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DEMOGRAPHICS OF POPULATION AGEING IN HUNGARY

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Abstract

The paper deals with population ageing from demographic aspects. It is a general trend in human development. A new accelerated stage with shrinking labour force has been started.

There is a redefinition of young, working-age and old-age groups. Trends in schooling, postponement in family formation, childbearing are connected also with ageing with this respect.

The cohort ageing can also be defined. Here the basic inequality between the cohort and period burden of support is presented and the main strategies for adjustment are outlined.

Roma and immigrant subpopulations modify the tempo of ageing in Hungary. Educational change is of great importance to cope with the challenges.

JEL classification: J1, J11

Keywords: Hungary, population ageing, long-term projections, pension

It is clear that population ageing should be rated as one of the most important processes in the developed countries and even worldwide. It is an unprecedented phenomenon in human history. According to UN population projections, by 2050 the number of persons aged 60 and over in the world will exceed the number of those aged below 15. By 1998, this historic turn had already taken place in the more developed regions.

Population ageing poses long-run challenges to society. It has major implications in the economic area, in the social sphere, even in terms of political dimensions. Suffice it to mention the impact on economic growth, savings, investment and consumption, labour market, taxation, pensions, health care, living arrangements, housing etc. It should be emphasized that population ageing is expected to continue, even accelerate in the next decades, indicating massive growth of challenges.

The paper consists of four topics concerning the ageing process in Hungary: (1) ageing and its determinants; (2) ageing and the changing age pyramid; (3) cohort ageing; (4) ageing and subpopulations. Short introduction into Hungarian pension reform is also presented.

What is population ageing?

Population ageing from a demographic point of view is a natural process, generated by demographic transitions. Fall in fertility and mortality from their high level in the pre-decline period to the recent low ones has involved not only robust changes in the population size, but also long-term transformation of the age-structure. This is called population ageing. Consequently, ageing is a basic process of population development in the 20th–21st centuries. In this light, ageing is not a demographic crisis, but quite to the contrary, it mirrors a general trend of human development aimed at achieving longevity and well-being.

The most documented feature of population ageing is the growing size of the elderly population and its increasing share of the total population. Other features include a rise in the average age of population, a decreasing proportion of children, increasing old age dependency ratio. When judged by these criteria, the ageing process is not a new demographic phenomenon in Hungary. In fact, population ageing in Hungary, as in other developed countries began over a century ago, with the onset of transition in fertility and mortality from high to low levels. At the dawn of the 20th century, Hungary's population was very young in demographic terms. Nearly half of the population was below 20 years of age. Children outnumbered the elderly (taken as those aged under 20 and 60 years and over, respectively) by 6 to 1 (see Table 1).

Table 1

Age structure changes in Hungary, 1901–2050

Age group (years)	1901	1949	2001	2050
Population size (in 1000)				
Under 20	3078	3067	2360	1632
20-59	3263	5065	5761	4194
60+	514	1073	2079	2941
Total	6854	9205	10200	8767
Percentage distribution (%)				
Under 20	44,9	33,3	23,1	18,6
20-59	47,6	55,0	56,5	47,8
60+	7,5	11,7	20,4	33,6
Ratio of under 20 to 60+	6:1	3:1	1:1	1:2
Average age of population	27,0	31,5	37,2	44,0
Old age dependency ratio	0,15	0,20	0,28	0,59
Total dependency ratio	1,09	0,84	0,71	0,99

Source: Demographic Yearbook at HCSO (2001)

Between 1901 and 1949, the number of Hungarians aged 60 years and over increased almost two-fold, from 514 thousand to 1,073 thousand. Over the next 52 years, it has doubled again reaching 2079 thousand in 2001. This was much faster than the rise of the number of those in working ages or the growth of the total population. The number of young people under 20 even decreased, mostly and sharply after the 1960ies.

Population ageing means not the rising number of older people, but growing proportions of them, and, obviously, shrinking proportions of younger age groups. In Hungary proportion of those under 20 fell from 44,9 percent to 23,1 percent during the last century. Excess of young over the elderly has gradually disappeared. Share of people aged 60 and over increased from 7,5 percent to 20,4 percent.

Latest projections indicate that the population aged 60+ is expected to grow by about one million up to the middle of the century, to reach 2,941 thousand by 2050. This is expected to make up 33,6 percent of the total population projected. Large generations borne in the 1950ies and 1970ies will accelerate the process when enter the group of elderly people.

At present there are about as many elderly as children in Hungary, in terms of age groups 60+ and 0-19. By 2050, there are projected to be at least 80 percent more elderly than children. New phenomenon of shrinking labour force poses new challenges for the society. The share of those in working ages is expected to decrease below 50 percent, while their number will fall to a level back before World War I, only 4 million.

In Hungary challenges of population ageing are strongly connected with the challenges of the population decline. Population size has already decreased by 600 thousand since

1981. The decline is expected to continue, by 2050, there will be 8767 thousand inhabitants in Hungary, by almost 1.5 million less than now.

Population decline and ageing are in strong relationship in Hungary. One can say that the smaller the population size will be, the more developed stage the ageing process will reach. It means that population decline is not a solution of undesirable effects of ageing.

