Kremena Borissova-Marinova[1]

DEMOGRAPHIC DEVELOPMENT AND LABOUR FORCE: DEPENDENCIES AND KEY CHANGES[2]

This study systematises the fundamental dependencies between demographic development and labour force and identifies key changes in the labour force in the country over the last two decades. A theoretical model was presented featuring the formation of the labour force focusing upon demographic factors. The place of reproduction of labour force among the systems of public activities and the classification of factors impacting it were defined by applying a system approach. Some leading tendencies in the evolution of the labour force in the country during the period 2001-2019 were featured. To achieve a fuller and more objective evaluation, an international comparison was made, including four European countries: Greece, Hungary, Czechia and Sweden. The analysis includes some indicators of general and age-specific levels of economic activity, working-age population replacement rates and the age and educational structures of the labour force and inactive persons.
The received results testify that the tendencies, observed in Bulgaria, are close to those, registered in the selected European countries over the reference period. There is, however, a number of particularities and specificities of their manifestation in the country and these are key or the reproduction of the labour force in Bulgaria.
Keywords: labour force reproduction; generational model; economic activity levels; labour force ageing; economically inactive population's structures
JEL: J11; J21; J18

The last few decades were a period of significant changes in the reproduction of the labour force in post-modern societies entailing long-term implications (Trubek, Mosher, 2001, p. 1-9; European Commission, 2011). Our nation is no different. We would even claim that, given the fact Bulgaria is a small country with relatively limited resources, the socio-economic consequences ensuing from the changes in the labour force have always been of key importance (regardless of whether these have been prioritised by governments' policies or not). The adopted National Development Programme: Bulgaria 2020 testifies that some aspects of the country's labour force development are already being included in the political vision on Bulgaria's development. These, however, should be written into the core of the national long-term economic development concept and bound to the other aspects of both

[1] *Kremena Borissova-Marinova, Institute for Population and Human Studies at the BAS, Demography Department, Economic and Historical Demography Research Unit, e-mail: kbmar@abv.bg.*

economic and demographic strategies. This necessity is growing into an increasingly compelling imperative for this country. Given the long-term reduction of the nation's population, it should be emphasised that Bulgaria's socio-economic development will be closely dependent on the way and degree of solving the problems relative to the development and efficient use of the labour force (Naidenova, 2013, p. 16).

Over the last several decades, a number of mutually related issues have been accumulating in the domain of Bulgaria's labour force reproduction. Undoubtedly, these extend their influence upon the demographic development of this population group. However, they also have certain impacts on the overall development of the country and society, which may become significantly more complicated in the future (Borissova-Marinova et al., 2018; Beleva, 2017; Atanassova, 2013). The changes in some basic demographic parameters of the labour force largely ensue[3] from long-term trends in the main demographic processes:

- High general and premature mortality in a European context (European Commission, 2011a);

- Fertility below the level of replacement of generations from the mid-1980s to the present (Moraliyska-Nikolova, 2020; Coleman, 2009);

- Relatively high for the scale of the country and a relentless negative migration balance (Kalchev, 2019).

From a demographic point of view, there are two main consequences stemming from the combination of negative natural change and negative migration balance maintained for several decades (Borissova-Marinova, 2013). In one respect, as a result of such population development over the last 15 years, Bulgaria has been invariably in the group of European countries with ongoing depopulation. (Dumont, 2019). Another aspect thereof is that there has been a significant acceleration in population ageing. This process implies its demographic effects upon the labour force and population in working age, which population is a natural resource for its replenishment. The most significant among them are the reduction of the size of the labour force and the working-age population in the country and the rapid deterioration of their structures on a number of demographic, social and economic grounds (Borissova-Marinova et al., 2018; European Commission, 2018).

According to the developed demographic forecasts and projections by the UN Department of Population, Eurostat, and the NSI, no changes in the reproduction regime of the country's population are envisaged (Borisova-Marinova and Moraliyska-Nikolova, 2019). The results of the forecasts on Bulgaria's labour force published over the last decade show that, other things being equal, the trends of labour force reproduction will also continue for at least the next 20 years (Borisova-Marinova, 2019). Due to the above considerations and given a strong competition today between developed countries for attracting labour force, the importance of more efficient labour force management is growing. The state policy based on scientific data and aimed at well-being and balance in society is a leading tool for adapting to the current parameters of demographic reproduction in Bulgaria. In the present-day context,

---

[3] However, they are also dependent on many other factors, including economic and social factors, as set out below in the exposition.

counteraction to the reduction and rapid ageing of the labour force should be sought in measures to improve the reproduction of the labour force, such as increasing economic activity and the parameters of human capital.

This study's objective is to systematise the fundamental dependencies between demographic development and labour force and to identify key changes in the labour force in the country over the last two decades. A generation model was presented featuring the factors for the formation of the labour force focusing upon demographic factors. The place of reproduction of the labour force and the classification of factors impacting it were defined by applying a system approach. Based on it, some leading changes in the evolution of the labour force in the country during the period 2001–2019 were featured. To achieve a more complete and objective assessment of the changes produced in the characteristics of Bulgaria's labour force, an international comparison was made, including four more European countries (Greece, Hungary, Czechia and Sweden).

Modelling Demographic Development/Labour Force Dependencies

Labour force reproduction is a theoretical concept to look into the generation renewal process and the labour force structure changes. Modelling was introduced to the demographic theory after the blueprint of the "reproduction of population" concept as a process going on within one of the most important subgroups of the overall population of a nation. This term would designate "the result of all changes to the units of the dynamic aggregate and their reflections upon the number and composition of population" (or of a subgroup thereof) over a given period (Sugarev, 1975, p. 295). This theoretical concept would help researchers study some key aspects of the process of change and replacement of generations in the population (Pressat, 2006, p. 38).

Reproduction of labour force is a complex process with a number of dimensions generating a number of hardships in modelling thereof. Among these, the complex nature of the labour force stands out in particular, which is why a dualist approach has been applied in both science and academic practice. Today it is considered generally accepted that the demand for labour is mainly an economic category and the result of the development of economic processes, with the supply of labour being an external value for the economy. In other words, labour offer is only viewed as a demographic category characterising the availability of people willing to join the labour market. From a demographic perspective, however, what is an external factor for the population is the labour demand. This factor has a decisive impact upon the very formation of the labour force – both on the number of its demographic and socio-economic structures and on the process of reproduction thereof taken in its dynamics. Therefore, the main, and still unresolved problem while modelling labour force reproduction stems out from its dualist nature and the dualist approach to it in the labour market models. Regardless of the rapid development of the so-called demo-economic models[4] starting from the 1960s onward through to this day, the attempts to shape a unified labour market model

---

[4] Where various demographic and other processes are included as endogenous variables.

have so far failed to yield a satisfactory result from the perspective of theory, methodology of modelling or practice (e.g. forecasting).

What should be done prior to categorising the factors and clarifying the nature of relations between demographic development and labour force reproduction is to model its location among the elements of society. To this end, the systemic approach was applied to this problem requiring the main activities in a society to be grouped based on the specific internal element-to-element relations. Sources reveal various viewpoints on how society's elements should be classified into subsystems. The model applied here to society as a system was authored by the member of the Bulgarian Academy of Sciences E. Mateev, a model which, in our view, allows to derive precisely and adequately the place where the labour force reproduction belongs. This model groups the fundamental activities in a society into four subsystems based on some specific internal relations between their elements (Figure 1). It reserves an explicit location for the population as a subsystem through which the demographic development is expressed[5]. The dualist nature of the labour force is defined quite precisely: labour, which from the viewpoints of the other systems is an input, is an output from the viewpoint of a demographic system. Therefore, persons who perform it belong to two systems at a time. For example, persons employed in economy "given their origin, make part of the demographic system as inside this system and as a result of its intrinsically specific bonds, they are reproduced. However, if viewed their functioning, they become part of the economic system as, by default, a production process includes man" (Mateev, 1987, pp. 64-65). The same duality is observed at the other entrance-exit: "Demographic system-Noosphere". The elements of the system thus defined, the connections between them and the connections with the other systems of society are in full agreement with the theoretical definitions of demographic reproduction of both the whole population and the labour force as cited above.

Among other things, the theoretical model shows explicitly the place of the processes running on the labour market, or if defined from a demographic viewpoint, the reproduction of the labour force. On Figure 1, it is shown as a dotted rectangle covering parts of three of society's systems. It includes a large part of the demographic system (these are the economically active persons in and outside working age), parts of the economic system and the noosphere (expressing the processes of job searching) and the two exits from the demographic system to them (representing, in fact, the labour offer processes).

A further hurdle in modelling the reproduction of the labour force ensues from the multitude of heterogeneous factors[6] impacting this process. Two are the factors most commonly mentioned in the sources: the number of the working-age population and the social division of labour, which determines the existing structure of social production (Haines, 1979; Sauvy, 1963; Stefanov et al., 1974). The cited authors take the view that the social division of labour is both exogenous and structure defining factor as far as they esteem economic activity as

---

[5] The specific internal bond between the elements of the demographic subsystem is the reproduction of humans.

[6] The term *factor* is employed not in its specifically statistical meaning, but in a broader sense. It designates the reasons, which generate the change and are part of it, and the external conditions that cause those changes.

belonging only to society's economic system. Moreover, sources may also offer some more detailed groupings of factors, with none of them purporting to be exhaustive. According to Sauvy, economic activity depends on a number of factors, among which those demographics are last but not least so long as each age and sex group has its own intrinsic activity rates and there are certain regular patterns in their transformations while making transitions between such groups (Sauvy, 1963).

