

# Demographic challenges for the Bulgarian economy

Kaloyan Ganev, Elitsa Dimitrova, Gueorgui Kambourov, Georgi Kocharkov, Plamen Nenov, Ralitsa Simeonova-Ganeva\*

Bulgaria faces serious demographic challenges, that have given rise to numerous public discussions on the national well-being and development prospects. Since the early 1990s, the population has declined by approximately 2.5 million people due to global trends, such as declining fertility, aging, and country-specific factors. These changes have long-term economic implications for aggregate output, the labour market, social security, and regional development.

The demographic indicators show negative trends: fertility remains below the replacement level, despite its slow recovery since the beginning of the new millennium. The mortality rate in Bulgaria is among the highest in the European Union, and life expectancy is the lowest at 74.2 years, compared to the EU average of 80.6 years. The population has been declining due to negative natural growth and net migration, especially during the period 2012-2019. Since 2010, there has been a significant increase in demographic pressure on the working-age population.

The economic effects of these demographic trends are significant. Our analysis shows that after 2009, the demographic factors have had a strong negative impact on GDP growth, with an average negative effect of around 0.9 percentage points per year. This represents approximately 45% of the average annual GDP growth during the period 2010-2021. The negative effect is mainly due to emigration and changes in the population structure. In the future, without a change in economic conditions and policies, there is a risk that this negative effect will continue and even increase after 2035 due to an acceleration of population ageing.

The demographic changes in Bulgaria pose a serious risk to economic growth and the sustainability of social systems. A long-term strategy must be developed and implemented to address the immediate and long-term consequences of these trends. Only through coordinated efforts and integrated solutions can the country overcome the demographic challenges and ensure sustainable economic development.

To address these challenges, a combined approach involving both direct and compensatory policies is needed. Direct policies can include measures with long-term effects, such as boosting fertility and improving the health status of the population, and policies with short-term effects, such as those related to migration management. Compensatory policies can be aimed at increasing employment, raising productivity, and improving the quality of labour resources through education policies as well as investment in productive capital.

\* Ganev is from Sofia University St. Kliment Ohridski, Kamburov is from the University of Toronto, Kocharkov is from the European Central Bank (ECB), Nenov is from Norges bank and BI Norwegian Business School, Simeonova-Ganeva is from Sofia University St. Kliment Ohridski. All are members of the Bulgarian Council for Economic Analyses. Dimitrova is from the Institute for Population and Human Studies of the Bulgarian Academy of Sciences (BAS). Special thanks go to Danail Vassilev, Georgi Vezhenov, and Nikola Nenovski for their assistance in preparing this analysis. The views expressed in this analysis are solely those of the authors and do not in any way engage or represent the views of the ECB, the Norwegian Central Bank, the Bulgarian Council for Economic Analysis, or the Bulgarian state and its institutions.

The demographic trends in Bulgaria in recent decades are a sensitive issue for the Bulgarian society. Since the beginning of the 1990s, there has been a dramatic decline in Bulgaria's population, which, according to the latest data, amounts to approximately 2.5 million people. This significant demographic change is at the heart of many discussions and perceptions concerning the country's public welfare and development prospects. This makes the issue of demographic trends in the country a natural priority for policymakers.

The demographic processes in Bulgaria do not take place in isolation but against the background of a global demographic transformation. Globally, and particularly among industrialised economies, there is a decline in fertility, an increase in life expectancy, and an aging population. Therefore, it is not surprising that demographic issues are also on the radar of policymakers in these countries.<sup>1</sup> This shows that the factors determining demographic dynamics in Bulgaria are both global and country-specific.

In addition to creating social change, demographic trends have important economic consequences. These consequences can be long-term and affect many aspects of the economy, including aggregate output, the labour market, social security, and regional development.

Taking into account the importance of demographic problems for Bulgaria and the need to structure the public discussion on the topic, in this policy brief we present the demographic challenges facing the country through the prism of their effects on economic growth. To this end, the analysis focuses on the following three aspects:

1. Review of key demographic indicators for Bulgaria and other European countries, and

differentiation between common and country-specific factors.

2. Assessment of the overall effects of demographic trends in the country on economic growth.
3. Identifying the main possible direct and compensatory policies to address the risks and challenges posed by demographic trends.

In doing so, we hope to provide a better understanding of the complex linkages between demography and the Bulgarian economy and offer practical guidance for future policies to address these challenges.

## Demographic trends - comparative analysis

### Brief methodological notes

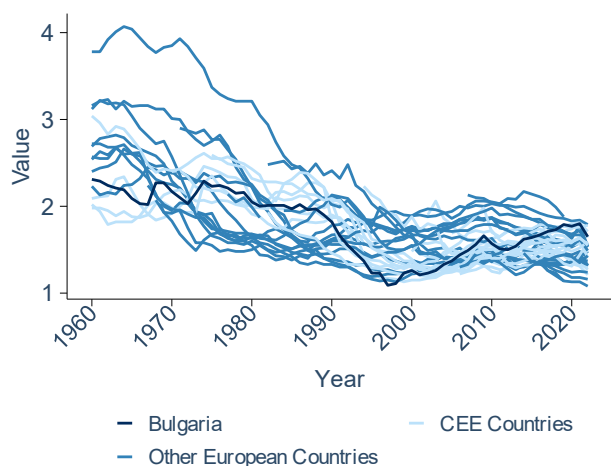
The analysis examines trends in key demographic indicators, such as fertility, mortality, migration, and population structure.<sup>2</sup> To isolate the general factors from the country-specific ones regarding the demographic indicators of Bulgaria, we use cluster analysis. With its help, we distinguish different groups of European countries on the basis of similar demographic trends. Bulgaria falls into the group of Central and Eastern European (CEE) countries, which includes Albania, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovenia and Slovakia. This group of countries shares a number of common demographic characteristics, including lower life expectancy, low fertility during the transition period in the 1990s, and high levels of emigration. At the same time, they share several common trends with other European countries, such as an ageing population. Comparing Bulgaria

<sup>1</sup> See, for example, United States Council of Economic Advisers Report to the President 2024. Available at: <https://www.whitehouse.gov/wp-content/uploads/2024/03/ERP-2024.pdf>

<sup>2</sup> In the Appendix, we present a comparison of additional demographic indicators.

with these similar countries identifies country-specific factors.

