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DEMOGRAPHIC PROCESSES: PAST, PRESENT AND FUTURE – SELECTED ISSUES

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ABSTRACT: This papers refers to demographic processes in the period from the 19th century through to the present and tries to define what they will look like in the future. Demographic trends *i.a.* relating to fertility, mortality, migrations, the process of family-union-household formation and dissolution, and the process of population ageing, are described by the concepts of demographic transformations: first, second and third. The transformation of demographic trends has coexisted and will coexist with globalization processes, though the scope of the mutual influence changes over time. Despite the fact that it takes place in various geographical regions, the transformation of demographic trends is characterised by high cultural diversity and socio-economic development.

KEY WORDS: demographic transformations, globalization, population ageing, mortality, fertility, demographic transitions.

INTRODUCTION

The issue of demographic trends and their development in the context of globalization is not a common topic of publications or academic debates. Where these issues are raised it is most commonly in the context of the development of the world population or of regions, as well in connection with the activities of such

international organizations as the UN, UNESCO, the OECD, WTO, WB, IMF, etc.[1] In turn, from among many demographic trends *i.a.* relating to fertility, mortality, migrations, the process of family-union-household formation and dissolution, and the process of population ageing, the ones to be discussed most commonly at global fora are: migration (its scale and scope as regards resources and streams) and fertility changes, these usually in practice resulting in a lowering of fertility and total fertility rate and hence acceleration of the population ageing process, especially in highly-developed countries. Demographic trends on the global scale are discussed during the Sessions of the Commission on Population and Development of the UN, in the course of revisions of UN demographic projections (the last revision taking place in 2012 − The 2012 Revision of World Population Prospects) or at conferences of the United Nations High Commissioner for Refugees. The High-Level Dialogue on International Migration and Development "Making Migration Work" took place on October 3rd and 4th 2013 in New York, at United Nations Headquarters (*High-level Dialogue*..... 2013). On the UN Population Division's webpage[2] we can read: "The purpose of the High-level Dialogue is to identify concrete measures to strengthen coherence and cooperation at all levels, with a view to enhancing the benefits of international migration for migrants and countries alike and its important links to development, while reducing its negative implications." Migrations are one of the global hot topics, which are important on such varied levels as the political, economic, sociological, psychological, personal, family-related, and so on. In this short text concerning selected demographic processes in the age of globalization we will try to define the latter term, which is in fact closely related to demography, sociology and the economy. We will then seek to answer questions as follows:

- What do demographic trends look like in the global context – the context of demographic transitions?
- What are the fertility, mortality, migration and ageing processes now, what did they look like in the past, and what will they look like in the future?

THE WORLD'S POPULATION DEVELOPMENT AND PROCESSES OF DEMOGRAPHIC TRANSITION

The global population has now exceeded 7.2 billion. Estimates indicate that the first time a billion was reached was in 1804, with the increase to 2 billion then taking over a century (127 years to be exact). In 1950, that is at the beginning of the third phase, the population numbered 2.5 billion, and an additional half-billion people appeared within just the next 10 years. By 1960 the world population stood at

[1] **U**nited **N**ations; **U**nited **N**ations **E**ducational, **S**cientific and **C**ultural **O**rganization; **O**rganization for **E**conomic **C**o-operation and **D**evelopment; **W**orld **T**rade **O**rganization; **W**orld **B**ank; **I**nternational **M**onetary **F**und.

[2] http://www.un.org/esa/population/meetings/HLD2013/mainhld2013.html

3 billion[3], and growth by a further billion took place within 33 years. In these case the first half-billion increase took 23 years, while the second again took as little as a decade. The 1950s were a period characterised by very dynamic population growth that was unprecedented in the history of humankind. High growth numbers, the so called 'baby booms' in many countries, especially in Europe, were the result of "compensation" following the impact of War, on the one hand, and great civilisation development, on the other, this including major discoveries in medicine capable of limiting the mortality rate, especially among infants and children. Overall, since 1960, very dynamic growth of the world population has been noticeable, with each new billion taking approximately 12 to 14 years (compare data in Tab. 1).

The Club of Rome report *The Limits to Growth* (1972) was widely discussed around the world (Meadows *et al.* 1972). It included a warning related to the unprecedented dynamics of population growth in the 1960s and 1970s, in the context of the depletion of natural resources. The authors' basic premise was the assumption from T. Malthus (1766–1834), whose study of the rules governing the development of humanity (Balicki, Frątczak and Nam 2007, p. 37 and next) led him to point out that population growth was geometric, while food availability increased arithmetically, the inevitable consequence being a depletion of food resources. However, the Club of Rome scenarios extend beyond food per capita to industrial production per capita, population, non-renewable natural resources and pollution. *The Limits to Growth* report includes a warning regarding development (Meadows *et al.* 1972, p. 32) as follows: "If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity."

In the 1970s and 1980s the press was writing about the "demographic bomb" threatening our world, this explaining why many international organizations took action in support of family planning and contraception – as is visible in World Population Conference documents (Bucharest 1974, Mexico 1984, Cairo 1994). The United Nations Fund for Population Activity played an important role in the above area, while the **C**ommission on **P**opulation and **D**evelopment (CPD)[4] holds yearly sessions

[3] Por. DemoData. An empirical demographic database, Population Division UN, New York: http://esa.un.org/unpd/wpp/index.htm

[4] A Population Commission was established by the Economic and Social Council in its resolution 3 (III) of 3 October 1946. In its resolution 49/128 of 19 December 1994, the General Assembly decided that the Commission should be renamed the Commission on Population and Development (CPD). This was to constitute a three-tiered intergovernmental mechanism play a lead role when it came to follow-up as re gards the implementation of the Programme of Action of the International Conference on Population and Development. The Commission, as a functional commission assisting the Council, was also to monitor, review and assess the implementation of the Programme of Action at national, regional and international levels and, as well as advising the Council thereon (cp. http://www.un.org/en/development/desa/population/commission/index.shtml)

devoted to the relevant subjects. The Forty-Sixth CDP Session held in 2013 was devoted to the subject of migration, its main agenda being "New trends in migration: demographic aspects".

