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ECONOMIC ASPECTS OF DEMOGRAPHIC CHANGES IN THE EUROPEAN UNION AND IN BULGARIA³

The article considers the specifics of demographic development in Bulgaria, compared to that of the EU-28. The natural movement of the population and internal migration in the country is analyzed. The focus is on the combined influence of the three main demographic processes – fertility, mortality and migration, which are considered as the main determinants of human resource development and economic activity. To illustrate these processes, a survey was conducted and described in the village of Smilyan, Smolyan municipality. The specificity and role of two demographic processes (population aging and depopulation) in several contexts are examined – the concept of active aging in the EU and its implementation in Bulgaria, their impact on labor productivity and economic growth, the health status of the elderly as potential for work and employment, etc.

JEL: J11; J14; J16; F22; R13

Introduction

In recent decades dynamic demographic processes in the EU, including Bulgaria, have been observed. They are related both to the natural movement of the population – reduction of its number (depopulation) and the so-called aging of the population, as well as to migration.⁴ Sudden demographic changes in Bulgaria have been observed since 1990. Currently, Bulgaria is among the five EU countries with the most dynamic aging processes (measured by the highest percentage of adults aged 65 and over) and among the top six in the world (five in Europe and Japan). Bulgaria is also among the countries of Central and Eastern Europe (CEE) with a large number of emigrants – about 1.5 million, predominantly in

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³ The paper summarizes the main results of the first part of the project „Economic Aspects of Demographic and Migration Processes in the EU and Bulgaria”, developed within the Research Programme of the Economic Research Institute at BAS. The project was accepted as successfully realized in January 2019.

⁴ The two types of processes are demographic, but the authors use the terms demographic and migration processes to specify them.

working and fertile age. As a result of both impacts, the population in the country has declined from 9 million in 1988 to just over 7.0 million in 2018.

Recent demographic and migration changes are unique in the economic history of EU countries and combined have a significant impact on its development. In the last 4-5 years there has been a new phenomenon – mass immigration of people from third countries, mainly from the Middle East and Africa to the EU countries. These processes are individually studied by international organizations, research institutes, universities and individual scientists (demographers, sociologists, political scientists, etc.), but far less attention is paid to a comprehensive study of their economic aspects.

Today's realities require exploring economic development opportunities in the EU and Bulgaria in conditions such as population aging and migration processes and in the context of ongoing innovation and integration processes. The article defends the thesis that demographic changes (natural movement of the population and migration) are an important determinant of production factors, especially in the context of globalization and integration. The period under consideration is the years of Bulgaria's EU membership – from 2007 to 2018.

Theoretical basis and research on demographic development

There are three main demographic factors for the population aging: *reducing mortality, reducing birth rates and external migration*. In long-term retrospect, the natural movement of the population in the world and in the individual countries goes through different transitions and stages of different duration. The overall observed trend is an initial gradual decrease in mortality and, at a later stage, a lasting decrease in fertility at different rates of change in the two indicators, accompanied by an increase in the average life expectancy. The role of external migration is also important, and its impact is relatively rapid on the population age structure.

The current stage of demographic transition in the developed countries is characterized by stable levels of low birth rate and low mortality rate. However, Bulgaria is characterized by low birth rate and a high mortality rate, which makes the issue of improving the demographic picture more specific and complex. The situation is further exacerbated by the persistent negative migration balance, which is significant for the working-age population.

The question is whether, in relation to the observed demographic changes, a *demographic crisis* is an adequate term. It is used in some Eastern European countries – Bulgaria, Russia, Latvia, etc. The objections to this term come mainly from two reasons. *Firstly*, the etymological meaning of the word crisis means a period of severe critical decline or a bout of illness (in the medical field), but it is assumed that it will be overcome and why not even create conditions for more successful development after overcoming it. However, the demographic development today does not have any such prospects, which is shown by the long-term forecasts (up to 2050 and 2070) of international organizations (such as UNs World Population Prospects, etc.), national institutes such as the National Statistical Institute (NSI) in Bulgaria and individual experts. If a more precise term is sought,

demographic collapse and even *catastrophe* can be mentioned for countries like Bulgaria. Many municipalities in Bulgaria are already critically depopulated, and this demographic collapse has led to the term *catastrophe*. *Secondly*, since the beginning of the 1990s, during the transition to a market economy, society has become sensitive to all major changes and could easily use the word crisis in various fields and cases, including in such important and slowly changing (inert) demographic processes.

The demographic aging process has two aspects. The *first one* is an increase in the size of the population of the elderly people, measured by their number or share in the general population. The *second aspect* reflects the decrease in the number of young people in the population. It is noteworthy that the efforts of scientists, experts, various institutions and international organizations focus almost entirely on the first aspect.

The population aging affects the economy of a country in many ways – reducing labor supply, reducing savings, increasing spending on pensions and health care, reducing economic growth, etc. The increasing share of the elderly also raises the question of changes in the transfer of resources between generations.

Population aging has implications not only for public finances but also for labour productivity. It is clear that *the future economic progress in developed countries must be made with fewer and older workers*. Presumably, this leads to a lower income per capita for at least two reasons: *firstly*, the increase in the proportion of older people compared to working-age population leads to a change in the ratio of consumers to producers, and *secondly*, a negative effect is expected for the labour productivity of the relatively older population.

Over the last two to three decades, work on studying demographic development and its economic impact has intensified internationally and nationally. It is assumed, that with so many scientific conferences, publications, developed and accepted projects, concepts, strategies, measures and policies, their results will be more obvious. The demographic issues in Bulgaria are considered, above all, as statistical tendencies with inventions for the resulting social and some economic consequences. Economists in the country are expected to get involved more directly and more actively in studying the economic consequences of the aging population and how the economy would function in such demographic realities. In other words, the current demographic situation should be accepted as a given that determines the basis of labour resources today and even more in the future, which will affect the whole economic system – production and economic structure, human capital, opportunities for innovation, competitiveness, etc. Due to the inertia of the processes, no noticeable positive results can be expected in the short and medium-term with the policies launched today. Efforts should be made to maximize the results from the available human resources, but at the same time real action must be taken to address long-term problems.

In the developed countries, particular attention is paid to the economic aspects of demographic change. It works systematically, there are science centers or departments, such as the Munich Center for the Economics of Aging. The cooperation and synergy between demographic, social and economic researches, as well as those in the fields of medicine, culture, ecology, etc., practically carried out in Bulgaria, would be useful. The ineffective cooperation in the country however, between the science units and those

responsible for the formation and implementation of economic and social policy in the field of demographic development continues.

The economic aspects of population aging are being considered by reputable institutions such as the World Economic Forum, the International Labor Organization, the World Health Organization and others. For years, they have been the subject of intense work by the European Commission in the field of active aging and the silver economy.

Demographic development of Bulgaria in the EU context

Since 1989, there has been a dramatic change in the demographic situation in Bulgaria.⁵ Negative demographic changes began to manifest themselves clearly at the beginning of the transition to the market economy. The political and economic transformations in CEE, including Bulgaria, as well as the accelerated processes of globalization, have had a negative impact on demographic processes, and in particular on people's reproductive behaviour and their international mobility. Like other CEE countries, the structure of the population is changing, with the proportion of the elderly increasing, approaching that of the EU-15. Such demographic changes began earlier in Western European countries, but demographic policies in these countries over the last four decades have contributed that the aging process to be accompanied by a reduction in mortality and an increase in the average life expectancy. In the 1990s, the aging dynamics of CEE countries were more pronounced. The CEE countries face the challenge of dealing with the combination of three serious problems – population decline and aging, which is also seen in developed countries of Western Europe, but in the context of stronger economies in the latter, population with much lower incomes and significant emigration of the population mainly to the more developed EU countries.

The EU-28 population increase for 2018 towards the previous year (most recent data) is due to a 2.8‰ increase in net migration, while natural increase population rate is negative (Table 1).

In the first group of countries with the largest population growth are: Malta, Luxembourg, Sweden, Ireland, Austria, and so on. Most of them have both a positive natural rate and a migration balance. Germany, Finland and Poland register a negative natural increase rate, but due to the significant immigration flow, they achieve an overall increase in their population. The Western and Northern European countries take advantage of the emigrating young people of fertile and working age. *In the group of countries with a decreasing population* are those from Central and especially from Eastern Europe, also Portugal and Italy, with the largest decrease in Lithuania, Latvia, Croatia, Bulgaria, Romania, etc. This depopulation started about 30 years ago, both because of the negative natural growth and the significant emigration, mainly to the countries of Western Europe. The strength of the two factors manifests differently in different countries.

⁵ Demographers in Bulgaria had previously predicted a negative natural increase by the end of the twentieth century, but this was recorded as early as 1990.

Table 1

Population change in EU-28 countries in 2018, ‰

	Total population change	including			Total population change	including	
		Natural increase	Net migration			Natural increase	Net migration
EU (28 countries)	2.1	-0.7	2.8				
Countries with increasing population				Countries with decreasing population			
Malta	36.8	1.6	35.3	Latvia	-7.5	-4.9	-2.5
Luxembourg	19.6	3.2	16.3	Bulgaria	-7.1	-6.6	-0.5
Ireland	15.2	6.1	9	Croatia	-7.1	-3.9	-3.3
Cyprus	13.4	4.1	9.3	Romania	-6.6	-3.9	-2.8
Sweden	10.8	2.3	8.5	Lithuania	-5.3	-4.1	-1.2
Slovenia	6.8	-0.4	7.2	Italy	-2.1	-3.2	1.1
Belgium	6.1	0.7	5.4	Greece	-1.8	-3.2	1.4
Spain	5.9	-1.2	7.1	Portugal	-1.4	-2.5	1.1
Netherlands	5.9	0.9	5	Hungary	-0.6	-3.9	3.3
United Kingdom	5.6	1.7	3.9	Poland	-0.1	-0.7	0.6
Denmark	4.3	1.1	3.2				
Estonia	4.3	-1	5.3				
Austria	4.1	0.2	4				
Czech Republic	3.7	0.1	3.6				
Germany	2.7	-2	4.8				
France	1.5	2.2	-0.6				
Slovakia	1.3	0.6	0.7				
Finland	0.9	-1.3	2.1				

Source: Eurostat.