Figure 1
Place of reproduction of labour force among the systems of activities in a society
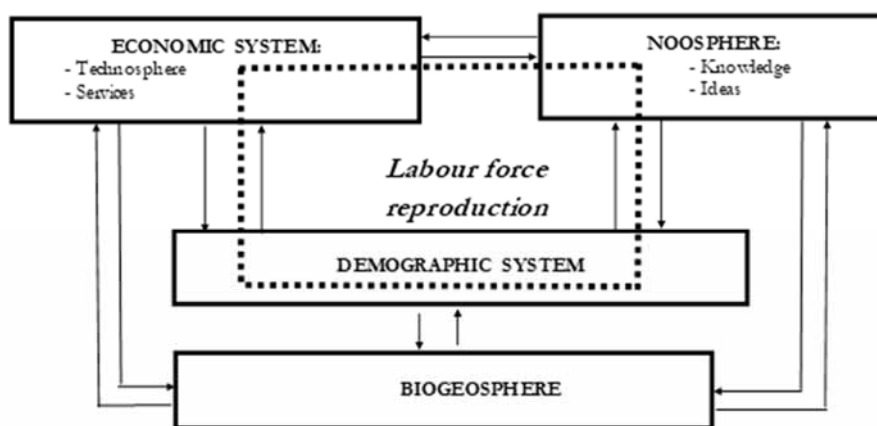
Source: After Mateev, 1987, pp. 15-69.

The most general classification of factors would include two groups: demographic and non-demographic factors (Stefanov et al., 1974, p. 397). If the first group of factors is concerned, the picture has almost entirely been clarified from a macroeconomic perspective while considering the momentary condition of the labour force. Their influence is considered to be greatly defining the overall number of the labour force. This group would usually include: number of the working-age population; number of disabled persons due to disability and early retirement for age for certain categories of occupations; number of active disabled and working-age pensioners; and number of active persons in non-working age. As long as a large portion of the above listed demographic factors is dependent in turn on the size and the age and sex structure of the entire population, it is quite obvious that "the available labour force comes as a result of population's reproduction and is largely dependent upon the demographic development in previous periods" (Stefanov et al., 1974, p. 397). Going further deeper into this formulation shows that this classification is incomplete because, to say the least, it lacks factors such as mortality and external migrations.

The other group includes factors of different nature: economic, social, cultural, psychological, historical, etc. The most quoted in the sources are: division of labour; change

of the branch and territorial structure of the economy; level of labour costs; development of the educational system of the country; the age specified by law for starting and ending economic activity; the level of completed education; the age of completion of the respective educational degree and entry into activity; organisation of production and management; the degree of urbanisation; labour force mobility (territorial, professional, sectoral); the intensity of migrations; the level of income in households; the state policies regarding economic activity; and a number of others.

Even such a brief listing of the main factors influencing the formation of the labour force shows that there are many of them. Moreover, they form a heterogeneous aggregate owed to the differences in their nature, origin and opportunities to quantify them. Furthermore, it should be outlined that the division thereof into two groups, demographic and non-demographic, is not sufficiently grounded or precise, particularly for the purposes of labour force reproduction modelling.

The third specific particularity while modelling the labour force reproduction ensues from the fact that there are different types of dependencies existing between the factors and the event/result. Even the most superficial look would show that, e.g., the dependencies between the labour force and the number of disabled in active age or the branch structure of the economy belong to different types. The results of the analysis thereof show that there are two types of causal relationships existing between the labour force and factors (Borissova-Marinova, 2007, p. 98-101). The first type covers structural dependencies of a portion and whole that come very clearly to the fore when the labour force is treated as part of the population[7]. The second type of bonds is a correlation, i.e., the same changes in the value of factors do not always correspond to the same changes in the event/result. This is the nature of bonds existing between non-structural demographic and other factors and the labour force. This type of dependencies stands out when the dependencies of the labour force with the other society's systems are scrutinised.

Taking into account the considerations presented so far, the process of formation and reproduction of the labour force can be represented by the following theoretical model (Figure 2). This model divides the factors into separate groups depending upon their nature. Given the purposes of this study, the scheme separates five main groups: direct demographic factors, indirect demographic factors, economic, social and other factors.[8] As demographic factors are considered to have the strongest and longest-lasting impact on the number and distribution by sex and age of the workforce, they are presented in more detail. This is why the proposed model divides the demographic factors into two separate groups (direct and indirect), according to the period over which their impacts upon the overall population and working-age population takes place. In the model studied, non-demographic factors are distributed into three separate groups. Economic and social factors have a much stronger

---

[7] This type of dependencies is used to calculate the size of labour force in a given moment: persons who are not economically active due to health or other reasons (disability, raising children, continuing education, etc.) are excluded from the working age population. To the number obtained is added the number of economically active persons outside working age.

[8] This group includes some cultural, historical, psychological and other factors, which are relatively detached and may be structured into a system, whose effects however are difficult to quantify.

influence upon the qualitative characteristics of the labour force, however, their impact over the quantitative parameters of the labour force should not be overlooked in the modern period of development.

Figure 2

Generation model of labour force reproduction

Source: Borissova-Marinova, 2007, p. 96.
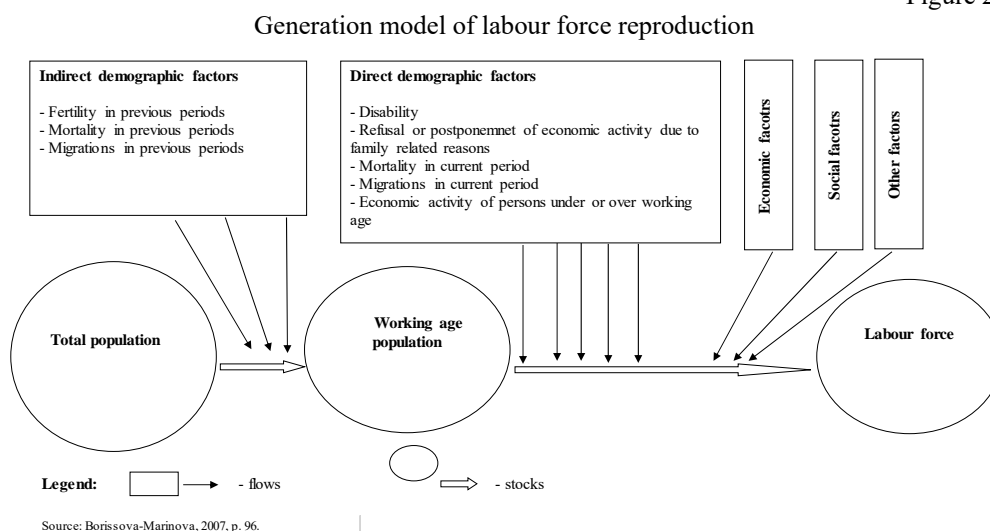
Indirect demographic factors form the first group. The distribution of the working-age population by sex and age in a certain moment of time is conditional on the levels of fertility, mortality and migrations over the precedent periods. In other words, the number of people in the 20–24 age group in 2020, for example, depends at the same time on how many children were born in the period 1996-2000, how many of them lived to 2020 and how many of them did not emigrate (immigrated, respectively) in the period 1996-2020. The number of children born in the period 1996-2000, in turn, depends on the size and age distribution of the groups of women in fertile age, which are determined by the level of these three processes during the period starting from the birth of the maternal generations and ending in 1996. The group of indirect demographic factors expresses this chain dependence back in time on the levels of births, deaths and external migrations. It illustrates the demographic impacts on the age-specific distribution of the working-age population having taken place in the preceding periods.

The second group encompasses the direct demographic factors. These are the fundamental demographic factors largely influencing both the size and the age-specific distribution of the labour force in the present-day period. It includes the refusal of economic activity due to family-related reasons mostly associated with confinements and raising children, the level of economic activity among the persons in working age, as well as the levels of disability, mortality, emigration and immigration among the individuals in working age. Four of the indicated six factors exert their influence toward a reduction in the number of labour force vs. the number of working-age population. These are: refusal of economic activity, disability, mortality and emigration. The remaining two factors exert their influence toward an increase

in the number of labour force vs. the number of working-age population. The specific combination of matching the factors of this group in the individual periods largely determines how close are the working-age population distributions and the labour force distributions by sex, age and a number of socio-economic attributes.

Insofar as the impacts of the other three groups of factors lie beyond the objective of this study, these were mostly just flagged in the model. For example, the group of economic factors includes factors such as: structure of the economic complex; price of labour; phase of the economic cycle; degree of organisation of production and management; degree of urbanisation, etc. Social factors encompass the level of education; the ages of completion of the respective degree and of entry into activity; the age stipulated by law for starting and ending economic activity; degree of labour force mobility (territorial, professional, sectoral), etc. Factors of cultural, psychological, historical and other nature, such as the permanent establishment of the pursuit of social and financial autonomy of individuals in developed countries; perception of professional activity as the main means of personal expression of the individual in them, etc. form the fifth group.

The suggested generation model perhaps reflects more adequately and in more details the labour force formation process in the changing context of today's society. Moreover, it provides a general theoretical framework to study the dependencies between demographic development and the changes in labour force. It systematises the influences of multiple factors, either discovered by theory or proved empirically.

The significant changes in the nature of demographic reproduction and in the levels of economic activity in most of the European nations over the last few decades call for applying an interdisciplinary approach while analysing the development of the labour force. Studying the impacts of factors over the development of the labour force would allow both to study the reflection of the regime of population reproduction over the labour force and to outline a more realistic range of possible variants of its future evolution. A further clarification and improvement of the theoretical formulations in this field will allow for the development of the specific tools for studying the influence of individual factors.