However, instead of being obsessed with the demographic growth bomb, the press is now more concerned about:

- the European age crisis beginning to bite (with every country in the EU having a fertility rate below 2.1 births per woman, the minimum to keep the population stable, and with the average being 1.51 (…), an ageing crunch is already "baked into the pie", hitting hardest from 2015 to 2035[5].
- the Polish demographic bomb (*Newsweek* 2011), with Polish immigration policy being obliged to accept and open itself to migration, mostly for demographic reasons.

As participants at the World Population Conference in Cairo discussed population problems and then set about preparing Conference documents, they could scarcely have suspected that – just a decade later – the UN Population Division, responsible for preparing demographic forecasts, would be forced to correct its predictions, mostly on account of low fertility and growing mortality rates, especially on the African continent. For in the late 20th and early 21st centuries, the world has found itself facing another group of demographic challenges entailing low and decreasing fertility, rapid ageing of the population (especially in developed countries characterised by low or very low fertility), and a growing role for migration as the third demographic process (after mortality and fertility) shaping change in the world population.

Table 1. Development of the world's population

Data	The world's population in billions	Year of achievement	The time (years) during which the population increased by successive billion
Estimation	1	1804	
	2	1927	123
	3	1960	33
	4	1974	14
	5	1987	13
	6	1999	12
	7	2012	13
Projected 2012 revision UN medium variant	8	2024	13
	9	2040	16
	10	2062	22

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*, http://esa.un.org/unpd/wpp/index.htm.

[5] Source: *The Telegraph*, Great Britain , 29th April 2009, www.telegraph.co.uk/finance/economics/5245757/Europes-age-crisis-begins-to-bite.html)

The changes in global population described in Table 1 took place in relation to changes in the basic demographic trends, initially mostly the fertility and mortality rates. Later these processes included also migration and then the basic trends were supplemented by processes of family and household formation and dissolution and the ageing processes. These changes are described in demography by the concepts of demographic transformations: **first**, **second** and **third**. The issue of demographic transformation was extensively described in professional literature, especially in demographic publications (Balicki, Fratczak, Nam 2007; Coleman 2006, Dyson 2010, Frątczak 2004a,b; Lesthaeghe 1983, Lesthaeghe, Meekers 1986; Lesthaeghe, Surkyn 1988; Thornton 2005, Van de Kaa 1987, 1994, 2001a,b, 2002; Wilson 2011).

The concept of the **F**irst **D**emographic **T**ransition (FDT) describes the change process within the two regimes of fertility and mortality, as well as the transition from high fertility and mortality to low fertility and mortality. R. Lesthaeghe defined FDT[6] thus: The first or "classic" demographic transition refers to the historical declines in mortality and fertility, as witnessed from the 18th Century onward in several European populations, and continuing at present in most developing countries. The end point of the first demographic transition (FDT) was supposed to be an older stationary and stable population corresponding with replacement fertility (i.e. just over 2 children on average), zero population growth, and life expectancies higher than 70 years. As there would be an ultimate balance between deaths and births, there would be no "demographic" need for sustained immigration. Moreover, households in all parts of the world would converge toward the nuclear and conjugal types, composed of married couples and their offspring. In fact there were many authors who contributed to the creation of the FDT concept. A detailed list, along with the definitions of transition and population cycle, are included in the work by Balicki, Frątczak and Nam (2007, p. 49–64). The following people contributed to the creation of the demographic transition theory:

- Thompson (1929) – in his works he generalised the European experience regarding fertility and mortality. He thus identified three groups of countries in relation to birth and death rates, i.e. countries with a decreasing mortality rate, countries with numbers of deaths decreasing faster than the birth rate, and countries with decreasing birth and mortality rates, in which the fertility rate falls faster than the rate of mortality.
- Landry (1934) – identified three main stages to population changes. First – primitive, when there is a balance between mortality and fertility rates; second – intermediate; third – modern, when the fertility rate drops down to the level of the decreasing mortality.
- Notestein (1947) – described the stages of the demographic transition in the context of modernisation, dubbing the three stages identified by Landry as: high growth potential, transition and the beginning of decline. It was probably at this time

6 Cp. http://www.vub.ac.be/SOCO/ron/final_textSDTBasilBlackwellEncyclop.doc

that the idea of the term *demographic transition* was created. FDT was therefore described as a three-phase transition, but in the end the most common description is the four-phase model.

The essence of the four-phase model is constituted by changes in mortality and fertility, which are characterised as follows:

First phase – the fertility and mortality rates are both very high, which is characteristic for a natural reproduction process in which fertility and mortality rates are equal. In this phase economic development was still at a very low level, with total fertility rate equalling 6 or more, and the average life expectancy standing at around 45 years.

Second phase – of a decrease in mortality, while fertility remains at a high and unchanged leveel. In this phase the total fertility rate equals 4.5−6 and the average life expectancy is of 45−65 years.

Third phase – fertility is decreasing faster than mortality and the birth rate is the highest, hence the high population increase dynamics. In this phase, the total fertility rate equals 3−4.5 and the average life expectancy is of 55−65 years**.**

Fourth phase – the rate of occurrence of new births comes ever-closer to matching mortality rate. Death is now very low proportionately, with the reproduction process being stabilised on the low level of the birth rate. In this phase the total fertility rate equals 3 and the average life expectancy is over 65 years.

