Beyond 2050: The New Economy Turning Old

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Abstract

The study examines the influence that demographic changes, which may be expected to take place in developed countries over the next several decades, will have on the development of some economic factors. The most important demographic shifts include potential changes in the number of inhabitants of developed countries as well as changes in the ratio of people in the productive age to those in the post-productive age. The work addresses some issues that may arise in the economy as a result of the expected situation, with special focus on analyses of some traditional topics (such as implications for the pension and healthcare systems) as well as of those less apparent (e.g. influence on industrial production). Using the specific example of the Czech Republic, the study elaborates on some aspects, such as knowledge transfer in relation to the expected influx of labour from less developed countries. In this respect, the burden on the system of education that should be able to provide immigrants with sufficient education is also discussed.

Key words

Ageing population, education, qualification, migration, economic impacts of ageing

1. The “ageing” issue

As Europe ages it faces the threat of losing a part of its population that has been established there in terms of its culture and nationality. This fact is unquestionable to the point that supporting it with statistics is unnecessary and publicists [1] and demographists [2] have been pointing it out for years now. As Mark Steyn said, we live in a period where *“the number of children diminishes faster than the amount of oil supplies”.* The issue is traditionally examined from various political, cultural, religious, social, sociological or anthropological perspectives. To a varying degree, these were apparent in the conclusions of the First and Second World Assembly on Ageing in Vienna (1982) and Madrid (2002) [3–4]. Only rarely is the issue perceived as being of significantly economic nature; when it is, than mostly in relation to the topic of poverty in the old age [5–6] or the need for the reform of pension systems. [7–10]. By the same token, discussing the issue from the perspective of ageing and inter-generational exchange of information, skills and knowledge is even more unique a sight.

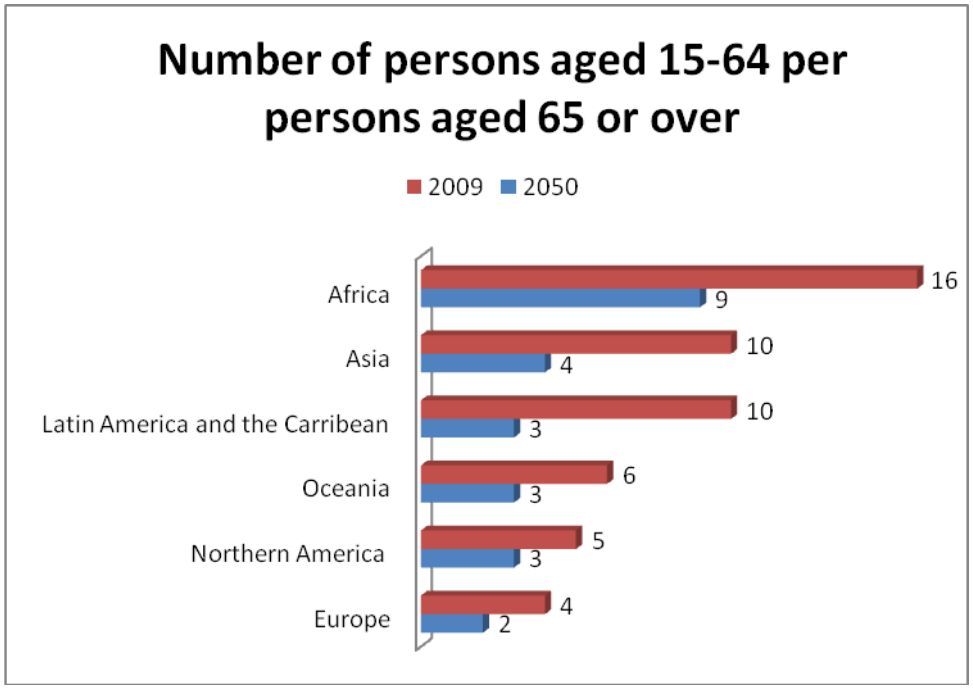
The notion of “ageing” has a well defined meaning. It relates to the number of years that have elapsed since the birth of an individual as he/she progresses toward the

death. Somehow we do not speak of ageing when we refer to people in their 20s and 30s (even though the ageing process is in place as in any other life period). In the 21st century the term is no longer used even when we talk about people in their 40s, with the word becoming reserved for people well into their 50s or 60s as life expectancy has been dramatically extended over the last hundred years, with our usage and understanding of the term reflecting that change accordingly. When in 1903 the renowned Czech poet Jaroslav Vrchlický was celebrating his fiftieth birthday, the most influential newspaper of the time published homage to the author, addressing him as “Our venerable elder…” This is a great example of how our perception of age has evolved since that time.

For the purposes of this article, however, we are mostly interested in the social aspects of ageing. Note how over the last decade and particularly over the last few years the term has been used with increasing frequency. The reason is simple: while throughout the 20th century ageing applied to individuals, the society as a whole was getting younger. Today, ageing applies to the entire society. This entails a number of interesting phenomena that received a very limited attention previously.

For example, throughout the modern history of parliamentary or presidential democracies, the under-15 group would always outnumber the 65+ group. Today the situation is reversed in Italy, Germany, Spain, Portugal or Greece, with other countries soon to follow. As the right to vote does not extend to those under 15, this has seemingly no implication for democracy. However, what matters is that the traditional demographic tree, that used to remind us of a Christmas tree with nice thick branches at the bottom that would get narrower toward the top, starts changing slowly. The bottom branches become scarce; needles fall out and the parts with the highest density of needles now move toward the top where the branches get progressively longer. This ushers in the question of mechanical stability: while the stand for a traditional Christmas tree does not have to be of the sturdiest ones, what will keep the tree straight as its centre of gravity shifts toward the top? The stability of future societies will be inevitably reduced compared to the existing ones.