Leading Tendencies in the Parameters of Labour Force in Bulgaria During the Period 2001-2019

The results of the analysis of the development of labour force in the country during the period 2006–2016 revealed several tendencies, three of which are indicated as key for its reproduction as part of the EU (Borissova-Marinova et al., 2018, p. 20-69 and 168-178).

- Relatively low employment and economic activity levels in a European context of all age groups;

- High share of the economically inactive population;

- Increasing territorial differentiation between the provinces by number and basic parameters of the labour force and working-age population.

The first two tendencies are the subject of our further analysis.[9] To assess their validity during the period 2001-2019, the results from the international comparison of the EU Member States were also presented. The analysis was conducted under five indicators: total and age-specific economic activity rates by sex, replacement rate of the working-age population, age and education structures of the economically inactive population in working age. The changes produced in the selected indicators come as a result of the impact of a number of factors, however, what is decisive are both the significance of the development of the economic system and the particularities of the demographic evolution in each of the countries.

Level of economic activity

To highlight the general trends in the development of the workforce and participation in the labour market over the reference period, two indicators were used: total economic activity rates by sex and age-specific activity rates by 5-year age groups.

In 2001, **economic activity rates[10]** of males in 15 EU Member States (Figure 3[11]) were above the average indicator for EU-28, which was 76,8% as was the value of this indicator for Greece (76.9%). Another 9 countries (from Luxembourg to Slovenia inclusive in the figure) make up a second group where the indicators are below the EU average, but the difference with it is within the interval 1-5 pp. Six of them were also in the same group by the end of the period (Lithuania, Slovenia, Romania, Luxembourg, France and Italy). The third group includes four countries where this difference is the largest, i.e. between 5 and 10 pp: Hungary (9.6), Bulgaria (8.9), Croatia (7.3) and Poland (5.2).

Until 2019, the economic activity rates of males have been rising in almost all MS in the context of comparatively low increase for the EU-28 (2.6 pp). An exception of this finding were Denmark and Portugal, where a very low decrease was noticed, 1 pp in 2019 in comparison with 2001. In one-third of the countries (Belgium, Ireland, Greece, Spain, France, Cyprus, Luxembourg, Netherlands, Finland and UK), the dynamics of this index for the entire reference period is insignificant (under 1 pp). In another 8 countries (Germany, Sweden, Romania, Malta, Austria, Croatia, Slovakia and Italy), the growth in this index is between 1 and 5 pp. The highest growth of the rates among men (above 5 pp.) is accounted for 8 countries: Estonia (8.7), Latvia (7.2), Poland (6.1), Slovenia (5.5) and Czechia and Lithuania (5); where in the countries with the lowest levels of this index in the beginning of the reference period, the increase is the highest – Hungary (12.8 pp), Bulgaria (9.7).

As a result of the described dynamics, in 2019 the indicator for men was above the EU-28 average of 79.4% in a whole of 13 countries (Latvia: 79.9%). While Ireland (-0.2 pp), Spain (-0.9), Portugal (-1.1) have left the group, Estonia (2.7 pp) has entered. The number of the MS in the second group increased by 13 with Ireland, Slovakia, Spain, Portugal и Greece having entered there, with all those having dropped out from the first group, as well as Poland

---

[9] The study of the degree of the territorial differentiation should be a subject of a separate research.
[10] To more clearly delineate the existing differences, the countries are grouped according to the size of the difference between the indicator and the EU-28 average.
[11] The countries are arranged in a descending order according to the value of the economic activity rates of men.

and Bulgaria, having dropped out of the third group. The group of countries where the activity rate remained by 5 pp below the EU-28 average, included two more countries in 2019: Belgium (6.3) and Croatia (7.9).

<div align="right">Figure 3</div>
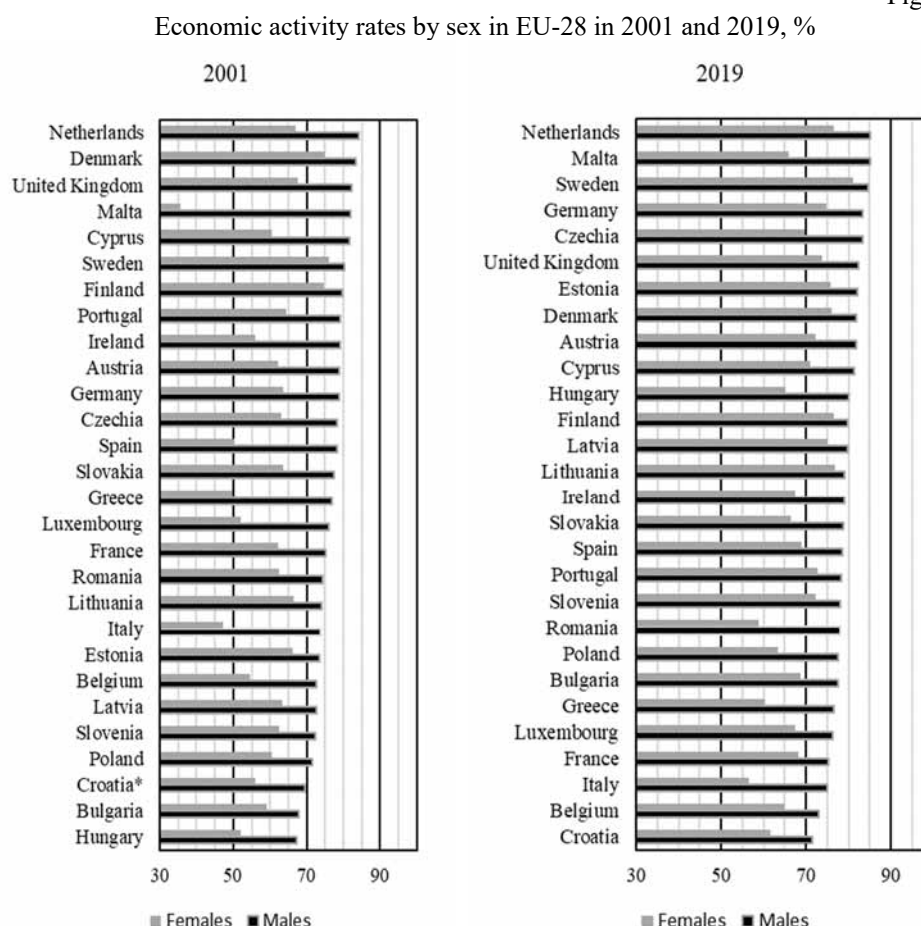
Economic activity rates by sex in EU-28 in 2001 and 2019, %

* Data for Croatia are for 2002.
Source: Eurostat, Activity rates by sex, age and citizenship (%) [lfsa_argan]. Accessed: 21.04.2020.

At the beginning of the reference period, the nations assembled four groups according to the size of the difference between economic activity rates of females and the respective average EU indicator. In 2001, the first group, having indicators above the EU-28 average of 60.5%, was the most numerous and included 18 MS with the difference being the most significant in Sweden (15.5 pp), Denmark (14.5) and Finland (14.2). The second group covered three countries where the rates of women were a little under the EU average. Bulgaria (-1.4 pp), Croatia и Ireland (4.5 pp each). The third group would cover Belgium (-6), Luxembourg and

Hungary – 8.5 pp each, respectively, and the lowest were the economic activity rates of females in four of the countries in South Europe: Spain (-10.1 pp), Greece (-10.7), Italy (-13.4) and Malta (-24.9).

The rates for women were also increasing over the reference period where the EU average increase was over threefold if compared to what was observed among men (8.1 pp). It was only Romania that registered a decrease of 3.5 pp. Four were the countries (Denmark, Poland, Slovakia and Finland) where the dynamics for the whole period was relatively low, namely below 2.8 pp. Over one-third of the countries (Bulgaria, Czechia, Estonia, France, Croatia, Italy, Netherlands, Portugal, Slovenia, Sweden and UK) showed an increase of this indicator of 5-10 pp. 9 MS (Belgium, Germany, Ireland, Greece, Cyprus, Latvia, Lithuania, Hungary and Austria) featured a growth in this indicator of 10-15 pp within this period. Over 15 pp was the increase among women in Luxembourg (15.4), Spain (18.6) and Malta (30.4 pp).

In 2019, the distribution of the groups of countries according to the difference of this indicator to the EU average was much more different as the period showed a significant growth of the economic activity among women in a number of countries. By the end of the period, the indicator remained above the average for EU-28 in 16 countries (while France, Poland, Romania and Slovakia were out of the group, Bulgaria and Spain entered). The number of countries in the second group, i.e. those having indices (difference up to 5 pp) lower than the EU average, already includes seven countries: Belgium (-3.7), Hungary (-3.3), Malta (-2.6), Slovakia (-2.2), Ireland and Luxembourg (-1.2 pp each) and France (-0.4). The third group of countries where the activity rate among women stands between 5 and 10 pp below the EU-28 average, included four countries in 2019: Romania (-9.7), Greece (-8.2), Croatia (-7) and Poland (-5.2). The fourth group, featuring a difference of over 10 pp away from the EU average indicator, includes only Italy (-12.1 pp).

It should be noted that despite the trend of increasing activity rates, the scope of the indicator remained almost unchanged during the period for women (14.8 in 2001 and 15.1 in 2019), with a slight decrease among men (from 17.0 pp to 13.6, respectively).

