2001. 37). Instead of accepting a dichotomy, Faragó outlines four to five types on the basis of joint examination of these phenomena (Faragó 2001. 44–46). These include the version he terms 'Central European nuclear or stock family' which appears near the Western borders of Hungary (households comprising the nuclear or stock family, relatively late marriages, high rate of servants, ethnically mixed population); the 'South East European large family' belt which runs along the Southern border (early marriages, few servants, households complex in composition, population mainly Southern Slavs); the 'Central European complex household' characteristic of the central part of the Uplands (the Northernmost part of historical Hungary) (here households are more complex than in nuclear families but less complex than in the Southern part of the country, characterised by a rather frequent use of servants, while the population is Hungarian and Slovakian); and finally the type that Faragó calls 'Central European border region family' (population in-migrant to the Great Plain, nuclear family households, very early marrying ages, very infrequent employment of servants). Thus the dichotomy seems to be replaced by a more complex model which allows for several combinations and transitional types in harmony with experience, although Faragó claims that the number of these is limited. At the same time, we also find rather varied conditions below the county level, among individual villages and towns. In other words, a county average conceals rather a wide dispersion. This renders it extremely complicated to explain the differences in household type. Partly there are clear ethno-cultural differences – e.g. in the villages of the Pilis district which are extremely mixed in terms of ethnicity and denomination, and partly there are transitional types where ethno-cultural relations do not offer a complete explanation, and we have to reckon with the influence of cultural diffusion, artificial repopulation, economic and ecological factors, adaptation to each other and the environment (Faragó 1985). In other areas, in Borsod county, which is ethnically more homogeneous, but more mixed in terms of denominational and social terms and has a strong local tradition, the determining features seem to be the economic and social factors and the re-



gional traditions rather than the ethno-cultural traditions (Faragó 2002). In the case of Keszthely, a larger town in the West of Hungary and thus also more complex in its social composition, economic and social factors play a determining role in shaping household structure (Benda 2002). At another market town (Zsámbék), which is ethnically mixed, it is also apparent that the original ethno-cultural differences of inheritance and marriage become loosened with time and a cultural exchange becomes observable between Germans and Hungarians: the Germans marry earlier and some of the Hungarians move in the direction of stem inheritance system (Husz 2002). A further problem is that the sources give little information about the dynamics of the household structure, about its changes in relation to the life cycle, about differences within individual villages which are hard to explain in terms of discrepancies in ethnicity, agricultural practice and social structure. On the micro-level the above mentioned models may easily disintegrate and the explanation of differences also becomes extremely problematic – in explaining differences within the micro-community we either cannot see the genuine differences in position that lead to the different behaviour forms, or the role of individual choice and personal decision was greater than we customarily assume and so we have to reckon with a multitude of changing, dynamic models.

In the course of this analysis, examining the customs of marriage and household formation, I concentrated on the age at which the first marriage is contracted – this factor is used by John Hajnal as a model forming element and the data are suitable for its analysis. I also focused on the proportion of servants and the number of married men per household, as this indicator describes the complexity of the household structure (Óri 2003a, 243–275). The average age for entering the first marriage is 22 years for men and 20 years for women. Almost 30% of men and more than 60% of women marry under the age of 20. Dispersion is small in terms of age at marriage, 24 years for a man and 22 years for a woman are seen as a late age at marriage. The data on Pest County seem to fit into two marriage models, an ethnically based one and an ‘urban’ type. In the region under examination two extremes can be outlined on an ethno-cultural basis: on the one side we find the Germans who are relatively late in marrying (but not by the standards of Germany) and on the other the Southern Slavs who are characterised by early marriages. Other differences, as those between Hungarians and Slovaks, are not significant. For women, ages at marriage are unanimously early (19 to 20) except among the Germans, and the frequency of marriages under the age of 20 is variable but significant at all places. In the case of the towns of Nagykovács and Kecskemét, where the population is Hungarian, we clearly cannot talk of a coincidence between town size, market town status and ‘Western’ (German) ethnic composition. In larger towns and market towns there clearly exists a male pattern of later first marriages which is, to a

varying extent, independent of ethnic identity.<sup>7</sup> Ethno-cultural background and size of location appear to be important explanatory factors, but their role does not seem exclusive. There are probably other factors still latent, and we also have to count on the influence and role of cultural exchange, adaptation and acculturation.