Population ageing has a very strong impact in many domains since it changes the dependency ratio. It is a fundamental economic issue that ageing alters the burden of transfers from those in work to the dependent population. In Hungary, old age dependency ratio almost doubled in the 20th century and it will happen also during the next 50 years. Nevertheless, the next period show an essential difference from the past regarding the total dependency. After a long period of low level caused mainly by below replacement fertility, Hungary will face to a sharply increasing total dependency ratio.

These estimations draw on the baseline variant of the 2001-based population projections for Hungary, which cover the period to 2050. This variant assumes that during the projection period, the life expectancy at birth for males will increase from 68,2 years to 76,5 years and for females from 76,6 years to 82.6 years. Concerning international movement, there will be a net migration gain of 12,000 persons per year. Fertility also is assumed to increase to the medium level of 1.6 children per women.

Time series of population figures in the past and projected underline that ageing even takes place within the group of older persons. The fastest growing age group in Hungary are the oldest old, those aged 85 years and older. Compared to 1901 its size is 14-fold now and it will be 34-fold by 2050 according to the projection (Table 2).

Table 2

Ageing of the elderly in Hungary, 1901-2050

Age group (years)	1901	1949	2001	2050
Population size (in 1000)				
60-64	210	380	534	600
65-74	223	499	928	1240
75-84	72	172	490	799
85+	9	22	126	302
Total	514	1073	2079	2941
Changes over time (1901=100)				
60-64	100	181	254	286
65-74	100	223	416	555
75-84	100	240	682	1111
85+	100	249	1426	3412
Total	100	209	404	572

Source: Projection database of HCSO DRI, 2003.

It is also clear that the working-age population is getting older. Even among young people under 20, the average age is now older than it was in the past.

Population ageing is determined by the long-term joint effect of its determinants, fertility, mortality and migration. In Hungary, mostly general trend of demographic transition influenced the ageing process to the middle of the last century. In the time of communist regime between 1950 and 1990 the mortality crises slowed down the ageing process, while below replacement fertility combined with massive emigration flows influenced the process to accelerate. As a consequence, Hungary's population is rated to be very old in worldwide context at the present.

Ageing and the age pyramid

Population ageing is a total transformation of the age pyramid. It is difficult to identify the various changes in view of the fluctuations in the underlying processes, but one can differentiate three main stages.

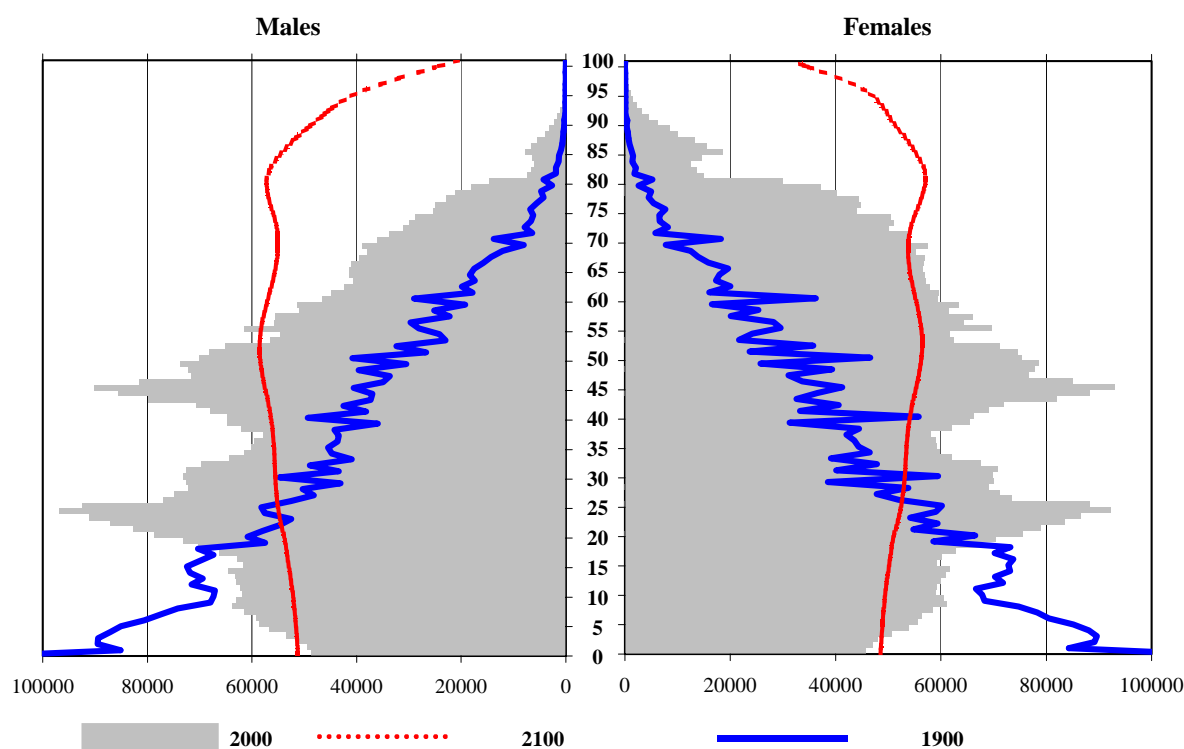
The age pyramid of Hungary at 1901 may characterize the initial age structure at the beginning of the first demographic transition, which in the developed countries generally took place in the 19th century. It draws a very young population. The age pyramid is shaped like a Christmas tree.

