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Impact of Demographic Structure on Economic Development of Ukrainian Coastal Regions

Patrik Rovný [1], Serhiy Moroz [1,*], Jozef Palkovič [2] and Elena Horská [1]

[1] Department of Marketing and Trade, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 949 76 Nitra, Slovakia; patrik.rovny@uniag.sk (P.R.); elena.horska@uniag.sk (E.H.)

[2] Department of Statistics and Operations Research, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 949 76 Nitra, Slovakia; jozef.palkovic@uniag.sk

* Correspondence: serhiy.moroz@uniag.sk

Abstract: The main aim of our paper is to study peculiarities of two periods, i.e., the pre-conflict period (2004–2013) and conflict period (2014–2018), in the context of the impact of the demographic structure of the population on the economic growth and development of coastal regions of Ukraine. In the first step of the analysis, we investigate the relationship between the demographic shifts and selected economic indicators, using the Pearson's correlation coefficient. In the next step of the analysis, we focus on the quantification of the impact of demographic indicators on the economic variables, based on the panel model with fixed effects. The received results confirm that the influence of the demographic stricture on the economic state of coastal regions changed significantly in the conflict period in comparison with the pre-conflict period, especially concerning income, unemployment, and the openness of the economy. Additionally, our findings show that while economic differences existed between the Azov Sea regions and the Black Sea regions in the pre-conflict period, they disappeared due to the economic deterioration of the Azov Sea regions during the conflict period. It is concluded that war affects adversely the population's demographic structure, which inhibits the growth and economic development of Ukrainian coastal regions.

Keywords: Ukraine; coastal regions; demographic structure; regional economic performance

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1. Introduction

Coastal regions play an essential role in the country's economic performance and sustainable development due to available diversified resources and multifunctionality. However, it is necessary to pay attention that disparities between these regions could constrain the country's economic growth [1,2]. Therefore, it is necessary to analyze comprehensively different factors affecting the economic state of coastal regions. Based on this analysis, it is possible to work out the regions' strategies, aimed at ensuring their dynamic and effective functioning in the country, taking into account tendencies and peculiarities of international economic processes.

Ukrainian coastal regions include Donetsk, Kherson, Mykolayiv, Odesa, and Zaporizhzhya oblasts, Autonomous Republic of Crimea, and Sevastopol (city). Odesa and Mykolayiv oblasts and Sevastopol (city) border with to the Black Sea, and the Donetsk and Zaporizhzhya oblasts have access to the Azov Sea. The Kherson oblast and Autonomous Republic of Crimea border with both the Black and Azov seas. The coastal regions make a special contribution to Ukraine's international trade, industry, and recreation and tourist activities. In these regions, seaports are situated that have strategic importance for the country. The value of the regions is also determined by the fact that their coastal shelf contains large reserves of mineral resources, including oil and gas.

It should be noted that Russia used to be one of the major political and economic partners of Ukraine. Though, the situation changed significantly at the beginning of

2014. Prolonged protests took place in the country when the Ukrainian president Viktor Yanukovych rejected to sign the Association Agreement between Ukraine and the European Union. Pro-European political forces came to power in the country, aiming at the conclusion of this Agreement. Russia annexed the Crimean peninsula and occupied significant parts of the Donetsk and Luhansk regions in violation of international treaties. Nowadays, economic and trade ties between the countries are limited. In Ukraine, the substantial decline of the country's economy, the deterioration of the population's living standards, and the intensification of internal and external migration are observed.

Taking into consideration that the effects of demographic processes on the economic growth of Ukraine and its regions are investigated to a limited extent (particularly, in regards to Ukrainian coastal regions), we decided to select this research direction. The main aim of our article is to study peculiarities of two periods, i.e., the pre-conflict period (2004–2013) and conflict period (2014–2018), in the context of the impact of the demographic structure of the population on the economic growth and development of coastal regions of Ukraine. Moreover, demographic and economic differences between the Black Sea and Azov Sea regions were explored during the above-mentioned periods. The overarching research hypothesis of the article was that war affects adversely the demographic structure of the population, which inhibits the growth and economic development of Ukrainian coastal regions.

The paper is organized as follows: Section 2 provides a brief overview of publications on the impact of demographic changes on the economic performance of countries and regions. In Section 3, research assumptions are presented. Section 4 includes the description of data, methods, and the research process. In Section 5, research results concerning the effect of demographic composition on the economic state of Ukrainian coastal regions are presented. Section 6 contains a discussion and possible directions for future research. The main conclusions are given in Section 7.