The proportion of servants (8%) is the same as it is in Western Europe. The fact that child servants and presumably unmarried young adult servants were also employed does not preclude the possibility that service was of a life cycle nature, neither does the fact that the servants were employed on a regular contractual basis. However, at least a part of servants (and maybe a predominant part) were not only in service for a certain period in their life cycle. This latter type of servants probably played an important role in the farmsteads, even though their work was of a seasonal nature, they migrated on a regular basis and some of them were probably married, living in an independent household. The proportion of servants is the highest in areas of low population density where villages with huge fields could be found, and which struggle with a labour shortage that attracts migrants. The greater part of servants contract for seasonal labour or a limited period of time here. While the presence of servants and the frequency of migrants are high in these areas, within the total in-migration of these regions the rate of migration with the aim of temporary, seasonal work in a contracted service is very high, and so is the rate of temporary in-migration compared to the number of the local population. Naturally, this means that emigration from these areas also shows high figures. The intensity of in-migration leads to a high increase in population and high natural population growth. At the same time this has a connection, even if not a very strong one, between the proportion of pastures, which shows that the rates of servant employment are tied in with the stock-breeding nature of the village. However, there are also several examples to disprove this assumption, a relative labour shortage and a high rate of servants can occur in conjunction with different branches and different arrangements of agricultural production as well as among the most varied conditions. Another important connection is that a high rate of servants is tied in with a high presence of the nobility and the ratio of the nobility is a significant explanatory variable according to regression analysis. At the same time there seems to emerge a determination which involves ethno-cultural features and type of settlement: in terms of the proportion of servants the two extreme poles seem to be taken up by the Germans (high) and the Southern Slavs (low). Besides this, Vác and Szentendre particularly seem to embody an urban type characterised by a low rate of child age servants (this is also true of towns like Kecskemét and Nagykőrös) while the rate of women

<sup>7</sup> See Faragó 2000 and Melegh 2000b.

servants is considerably higher (over 50%) than at other places. This leads us to suppose the presence of urban type maids in households.

The structure of households in the examined time period is simple: the county is characterised by the predominance of households comprising the nuclear family only (1.05 married men per household). At the same time we can find a few villages where household structure is evidently more complex. The complexity of household structure is doubtless related to ethno-cultural characteristics, as the majority of Germans lived in households of the nuclear family, while among the Serbs and the Croats it was more common for several (interrelated) core families to live within the frames of one household. This finding is confirmed if we examine the routine of entering service and the age of first marriage. In-migration from different directions more or less leads to the parallel existence of 'Eastern' and 'Western' marriage and household formation patterns, and sometimes this even occurs within one village. At the same time it is also obvious that in certain cases the effect of ethno-cultural elements may have been outweighed by other factors. The larger and more complex societies of market towns, which appear to have offered a wider range of opportunities for sustenance and the formation of new households, were predominantly nuclear in their household structure even if their population contained a determining Southern Slav element. It has also been demonstrated that the households of land owning peasants are more likely to be characterised by a complex household structure than serfs and servants. In terms of the connections between the method of production and household structure it seems definite that vine-growing towns and villages (partly market towns, partly places around Buda) and villages of the forested hill-country have simple households. Some places that have complex households are only surrounded by a narrow belt of land situated by the Danube, where birth control probably appeared in the last decades of the 18<sup>th</sup> century amid conditions of complex households. Both of these phenomena served to avoid social degradation, impoverishment and the fragmentation of the family estate at a time when possibilities of expansion were closing in. We had seen different types, too: with some villages of the Plain the opposite mechanism seems to have been operating: complex households are generated by a labour shortage, a relative abundance of land and the opportunities of expansion, unless this is incompatible with some ethno-cultural or local tradition. One thing we certainly have seen is that if we examine the question on a village level, the majority of towns and villages are dominated by nuclear family households, and complex households cannot be associated with either a unified region, an ethnic group, a social stratum or a form of production. This analysis outlines a kind of demographic mosaic but interpretation remains difficult on this level of analysis.