The described population figures in the EU countries largely explain the reasons for the demographic policy applied in them and within the Union as a whole. While countries such as France, Germany, and others tend to rely on immigrants from Eastern Europe, Africa and the Middle East, CEE countries, including Bulgaria, are overwhelmingly seeking a national solution to demographic issues regarding natural increase rate and retention of emigration, including policies aimed at returning emigrants.

By all major demographic indicators, Bulgaria was and still is below the EU-28 average, and in many cases, it is in the last positions regarding these indicators. EU membership since 2007 has not led to a reversal of long-term negative trends. Over the last ten years, the EU-28 average birth rate has remained relatively stable around and slightly above 10‰ (Table 2). For Bulgaria, it decreased from 10‰ in 2007 (which is slightly lower than the EU-28 average) to 8.9‰ in 2018, widening the gap with the Union average.

Table 2

Demographic indicators for Bulgaria compared to EU-28, 2007-2018

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>Birth rate (per 1000 people)</i>												
EC-28	10.7	10.9	10.8	10.7	10.5	10.4	10	10.1	10	10.1	9.9	9.7
България	10.0	10.4	10.9	10.2	9.6	9.5	9.2	9.4	9.2	9.1	9.0	8.9
<i>Mortality rate (per 1000 people)</i>												
EC-28	9.7	9.8	9.8	9.7	9.7	9.9	9.9	9.7	10.3	10	10.3	10.4
България	15.0	14.8	14.5	14.9	14.7	15	14.4	15.1	15.3	15.1	15.5	15.4
<i>Total fertility rate*</i>												
EC-28	1.56	1.61	1.61	1.62	1.59	1.59	1.55	1.58	1.58	1.6	1.59	
България	1.49	1.56	1.66	1.57	1.51	1.5	1.48	1.53	1.53	1.54	1.56	
<i>Share of the population aged 65 and over in the total population, %</i>												
EC-28	17.0	17.1	17.3	17.5	17.6	17.9	18.2	18.5	18.9	19.2	19.4	19.7
България	17.6	17.8	18	18.2	18.5	18.8	19.2	19.6	20	20.4	20.7	21.0
<i>Life expectancy at birth (years)</i>												
EC-28	79.1	79.4	79.6	79.9	80.2	80.3	80.5	80.9	80.6	81	80.9	
България	73.0	73.3	73.7	73.8	74.2	74.4	74.9	74.5	74.7	74.9	74.8	
<i>Expected Life expectancy of people aged 65 (years)</i>												
EC-28	18.9	19	19.2	19.4	19.6	19.5	19.7	20	19.7	20	19.9	
България	15.0	15.3	15.6	15.6	15.8	15.8	16.2	16	16	16.2	16.1	

* Shows the average number of children (boys and girls) that a woman would give birth to throughout her fertile period (15 to 49 years).

Source: Eurostat and NSI

The fertility rate in 2017 in Bulgaria is 9‰ and continues to fall to **8.9‰ in 2018**, compared to the average of EU-28 countries of 9.7‰. In 5 of these countries the birth rates are lower than in Bulgaria – the lowest in Italy (7.3‰), followed by Spain (7.9‰), Greece (8.1‰), Portugal (8.5‰) and Finland (8.6‰).

The total mortality rate in Bulgaria in 2017 is 15.5‰, and in the following year it stays at almost the same high levels – **15.4‰**⁶ (at 10.4‰ EU-28 average), while the mortality rates in the countries with lower birth rates than Bulgaria are lower: Greece – 11.2‰, Portugal – 11‰, Italy – 10.5‰, Finland – 9.9‰, Spain – 9.1‰.⁷

The mortality rate in Bulgaria is the highest in Europe and among the highest in the world (Table 3). After Bulgaria, much higher than the EU-28 average is the value of this indicator

⁶ The total mortality rate in Bulgaria is increasing even at a declining child mortality rate, which is a positive fact in itself – from 13.2 in 2002, 9.2‰ in 2007, 8.5‰ in 2011 and 6.4‰ in 2017, although it remains among the highest in comparison with other countries, at an average of 3.6 ‰ for the EU-28. The lowest is the child mortality rate in Cyprus (1.3‰), Finland (2‰), Slovenia (2.1‰) and Estonia (2.3‰). In the Bulgaria's case, the negative role of the relatively high rate of premature mortality should be added.

⁷ The lowest mortality rates are in Cyprus (7‰), Luxembourg (7.1‰) and Malta (7.6‰), which is more than twice lower than in Bulgaria.

only in Latvia and Lithuania.⁸ Among the EU-28 countries with the lowest mortality rates are Ireland, Cyprus and Luxembourg, and on a European scale – Andorra, Kosovo (UN), Turkey, Azerbaijan, Iceland, etc. Low mortality combined with high birth rates determines the relatively high positive natural increase for these countries.

Table 3
Mortality rates in European countries in 2018, ‰

Countries	Mortality rate
Bulgaria (15.4) , Latvia (15)	15 and more
Serbia, Lithuania	14 – 14.99
Ukraine, Russia (2011), Romania, Hungary	13 – 13.99
Croatia, Belarus, Georgia	12 – 12.99
Estonia, Germany, Greece, Portugal	11 – 11.99
Poland, Czech Republic, Italy, Bosnia and Herzegovina (2016), Montenegro, Moldova (2016), EU-28 (10.4) , Slovakia	10 – 10.99
Slovenia, Finland, Belgium, Denmark, Austria, Northern Macedonia, United Kingdom, France, Spain, Sweden	9 – 9.99
Netherlands, Armenia	8 – 8.99
Switzerland, Norway (2017), Malta, Albania, Liechtenstein, Luxembourg, San Marino	7 – 7.99
Cyprus, Monaco, Ireland, Iceland	6 – 6.99
Azerbaijan (2017), Turkey	5 – 5.99
Kosovo, UN (2017), Andorra (4.4)	4 – 4.99

Source: Eurostat

As a result of the described trends in Bulgaria, an increasing negative natural increase of the population emerges (Table 4). *The problems for the decreasing population in Bulgaria are above all in the high mortality rate, apart from the declining birth rate.*

The high mortality rate in the country is terrifying and it cannot be said that the measures taken to reduce it are adequate to its scale and seriousness. *Such high mortality should be accepted with all its importance in the concept of the current demographic processes in Bulgaria and reflected in the main demographic policies against depopulation and population aging.*

⁸ According to CIA data for 2017, Bulgaria ranks third in mortality in the world (14.5 per 1000 people), with only the Republic of Lesotho (15 per 1000) and Latvia (14.6 per 1000 people) ahead of Bulgaria. The ranking is dominated mainly by African, Balkan and former Soviet republics. Lithuania has similar to Bulgaria's death rate. Ukraine, Guinea-Bissau, Chad, Serbia, Russia and Afghanistan, which is a site of military conflict and terrorism, also rank in the top 10 of the black chart. In recent years Bulgaria has always been among the leaders in this ominous ranking, but for the first time it has climbed up and is now in the top three. Central Intelligence Agency (US), the World Fact Book. Available at: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2066rank.html>.

Table 4

Live births, deaths and natural increase in population in Bulgaria in 2007-2018, numbers

	Live births	Deaths	Natural increase
2007	75 349	113 004	-37 655
2008	77 712	110 523	-32 811
2009	80 956	108 068	-27 112
2010	75 513	110 165	-34 652
2011	70 846	108 258	-37 412
2012	69 121	109 281	-40 160
2013	66 578	104 345	-37 767
2014	67 585	108 952	-41 367
2015	65 950	110 117	-44 167
2016	64 984	107 580	-42 596
2017	63 955	109 791	-45 836
2018	62 197	108 526	-46 329

Source: NSI.

The total fertility rate (Table 2) also shows Bulgaria's weaker position than the EU-28 average. It decreased from 1.81 in 1990 to 1.23 in 1995 and then increased to 1.56 in 2018, but remained below the EU average of 1.59. Most CEE countries have an even more pronounced decrease in this indicator. Countries such as Spain, Greece, Italy and Malta have a markedly low total fertility rate throughout the period (around 1.30). With highest values are France (1.9), Sweden, Ireland, Denmark, United Kingdom, Romania (all in the order of 1.71 to 1.78).

As a key indicator of the population aging of in a given country in the EU, the relative share of the population aged 65 and over is taken. In this regard, Bulgaria has a higher percentage than the EU-28 average (Table 5).

Table 5

Relative share of the population over 65 years in total population, 2018, %

Share, %	Countries
under 9	Azerbaijan (6.5), Kosovo UN (8.1), Turkey (8.5)
11.0-11.9	Moldova (2017), Armenia
13-13.9	Russia (2014), Albania, Northern Macedonia, Ireland
14.0-14.9	Iceland, Luxembourg, Georgia, Montenegro
15.0-15.9	Belarus, Slovakia, Cyprus
16-16.9	Ukraine, Norway
17.0-17.9	Poland, Liechtenstein
18-18.9	Romania, United Kingdom, Switzerland, Belgium, Austria, Malta, Hungary, Netherlands
19.0-19.9	Czech Republic, Spain, San Marino, Denmark, Slovenia, Estonia, Lithuania, EU-28 (19.7) , France, Sweden, Serbia
20.0-20.9	Croatia, Latvia
21.0-21.9	Bulgaria (21.0) , Germany, Finland, Portugal, Greece
22.6 (the highest)	Italy

Source: Eurostat.