### 1. Total fertility rate



Source: NSI, Eurostat and own calculations. The total fertility rate is defined as the average number of children a woman would give birth to if she followed the age-specific fertility rates for a given year during her childbearing years.

## Fertility

Figure 1 presents the dynamics of the total fertility rate for Bulgaria, other CEE countries, and other European countries. The value of 2.1 is considered as a limit for the so-called replacement level at which the population would be constant over a long period of time. In Bulgaria, the ratio fell below this value as early as 1980.

Fertility in Bulgaria is characterised by a steady decline, which accelerated during the post-communist transition period after 1990.<sup>3</sup> The economic crisis and growing political instability are one explanation for the sharp decline in fertility to the so-called 'lowest-low levels' during this period.<sup>4</sup> Other scholars also highlight the cultural changes and liberalisation of attitudes towards the family and reproduction, which are part of the second demographic transition beginning in Eastern

Europe.<sup>5</sup> The interaction between these two processes determines the trajectory of Eastern European countries towards the establishment of a fertility regime below the replacement level.

Since the beginning of the new millennium, there has been a slow recovery trend for Bulgaria as well as for other CEE countries, with some fluctuations in fertility during periods of economic recession.<sup>6</sup> In recent years, fertility levels in the country have been higher than in the EU-27. Despite this increase in the average number of children per woman, the total fertility rate in Bulgaria remains below the replacement level. The situation is currently similar to that of other European countries included in the comparative analysis.

## Mortality

Mortality in Bulgaria is a particularly important country-specific demographic factor. Figure 2 presents two indicators related to mortality: crude mortality rate (left panel) and average life expectancy at birth (right panel).

The mortality rate in Bulgaria has been steadily increasing for decades because of the aging of the population. As a result, the crude mortality rate in Bulgaria is quite high compared with that in other EU countries, even before the peak mortality observed during the Covid-19 pandemic.<sup>7</sup>

<sup>3</sup> See Kohler and Philipov (2001); Kohler, et al. (2002); Frejka (2008), Billingsley (2010).

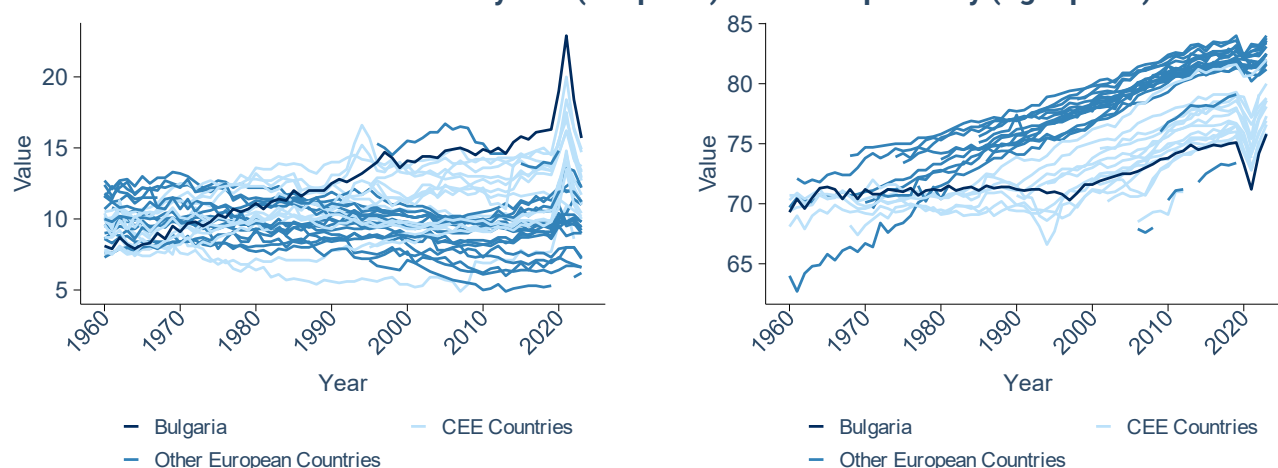
<sup>4</sup> "Lowest-low fertility" is defined by a level of total fertility rate below 1.3 children on average per woman (Billari & Kohler, 2004).

<sup>5</sup> The second demographic transition is a process of change in the mode of reproduction in European societies that began in the late 1960s/early 1970s. During this period, fertility rates fell below replacement levels, there was a significant increase in the average age at first childbirth, the proportion of childless individuals at the end of the reproductive cycle increased, new forms of family union such as celibacy emerged, marriage rates declined and divorce rates increased (Lesthaeghe & van de Kaa, 1986 and Van de Kaa, 1987; see also Sobotka, 2008).

<sup>6</sup> Increasing fertility in this period is accompanied by an increase in the median age at first childbirth (see Figure A4 in the Appendix), indicating increasing relative fertility of women at relatively later ages.

<sup>7</sup> See Rangachev, et al. (2022) for a detailed discussion of peak mortality from Covid-19 in Bulgaria in the period 2020-2021.

## 2. Gross mortality rate (left panel) and life expectancy (right panel).



Source. The crude death rate is defined as the ratio of the number of deaths in a year to the average population in that year (per 1 000 population). Life expectancy is defined as the average number of years a newborn child can expect to live if it follows current age-specific mortality probabilities throughout her lifetime.

Bulgaria is also among the CEE countries in terms of life expectancy. For this group as a whole, stagnation in life expectancy was observed in the period 1960-1990, and for Bulgaria, this stagnation continued in the 1990s. After the second half of the 1990s, a period of slow growth began.<sup>8</sup> However, by 2022, life expectancy at birth in Bulgaria was the lowest compared to other European countries. In addition to these trends, by 2022, a large gap (on the order of seven years, compared to an EU average of six years) in life expectancy between men and women has formed in Bulgaria (Figure A8 in the Appendix). Similar to the high mortality, the low life expectancy in Bulgaria is an important country-specific demographic factor.