The first three phases form a situation typical for developing countries, while the fourth phase is typical for highly-developed counties and countries that have already completed the transformation process. For many years, critics of the classic approach pointed to the shortcomings of its basic premises. One of the criticized elements is the fact that the classic approach lacks migration, which is the third main element to population changes. Another point of criticism is the lack of references to changes relating to procreation behaviour and the answer to a question as to what happens when phase four ends?

In order to answer this question Van de Kaa (1987) introduces the concept of the **S**econd **D**emographic **T**ransition (SDT). In fact the creators of the SDT are considered to be Professors Dirk Van de Kaa and Rohn Lesthaeghe. According to R. Lesthaeghe the SDT is defined as[7].

The Second Demographic Transition (SDT), on the other hand, sees no such equilibrium as the end-point. Rather, new developments bring sustained sub-replacement fertility, a multitude of living arrangements other than marriage, a disconnection between marriage and procreation, and no stationary population. Instead, populations would face declining sizes if not complemented by new migrants (i.e. "replacement migration"), and they will also be much older than envisaged by the FDT as a result of lower fertility and additional gains in longevity. Migration streams will not be capable

[7] http://www.vub.ac.be/SOCO/ron/final_textSDTBasilBlackwellEncyclop.doc

of stemming ageing, but only stabilize population sizes. Nonetheless, the outcome is still the further growth of "multicultural societies." On the whole, the SDT brings with it new social challenges, including those associated with further ageing, the integration of immigrants and other cultures, lesser stability of households, and high levels of poverty or exclusion among certain household types (e.g. single persons of all ages, lone mothers). The philosophy of describing changes in demographic processes, as created by Van de Kaa, includes migrations, as is presented in Figure 1.

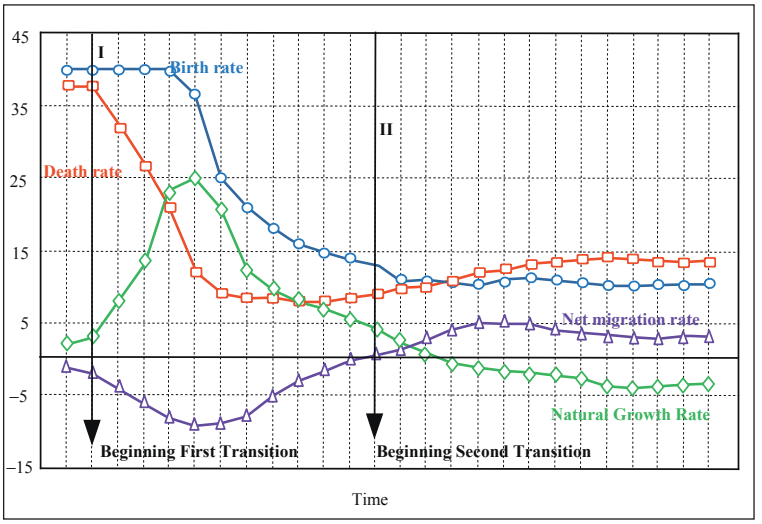

Figure 1. Model of First and Second Demographic Transitions
Source: van de Kaa (2001b, 2002; Fig. 1, p. 2).

When it comes to the three demographic processes described by reference to death rate, birth rate and net migration rate, the SDT assumes change in the relationship between births and deaths from positive to negative, which results in more deaths than births (for some time now) and as a consequence a negative natural growth rate. However the migration rate has a significantly positive impact on population growth, which results in a positive net migration rate. While the FDT model is universal for the entire globe, the SDT concept is based on the demographic processes experienced by the Western European countries, or, to be more specific – industrialized countries. However, both models of transformation are related to processes and phenomena regarding change in marriage, fertility and societal background. An overview of these is included in Table 2.

Comparing both demographic transformation models, we can reason that mortality change created disequilibrium and FDT, while fertility change created SDT and a new disequilibrium. In order to explain the changes related to the SDT model, the specialist literature includes arguments referring to the theoretical interpretations, including postmodernism and postmaterialism, as well as the social change macro-micro relationship

Table 2. Overview of demographic and societal characteristics respectively relating to the FDT and SDT (Western Europe)

First Demographic Transition	Second Demographic Transition
Marriage	
Rise in proportions marrying, declining age at first marriage. Low or reduced cohabitation. Low divorce. High remarriage.	Fall in proportions married, rise in age at first marriage. Rise in cohabitation (pre-& post marital). Rise in divorce, earlier divorce. Decline in remarriage following both divorce and widowhood.
Fertility	
Decline in marital fertility via reductions at older ages, lowering mean ages at first parenthood. Deficient contraception, parity failures. Low definitive childlessness among married couples.	Further decline in fertility via postponement, increasing mean age at first parenthood, structural sub replacement fertility. Efficient contraception (exceptions in special social groups). Rising extra – marital fertility, parenthood within cohabitation. Rising definitive childlessness in unions.
Societal background	
Preoccupations with basic material needs: income, working conditions, housing, health, schooling, social security. Solidarity is the prime value. Rising memberships of political, civic and community-oriented networks. Strengthening of social cohesion. Strong normative regulation by State and Churches. First secularization wave, political and social "pillarization". Segregated gender roles, feminist policies, embourgeoisement. Ordered life-course transitions, prudent marriage and dominance of single family model.	Rise of "higher order" needs: individual autonomy, self–actualization, expressive work and socialization values, grass–roots democracy, recognition. Tolerance is the prime value. Disengagement from civic and community-oriented networks, social capital shifts to expressive and affective types. Weakening of social cohesion. Retreat of the State, second secularization wave, sexual revolution, refusal of authority, political "depolarization". Rising symmetry in gender roles, female economic autonomy. Flexible life-course organization, multiple lifestyles, open future.