While there has also been a significant reduction in the value of the differences by sex in the activity rates[12], the EU average indicator plunged by over one third in 2019 if compared with 2001 (Table 1). The number of countries where the differences by sex were not above 10 pp grew more than twice over the period and in 2019 already comprised 18 EU Member States. At the same time was registered a twofold reduction in the number of countries featuring high levels of this indicator (over 10 pp). These were predominating in the distribution in 2001, i.e., their number was 21, while their number in 2019 was already 10. A significant achievement in this area is that in 2019 no European nation showed differences by sex above 20 pp. It is noticeable that Bulgaria's indicator remained unaltered (8.8 in 2001 and 8.9 in 2019), but this may not be assessed as a positive tendency. While in 2001 this value was twice as low as the EU average, in 2019 the respective indicator was already nearing the EU average.

---

[12] This indicator was calculated as a difference between the relevant activity rates among men and women for a given nation.

Table 1

Distribution of EU-28 countries according to the difference by sex in economic activity rates[*] in 2001 and 2019, in percentage points

Difference by sex	Countries	
	2001	2019
Up to 5 pp	Sweden (4,2), Finland (4,9)	Lithuania (2,3), Finland (3,3), Sweden (3,4), Latvia (4,8)
5-10 pp	Estonia (7,1), Lithuania (7,8), Denmark (8,3), Bulgaria (8,8), Latvia (9,4)	Portugal (5,4), Slovenia 5,8), Denmark (5,9), Estonia (6,3), France (7,1), Belgium (8,2), Netherlands (8,4), Germany (8,6), UK (8,7), Bulgaria (8,9), Luxembourg (9,0), Spain and Austria (9,5 each), Croatia (9,9)
10-15 pp	Slovenia (10,0), Poland (11,0), Romania (11,9), France (12,8), Croatia[**] (13,5), Slovakia (13,8), UK (14,5), Portugal (14,7)	Cyprus (10,5), Ireland (11,8), Slovakia (12,4), Czechia (13,6), Poland (14,3), Hungary (14,7)
15-20 pp	Germany and Hungary (15,1 each), Czechia (15,4), Austria (16,7), Netherland (17,3), Belgium (18,2)	Greece (16,3), Italy (18,5), Malta and Romania (19,1 each)
Over 20 pp	Cyprus (21,0), Ireland (23,2), Luxemburg (24,1), Italy (26,6), Greece (27,1), Spain (27,9), Malta (46,5)	-
EU average	16,3	10,8

* The countries are arranged in a ascending order according to the value of the difference by sex in economic activity rates.
** Data for Croatia are for 2002.
Source: Eurostat, Activity rates by sex, age and citizenship (%) [lfsa_argan]. Accessed on 21.04.2020.

The results from the analysis show that the economic activity rates were growing during the period in almost all EU countries. The growth among men as a whole was lower in comparison with the growth in the indicator among women, however, it should be taken into consideration that the latter were significantly lower in a number of countries in the beginning of the period. Furthermore, both sexes kept the trend where more than the half of the EU Member States featured indices above the EU average. The number of nations where the economic activity rates were significantly under the EU average indicator (the groups where the difference to the EU average indicator exceeded -5 pp) dropped down to 2 among men and to 5 among women in 2019. The period showed a significant reduction in the differences by sex in the economic activity rates in the European countries, which came as a result of the gradual convergence of indicators for women to those for men in most of the countries considered.

As for the place of Bulgaria against the background of the described dynamics, the obtained results show that despite the observed increase over this period, the levels of economic activity in the country permanently remain insufficiently high in the European context. From the penultimate place in the EU in 2001 for men, the country climbed a little, but in 2019 it was in the last quarter of the ranking of countries (22nd place). The indicators for women hovered around the EU average (in 2001 respectively 59.1% and 60.5%, and in 2019 – 68.7% and 68.6%) and the country's rank rose from 19th position in 2001 to 16th position in 2019.

By comparison, in 2019 the overall activity rate for men in the country was 7.5 points lower than in the Netherlands (85.1%), with that for women being 12.5 points below the figure of Sweden (81.2%), i.e. the countries with the highest levels of economic activity for the respective sex in the EU. The values of the total activity rates show that a large part of the working-age population in Bulgaria remains outside the labour market (about 1⁄4 for men and almost 1/3 for women) at the end of the period under review.

Due to the limited size of this exposition, five European nations were selected for the further comparative analysis: Bulgaria, Greece, Hungary, Czechia and Sweden. The main reasons for such a selection include three aspects. The basic attribute while selecting the countries was the proximity in the numbers of the overall population to Bulgaria's. Bearing in mind that the main target of this study is to go into the dependences between demographic development and reproduction of the labour force, the absolute number of the overall population and of the labour force has a particular importance. A second reason associated with the choice of the nations was the similarity of all those nations' demographic and/or socio-economic development. This was the basis to select Greece as a Balkan country Bulgaria has some similarities in its development from a historical perspective with, and the two East-European countries we share some characteristics and trends of development of our socio-economic systems in the past and which, like to Bulgaria, passed through a period of transition from centralised planning economy to market economy (Czechia and Hungary). Sweden was purposefully added to this group as it has maintained for decades some of the highest levels of activity and employment in the EU. Moreover, its demographic development trends in a certain period of time in the past were similar, and therefore the kinds of problems the state management faced, irrespectively from the degree of social and economic development of the respective country, were also the same or similar. However Sweden, unlike Bulgaria, is a nation of constant immigration, not very high though.

As a result of the selection made, a group of five European countries was formed with two old EU Member States and three new members having accessed the EU in the first decade of 21st century. Figure 4 displays the position occupied by EU countries in 2001, combining two indicators expressing the reproduction patterns of the overall population and of the labour force: median age of population and employment level among women (calculated for the population aged 15+). The countries chosen for the international comparison are marked with a different sign on the figure (black circle) to be easily distinguishable against other European countries.

Obviously, the countries selected for comparison are located in the middle of the figure. This shows that the comparison group includes nations with an aged population, but in different combinations with the values of the female employment rate. In 2001, Germany and Italy's populations had a higher median age than Bulgaria, along with Sweden, which is included in the group. Excluded from the comparison is the lowest middle rectangle, where Malta, the country with the lowest female employment rate in 2001, is located.

Figure 4

Position of EU countries according to the median age of the population and total employment rates of females in 2001
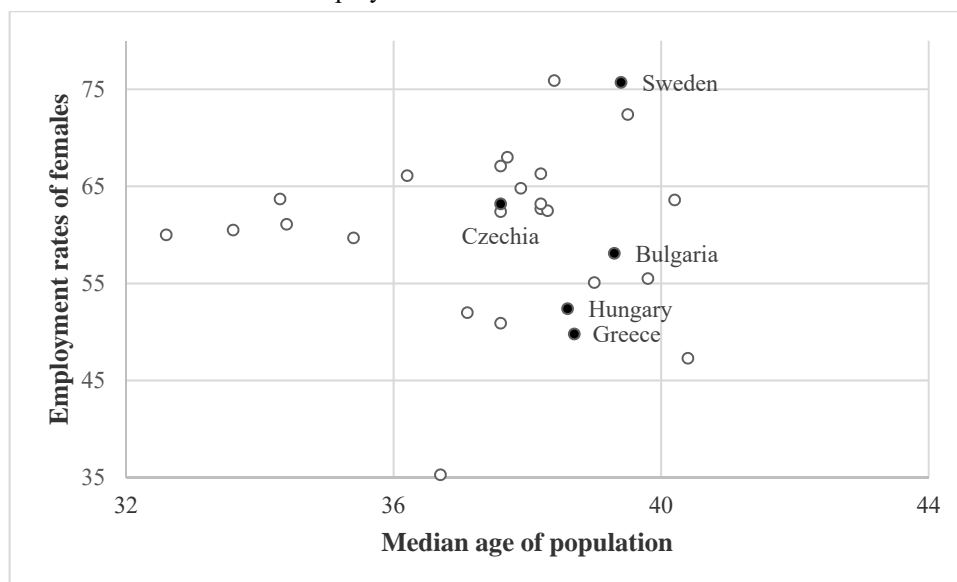

Source: Eurostat, Employment and activity by sex and age – annual data [lfsi_emp_a] and Population structure indicators [demo_pjanind]. Accessed on 24.04.2020.

Age-specific activity rates were used to characterise changes in age activity levels. The main trends during the period under review, which are observed in all five compared countries, are three. The first is the increase in activity levels in almost all age groups in all analysed countries. Depending on the direction of change of the rates and their size, the selected countries can be divided into three groups (Figure 5). The first group includes Bulgaria and Czechia, in which during the period under review there was a decrease in activity rates of all ages under 40 (which reaches 15 pp for the group 20-24), a slight increase in the activity levels in the age range 40-54 and a significant increase in the indicator for the ages 55-65 (35 pp for the group 55-59 in both countries, and for the group 60–64, 40.4 pp in Bulgaria and 29.8 pp in Czechia, respectively).

The second group of countries contains two: Greece and Hungary. Over the reference period, they also saw a reduction in activity levels, however, it only affected the two youngest age groups: those under 25. All other age-specific rates of activity there showed a steady increase until the end of the reference period. It should be noted that the registered increase in activity in the age range 55-64 until 2019 in Hungary had values close to those indicated for the first group of countries (39.3 and 33.9 years, respectively).

Sweden was separated into a stand-alone group, as the period 2001-2019 saw a growth in all age-specific rates of activity there. The largest in terms of value was the increase of the indicators for the age groups 60-64 (20.2 pp) and 65-69 (11.1 pp).