### Natural population growth

The country's fertility and mortality rates determine the natural growth rate (the rate of population change that would occur if net migration were zero). Figure 3 presents the dynamics of natural population growth in Bulgaria. Despite the relatively high fertility rate compared to other European countries, its value below the replacement level and the high mortality rate determine the strongly negative natural population growth rate for the entire period since 1990. Similar

to mortality, Bulgaria ranks last among CEE countries in this indicator.

### Migration

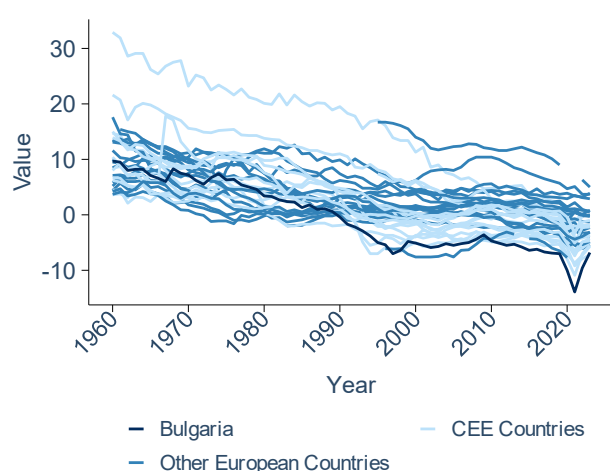
Overall, there are significant difficulties in tracking migration dynamics in Europe. They relate to institutional differences in administrative records of immigration and emigration in different countries. As a result, migration data are characterised by certain inaccuracies in the years between censuses, necessitating their updating after each new census.

Figure 4 presents the net migration in Bulgaria, measured between the different censuses in the country (as a share of the population at the end of the respective period).<sup>9</sup> Net migration is negative for the entire period, with some stabilisation in the early 21st century. In the period between the last two censuses, there has been a new acceleration in net migration since 2011, reaching levels comparable to those of 1992. This strong increase in negative net migration is mainly due to the period 2012-2019 (see Figure A2 in the Annex).

<sup>8</sup> The slow rate of increase may be due in part to socio-economic inequalities in the country, especially between different ethnic groups.

<sup>9</sup> Separately, Figure A2 in the Appendix presents a comparison of annual net migration between Bulgaria and other European countries. Here again, the trends in Bulgaria are similar to those of CEE with high negative net migration in the post-1990 period compared to high positive net migration for most of the other European countries.

### 3. Natural growth rate



Source: NSI, Eurostat and own calculations. The natural growth rate is the ratio of the natural population increase during the year (live births minus deaths) to the average population during the same year (per 1 000 people).

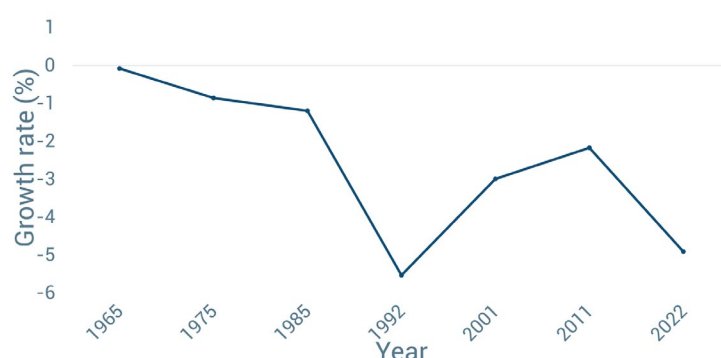
After 2020, for the first time in many years, there is a positive net migration rate (i.e. immigration is higher than emigration; see Figure A2 in the Appendix). This is due to both the return of many Bulgarians during the pandemic and the refugee flow from Ukraine after the Russian invasion in 2022. It is unclear whether this trend will continue in the future or merely reflects the specificities of this period.

### Population structure

In addition to population size, an important indicator of the demographic situation, particularly its economic consequences, is the age structure of the population. The age-dependency ratio is the main indicator describing the age structure of the population. Figure 5 shows the evolution of this coefficient from 1960.<sup>10</sup> For most of this period, the coefficient for Bulgaria was approximately 50. Since 2010, however, demographic pressure on the working-age population has increased significantly, with a value of over 60 by 2023. This places Bulgaria among European countries with the most unfavourable age structure of the population.

The reason for the increase in the dependency ratio since 2010 is the rapid aging of the population. This is due to two main factors. The first is the high emigration rate during this period, primarily among the working-age population.<sup>11</sup> The second is related to cohort effects caused by the low birth rate, which leads to an insufficient replacement of the older working-age population. An additional influence is the increase in life expectancy during this period. Towards the end of the period, there was some stabilisation in the population structure, but at a higher level. Stabilisation or a more gradual increase in the dependency ratio can be expected over the next 10 years, assuming no new high levels of emigration, such as those in the 2012-2019 period.<sup>12</sup> After 2035, however, in the absence of changes in demographic trends, a further acceleration and strong increase in the age dependency ratio is expected by 2050.

### 4. Net migration for Bulgaria (between censuses)



Source: NSI, Eurostat and own calculations. The graph shows net migration between censuses in Bulgaria relative to the population of the country at the census year. For the last census, the 2022 values are used. For the value in 1965, the difference between 1965 and 1960 is used.

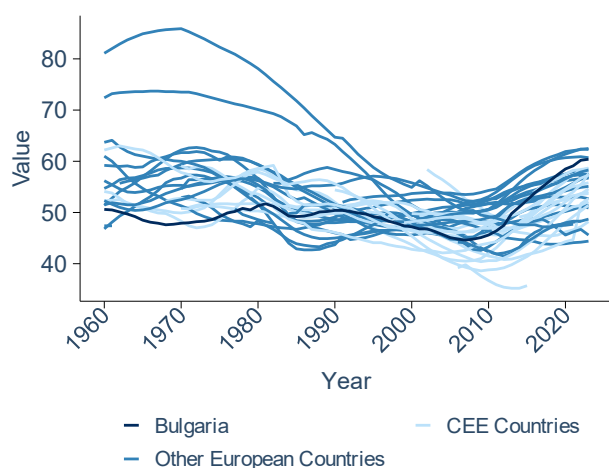
<sup>10</sup> Figure A9 in the Appendix shows the dynamics of the age structure for Bulgaria by age group, 0-14, 15-64 and 65 and over. The increase in the ratio since 2010 is mainly due to the group of older people outside the working age.