The above described, model forming elements of household formation (primarily the age for first marriage, the employment of servants, the complexity of

household structures) was subjected to cluster-analysis in an attempt to grasp different types within the county. The five subtypes thus generated agree in number with that of the results of Tamás Faragó's model experiment, but the types are somewhat different from those he outlined. Pest County did not have a Southern Slav population living in *zadruga* type households – indeed, this model cannot have been general even in villages of Southern Slav population. The 'Eastern' and the 'Western' type indeed emerge but these are heterogeneous, mixed in terms of ethnicity, location type, geographic conditions, economy and social structure, while the number of servants leads to the emergence of further subgroups. A unique Hungarian version is also observable which we named the 'Plain type' because it is characteristic, among others, of some typical towns and villages of the Great Plain. This type differs mainly in the proportion of servants and the smaller size of households from Tamás Faragó's 'frontier type'. Besides this type, there are also several individual variants on the Plain, characterised by a very high rate of employed servants, a varied age of first marriage and varying degrees of household complexity.

3. *Subtypes of marriage and household formation in Pest-Pilis-Solt county in the late 18<sup>th</sup> century*

	Ratio of servants (%), 1774–83	Men's age at first marriage 1774–83	Women's age at first marriage, 1774–83	Average household size 1785	Married men/household 1785
I. 'Eastern': early marriage, few servants, highly complex households	4,5	20,6	19,6	5,5	1,199
II. 'Western': late marriages (for men), considerable presence of servants, predominance of nuclear family households	12,8	24,1	22,1	5,2	1,018
II/a Subtype of 'Western' type: Germans, Calvinists, urban populations with few servants	5,9	23,0	20,9	4,8	0,959
III. „Plain” version: significant presence of servants, early marriage, nuclear families	9,3	21,6	19,2	4,9	1,012
IV. „Transition type”: somewhat later marrying age for men, transitional household structures, varying degrees of servant presence	5,6	23,1	19,6	5,4	1,103
County average (N=121)	8,1	22,4	20,3	5,2	1,055

*Migration*

The majority of villages in the county were re-populated before the mid 18<sup>th</sup> century but external and internal migration remained intense in the second half of that century, even if it did not reach the national average in 1785 or in 1787 (Faragó 1998. 32.). The strong presence of a servant population presupposes in-migration into certain parts of the region with the aim of entering seasonal employment which can still, however, mean that these servants settled for considerable periods of time. At the same time, the repopulation of the Great Plain region continued into the second half of the century, new farmsteads and villages were set up, in fact their number increased. Tamás Faragó's investigations also shed light on the fact that beyond the organised mass re-population a great role was played by spontaneous 'follow-migration' whereby foreigners directed into repopulated villages were followed spontaneously by their compatriots (Faragó 1998. 22). The German, Slovakian and South Slavic speaking villages of Pest County were in themselves able to generate in-migration of this kind. We must also bear in mind that certain urbanised locations of the county also had the potential to attract in-migrants. Foremost among these were Szentendre and Vác to the North of Budapest which were showing a natural population decrease, but we also have to reckon with the 'pull' effect of the two large towns, Pest and Buda. All this assumes a movement of short term migration which takes place within the boundaries of the county but partly overarches it (aiming at entering service or marrying) as well as migration which leads to people settling for the long term, but we must also reckon with migration directed at the artificially repopulated towns and villages and the newly created farmsteads during this century.

After analysing the data of the *Conscriptio Animarum* the intensity of migration cannot be clearly linked with the topographic conditions, although it is doubtless that higher figures occur mainly on flat areas like the Great Plain rather than in hilly or mountainous regions. The Danube must have played an important role, too, in at least two distinct ways. On the one hand it acts as a water path that made in-migration easier, and on the other hand it is a boundary which limited the growth of villages, their surrounding belt of plough land and their production opportunities, and thus acts to curb migration. Thus, for example, the flat part of the county is rather many faceted from the point of view of migration. We can find regions unanimously high in mobility and others that were unanimously low: it has become clear that the extent of migration cannot be clearly linked to ethnic composition, type of location, the closeness of the two large cities or by geographic conditions and there are obviously different, partly economic factors in the background which have to be taken into consideration.

To sum up, the most useful explanatory factors in accounting for migration seem to be the size of arable land available, the amount of physical space and the method chosen for satisfying an emergent high labour demand (employing servants) as well as a high rate of pastures. In other words, the chief role is played by geographic, economic features and characteristics of work organisation. The influence of a few other factors (marriage rate, fertility, number of persons per household, age at marriage for men, illegitimacy) is more difficult to decipher, they are probably in a complex interaction with the level of migration.