In this respect, the following graph is very illustrative as it clearly shows the future development. According to demographists, the ratio of people in the productive age (15–64) to those in the post-productive age (65+) will change dramatically over the next 40 years, i.e. over the span of one and a half generations.



Source: [11]

Going from four people in productive age per one pensioner to two productive persons per one pensioner must affect the pension system. While the issue is currently discussed in all developed countries, the question is what the declining number of people in individual societies will cause in combination with ageing.

2. Economic consequences of ageing

The political and social instability of the future societies within developed countries is only one of the potential threats arising from the demographic development. Let's now attempt to define the economic risks for the next forty years.

In the 19th and throughout most of the 20th century the lack of raw materials or the incapacity of the mankind to produce a sufficient amount of food were considered the key hindrances to economic growth. Collapse of the global economic system was predicted many times. The 1972 study The Limits of Growth [12] is probably the most infamous of such forecasts. In its original edition, its authors heralded the exhaustion of global supplies of gold, mercury, tin, lead and natural gas over the period of 1981 to 1993. The truth is, however, that despite the relatively massive exploitation, the supplies of these commodities are at higher levels than were those prospected and documented in the 1970s. In other words, while we are able to predict how long supplies will last in one location, we have no idea as to what the total globally exploitable supplies are. All previous attempts to predict the time of supply exhaustion based on mining data have completely failed due to various reasons:

- Firstly, it has become apparent that we are far from having chartered all locations with supplies of raw materials even though we have repeatedly assumed that our prospecting methods have attained the highest possible quality. So far, there have always been new methods identified that have provided for finding new sites.

- Secondly, we have very limited information on the locations where exploitation will be technologically possible in the future. In this respect, the progress is very quick; a number of current locations were previously considered unusable.

- Thirdly, it is apparent that substitutes exist for some raw materials that were previously considered irreplaceable and unique; as the result, their consumption does not grow so fast and is less dependent on the GDP development than the case was before.

- In many cases, the development of consumption-reducing and recycling technologies has led to reduced outputs that could potentially be much higher. With the declining number of countries with negligible wage costs and those where exploitation of resources takes place without compliance with safety requirements and investments in security, raw materials have become significantly more expensive over the last decades. This has led to exploitation giving way to recycling, with reuse rates for some materials attaining very high levels (as much as 80 percent in some cases; approximately 50 percent of tin, aluminium, steel or lead originate from recycled materials.)

Based on other predictions, the world should have become absolutely overpopulated and suffer from famine due to our incapacity to produce a sufficient amount of food, claiming hundreds of millions of victims. The truth is that hundreds of millions of people do starve and millions die of hunger; however, the cause of the situation does not lie in our incapacity to produce enough food but, rather, comes as a result of civil wars – whether those happening due to national or religious differences, extensive corruption or rogue and criminal behaviour of governments. It seems that our planet could easily feed significantly more than ten billion people. If everyone went vegetarian, the planet Earth could allegedly support as many as 200 billion inhabitants. However, as the number of unknown variables in these calculations is substantial, any such predictions would be misleading and their factual validity would not be much better than that of a randomly selected number. In any case, overpopulation as the reason for a global social and economic collapse is not on the agenda, with the ideas promoted by Thomas Robert Malthus [13] and his followers remaining largely unconfirmed.

The lack of people in the productive age appears to be the worst risk to the global economic growth in the 21st century. This does not mean that the global population should decrease over the next years but that the overall age structure of inhabitants will change, with the growth taking place in less developed and poor countries. As

the following table reveals, after a long period of globally dynamic population growth, its speed has now been reduced.

Population growth milestones

Year	Number of inhabitants (billion)	Years necessary to attain the next billion
1804	**1**	**123**
1927	**2**	**33**
1960	**3**	**14**
1974	**4**	**13**
1987	**5**	**12**
1999	**6**	**13**
2012	**7**	**16**
2028	**8**	**19**

Source: [14]

While since the 1960s it would take 14, 13 and later even as few as 12 years for the world population to grow by a billion people, the new millennium has seen the trend slowing down significantly. It is also important to understand that the decline in birth rates is logically much more significant than suggested by the forecasts of the longer time that the global population will need to grow by another billion. If in the 1960s to 1980s, it took 14 and, eventually, 12 years for the population of three and five billion people to grow by a billion, seven (and later as many as eight) billion people in our century will take longer than that. The growth has slowed down significantly and given the laws of demography, we may consider the trend global. In simplified terms, the development started in the richest countries decades ago, then continued in new democracies arisen from the post-communist block at the end of the last century and the process now spills into the fast-developing economies of Asia after having already affected the most developed countries in Africa; the poorest third world states are to follow over the next decades.