The aging process in Bulgaria is more pronounced among women than men. The relative share of women over 65 is 24.8% and of men – 17.7% (2018). This difference is due to the higher mortality rate for men and, as a consequence, the lower average life expectancy. The male mortality rate in Bulgaria (16.5‰ in 2018) is significantly higher than the female mortality rate (14.4‰).

Because of the described trends, Bulgaria has the lowest life expectancy (74.8 years), which is over 6 years lower than the EU-28 average (80.9 years in 2017). The life expectancy is similar in Latvia and is slightly higher in Romania (75.3). At the same time, in 18 of the 28 countries, life expectancy is above the EU-28 average, with the highest being in Spain (83.4) and Italy (83.1). The situation with the life expectancy of the elderly people (65 years) is similar. In 2017, it is 16.1 years in Bulgaria, compared to 19.9 EU-28 average. Bulgaria has the lowest life expectancy of 65-year-olds in the EU-28 (similar to Serbia and Belarus), with Hungary and Romania at 16.7 each. At the same time in 15 countries in EU-28 the average life expectancy of these people is above the Union average. These differences directly reflect the nature of the economic and social policy within the EU countries in the context of an aging population.

According to all available national and international forecasts, the population of Bulgaria will continue to decline in the future and, according to most of them, will be just over 5 million by 2050.

Summarizing:

1. The demographic collapse not only reduces the number of the workforce, but also worsens its age and occupational structure. Such a structure increases the burden on the budget by spending on pensions and medical care for the elderly. There is an unfavourable change in terms of available human resources as a workforce in quantitative and qualitative terms. In these demographic conditions, it is difficult to achieve high productivity and accelerated catch-up development.
2. Alarming demographics indicators are complemented by (and explained by) other macroeconomic ones: Bulgaria is the country with the lowest average incomes among other EU countries; also the country with the highest risk of poverty and social exclusion for the population and even more for the elderly; the country with the most widespread corruption in the Union. The income gap of the population is growing strongly and rapidly. According to Eurostat data, in the period 2012-2017, the gap between the incomes of the richest and the poorest 20% of Bulgarians increased from 6.2 to 8.2 times.
3. The achieved GDP growth (3.6% in 2017 and 3.1% in 2018) cannot fulfill the role of inclusive catch-up development and hasn't a noticeable impact on poverty reduction and economic and social inequalities. At the same time, the deepening of demographic change creates a serious strain on social security and a growing need for budgetary funding. The conclusion is that unless a drastically different socio-economic approach is implemented to bring about a significant change in demographic development, the status quo will not change.

Demographic processes in Bulgaria in a regional aspect as a basis for economic development

Natural increase in population

The imbalance in the territorial population distribution in Bulgaria is deepening. These trends are more dramatic in villages than in cities. In 2018, half of the country's population lives in South-West and South-Central Bulgaria (30 and 20.1% respectively), with the lowest share in the Northwest – just 10.6%. The latter region also marks the largest negative growth rate. Four of the six cities with a population over 100 thousand are in Southern Bulgaria – Sofia, Plovdiv, Stara Zagora and Burgas, and only two – Varna and Rousse, are in Northern Bulgaria. This creates specific conditions for the economic development of the country in territorial terms. In addition to having the lowest economic level among EU countries, Bulgaria, measured in terms of GDP per capita, also has the highest regional disparities.

Apart from the population concentration, there are also significant economic differences in its age structure. Viewed by districts, the share of persons aged 65 and over is highest in Vidin (29.6%), Gabrovo (28.6%) and Unsteadily (27.3%). In twenty districts, this share is above the national average (21%). The lowest is the share of the elderly in the districts of Sofia (capital) – 17.5%, and Varna – 18.9%. The aging process is more pronounced among women than men.

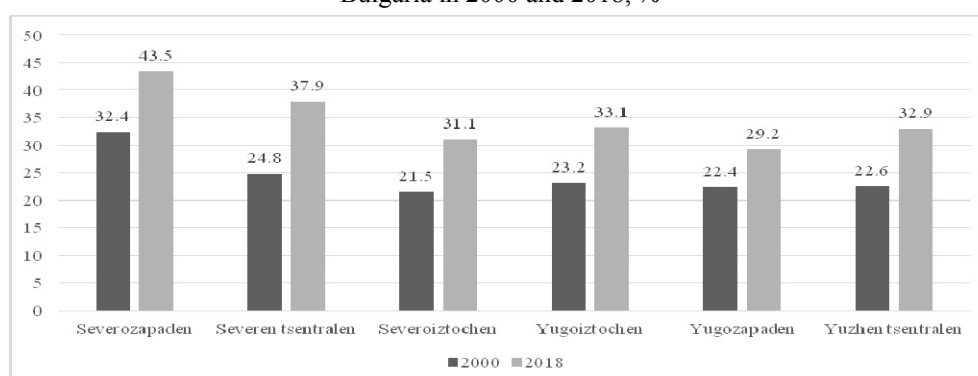
The unfavorable tendency of population aging and the relative decrease of people of working age can be traced by the change of the ratio between people of over-working age and those of working age. It shows a relative increase in the elderly population over 65 years compared to that of working age. It is the least pronounced in the Southwestern region – by 6.8 percentage points and the strongest in the North Central region – by 13.1 percentage points followed by the Northwest – by 11.1 percentage points (Figure 1). The increase in this ratio is not proportional to the regions and indicates the greater economic potential of the Southwest and South Central region compared to other regions in the country.

The indicators regarding the natural increase of the population that determine its natural growth are the fertility and mortality rates. The data by districts follow the trends for the country as a whole for declining birth rates, high and increasing mortality rates. With a birth rate of 8.9‰ for 2018 (and 9‰ for 2017), the highest birth rate is in Sliven district – 12‰, followed by Sofia (capital) (9.8‰) and relatively high and above the national average and in the districts: Yambol, Plovdiv, Pazardzhik, Stara Zagora, Kardzhali, Varna and Burgas, in which are located largest cities in the country, or are characterized by populations of different ethnicities. The lowest birth rate is in Smolyan – 6.3‰.

There are large variations in mortality rates in different regions. It is the lowest in Sofia-capital (11.7‰) and the highest in poor cities such as those in the Northwestern region (Vidin – 23.2‰, Montana – 21.7‰). The described trends also predetermine the natural increase population in the districts. These regional imbalances further complicate the country's demographic problems. Viewed in a regional plan, the highest average life expectancy is in the district of Kardzhali – 76.61 years and in Sofia (capital) – 76.58. In

districts, mainly with large cities, average life expectancy is between 75 and 76 years and is above the national average – Blagoevgrad, Smolyan, Varna, Plovdiv, Burgas. The lowest life expectancy is between 72 and 73 years in the districts of Northwestern region Montana and Vratsa. In ten areas the average life expectancy is between 73 and 74 years and these are areas where other negative demographic and social phenomena are observed. The average life expectancy in the country and by region is increasing over time, with a higher life expectancy for women of about 6-7 years than for men.

Figure 1
Ratio of the share of the population over 65 to that between 15 and 64 by regions in Bulgaria in 2000 and 2018, %



Source: NSI. Residence structure, sex ratio and age dependency rates.

The average population age in Bulgaria is also rising – from 39.9 years in 2000 to 41.5 years in 2007 and 43.7 years in 2017. The most aging population is again in Vidin, with an average age of 47.6 compared to 41 in Sofia.

The consequence of demographic changes is the worsening age structure of the population in the various districts. Even for a relatively short period, such as 2010-2018, there was a marked decrease in the number and share of the working-age population (from 62.6% in 2010 to 60.0% in 2018) and an increase in the over-working age population (from a low of 22.7% to 24.7%) with a very slight increase in the already low percentage of incoming generation in under-working age – from 14.6% to 15.2%. These structural changes are more pronounced in rural areas than in urban and in women than in men. The proportion of people in over-working age in urban areas in 2018 is 22.7% and in rural areas – 30.4%. The relative share of women in over-working age in 2018 in urban areas is 27.9% and of men – 17.1%.

Migration

Bulgaria is among the CEE countries, characterized by significant emigration flow since 1989, changing in size and structure over the years, but stable over time. Leaving so many people, especially the young, leads to a weakening of the economy and a threat to its

overall functioning in certain regions. It is not uncommon that one of the most important barriers to investment in underdeveloped areas is the lack of human resources (Zlatinov, 2010, p. 177-190).

Emigration was more intense in the 1990s, in the years of transition to a market economy than in the years of EU membership. Since 2007 the NSI has been keeping regular statistics on external migration, which enables it to be better studied. Despite the conditionalities of statistics, it is observed that the number of people leaving the country is generally increasing, with a peak in the years of the economic crisis (2009-2010) and then in 2014 and 2015, when the number of immigrants in the country has increased dramatically, but the migration balance has remained negative and even increasing.

The motives for the internal migration are the same as in the case of external migration - job search, higher pay, better working and security conditions, better professional realization and career, providing better or appropriate children education, etc.

