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# The demographic barriers of economic development in Poland, Azerbaijan, Kazakhstan and Uzbekistan by 2035 – the comparative analysis

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## Abstract

The purpose of this paper is to investigate the impact of demographic tendencies on the long-term economic development in selected former-Soviet republics (Azerbaijan, Kazakhstan, and Uzbekistan), and Poland by 2035. In light of the constant increase in the number of population in Central Asian countries by then, their sustainable growth seems to be stable in the following decades. However, the forecasts either for Azerbaijan or Poland are far less propitious. Therefore, it is particularly necessary to study the last reforms of pensions scheme there and compare their efficiency to the systems that either have already been established in Kazakhstan or are in an ongoing stadium in Uzbekistan. Hence, the in-depth analyses of all chosen countries either from demographic or economic perspectives should answer the question, whether the aging population may harm their long-term development in the assumed timeline.

## Introduction

After the collapse of the Soviet Union, almost every of its newly emerged former republics has implemented unique approaches regarding the social protection of retired people. However, it is difficult to judge if the efficient combination of social policy reforms has already been recognized in the aforementioned region by the local policymakers. According to Rajabov (2016), still profoundly Sovietized economies found themselves under the conditions of arising free-market, as fragile and unstable during the first decade after 1991. Simultaneously new republics in Central Europe

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that were under the strict influence of the USSR since the end of World War II appeared. Over the years after its downfall in 1991, many of them joined the EU. It had an extensive impact on their institutional framework and integration with Western European countries. Among them, Poland has the most populous society and the largest economy (World Bank 2019).

Nonetheless, since the very beginning of the 21st-century, when the global market prices for the raw materials had risen significantly, the economic growth in some post-soviet countries remarkably increased. Among success stories, it is necessary to indicate the examples of Russia, Kazakhstan, Azerbaijan, and to a lesser extent Uzbekistan. Every one of them largely compounded their spendings on a boost of their social development indicators. However, the sub-prime crisis that dramatically destabilized the international financial market after 2007, exposed their reliance on the demand capabilities in developed countries.

Notwithstanding in this research paper, Russia that Goldman Sachs included in the BRIC acronym in 2004 (O'Neill, 2005) is not taken into account. The author tries to examine the successful policies that have recently been implemented to promote the development, in the light of the aging-population problem, in Azerbaijan, Kazakhstan, and Uzbekistan. To make this case comprehensive, it is needful to present a comparative study with the CEE region representative. Considering the dynamic of growth since 1991, GDP per capita change in current USD (World Bank 2019) and the pace of demographic alteration, Poland pretends to be a well-adjusted example.

This paper proceeds as follows: after an introduction, the second section concentrates on the theory of economic development in light of the aging population. The third section describes the pension systems in the selected countries. The fourth section outlines the growth tendencies and the main barriers to sustainable development that result from demographic decline. The end section concludes the results of the study and highlights the scope for further research.

## Literature review

There is no doubt that the relation between aging of the population and its impact on the long-term, sustainable growth of the country highly depends on its stage of development. The developed countries' societies have been getting significantly older for decades. As the main arguments that enhance this tendency could be considered either dramatically decreasing in birth rates or steadily rising life expectancy rate within them (on the purpose of this research OECD members represent this group) (World Bank 2019). Therefore, those societies work on average significantly longer than employees in the former soviet states (Eurostat 2018). Hence, it is essential to present the theoretical framework of this phenomenon that has been discussed by researchers hitherto.

The research paper prepared by Prettner (2013) claims that in the endogenous model of growth, the one based on the principal assumptions of Romer's fundamental study

(1990), thrives on thanks to the demographic processes. As of its result, the number of investments in R&D increases, as well as the long-run economic growth perspectives of industrialized countries. Although in Prettner's viewpoint, the aging of the population is beneficial for the long-run economic growth. However, it is solely on the condition that the negative results of the decreases in fertility are overcompensated by the outcomes of reductions in mortality.

Prettner's study could be supplemented by the exploration conducted by Nagarajan, Teixeira, and Silva (2013). To conclude their examination: aging of the population has improved the economic growth of developed countries, but at the same time an obstacle has never seen in the past has occurred. As a result, aging influences might be considered a new experience for the world. Furthermore, Muggeridge's (2015) geographic input to this study is also meaningful. He underlines there that only the more economically developed regions (countries) have potentially benefited from population aging when less developed ones have not. Finally, the research of Maresova, Mohaleska, and Kuca (2015) pays attention to the changing market trends related to the steadily rising health expenditure, and business opportunities in that context, regarding European Union countries since 2011.

On the contrary to above-presented opinions is the paper prepared by Maestas, Mullen, and Powell (2016). Their findings reveal that between 1980, and 2010 GDP per capita in the US decreased by 9.2% as a result of the population aging (the share of older people increased by 16.8% in the same period). Another significant remark from this research exposes the subsequent influence of an increasing number of elderlies on economic growth in the following decade. Between 2020-2030 the older population share will rise by 11% what should negatively affect the future annual economic growth of 0,6 percentage points therein the US. This viewpoint is bolstered either by data presented in Guarino's article (2018). Similar concerns highlight Devictor (2012) in his study. He examines there that the main hurdle for the sustainable development of Poland is its quickly aging population. If that tendency maintained until 2020, the average annual GDP per capita growth would fell from 4,7% (2011–2020) to around 3% between 2021–2030.

To conclude this section, it is necessary to highlight the results of the analysis pursued by Sukpaiboonwat, Plyngam, and Jaroensathapornkul (2014), who based their investigation on the experiences of High Performing Asian Economic countries. Further, they emphasize that older residents can contribute to economic growth because of knowledge transfer. Therefore, the learning of younger from the elderly population experience is the essential success to develop their skills. This observation is particularly valuable if taken into account how older people are traditionally respected in Asian societies.

## The structure of retirement systems in selected countries

Polish retirement system characterized as a defined benefit (DB) pay-as-to-go scheme before 1999. Wong (2015), describes it as a plan in which the current pension welfare of the elderly is financed by a contribution from the current working population. Moreover, this pension model was inherited by all post-Soviet states after the collapse of the USSR in 1991 (Grishchenko, 2015).