At the end of the first transition, in Hungary close to the end of the last century, the shape of the age pyramid changed. In this phase, the size and proportion of different age groups were far more balanced, disregarding the irregularities caused mainly by fluctuations in the birth rate. Another important feature of this age pyramid is that the share of those in the working-age group was still high and the overall dependency ratio was relatively low. Having said that, a very significant change took place in the young and old components of the dependency ratio. Whereas old-age dependency was on the rise, the level of young-age dependency declined. The ageing index gradually approached 1.

The third shift in the age pyramid is still ongoing. As old-age life expectancy continues to increase, dramatically raising the share of older persons, the proportion of those in working ages is decreasing, resulting in a steady growth in old-age dependency and overall dependency. Figure 1 shows how these different age pyramids developed in Hungary.

Figure 1

Age pyramid of the population of Hungary, 1900, 2000 and 2100



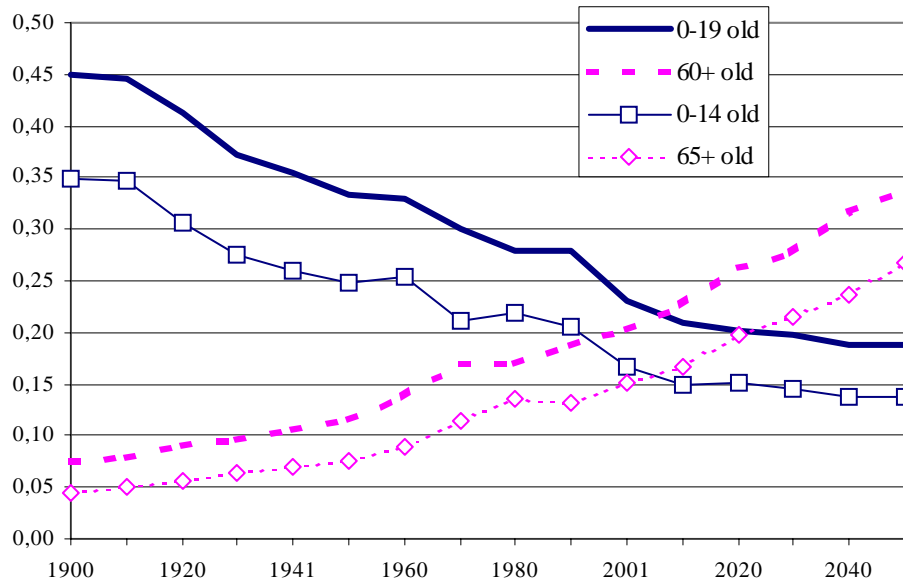
Source: Projection database of HCSO DRI, 2003

The age pyramid in 2100 is based on a scenario assuming total fertility rate 1,9 and life expectancy at birth of 100 years, as the highest value in this century. Although we cannot vouch for the reality of these assumptions, they are certainly not impossible.

The main implication of Figure 1 is that a fourth determinant of ageing should be taken into consideration, namely the redefinition of young, middle-aged and old age groups. Proportion of those aged 60+ was 8 percent in 1901, it is 20 percent now and it is expected to be 45 percent in the 2100 scenario. The situation among those under 20 is quite to the contrary: their share decreases from 45 percent to deep below 20 percent. It seems that whatever we set the bottom limit of the elderly group and upper limit of the young part of population, the share of elderly will exceed the proportion of young (see Figure 3).

Figure 3

Proportion of young and elderly population in Hungary



Source: Projection database of HCSO DRI, 2003

In Hungary, there is a time for historic turns in ageing process also regarding the different definitions. The proportion of those aged 60 and over is already higher than proportion of those under 15 and will reach the proportion of people under 20 in 2006. Looking those aged 65 and over, their proportion will reach share of children under 15 in 2005, those under 20 in 2020. Moreover, in 2050, it will be as many people over 75 as below 15, according to the baseline projection.

Not only the increasing share of elderly involves the shifting the bottom limit of the elderly group. What we see happening now is that the upper limit of the young age group is increasing, too. Trends such as prolonged education, leaving the parental home at an older age, late marriage, and increased age at childbearing, are all extending the age interval of youth. Increased longevity and expanded childhood force the society to redefine the burdens of the working age group.

All this implies that a process is ongoing, perhaps not for all, but for a growing number of people, in which they are extending their active lives, claiming and accepting older retirement ages and/or forms of gradual retirement. It is clear that policy efforts to stimulate labour force participation and to extend people's active lives can be one of the most productive among the means to challenging the process of population ageing.

Cohort ageing

Population ageing is usually seen as a cross-sectional process. Its indicators (the proportion of older persons, average age, old-age dependency, ageing index etc.) refer

to the population observed at certain points in time. However, ageing can be defined in terms of birth cohorts, too. If life expectancy increases, the proportion of time spent in old age by a given generation is extended. This may be referred to as a cohort analogue of population ageing, or simply cohort ageing.