A more general picture of the mechanical movement by districts can be obtained from the available NSI data on the total number of migrants, whether in or outside the country. In the period 2010-2017 the tendency for more emigrants than immigrants in Bulgaria continued, which resulted in a negative migration balance.⁹ According to NSI data, in 2017 the number of immigrants in Bulgaria was 139 068, and of those emigrants – 145 057, as a result of which a negative migration balance of -5989 people was registered.¹⁰ In some districts, there was a positive migration balance, most notably the biggest ones: Sofia (capital) – 3572, Plovdiv – 1698, Varna – 1148, Kardzhali – 863, Bourgas – 670 and Pernik – 174.

The territorial distribution of immigrants and emigrants based on 1 000 people shows their real impact on demographic processes. With a negative migration balance overall for the country, it is interesting from which districts are predominantly leave people (this would be useful to track by municipalities) and whether they go abroad or in another districts of the country (Table 6). It is hardly strange that the districts with the highest number of emigrants per 1000 people are those, which by other indicators show unfavourable development and unattractiveness: Vratsa – 32.9, Vidin – 31.2, Montana – 28.2, Targovishte – 27.5, Razgrad – 27 etc. Relatively few emigrants per 1000 people are from Sofia (capital) – 14.6, Plovdiv – 16.4, Pazardzhik – 16.7, Ruse – 17.1, etc. As a result, the effects of migration processes in individual areas are reflected in their migration balance. The Smolyan region is the hardest hit, followed by Vratsa, Vidin, Pleven, etc., and the best positions with a positive migration balance are the districts of Kardzhali, followed by districts with big cities – Sofia (capital), Plovdiv, Varna, etc. (with twice lower levels of the indicator).

⁹ Since 2007, the migration of the population includes not only internal migration but also the movement of persons to and from the country.

¹⁰ The migration survey monitors the number of persons who have changed their usual place of residence (current address). The data source for migrants is the Unified System for Civil Registration and Administrative Services (ESGRAON). According to the NSI methodology, the mechanical growth of the population in territorial aspect represents the difference between the number of immigrants and the number of emigrants in and from each settlement in the calendar year. The migration balance from external migration is expressed by the difference between the emigrants and the immigrants in the country in the same year.

Table 6
Immigrants, emigrants and migration balance per 1,000 people by district

	2010			2017		
	Immigrants	Emigrants	Migration balance	Immigrants	Emigrants	Migration balance
Total – number	155 212	179 402	-24 190	139 068	145 057	-5 989
Total for the country	20.7	23.9	-3.2	19.7	20.6	-0.8
Blagoevgrad	14.6	19.0	-4.4	17.5	20.9	-3.4
Burgas	26.3	26.3	0.0	23.3	21.7	1.6
Varna	23.8	23.5	0.3	21.3	18.8	2.4
Veliko Tarnovo	25.7	32.5	-6.8	22.1	26.1	-3.9
Vidin	23.1	29.4	-6.2	25.3	31.2	-5.9
Vratsa	21.2	27.7	-6.5	26.6	32.9	-6.3
Gabrovo	18.5	26.8	-8.3	16.9	21.3	-4.4
Dobrich	19.2	24.8	-5.6	17.4	21.6	-4.2
Kardzhali	19.0	25.8	-6.8	30.7	25.0	5.7
Kyustendil	16.8	24.4	-7.6	17.4	23.0	-5.6
Lovech	16.1	28.3	-12.2	20.4	24.9	-4.5
Montana	23.0	29.2	-6.2	23.2	28.2	-5.0
Pazardzhik	12.6	18.6	-6.0	12.6	16.7	-4.1
Gingerbread	24.5	26.4	-1.9	19.9	18.5	1.4
Pleven	18.5	23.8	-5.3	17.6	23.4	-5.8
Plovdiv	18.9	23.0	-4.1	18.9	16.4	2.5
Razgrad	16.8	30.0	-13.2	21.6	27.0	-5.5
Ruse	19.6	23.1	-3.5	16.3	17.1	-0.7
Silistra	19.0	26.7	-7.7	19.6	23.4	-3.8
Sliven	16.0	27.8	-11.8	18.8	23.3	-4.4
Smolyan	14.5	28.0	-13.5	15.4	25.8	-10.4
Sofia (capital)	24.0	16.3	7.6	17.3	14.6	2.7
Sofia	20.4	22.5	-2.1	21.6	22.9	-1.3
Stara Zagora	22.6	27.5	-4.9	20.4	20.6	-0.1
Targovishte	21.2	30.7	-9.5	24.8	27.5	-2.8
Haskovo	18.3	24.8	-6.6	22.2	23.1	-0.9
Shumen	21.0	26.2	-5.2	23.4	24.5	-1.1
Yambol	22.5	34.3	-11.8	18.7	25.2	-6.5

Source: NSI, Demographic and Social Statistics.

NSI data by districts give an opportunity to determine the structure of the emigrants in the country – whether they do so within a given district, outside the district within the country or abroad (Table 7). It is obvious that the migration of the population is mainly within the country, with the predominance of the migration from one district to another before the movement within the district. Razgrad (36.6%), Kardzhali (33.3%) and Kyustendil (30%) have the highest share of emigrants abroad compared to all emigrants. With the smallest relative share of emigrants abroad (less than 15%) are the districts: Veliko Turnovo (12.6%), Stara Zagora (13.6%), Plovdiv (14.7%).

Table 7

Structure of emigrants by districts in Bulgaria, 2017

Immigrants in:	Emigrants to:					
	the same district		other districts in the country		abroad	
	number	share (%)	number	share (%)	number	share (%)
Blagoevgrad	2467	38.4	2290	35.6	1669	26.0
Burgas	3892	43.6	3095	34.6	1945	21.8
Varna	3386	38.1	3514	39.5	1991	22.4
Veliko Tarnovo	2285	36.7	3162	50.7	785	12.6
Vidin	1199	44.1	996	36.7	521	19.2
Vratsa	2246	41.2	2157	39.5	1054	19.3
Gabrovo	693	29.5	1045	44.6	609	25.9
Dobrich	1464	38.6	1452	38.2	883	23.2
Kardzhali	1468	38.9	1048	27.8	1255	33.3
Kyustendil	715	25.7	1235	44.3	835	30.0
Lovech	1006	31.8	1485	46.9	674	21.3
Montana	1429	38.4	1603	43.0	694	18.6
Pazardzhik	1370	31.8	1947	45.2	990	23.0
Gingerbread	795	35.1	1089	48.0	384	16.9
Pleven	1912	33.5	2686	47.1	1106	19.4
Plovdiv	5483	49.9	3890	35.4	1618	14.7
Razgrad	892	29.0	1058	34.4	1125	36.6
Ruse	1390	36.7	1663	44.0	730	19.3
Silistra	952	36.8	1134	43.9	500	19.3
Sliven	1288	29.4	1980	45.1	1120	25.5
Smolyan	682	24.7	1352	48.8	732	26.5
Sofia (capital)	2127	11.0	12152	62.8	5082	26.2
Sofia	1467	27.6	2962	55.8	880	16.6
Stara Zagora	2751	41.9	2920	44.5	893	13.6
Targovishte	1229	39.7	1138	36.7	731	23.6
Haskovo	1799	33.7	2290	42.8	1253	23.5
Shumen	1494	35.3	1808	42.6	935	22.1
Yambol	898	29.6	1541	50.8	592	19.6

Source: Authors' calculations based on NSI data on migration of the population.

Demographic changes and imbalances lead to other territorial disparities by area. One very important indicator is the economic activity of people aged 15-64. With a coefficient total for the country (2018) 71.5% it is highest in Sofia (capital) – 77.2%, and in several districts is relatively high – Smolyan, Blagoevgrad, Sofia (region), Vidin, etc. The lowest is the economic activity in the districts: Kardjali, Vratsa, Montana, Razgrad. Another production factor (other than labor force) is that of investment, in this case, foreign direct investment (FDI). For them, the distribution is more than indicative, with more than half of them going to Sofia (capital), followed by a much smaller share of the districts with the big cities – Varna, Burgas, Plovdiv. Not surprisingly, the districts of Silistra, Montana, Kyustendil, Yambol, Vidin, Vratsa have the smallest share. If the average wage is considered to be the result of economic activity, again the very favourable position of Sofia (capital) is obvious

– 138.2% against the country total 100%. Long after it, but just below 100% is the average wage in Stara Zagora, Sofia region, Varna, Vratsa, Plovdiv, etc.

Summarizing:

1. Depopulation and aging processes will continue in the future, with depopulation even greater in some districts, leading to further disappearance of some administrative units or critical depopulation of individual settlements. The issue is not only to track down negative trends, but to urgently find policies to counter them. Because there are points of the situation after which settlements cannot function normally, and any efforts to create economic activity and infrastructure will not make sense and significance.
2. It is disturbing that the problems of territorial imbalances did not find at least a partial solution during the period under consideration, during which the country received significant ESF funding. The imbalance in the territorial distribution of the population is exacerbating. The EU focused on the cohesion policy of European regions and cities in the economic, social and environmental spheres covered by the two programming periods: 2007-2013 and 2014-2020. The European Commission report for Bulgaria on the evaluation of cohesion policy programs in 2007-2013, focused on the European Regional Development Fund and the Cohesion Fund, noted that the gap remained relatively unchanged over the period.¹¹
3. The logical and most commonly proposed policy to reduce regional disparities is the proposal to redirect resources to the least developed territorial units. The income gap between less developed districts and Sofia may be reduced by greater efforts to attract local and foreign investment, quality and continuing education and training, infrastructure development and a better business environment that fosters entrepreneurship. To this end, an adequate and targeted *strategy* is needed, outlining how to achieve these goals. Such a strategy must be based on the endogenous (internal) economic potential of the regions, as well as strive to match regional policy with economic efficiency.
4. Regional development would be sustainable if implemented on the basis of well-combined economic, social, environmental and institutional development. It implies that there are working institutions involved in addressing the problems of creating and reviving (where applicable) economic activity, reducing income inequality, activating the labor market and reducing unemployment. There is a general understanding of the lack of systematic success in this area.
5. The territorial redistribution of the population in the country is proving to be one of the reasons for the widening of the differences in living conditions between towns and villages. The spatial dimension of poverty (cities versus small settlements) is exacerbated by poor infrastructure. The change in the territory of the six statistical regions in the country, which has been planned and discussed in the last few months,

¹¹ An interesting analysis of the peculiarities of the agricultural structure and policy in Bulgaria, as well as the absorption of funds from the European funds, see: Boyukliev, 2016, pp. 145-165.

can suppress on paper some drastic territorial differences, but in the districts and municipalities it cannot be relied on territorial reconstruction.