Nonetheless, the Polish government decided to dramatically change the internal structure of the pension scheme and make it more diversified. Since then, it is based on the three-pillar system. The first one persisted as a defined contribution scheme, based on the Social Insurance Fund, and led by the Social Management Institution. The second pillar was based on open pension funds that were managed by the private fund managers. The third pillar consists of the voluntarily paid funds, which include for example Personal Voluntary Plans, Individual Pensions Insurance Accounts, or Voluntarily Occupational Pensions Plans (Leszko, Lamparska, Trempala, 2015).

Since 2014 the participation in the first two pillars was mandatory and amounted proportionally for 12.22%, and 7.3% of gross wages. However, the previous ruling power decided to weaken the capital pillar and redirect the larger volume of compulsory contribution toward the Social Management Institution, and to take over 51.5% of its assets. After the reform, the number of capital inflows to the second pillar has significantly decreased (around 0.2 percent GDP), but the share of assets that preserves under its control remains still noteworthy (around 8 percent GDP) (Łaszek, 2019).

Notwithstanding the implementation of the subsequent modernization to the Polish pension system, its efficiency has been remarkably declining for years. According to the data annually presented by OECD (2017), the gross pension replacement rate has fallen between 2014, and 2017 from 43.1% in general to 31.6% for men, and 27.9% for women. This negative change might be influenced by the reduction of the long-term planned retirement age (in 2015) from 67 years old in general (set in 2013) to 65 years old for men and 60 years old for women (as one of the very few countries in the world). To reverse this negative tendency, the current government decided to introduce the Employees Capital Pension Scheme from the 1st of July 2019. Their main goal is to encourage employees to voluntarily pay between 2–4% of their gross salaries on top of their obligatory monthly payments. Together, the employer is obliged to pay up to 4% of the employee's wage into the retirement scheme (Barteczko, 2018).

To sum up this subsection, it is necessary to present the predicted structure of the Polish retirement system in 2020. Biskupski (2019) claims that the second pillar, in its current shape, is going to be eliminated until then. As a result, the pension system will consist of: defined contribution scheme, employee capital pensions scheme and voluntarily paid funds. The number of assets, that is still accumulated in the remov-

ing Open Pension Funds, amount to 36.95 billion euros<sup>2</sup>. Moreover, its number of shareholders equals to 15.8 million Polish citizens. They will be able to decide whether their accumulated assets so far should be transferred to the first pillar or the third one. The government anticipates that around 80% of Poles will choose the second option. As a consequence, the state budget is going to earn an additional 4.4 billion Euro<sup>3</sup> by 2021, as the transformation fee amounts to 15% of the total value of owned assets by individual participants (Bankier, 2019).

The scheme described above has been considered as well working pattern in many post-Soviet republics for years. Analyzing pension systems there, it seems that the most courageous model has steadily been developing in Kazakhstan since 1998. Comparing its exact structure to the aforementioned instance of Poland, it is possible to identify notable similarities between them. As one of the most outstanding examples could be acknowledged the decision to leave an inefficient PAYG model and replace it with a more diversified paradigm based on the three pillars (following the main assumptions of the Chilean model, that was introduced in 1980 there).

Nonetheless, the Kazakh government also decided to increase the retirement age from 55 to 58 years for women and from 60 to 63 for men. According to Buribayev, Mukaldyeva, Nurahmetova, Uteyev, Nessipbekov, and Khamzina (2016), the in-depth reforms implemented in 1998 were only the beginning for the general reorganization of the entire pension system in Kazakhstan that first phase ended only in 2013. Its positive outcomes are presented in his research paper by Belanovsky (2014). The value of minimal pension between 2000-2011 increased sevenfold (to 163 USD), the average one rose eightfold (to 246 USD) and the maximum one changed by 640% (to 355 USD). Nowadays, the Kazakh pension system mainly consists of universal, mandatory and voluntary pillars.

Citing Maltseva and Janenova (2018), the zero pillar comprises of the basic social pension. All citizens who entered a personal age, have a right to participate in its payments. In 2018 the minimum base pensions amounted \$45 what corresponds to 54% of the minimum subsistence level (MSL) in Kazakhstan. The first pillar is based on an obligatory individual account defined contribution of a 10 % rate for workers. The second pillar, previously based on the solidarity pension scheme, has consequently been substituting for the voluntary pension scheme of the United Pension Fund that was set in 2013 (current third pillar). Nevertheless, until its phase-out around 2030, the PAYG pension will continue to be paid as long as there are still workers or pensioners with at least six months of employment before January 1998. The second pillar contains also a compulsory contribution for workers employed

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2 Own calculation of an exchange rate on the basis of National Polish Bank data. Retrieved from <https://www.nbp.pl>

3 Own calculation of an exchange rate on the basis of National Polish Bank data. Retrieved from <https://www.nbp.pl>

in high-risk professions, with a contribution rate of 5% paid by employers. To start obtaining the pension transfer from all pillars, it is necessary to prove at least 10 years of professional activity, and the real participation in making a contribution to the Pension Funds.

Probably, from 2020 on, an additional notional defined contribution pension financed through a contribution rate of 5% paid by employers is going to be implemented. All of these reforms should ensure the replacement rate at the level of at least 40% and above in the future decades. Today, the old-age replacement rate is around 53% (191 EUR<sup>4</sup> to 358 EUR<sup>5</sup>). However, if taking into account only the full employment rate of 25 years for men and 20 years for women, it accounts for 60% and may increase 1% for every additional year up to 75%. The retirement age is still 58 years for women and 63 years for men, but between 2018–2027, this age will gradually level off at 63 years for both sexes (Egemen Qazaqstan, 2018).

Between 2001–2017 a similar pension scheme existed in Azerbaijan. It was an effect of tight cooperation between the local government and International Organizations, which suggested the adoption of a 3-tier pension system. In the final version, it was expected to consist of the PAYG component, an additional mandatory insurance part, and a third voluntary scheme. Social protection became the main development priority for the authorities shortly after the sudden rise of strategic fossil fuel prices on the international market at the beginning of the 2000s. This inflow of foreign capital enlarged state budget reserves and fostered the restoration of the entire local social policy. It was needful because the first years after regaining independence in 1991 characterized by economic downturn and uncertainty. Despite plentiful natural resources almost half of society lived in inadequate conditions before (ILO, 2016).