<sup>11</sup> See Garrote-Sanchez et al. (2021).

<sup>12</sup> See Figure A10 in the Annex for the UN projection of population structure dynamics beyond 2022.



## 5. Age dependency ratio



Source: NSI, Eurostat and own calculations. The overall age dependency ratio is the ratio multiplied by 100 of the sum of the number of young people and the number of elderly people at an age when both groups are usually economically inactive (i.e. under 15 and 65 and over), to the number of people of working age (i.e. 15-64).

## Main conclusions

Based on the analysis, we can draw the following conclusions regarding the demographic indicators in Bulgaria.

**Fertility:** There is a negative trend due to both economic and cultural factors associated with the second demographic transition. The transition to a market economy during the period 1990-2000 significantly accelerated this decline. Although fertility has been recovering slowly since the beginning of the new millennium, it is still below the replacement level.

**Mortality and longevity:** Bulgaria is characterised by a very high mortality rate compared to other EU countries, and this is also true for the years before the Covid-19 pandemic. Life expectancy stagnated or declined between 1960 and 2000 but has been on an upward trend since 2000. However, life expectancy in Bulgaria remains the lowest in Europe at 74.2 years, compared to the EU-27 average of 80.6 years. Moreover, there is a significant gender gap in longevity, with women

living on average seven years longer than men (compared to an EU average of six years).

**Population dynamics:** Over the last few decades, there has been a steady decline in the population of Bulgaria. Since 2020, net migration has been positive, mainly due to the return of Bulgarians from abroad during the pandemic, as well as the refugee flow from Ukraine.

**Population structure:** Since 2010, there has been a significant and sustained increase in demographic pressure on the working-age population owing to rapid aging. This trend is the result of several key factors, including the negative net migration of working-age people during this period, very low fertility rates during the period 1990-2000, and an increase in life expectancy after 2000. The dependency ratio is projected to stabilise during the period 2025-2035 in the absence of adverse migration developments, with a further increase expected after this period.

## Economic effects

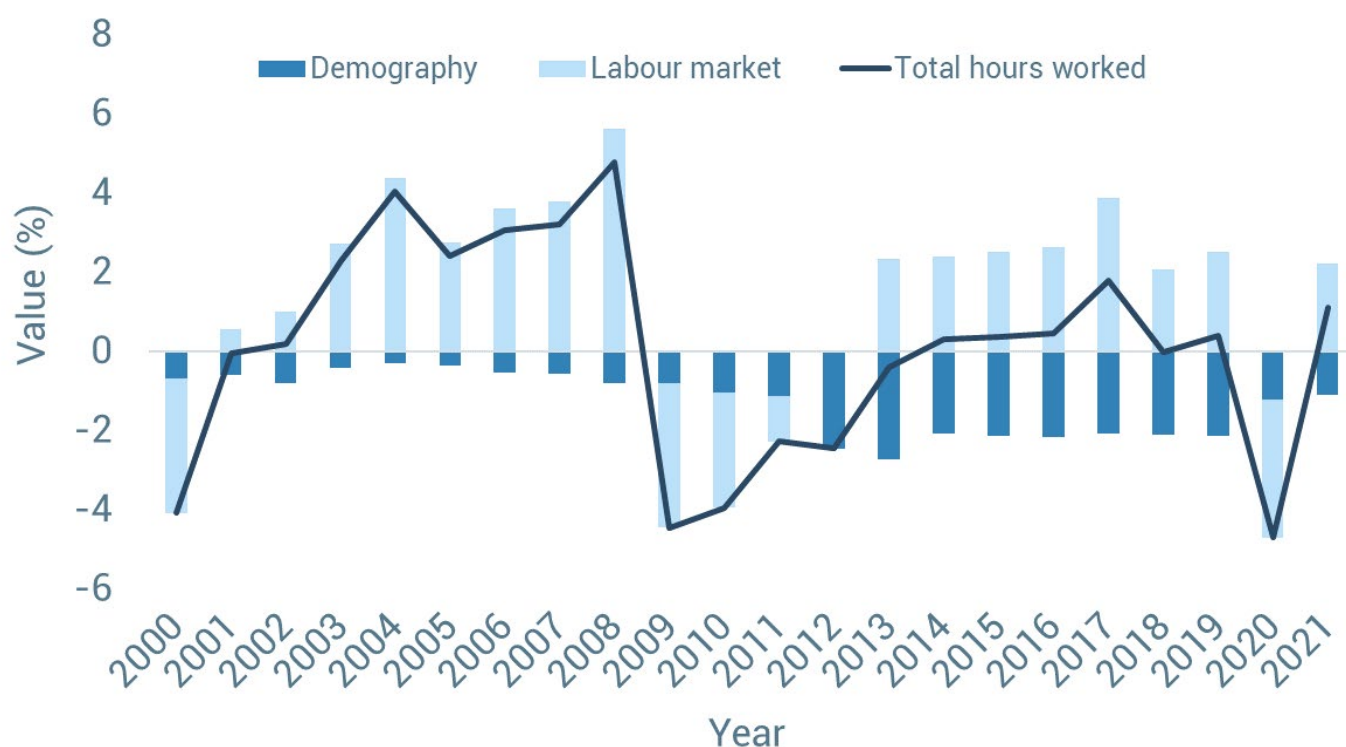
### Growth accounting decomposition

In this analysis, we use a methodological approach to estimate the economic effects of demographic trends in Bulgaria, based on the so-called growth accounting.<sup>13</sup> According to this methodology, the annual growth of a country's gross domestic product (GDP) is decomposed into contributions from several separate components. This includes:

- **Labour input** (total hours worked per year): measures the direct effect of changes in the quantity of labour input on economic growth.