The above table offers some other interesting revelations. If we supplied it with additional estimated data, we would see that in the year Jesus Christ was born, the global human population stood at around 300 million individuals. Following year 1000 A.D., it went up to 310 million, in 1500 it was at 500 million people, with the population in 1750 estimated at around 800 million and the first billion attained shortly following 1800. The 20th century was welcomed by 1.6 billion global inhabitants (although the majority of them were unaware of the reasons to celebrate). As we see

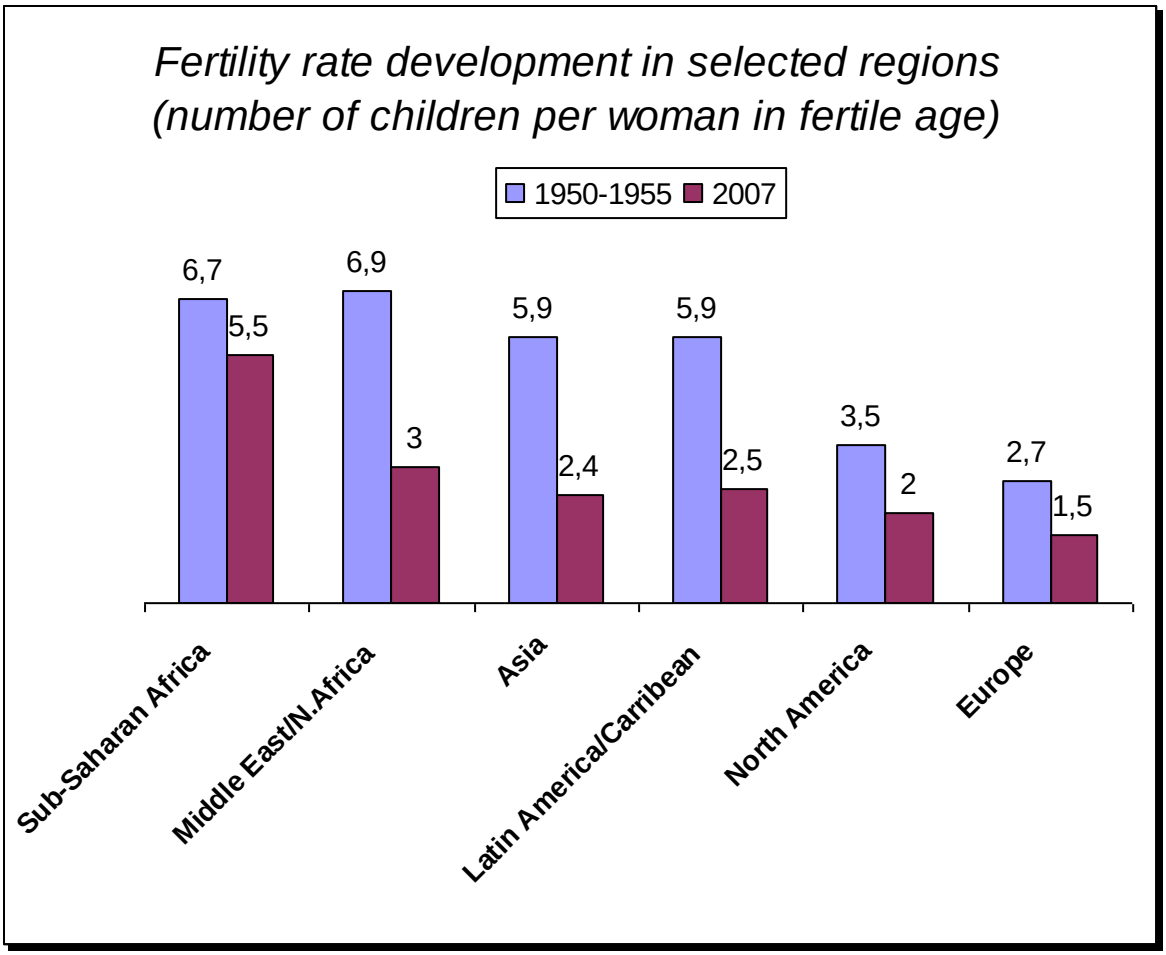
from the relatively well-mapped period of human history, the “population explosion” has only applied to a very limited stage. And that is something worth remembering.

2.1. Gradual globalization of ageing

As we have seen, considering ageing as an issue faced exclusively by the developed states as opposed to the rest of the world would definitely be a mistake.

The truth is that almost all countries undergo similar variations in fertility, although this happens over different time periods. From the global perspective, the human population grew dynamically in the second half of the 20th century, i.e. following WWII. If U.N.-provided estimates are to be trusted, then the year-on-year net growth of the global population used to attain two percent a year and in some periods as much as 2.1 percent (in 1965 to 1969). This development was clearly due to third-world countries, i.e. countries in Africa and, to some degree, in Asia (naturally including China and India), with some influence of Latin America. While Europe, the United States and other developed countries continued growing, compared to the undeveloped ones the growth was less important. By the end of the 20th century and into the first few years of the new millennium female fertility rates had started to drop, with the global population growth initially at 1.1 percent a year declining to less than one percent. However, the population continues growing as the life expectancy of people continues to rise, with every following generation gaining “an extra portion of life span” compared to the previous ones. In other words, the procreation process initially functioned almost too well and the fertility rates grew dynamically as a result of it. Subsequently, the age of dying was “postponed”. Thus the global population still grows and, undoubtedly, it will continue doing so for some time. And this might also be one of the reasons why there are still so many people who perceive overpopulation as one of the major global issues that the mankind has to face.

Significant regional differences shown in the following chart are also worth noting. From a different perspective, the chart looks at the somewhat strange state of affairs – the growing standard of living and the parallel decline in the number of children in the society, both in terms of time (the standard of living of 2007 was undoubtedly higher than that in the early 1950s) as well as space (providing for simplification, we may say that the more developed and richer a region is, the lower the number of children per woman in fertile age it has).



Source: [14]

Logically, the question ensues: If a relationship like the one above truly exists, does this mean that with the growing standard of living in countries undergoing fast development (e.g. China, India, Russia), their fertility will plummet? Most likely, yes. Russia already has one of the lowest numbers of children per woman in productive age and even the Chinese birth-control measures are no longer needed; instead, the country has introduced restrictions on new car registrations to keep traffic in check. If things continue evolving at the same speed, in approximately 2025 China will give way to India as the most populous country in the world.