Investigating the structure of discussed reform its elements were executed gradually. Since 2006, the second pillar (notional defined contribution) was officially brought into existence altogether with the introduction of individual accounts. It is fully financed either by employees who are obliged to pay 3% monthly of their gross salaries, or employers with a contribution of 22% of payroll. In the case of the basic pension, its value profoundly corresponds to the minimum standard and progress to reach progressively the subsistence minimum for the people who are unable to work (Bitinas, 2018). From 1st March 2019, its value was raised by 38,5% from 61,24 EUR to 84.46 EUR<sup>6</sup>. The base pension is provided by the government to only those who worked at least 12 years and are in retirement age (similar requirement as in Kazakhstan). The residuary amount

4 Own calculation on the basis of Kazakhstan data. Retrieved from <http://en.egemen.kz/article/188704-the-average-pension-is-82-thousand-tenge-in-kazakhstan> and National Bank of Kazakhstan data. Retrieved from <https://nationalbank.kz>

5 Own calculation on the basis of Azernews data. Retrieved from <https://www.azernews.az/region/133417.html> and National Bank of Kazakhstan data, access: <https://nationalbank.kz>

6 Own calculation on the basis of Azernews data. Retrieved from <https://www.azernews.az/business/146969.html> and Central Bank of Azerbaijan. Retrieved from <https://www.cbar.az>

depends on the transferred savings to the individual account (Verulava, 2018). The third pillar was never physically implemented.

Consequently, in 2017 an amendment to the current pension system that officially transited the previous three pillars system to a two-stage one was enacted. In consequence, nowadays the old-age pension consists only of an insurance component and voluntary contribution funded by the individual itself. The base component was removed from the pension scheme. Same as in Kazakhstan, Azerbaijani officials are consequently increasing the minimum limit of old-age pension. Currently, men acquire it upon completion of the age of 64 years and women of 61 years. However, it was the government decision (contained in the amendment) to equal the pension age for both sexes at the level of 65 years old. As a result, it will be respectively reached by men in 2021, and by women in 2027 (CESD Research Group: 2017). Today, the replacement rate is computed by around 41% (126,66 EUR<sup>7</sup> to 308,66 EUR<sup>8</sup>).

The only country presenting in these papers, that has never updated its pensions scheme and is still fully-based on the PAYG structure is Uzbekistan. The main reason for preserving this outdated structure was an outstandingly positive demographic tendency between 1991–2017. According to the data collected by The State Committee of the Republic of Uzbekistan on Statistics (2017), the number of local citizens increased then by 11,5 million people, or 55,9 % (from 20,61 million to 32,12 million). Nonetheless, the percentage of elderly persons has been consequently raising, and it is supposed that it will reach the level of 11% by 2025 (what is still much less than in Kazakhstan, Azerbaijan and especially Poland). In comparison, based on the research of Off-budgetary Pension Fund (2018), in 2011 old-aged part of the society stood barely at 6,2%. Moreover, the retirement age in Uzbekistan begins after approaching 60 years old by men and 55 years by women (with at least 7 years of actual employment). These figures, to cite Dosmuhametova (2018), are the lowest among CIS countries.

To face the demographic transition that seems to be inevitable, the recently presented project of the social policy improvement assumes the increase of retirement age for both sexes to relatively 63 years for men and 58 years for women in 2023. Furthermore, the minimum needed age of active professional engagement should not be lower than 10 years until then (Rachmatova, 2019). Today, the resources of Off-budgetary Pension Fund that is responsible for every pension transfers are based on inflows from fixed revenue from the Single social payment (25% of the wages fund is paid by legal entities and 15% for small firms), citizens' insurance payments (7% of individuals' salaries); mandatory payments (1,6% of the sales revenue of goods) (Ra-

7 Own calculation on the basis of Azernews data. Retrieved from <https://www.azernews.az/nation/140478.html> and Central Bank of Azerbaijan. Retrieved from <https://www.cbar.az>

8 Own calculation on the basis of CEIC data. Retrieved from <https://www.ceicdata.com/en/azerbaijan/average-monthly-salary-statistical-classification-of-economic-activities-rev-2/average-monthly-salary> and Central Bank of Azerbaijan. Retrieved from <https://www.cbar.az>

khmonov, 2016). According to the Ministry of Finance of the Republic of Uzbekistan (2018), the old-age replacement rate is significantly lower than in Kazakhstan and Azerbaijan and amounted to 36,6% in 2017 (51,44 EUR to 140,32 EUR)<sup>9</sup>.

Despite the fact that the percentage of elderly persons will slightly increase until 2035 (from around 9% today to 12,65% then), their total number will raise almost about 55% from 3,2 million today to 4,94 million then<sup>10</sup>. The total population of the country is going to reach a level of 39 million<sup>11</sup> inhabitants until 2035. Hence, the implementation of pension reforms is one of the crucial challenges for the current government. It is assumed that the future pension scheme is going to be modeled on the elements successfully executed so far in Poland, Czech Republic, South Korea and Russia (Rachmatova, 2019).

To summarize this section, it is necessary to compare the demographic tendencies based on the data presented earlier in this paper. Nowadays, the most populated country remains Poland nonetheless its number of inhabitants will be steadily shrinking in the next 15 years, from 37,85 million today to 36,18 in 2035. At the same time, the reverse trend should be observed either in Uzbekistan (from 33,47 million to 39,07) or Kazakhstan (from 18,78 million to 21,48). The most unchangeable situation is going to be kept in Azerbaijan (chart 1).

As a result of the low fertility rate in Poland, there is a high likelihood that almost the third part of that society will consist of people aged 60 and above until 2035 (chart no. 2). In described in this paper former-soviet states, these numbers are going to be demographically more hopeful, but the steady aging of the society will be observed there as well. In Uzbekistan, the number of elderly persons should not exceed 13% (8,3% today) of the population by 2035, but in Kazakhstan, this variable will likely increase from 12,2% today to 16,4%, and in Azerbaijan from 11,6% now to 18,7% by then. The above-mentioned fertility rate is going to remain over two births per woman only in Kazakhstan and Uzbekistan by 2035. Nevertheless, in both cases, there will be seen a decreasing tendency in this term (more in chart no. 3).