<sup>13</sup> See Solow (1957). For the decomposition of economic growth, we use data from The Conference Board Total Economy Database, which in turn uses data from the Penn World Table (Feenstra, et al., 2015). For the decomposition of labor inputs, we additionally use data from Eurostat and NSI. The methodology for the decomposition of labor resources is based on the methodology in Mourre (2009).

## 6. Decomposition of the labour input in Bulgaria, 2000-2021.



Source: Conference Board and own calculations. Labour input is measured by the total number of hours worked in a year.

- **Labour quality:**<sup>14</sup> considers how improving the education and skills of the workforce affects productivity.
- **Physical capital inputs:** include investments in machinery, equipment, and infrastructure, which increase the productive capacity of the economy.
- **Total factor productivity (TFP):** reflects the efficiency of the use of labour and physical capital, as well as technological innovation and organisational improvements.<sup>15</sup>

Evaluating the effects of demographic trends requires a more in-depth analysis of labour resources. Hence, in our analysis, we also implement the so-called decomposition of labour resources. The labour resources used can be divided into two components: demographic and labour market. The demographic component comprises changes in labour resources due to

changes in the population and its structure. This change is measured by the demographic indicators discussed in the previous part of the analysis:

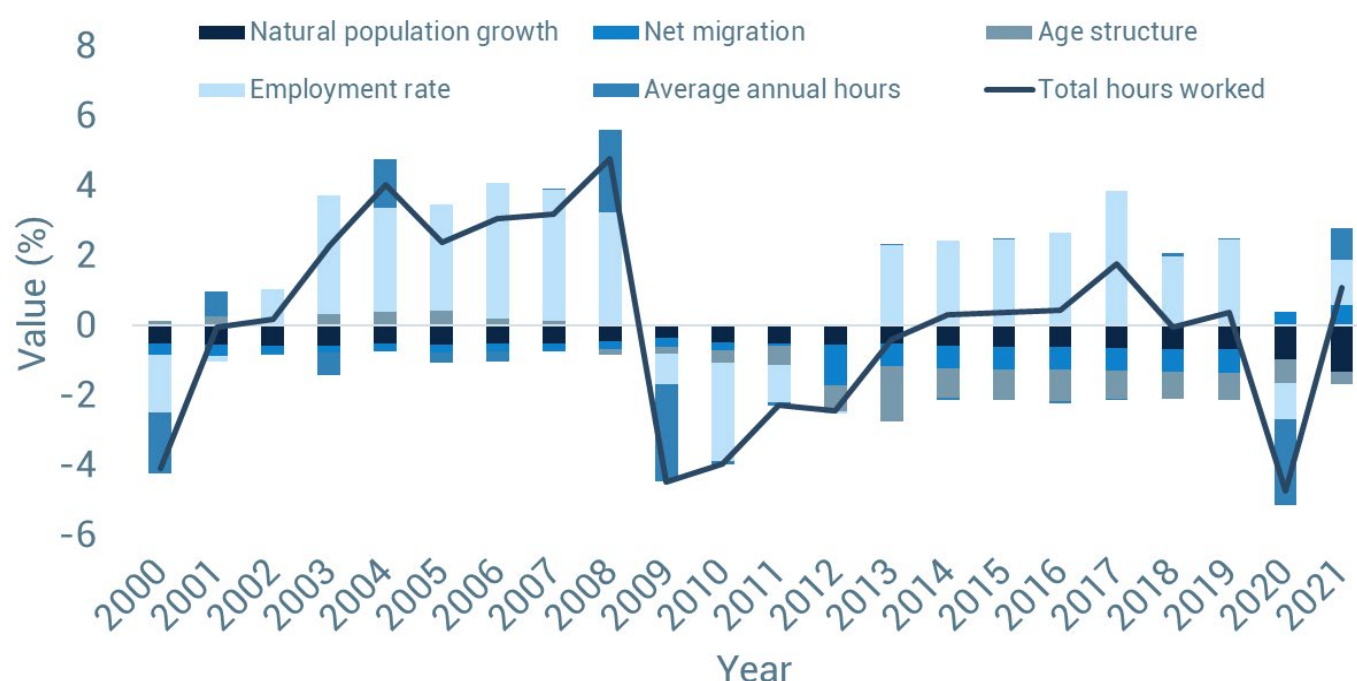
- **Natural population growth:** the impact of fertility and mortality on the total population, which directly affects the size of the labour force.
- **Working-age population:** the effects of changes in population structure on the size of the labour force.
- **Net migration:** the movement of population between countries that directly affects the amount of labour available.

The labour market component covers changes in labour resources used due to labour market changes, including:

<sup>14</sup> The quality of labour resources is measured by the educational qualifications of workers, weighted by the share in total employment of workers with different levels of education. See de Vries and Erumban (2022) for a detailed description of the data on labour force quality (available at: <https://www.conference-board.org/data/economydatabase/total-economy-database-methodology>).

<sup>15</sup> Total factor productivity is a residual component in the decomposition of GDP growth.

## 7. Decomposition of labour input in Bulgaria (detailed review), 2000-2021.



Source: Conference Board and own calculations. Labour input is measured by the total number of hours worked in a year.

- **Average hours worked per year:** measures changes in labour resources due to changes in the number of hours worked by a person in a year.
- **Change in employment rate:** reflects changes in employment related to economic conditions and labour market policies.<sup>16</sup>

## Results

Figure 6 presents the decomposition of labour force growth in Bulgaria over the period 2000-2021 in terms of two main components: demographic and labour market contributions. Overall, the negative impact of the demographic component is increasing. Particularly in the period 2012-2019, there was a significant negative contribution (an average negative effect of approximately -2.2 percentage points (p.p.) per year in this period). Figure 7 presents a more detailed decomposition of the demographic and labour-market components.