Based on a U.N. mid-term prognosis, 9.2 billion people will populate the world in 2050, with the entire growth being attributable to African states. That is the reason why the black continent (with the exception of the Arab part in the north) will be the last region immune to the effects of ageing and declining birth rates. According to demographers, even in this part of the world the rates will eventually stagnate and the birth rates per woman in Africa will subsequently drop to 2 children, i.e. slightly below the reproductive level.

The merciless statistics invite the question what will happen in the countries that currently have an extremely high portion of population in the under-25 bracket if the number of births in them plummets? The scenario will be identical to that already

experienced by the developed countries. The population will start ageing. This also applies to undeveloped third-world countries that are about to go through the same process that Europe has been experiencing for a while now. The number of people in the under-25 group is extremely high in many countries, attaining locally as much as 40 percent in North Africa (the Arab part). However, this will not cause the birth rate to remain the same and the opposite trend will set in within the several upcoming decades. In China the impacts of the process will be even more hard-felt due to the very rapid decline in the fertility rate. While the current share of the 60+ group in the Chinese population stands at approximately 10 percent, according to a U.N. prognosis in fifty years it will be at 30% which translates into almost 440 million people in absolute terms.

A number of undeveloped countries whose population numbers are yet to peak, will enjoy what demographers call a “demographic window”. It is a stage of twenty to forty years during which the number of people in the productive age remains significantly above the pre- or post-productive age group. From the economic perspective, this gives their economies and societies an opportunity to prepare for the decades following the “window” period that will be marked by development identical to that already known in the developed world: the post-productive group will grow to an unprecedented size. We may already express significant doubts that these countries will be able to deal with the situation; we are yet to revert to the topic in the subsequent parts as it has its significance for the developed world.

2.2. The challenge of estimating impacts on developed countries

Forecasting impacts of the modified demographic situation on the developed world is particularly challenging as a significant number of variables need to be taken into account; these are often almost impossible to estimate or may be estimated only with a great deal of difficulty. Our attention should nevertheless be pointed in that direction over the next years and attempts at mapping the general impacts of the current trends should equally be made. Let’s now try to gain basic understanding of which of the currently unknown variables may affect the situation in the developed countries most significantly. We may probably define two groups of events of decisive influence.

The first group involves internal events, i.e. those happening in the respective countries. These involve, above all, the development of the age structure of the local population that may be roughly estimated by demographers; however, the estimates are only approximate, with a host of varying outcomes.

Other internal aspects include the development of costs of pension and healthcare systems that, to a large degree, depend on the age structure of inhabitants. Let’s also not forget that besides the actual demographic development, phenomena such as advances in medicine, changes in lifestyle or improved environment play their role

and may contribute to shifting life expectancy even further, thus affecting one of the parameters that shapes the future composition of the population. While these changes might be beneficial to those living longer lives, the financing of pension systems and the healthcare costs to the society are likely to become a real issue as the increased expenditures may, although not necessarily, influence the availability of funding for other areas. In either case, they significantly change financial flows within the economy in ways that we are not capable of identifying.

The third group of internal influences that we cannot predict in a reliable way is the development of economic structure of developed countries. It is generally expected that financial economy, services and high-value added production will continue concentrating in developed countries although the assumption is based largely on the current distribution of labour within the global economy. At this point we are unable to predict whether this will be the case; however, we may say that given the quick emancipation of some economies, e.g. those of Russia or China, expecting that such a development could take place without conflicts would be irresponsible.

Neither are we able to predict to what extent the ageing of population and the potential reduction in the number of inhabitants will affect individual countries of the developed world. To illustrate the situation, let's look at the different impacts the ageing population alone will have on a country whose 20% of domestic product consists of production and 80% of services and one with the production to services ratio of 60% to 40%. For example, we may expect that if the pension age shifts above 65 years of age, the service-based economy will do better since people in the sector will be able to carry out their work even in this advanced age. In manual professions such as those in the construction and other industries that rely on certain mechanical skills, strength, fitness and health aptitude, the adaptation of workers to the increased pension age will be more difficult which will necessarily entail some problems. To put this simply, the extended survival may not necessarily mean that the period where people are able to perform manual labour will be prolonged accordingly. In this respect, relevant statistical data are not available, which leaves us with estimates as the only option.

Just out of curiosity, let's have a look the following international comparison:

Healthy life years at birth (males)

Countries	2000	2001	2002	2003	2004	2005	2006	2007
EU 27	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**[1] 61.6**
Austria	64.6	64.2	[1] 65.6	[1] 66.2	[2] 58.1	57.8	58.4	58.4
Belgium	65.7	66.6	[1] 66.9	[1] 67.4	[2] 58.4	61.7	62.8	63.3
Cyprus	.	.	.	68.4	.	[2] 59.5	64.3	63.0
Czech Republic	.	.	[3] 62.8	.	.	[2] 57.9	57.8	61.3
Denmark	62.9	62.2	[1] 62.8	[1] 63.0	[2] 68.3	68.4	67.7	67.4
Estonia	.	.	.	.	[2] 49.8	48.0	49.4	49.5
Finland	56.3	56.7	[1] 57.0	[1] 57.3	[2] 53.1	51.7	52.9	56.7