Source: Lesthaeghe R., *Second Demographic Transition*, Table 1, p.7, http://www.vub.ac.be/SOCO/ron/final_textSDTBasilBlackwellEncyclop.doc

(structure – culture – technology). The changes regarding the fertility and forming of relationships are explained by reference to regional and cultural aspects, and sociological and psychological aspects connected with the destandardisation of the life course. Destandardisation of life course, in comparison with standardisation of life course, means that at times when the dominant form of relationship was marriage (FDT), the life events took place in the following order: education, marriage, childbirth. In the SDT models category, the child can appear before marriage and marriage can take place after childbirth,

which means that being married is not a prerequisite for having children. Colossal changes are taking place in attitudes and behaviours, which are determined by changes in the system of values. All these have their sources in Inglehart's theory of ideology change. Inglehart was one of the first to describe these changes as a "silent revolution". According to Van de Kaa (2010, p. 81), Ronald Inglehart has described the societal change in the western societies in the 1960s and 1970s, which has reflected particularly in family formation and dissolution, attitudes towards fertility regulation and motivation for parenthood, as 'a silent revolution'. He first used the term 'post-materialism' to characterize the shift, but in a later book (Inglehard 1997) used 'postmodernization' when speaking of the cultural, economic, and political changes in the 43 societies which he surveyed. The demographic aspects of these changes, such as: postponing the relationship and childbirth, childlessness and longer education have become a norm in contemporary society. The role and importance of gender is rising, the situation on the labour market is changing – there is a combination of various processes which overlap and coexist. These processes are partly elements of globalization and partly arise out of demographic transformation processes. The theories most commonly used in explaining the SDT changes, which date back to the 1960s in Europe, include: ideational changes, modernization and postmodernization (Inglehart 1977, 1990, 1997).

The concept of the **T**hird **D**emographic **T**ransition (TDT) was introduced relatively recently. It was presented by D. Coleman in his article *Immigration and Ethnic Change in Low Fertility Countries: A Third Demographic Transition* published in 2006 in *Population and Development Review*. According to the author: A Third Demographic Transition is underway in Europe and the United States and the ancestry of some national populations is being radically and permanently altered by high levels of immigration of persons from remote geographic origins or with distinctive ethnic and racial ancestry, in combination with persistent sub-replacement fertility and accelerated levels of emigration of the domestic population. The author's proposition resolves into two claims (Coleman 2006, p.401):

- The first, which is relatively easy to demonstrate in empirical terms consists of two components: a) in some industrial countries a rapid change is already apparent in the composition of the population by national or ethnic origin, arising from the direct and indirect effects of immigration in the last few decades; b) projections based on plausible assumptions imply ‚…, a substantial alteration of the composition of that population, which if continued in the longer term would lead to the displacement of the original population into a minority position.
- The second, that such a process, were it to continue and materialize in its demographic aspects over such a short historical period would warrant the label of "transition".

In fact, the role of migration in shaping demographic structures is growing, but Coleman' proposition has not been discussed at length in professional publications. It is not sufficiently related with other processes which condition migration, and it lacks strong theoretical arguments. Perhaps it will be properly analysed in the future and

supplemented with theory and valid arguments, as happened with the SDT model, which has its roots in the description of changes taking place in the Western Europe of the 1960s.

POPULATION AND BASIC PROCESSES IN THE FUTURE AND GLOBAL CONTEXT

During a press conference which took place on 13th June 2013, John Wilmoth, Director of the Population Division of the **D**epartment of **E**conomic and **S**ocial **A**ffairs (DESA), presented the new UN report – *World Population Prospects: the 2012 Revision*. The last revision of demographic projections for the world population was done two years before that, in 2010 (*World Population Prospects: The 2010 Revision*). The projections were created on the basis of source data from 233 countries all over the world. The synthetic results of the latest prognosis (in variant approaches described as low, medium, high, constant fertility) for the period until 2100 are included in Figure 2 and Table 3a,b.

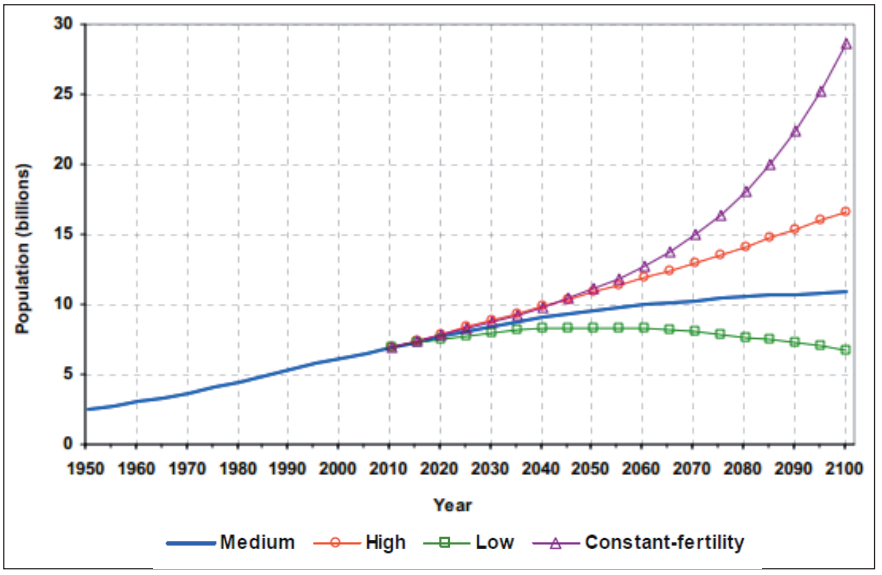

Figure 2. Population of the world, 1950–2100, according to different projections and variants
Source: *World Population Prospects: The 2012 Revision*. New York, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2013, ESA/P/WP.228, NY, p. XV, Figure 1.