One can characterize the extent of the cohort ageing using life tables. For precise calculations cohort life tables are needed, here we illustrate the process using period indicators. In Hungary, share of those survive until age 60 was 35 percent at the dawn of the 20th century. According to the mortality data this ratio is 79 percent at the present and it is expected to be 90 percent by 2050. Changes in survival until age 80 are much more significant: 8 percent in 1901–1905, 35 percent now, and 55 percent in 2045–2049 (both sexes).

Table 3

Survival until older ages in the period life tables, Hungary, 1901–2049

Age group (years)	1901-1905	1951-1955	1996-2000	2046-2049
Number of male survivors until age				
50	43944	79308	85178	94017
60	34875	68762	69958	86603
70	21629	49401	47871	71574
80	7586	22212	22496	43481
Number of female survivors until age				
50	44052	84350	93529	97247
60	35452	76615	86794	94253
70	21782	59517	73123	87194
80	7635	29401	46285	67664
Number of survivors until age				
50	43993	81749	89362	95586
60	35153	72556	78561	90336
70	21701	54284	60899	79249
80	7609	25681	34824	55467

from 100,000 newborns of respected sex according to the period life tables

Source: Projection database of HCSO DRI, 2003

How could the study of cohort ageing contribute to our topic, namely ageing and intergenerational equity? The answer is simple: if people spend more time in old age, generations will need more benefits to ‘manage’ longevity. If we approach the issue from the perspective of successive generations, the phenomenon of ‘generalized sandwich generations’ emerges. Whilst there is a growing demand among the generation of parents for benefits designed to lengthen and improve their lives in old age, the generation of children need more loan to make their lives as productive and

‘transferable’ as possible in working ages in order to make transfers to their parents. Intergenerational solidarity could easily lose force in the process, corroding the foundations of society.

In the transition countries, as in Hungary, this situation is even sharper, because of the quick changes in almost every field. One can observe the schooling boom, an expansion toward second and third level education. In 2001, among those aged 25–29, only 37 percent of males and 43 percent of females finished secondary education, while in 2021 it is projected to 72 and 84 percent, respectively. One can estimate that the length of the basic period for education will extend by 3 years at least. High proportion of people in their 20ies does not take part in the labour force. They postpone job career, marriage and childbirth.

At the same time mortality improvement starts in the region, especially in the countries joining to the European Union. In Hungary, life expectancy at birth increased by 3-4 years in the second half of the last decade, almost due to the decrease of mortality in older ages.

As a consequence of economic change, there was a loss of 1.5 million jobs in the first half of the last decade. Therefore very significant share of people in working ages receive benefit from the disability or early retirement system. About 10 percent of people aged between 20 and 60 are already retired. It means that beside the young and old part of the population significant share of those in working ages belong to the group of economically non-active people. In other words, Hungary is a country with high support burden ratio. While there is a pressure for increased expenditures to the economically non-active population due to population ageing, with the current low participation rates, there are severe difficulties to ensure enough contributions for social security programs.

Table 4

Support burden ratio, Hungary, 2001

Region	Ratio of economically non-active people to the economically actives
Central Hungary	1,29
Central Transdanubia	1,34
Western Transdanubia	1,27
Southern Transdanubia	1,59
Northern Hungary	1,73
Northern Great Plain	1,78
Southern Great Plain	1,59
Hungary total	1,48

Source: Regional projection database of HCSO DRI, 2003

According to Table 4, in 2001, the support burden ratio was 1,48 in Hungary. It means that there are 148 economically non-active persons for every 100 economically actives. Regions show big variations around this average from 1,27 (Western Transdanubia) to 1,78 (Northern Great Plain).

Support burden ratio can be transformed into the amount of lifetime spent with or without a (paid) work. Start with the stationary population of the life table for both sexes. Suppose that the young and elderly people are all dependant. Thus, the time spent in young and older ages is financed by the paid work in the working ages. In addition, time spent in working ages should also be divided into time with and without paid work. It can be done using the share of actives and non-actives in this age group. Finally we have got the very surprising result that in recent circumstances in Hungary only 36 percent of the total lifetime is covered by paid work, therefore loans and savings should support the other 64 percent.

Concerning the age-components of the support burden ratio, one can estimate the young-age, working-age and old-age ratios, dividing the number of economically non-active people aged under 20, between 20 and 60, at least 60 by the number of economically actives. Table 5 shows the ratios in actual population of Hungary (period support burden ratios) and the ratios estimated for the stationary population (cohort ratios).