2. Literature Review

Moosa [3] considers war as a state of armed conflict among countries, governments, societies, and factions. It can also take place within the country as the civil or revolutionary war. Reasons, tendencies, and consequences of war economics have been studied for a long time. For instance, historical features and theoretical foundations of this economics are investigated in detail by Robinson [4]. As stated by the researcher, the cause of war is the law of decreasing returns. This economic principle is the driving force that pushes countries to war activities.

Taking into account different war and conflict origins, Kimbrough et al. [5] identify the following war/conflict economic models:

- Contest models;
- War of attrition games;
- Colonel Blotto games;
- Guns versus butter models;
- Spatial conflict models.

Anderton and Carter [6] point out that conflict and economics are linked as follows:

- Conflict is a choice, which is similar to economics;
- Conflict has an impact on economic outcomes (production, trade, capital and labor migration, growth, etc.);
- Economic variables influence conflict;
- Conflict is a way of wealth acquisition.

It is important to understand the real impact of war on economic development. Based on the U.S. data, the Institute for Economics and Peace [7] analyses the macroeconomic effects of five war periods on the country's economic performance. It is found that military spending has only a temporal positive influence on the country's economy. Regardless of used financial sources, its consequent macroeconomic impact is negative because of higher taxes, the larger budget deficit, growing inflation, etc.

The influence of demographic factors on the development of different countries is widely considered in publications. For example, Wei et al. [8] forecast the influence of population aging on various economic processes in China in 2050, applying the global computable general equilibrium model. Their findings testify that, due to the aging, the country will have a decline in consumption and labor supply, as well as investments. As a result, the predicted value of GDP is expected to be lower by nearly 10%.

Lee et al. [9] make predictive calculations about the link between demographic changes and fiscal sustainability in Asian countries up to 2050. Based on the simple stylized model, the researchers identify that population aging could have a strong negative impact on the fiscal health of these economies. They argue that the drastic increase of the old age population might cause the rise in public spending and the contraction in revenue to a significant extent even in the case of the existing demographic structure.

Uddin et al. [10] examine the peculiarities of the effect of the population age structure on Australia's economic development. Employing several statistical approaches (including dynamic ordinary least squares, fully modified ordinary least squares, and the vector error correction model), it is determined that the dependency ratio has an unfavorable influence on the gross domestic product (GDP) per capita. Accordingly, the population in the working-age affects positively the county's economic state.

Mierau and Turnovsky [11] work out the extended single-sector endogenous growth model to better understand how demographic shifts are associated with economic development and wealth inequality. The researchers note that the impact of the population growth rate on countries' economic performance might be different, depending on the character of demographic changes. As an example, they investigate the effect of demographic changes (the growth of life expectancy and the decline of the birth rate) on the US economy. The received results show that the mentioned evolution of birth and life expectancy rates are positively linked with the country's economic growth in the long-term. Moreover, these demographic tendencies have offsetting effects on the degree of wealth inequality.

Sánchez-Romero et al. [12] explore the impact of demographic changes on wealth inequality in the US based on the elaborated small-open economy model with overlapping generations. It is revealed that, while the decrease in fertility causes the growth of wealth inequality, it has the reverse effect on this inequality at the population level. Additionally, it is identified that the rise of life expectancy affects wealth inequality non-monotonically.

Heijdra and Mierau [13] use the demographic macroeconomic model to assess the impact of aging on the Netherlands' economic growth. The research results indicate that population aging has a positive influence on the country's economic performance. At the same time, the findings show that the increase in the retirement age hurts the economy as a consequence of a longevity shock.

Sánchez-Romero et al. [14] examine how long-term demographic trends affect the income growth of Spain. Using the overlapping generations model, they found that around 17% of the per-capita income rise is connected with demographic changes: 14.5% and 6.4% because of contraction infertility and the growth in longevity, respectively. The researchers argue that, after productivity, the demographic component is the most influential factor of the country's income growth.

Based on the multi-country overlapping generations model, Kolasa and Rubaszek [15] present a prognosis of the impact of aging on the economic situation in the selected European countries: Germany, France, Italy, and Spain. The obtained results confirm that the expected growth of the old-dependency ratio can cause substantial external and internal imbalances in these European economies.

Lindh and Malmberg [16] explore the effect of the age structure on the economic situation in the EU-15 countries. The results confirm that there is a link between the increasing portions of dependent age groups and the shrinking GDP growth rates. It is also expected the existence of the negative influence of population aging on the countries' economic growth in the long-term, though related to various time horizons.

Dolls et al. [17] investigate the expected influence of population aging and upskilling on the income distribution of the EU-27 countries by 2030. The use of reweighting and microsimulation techniques allow the researchers to determine that, while population aging will likely lead to income inequality growth, the estimated impact of increasing educational attainment will be more ambiguous.