According to the data published in the "Population Prospects: The 2012 Revision, New York", in 2013 the world population reached 7.2 billion, with 5.9 billion (or 82.5% of the world total) living in the less-developed regions (Tab. 3a). Out of these, 898 million reside in the 49 least-developed countries and account for 12.5% of the world population. More-developed countries, whose total population amounts to 1.25 billion inhabitants, account for 17.5% of the world population (Tab. 3b). According

Table 3a. Population of the world, development groups and major areas in 1950, 1980, 2013, 2050 and 2100 according to different variants

Development group or major area	Population (millions)			Population in 2050 (millions)				Population in 2100 (millions)			
	1950	1980	2013	low	medium	high	constant	low	medium	high	constant
				fertility				fertility			
World	2 526	4 449	7 162	8 342	9 551	10 868	11 089	6 750	10 854	16 641	28 646
More-developed regions	813	1 083	1 253	1 149	1 303	1 470	1 268	801	1 284	1 960	1 152
Less-developed regions	1 713	3 366	5 909	7 193	8 248	9 398	9 821	5 949	9 570	14 682	27 494
Least-developed regions	195	393	898	1 594	1 811	2 043	2 552	1 944	2 928	4 266	13 590
Other-less developed regions	1 518	2 973	5 011	5 599	6 437	7 355	7 269	4 005	6 642	10 416	13 904
Africa	229	478	1 111	2 119	2 393	2 686	3 210	2 826	4 185	6 007	17 221
Asia	1 396	2 634	4 299	4 482	5 164	5 912	5 805	2 739	4 712	7 558	8 971
Europe	549	695	742	622	709	804	673	383	639	1 005	508
Latin America and Caribbean	168	364	617	674	782	902	885	420	736	1 215	1 298
North America	172	255	355	395	446	500	453	335	513	754	535
Oceania	13	23	38	50	57	64	62	46	70	102	114

Source: Population Division of the Department of Economic and Social Affairs of the United Nation Secretariat (2013), World Population Prospects: The 2012 Revision, New York, United Nations, Table 1.1.

Table 3b. Percentage distribution of the world population by development group and major area estimates and projections according to different variants in 1950–2100

Development group or major area	1950	1980	2013	2050				2100			
				low	medium	high	constant	low	medium	high	constant
				fertility				fertility			
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More-developed regions	32.2	24.3	17.5	13.8	13.6	13.5	11.4	11.9	11.8	11.8	4.0
Less-developed regions	67.8	75.7	82.5	86.2	86.4	86.5	88.6	88.1	88.2	88.2	96.0
Least-developed regions	7.7	8.8	12.5	19.1	19.0	18.8	23.0	28.8	27.0	25.6	47.4
Other-less developed regions	60.1	66.8	70.0	67.1	67.4	67.7	65.6	59.3	61.2	62.6	48.5
Africa	9.1	10.8	15.5	25.4	25.1	24.7	29.0	41.9	38.6	36.1	60.1
Asia	55.3	59.2	60.0	53.7	54.1	54.4	52.3	40.6	43.4	45.4	31.3
Europe	21.7	15.6	10.4	7.5	7.4	7.4	6.1	5.7	5.9	6.0	1.8
Latin America and Caribbean	6.6	8.2	8.6	8.1	8.2	8.3	8.0	6.2	6.8	7.3	4.5
North America	6.8	5.7	5.0	4.7	4.7	4.6	4.1	5.0	4.7	4.5	1.9
Oceania	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.4

Source: Population Division of the Department of Economic and Social Affairs of the United Nation Secretariat (2013), World Population Prospects: The 2012 Revision, New York, United Nations, Table 1.2.

to the medium variant, the world population will reach 9.5 billion in 2050 and around 10.9 billion in 2100. The population of the more-developed regions will reach 1.25 billion in 2013, 1.3 billion in 2050 and 1.28 billion in 2100. This means that the world population inhabiting these regions will oscillate around 1.3 billion, which will be 12–13% of the world population. The population of the less-developed regions will reach 6 billion in 2013, 8.3 billion in 2050 and 9.6 billion in 2100. The numbers clearly show that, according to the UN prognoses (medium variant), the development of the world population will be based around the population of less-developed regions.

Projection results are a consequence of accepted premises regarding the basic demographic processes: fertility, mortality and migration. Two continents are the leaders in population growth: Asia and Africa. In 1950, the population of Africa accounted for 9.1% of the total world population, while in 2013 the figure was already 15.5%. According to the prognosis, by 2100 it will have reached 39%. Despite the high contribution to current population made by Asia – 60% as of 2013 – the proportion will drop to 43% in 2100. The percentage of the European population in relation to the world population is also decreasing rapidly. While in 1950 the European population accounted for 22% of the world total, by 2103 that percentage had dropped to 10.4%. By 2100 it will account for only 6%. Europe is one of the continents in which the demographic processes observed in the last century, and especially since 1950, have significantly lowered the overall dynamic for population growth. Both the First and Second Demographic Transformations, which began in Western Europe and continued in Northern and Southern Europe, have significantly sped up in Eastern and Central Europe. This was caused mostly by the socio-economic and political transformations dating back to the fall of the Berlin Wall and the collapse of the Soviet Union. Currently this part of Europe (and world) is an example of a "demographic laboratory", displaying as it does a scale, tempo and intensity of demographic processes that is unprecedented in the history of the entire continent.

Over the last 60 years (in the period from 1950 to 2010), there have been some essential changes in the basic demographic processes. We will try to characterize these briefly here, as they concern mortality, fertility, population ageing and migration.

MORTALITY

A synthetic measure of mortality is the average life expectancy, one of the parameters in the life tables. It differs depending on sex (in general, women live longer than men, and the lower the socio-economic development of a given country, the more the parameter differs depending on sex) and the socio-economic development of a given country or region of the world. Appropriate data are included in Figure 3.