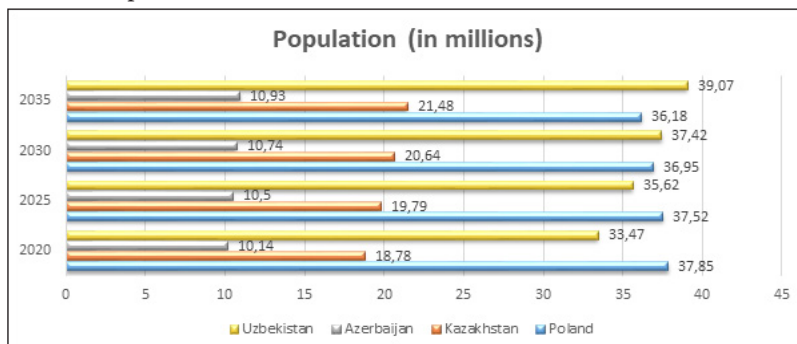
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9 Own calculation on the basis of State Budget data p. 80. Retrieved from [https://www.mf.uz/media/file/state-budget/pub/budjet\\_for\\_citizens.pdf](https://www.mf.uz/media/file/state-budget/pub/budjet_for_citizens.pdf) and Central Bank of Uzbekistan. Retrieved from <https://nbu.uz/>

10 Own calculation on the basis of United Nation data. Retrieved from <https://population.un.org/wpp/DataQuery/>

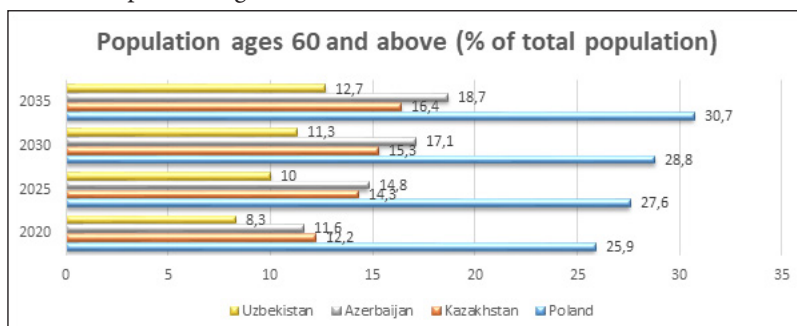
11 Own calculation on the basis of United Nation data. Retrieved from <https://population.un.org/wpp/DataQuery/>

Chart 1: Population between 2020–2035



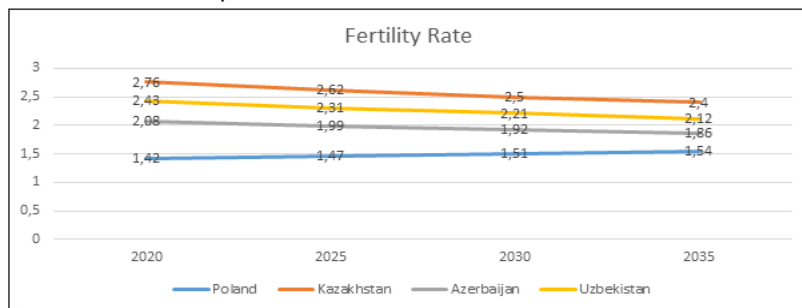
Source: Own counting based on United Nations database: <https://population.un.org/wpp/DataQuery/>

Chart 2: Population ages 60 and above 2020–2035



Source: Own counting based on United Nations database: <https://population.un.org/wpp/DataQuery/>

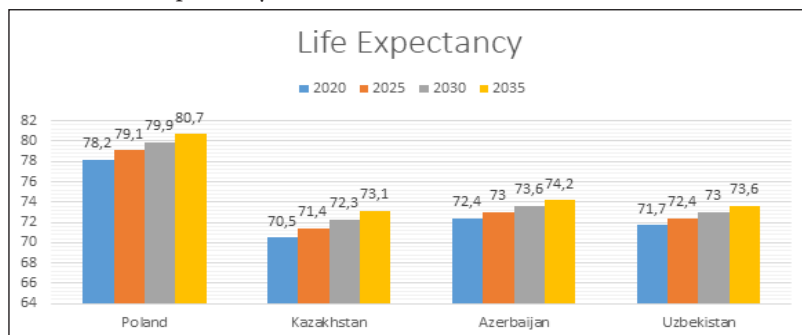
Chart 3: The Fertility Rate 2020–2035



Source: Own counting based on United Nations database: <https://population.un.org/wpp/DataQuery/>

Analyzing data regarding life expectancy (chart no. 4), and retirement age (Table 1), there are no doubts that people are going to live longer in each of the investigated countries. Therefore, the local governments are somehow compelled to implement structural reforms and seek new opportunities to diversify the structure of capital inflows to cover unwaveringly rising budget spendings on retiree maintenance. Hence, it seems to be evident that the responsibility for the final amount of pension payment should both depend upon the state and the citizen. As a result of PAYG pension scheme, still working in Uzbekistan, becomes less useful than ever before.

Chart 4: Life Expectancy 2020–2035



Source: Own counting based on United Nations database: <https://population.un.org/wpp/DataQuery/>

Table 1: Retirement conditions in selected countries

|                                              | Poland | Azerbaijan | Kazakhstan | Uzbekistan | Russia |
|----------------------------------------------|--------|------------|------------|------------|--------|
| Replacement rate (average for both sexes, %) | 29,75  | 41         | 53         | 36,6       | 36     |
| The pension age for men                      | 65     | 64         | 63         | 60         | 60     |
| The pension age for women                    | 60     | 61         | 58         | 55         | 55     |
| The average pension wage (in EUR)            | 492,7  | 126,7      | 191        | 51,44      | 196,67 |

Source: Own calculation based on data from Azerbaijan Ministry of Finance, The Ministry of Finance of the Republic of Kazakhstan, The State Committee of the Republic of Uzbekistan on Statistics, GUS, Rossiyskaya Gazeta.