Table 5

Period and cohort support burden ratios, Hungary, 2001

	Ratio
Period support burden ratios, 2001	
under 20	0,55
between 20 and 60	0,44
60 at least	0,49
total	1,48
Cohort support burden ratios, 2001*	
under 20	0,76
between 20 and 60	0,44
60 at least	0,57
total	1,76

* Based on the life table 2001

Source: Author's calculation

According to the table, one can point out the difference between cohort and period ratios. Both the young-age and the old-age dependency are higher in cohort view than

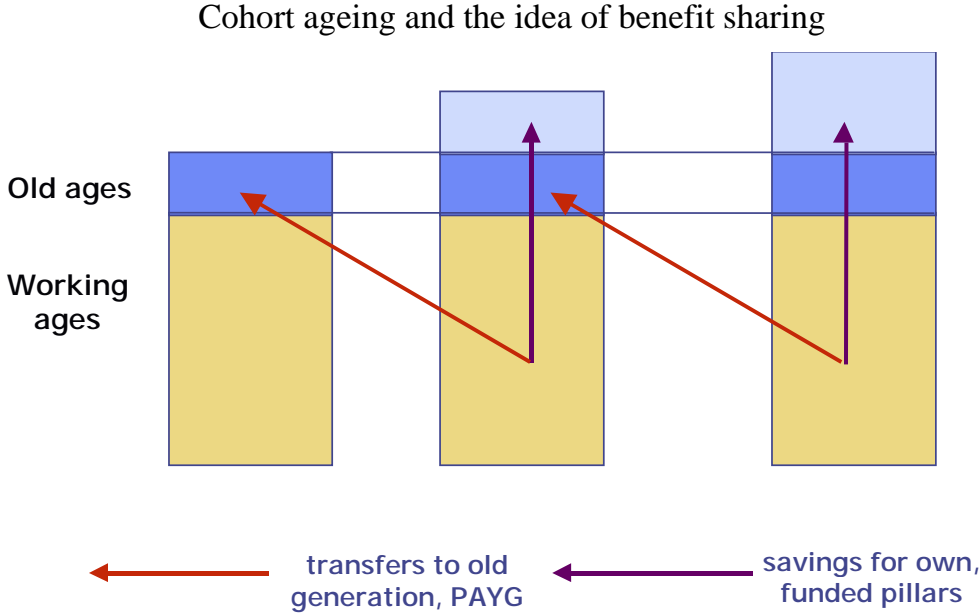
in the actual population. In other words, there is a basic inequality between the cohort and period burden of support.

What can happen in the near future? If further low labour force participation is assumed, an accelerating ageing makes the period support burden to grow, while higher life expectancies shift the cohort support burden. The former is estimated to 1.62 in 2020, the latter to 1.87, compared to the values in 2001, 1.48 and 1.76, respectively.

Three main strategies can be outlined to decrease the difference between period and cohort support burden, and, to achieve an overall decrease. A demographic strategy counterbalances the effect of growing life span with fewer children and more migrants. A demo-economic strategy increases the labour force participation and redefines the old-age limit promoting active ageing and rising the effective age for pension. An economic strategy can be based on progress in field of technology, productivity and human capital. It seems that for a sustainable development a good combination of these strategies should be developed in Hungary.

Among the possible solutions of financial problems of old-age programs in time of an accelerating ageing is the idea of benefit sharing. Old-age support is based on a combination of guaranteed/contracted benefits for all generations in the form of intergenerational transfers and additional (mandatory and voluntary) individual savings. Note that we speak about multi-pillar systems in old-age programmes, but from demographic background.

Figure 4



Source: Author’s illustration

Ageing and subpopulations

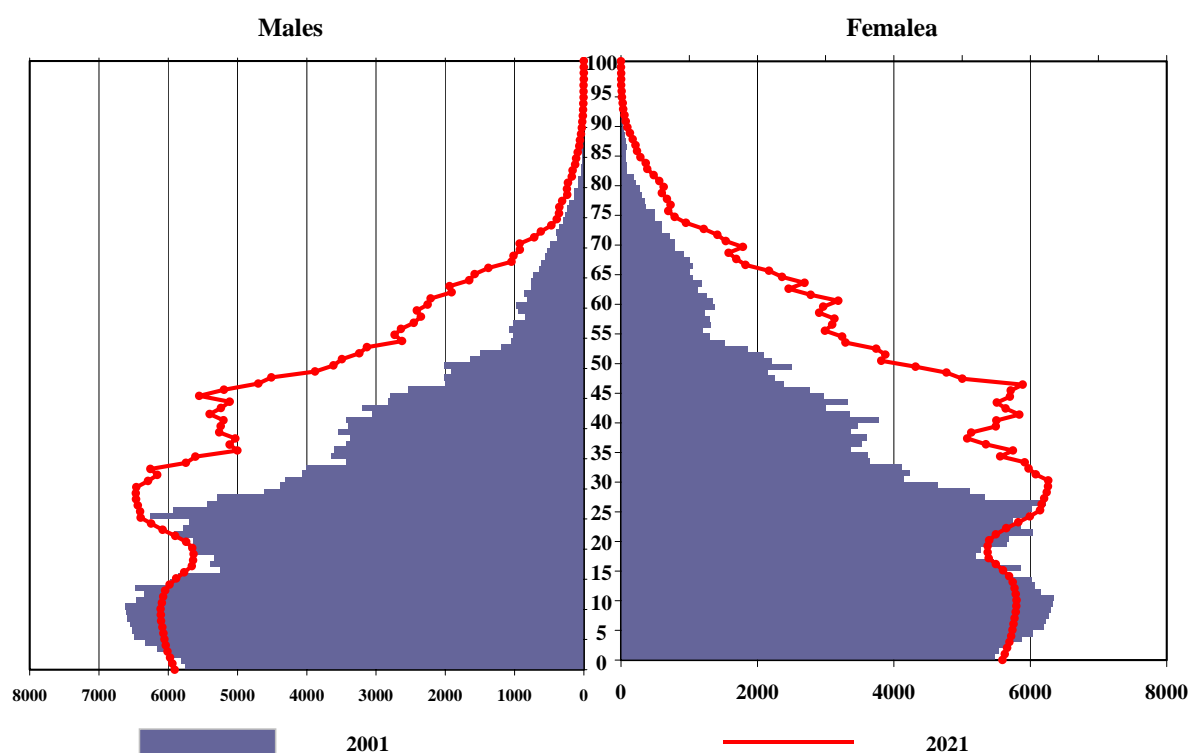
Population ageing influences not only age groups, but also subpopulations in general. Big differences among groups of society may exist in terms of the extent and tempo of ageing. In Hungary there are two special subpopulations acting for slower ageing: the Roma and the immigrants.