Demographic and migration processes in the Smolyan district

Smolyan District has a relative share of 1.52% of the total population in the country (2017). Lower is the share only in Vidin district (1.23%) and with a little higher proportion are Gabrovo (1.56%) and Silistra (1.57%). The authors' research interest in the Smolyan district is driven by the desire to analyze a less studied regional unit, which is among the smallest in the country in terms of population and territory, with rapidly deteriorating demographic characteristics and a poorly developed economy. There is an uneven distribution of the population by municipalities, with more than 1/3 of the people living in the municipality of Smolyan (the largest in the district). The population in Smolyan is declining at a higher rate than the total for the country (Rangelova, Bilyanski, 2018, pp. 80-101).

In the Smolyan district, demographic development is expressed in low birth rates, very high mortality rates, negative natural increase, depopulation, migration of young people caused by lack of employment and well-paid/attractive jobs in small settlements. The age structure continues to worsen, with the share of older people increasing. This is more pronounced in women than in men and more strongly in villages than in towns. The contingent of the younger generation is becoming smaller, which has a negative impact on human fertility and other characteristics of the natural increase of the population, and thus on the state of human resources in the area. Although the negative migration balance is diminishing, active emigration from the Smolyan district, permanently depletes its human resources. The processes of depopulation and population aging pose a serious problem for the economic development for this part of the country.

Economic activity, employment and unemployment are undoubtedly influenced by the demographic factor. There is increasing employment (with a slow decrease in the number of labor force), decreasing unemployment, improving the educational level of the workforce. The average wage level is below the median for the 28 districts in the country. The risk of poverty and social exclusion is among the highest in the country and income inequality is increasing. Compared to other districts, however, the distribution of income in the Smolyan district by the Gini coefficient is more even, meaning that social problems, including the risk of poverty and social exclusion, affect a wider part of the population.

A survey (questionnaire) was conducted in the village of Smilyan, Smolyan municipality. It was aimed at examining the demographic situation and the emigration mood there, and understanding the reasons leading to the depopulation of the municipality and to the current economic and social development. Through the survey, adequate recommendations are seeking for revitalizing the economy and raising living standards.¹²

¹² The survey was conducted during the summer of 2017. The respondents were 159, i.e. 10% of the total population in the village of Smilyan.

Main findings:

- Smilyan is a typical present Bulgarian village with a decreasing population, increasing share of elderly people and leaving young people. This not only reduces the workforce, but also degrades its age and professional structure.
- Respondents show personal monthly income below the national average. People in retirement age (65 and over) make up the largest low-income group, followed by those in pre-retirement age (51-65). It is understandable that the people receiving relatively higher incomes (between BGN 601-1000 and over BGN 1000 per month) are those of the most active working age 36-50 and 19-35.¹³ According to the survey data, there is no significant financial support from relatives working abroad.
- Demographic changes pose the necessity for the elderly to be viewed as a human resource that, with experience and knowledge, can optionally continue their career in the forms they choose. However, *increasing the retirement age* is not considered justified by the respondents. Over four-fifths of the respondents (82.4%) disagree with it and only 12.6% answered positively.¹⁴ The support for this measure comes mainly from people of retirement age. However, working pensioners are of great importance for small settlements where there are problems with the shortage of certain professions.
- According to the answers received in the questionnaire for the depopulation of Smilyan, emigration within the country is of greater importance, and that of foreign countries remains of secondary importance. *The emigrants are mostly young people* looking for a better job or education. In practice, almost everyone who went to study in a larger city remains employed there. And this tendency cannot be stopped, or at least diminished, unless attractive conditions for the professional realization and standard of living of young people in their places of origin are created.
- The increase in employment implies the development of economic activity in the Smolyan region. This covers a wide range of priorities and includes measures such as: infrastructure development – road, transport and communication; promoting projects from international and national programs and local initiatives; stimulating entrepreneurship and attracting foreign investment; development of tourism using natural, cultural and historical assets, cross-border cooperation in the interest of people and others.¹⁵
- However, there are quite a few opportunities for the economic development of the region that can be realized relatively quickly. These opportunities, in turn, can be the turning point of these negative processes. Firstly, these opportunities must be sought in the development of existing economic activities to create higher value-added. Specific

¹³ The Bulgarian Lev is pegged to the Euro, with 1 € = 1.95583 BGN.

¹⁴ When analyzing such a question, for many people the question actually changes from "Do you agree to increase your retirement age?" to "Do you agree to start receiving a pension in addition to your salary later?", to which the answer is clear.

¹⁵ These measures are the subject of attention and discussion in various regional and national documents. See: Development Strategy of Smolyan District 2005-2015. Republic of Bulgaria. Smolyan District Governor.

examples are the woodworking industry (but aimed at furniture production, not exporting very low-processed products), rural tourism (but aided and co-ordinated by local authorities, not fragmented, with multiple individual hotels and houses for guests offering only overnight accommodation and food and the increasingly-asked question of why tourists do not return again), livestock breeding and plant growing (which can be easily organized under natural conditions, but again with the help of local authorities), food industry, trade and others. In the next phase there is also room for development of new and modern economic activities, but they should take into account the specifics of the region, its traditions and the restricted labor market very well.

Active aging of the population as an economic factor

Active aging of the population contributes to increasing the country's development resource, and in particular its economic and social potential. This leads to more complete human realization and satisfaction, and ultimately to higher economic results. The concept of active aging brings returns by reducing the loss of valuable experience and, based on the wisdom of the elderly, to strengthen the human resilience of society in order to address the economic and social challenges in the long term. In this context, active aging strategies are being developed that aim to change the attitudes of different age groups and to develop a more effective approach to address the aging population.

In the EU, the concept of the Silver Economy has emerged, encompassing a number of different but interconnected strands aimed at improving the quality of life, social inclusion and participation in the economic activity of an aging population through innovative policies, products and services. The EC publishes the European Silver Economy Growth document, which outlines a wide range of policy initiatives related to the economy.¹⁶

Bulgaria has adopted a National Strategy for the Active Life of the Elderly in Bulgaria for the period 2019-2030 MLSP.¹⁷ The Strategy responds to the challenges facing the aging population and supports policy-making and action in the social field, with an emphasis on promoting older people's employment and participation in public life. The main objective of the strategy is to create conditions for an active and dignified life of the elderly by providing equal opportunities for their full participation in the economic and social life of society. The following priorities of the Strategy have been identified: Priority 1: Promoting the active life of older people in employment; Priority 2: Promoting the active life of older people in the field of community participation; Priority 3: Promoting the active life of older people in the field of independent living; Priority 4: Creating capacity and a supportive

¹⁶ See: The Silver Economy – an Emphasis on the Third European Standardization Summit. It was the focus of the Third European Standardization Summit, which took place from 10 to 12 June 2014 in Istanbul, Turkey. Available at: http://www.bds-bg.org/bg/pages/page_1963.html.

¹⁷ It was developed by the Ministry of Labor and Social Policy and replaced the existing National Concept for the Promotion of the Active Life of the Elderly (2012-2020), in order to ensure continuity and adequate use of the experience gained. Available at: https://www.mlsp.government.bg/ckfinder/userfiles/files/politiki/demografaska%20politika/nacionalni%20strategicheski%20dokumenti/National_agieng_strategy_2019-2030.pdf.

environment for the active life of older people at national and regional level. The EU concept of active aging is embodied in the project for calculating the Active Ageing Index (AAI).¹⁸ It is designed to determine the extent to which older people can contribute to the economy and society and help policymakers and society develop appropriate policies for the active life of older people.

AAI are composite measures calculated using 22 individual indicators and grouped into four areas that are components of the overall index:

- *Employment age 55 and over*, divided into four age groups: 55-59, 60-64, 65-69 and 70-74;
- *Participation in public life*: voluntary activity, child and grandchild care, adult care, participation in politics;
- *Independence of the elderly* – health, economic and social – access to health care, middle income, poverty risk, lifelong learning, etc.;
- *Capacity (potential) and favorable environment for an active and healthy life of the elderly* – life expectancy, life share of people in good health, use of ICT by the elderly, social cohesion, educational attainment of the elderly, etc.

The first three areas relate to the actual state of affairs, while the fourth area captures the capacity and favourable environment for active aging, which means factors that may facilitate or impede active aging.

Data for the period from the initial calculation of the AAI, year 2008 to 2016 have served to calculate the indices for 2018. There is an increase of this index on the EU average from 32 for 2008 to 35.8 for 2018.¹⁹ There is an increase in all countries except Greece. The increase is highest in Malta (7.1 percentage points – p.p.), followed by France and Belgium (5.3 p.p.), Austria (5.1 p.p.) and so on. For Bulgaria, the increase is 4 p.p. reaching 32, which is lower than the EU average.