France	60.1	60.5	[1] 60.4	[1] 60.6	[2] 61.2	62.0	62.7	63.1
Germany	[1] 63.2	[1] 64.1	[1] 64.4	[1] 65.0	.	[2] 55.0	58.5	58.8
Greece	66.3	66.7	[1] 66.7	[1] 66.7	[2] 63.7	65.7	66.3	65.9
Hungary	.	.	.	[3] 53.5	.	[2] 52.0	54.2	55.0
Ireland	63.3	63.3	[1] 63.5	[1] 63.4	[2] 62.5	62.9	63.2	62.7
Italy	69.7	69.8	[1] 70.4	[1] 70.9	[2] 68.4	65.7	64.7	[1] 62.8
Latvia	.	.	.	.	.	[2] 50.6	50.5	50.9
Lithuania	.	.	.	.	.	[2] 51.2	52.4	53.4
Luxembourg	.	.	.	.	[2] 59.1	62.2	61.0	62.2
Malta	.	.	[3] 65.1	.	.	[2] 68.5	68.1	69.0
Netherlands	61.4	61.9	[1] 61.7	[1] 61.7	.	[2] 65.0	65.0	65.7
Poland	.	.	62.5	.	.	[2] 61.0	58.2	57.4
Portugal	60.2	59.5	[1] 59.7	[1] 59.8	[2] 55.1	58.4	59.6	58.3
Rumania	.	.	.	.	.	.	.	60.4
Slovakia	.	.	.	.	.	[2] 54.9	54.3	55.4
Slovenia	.	.	.	.	.	[2] 56.3	57.6	58.7
Spain	66.5	66.0	[1] 66.6	[1] 66.8	[2] 62.5	63.2	63.7	63.2
Sweden	63.1	61.9	[1] 62.4	[1] 62.5	[2] 62.0	64.2	67.1	67.5
United Kingdom	[1] 61.3	[1] 61.1	[1] 61.4	[1] 61.5	.	[2] 63.2	65.0	[1] 64.8
Other								
Iceland	.	.	.	.	.	[2] 66.9	68.3	72.8
Norway	.	.	.	[3] 66.3	[2] 65.5	65.5	65.7	66.4

[1] Estimate
[2] Not fully comparable with the data for previous years due to a change in methodology
[3] Preliminary data
Source: Český statistický úřad, 2011

The above table is interesting not only because it shows figures that are oftentimes lower than the official pension age that currently is or shortly will be applied in the individual countries but also due to the number of countries that are not represented. This is due to the fact that local statistical offices do not keep track of similar indicators or are not capable of aggregating them. Also given the different methods applied to such research undertakings, where “good health” in one country does not quite mean the same thing as in another one, the above indicators cannot be relied on and are shown for the sake of curiosity. They nevertheless give us an idea of “health limits” to changes in pension systems. While we will undoubtedly save money by shifting the pension age to 65, 67 or even 69 years, a substantial number of people will burden the welfare system as the population of such age will not be healthy enough to work in their professions, especially if industries such as construction or agriculture are significantly represented in the country’s GDP.

Then we have to consider external influences that will undoubtedly affect the economic future of developed countries. First of all we cannot estimate the number of future migrants. It is a well-known fact that the developed world is the target of significant migration flows from less developed areas. To a certain degree, this process mitigates the fact that the population of the “original ethnicity” is shrinking, especially in Europe. It is estimated that as much as 95% of migration happens due to economic reasons, i.e. it is similar to people moving from “poor” villages to “rich” cities. Europe underwent the same process in the Middle Ages and then during the

first and second industrial revolution; now emerging and "undeveloped" countries experience the same process. Only as little as five percent of migration is due to significant and provable political reasons, i.e. people leaving their homelands due to the threat of persecution. Future migration levels cannot be estimated in any way; while the desire of populations of poor countries to make their way to the more developed ones is generally considered stable, the developed world becomes increasingly worried of continuing immigration due to cultural, religious and other reasons. In other words, developed countries adopt measures to make the arrival of immigrants harder rather than simpler. Globally, there are 150 to 200 million persons living in a country other than the country of their origin, with the majority of them settling in Europe, the United States and other developed countries (with the remainder inhabiting "refugee camps" in countries neighbouring on areas plagued by regional conflicts or civil wars). While migration is usually considered a major issue (with the poor south moving to the rich north or the poor east to the rich west), we are unable to predict whether future migration will be strong enough to supply the developed world with sufficient workforce.

We have seen that political representatives in the key immigrant EU states admitted that the strategy based on multiculturalism, which believes in peaceful co-existence of various nationalities fully respecting each other's culture, religion and social values, had failed. This does not mean, however, that the official perception of migration as a phenomenon that enriches the original societies by importing new "cultural, religious and social stimuli" has changed. In the future, immigrants will be expected to adopt "social values" and to assimilate much deeply within the society. As Mark Steyn [1] rightfully points out: *"The refined antennae of western liberals mean that, whenever one raises the question of whether there will be any Italians living in the geographical zone marked as Italy a generation or three hence, they cry, "Racism!" To fret about what proportion of the population is "white" is grotesque and inappropriate. But it's not about race, it's about culture. If 100 percent of your population believes in liberal pluralist democracy, it doesn't matter whether 70 percent of them are "white" or only 5 percent are. But, if one part of your population believes in liberal pluralist democracy and the other doesn't, then it becomes a matter of great importance whether the part that does is 90 percent of the population or only 60, 50, 45 percent."* As we may see, this is not about racism nor religious intolerance, but rather about the preservation of civic, democratic and cultural values and, maybe most importantly, about the preservation of economic freedoms.

We have already discussed the fact that even in poor countries birth rates will go down and the demographic situation in these, predominantly African, countries will start to change. If over the few next decades the events result in real shortage of workforce in the areas in question, the current migration-driving pressures will be significantly relaxed, with migration flows possibly drying out to a large degree. This is one of the main reasons we are incapable of estimating the future migration potential.