Figure 5

Age-specific activity rates in Bulgaria, Greece, Czechia, Hungary and Sweden in 2001, 2011 and 2019, in %
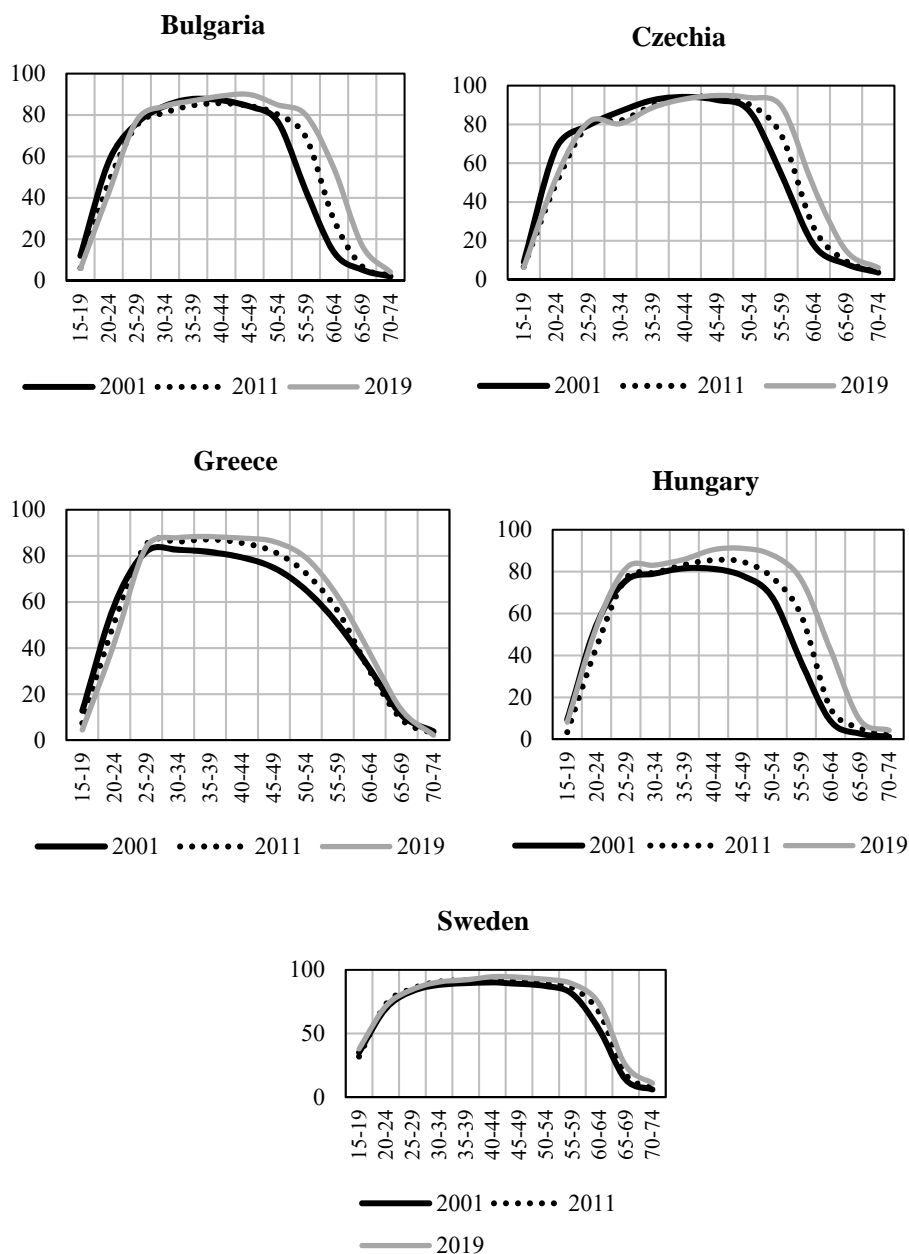
Source: Eurostat, Activity rates by sex, age and citizenship (%) [lfsa_argan]. Accessed on 21.04.2020.

The second common trend is relative to the much more significant growth registered in the age groups 55+ over the reference period vs. the changes in this indicator in the remaining age groups. This is associated with the extension of working life and the legislative changes undertaken in all European countries to gradually increase the retirement age. The results from the analysis of age-specific activity by sex show that most of this increase was owed to the significant increase of the activity among women belonging to those age groups. It should be noted here that despite the large and rapid increase in activity rates for pre-retirement age groups in 2019, they remained much lower in four of the countries compared with the levels reached in Sweden: 89.0% for the group 55-59 years and 73.5% for the age group 60-64, respectively.

The third trend affects the height and the width of the so-called plateau curve. In three of the countries, Bulgaria, Greece and Hungary, in 2019, the values of the rates from the plateau were below 90%, except for the age groups 40-49 in Hungary (90.5 and 91.1%, respectively). In Sweden, all the rates from the plateau exceed 90%, and in Czechia – only part of them, in the age groups 40-54.

With regard to the width of the plateau, it should be noted that it covers the age groups 30-59 in Bulgaria and Hungary, 25-59 in Czechia and up to 54 in Greece and is the widest and most evenly distributed in Sweden, 25-64.

The results from the comparative analysis show unfavourable trends in Bulgaria, despite the large increase in activity among people of pre-retirement age. The decrease in the activity among the youngest persons, which is also observed in some of the other compared countries, can be explained to some extent by the extension of the training period of young people, which makes it difficult for them to enter the labour market (ILO, 2010). However, the stagnation of activity rates over the reference period in the average age groups, i.e. 25–40, is mostly related to the development and structure of the economy, economic growth and the state policy regarding the economic activity. Among the main reasons for such stagnation can be pointed out the deteriorating situation on the labour market owed to the global financial and economic crisis of 2008, the shut-downs and bankruptcy of a number of small and medium enterprises (Beleva, 2014), maintaining a high share of long-term unemployed, a strong increase in the number of those discouraged to find a job, older generations' insufficient skills and qualifications (Atanassova, 2016), substandard conditions for combining birth and upbringing of children with the professional development of parents (Vladimirova, 2020, pp. 83-225), etc. Despite the large increase in the rates among people aged over 55, at the end of the period, they remain significantly lower than in Sweden, for example (54.0 vs. 73.5% for the 60-64 age group).

Demographic ageing

Ageing of labour force is directly related to ageing of the total population along the lines of the above-mentioned direct and indirect demographic factors. Moreover, this is very heavily influenced by the changes in the age activity arising mainly from the economic factors, but also under the influence of the other factors indicated in the model (Borissova-Marinova, 2007, p. 87-116). The replacement rate of the age group 60-64 by the age group 15-19 was

used to measure the degree of ageing among the working-age population over the reference period. The indicator is calculated as a ratio between the number of persons aged 60-64, the pre-retirement age group where the levels of economic activity tend to diminish from the peak values, and the number of persons aged 15-20, the youngest age group entering in economic activity. The indices were calculated per 100 people from the relevant age group of the total population and the labour force (Figure 6) and they are one of the synthetic characteristics of working-age population and labour force's reproduction.

Figure 6

Replacement ratios in the selected countries in 2001, 2011 and 2019
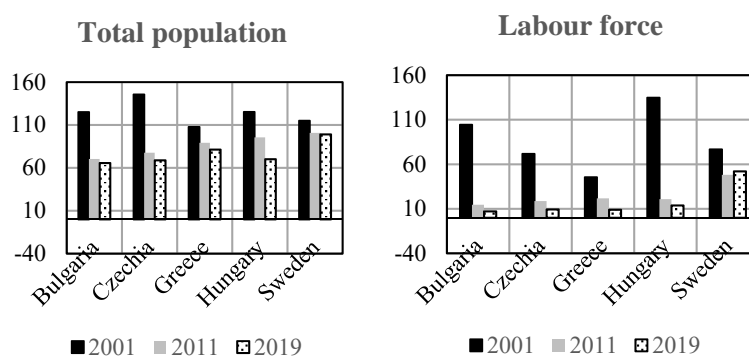
Source: Calculations on Eurostat, Population on 1 January by age group and sex [demo_pjangroup] and Active population by sex, age and citizenship (1000) [lfsa_agan]. Accessed on 14.07.2020.

In 2001, the values of the total population indicator exceeded 100 in all compared countries. In 2001, the levels of incoming flows exceeded the levels of outgoing flows: per each 100 leaving working age, there were 125 enterings in Bulgaria and Czechia and 146 in Hungary, respectively. The high rate of population ageing has led to a very rapid decrease in the demographic replacement rate over the reference period in four of the selected countries (excluding Sweden). By the end of the period, Bulgaria, Hungary and Czechia showed around a twofold reduction in this indicator, if compared to 2001. Today in these countries, each two people aged 60-64 leaving working age are only replaced by 1 person aged 15-19 entering there. In is noteworthy that, according to the data available, in Bulgaria[13] and Czechia, the bulk of the reduction in these rates happened until 2011 and thereafter, the process slowed down significantly. In Hungary, the reduction in the index ran evenly within the reference period. In 2001, the lowest was the value of this index in Greece, with 108 people entering working age per each 100 leaving it. At the end of the period, the lowest value of this index was in Bulgaria (66 enterings per every 100 leavers).

---

[13] A reason for doubt about the speed of the process in Bulgaria during the second decade of the reference period gives us the inaccurate and incomplete current registration of emigrants during the period, which affects the sizes of both age groups included in the rate. A similar situation was also observed during the period 2001–2010, the data on which was subsequently corrected based on the information retrieved from the 2011 population census.

Sweden also demonstrates a decrease of this index, however showing two key differences when compared to the countries analysed above. First, the index drop was much milder: from 115 enterings working age in 2001 down to 99 in 2019. And second, over the period 2011-2019, the value of this index was around 100. This shows a simple replacement of the two flows or, in fact, the halt to the process of population's ageing.