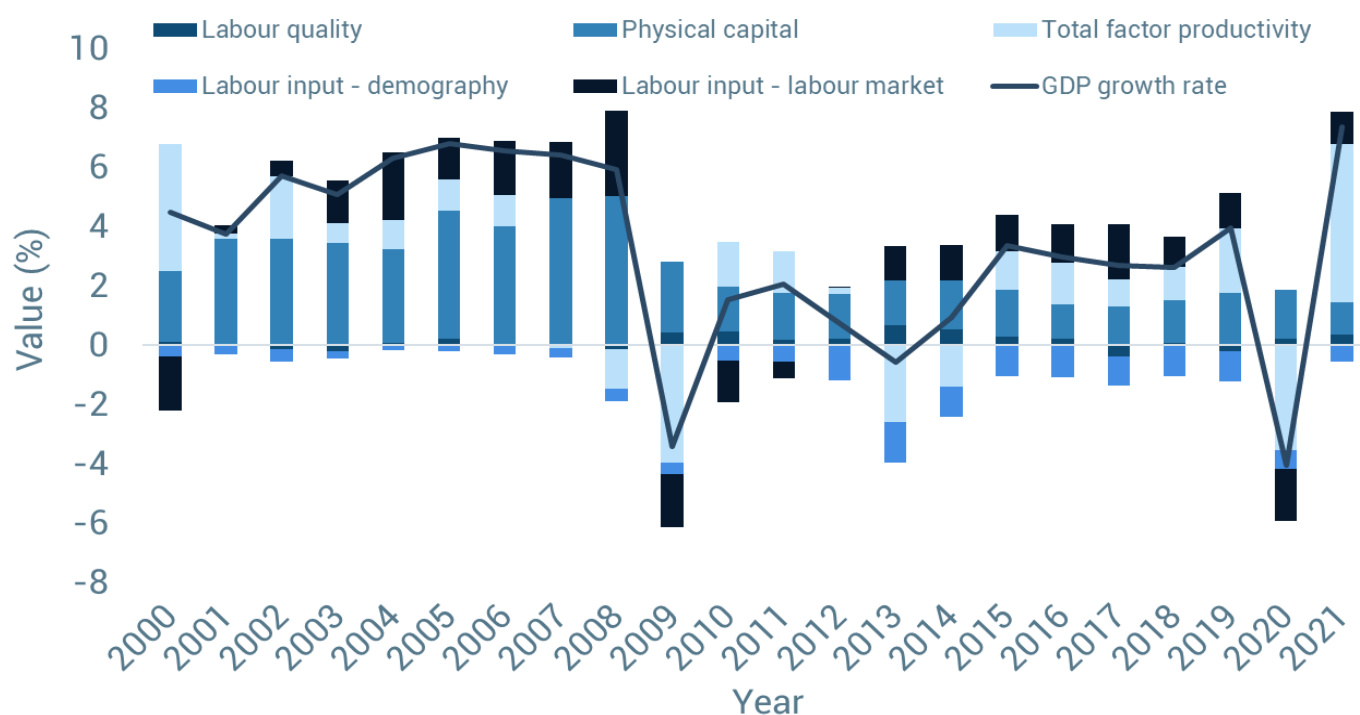
The overall average effect of the demographic component on labour force growth in the country over the whole period is approximately -1.3 p.p. per year. On average over the whole period, the negative contribution of the natural population growth was -0.6 pp/year, followed by the contribution of net migration and the working-age population at around -0.35 pp/year. In the period 2012-2019, however, net migration and population aging played a major role, with an overall negative effect of -1.6 p.p. per year on average.

As net migration is mainly concentrated on persons of working age, a significant share of the aging effect in this period is also due to net emigration. Net emigration therefore plays a major role in increasing negative demographic trends in the labour force in the second decade of the 21st century. From 2020 onwards, the effects of net migration and ageing diminish, with the main effect at the end of the period being from natural population growth, which was strongly negative

<sup>16</sup> The contribution of the employment rate is measured as a residual component in the decomposition of labour input growth, similar to how total factor productivity is measured in the decomposition of GDP growth.



### 8. Growth accounting decomposition in Bulgaria, 2000-2021.



Source: Conference Board and own calculations. The figure presents a decomposition of GDP growth (in %) using the growth accounting decomposition method.

during the Covid-19 pandemic. However, this large negative effect is likely to be only temporary.

In terms of the labour market component, the sustained increase in the employment rate is the most important positive effect on the country's labour input, while the increase in average annual hours worked is secondary outside periods of recession. The increase in employment over the entire period offsets the adverse effects of demographics. The average annual increase in the labour input due to the rise in the employment rate was 1.5 pp. Here, the positive effects increase over time (on average 1.2 pp until 2011 and on average 1.8 pp after 2011).

What are the direct contributions of these labour impacts on the country's GDP growth? Figure 8 shows the decomposition of GDP growth into its main components. Here, the labour input is divided into two subcomponents: demographic and labour market. The demographic component has an average negative effect of -0.6 p.p. per year. This effect is fully offset by the slightly higher positive

effect of the increased employment rate. After 2009, however, the negative effect of the demographic component on GDP increased significantly to around -0.9 pp per year. It cannot be fully offset by the positive labour market effects in this period.

Of the remaining components, investment in productive capital is the most significant contributor to GDP growth, averaging 3.3% over the 2000-2021 period, at 2.5 p.p. per year. This is followed by total factor productivity, with an average contribution of 0.6 p.p. per year. The quality of labour input contributes on average 0.16 p. p. p.a., while the contribution of the quantity of labour input (the sum of the demographic and labour market components) is 0.04 p.p. p.a.. Since 2010, the GDP growth rate has been slowing, and there has been a sustained slowdown in investment in productive capital,<sup>17</sup> with the contribution of capital investment shrinking to only 1.5 p.p. per year.

<sup>17</sup> See the 2023 Annual Report of the Council of Economic Analysis for further discussion on this issue.

In addition to the 2000-2021 period, a decomposition of growth and labour resources for 1961–2021 is presented in the Appendix (see Figures A12 and A13). The main conclusions of the analysis for this longer period are that the labour market component is again dominant in terms of its contribution to labour input growth, with the negative effect of the natural increase increasing smoothly over the decades due to the slower demographic changes in the country. However, the period from 2012 to 2019 emerged as the most critical period in terms of the economic effects of the country's demographic trends.