One important issue that also remains unresolved is the issue of vocational skills of the future migrants. Currently migrants leave countries insufficiently educated which makes the workers inadequately prepared for professions in highly sophisticated industries. We have reasons to believe, however, that the educational background of future migrants will not be much better than it is today. In this respect, it is important to note that the widely discussed “loss of brains” due to experts leaving poor countries in favour of the richer ones is not as common as it only concerns thousands or, at most, tens of thousands of people annually. While from the demographic perspective the phenomenon is completely negligible, its economic impacts are hard-felt in the countries left by these professionals.

2.3. Demographic outline of the Czech Republic

Along with the majority of developed countries, the Czech Republic has been caught up in the middle of a population crisis manifested by low birth rate (during the first years of the new millennium, the rate was 1.23 and, while in 2010 it went up to 1.7, still remained deeply below the reproduction limit of 2.14 children per woman). Current population levels may thus be maintained only via positive migration balance. On average, it is forecast that without migration, the population of 10.3 million (2010) is expected to drop to 8.12 million (2050), with net loss of more than two million people. Some predictions expect the decrease to be even more significant at below 7.5 million.

Due to varying estimates of migration balance rates, in 2050 the Czech Republic is expected to have between 8.1 (positive balance of 10 thousand people a year), 9.4 million inhabitants (balance of 25 thousand) and 10.8 million inhabitants (balance of 40 thousand), with these estimates being based on moderate curves of population development. Given the migration levels to date, we cannot realistically expect that the migration balance of 40 thousand people would be feasible, with this option thus remaining in the realm of theory. As of 2010, approximately 4.2% of the Czech Republic’s population were foreign; if the version working with the high balance estimate were to materialize, there would be some 2.8 million immigrants at different stages of integration living in the country in 2050, representing 25% of the total population. In spite of the projected period still being forty years away, such a change is beyond imagination and would mostly likely cause insurmountable problems.

Based on various estimates, the under-19 population is expected to stand at some 16-19% in 2050, down from approximately 20% in 2010. Over the same period, the 65+ group will be at 30-32%, up from the current level of 15.9%. What is even worse, the 55–64 bracket involving the period of life that benefits the most from knowledge and experience will stand at 12%, down from 14.5%. Differences expressed in absolute values will be even more substantial, as the current calculations working with 10.3 million inhabitants produce different results than, say, those based on the total of eight or nine million inhabitants.

Population structure based on gender and age groups (a version by Burcin – Kučera)

	2003	2010	2020	2030	2040	2050	2065
Total population (thousands)	10 214	10 305	10 404	10 376	10 231	10 231	9 716
Age structure (%)							
Men	100,0	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	23,0	21,2	21,1	20,3	19,4	19,8	19,8
20 - 54	53,5	51,4	48,3	44,8	42,1	40,4	40,5
55 - 64	12,4	14,3	12,3	14,1	14,4	12,8	12,1
65 -	11,1	13,2	18,2	20,8	24,1	27,1	27,7
Women	100,0	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	20,7	18,9	18,7	17,9	17,3	17,7	17,8
20 - 54	49,7	47,9	45,2	41,8	39,6	36,9	37,3
55 - 64	12,9	14,7	12,3	14,0	14,6	12,6	11,6
65 -	16,7	18,5	23,8	26,4	29,6	32,8	33,3
Combined	100,0	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	21,8	20,0	19,9	19,1	18,3	18,7	18,8
20 - 54	51,6	49,6	16,7	43,3	40,3	38,6	38,9
55 - 64	12,7	14,5	12,3	14,0	14,5	12,7	11,8
65 -	14,0	15,9	21,1	23,7	26,9	29,9	30,5

Source: [15]

Population structure based on gender and age groups (a version by the ČSÚ)

	2003	2010	2020	2030	2040	2050
Total population (thousands)	10 217	10 283	10 284	10 102	9 795	9 438
Age structure (%)						
Men	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	22,8	20,2	19,2	18,2	17,4	17,5
20 - 54	53,7	52,6	50,5	46,5	42,0	39,5
55 - 64	12,4	14,4	12,8	15,3	16,4	14,5
65 -	11,1	12,8	17,5	20,0	24,1	28,5
Women	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	20,6	18,3	17,4	16,5	15,8	15,9
20 - 54	49,9	48,8	46,8	42,9	386,0	36,1
55 - 64	12,9	14,8	12,8	15,1	16,1	14,0
65 -	16,6	18,1	23,0	25,6	29,5	34,0
Combined	100,0	100,0	100,0	100,0	100,0	100,0
0 - 19	21,7	19,2	18,3	17,3	16,6	16,7
20 - 54	51,7	50,7	48,6	44,6	40,3	37,8
55 - 64	12,7	14,6	12,8	15,2	16,3	14,2
65 -	13,9	15,5	20,3	22,8	26,9	31,3

Source: [16]