## How old-aging may affect sustainable economic growth in investigated countries.

The second decade of the 21st-century could be characterized by stability and positive economic performance in most of the described countries here. The highest development and sustainability have been exposed by the macroeconomic figures related to the Polish economy (table 2). Between 2010–2018 its average annual GDP growth amounts to 3,53% and reaches an even higher level of 3,59% in per capita terms. Respectively the GDP per capita expressed in current USD has raised about 18%, from 12 600 USD to 15 424 USD then. In 2018 the number of citizens was almost similar as in 2010 (from 38,04 to 37,88 million inhabitants<sup>12</sup>). As a result, the inflation as GDP deflator barely suppressed 1% on average and amounted to 1,36% then.

Table 2: Poland Economic Outlook 2010–2018

| Poland | GDP growth (annual %) | GDP per capita growth (annual %) | Inflation, GDP deflator (annual %) | GDP per capita (current US\$) |
|--------|-----------------------|----------------------------------|------------------------------------|-------------------------------|
| 2010   | 3,61                  | 3,9                              | 1,66                               | 12 600                        |
| 2011   | 5,02                  | 4,96                             | 3,23                               | 13 894                        |
| 2012   | 1,61                  | 1,61                             | 2,35                               | 13 146                        |
| 2013   | 1,39                  | 1,45                             | 0,29                               | 13 781                        |
| 2014   | 3,32                  | 3,4                              | 0,5                                | 14 348                        |
| 2015   | 3,84                  | 3,91                             | 0,77                               | 12 572                        |
| 2016   | 3,06                  | 3,11                             | 0,31                               | 12 432                        |

12 Own calculation based on World Bank Database: Retrieved. from <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=UZ-AZ-KZ-PL&start=2010>

|                    |      |      |      |        |
|--------------------|------|------|------|--------|
| 2017               | 4,81 | 4,8  | 1,98 | 13 861 |
| 2018               | 5,15 | 5,14 | 1,14 | 15 424 |
| Average/<br>Change | 3,53 | 3,59 | 1,36 | 22%    |

Source: Own calculation based on World Bank database

However, the forecast presented by Devictor (Section II) assumed even better performance. Furthermore, the growth perspectives for the coming decade (2021–2030) should be even worse than the figures achieved by the Polish economy so far. Either the decreasing number of population (from current 37,88 to 36,95 million in 2030 or still rising amount of elderly persons (from 25,9% of the total population now to 28,8% in 2030, successfully diminishing the growth potential of the country. Therefore it is expected that the old-age dependency ratio will increase from 28,4 at the beginning of 2020 to 37 in 2030<sup>13</sup>. If the old-age minimum pension age does not raise soon, Poland will face the significant problem of pension scheme inefficiency.

Among selected for this examination former-soviet states, Kazakhstan noted the most predictable development during the last decade. Its average GDP growth between 2010–2018 amounted to almost 4,5% when the number of citizens rose by nearly 2 million (from 16,32 to 18,28 million<sup>14</sup>). Hence, the growth per capita was respectively lower and calculated at 3%. Nevertheless, the analysis of inflation rate change at the same time reveals economic volatility in the analyzed period. What is more, the inflation as GDP deflator was sharply shifting from 1,82% to even 20,54% then, and its average value amounted to 10%. As an effect, the GDP per capita expressed in current USD has almost not changed and rose only by 3% between 2010-2018 (more detailed macroeconomic statistics in table 3).

Table 3: Kazakhstan Economic Outlook 2010–2018

| Kazakhstan | GDP growth<br>(annual %) | GDP per capita<br>growth (annual %) | Inflation, GDP<br>deflator (annual %) | GDP per capita<br>(current US\$) |
|------------|--------------------------|-------------------------------------|---------------------------------------|----------------------------------|
| 2010       | 7,3                      | 5,79                                | 19,54                                 | 9 070                            |
| 2011       | 7,4                      | 5,87                                | 20,54                                 | 11 634                           |
| 2012       | 4,8                      | 3,33                                | 4,79                                  | 12 387                           |
| 2013       | 6                        | 4,49                                | 9,5                                   | 13 891                           |
| 2014       | 4,2                      | 2,68                                | 5,77                                  | 12 807                           |

13 Own calculation based on United Nations database, access: <https://population.un.org/wpp/DataQuery/>

14 Own calculation based on World Bank database, access: <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=KZ&start=2010>

|                    |      |       |       |        |
|--------------------|------|-------|-------|--------|
| 2015               | 1,2  | -0,27 | 1,82  | 10 511 |
| 2016               | 1,1  | -0,33 | 13,64 | 7 715  |
| 2017               | 4,1  | 2,69  | 8,6   | 9 030  |
| 2018               | 4,1  | 2,74  | 6,35  | 9 331  |
| Average/<br>Change | 4,47 | 3,00  | 10,06 | 3%     |

Source: Own calculation based on the World Bank database.

Taking into account the fact that the economic uncertainty in Kazakhstan depended either on the volatile prices of crude oil or the internal political reconstruction since 2010, the near future in terms of demography looks long-range. Having the highest fertility rate in studied countries (see chart 3), the number of inhabitants tends to exceed 20 million in 2030. Moreover, the percentage of the population ages 60 and above is going to increase slowly and will reach only around 16,5% by 2035. Consequently, the old-age dependency ratio will augment from 12,6 to 18,3%<sup>15</sup> by then. In Poland, that indicator will be almost twofold higher. What is more, the Kazakh pension scheme has consequently been reforming for over 20 years and seems to be well-matched to the social demographic structure soon.

Azerbaijan, as the country that highly depends on the price of fossil fuels (same as Kazakhstan and Uzbekistan), is the only example used in this research that's real economy shrunk in assuming timeline. GDP per capita expressed in USD was 19% lower in 2018 than in 2010. Furthermore, the percentage of GDP hardly raised (only by 0,28%) when the number of citizens augmented by around 1 million people (from 9,05 to 9,94 million<sup>16</sup>). GDP's average annual growth was estimated at 1,46% then. As in Kazakhstan, local citizens have encountered essential price fluctuations since 2010. Even though the average inflation as GDP deflator amounted to the figure of 8,31% between 2010-2018, its marginal values varied from -8,81% to 24,61% (more detailed macroeconomic statistics are collected in table 4).