Cruz and Ahmed [18] study the impact of changes in the population age structure on the economic development of selected countries, applying several approaches (the first-difference estimation, panel fixed effects estimation, and system-GMM estimation). It is found that the increase of the portion of the working-age population and reduction of the child-depending ratio is positively linked with the growth of GDP per capita and the decrease of the poverty level of analyzed countries.

Kuhn and Prettner [19] consider specific features of the influence of the population age structure on the economic growth and consumption level in chosen countries. The obtained results indicate that there are significant cross-country differences concerning the impact of the generational turnover effect on the countries' economic development. Its positive influence is identified in countries with a young population, while its negative effect is observed in aging economies. It is argued that these differences are due to the peculiarities of the consumption age profile. It is also noted that consumption growth per capita tends to be lower in economies with high levels of mortality and fertility.

Wietzke [20] explores the relationship between demographic changes and the poverty level, analyzing data for 140 countries. Based on the poverty–growth regression, it is found that the fertility decline positively impacts countries' poverty rates. Moreover, it is determined that it has a more pronounced effect in countries that are in the early stage of demographic transition.

Several studies are conducted to assess the impact of the population age structure on regional economic development. For instance, Wei and Hao [21] examine the effect of demographic structure on the economic growth of China's provinces based on the panel data approach. Their findings show that the demographic change (particularly, the effect of fertility decline on the contraction of youth dependency) is positively associated with the long-term country's growth. The reverse impact of the economic growth on investigated demographic indicators is also revealed.

Applying fixed-effect estimations, Zhang et al. [22] find that the various demographic groups impact substantially the economic state of Chinese provinces. The changes in the population composition cause the growth of GDP per capita by one-fifth at the regional level. Attention is also given to the fact that the size and demographic structure of the working-age population have at least the same influence as dependency ratios.

Benassi and Salvati [23] study how migration and demographic changes affect the economic performance of Greek regions, employing the multi-temporal principal component analysis and diachronic analysis. The findings confirm that there is a significant influence of the structure of the regional population on expansions and recessions of the country's economy. The received results also show the substantial impact of migration, demographic changes, and the population structure on the regional polarization. Moreover, it is identified that there is a short-term influence of aging on the population structure, which could unfavorably affect the ability of Greece's economic revival in the post-crisis period.

The results received by Brunow and Hirte [24] indicate a significant effect of the demographic structure on the economic performance of EU-15 NUTS2 regions (namely, on GDP per capita). Using four specifications (the basic OLS regression, the spatial error approach, the spatial lag specification, and the spatial regressive specification), the most substantial positive impact is identified for the working cohorts that are younger than 45. While the positive influence is also found for the 45–59 age group, the effect of the young population on the regional economic development is rather limited.

Different aspects of demographic changes and their influence on the countries' economic development are also explored in the publications [25–31]. Moreover, some authors

argue that demographic shifts can have a changeable impact on economic growth, depending on the situation in countries and/or regions. For example, Taketoshi [32] analyzes the influence of the demographic dividend on the economic growth of China. In this study, particular attention is given to:

- the "labor effect", which is connected with an expanding working-age population and, consequently, the country benefits from a larger young labor force;
- the "capital effect", that is related to the declining dependency ratio and its positive impact on total savings, which are mainly used for investment in physical capital.

Until the 2010s, the "capital effect" has affected China's economy to a greater extent than the "labor effect". However, in the 2010s, the situation changed completely, and the "capital effect" was not the substantial driving force of the country's economic development anymore.

Macunovich [33] assesses the impact of the demographic structure on the main economic indicators of selected countries, employing the Fair–Dominguez method. The findings show that the population aged 15–24 has the strongest effect on the countries' economic development. Though, while this young population group positively affects GDP, it hurts both the current account balance and gross capital formation.

It should be noted that there are many papers published on general demographic trends and problems in Ukraine. However, only a few studies are dedicated to the assessment of the impact of demographic changes on the economic state of the country and its regions. First of all, we would like to draw attention to the article written by Maksymenko [34], in which ways of interaction between declining fertility and the state of the Ukrainian economy are examined. Based on a multi-variable vector autoregression model, it is found that there will be the short- and long-term reactions of fertility on unemployment, money holdings, and the country's economic growth. In the short-term, policies in regards to decreasing fertility could be suitable. Though, in the long-term, opposite approaches and policies should be implemented to promote the country's economic performance. We can also mention several other publications [35–37], in which some aspects of demographic and economic interaction in Ukraine are explored.