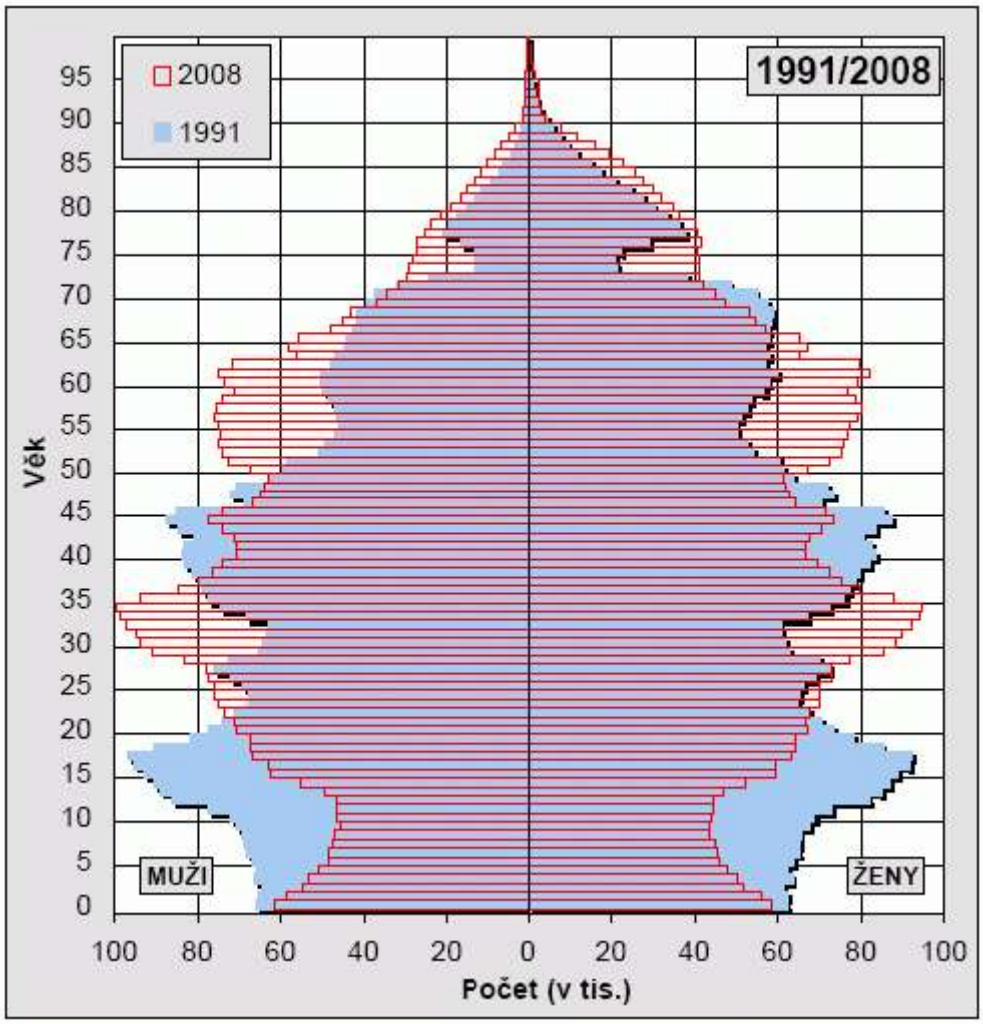
The expected immigration levels will very likely be linked to a number of phenomena, including the need for at least basic language instruction for immigrants, with their insufficient educational background also requiring educational programs to facilitate their integration in the job market. In this respect it is important to note that even with relatively high immigration balances, the economy will struggle due to significant lack of workforce; while in 2010, 6.6 million people were in the productive age (20 to 65), in 2050 their number will drop to approximately 4.2–4.6 million even including immigrant workers.

The reduced number of workers will have different effects on different industries. In 2009, the employment structure in the Czech Republic was affected by the dominant influence of the processing industry (1.242 million employees) and the strong position of commerce (0.631 million), construction industry (0.497 million) and transport (0.331 million). The total number of employees within the national economy stood at 4.934 million. During the same period, the Czech Employment Office registered 0.352 million unemployed, of whom two thirds were people without education or with only limited secondary education (people without school leaving exam qualifying them for university admission). As the experience in other countries has shown, no improvement is likely to be expected in terms of educational structure and qualification levels. In the second half of 2008, at the time of peaking economic boom, approximately 290 thousand foreign workers were in the country legally; their numbers were substantially reduced during the subsequent crisis, with 70% of those losing their jobs being those with limited or no education. Qualified workforce has mostly been recruited from Slovakia. As the Slovak economy has developed at a faster rate than the Czech economy for a number of years now, influx of additional experts from the country cannot be expected.

We may therefore expect that the modified demographics and decreased number of inhabitants – even if offset by positive migration balance – will lead to changes in the economic structure of the Czech Republic. The shift may be expected to take place within the next twenty years, with change-driving pressures growing stronger. Businesses settled in the Czech Republic will be forced to relocate a substantial amount of their production capacities abroad due to lack of workforce. Judging by the current situation, we are looking at some thirty percent of production, which will lead to a growing gap between gross domestic product and gross national product. In the area of innovations, problems may equally arise as the innovation-driving generation (aged 20–32) will be less represented within the society both in terms of percentage as well as in absolute numbers.

It is interesting to note in this respect that as the time progresses, demographic predictions of the development seem to be more dramatic and their conclusions bleaker [17], as documented by the following graphs.