It is logical for countries with a high standard of living to have high levels of active adult life (Figure 2). In the EU, these countries are as follows Sweden, Denmark, the United Kingdom, the Netherlands, Finland, Ireland, etc. Of course, the ratio does not mean the most direct causal-effect relationship. Moreover, this relationship can work in both directions – a higher level of GDP leads to more active aging opportunities, but this dependence may not be watching. For example, at a higher GDP per capita than in the rest of the EU-28, the AAI (in total and by component) should be higher. Estonia is another example because markedly better active aging in it than other CEE countries is achieved at a lower or similar level of GDP (like Slovenia, Slovakia). Bulgaria also presents a higher AAI overall than some CEE countries, which have higher GDP per capita – Slovenia,

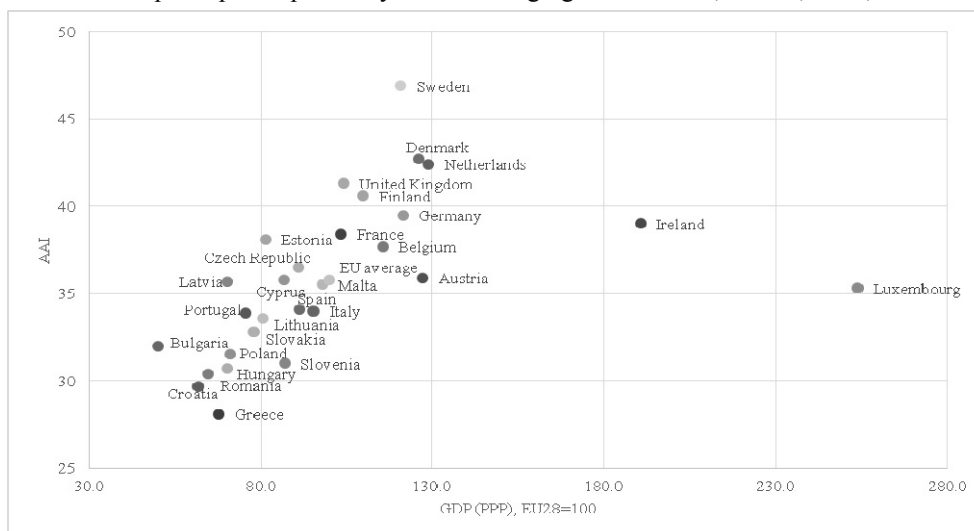
¹⁸ Вж. Active Ageing Index 2014. Analytical Report, 2015. UNECE and EC (DG EMPL), 2015.

¹⁹ UNECE/European Commission (2019) “2018 Active Ageing Index: Analytical Report”, Report prepared by Giovanni Laura and Andrea Principi under contract with the United Nations Economic Commission for Europe (Geneva), co-funded by the European Commission’s Directorate General for Employment, Social Affairs and Inclusion (Brussels).

Slovakia, Greece, Hungary, Poland, Romania. A weak correlation in such cases could arise in part because the development goals of some government policies are not directly targeted at specific priorities implied by the AAI.

Figure 2

GDP per capita dependency and active aging index – total, EU-28, 2018, %



Note: GDP data for Hungary is for 2017.

Source: Eurostat, UNECE.

Viewed by AAI area, Bulgaria is presented in the following way compared to the EU average: employment – 30.5 vs 31.1, participation in public life – 9.7 vs 17.9, independence of the elderly – 67.6 vs 71.8, capacity and favourable environment – 55.8 vs 57.5. These data show that in striving to approach the EU average, it is most urgent for Bulgaria to work towards better positions for older people in terms of their participation in public life and leading an independent life. This means that the National Strategy must be more fully integrated into contemporary economic and social policies and periodically report on the development of these complex issues.

Population aging and economic growth

The big challenge for countries experiencing intense aging processes is to maintain their competitive advantages over other countries. In particular, the question is what will be the impact of this process on total labour productivity, recorded as GDP per employee.

In practice, there are several main channels through which the aging population affects the economy: reducing labour supply, reducing savings and increasing health and pension costs. The growing share of older people in the general population is creating common

macroeconomic problems in financing intergenerational resource transfer. Population aging is also affecting economic growth through lower consumption of older people and higher rates of savings. They also consume less durable goods, housing, recreational services, etc., but use more medical services, medicines and more. According to life cycle hypotheses, older people are expected to spend the accumulated savings so that the overall savings available to the economy tend to decrease. Thus, demographic change will have an impact on economic growth.

The aging of the population affects not only public finances, but also directly labour productivity. It is obvious that in the future, technological progress will be achieved by fewer and older workers. By assumption, the latter leads to lower per capita income for at least two reasons: first, the increasing share of the older population is changing the producer-consumer ratio and second, the relatively older population is having a negative impact on economic productivity. Assessing the exact magnitude and direction of these impacts over time and how they will interact is a complex and difficult task.

It is generally accepted a priori that population aging is linked to a decline in labour productivity and, consequently, to economic growth. These studies relate to different economies (large or small open), different sectors and activities, reflecting different age structures, household incomes, household behavior, pension policy, etc. They use a variety of econometric methods and models, which incorporate mainly past trends, which inevitably predetermines the expected results. Whatever these trends are, they have useful implications for policymakers in the fields of economic and social policy.

Various published studies show that it is difficult to assess the impact of the aging population, in particular, the workforce, on labour productivity. They do not give definitive answers about the impact of aging populations on labour productivity. Many more empirical examinations and the search for appropriate tools are needed to arrive at clearer and categorical conclusions. This is all the more necessary in today's dynamic development of technological progress, digitalization, robotics, etc. The emerging digital (digital) economy is changing the world of business, changing the nature of working around the world, generating new job opportunities. It will radically change the participation and nature of labor in economic activity in a diversified way – the need for a smaller number of labour force as a consequence of much higher labor productivity, demands for higher specialized education, etc. In some developed countries, this is already being observed, even sooner than expected in Bulgaria.

Given the aging population in Bulgaria, and in particular the changing workforce, a model of the International Labor Organization was applied, which allows different scenarios to be created depending on the experts' assumptions about the future change in the main economic and demographic indicators, in particular the change in the number of labor force given three variants of changing the average life expectancy (slow, medium and fast) in the long run by 2050 (Rangelova, Sariiski, 2013, pp. 124-139). The question was asked whether this process affects overall labor productivity. The main results are as follows: (1) There are differences in the GDP produced per one employed person (albeit very small) in absolute terms, respectively in terms of growth and indices, according to the three options for improving life expectancy. The differences between the results obtained with medium and slow improvements in life expectancy are smaller than those obtained with medium

and rapid improvements. (2) The faster the improvement in life expectancy, the lower the economic performance measured by labor productivity. The differences between the indicators of the three options in absolute terms are small, which makes them even smaller at the annual average rates and indices; The outlined trends from the calculated figures are more important. This means that the negative effect (though unconvincing) of the aging population on labor productivity is confirmed in this case. (3) The results obtained show that the model is stable and relatively insensitive to small changes in the other main input parameters. For two main reasons, namely: the inevitable limitations of any given model construction, as and in this case it is a simple extrapolation of current trends and ongoing economic and social processes and a rather long period of nearly half a century when a wide range of changes can occur in economic, social and demographic life, the results obtained should be interpreted with caution. Possible policy decisions on technological progress and innovation, boosting GDP growth, and policies for active aging or activation of the elderly must be taken into account: increased participation, extending of working age (rethinking retirement due to the slogan: longer life, longer learning and longer work), developing a favorable migration policy from and to the country, a more successful demographic policy (promoting births, longer duration of birth) life) and more.

Among the most commonly used economic measures and policies in developed countries to address the problems of a declining workforce and the expected impact on labor productivity arising from an aging population are the following: raising the retirement age (which relies on the relatively high observed age) and increasing average life expectancy), a favourable policy to promote fertility and immigration, the introduction of lifelong learning, the concept of active aging, and others.

Retirement in the context of an aging population

In the EU countries, the population aged 20-59 is decreasing, reducing the number of workers and increasing the number of pensioners. The same tendency is observed in Bulgaria, while maintaining the low share of the coming generation in the working-age group. For EU countries, the declining working-age population poses a threefold challenge, on the one hand, with lower income to finance pensions, on the other, more pensioners in need of maintenance and a third, labor shortage. Extending working life proves to be the most effective measure to reduce the burden on workers. The logic is: a longer life (understand average life expectancy), a longer period of study, a longer period of employment and a better life for the elderly. The EU fosters the understanding that older workers are a resource, not a problem.

The implementation of successful policies to improve the position of older workers in the labor market is important in various aspects, the most important of which is that if the participation of older workers does not increase, the aging of the population will severely affect the availability of employment and hence the economic growth and sustainability of social protection systems. The EC proposes that the retirement age should be raised in stages, reaching 70 by 2060. The aim is to link retirement to the increasing life expectancy of Europeans, which is expected to average by seven years by the middle of this century

high than today. Bulgaria has successfully joined the step-by-step system of extending the retirement age.

The inevitable increase in the retirement age has specifics in Bulgaria, which are expressed along several basic lines. One of them is the observed activation of the elderly in the labor market in Bulgaria. The share of the elderly, their economic activity and employment is increasing and unemployment is decreasing. The share of employees in the 55-64 age group has almost doubled – from 10.7% in 2004 to 18.1% in 2017. The share of the oldest group is also growing – to 65 and over. For example, employment increased overall over the period considered, with the largest increase for the 55-64 age group – 25.7 p.p. and the lowest for the youth group (15-24 years) – 1.4 p.p., which is less than even the growth of the oldest group (65 years and over) – 1.9 percentage points (Table 8).