Table 4: Azerbaijan Economic Outlook 2010–2018

| Azerbaijan | GDP growth<br>(annual %) | GDP per capita<br>growth (annual %) | Inflation, GDP<br>deflator (annual %) | GDP per capita<br>(current US\$) |
|------------|--------------------------|-------------------------------------|---------------------------------------|----------------------------------|
| 2010       | 4,79                     | 3,55                                | 13,83                                 | 5 843                            |
| 2011       | -1,57                    | -2,85                               | 24,61                                 | 7 190                            |

15 Own calculation based on United Nations database. Retrieved from <https://population.un.org/wpp/DataQuery/>

16 Own calculation based on World Bank database Retrieved from <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=AZ&start=2010>

|                    |       |       |       |       |
|--------------------|-------|-------|-------|-------|
| 2012               | 2,2   | 0,85  | 2,85  | 7 496 |
| 2013               | 5,84  | 4,48  | 0,41  | 7 876 |
| 2014               | 2,8   | 1,52  | -1,33 | 7 891 |
| 2015               | 1,05  | -0,15 | -8,81 | 5 500 |
| 2016               | -3,06 | -4,14 | 14,63 | 3 881 |
| 2017               | -0,28 | -1,26 | 16,73 | 4 147 |
| 2018               | 1,41  | 0,51  | 11,87 | 4 721 |
| Average/<br>Change | 1,46  | 0,28  | 8,31  | -19%  |

Source: Own calculation based on the World Bank database.

The demographic investigation does not reveal any significant capacity and exhibits Azerbaijan as a country that is gradually going to become more similar to Poland and other European countries than Kazakhstan or Uzbekistan in a number of birth per woman. The fertility rate will be continuously decreasing and should reach 1,86 (2,08 today) in 2035. Moreover, either the percentage of elderly persons may increase from 11,6% to 18,7% in 2035, or the old-age dependency ratio from 9,7% to 19,9%<sup>17</sup> at the same time. Consequently, from this viewpoint, the amendment implemented to the pension scheme in 2017 looks like the necessary upgrade. As of its result, the main financial burden related to the future pensions scheme maintenance should be redirected from the government to citizens in the coming decades.

Since the death of President Islam Karimov in 2016, Uzbekistan is undergoing meaningful modernization of the entire state that reflects its reorientation from an inward-looking, insulated economy to the open market version. Between 2010-2018 GDP average annual overall growth was estimated at 7% and 5% in per capita terms (ones of the highest in Asia). Although its GDP per capita expressed in USD has regularly declined for the last three years (from 2 615 USD in 2015 to 1 532 USD in 2018), the annual growth of Uzbekistan fell under 5% only once between 2010–2018 (in 2017). In 2010 this variable amounted to 1 377 USD. Furthermore, as the most populated community in Central Asia, with a promising tendency for future proliferation, the number of Uzbeks enlarged from 28,56 to 32,96 million at the same time<sup>18</sup>. The only barrier that could hamper the country's sustainable development in the fol-

17 Own calculation based on United Nations database. Retrieved from <https://population.un.org/wpp/DataQuery/>

18 Own calculation based on World Bank database, Retrieved from <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=UZ&start=2010>

lowing decade is high inflation. Its average rate amounted to 18,4% in the assuming period (table 4).

Table 5: Uzbekistan Economic Outlook 2010–2018

| Uzbekistan         | GDP growth<br>(annual %) | GDP per<br>capita growth<br>(annual %) | Inflation,<br>GDP deflator<br>(annual %) | GDP per capita<br>(current US\$) |
|--------------------|--------------------------|----------------------------------------|------------------------------------------|----------------------------------|
| 2010               | 8,48                     | 5,46                                   | 16,48                                    | 1 377                            |
| 2011               | 8,28                     | 5,41                                   | 16,59                                    | 1 565                            |
| 2012               | 8,18                     | 6,6                                    | 14,93                                    | 1 740                            |
| 2013               | 8,03                     | 6,35                                   | 14,25                                    | 1 908                            |
| 2014               | 7,18                     | 5,39                                   | 36,76                                    | 2 492                            |
| 2015               | 7,45                     | 5,59                                   | 10,42                                    | 2 615                            |
| 2016               | 6,09                     | 4,27                                   | 8,75                                     | 2 568                            |
| 2017               | 4,46                     | 2,72                                   | 19,43                                    | 1 827                            |
| 2018               | 5,13                     | 3,33                                   | 28,12                                    | 1 532                            |
| Average/<br>Change | 7,03                     | 5,01                                   | 18,41                                    | 11%                              |

Source: Own calculation based on the World Bank database.

Uzbekistan is going to accommodate around 39 million people by 2035, 12,7% of which will be perceived as elderly ones (only 8,3% today). Although the fertility rate will be continuously shrinking in the following 15 years (from 2,43 to 2,12), the old-age dependency ratio should not exceed 12,5% then<sup>19</sup>. Having a populous and young society, Uzbekistan will have an encouraging environment for an occurrence of long-term, sustainable development soon. Furthermore, despite the promising demographic conditions, the local ruling power is already seeking an opportunity to improve the living standard of old-aged persons. Accordingly, the government found it necessary to implement a modern, multi-pillar pension scheme that will successfully replace the currently working, outdated PAYG system.

## Discussion

Explaining the above-obtained results of this research, that seems to be necessary to link investigated countries with their current stage of the Demographic Transition Model. Taking into account the effects presented in his research by Grover (2014),

<sup>19</sup> Own calculation based on United Nations database, Retrieved from <https://population.un.org/wpp/DataQuery/>

it is possible to assign the above-described cases to three different groups. Current demographic trends in Kazakhstan and Uzbekistan classify them to be in turn from 2nd to the 3rd stage (out of five) that characterizes by a low death rate and a significant decrease in birth rates. It means that the local authorities have already provided significant improvements in healthcare, education system and food and sanitation infrastructure. Nonetheless, the fertility rate in both countries is gradually declining (chart 3). Therefore, lower birth rates combined with low death rates will slow the pace of their overall population growth after an expected transformation to Stage 3 what should happen there until 2035.