In one respect, the reduction in the index is conditional upon the growth in the absolute number of people aged 60–64 over the period in all five nations. The increase in this age group over the reference period was in the interval from 44% in Czechia to 5% in Greece (8% in Bulgaria). On the other hand, four out of the five compared nations report a reduction in the absolute number of the youngest age group in 2019 vs. 2001. The level of such reduction varies between 43% in the case of Bulgaria to 21% in the case of Greece. In the fifth nation, Sweden, the number of people aged 15-19 grew by10% throughout the period.

Behind the indicated relative numbers stand specific changes in both the direct and indirect demographic factors. A good example of the influence exerted by an indirect factor may be fertility in past periods. In 2001, those aged 15-19 were the individuals born during the period 1982–1986. Back then, the total fertility rate (TFR) was 1.9-2.0 births per woman in fertile age in Bulgaria, Czechia and Greece, around 1.8 in Hungary and 1.6 in Sweden. In 2019, the same age group was populated by those born during the period 2000-2004, when TFR was 1.2-1.3 in Bulgaria, Czechia, Hungary and Greece, while in Sweden, it was 1.7.[14] In 2019, the age group 60-64 comprised the generations born during the period 1954-1959, while in 2001 – those born during the period 1937-1941, respectively. According to UN data (UNPD DESA, 2015)[15], during the period 1955-1959, TFR was much higher in all compared nations and exceeded the simple population reproduction limit: 2.3 in Bulgaria, Hungary, Greece and Sweden, with 2.4 in Czechia. Therefore, merely taking the context of the indirect effect of fertility, it becomes obvious that the generations born increasingly back in time were more and more numerous. This should be supplemented by the mortality-related effect, which was decreasing in the European nations throughout this period. As a result of this, living to the age of 64 is going up. The effects of external migrations over the distribution of population are dependent upon the value of the migration balance in the respective country. According to data from a research, in the period 1965-2005 it was stable and positive in Sweden and Czechia throughout the entire period, in Greece and Hungary it was negative until the early 1980s, after which they gradually became nations of immigration and since mid-1990s the index settled at relatively stable positive values, while it was negative in Bulgaria throughout the entire period (Borissova-Marinova and Moraliyska-Nikolova, 2011, pp. 59-65).

The dynamics of the similar labour force index is much more impressive (Figure 6): its value also decreased in all compared countries during the period. It also features two groups of countries, which differ sharply depending upon the strength and speed of decline in the index. Bulgaria, Czechia, Greece and Hungary all fall into one group where the reduction of the

---

[14] After data of Eurostat. Available at: https://appsso.eurostat.ec.europa.eu/nui/show.do. Accessed on 17.07.2020.

[15] The UN basis of demographic information on individual countries around the world covers data having been collected since 1950 and until today, and therefore no information could be provided on the TFR values for the period 1937-1941.

indicator is huge: 5 times in Greece, 7.8 times in the Czech Republic, 10 times in Hungary and 14.5 times in Bulgaria. This means that in these countries in 2019 there were be less than 10 people aged 15-19 per 100 people aged 60-64 (13 people in Hungary). Sweden falls into another group where the decline in this index is much weaker (by 1/3), with 100 economically active persons aged 60-64 corresponding to 52 active individuals belonging to the youngest age group.

To what has been said so far, it should be added that at the beginning of the period Hungary (134 people) and Bulgaria (104 people) were the only nations showing a complete replacement of the outflow of the labour force by the inflow. The remaining three nations showed values of this index much lower than this level as early as in 2001: 77 people in Sweden, 72 in Czechia and 45 in Greece, respectively, with a significant drop by the end of the period.

The absolute size of labour force age groups that are correlatable in the index analysed is shaped under the impact of the entire aggregate of drivers represented above rather than just by the demographic ones. The result of their influence is a huge increase in the number of active people aged 60-64 in 2019 vs. 2001 in most of the selected countries: 6 times in Hungary, 4 times in Bulgaria and Czechia and 1.7 times in the case of Sweden (with Greece showing +30%). Undoubtedly, a large part of this increase is related to the increase of the retirement age. At the same time, there was also a considerable fall in the number of active persons aged 15-19. Apart from the demographic drivers, this trend has a bearing to the ever-increasing period of education of young people before they can enter the labour market (ILO, 2010), with the variety of traditions and opportunities offered to reconcile training with economic activity (McDonald and Kippen, 2000, p. 4-5), etc. The biggest is the shrinking of this age group in Bulgaria and Greece, by 3.5 times, followed by Czechia (twofold) and Hungary (by 50%). The tendency toward change in this index, among others, is radically different in Sweden: in 2019, it accounts for a 20% increase in the number of active people belonging to the youngest age group vs. 2001.

The results obtained from the analysis give grounds to conclude that the dynamics of both indicators in Bulgaria over the reference period was extremely unfavourable. The size of the reduction of replacement rates and the speed of the process of ageing are the highest among the selected countries both in terms of the population in working age and in terms of the labour force. In both cases, the values of the indices reached in Bulgaria in 2019 were the lowest among the countries selected for such comparison.

Structure of economically inactive population

Two distributions of the inactive population aged 15-64 are used to characterise the changes among the inactive individuals: age structure and educational structure.

Basically, the age structure of the economically inactive people in working age has its distinctive specifics relative to the specific conditions and parameters in terms of entering or leaving the labour market. It is expressed as large shares of people from the young and pre-retirement age groups within the total number of individuals outside the labour market. The remaining age groups feature much lower and relatively more evenly distributed shares.

The above particularities in the distributions are, first of all, relative to the lengthier period of education owed to the growing requirements of the labour market to the labour force's education and qualifications. Alongside with this, they make young people's participation in the labour market more difficult during their training periods. This is why the share of inactive people from the age groups under 25 is high (Figure 7) and as it might be expected, it increased over the reference period. As a result of this trend, in 2019 their percentage approached 40% in Hungary, Bulgaria and Greece, while in Czechia and Sweden, it exceeded this value (42% and 48%, respectively). Some other reasons for the high levels of inactivity in the young ages are the high unemployment, the high share of long-term unemployed (Beleva et al., 2014); the incongruence between the education received and the levels of qualifications, and the requirements of the labour market (Atanassova, 2014); etc.

Figure 7

Distributions of the economically inactive population aged 15-64 by age groups in the selected countries in 2001, 2011 and 2019
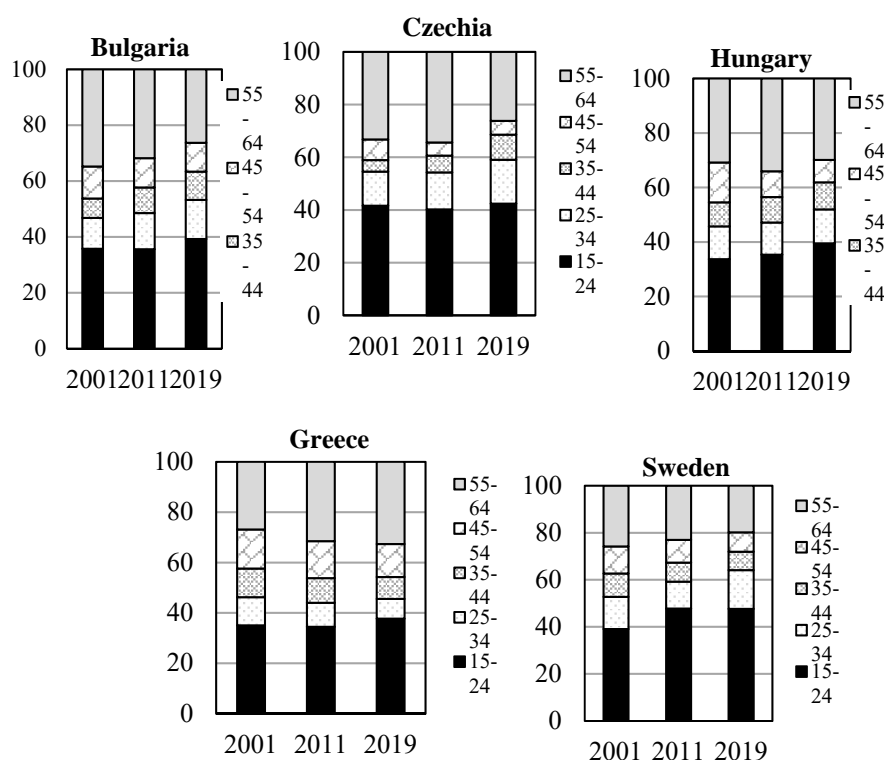
Source: Calculations on Eurostat, Inactive population by sex, age and citizenship (1000) [lfsa_igan]. Accessed on: 14.06.2020.

There is a slight increase (around 3 pp) over the same period in the share of the age group 25-34 in Czechia, Bulgaria and Sweden. While in Hungary, the index remained almost

unaltered (12.4%), a reduction was recorded in Greece at the end of the period (again around 3 pp). Under the impact of such trends, in 2019, the share of individuals aged under 35 outside the labour market already exceeded 50% of the overall number of inactive persons in all compared countries except Greece (45.6%). In Sweden, the value of this indicator reached 64.1%, which means that two out of each three inactive persons in working age were under 35.