#### *Natural population increase and population growth*

A joint examination of natural population increase, population growth and migration reveal that migration plays a very important role in population growth, but at the same time the uncertainty of data on migration also became evident. The relatively weak correlation between natural increase and population growth is caused by migration. Population growth was high between 1774 and 1783 mainly in towns and villages with huge fields, frequent employment of servants, high in-migration, including a high in-migration of servants, and where the fields of the settlement included a high ratio of pastures. This description is a relatively accurate equivalent of the conditions of the Great Plain part of the county. The relation between fertility and mortality (the rate of natural population increase) is also mainly defined by the regional characteristics, but within this the levels of fertility and mortality can vary widely from place to place. At the same time, the level of mortality has a more powerful and direct effect on natural population increase than fertility which is less changeable.

#### JOINT ANALYSIS OF THE MOST IMPORTANT DEMOGRAPHIC VARIABLES

We carried out cluster-analysis using the variables which have proved reliable in the previous analysis in order to attempt to define the demographic micro-regions of the county. The method we applied allowed us to form groups of towns and villages after analysing some of the variables which can partly offer a control over the results of the categories created *a priori* (geographic, ethno-cultural and type of location), and on the other hand they grasp the basic units for demographic behaviour within the county. By examining the micro-regions thus created, we might take a significant step ahead in identifying the factors that determine demographic behaviour and at the same time we can gain objec-

tive criteria for sample selection – a very important consideration for local level research.

The results (seven major clusters and three consisting of only one location) justified the outcome of earlier analysis: the county is extremely varied in demographic terms, the individual demographic types are extremely mixed in terms of ethnicity and denomination and thus it is impossible to identify clear social distinctions between them (at least on the basis of the variables I used) and the clusters are not unified in space. Each attempt at analysis resulted in a multi-coloured, mosaic-like picture in which some of the basic elements are physically next to each other, while others are often far removed and mingled with other demographic characteristics. Within the groups which show demographic similarity, the individual towns and villages are extremely varied in ethnic and denominational terms. In most cases, the same could be said even of places lying right next to each other, however, we can also find some ethnoculturally homogeneous units which form a tight physical compound. These, however, never consist of more than two or three villages, while similar villages in their neighbourhood produce differences in demographic terms. (See Appendices II, III.)

## SUMMARY

In summary we can point out that comparing the results gained from the *Conscriptio Animarum* with László Hablicsek's estimates for the 1820's (Hablicsek 1991) we find a population slightly higher in fertility and mortality (higher mortality in the young age groups) and younger in age composition, producing a slightly higher natural population increase. Compared to a decade which by the standards of the 19<sup>th</sup> century counts as very good in mortality and high in natural population increase, just before the time of Joseph II's census the population underwent a period which had also started out favourable but then came to show worsening mortality rates with almost identical natural population increase and almost 15% higher rates in fertility and mortality. All this fits in well with the earlier results of historical demography. Fertility was higher in the years preceding the census than in the 1820's, even though local differences were higher in both time sections. Conscious birth control was only detectable in traces in the second half of the 18<sup>th</sup> century in this region. According to the results of family reconstitutions, the practice began to spread in certain areas only from the 1790's onwards. While strong local differences persisted and even increased, this growing practice may have contributed to the altogether lower fertility of the 1820's. Mortality was higher in the 1770's and 1780's but we have seen that this may be attributed to the various epidemics, some minor, some more serious, of the 1780's and the consequent worsening of

mortality. The good mortality rates of the few decades preceding the 1780's may have supported a permanently high natural population increase, as high in some cases as 1%, even if this probably cannot be projected to a national level and even less to the whole of the 18<sup>th</sup> century. It seems, however, that after the 1780's such high population growth only occurred for shorter periods. All of this would explain the lower rates of growth that were characteristic after the time of Joseph II's census at least as compared to the years directly preceding the census. In other words, the most vital demographic figures of the conscriptions fit in well, in our judgement, with the picture we have outlined concerning the demographic development of the 18<sup>th</sup> and 19<sup>th</sup> centuries and altogether reflect realistic demographic conditions.