On another hand, citing the World Bank report prepared by Bussolo, Koettl, and Sinnott (2015) is the fact that demographic alteration in former-Soviet states is occurring differently than in developed countries. Therefore, the rise in average age in Eastern Europe and Central Asia is mostly attributable to low and declining fertility rates rather than to increases in longevity. Nevertheless, this same source defines the Kazakh pension scheme as the only one within Central Asian states with a low risk of higher poverty among elderly persons.

Azerbaijan, considering as one of the fastest-growing former-Soviet states in the first decade of the 21st century might be included in the 3rd stage group of countries in Glover classification. Notwithstanding, there are still essential uncertainties regarding the economic, social or political stability. The last decade exposed the dramatic dependence of the development of the country on fossil fuel prices. Therefore, it is challenging to consider Azerbaijan as the state that reassures decent living conditions to its citizens. On another hand, anticipated stabilization in terms of population number contributes significant advantages for a country, giving opportunities to strengthen its economy as a prominent number of its citizens will be in their working age. To achieve the 4th stage by 2035, Azerbaijan will be obliged to be attributed in an efficient and diversified economy, educated population, widely-available healthcare and augmented employment opportunities for women.

The pace of Poland's development after 1989<sup>20</sup> resembles in many aspects the trends that were presented by countries as Germany, Netherlands or France between 1960 (the beginning of the post-war economic boom) and 1990<sup>21</sup>. Nevertheless, Poland has never been a recipient of mass inflows of emigrants from post-colonial countries. There are doubts that their arrival to Western European countries after World War II had a positive influence on the change of diminishing fertility rate, observed within

20 Own calculation based on World Bank database. Retrieved from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2018&locations=PL&start=1990>

21 Own calculation based on World Bank database. Retrieved from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=1990&locations=NL-DE-FR&start=1960>

its native citizens<sup>22</sup>. Therefore, Poland experiences loss to the overall population today, mainly due to one of the lowest fertility rates in the entire EU and a negative rate of natural increase (the number of deaths exceeds the number of births). Regarding Grover order, Poland shall be considered as a member of the last, 5th stage group of the countries. However, real economic performance and negative long-term net migration rate complicate the final assessment of this specific case.

## Conclusions

Through the examination of selected variables and indicators related to the aging of populations in Poland, Azerbaijan, Kazakhstan and Uzbekistan, I intended to determine the trends in demographic performance of selected nations and barriers for their long-term development by 2035. As the research reveals, the youngest societies are currently in Central Asian countries that either has built an efficient pension scheme despite the relatively low number of pensioners (Kazakhstan) or are in the process of its reconstruction (Uzbekistan). Therefore, they seem to be prepared for the demographic transition that is going to begin there in the future. If they maintain their integration with the global market (especially Uzbekistan), it is feasible that their positive growth trend will be kept in the following decades as well.

The forecast for Azerbaijan's development implies less propitious economic performance today. On the one hand, the number of its inhabitants will almost not changed by 2035. On another one, it might be a fabulous opportunity to diversify its economy and focus on the industries that are more knowledgeable than resource-based. Furthermore, the pension system without the base component that was removed in 2017 redirects the principal responsibility for pension payments on society. As a result, it might be a beginning for its transformation into the 4th stage country according to Glover classification.

The less optimistic demographic estimation concerns Poland. Being one of the fastest aging populations in Europe, it is difficult to assess whether the last reforms will be enough to input profound change into the entire pension scheme. The reduction of the retirement age from 67 years in general to 65 years for men and 60 for women does not indicate the positive demographic transformation even in the medium-term. Moreover, the fertility rate will probably not increase considerably by years, hence without the massive immigration, the number of the Polish population is going to shrink dramatically in the following decades. If this tendency is going to be upheld, the assuming catching-up of the developed countries could never happen.

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22 Own calculation based on World Bank database. Retrieved from <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=NL-DE-FR-PL&start=1960>

## References

- Bankier. (2019, April 16). *Reforma OFE – wszystko, co warto wiedzieć*. Retrieved from Bankier: <https://www.bankier.pl/wiadomosc/Reforma-OFE-wszystko-co-powinienes-wiedziec-7653799.html>
- Barteczko, A. (2018, August 29). *Poland expects new pension scheme to boost its bourse*. Retrieved from Reuters: <https://www.reuters.com/article/poland-pensions/poland-expects-new-pension-scheme-to-boost-its-bourse-idUSL8N1VK1W0>
- Belanovsky, S.A. (2014). Razrabotka Predlozheniya po Reformirovaniyu Pensionnoi Sistiemy Rosii s ychetom opyta Kazahstana, *Rossiyskaya Akademia Narodnogo Hoziasystvyya i Gosudarstvienny sluzhby pri prizidentie Rossiyskoy Federacii*, pp. 4–6.
- Biskupski, Z. (2019, July 11). *Rewolucja w Otwartych Funduszach Emerytalnych*. Retrieved from Strefa Biznesu: <https://strefabiznesu.pl/rewolucja-w-otwartych-funduszach-emerytalnych-11072019-r-pieniedzmi-z-ofe-mozna-swobodnie-dysponowac-kiedy-na-jakich-warunkach/ar/c3-14054175>
- Bitinas, A. (2018). Modern Pension System in Azerbaijan: Challenges and Reforms. *Teise*, pp. 7–23.
- Buribayev, Y.A, Mukaldyeva, G., Nurahmetova, G.G., Uteyev, B., Nessipbekov, Y., Khamzina, Z.A. (2016). Pension reform in the Republic of Kazakhstan: Main directions, conditions for implementation and development prospects. *International Journal of Environmental and Science Education*, XI (18), 11611–11619.
- Bussolo, M., Koettl, J., & Sinnott, E. (2015). *Golden Aging: Prospects for Healthy, Active, and Prosperous Aging in Europe and Central Asia*. Washington, DC: The World Bank Group.
- Devictor, X. (2012, June 14). *Starzenie się społeczeństwa a gospodarka*. Retrieved from World Bank: <https://www.worldbank.org/pl/news/opinion/2012/06/14/poland-aging-and-the-economy>
- Dosmucharmetova, D. (2018, December 7). *V kakom vozrastie v stranach SNG vychodiat na pensiu*. Retrieved from Sputnik News: <https://tj.sputniknews.ru/infographics/20181207/1027645995/vozrast-pensiya-SNG-tajikistan.html>
- Egemen Qazaqstan. (2018). *The average pension is 82 thousand tenge in Kazakhstan*. Retrieved from Egemen Qazaqstan: <http://en.egemen.kz/article/188704-the-average-pension-is-82-thousand-tenge-in-kazakhstan>
- Eurostat. (2018, January 8). *EU-Commonwealth of Independent States (CIS) – statistics on active ageing*. Retrieved from Eurostat: <https://ec.europa.eu/eurostat/statisticsexplained/>
- Galushkina, E. (2016). Status of Demographic Load of Population in CIS Countries. *Vestnik KRSU*, XVI(6), 13–17.
- Główny Urząd Statystyczny. (2017). *Emerytury i renty w 2017 r*. Warszawa: Central Statistical Office in Poland.
- Grishchenko, N. (2016). Pensions after pensions reforms: A comparative analysis of Belarus, Kazakhstan, and Russia. *Procedia Economic and Finance* (36), 3–9.
- Group, CESD Research. (2017). *Pension Attainability: Evaluation of the Latest Amendments of the Law on Labour Pensions*. Baku: United Nations Development Programme.
- Grover, D. (2014, October 10). *What is the Demographic Transition Model?* Retrieved from Population Education: <https://populationeducation.org/what-demographic-transition-model/>