In general, over the last 60 years, every continent has experienced positive change regarding life expectancy. The highest values for this parameter are measured in North America, Europe and Oceania, the lowest in Africa. Generally life expectancy at birth remains low in the least-developed countries, at the level of 58 years in the period 2005–2010. At the same time we have to remember that increasing longevity

contributes to population ageing. Apart from adult mortality rate, an important factor in the changes of mortality are the changes regarding infants and children under age 5 mortality. In recent years, thanks to better access to health services and the development of medicines, the mortality of infants and children under 5 has been reduced significantly. The under-5 year mortality is an important indicator of development and the well-being of children. In the years 1950−1955, 21% all children born in the world did not reach their fifth birthday. In the years 2005−2010, the value for this rate was at the level of 59 deaths per 1000 births.

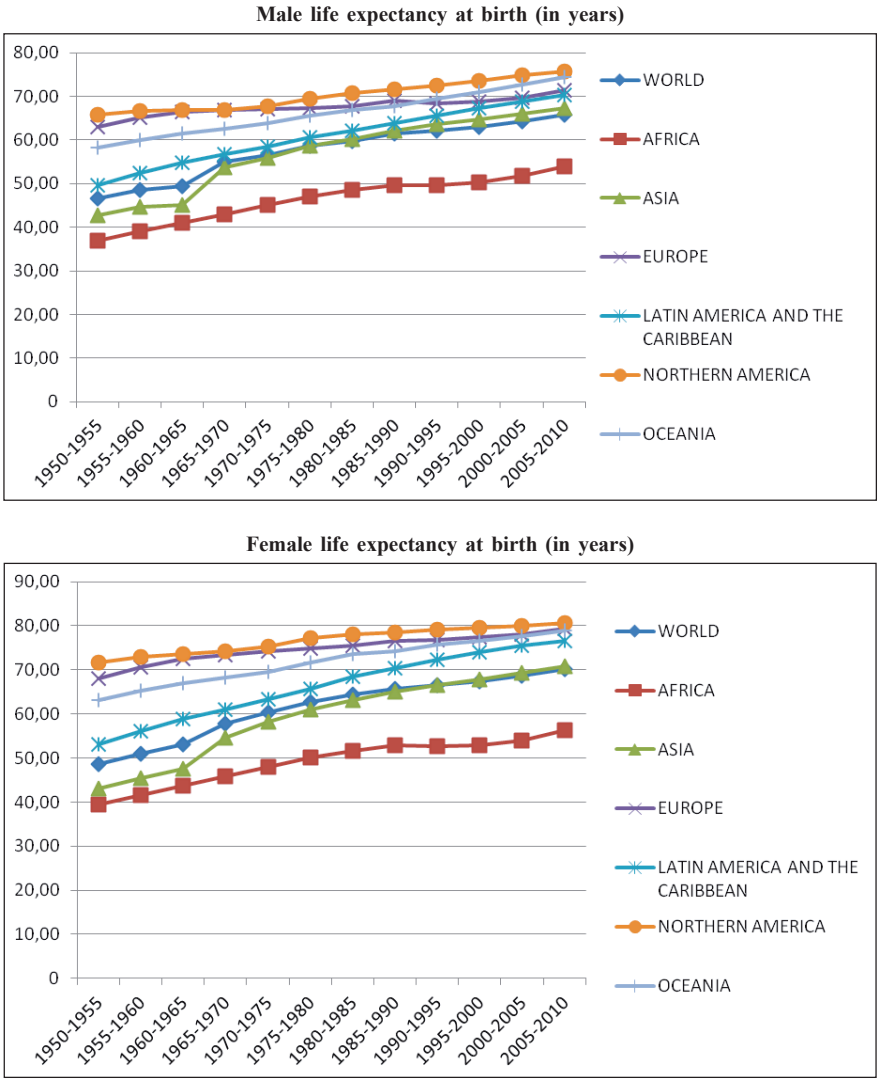

Figure 3. Male and female life expectancy: world and regions, from 1950–1955 to 2005–2010
Source: Author's own elaboration based on UN Data base.

FERTILITY

The changes in fertility form an important process determining population development dynamics and influencing population age structure. The synthetic measure is the **T**otal **F**ertility **R**ate (TFR), which informs us about the number of children born to every woman during her reproductive period, that is from 15 to 49 years of age. Figure 4 includes information about the change in this measure for the whole world, divided into continents. At the beginning of the 1950s, Europe, North America and Oceania had the TFR at a level lower than other continents – from 2.4 to 4 children per woman, while on other continents the TFR was from 5 to 7 children per woman. In many continents a significant decrease in fertility took place in the 1960s. In Europe these changes were cause by the Second Demographic Transition. The scope of changes observed at the end of the 1980s and in the 1990s resulted in the fact that, in many countries, the TFR decreased well below the simple replacement rate. The lowering fertility resulted in a significant regrouping of countries in regard to this measure. Table 4 includes the relevant information.

Table 4. World Population by Total Fertility Rate: 1950, 2010, 2050, 2100

Value of TFR	Population by Total Fertility Rate							
	1950		2010		2050		2100	
	million	percent	million	percent	million	percent	million	percent
6 and more	1 102	43.5	119	1.7	0	0.0	0	0.0
5.0–5.9	541	21.4	391	5.7	0	0.0	0	0.0
4.0–4.9	47	1.9	364	5.3	129	1.4	0	0.0
3.0–3.9	351	13.9	350	5.1	764	8.2	0	0.0
2.1–3.9	418	16.5	2 372	34.4	1 178	12.7	1 768	17.5
Under 2.1	71	2.8	3 299	47.8	7 234	77.7	8 355	82.5
All TFR levels	2 532	100.0	6 895	100.0	9 305	100.0	10 123	100.0

Source: UN Data and *Word Population Prospect. The 2010 Revision,* Population Division of the Department of Economic and Social Affairs of the United Nations, 2012.