Table 8

Employment rates by age in Bulgaria, 2004-2017, %

Age	2004	2007	2008	2009	2011	2014	2016	2017
15-24	21.5	24.5	26.3	24.8	22.1	20.7	19.8	22.9
25-34	67.4	76.2	78.2	75.1	67.8	68.3	69.9	73.6
35-44	76.2	82.8	84.6	82.6	77.4	79.0	79.9	82.7
45-54	69.8	78.4	80.6	79.0	74.7	75.8	78.2	81.4
55-64	32.5	42.6	46.0	46.1	44.6	50.0	54.5	58.2
65 +	3.3	3.0	3.8	3.3	2.8	3.8	4.3	5.2

Source: Calculated according to NSI Labor Market Data.

With the policy of regulated stepwise increase of the retirement age in Bulgaria since 2012 onwards, it is interesting to track the change in the effective retirement age (Table 9).²⁰ In a short period such as 2009-2017, there is a first decrease and then a gradual increase in the effective retirement age to reach the starting year, both for men and women and for the difference between them. Further analysis is needed to explain this trend, as well as its relationship to the gradual legal increase in retirement age. Compared to EU-28, it appears that the effective retirement age in Bulgaria for men is closer to the Union average than the average position for women. The rank of the difference between men and women shows that it is not big. However, due to the higher average life expectancy of women, but the higher effective retirement age for men compared to women, the policy of gradually raising the retirement age in Bulgaria is being implemented faster at women with a view to its equalization in the future.²¹

²⁰ An effective retirement age is one that leaves the labour market for any reason, but mainly because of retirement. The EU effective average retirement age is calculated as the average age of leaving the work.

²¹ According to National Social Security Institute data, the average age of people who received their first pension in 2013 is 56.2, 56.5 for men and 55.8 for women. This relatively low age is influenced by the significant number of early retired persons in the first and second categories of work and the short periods of insurance. The average amount of pensions for men is BGN 349.27, which is significantly higher than the average size of pensions for women, which is BGN 202.33.

Table 9

Effective retirement age by gender in Bulgaria, 2009-2017, years

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Ranking Bulgaria versus EU-28 average, 2017
Men	64.2	62.9	61.8	61.0	61.7	61.8	62.5	63.1	64.1	9
Women	61.0	60.5	60.1	59.5	60.2	60.7	61.0	60.7	61.1	17
Gap men/women	3.2	2.4	1.7	1.6	1.5	1.1	1.5	2.4	3.0	4

Source: Eurostat

The trends described in the elderly are in line with those in developed countries and should be looked at in perspective. The arguments of possibly diminishing employment opportunities for young people due to adult involvement are unfounded, and the international practice has proved this. Moreover, the influx of new workers is diminishing. There are approaches to the specific nature of the individual's pursuit of activity that do not violate the interests of both groups, such as forms of flexible employment, offering better jobs for both adults and young people who are educated at the same time. Another factor affecting a longer period of paid or self-employed work is the labour market – either with lower demand for older people's labour, even more in times of economic recession, or vice versa – labour shortage and demand for labour in a time of recovery and boom.

One of the main arguments of the opponents against increasing the retirement age is the fact that the average life expectancy of the population in Bulgaria and especially of men is among the lowest in the EU. So increasing the retirement age will shorten the period people can live as retirees. Another well-founded argument is the deteriorated health status of the population over the last two decades, which counteracts the increase in years of older people's employment.

The nature of the policy pursued must be tailored to the individual capacities of each adult according to their health status, educational level and the specificity of the profession (in the great diversity of: builders, teachers, doctors, philologists, nurses, etc.), desire and choice, etc. Raising the retirement age should also be differentiated by clear rules that are known much earlier than when they take effect.

Healthy employment potential for people of later age

Health is a very limiting factor in increasing the longevity and employment of older workers. The link between health status and the supply of work to people of later age is the subject of research by specialists and of particular interest by those pursuing socio-economic policies in developed countries, for which the phenomenon of population aging is typical. The aim is to determine how health affects workability and thus what can be expected in terms of employment. If health is a hindrance and politicians are interested in raising employment rates, it may be necessary to devote more resources, care and time to understanding and reducing this limitation.

A large-scale research project called International Social Security (ISS), involving teams of analysts and experts from twelve economically advanced countries in the world for about twenty years, is of interest in this topic.²² The project aims to outline a summary assessment of the health potential of the elderly (for those aged 55 or over, or mainly between 55 and 69), but not to suggest how long each individual can work in higher age groups, or how directly to reform the retirement system in different countries.

To illustrate the results, it will be noted that for one of the three applied calculation and analysis methods with an average of 5.5 years for the potential for additional work for men aged 55 to 69 in all 12 countries considered, these years range from 3.2 (at smallest) for Sweden to 8.4 (at most) for the United Kingdom. The general conclusion for countries is that higher educated people are more likely to be included in employment at the age of 55-74 than less educated people. Conversely, work potential is lower among the less-educated groups, reflecting the fact that, on average, they are in poorer health than those with higher education. Another conclusion is that higher education helps to create more complementary potential in both sexes, with differences between countries, for example in Spain this is more pronounced in men than in women.

Unfortunately, there are no long enough time series (4-5 decades) of adequate indicators for Bulgaria – employment and mortality to make a similar empirical study. However, for those years in which data is available, the data show an unfavorable trend. While for developed countries the increase in employment, although more smoothly correlates with a decrease in mortality, *in Bulgaria there is an inverse dependence – increasing employment and increasing mortality.*

With such a large-scale study on a solid methodological basis as described, it is tempting to try to apply the methods used based on Bulgaria data, or to adapt to its conditions. A very restrictive condition is the requirement for data over several decades (at least since the 1960s) for age mortality rates, probabilities of dying and employment, which has been in collection even before 1989. The other reason is the economic development of the country during this period – from full employment and lack of information on unemployment to the fall of the central planning system, strong changes in employment and unemployment in the creation of the labor market during the transition to a market economy. In recent years, there has been a general *increase in the employment rate* and a decrease in unemployment, but this must be considered in combination with demographic changes and the absolute decrease in the population in the country, including the workforce, which arithmetically increases these indicators. However, there is certainly an activation of older people in the labour market (Table 10).

²² The project is “Social Security Programs and Retirement Around the World”, International Social Security – ISS – Grant P01 AG012810. It is organized within the National Bureau of Economic Research, supported by the US National Institute on Aging. See: Coile, Milligan, Wise, 2016. Project supported by the National Institute on Aging.

Table 10

Mortality rates, probability of dying and employment rates for selected age groups in Bulgaria, 2011-2018

<i>Mortality rates, ‰</i>								
	2010	2011	2012	2013	2014	2015	2017	2018
Total	14.6	14.7	15.0	14.4	15.1	15.3	15.5	15.4
Men	15.8	15.8	15.9	15.5	16.1	16.3	16.5	16.5
Women	13.5	13.7	14.0	13.3	14.1	14.4	14.6	14.4
<i>Probability of dying – total men and women</i>								
	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018		
50-54	0.035677	0.035764	0.035836	0.036163	0.035506	0.035337		
55-59	0.05394	0.053679	0.054117	0.054978	0.054832	0.055204		
60-64	0.077404	0.077387	0.078011	0.07995	0.079665	0.07969		
65-69	0.109392	0.107778	0.110274	0.110529	0.110887	0.110852		
70-74	0.162395	0.156705	0.158085	0.158369	0.158559	0.157288		
<i>Employment rates of people aged 45 and over</i>								
	2011	2012	2013	2014	2015	2016	2017	2018
45-54	74.7	74.2	75	75.8	77.7	78.2	81.4	82.7
55-64	44.6	45.7	47.4	50	53	54.5	58.2	60.7
65 +	2.8	2.8	3.3	3.8	4	4.3	5.2	5.7

Source: NSI

Concerning *mortality rates*, their high and increasing levels were commented. It reaches 15.4‰ overall for the country in 2018, at a higher rate for men than women and much more pronounced in rural areas than in cities – 22.2‰ against 13.2‰. In terms of the *probability of dying*, the high age groups that are relevant to the problem studied here are of interest. In the current decade (specifically 2011-2018), the probabilities of dying by age group show an increase in time in three of them and in two – a decrease, which are the first age group (50-54 years) and the last (70-74). These values are relevant to the calculation of the increasing average life expectancy over time, which raises questions about the matching of trends between it and the mortality rates. The odds of dying in the age groups in question are higher in men than in women.

In addition to the overall mortality rates, an important indicator is the premature mortality caused by noncommunicable diseases among people of active economic age. According to the current demographic statistics of the NSI, they are alarmingly high in Bulgaria, noting the opposite trend over time. While in 1990 the total mortality rate was 12.5‰ and the premature death rate was almost 30% (29.7%), the former steadily increased and in 2011 it was 14.7‰, while the second decreased to 23.3%, but still remained high. For this reason, Bulgaria is among the countries that lose people the most potential years of productive life associated with non-communicable diseases.

According to a joint study by the OECD and the EC, with 410 premature deaths per 100,000 people, more than twice the EU average, Bulgaria holds another black record (Health at a Glance: Europe 2016). This means that there are about 17,500 deaths per year for Bulgarian citizens between the ages of 25 and 64. According to estimates in this study, this significant loss of the increasingly scarce workforce in the Bulgarian economy equals

the annual loss of more than 2500 potentially productive man-years for every 100,000 Bulgarians. In addition to the fact that the money for health care in Bulgaria is extremely insufficient, it is also spent very inefficiently.²³ The Bulgarians live in good health 6 to 9 years less than citizens of many other countries. At the same time, Bulgarians are big optimists – two-thirds of them say they are okay. To cope with premature mortality, the OECD and the EC propose to implement in the country an adequate policy for information and clinical prevention of the most significant fatal diseases. After his retirement, the Bulgarian remains in good health for about 8-9 years, and then has a sharp breakdown. This probably means that there is no good care for the health of the elderly when they are in need.