### Main conclusions

Based on this analysis, we can draw the following conclusions:

- The contribution of labour market changes is dominant in terms of growth in labour input.
- The demographic component has a moderate negative impact on GDP growth until the second decade of the 21st century. The average negative effect over the period 2000-2009 was about -0.3 p.p. per year, which represents about 6% of the average GDP growth over this period.
- After 2010, especially during the period 2012-2019, demographics began to have a strong negative impact, mainly because of net migration and rapid changes in the age structure of the population. The average negative effect on GDP growth due to demographic trends in the period 2010-2021 is around -0.9 p.p. per year, while the positive effect of the increase in the employment rate is around 0.5 p.p. (i.e. the net effect is around -0.4 p.p.). In comparison, the average GDP growth in

Bulgaria over the same period (2010-2021) was approximately 2% per year. Therefore, the negative effect on growth from demography in this period is approximately 45% of annual GDP growth.

Going forward, if current economic conditions and policies are maintained, the offsetting effect of the increase in the employment rate would likely diminish. Simultaneously, the effect of negative natural population growth is likely to persist at the same rate.

In terms of the age structure of the population, the projections of population dynamics (Figure A10 in the Appendix) suggest that the effects of aging are initially expected to diminish in the period 2025-2035, but to worsen significantly in the longer term after 2035.

The effects of net migration, due to the difficulty of accurately accounting for migration, pose the main short- and medium-term risks to the country's demographic outlook. If the 2012-2019 trend continues into the third decade of the 21st century, it will have a strong negative effect on GDP growth, comparable to that of the second decade of the 21st century (see above). Conversely, a positive contribution through this channel of impact is also possible if net migration reverses its direction in a sustained manner.<sup>18</sup>

An important feature of the economic growth decomposition methodology is that it does not account for potential interactions and indirect spillovers between the different components. For example, negative demographic trends may interact with productive capital accumulation. This is the so-called secular stagnation hypothesis.<sup>19</sup> According to this theory, adverse demographic trends and population aging lead to lower returns on investment. On the other hand, lower investment

<sup>18</sup> Positive net migration in the post-2019 period is an encouraging but still too early signal of a possible positive contribution of migration to the country's labour input and overall economic growth. The full effect would only be known after the next full census in 2031. It is possible that with an increase in the country's GDP compared to the EU average, the migration flow could permanently reverse, following the example of other European countries undergoing a process of convergence. See, for example, Cornelius (1994) and Arango (2000) on the reversal of the migrant flow in Spain in the 1980s and 1990s, and Zelinski (1971) and Martin and Taylor (1996) for theoretical arguments on the migration transition in a country's economic development.

<sup>19</sup> See Summers (2014) and Eggertsson, et al. (2019).

can lead to a further slowdown in economic growth, which can amplify migration processes. Negative demographic trends could also trigger a partially offsetting response from the employment rate due to higher wages. These interactions cannot be accounted for using the growth accounting methodology. These more complex interactions warrant further in-depth research to estimate the ultimate net benefits of different policies and their long-term impact on the economy.

## Possible demographic policies

The possible policies can be broadly divided into two groups. First, policies that directly affect a country's demography. Such policies are, for example, policies related to migration, fertility, family and health. The second group of policies are the so-called offsetting policies, which affect other (non-demographic) factors that influence economic growth. These are, for example, policies aimed at improving employment and increasing labour market participation. Other offsetting policies aim to raise productivity, for example, education policies that raise the quality of labour resources and policies aimed at increasing investment and total factor productivity growth.<sup>20</sup>

As the second group of policies is broad and concerns a much broader topic than demographic trends, in this analysis we pay special attention to the first group of direct policies. There have been several very concrete proposals for demographic policies in Bulgaria.<sup>21</sup> Therefore, without seeking exhaustiveness and committing to the net benefits of the various possible measures, we present an overview of possible policies in the form of a menu of possible measures.

## Policies promoting fertility

Policies aimed at promoting fertility have long-term economic effects. This is because their main impact on the economy is through changing the structure of the population and increasing the relative share of the working-age population. However, such changes would occur over a time horizon of decades rather than years. Therefore, such policies have a very long planning and implementation horizon.

Another feature of fertility policies is that there are strong cultural factors that sometimes dominate economic incentives.<sup>22</sup> Based on these features, we can divide the possible measures into the following subgroups:

- **Measures related to cultural factors influencing fertility:** Policies to promote social norms for families with three children. These norms can be influenced relatively quickly, for example, through well-structured social media campaigns, including behavioural measures. Other possible policies in this regard are the promotion of social behaviours to combine work and study with child-rearing.
- **Increasing the supply of organised day care for children:** increasing the supply of organised day care for children can have a strong positive effect on fertility.<sup>23</sup> Possible measures include subsidies for day care, which would increase its supply, and tax incentives for employers to provide such services, but with quality regulation (through minimum standards).
- **Financial incentives:** this type of policy requires strong targeting of the economically active population. Possible measures include increasing disposable income either through more generous

<sup>20</sup> It is important to note that since compensatory measures often also lead to an increase in disposable income and quality of life, they can themselves have positive direct effects on demographic trends.

<sup>21</sup> See, for example, the reports on this topic by the Institute of Population and Human Studies at BAS ((Борисова-Маринова, et al. (2018), Владимирова, et al. (2019), Коцева, et al. (2019), Томова, et al. (2020), Христова, et al. (2020), Черкезова, et al. (2020), Щерионов, et al. (2018)).

<sup>22</sup> See, for example, Kearney and Levine (2015) and Kearney, et al. (2022).