Roma population

A special challenge (and opportunity) is posed by Hungary's Roma (Gypsy) population. Currently this segment of Hungarian society is characterised by low employment rates, acute educational and training deficits, dramatic health problems and a serious problem of exclusion. Currently Romani employment rates are some 50 per cent lower than the average, which could have significant consequences for overall labour supply in the future if they are not better integrated into the labour market.

Figure 4

Age-pyramid of the Roma population, 2001, 2021



Source: Projection database of HCSO DRI, 2003

The future of the Roma population is characterised by steady growth and gradual ageing. In contrast to the population as a whole, high birth rates among the Roma are predicted to cause their population to double by 2050, growing to 13 percent of all Hungarians and according to the estimations their share in the working-age population will rise from 5 to 16 percent by the middle of the century.

From the point of view of the demographic transition the Roma subpopulation is in third stage of development. It means that the explosion period is over, and with slower growth the ageing of the Roma population will develop quickly. Figure 4 shows the age pyramid of Roma population to 2001 and 2021.

Immigrant population

To understand some historical roots of population movements crossing the border of Hungary, we need to remember the fact that in countries surrounding Hungary – in territories that had once belonged to Hungary – there is a sizeable population of ethnic Hungarians. The most populous ethnic community is in Romania (almost exclusively in Transylvania) whose number was registered by the census of 2002 at 1.4 million. There are 560,000 ethnic Hungarians living in Slovakia, nearly 300,000 in the Voivodina in the former Yugoslavia and 156,000 in the Sub-Carpathian region now in the Ukraine.

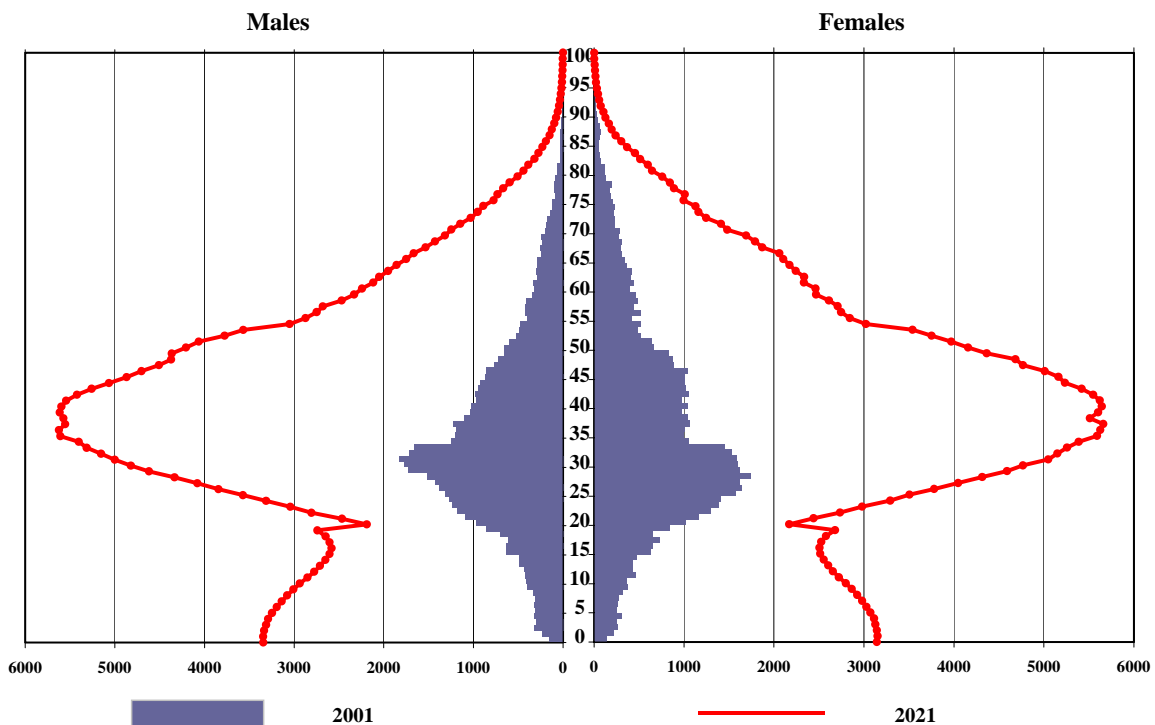
Due to her hard history in the 20th century Hungary was characterised with negative net migration. This situation has changed at the end of the 1980ies. During the last decade about 200 thousand more immigrants were received than emigrants have left the country. In the last years annual net foreign migration appeared around 18 thousand.