Health and labour market policies are formulated independently of one another, but the data show the need for greater cross-sectoral cooperation. Both the labor market situation and health outcomes would benefit many from a combined policy. For Bulgaria, this also means that an emphasis *should be placed on improving the health status in order to increase people's working lives while seeking to further increase their retirement age.*

However, raising the retirement age should not be seen on its own to solve budgetary and labor market problems, but to focus on raising the health status of workers, linking pay and pensions to life expectancy etc., which means with many indicators, not only budgetary parameters and increasing but still relatively low life expectancy. Generally, a favourable environment for raising the retirement age should be created.

Link between demography and migration

Politicians and demographers concern for more than two decades about an aging population in Europe. The demographic vacuum (depopulation) is thought to be filled in two ways – either by achieving super-fertility, which cannot be expected either in Europe or in Bulgaria, or by allowing over-immigration. International migration is at the forefront of the European political agenda. European labor markets need immigrants. Some politicians have suggested increasing immigration to the EU from third countries to compensate for the aging of the population, or so-called replacement migration. This has happened in history. Population aging has already created labor shortages, but immigration also raises concerns about distribution conflicts.

Much more has been elaborated in the scientific literature about the economic and demographic effects of immigration, that is, on the *host countries* compared with *sending countries* (also called countries of origin). In the recent and distant past, some European

²³ In a quoted study (Health at a Glance: Europe 2016), this fact was commented as follows: "Poor organization, poor social and regional coverage and high cost of medicines, medical devices, clinical trials and procedures – even for insured patients – put healthcare in place, with poverty, aging and the escape of young people, among the main reasons for the continued rise in the already high mortality rates in the country. "According to OECD and EC data, Bulgaria is firmly ranked last in Europe by the share of Watts allocated to preventive clinical studies and long-term care for the elderly and seriously ill patients.

countries had experienced periods of high and prolonged emigration without being offset by immigration, such as Ireland, Italy, Greece, Spain, Portugal, Malta and others.

United Nations (2008) studies on migration show that in order for international migration to overcome the problem of an aging population in Europe, net migration levels must be much higher than in the recent past. But even such high levels of immigration would not be able to stop the aging population. International migration could not have a significant impact on the age structure of most developed countries, mainly because of the accelerated aging process.²⁴ It reflects both previous changes in fertility and mortality rates and the cumulative effect of migration over the years. Demographers estimate that a very high (and probably insolvent) level of immigration will be required, and it is not known whether national societies in Europe will support international migration as a potential solution to the aging population.

Demographic measures in both dimensions – natural and mechanical movement – are closely linked, first and foremost, to economic aspects. Since 1990, there has been a sharp and consistent decrease in the population and mass emigration of Bulgarians to developed countries, which continue to this day. However, the low birth rate with high mortality has had a greater impact on reducing the population than the intensive migration processes in the country. It should also be borne in mind that the emigration of young people and women of fertile age contributes significantly to reduced fertility.

A significant reserve for improving the demographic status is to create favorable conditions for emigrants to return to their homeland (with the popular expression, "I'll come back when they set up the country"). This factor seems to be neglected against the backdrop of efforts by employers in the country over the past 1-2 years to attract immigrant workers from other countries. A nationally responsible demographic policy would show that *attracting migrant workers has a complementary but not a substitute function, and is a viable solution only after the other prerequisites for normalizing the labour market are available*.

These and other issues related to the development of migration processes from and to Bulgaria are discussed in detail in the second article on the cited project.²⁵

Conclusion

1. The current demographic profile of countries is at the heart of future population aging, reflecting previous changes in fertility and mortality rates, as well as the cumulative effect of migration. The high rate of aging and depopulation of the population is created by past demographic trends. The future trends in these three components of population change determine what its structure will look like in perspective. This means that in Bulgaria and in most countries experiencing similar demographic processes, the

²⁴ According to NSI data from the 2011 Census, the population in the country decreased by 581 750 compared to the 2001 census, with more than two thirds of this decrease (68.9%) being caused by the negative natural increase and less than one-third (31.1%) – due to external migration.

²⁵ Bobeva, Zlatinov, Marinov, 2020.

population will continue to age even if fertility, mortality and migration rates remain at their current levels.

2. Bulgaria has been affected itself in a particularly unfavorable way in comparison with most of the EU-28 countries. This is very important, especially for our country, an interdisciplinary scientific problem in which economic issues and solutions must find an increasingly adequate place. Bulgaria's demographic development is unfavorable to the country's economic development and it faces many challenges. The reduction of the significant income gap with other EU countries is more difficult because Bulgaria is experiencing less favourable demographic changes in depopulation and population aging. Lack of manpower is a constraint on growth. Human capital is difficult and slow to form. Given the very high mortality rate in Bulgaria, it is imperative that we have a responsible attitude towards the health status of the Bulgarian population and the problems in healthcare.

In intra-regional terms, Bulgaria has a strong demographic, economic and social imbalance between the capital and the rest of the country, between North and South Bulgaria, which continues to deepen.

3. By itself, Bulgaria's EU membership does not have a serious impact on reducing the long-term negative trends in the development of human resources. This issue is fundamental to the development of the whole economy, but it is not sufficiently solved both on the level of EU and national policy with the specificities of a catching up economy, that is, the economy is vulnerable in terms of stability and competitiveness. European and national policies through the European Structural and Cohesion Funds cannot be claimed to have had a beneficial effect. The specific analyzes on them show some successes, but also the disadvantages and deficits, which is why their insufficiently effective influence is outlined.
4. The biggest threat to Bulgaria among other challenges is the demographic situation as the processes are inert and the policies implemented have a delayed effect. Even if trends start to turn in a positive direction, which is extremely optimistic and unrealistic, they will not be felt soon, but at least after 1-2 decades. The demographic processes in Bulgaria show the lack of an effective policy towards them. Their nature is such that little can be done with effect in the short and medium-term. The recommended policy, however, is to take urgent measures to maximize what the country has at its disposal, and to take real action in parallel to address long-term problems. The policy stated by the governing bodies should be implemented in practice. Those measures that stimulate long-term and sustainable growth of public expenditures are those in health care (increasing life expectancy and good health), education (improving human capital – knowledge, skills) and in general raising labour productivity and improving economic infrastructure.
5. Due to the global nature of the problem of ongoing demographic processes and related economic aspects, population policy is gaining international importance. Demographic processes are a global problem and solutions must outweigh the interests of individual countries. Therefore, the public must make mutual efforts to achieve results in this field,

both in terms of its natural and mechanical movement. Population development has general patterns, the factors of which must be purposefully and jointly managed.

References

- Active Ageing Index 2018. Analytical Report. UNECE and EC (DG EMPL), 2019.
- Active Ageing Index 2014. Analytical Report. UNECE and EC (DG EMPL), 2015.
- Bobeva, D., Zlatinov, D., Marinov, E. (2019). Economic Aspects of Migration processes in Bulgaria. – Economic Studies, N 5.
- Boyukliev, O. (2016). The agrarian sector as a factor for the economic development of Bulgaria. – In: Annual Report 2016 “Economic Development and Policies in Bulgaria: Estimates and Expectations”, Gorex Press, Sofia, pp. 145-165.
- Bilyanski, V. (2018). Demographic situation and social moods towards emigration in the municipality of Smolyan – opportunities for economic development. – In: Proceedings of the International scientific and practical conference “Bulgaria of regions’2018”. University of Agribusiness and Rural Development, Plovdiv 19-21 October 2018 (In Bulgarian).
- Coile, C., Milligan, K., Wise, D. A. (2016). The Capacity to Work at Older Ages. Introduction and Summary. Paper of the National Bureau of Economic Research’s International Social Security (ISS). Project, supported by the National Institute on Aging.
- Development Strategy of Smolyan District 2005-2015. Republic of Bulgaria. Smolyan District Governor.
- Health at a Glance: Europe 2016. State of Health in the EU Cycle. OECD and European Commission.
- National Strategy for Active Life of the Elderly in Bulgaria for the Period 2019-2030 Ministry of Labour and Social Policy.
- OECD/EU. (2016). Health at a Glance: Europe 2016 – State of Health in the EU Cycle, OECD Publishing, Paris. Available at: <http://dx.doi.org/10.1787/9789264265592-en>.
- Rangelova, R., Bilyanski, V. (2018). Demographic and migration processes as a factor for the formation of human resources in Smolyan District. – Naselenie Review, 2, p. 215-245. ISSN 0205-0617 (Print); ISSN 2367-9174 (Online) (In Bulgarian).
- Rangelova, R. (2017). Human Resources Development in Bulgaria in the Conditions of the EU Membership. – In: The Bulgarian Economy for Ten Years in the European Union, Sofia, pp. 81-98.
- Rangelova, R. (2016). Healthy employment potential for people of later age. – Population Journal, N 2, p. 36-57.
- Rangelova, R., Sariiski, G. (2013). Impact of Ageing Population on Labour Productivity: Empirical Evidence from Bulgaria. – In: Ageing in Bulgaria, Academic Publishing House “Prof. Marin Drinov”, Sofia, pp. 124-139.
- Zlatinov, D. (2010). Demographic determinants of the new theory of economic growth. – Population Magazine, 1-2, pp. 177-190, ISSN 0205-0617.