<sup>23</sup> See for example Bauernschuster, et al. (2016) for an assessment of the effects of such policies in Germany.

individual tax allowances or through higher direct transfers structured in a way that preserves incentives to participate in the labour market.<sup>24</sup>

- **Housing policies:** possible measures include tax breaks for family housing and facilitating mobility opportunities for larger homes for families with children through the implementation of guarantee schemes for bridge mortgages, allowing the purchase of a new home before the sale of the old home. Other options include the introduction of building regulations that increase the proportion of larger dwellings and the provision of free housing for workers in regions with acute demographic problems.
- **Parental leave:** while these measures are already widely used in Bulgaria, it is important to explore the possibilities of structuring them in a way that promotes a more equal distribution of leave between the two parents. This will also reduce gender inequalities in child-rearing.<sup>25</sup> At present, legislation provides for the accumulation of annual paid leave during maternity. This creates negative incentives for employers to hire young women and to increase the pay of those already employed. There is a need to review these legal provisions to ensure greater flexibility for young women's participation in the labour market on the one hand and increasing fertility on the other.

includes policies to encourage immigration and to manage the processes of economic emigration from the country.

- **Immigration policies:** possible measures include income tax relief for the first years after moving to the country.<sup>26</sup> To improve the targeting of these policies, it is possible to create a national fund to attract highly skilled workers (including return migration of Bulgarians living abroad), which, based on national priorities in specific sectors, would finance additional wages and cover relocation costs. Other possible policies are related to increasing the attractiveness of Bulgarian universities to international students by improving the quality of education, reducing administrative barriers, language courses, scholarships for outstanding talents, advertising campaigns, incentives for social inclusion, etc. The aforementioned housing policies in relation to fertility measures can also be considered in the context of immigration measures.
- **Managing economic emigration:** economic emigration has a strong regional profile in Bulgaria.<sup>27</sup> Thus, regional economic development policies would have positive effects.<sup>28</sup> In addition, macroeconomic stabilisation policies that support the labour market during deep recessions can have an additional indirect effect related to slowing down economic emigration. Finally, economic development policies aimed at increasing productivity and employment as well as improving the quality of public services, especially in the

## Policies targeting migration

Migration is a major short- and medium-term demographic risk in Bulgaria. Therefore, policies targeting migration are of central importance. This

<sup>24</sup> The possible effects here for relatively large, but also relatively expensive. See, for example, Cumming and Dettling (2024), who estimate that a 1% increase in disposable income leads to a 0.86% increase in fertility, with effects stronger among more liquidity-constrained families. It is important that tax benefits are at the individual level rather than the family level, given the spillover effects associated with reduced labour market participation of women (Guner, et al., 2012).

<sup>25</sup> See, for example, Thomas, et al. (2022) for possible positive effects on fertility from better balancing leave between the two parents.

<sup>26</sup> In these policies, targeting individuals with high elasticities of the relocation decision with respect to tax rates would be important to increase the effectiveness of the policy (see, e.g., Kleven, et al. (2014), Akcigit, et al. (2016), and Kleven, et al. (2020)).

<sup>27</sup> See Garrote-Sanchez, et al. (2021)

<sup>28</sup> See Nenov (BCEA Policy Brief No. 01/2023) and Nenov and Pavlova (BCEA Policy Brief No. 02/2024).

health sector, would have an additional positive effect on emigration.

## Health policies

High mortality and low life expectancy stand out as demographic indicators with particularly strong country specificity. Therefore, health policies are important direct measures to address these country-specific problems. Measures in this area can be grouped into three categories:

- **Improving access to healthcare:** possible measures include increasing funding for health expenses, such as delivery services and newborn care. There is also a need to increase access to health care and the quality of services offered in different regions.<sup>29</sup> This includes increasing the number of health professionals to ensure wider coverage of health services.
- **Expanding coverage:** this includes expanding maternal and child health services as well as improving the organisation of care for the elderly, which would also have benefits related to economic activity in economically depressed areas.<sup>30</sup> Additionally, wider support for infertility treatment, such as the introduction of free fertility tests, should be considered.
- **Increase prevention:** this includes making vaccines more widely available and promoting vaccination culture, such as cervical cancer vaccines. Other measures are related to the prevention of chronic non-communicable diseases, creating incentives for regular preventive check-ups, increasing physical activity, and reducing alcohol, tobacco, junk food, and drug consumption, as well as changes in social norms.<sup>31</sup>

## Compensatory policies

Policies that increase labour market activity and productivity are always beneficial regardless of demographic dynamics. In this context, it is important to promote and provide opportunities and incentives for later retirement and review the sustainability of the pension system. In addition, labour market participation can be supported by subsidies for childcare and day care, as well as by expanding the availability of these services.

## Main conclusions

Bulgaria is facing persistently negative population growth due to factors related to natural increase (more deaths than births) and significant emigration, especially during the period 2012-2019.

The analysis using a decomposition of GDP growth into its main components shows that demographic trends have a significant negative impact on GDP growth, especially after 2009, on the order of up to 0.9 p.p. per year. The biggest short- and medium-term risk to economic growth relates to unaccounted net emigration, which could further exacerbate pressure on the working-age population. In addition to these direct effects, demographic trends may have additional effects on GDP growth through other factors such as investment in productive capital, which requires further in-depth analysis.

To address the economic challenges arising from negative demographic trends, a combination of direct and compensatory policies with both short- and long-term horizons is required. Direct measures include a wide range of policies related to migration and fertility, and improving the health status of the population.

Demographic changes in Bulgaria pose a serious risk to economic growth and sustainability of social systems. A strategic and long-term

<sup>29</sup> See Simeonova-Ganeva and Ganev (BCEA Policy Brief No. 03/2023).

<sup>30</sup> See Nenov and Pavlova (BCEA Policy Brief No. 02/2024).

<sup>31</sup> See Георгиева, et al. (2022).



approach is required to develop and implement policies that address both the immediate and long-term consequences of these trends. Only through coordinated efforts and integrated solutions can the country overcome the demographic challenges and ensure sustainable economic development.

**The Appendix to this policy brief is available at: [cea.egov.bg](http://cea.egov.bg)**

The Council for Economic Analyses provides independent analyses and opinions on specific issues concerning the state of the Bulgarian economy, the challenges and risks facing it, as well as possible policies and recommendations to address them.

Web site: **[cea.egov.bg](http://cea.egov.bg)**

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