The second key tendency over the period is the reduction of the share of people aged 55+ in the total number of inactive population in three of the countries. As a result of this, in 2019, the share of this group plunged from 33% to 26% in Bulgaria and Czechia and below 20% in Sweden (vs. 25.8% in 2001). Hungary experienced a slighter reduction, with the index remaining around 30% in 2019. Greece saw an increase of the index by over 5 pp until the end of the period. The absolute quantity of this age group declined over the period in all countries, with the decline ranging from 3 pp in the case of Greece, through 33 pp in Sweden and 40 pp (Czechia and Hungary) to 54 pp recorded in Bulgaria.

Therefore, there was a reduction in the absolute number of inactive young persons (bar Sweden) and in the pre-retirement age groups in all countries considered. In relative terms, the trends are opposite – the share of young people was increasing, while the share of people aged 55–64 was declining by the end of the period. As a result of these trends, two out of four inactive people of working age were under 35 and one was over 55 in 2019.

The results of the analysis show that the age structure of the inactive population in Bulgaria in relative terms does not differ significantly from those in the selected countries. This finding is valid both for the direction and for the pace of change in the age distribution within the reference period. As for the size of the absolute decrease, Bulgaria ranks second as to the size of the reduction of inactive persons of working age (by almost 1/3) after Hungary and leads in the group of compared countries in the decline in the number of youngest inactive persons aged 15–19 (by 33 pp) and persons in pre-retirement groups (over 2 times)

The **level of education** was selected as a major social characteristic of the economically inactive population in working age. Three categories were formed according to the educational degrees: low (less than primary, primary and lower secondary education or levels 0-2 of ISCED, 2011), secondary (levels 3 and 4) and a higher level of education (levels 5-8).

The educational structure of the inactive population shows high shares of people of lower educational levels and a small share of those with higher education or higher (Figure 8). In 2001, more than half of the inactive population was persons with low education in three of the compared countries: Greece (59.4%), Hungary (55.2%) and Bulgaria (53.5%). Czechia and Sweden show a predominant share of people with secondary education (52.3 and 44.8, respectively). The share of highly educated inactive people was below 10% in the countries compared, with the exception of Sweden (13.2). By the end of the period under review, the share of those low-educated decreased in all countries except Sweden, where there was an increase of more than 8 pp. The decline was strong in Greece (18 pp) and Hungary (14 pp) and moderate in Bulgaria and the Czech Republic (8 pp). The share of inactive people with secondary education was increasing, and therefore at the end of the period, it exceeded the share of the low-educated in Czechia, Greece and Hungary. In Bulgaria, the shares of the inactive with lower and secondary education equalised (45.5%) in 2019. In Sweden, a

significant decrease of 13 pp in the share of the inactive with secondary education is reported. Furthermore, noteworthy is the rise of the share of inactive people with high education levels over the period, however slight it may be. As a result of this tendency, in 2019 the index exceeded 11% in four of the countries considered, and only Bulgaria, where its rise was minimal (under 0.5 pp) showed a value 9.0%.

Figure 8

Distributions of the economically inactive population aged 15-64 by educational level in the selected countries in 2001, 2011 and 2019
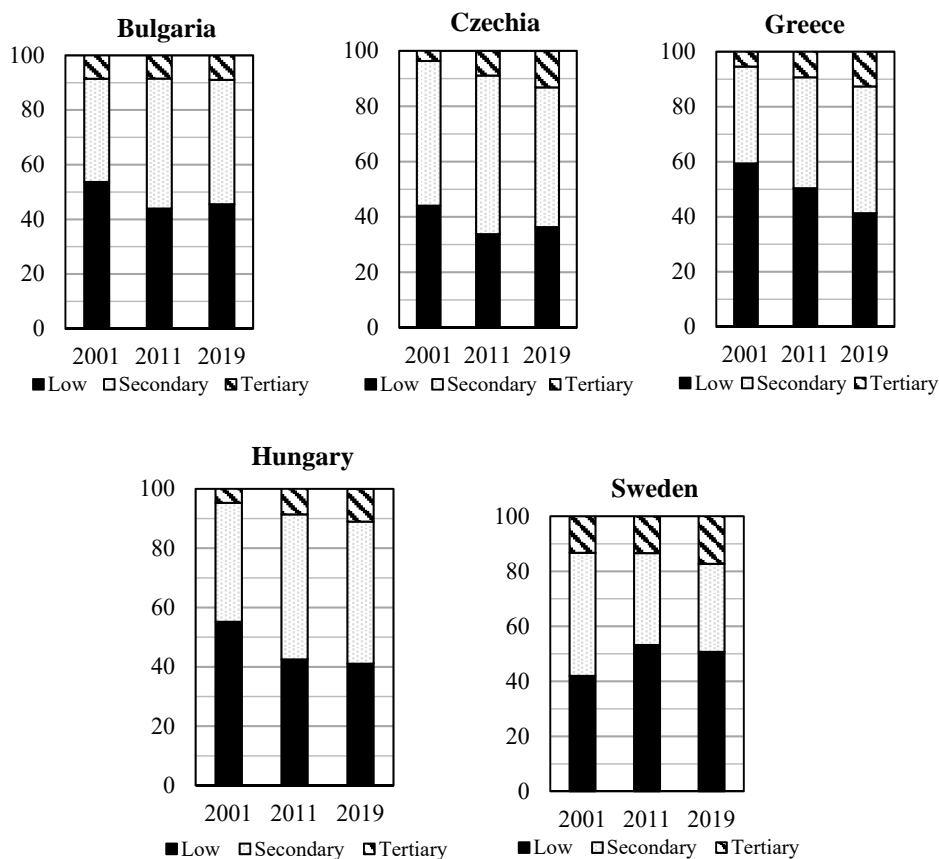
Source: Calculations on Eurostat, Inactive population by sex, age and educational attainment level (1 000) [lfsa_igaed]. Accessed on: 14.06.2020.

The changes in the absolute size of the analysed aggregates are significant over the reference period. The dynamics in the absolute number of inactive persons with low education levels is similar to the described relative index, however, its decline is much bigger. In 2019, it was down by two times in Bulgaria, Greece and Hungary, by over 1/3 in Czechia, while in Sweden it rose by 19 pp (i.e. by over 85 thousand people) vs. its level registered in 2001. A

decline, slighter though, was registered in the quantity of inactive persons with secondary education levels. This group was down by 1/4 in 2019 in the reference countries bar Greece, where there was a slight rise by 4 pp (40 thousand people). Furthermore, there was a substantial increase in the number of inactive persons with high education levels: almost threefold in Czechia, around twofold in Greece and around 1.4 times in Hungary. In Bulgaria, their number shrank by 40 pp in 2019 vs 2001 (60 thousand people).

The results from the analysis show a number of similarities between the educational structure of Bulgaria's inactive population and in the rest of the countries compared. This finding refers to both the proximity between the momentary distributions and to the trends observed over the reference period. The high and similar shares of people with low and secondary education are typical not only for Bulgaria at the end of the period, but also for Hungary and Greece. The share of people with high education levels is low in the structure studied here in all countries over the analysed period. During the period, similar trends were observed in the absolute size of the aggregates: a larger decrease in the number of inactive persons with low education and a smaller decrease among the persons with secondary education. A particular feature of the development of the educational structure in Bulgaria during the period is the large absolute decrease in the aggregates if compared to the selected countries. It stands among the highest for people with low (after Hungary) and secondary education levels (after Sweden) and is the highest among the people with university degrees.

Conclusion

The results from the performed comparative analysis of the key characteristics of the labour force results in the selected countries over the last two decades suggest several conclusions:

First, the results obtained show that the total levels of economic activity were rising over the period in the EU Member States. The increase among women was much higher vs. what was registered among men, and therefore the gaps by sex in the indices shrank significantly. There is some convergence between total activity levels, judging by the declining number of countries whose rates are well below the EU average.

Despite the observed increase over the period, the levels of economic activity in Bulgaria remained relatively low in the European context (from 27th position in 2001, the country rose up to 22nd in 2019). This means a big portion of inactive persons in working age remaining outside the labour market. From a perspective of the model adopted of labour force formation, a number of reasons may be indicated for such evolution, but two of them are key to its development. Given the shrinking quantity of working-age population over the entire period, it is obvious that economic and social drivers play an important part. Another possible reason may be that part of the inactive persons would be out of registration as active people for being employed in Bulgaria's grey economy or being temporary or part-time (unregistered) employees in the other EU Member States.

Secondly, there has been a growth in the levels of activity over the analysed period in most age groups in the studied countries. The most prominent, however, is the increase in the 55+ age groups. During the period, in part of the compared countries, there has been a decline in

the economic activity among the youngest people aged under 25. As an exception of this finding stands out Sweden where both rates have grown (slightly though) and the rate of the 20–24 age group has stood firmly at the level of 70% over the period. It is also indicative that the width of the "plateau" of the economic activity curves is the biggest in Sweden (25-to-64 age groups by the end of the period) and that the maximum values of age-specific rates over that same period are the highest (over 90%).

The specificity in the development of the age-specific activity in Bulgaria over the reference period includes the very high growth in the rates for the 55–69 ages, whose rates at the end of the period were already higher than the EU average. Such positive trends inherent in most European countries, however, are combined in Bulgaria with a stagnation in the activity rates in all ages in the 25–40 range and a significant decline of activity among people aged under 25. Some possible reasons for such negative trends may be sought in the economy's insufficiently developed and low-productivity sector structure, in the slow and low economic growth, the insufficiently focused and adequate policies implemented by the State in terms of economic activity and lifelong learning, etc.