Development of population age structure 1991 to 2008

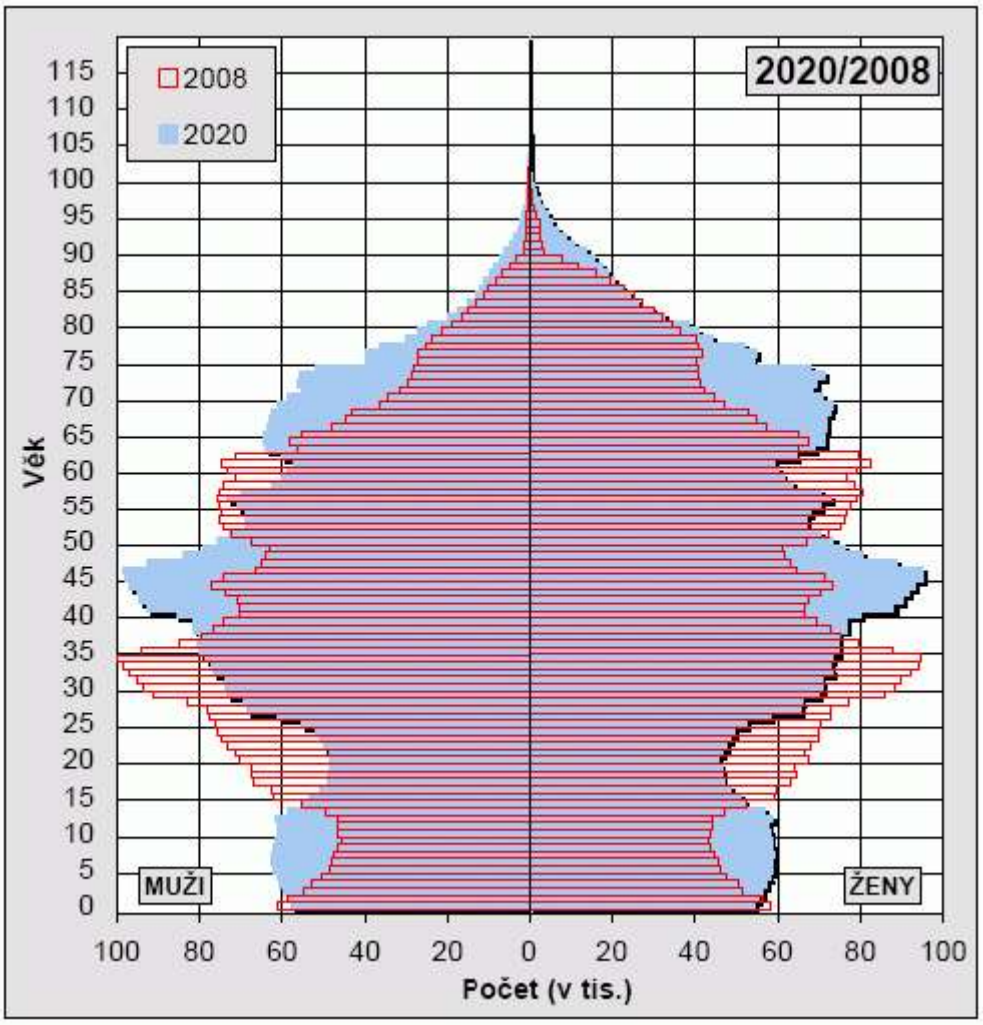


Věk: Age
Počet: Number (thousands)

MUŽI: MEN
ŽENY: WOMEN

Source: [18]

Development of population age structure 2008 to 2020



Věk: Age
Počet: Number (thousands)

MUŽI: MEN
ŽENY: WOMEN

Source: [18]

If the current trend should continue into the mid-century, the prognosis gets gloomier, fertility rates drop and the centre of gravity of the population tree moves toward the higher age.

Based on those circumstances, projects of inter-generational knowledge exchange will become increasingly important. While they may in no way prevent the demographic crisis from adversely impacting the developed countries, they may mitigate some specific phenomena linked to the development and devastating the local economic stability.

2.4. The issue of knowledge exchange

As the summary of the above future issues that are yet to be identified in their entirety suggests, two areas of social and political life will need to be reviewed. The government of the Czech Republic, along with the governments of other European countries, will be forced to initiate an all-encompassing discussion within their respective societies and community organizations concerning the future treatment of the topic of immigration. In this respect, the fact can no longer be overlooked that if the Czech Republic does not receive at least 20 to 30 thousand immigrants annually, this will necessarily entail a fundamental change in the economic life of the country, leading to a substantial decrease in the output of the national economy. Even though that in comparison to Western European states, the experience of the Czech society in co-habiting with foreigners is not as significant, the country needs to come to terms with the idea that in a relatively short time the share of foreigners in the Czech population will attain 20 and possibly as much as 30 percent.

This will require a dynamic modification of the education system, with an introduction of an education system for immigrants whose qualification and education will most likely not correspond to the needs of the Czech economy; in this respect, the language issue will probably be the minor one. The end of the idea of multiculturalism also necessarily means that the majority population will exercise significant pressure on immigrants to assimilate and to adopt the values of their new homeland; also this fact will require establishment of new institutions and adoption of new methods.

At the same time, however, the need for extensive educational and assimilation programs may possibly contribute to resolving the issue of lack of employment opportunities for a certain population of higher age, i.e. for those people who, due to health reasons, will not be able to work in their professions in the period prior to attaining their retirement age according to the newly defined pension parameters.

3. Conclusion

Within the shortest possible time, economists need to join their forces together with demographers since economics of the 21st century will no longer be the theory on the economic relationship and laws, but, rather will become a science attempting to discover mechanisms that will help our societies survive the hard-to-grasp demographic shock that we are about to experience. From the perspective of developed countries, the meaning of globalization seems to gain a clearer outline: it is a new version of what we have come to refer to as colonialism or imperialism, i.e. of attempts at modifying all corners of the Earth so that they become as comfortable and safe a place for inhabitants of the developed countries as their respective homelands. Historically, any such attempts by the developed civilizations have failed.

Developed societies are equally weakened by the reduction of their original populations. If a specific population attains the birth rate of 1.5 children per woman, this means that the next generation will be 25% less numerous.

If economic activities are to remain within what are currently the richest countries, then the lack of inhabitants must be made up for; however, the number of methods is limited. And in order for the methods to work, they need to be combined together:

- Change in economic structure and shift toward a production focusing on higher value added and improved productivity;
- Substantial positive migration balance;
- Resolution of social issues arising from the new age structure of inhabitants, including the creation of extensive assimilation programs.

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