On the local level, however, we are left with a number of uncertainties which the analysis was unable to disperse. Although we have probably managed to filter out the majority of villages where the conscription was incomplete, this is unlikely to have been 100% successful. Partly this and partly the character of our fertility and mortality indicators might render local level comparisons doubtful. Therefore we mainly strove to isolate and compare the extreme values of the various demographic phenomena, thus trying to highlight the causes of the differences. During the analysis it became clear that our figures concerning ratios of population growth and migration are still extremely uncertain, often based on incomplete data.

During the analysis a few important demographic indicators (mortality, natural population increase and partly fertility, migration and population growth) occasionally revealed the differences between the Plain regions and the hilly Northern part of the county. The per capita size of arable land is far greater on the Great Plain than in the northern part of the county and the proportion of meadows and pastures is also much higher, while in the north the rate of forests is higher. Larger spaces, more extensive lands and the more powerful role of stock breeding go hand in hand with more favourable mortality rates and lead to better natural population increase. Favourable figures in terms of population growth, in-migration and fertility do not apply to the whole of the flat southern part of the county, only to the classic 'puszta' region surrounding Kecskemét. The region along the Danube, with its moderate fertility and low migrational mobility differs considerably from Kecskemét's local characteristics.

One feature clearly identifiable from our data is thus geographic, flowing from the demographic nature of the Great Plain: better mortality, higher natural population increase, higher levels of migration and population growth and a younger age structure which probably arises in some places from migration, resulting in very high fertility. In the background of this we probably find economic and also, in all probability, social characteristics.



Analysis of smaller geographic regions shows that the majority of our regional units was heterogeneous in terms of ethnicity, denomination, social structure, mode of production and, consequently, demographic characteristics. In terms of ethnic composition and religion our ethno-cultural regions, rendered unified according to the boundaries of parishes, showed great demographic versatility. Demographic behaviour was indeed mosaic-like, 'molecular in structure', its basic units consisting of two to three neighbouring villages. These, however, were unlikely to constitute several hundred or thousand demographic subtypes. As we include ever more variables, the picture becomes increasingly colourful and complex, yet, one or other of the basic units resembles quite clearly the characteristics of units located in different regions, determined by different geographic and economic conditions, and characterised by different denominational and ethnic composition. We only find two or three mosaic stones of the same colour side by side, others mingle with stones of different colour. This 'motley mosaic' character is perhaps the most powerful feature of the picture that has emerged through our analysis. The only relatively clearly isolated and unified region with a demographic character of its own was a cluster of largely Calvinist villages along the Danube, in the 'Duna-mellék' area. These were distinguished by lower fertility, a relative reluctance to migrate and a high prevalence of complex households. However, it is also clear that this picture is tied in with the scene chosen for analysis, with the sources used, the level and methods of analysis and it requires further examination to decide whether it permits any generalisations.

Correlation and regression analyses have revealed the connections between the variables used, but the results of these are rather ambivalent. Some of the connections between different demographic phenomena reflect natural and familiar connections. Further connections must be the result of complex and indirect mechanisms: social divisions in the background of denominational composition were not visible, the connection between mortality and the rate of vineyards was obviously a highly complex one, related to the social conditions of vine growers, with their unique and vulnerable position in which they were exposed to the changes of market prices and more generally with the fact that vine-growing was usually common only in places where conditions were not favourable enough for other branches of agriculture or for alternative forms of sustenance.

A further important result of the regression and correlation analyses is that they confirmed the connection between certain demographic indicators while they were unable to justify the role of other factors (denominational composition). It is important to point out that the majority of connections identified were not necessarily a direct link of cause and effect, and theorising over the nature of connections is largely hypothetical in nature, while certainly such theorising can be seen as a source of questions orienting further research. The

fact that we were forced to handle villages and towns as a unit is also an act of reduction which may have covered important differences during the analysis. Moreover, regression analyses also made it clear that a great part of differences in the examined indicators cannot be explained through the independent variables we used here. It seems that important factors of culture, mentality and social structure have remained hidden during this analysis.

Cluster analysis using a part of our demographic variables yielded results in harmony with earlier observations. In analysing demographic differences it is clearly significant which demographic indicators were included in the analysis, which demographic phenomena we wish to understand in its different manifestations and which of the available variables we choose to work with. The result, however is always a motley, varied mosaic-like image: individual geographic micro-regions are always highly varied in terms of economic, social structure, cultural characteristics and consequently of demography: the patterns of demographic behaviour in the county show geographic, economic, social and cultural plurality. Within the individual geographic regions, however, we could identify demographic micro-units (patches in the mosaic) consisting of no more than 2, 3 or 4 villages (mosaic stones) that resembled other, more remote units and differ from units close to them in space.