According to the 2001 population census 110 thousand foreigners reside in Hungary having long-term permission for staying or being in immigrant status. One can prepare population scenarios starting with this subgroup and calculate its future size and the age distribution. It is called the immigrant population.

The size of immigrant population would increase from the recent 110 thousand to 521 thousand by 2021. It is not impossible looking the 200 thousand net migration during the last decade. Each segment of the subpopulations will grow. The number of young will be 7 times higher than at present, the number of those in working ages and the elderly 4 times, 6 times, respectively. The whole population will be very young (Figure 5).

Figure 5

Age pyramid of immigrant population 2001, 2021



Source: Projection database of HCSO DRI, 2003

Educational change and ageing

At the end of the 1980ies Hungary was characterised with a relative low average level of education compared to other developed countries. One could estimate this time that about 40 percent of males and 25 percent of females finish apprentice school, 20-25 percent of males and 30-35 percent of females has completed second level education and an additional 10-15 percent has a diploma. The whole structure by education was more characteristic to an industrial society than to a post-industrial one.

The changes took place in Hungary during the transformation have greatly affected the education system and the needs for higher education. In the 2000/2001 academic years the number of students in the second level education was 510 thousand, the number of those at third level education was 349 thousand. The respective figures of the 1990/1991 years were 360 and 102 thousand.

The schooling boom is a very positive phenomenon, which quickly transforms the educational structure of the Hungarian population. According to the projections by level of education the number of medium and high-educated people will grow very

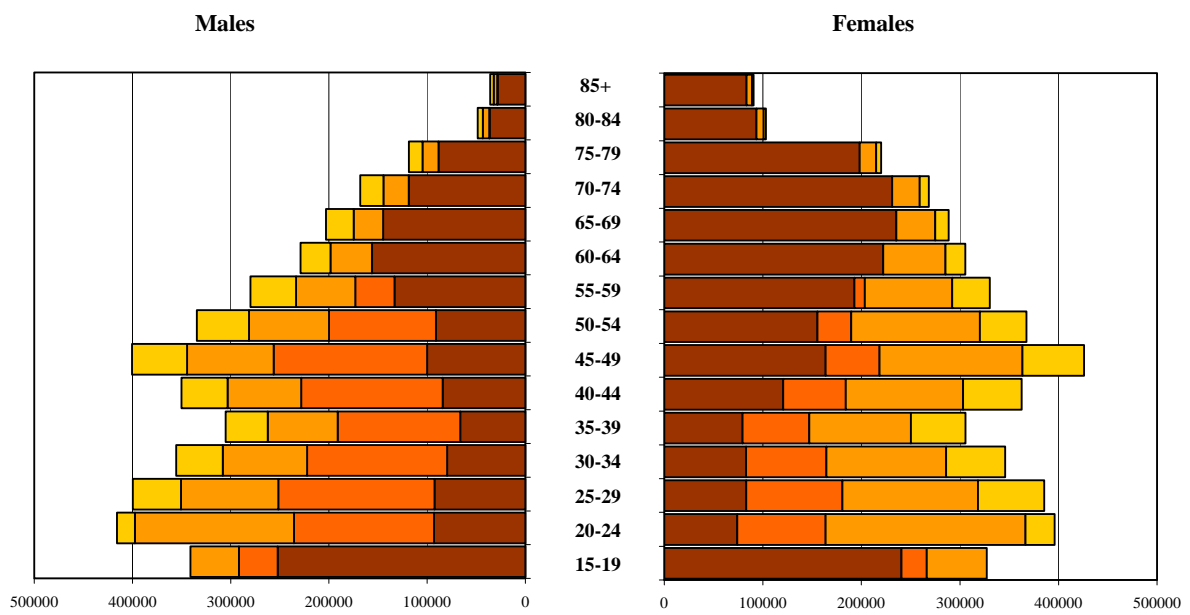
significantly, while the number of people with primary education or less falls. Fundamental changes will take place in the distribution of older people by educational level, too. Currently a big majority of older population is low educated, in 2021 more than half of them will have a general certificate of education. Figure 6 shows the recent age pyramid by level of education in 2001 and that estimated to 2021.

The educational change is of great importance concerning almost all topics of ageing. Higher educated people have better chances for longer life. In Hungary the difference between the life expectancy at age 30 of those males with high and low education exceed 10 years, by females 2 years. It is not evident that by increasing share of better-educated people fertility decreases automatically, because a significant part of intellectuals has 3 or more children. The schooling boom shifts the age limit of the young population, postpones family formation and childbearing.