More than one billion of the 2.5 billion world population in 1950 had a total fertility of 6 or more children. This was equivalent to about 44% of the world population. By 2010, however, the population with TFR at the level 6 children and more had declined to 119 million, thus accounting for only 1.7% of the world population. The population with total fertility of 2.1 or less grew from 71 million in 1950 to almost 3.3 billion in 2010. In 2010, almost 50% of the world's population had a total fertility rate of less than 2.1 children per women. According to projections for the periods up to 2050 and 2100 (medium variant), these changes will continue, which means that in 2050 around 78% of the world population will live in countries with a TFR of 2.1 or less. This percentage will grow to 83% by 2100.

The fertility transition is accompanied by a number of changes related to family-forming processes. It resembles fertility change in being discussed extensively in specialist publications. One of its characteristic features is the increased age at which a relationship/marriage is entered into, as well as a postponing of decisions regarding parenthood, this being reflected in ever-higher age of parents at first childbirth (Fig. 4).

Becoming a parent and the decisions and choices concerning fertility are processes involved in the transition to parenthood that are the subject of steady change. The main observed tendencies (mostly relating to more-developed regions) are for:

- Postponement of the onset of parenthood;
- An increasing prevalence of childlessness as an ideal lifestyle model;
- Very low fertility – at the level of 1.3 to 1.5 children per woman;
- Parenthood to be closely connected with other choices made during the life cycle of an individual and a family, entailing:
  - the formation and dissolution of families, relationships (the family career);
  - education and work (the professional career);
- The percentage of extramarital births in all European countries to increase − from 10% to over 50%;
- The current situation (contrary to popular belief) to be the reverse of that observed 20 years ago at the beginning of the 21st century, fertility being higher in the European countries charactrized by:
  - higher divorce rates;
  - a higher percentage of extramarital births;
  - a greater average age at first marriage;
- The process of the postponement of parenthood to seem irreversible;
- An increase in the number of women and men who will still not have become parents at the end of their procreative age;
- Low fertility at the level of 1.5 children or less to remain as it is or become even more widespread in the future;
- The lack of dependence between entering into a marriage and parenthood to remain the same or even deepen;
- The number of extra-marital births and births in successive relationships to (most likely) grow;
- The situation on the labour market and as regards life-long learning to continue to reduce fertility, at least in Europe.

The Second Demographic Transformation model describes in detail the changes accompanying these phenomena. One thing is certain – the decrease in fertility below the simple replacement rate, especially to very low levels below 1.5 children per woman, is significantly increasing the tempo of the population ageing process.

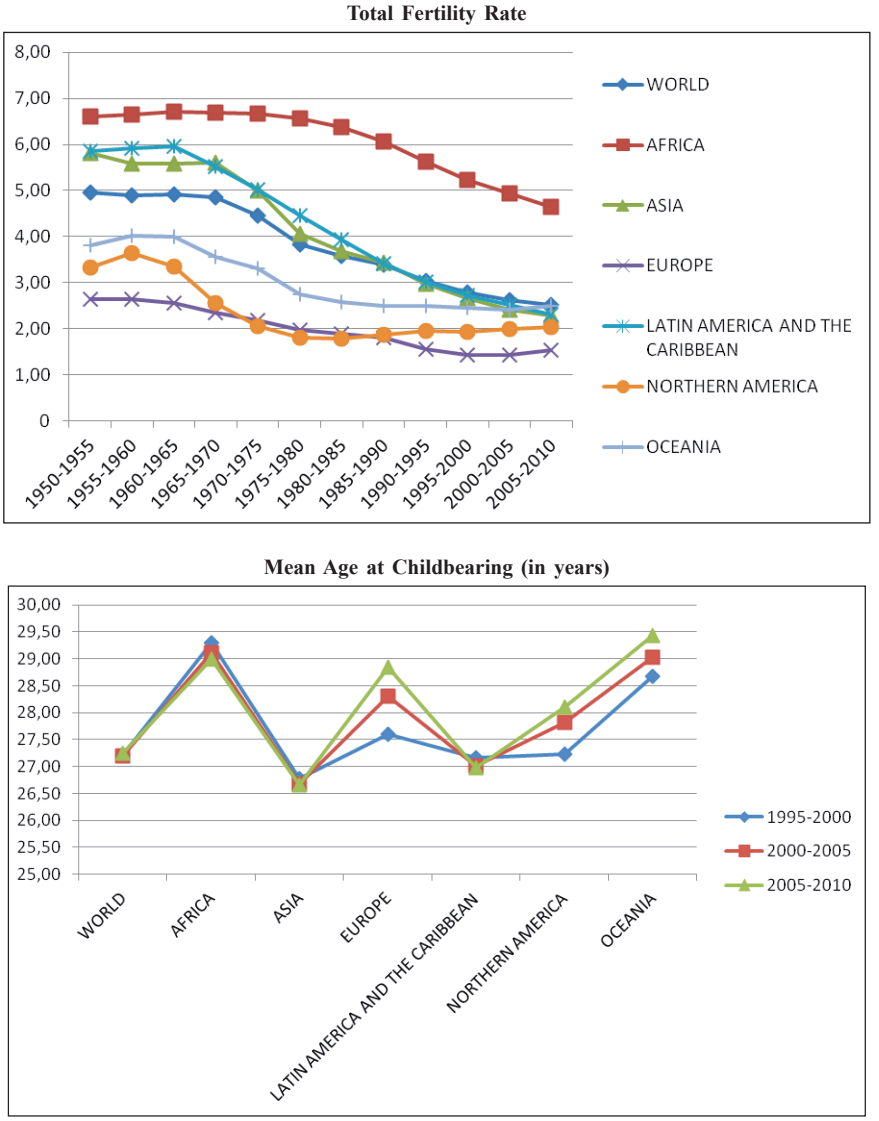

Figure 4. Total Fertility Rate and Mean Age at Childbearing (in years): world and regions, in the periods 1950–1955 and 2005–2010

Source: Author's own elaboration based on UN Data base.