- Guarino, A. S. (2018, August 2). *The Economic Implication of an Aging of Population*. Retrieved from Focus Economics: <https://www.focus-economics.com/blog/economic-implications-of-an-aging-global-population>
- International Labor Organization. (2016). *Universal Pensions in Azerbaijan*. World Bank Group.
- Leszko, M., Zając-Lamparska, L. & Trempala, J. (2015, August 27). *Aging in Poland*. Pobrano z lokalizacji The Gerontologist: <https://academic.oup.com/gerontologist/article/55/5/707/2605255>
- Łaszek, A. (2019, April 29). *Poland's latest pension reform is good for the government, bad for savers*. Retrieved from Emerging-Europe: <https://emerging-europe.com/voices/polands-latest-pension-reform-is-good-for-the-government-bad-for-savers/>
- Maestas, N., Mullen, K., & Powell, D. (2016). *The Effect of Population Aging on Economic Growth, the Labor Force and Productivity*. Santa Monica: RAND Labor & Population.
- Maltseva, E., Janenova, S. (2018). Reversing Pension Privatization in Kazakhstan. *International Labor Organization, Working Paper*, 67, 2–10.
- Marešová, P., Mohelská, H. & Kuča, K. (2015). Economics Aspects of Ageing Population. *Procedia Economics and Finance*, pp. 534–538.
- Ministry of Finance of Republic of Uzbekistan. (2018). *Budjet for Citizens*. Retrieved from Ministry of Finance of Republic of Uzbekistan: [https://www.mf.uz/media/file/state-budget/pub/budjet\\_for\\_citizens.pdf](https://www.mf.uz/media/file/state-budget/pub/budjet_for_citizens.pdf)
- Muggeridge, P.E. (2015). *The Implication of Population Aging for Economic Growth. A Regional Comparative Study*. Durham, North Carolina: Duke University.
- Nagarajan, R., Teixeira, A.A., & Silva, C. (2013, 9). The Impact of an Ageing Population on Economic Growth: An Exploratory Review of the Main Mechanisms. *FEP Working Papers*(504), pp. 2–20.
- OECD. (2017). *Pensions at a Glance 2017*. Paris: OECD Publishing.
- Off-budgetary Pension fund under the Ministry of Finance in Uzbekistan. (2018). *Koncepcja Reformy Sistiemy Gosudarstviennogo pensionnogo obuchenja*. Pobrano z lokalizacji Off-budgetary Pension fund under the Ministry of Finance in Uzbekistan: <http://pf.ru.uz/en/page/518>
- O'Neill, J., Wilson, D., Purushothaman, R., & Stupnytska, A. (2005). *How Solid are the BRICs?* New York: Goldman Sachs Economic Research.
- Prettner, K. (2013, September 15). Population aging and endogenous economic growth. *Journal of Population Economics – Springer*, 811–824.
- Rachmatova, D. (2019, January 26). *Pensionnaja Reforma v Uzbekistanie: Kak ne sosto-rietsja w nischitie*. Retrieved from Sputnik News: <https://tj.sputniknews.ru/column-ists/20190126/1028089988/uzbekistan-povyshenie-pensionnogo-vozrasta.html>
- Rajabov, S. (2016). Pension Reform in Central Asian Transition Economies: Social Protection Stability in Uzebistan and Kazakhstan. *Research Journal of Finance and Accounting*, VII(4), 72–75.
- Rakhmonov, D. (2016). Improvement of the Pension System in Uzbekistan: Through the Experience of the European Union Countries. *Eurasian Journal of Economics and Finance*, IV(1), 80–90.
- Romer, P.M. (1990). Endogenous Technological Change. *Journal of Political Economy*, XCVIII (5), 71–102.

- Sukpaiboonwat, S., Plyngam, S. & Jaroensathapornkul, J. (2014). Does an Ageing Population Diminish or Enhance Economic Growth?: A Survey of Literature. *Meiji Journal of Political Science and Economics* (3), 1–10.
- (2018). *Summary of the Chilean Pension Scheme*. International Center for Pension Management.
- The State Committee of the Republic of Uzbekistan on Statistics. (2018, July 20). *Demographic Situation in the Republic of Uzbekistan*. Retrieved from The State Committee of the Republic of Uzbekistan on Statistics: <https://stat.uz/en/435-analiticheskie-materialy-en1/2075-demographic-situation-in-the-republic-of-uzbekistan>
- Verulava, T. (2018, 1). Pension System in the South Caucasus: Challenges and Reform Option. *Bulletin Of The Georgian National Academy of Science* (12), 168–174.
- Wong, M.K. (2015). Problems of PAYG Pension Scheme and Pension Reform – A note on overseas experience and international guidelines, *Economic Analysis and Business Facilitation Unit*, 1–2.