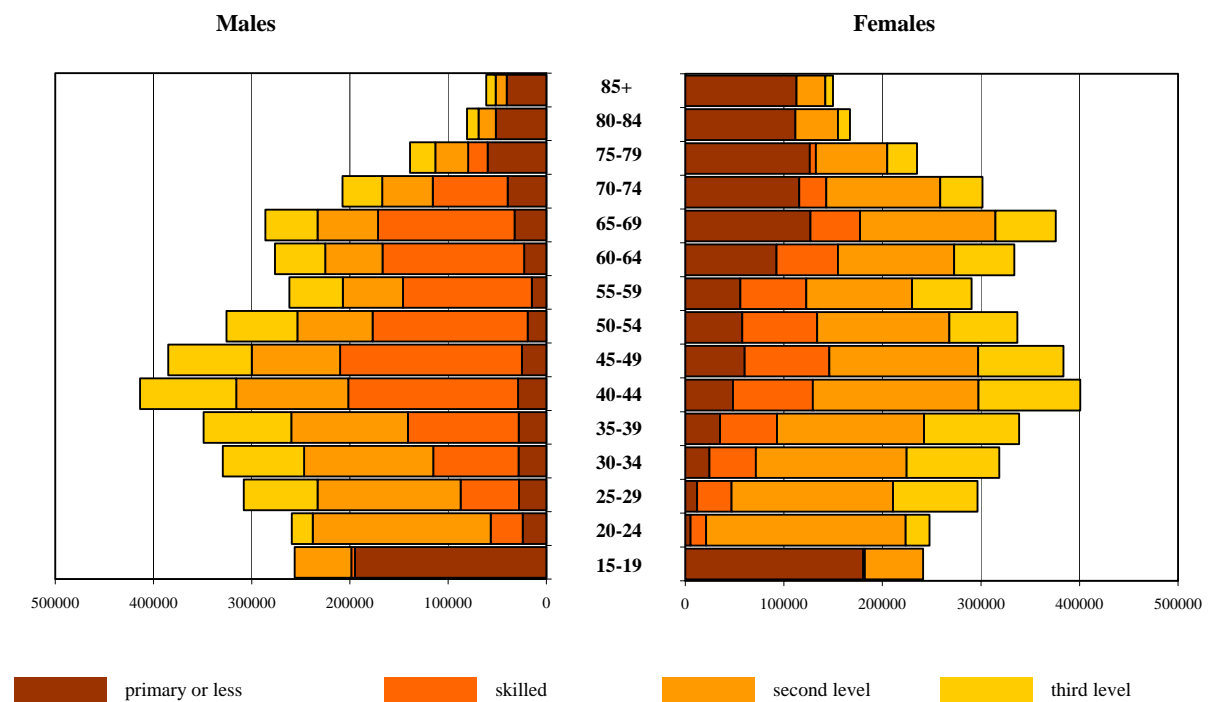
Educational change indicates higher participation rates. People with higher education are able to cope with the challenges on the labour market and can find paid work much better than low educated people. The whole issue is worth to great attention in Hungary and in Central Europe general.

Figure 6

Age pyramid by level of education, 2001



Age pyramid by level of education, 2021



Source: Projection database of HCSO DRI, 2003

The Hungarian pension reform

In Hungary, the pension problem started to become critical in the mid-1990s. The government faced the problem of a pension system that was becoming increasingly financially unsustainable. This was due to several developments:

- Population ageing reached an advanced stage; the share of 60+ exceeded 20 per cent
- Pension rights rocketed due to the full employment situation during the former regime
- The economic crisis and loss of millions of jobs boosted early retirement and the take-up of disability benefits
- A dramatic fall in labour force participation resulted in a large downturn in contributions
- The social support provided by the pension system began to exceed the limits of what was possible

In 1997, after heated discussions, five laws were passed in Hungary with a view to reforming the pension system. The main elements were:

- Keeping the PAYG system with defined benefits as a first pillar, with the intention of introducing individual accounts in the future
- Gradually increasing and harmonising the retirement age for males and females to 62 years
- Introducing a second mandatory pillar for new entrants into the labour market and providing at least 25 per cent of defined benefit in the first pillar
- Introducing a voluntary third pillar
- Supporting the second and the third pillar through tax reductions
- Introducing an old-age social benefit for those who have accrued no rights to a pension or who do not receive a minimum pension.

Based on the experiences of the past six years, one can say that the Hungarian pension reforms have been successfully introduced. Private pension funds have been developed and a growing share of investments comes from these funds. Strong state control over the funds has been implemented. The rates of return have decreased over the past two years, but maybe have remained significant. One could summarize the effect of the first six years of Hungary's pension reforms by saying that "whilst they have not performed wonders, their achievements have not been bad".

Pension reform is a very important issue in the process how to adjust to the challenges of ageing. Unfortunately, there are several fields of the same importance concerning ageing: healthcare, long-term care, active ageing, labour force participation, formation of knowledge-based society, etc. The final conclusion of this paper is that ageing is a complex process, which is an integrant part of the population development from one side and involves severe adjustment problems from other side.

This is a fundamental question in our societies what will be with the millions of older people. According to my opinion, looking the Hungarian situation, it follows the need of manifold influence of the processes, the necessity of the implementation of great variety of means, and integration into the population policy. For managing population ageing each field of science must add its own, well-elaborated solutions.

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