One lesson we can learn from all this is that just as the simplifying division of the Hajnal model did not prove suitable for our Pest County material when examining marriage and household structure models, similarly the attempt at creating a typology with the help of several demographic indicators showed that explanations based on denomination and ethnicity are rather tenuous. Explanations based on differences in geographic position and mode of production are more promising but indicators based on cadastral surveys only provided a superficial image of the conditions of agricultural production in various villages and, apart from vague shades, failed to outline differences in agricultural production between the various clusters generated by demographic variables. It is natural that in a narrow geographic region we should find several basic demographic elements and the towns and villages of a region, even if similar in natural environment, related to each other by a division of labour rather than in being identical in production. Thus differences could occur in a smaller space in demographic behaviour, marriage habits, household size and complexity, and probably also in inheritance, servant employment and reproduction, with a wide range of strategies operating side by side which were at the same time similar to those observable in other, more remote villages. Differences also occurred even within one location, whether on an ethnic, a religious, a social or an occupational basis or as a combination of these: e.g. in the age at which men first married, in the practice of exogamy-endogamy of marriage, in household structure, in fertility, in the early appearance of conscious birth control or in mortality. The present analysis was unable to perceive such differences partly because

individual towns and villages had to be treated as a unit and partly because our data did not allow for such a subtle examination of demographic differences. It is particularly in the field of social differences that our data were painfully uninformative – thus we were forced to leave out of consideration perhaps the most vital explanatory dimension. The same applies to cultural differences which are probably also very important in some respects (e.g. in terms of fertility). A more thorough understanding of these may have shed more light on the differences that might be grasped on the level of religious denominations or on the discrepancies between and within regions as well as on similarities which overarch geographic regions. The data we used (those available in great quantities), and the methods of analysis they rendered possible, outlined the limits of possible understanding.

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## APPENDIX

*I. Variables used in the analysis and their averages for the 1770's and 80's*

Variables	Average
<i>Conscriptio Animarum (1774–1783) and Joseph II's census (1785):</i>	
Differences in % between the genuine number of the non-noble population in 1785 and the number estimated on the basis of the conscriptions	5
Difference in % between the number of the non-noble population in 1783 and 1785	4,6
Number of population in 1783	239394
Population growth between 1774 and 1783, as a percentage of the 1774 population number	16,6
Ratio of natural increase (‰)	12,2
<i>Demographic structure (Conscriptio Animarum)</i>	
Ratio (%) of women within the total population	48,9
Ratio (%) of minors (under 15) within the total population	42,8
<i>Denominational composition (Conscriptio Animarum)</i>	
Ratio (%) of Catholics within the total population (1770's)	63,6
Ratio (%) of Protestants within the total population (1770's)	33,5
Ratio (%) of the Greek Orthodox within the total population (1770's)	1,8
Ratio (%) of Jews within the total population (1770's)	1,1
<i>Social structure</i>	
<i>Conscriptio Animarum:</i>	
Ratio (%) of servants within the total population	9,2
Ratio (%) of minors (under 15) within the servant population	32,6
Ratio (%) of women within the servant population	35,3
Ratio of the poor (%) within the total population (beggars, persons living in workhouses and charity homes)	0,5
<i>From Joseph II's census:</i>	
Ratio (%) of noblemen	2,2
Ratio (%) of peasants and craftsmen within the non noble, male population over-18	32,8
<i>Farming (Cadastral survey 1789):</i>	
Arable land per capita (in cadastral acres; 1 cadastral acre = 1.42 acres) based on the cadastral survey (agricultural area not including forests).	5,9
Ratio (%) of plough land (%) in the fields of the settlement (based on the cadastral survey)	34,7
Ratio (%) of pastures in the fields of the settlement (based on the cadastral survey)	31,9
Ratio (%) of vineyards in the fields of the settlement (based on the cadastral survey)	3,5
Ratio of gardens (%) in the fields of the settlement (based on the cadastral survey)	3,6
Ratio (%) of meadows in the fields of the settlement (based on the cadastral survey)	15,6