Thirdly, the comparative analysis showed that over the period 2001–2019, all selected countries experienced the processes of demographic ageing of both the working-age population and the labour force. The results obtained testify that ageing had been developing much more intensively among the labour force than among the working-age population. This tendency is primarily relative to the significant rise in the retirement age and of employers' requirements to both qualifications and education levels of employed people over the period. This trend, however, is undoubtedly influenced by some drivers such as the economic development strategy and the economic and social policies implemented in each of the compared States, the degree of accessibility and adequacy of the suggested trainings for further training and retraining of people of different ages and with different educational degrees, the structure of the policies applied to the labour market, the adequate focus and effectiveness of the conducted anti-crisis policy, etc.

The results, obtained for Bulgaria, prove beyond doubt, that both the size of the decrease in the generation replacement rates and the pace of their decline are among the highest in the group of selected compared countries.

Fourthly, the results obtained show the remarkable proximity in the relative indicators of the economically inactive persons' distribution by age in the countries compared. This conclusion is entirely applicable to the dynamics of this structure – both to the direction and to the pace of its change until the end of the reference period.

The particularities encountered in the evolution of their age structure in Bulgaria refer to the high level of the absolute reduction in the overall number of inactive people in working age and the number of persons from the youngest and the pre-retirement age groups. In Bulgaria, this positive tendency toward an absolute reduction of the number of people outside the labour market is accompanied by two other adverse tendencies which are unfavourable for the country's socio-economic development. On the one hand, it is only Bulgaria among the compared countries that has registered an absolute reduction in the labour force over the reference period. On the other hand, the share of those unwilling to work among the inactive

persons in working age in the country is very high (88% of the men and 91% of the women in working age[16]).

Finally, it is worth mentioning that the educational structure of inactive population in the analysed countries also features a remarkably expressed similarity, growing even stronger by the end of the period. It shows high shares of people of lower educational levels and a relatively small share of those with higher education. Also, all analysed countries record trends toward a reduction in the absolute number of low educated inactive persons and a lower decline in the number of those with secondary education. Indicative for Bulgaria and Greece is the large increase in the share of the inactive people with secondary education at the expense of the decrease in the indicators for persons with low education.

In conclusion, it should be noted that the results of the analysis fully confirm the analysed trends as key to the development of demographic parameters of the labour force and the working-age population in the period 2001–2019, and not only in Bulgaria. Currently, the reproduction of the labour force is expanded in three of the compared countries (Sweden, Hungary and Czechia), simple in Greece and shrinking (reduced) in Bulgaria only. It is a process in the context of reduced reproduction of the working-age population in all countries, although with different rates of decrease. Moreover, it is accompanied by demographic ageing and other unfavourable trends, such as the growing share of young people in the inactive population and the poor educational structure of the inactive population.

The observed negative trends in the country impose an urgent need to stimulate the labour force's reproduction. This requires providing the necessary preconditions for increasing economic activity and employment (based on economic restructuring) among all age groups of the workforce with a focus on young and middle-aged groups, more efficient use of available labour force and labour resources, and improving the quality indicators of human capital through education and life-long training. Measures to promote the demographic reproduction of the labour force can also have a broadly positive effect on a number of problems of the total population (emigration, fertlity, morbidity, mortality, etc.), on the speed of economic development and other key processes for the country's development.

References

Atanassova, M. (2016). Ikonomicheska aktivnost i zaetost na naselenieto na vazrast nad 55 g. v Balgaria – tendencii i predizvikatelstva. – V: Vazrastnite hora kato resurs v razvitieto. Varna: IK "Slavena". [Economic activity and employment of population aged over 55 in Bulgaria – trends and challenges].

Atanassova, M. (2014). Uchastie na mladezhite v zaetost i obuchenie v Balgaria – sastoyanie i predizvikatelstva. – V: IPHS-BAS. Demografskata situaciya i razvitieto na Balgaria. Sofia: Akademichno izdatelstvo Prof. Marin Drinov, pp. 715-726. [Youth participation in employment and training in Bulgaria: situation and challenges].

Atanassova, M. (2013). Education and Marginalised Social Groups on Labour Market – perspectives on employment. – In: Advances in International Psychology: research approaches and personal dispositions, socialisation processes and organisational behaviour. Kassel University Press GmbH, pp. 344-363.

---

[16] After data of NSI. Available at: https://www.nsi.bg/en/content/6506/persons-not-labour-force-national-level-statistical-regions-districts. Accessed on: 17.07.2020.

Beleva, I. (2017). Pazarat na truda v Balgaria: srednosrochni perspektivi i riskove pred dalgosrochnoto mu razvitie. – Ikonomicheski analizi, ERI na BAN, 1, pp. 3-40. [Labour market in Bulgaria: medium-term prospects and risks before its long-term development].

Beleva, I. et al. (2014). Segmentaciya na pazara na truda v Balgaria. Sofia: Akademichno izdatelstvo Prof. Marin Drinov. [Segmentation of labour market in Bulgaria].

Borissova-Marinova, K. (2019). Perspektivi na ikonomicheski aktivnoto naselenie na Balgaria. – Nasselenie, Vol. 37, N 4, pp. 615-656. [Prospects for development of economically active population in Bulgaria].

Borissova-Marinova, K. (2013). Negative population growth in Europe. – Nasselenie Review, English edition, N 1-2, pp. 28-46.

Borissova-Marinova, K. (2007). Ostaryavane na naselenieto. Otrazhenie varhu ikonomicheski aktivnoto naselenie na Balgaria. Sofia: Akademichno izdatelstvo Prof. Marin Drinov. [Ageing of population. Impact on Economically Active Population of Bulgaria].

Borissova-Marinova, K. and S. Moraliyska-Nikolova. (2019). Perspektivi za izmenenie na naselenieto na Balgaria do 2040 g. – Nauchni trudove na UNWE, N 2, pp. 151-183. [Prospects for change of Bulgaria's population to 2040].

Borissova-Marinova, K. et al. (2018). Demografsko razvitie, rabotna sila i trudovi resursi v Balgaria. Sofia: Izdatelstvo na BAN Prof. M. Drinov. [Demographic Development, Labour Force and Labour Resources in Bulgaria].

Borissova-Marinova, K., Moraliyska-Nikolova, S. (2011). Rezhimat na vazproizvodstvo na naselenieto v Balgaria i otrazhenieto mu varhu predlaganeto na rabotna sila (2005-2030). Sofia: Akademichno izdatelstvo Prof. Marin Drinov. [Regime of population reproduction in Bulgaria and its impact on labour force offer (2005-2030)].

Coleman, D. (2009). The future of human reproduction. – In: Centre for Population Studies at the Bulgarian academy of sciences and National council for co-operation on ethnic and demographic issues at the Council of ministers of the Republic of Bulgaria. Fertility in Bulgaria and State policy. Sofia: CPS-BAS, pp. 42-74.

Dumont, G.-F. (2019). Union européenne: dépopulation ou dépeuplement?. – Population & Avenir, N 743, Mai-juin 2019, p. 3.

European Commission. (2018). The 2018 Ageing Report. Economic & Budgetary Projections for the 28 EU Member States (2016-2070). https://ec.europa.eu/info/publications/economic-and-financial-affairs-publications_en.

European Commission. (2011). Demography Report 2010. Brussels: European Commission.

Haines, M. (1979). Fertility and Occupation: Population Patterns in Industrialization. New York: Academic Press.

ILO (2010). Global Employment Trends for Youth. Special issue on the impact of the global economic crisis on youth. ILO: Geneva.

Kaltchev, Y. (2019). Tendencii v razvitieto na vanshnata migraciya na naselenieto. – V: Vladimirova, K. et al. Migracii i nacionalna identichnost, pp. 53-71. Sofia: Izdatelstvo na BAN Prof. M. Drinov. [Trends in the development of population external migration].

Mateev, E. (1987). Struktura i upravlenie na ikonomicheskata sistema. Sofia: Izdatelstvo Nauka i izkustvo. [Structure and management of economic system].

Moraliyska-Nikolova, S. (2020). Kohortna razhdaemost v Balgaria – dinamika i osnovni harakteristiki. – Nasselenie, Vol. 38, N 1, pp. 159-188. [Cohort fertility in Bulgaria: dynamics and major characteristics].

McDonald, P., Kippen, R. (2000). The implications of below replacement fertility for labour supply and international migration, 2000-2050. 2000 Annual Meeting of the Population Association of America.

Naidenova, P. (2013). Structural reshaping of economic and demographic growth and ageing. – In: Ageing in Bulgaria. IPHS at the BAS. Sofia: Prof. Marin Drinov Academic Press, pp. 11-25.

Pressat, R. (2006). Rechnik po demografia. Sofia: Avalon Publ. House [Dictionary of Demography. In Bulgarian]

Sauvy, A. (1963). Théorie générale de la population. Vol. 1, Paris: PUF.

Stefanov, I. et al. (1974). Demografiya na Balgaria. Sofia: Izdatelstvo Nauka i izkustvo. [Demography of Bulgaria].

Sugarev, Z. (1975). Demografska statistika. Sofia: Izdatelstvo Nauka i izkustvo. [Demography of Bulgaria. Sofia: Nauka i izkustvo Publ. House].

Trubek, D., Mosher, J. (2001). New Governance, EU Employment Policy, and the European Social Model. – Jean Monnet Program, Working Paper No.6/01. New York.

UN Population Division Department of Economic and Social Affairs. (2015). World Population Prospects: The 2015 Revision. DVD Edition.

Vladimirova, K. (2020). Ikonomika i semeystvo: zaetost i razvitie na decata i semeystvoto. Sofia: Izdatelstvo na BAN Prof. Marin Drinov. [Economy and family: employment and development of children and family. Sofia: Prof. Marin Drinov Publ. House of BAS].