POPULATION AGEING

Population ageing is a process related to changes in the age structure of a given population, meaning that the share of people in a population who are old is growing. The definition of "old" varies, however, the age can, for example, be 60, 65 or 70 years. An increase in average life expectancy is a component part of the ageing

process, and a synthetic measure of population ageing is offered by statistics for the median age in the population. By definition, identification of the median age provides for the division of a population into two parts of equal size, which is to say that there are as many people of ages above the median as there are people with ages below the median. According to UN projections, population ageing is projected for all major regions of the world.

Table 5. Median age for the world, development groups and major areas in 1950, 1980, 2013 and 2050, 2100, medium variant

Development group or major area	1950	1980	2013	2050	2100
	Median age in years				
World	23.5	22.6	29.2	36.1	41.2
More-developed regions	28.5	31.9	40.5	44.5	46.3
Less-developed regions	21.4	20.0	27.2	34.9	40.6
Africa	19.2	17.6	19.4	24.7	34.9
Asia	22.0	21.0	29.7	39.8	45.4
Europe	28.9	32.7	40.9	45.7	46.8
Latin America and the Caribbean	19.9	19.8	28.3	40.6	48.1
Northern America	29.8	30.0	37.7	40.9	44.6
Oceania	27.9	26.4	32.6	37.0	44.1

Source: The 2012 Revision ,UN, New York, 2013, Table I.5, p. 8.

The median age of the world population grew from 24 in 1950 to almost 30 by 2013, which means that the age structure remains relatively young. However, the population ageing process differs from region to region, being highly intensive in developed countries, where the fertility rate is low and longevity is a well-established norm. In 1950, the median age in Europe − the world leader in the ageing process − was at the same level as the median age of the world population in 2013 – 29 years. However, the median age in Europe in 2013 equals 41 and will reach 46 years by 2050. There are countries in Europe whose median age will soon exceed 50 years, and Europe's ageing process will intensify significantly in the years 2015−2030, as the baby-boomers from the 1950s reach retirement age. The data from the 2012 UN projection suggest that this process will take place in many areas in the future, including North America, Latin America and the Caribbean, and Oceania. It will also impact upon the less-developed regions. The population ageing process disturbs inter-generational relations, and dependency ratios becomes relatively high – this is especially true for the old dependency ratio (the relation between old people and people active on the labour market − *World Population Prospects. The 2012 Revision*). Many economists warn us about the "cost of ageing", Lee and Masson are two such authors (Lee and Masson 2011a, Lee *et al.* 2010, 2011a; Lee 2012). In their work "Population Ageing and the Generational Economy. A Global Perspective", an aim to study macroeconomic

relations if inter-generational flows are put into the economic equation leads them to define a number of fundamental principles and concepts by which the costs of ageing might be estimated (e.g. global age transition; the Generational Economy; Producing and Consuming: the Economic Life Cycle; Sharing and Saving; Economic Flows across Age, etc.). This is then an important work, which uses the scientific method to record and analyze the economic aspects and consequences of the ageing process in the categories of macro inter-generational transfer. The population ageing process is seen to be a great challenge for different types of policies in many of the world's countries.

The role of migration in shaping demographic structure is seen to be growing, such that migrations – in their economic, social and political aspects – are widely discussed during international debates and conferences. In recent days the world has received a new portion of information in the form of the High-level Dialogue on International Migration and Development, which took place on 3rd and 4th October 2013 at UN Headquarters (*High-level Dialogue* 2013). The latest data on migration have been published there, leading to the quote that:[8] "More people than ever are living abroad. In 2013, 232 million people, or 3.2 per cent of the world's population, were international migrants, compared with 175 million in 2000 and 154 million in 1990. The North, or the developed countries, are home to 136 million international migrants, compared to 96 million in the South, or the developing countries. Most international migrants are of working age (20 to 64 years), such people accounting for 74 per cent of the total. Globally, women account for 48 per cent of all international migrants. "Migration, when governed fairly, can make a very important contribution to social and economic development, both in the countries of origin and in the countries of destination," said Mr. Wu Hongbo, UN Under-Secretary-General for Economic and Social Affairs. "Migration broadens the opportunities available to individuals and is a crucial means of broadening access to resources and reducing poverty."

The Polish experience informs us about the scale of migration engaged in by Poles, mostly since Poland became a member state of the EU. Current estimates state that around 2.0–2.5 million Poles live abroad, mostly working in the Scandinavian countries and the British Isles. More information on this subject can be found in publications such as: Coleman 2005, 2006; World Migration Report: 2011, 2012, 2013; *International Migration and Development,* United Nation: 2009, 2013.

CONCLUSIONS

- The world population, estimated at 7.2 billion, will reach 9.6 billion in 2050 and 11 million in 2100 (according to the *World Population Prospects: The 2012 Revision*).

[8] Cp. http://esa.un.org/unmigration/wallchart2013.htm

- The transformation of demographic trends has coexisted and will coexist with globalization processes, though the scope of the mutual influence changes over time.
- The fertility transformation process, which began intensively in the 20th century, will continue, with the path of future fertility determining future population growth.
- The world will have to face the challenge of a low fertility rate and advanced population ageing processes.
- While the FDT model became standard, the SDT is a local model, relating mostly to Europe and selected highly-developed countries. The concept of the TDT model is introduced into the professional literature, but has not been widely verified.
- Despite the fact that it takes place in various geographical regions, the transformation of demographic trends is characterised by high cultural diversity and socio-economic development. Its tempo and trajectory are characterised by high probability (Dyson 2010, Wilson 2011).
- A large majority of the world's population is engaged in a process of demographic convergence (Wilson 2011).

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