Ratio (%) of forests in the fields of the settlement (based on the cadastral survey)	10,6
<i>Fertility (Conscriptio Animarum):</i>	
Crude birth rate (‰)	58,6
Number of births per 1,000 married women	306,1
Number of births per marriage	6,2
Ratio (%) of illegitimate births within the total number of births	0,6
<i>Mortality (Conscriptio Animarum):</i>	
Crude mortality rate (‰)	46,4
Number of deaths per birth	0,8
Number of infant deaths per 1 adult death (1780's)	2,1
<i>Marriages, family, household</i>	
Conscriptio Animarum:	
Crude marriage rate (‰)	11,4
Number of terminated marriages per 1 marriage	0,9
Ratio (%) of married men among adult males	68,8
Ratio (%) of married women among adult females	71,9
Average age at marriage among men (1770's)	22,4
Average age at marriage among women (1770's)	20,3
Ratio (%) of men marrying at 20 years of age or younger, among marrying men (%) (1770's)	30,6
Ratio (%) of women marrying at 20 years of age or younger among marrying females (1770's)	63,4
From Joseph II's census:	
Number of persons per 1 marriage	5,2
Number of households per 1 house	1,3
Number of married men per household	1
<i>Migration (Conscriptio Animarum):</i>	
Gross rate of in-migration (‰)	17,3
Gross rate of out-migration (‰)	16,3
Difference between in-migration and out-migration rate (net migration rate)	1
Sum of in-migration and out-migration rates (total migration rate)	33,6
Ratio of illegal in-migrants within the total number of in-migration (%)	51,3
Ratio of temporary in-migration (‰)	9,7

Note: County averages refer to the 185 towns and villages whose data appear in all three groups of sources used.



*II. Demographic characteristics of the groups of locations generated by cluster analysis, 1774–1783*

	No. of people under the age of 15 (%)	Number of births per 1000 married women	Number of deaths per 1 birth	Married men (%)	Married women (%)	Illegitimate births (%)	Household size (persons)	Number of married men per household	Rate of men married at 20 or younger (%)	Rate of women married at 20 or younger (%)
Average (N=121)	43,3	289,3	0,834	69,0	71,7	0,7	5,2	1,055	29,6	64,2
1. (N=13)	40,9	305,3	0,906	62,9	65,8	0,7	5,1	1,064	55,8	70,9
2. (N=30)	44,9	284,3	0,853	74,5	75,4	0,9	5,0	1,011	18,1	51,6
3. (N=16)	42,4	265,1	0,870	65,8	71,0	0,6	4,8	0,963	17,7	75,2
4. (N=22)	43,8	303,1	0,781	63,3	67,3	0,2	5,3	1,038	16,1	48,8
5. (N=8)	45,9	326,6	0,623	77,6	80,1	0,6	5,4	1,068	28,0	77,7
6. (N=24)	43,6	274,5	0,770	72,1	74,4	0,3	5,6	1,189	47,8	76,7
7. (N=5)	38,7	307,8	1,028	56,0	58,3	0,9	4,6	0,945	24,0	62,9
8. Szen-tendre	33,2	228,8	1,802	63,5	59,9	2,8	3,9	0,753	26,0	75,9
9. Tököl	46,6	283,2	1,156	83,4	87,0	0,0	6,6	1,560	64,0	69,7
10. Vadas	37,3	343,7	0,940	68,1	68,3	9,0	4,0	0,875	100,0	100,0

*III. Major characteristics of major clusters*

	Religion	Ethnicity	Farming	Fertility	Mortality	First marriage	Household structure
1.	Catholic majority	Hungarian-Slovakian	Plough lands and lots of forest	high	high	early	transitional
2.	Catholic-Protestant	Hungarian-German-Slovakian	Mixed land cultivation and stock breeding	average	average	rarely early	transitional
3.	Slight protestant majority	Hungarian-German-Slovakian	Strong stock breeding	low	average	early for women	simple
4.	Catholic majority	Hungarian, German, few Slovaks	Slight predominance of plough lands, mixed farming	High	low	rarely early	transitional
5.	Strong Catholic majority	Hungarian	Slight dominance of plough lands, mixed farming	very high	very low	early for women	transitional
6.	Catholic majority	Hungarian-Slovakian, a few Germans	Pastures, meadows in slight predominance, mixed farming	Low	low	early	highly complex
7.	Catholic-protestant	Hungarian-Slovakian-German	Besides plough lands a high rate of vineyards and forests	High	very high	average	simple