3. Research Assumptions

According to the main aim of the paper, research hypotheses were formulated. The overarching research hypothesis of the paper was that war affects adversely the demographic structure of the population, which inhibits the growth and economic development of Ukrainian coastal regions. The verification of this hypothesis was split into three parts to assess the validity of three main and several partial research assumptions.

The first analytical part of the paper was focused on the verification of the hypothesis that the war conflict influenced significantly the relationship between demographic and economic indicators. The hypothesis was investigated using correlation analysis. This analysis was employed to examine four partial assumptions:

- relationship between the demographic and economic indicators in coastal regions differed substantially from the rest of Ukraine;
- relationship between the demographic structure and economic indicators in the war period differed significantly from the peace period;
- gross regional product and income were not influenced by the demographic structure in the war period;
- unemployment in the conflict period was more affected by the age structure than in the pre-conflict period.

The second part of the analysis was aimed at the verification of the hypothesis that demographic development has a significant impact on the economic performance of regions. The hypothesis was checked using the panel data model with fixed effects. In this part of the paper, the following research assumptions were formulated:

- war inhibited the regional economic performance;

- income and the openness of the economy was significantly influenced by the war conflict;
- young working population played the most important role in the economic development of regions.

The third part of the analysis was devoted to the Black Sea and Azov regions and the verification of the research hypothesis that war accelerates population aging and its unfavorable impact is more significant on the economic performance of Azov Sea regions due to their proximity to the conflict zone. This hypothesis was tested based on the comparative analysis, applying the statistical inference.

In this part, three partial research assumptions were also verified:

- the war conflict accelerated population aging;
- differences between the Azov and Black sea regions on the age structure in the peace period persisted in the conflict period;
- differences between the Azov and Black sea regions on their economic performance disappeared during the war period.

4. Materials and Methods

We used data and publications of the State Statistics Service of Ukraine (www.ukrstat.gov.ua (accessed on 14 December 2020), database.ukrcensus.gov.ua/MULT/Dialog/statfile_c.asp (accessed on 14 December 2020)). Data were collected for 5 coastal Ukrainian regions (Donetsk, Kherson, Mykolayiv, Odesa, and Zaporizhzhya oblasts) for 2004–2018. Regarding the Donetsk region, data for 2014–2018 were available for enterprises, institutions and organizations which submitted reports to the state statistics bodies. Since 2014, data for the Autonomous Republic of Crimea and Sevastopol (city) were not accessible due to Russia's annexation, and that is why they were not included in this study.

The coastal regions were investigated in the pre-conflict period (2004–2013) and the conflict period (2014–2018). Overall data for Ukraine were used as a benchmark in some comparisons. Data were employed in the form of a panel, including time series with 15 periods and 5 cross-section units; thus, there were 75 observations in total. The analysis included the following economic indicators:

- Gross regional product (GRP) per capita;
- Total export of goods per capita;
- Total import of goods per capita;
- Openness of the economy: (export + import)/GRP;
- Disposable income per capita;
- Unemployed population, %.

The values of GRP and disposable income per capita were recalculated from Ukrainian hryvnias into US dollars, based on the annual average official exchange rate of the National Bank of Ukraine. The trade indicators, i.e., total export of goods per capita and total import of goods per capita, were available in US dollars.

Several demographic indicators, related to the age structure, were investigated in terms of their impact on the above-mentioned economic indicators:

- Under14: population aged 0–14 years;
- Workingp: working population (15–65 years);
- Youngwork: young working population (15–34 years);
- Primework: prime working population (35–54 years);
- Oldwork: old working population (55–65 years);
- Elderly: population aged 65 years and over.

All variables in panel models, except unemployment, were included in the form of the natural logarithm. In the case of demographic indicators, the logarithm of the number of people in each category was used to avoid collinearity problems that would occur with an investigation of data expressed as a population share. In correlation analysis and descriptive statistics, demographic indicators were expressed as the population share (population aged 0–14 years, working population, and elderly) and the share of working people (young

working population, prime working population, and old working population) to make them comparable across the regions.

The analysis also explored the influence of the war conflict in Ukraine on the relationship between investigated variables. It was conducted by including a conflict dummy variable into the performed analysis, which was equal to 0 for the pre-conflict period and 1 for the conflict period.

In the first analytical part of the paper, special attention was given to the verification of the hypothesis that the war conflict influenced significantly the relationship between demographic and economic indicators. This hypothesis was checked using the correlation analysis, which measures the strength of the relationship between analyzed variables. For this purpose, the Pearson's correlation coefficient was used:

$$r = \frac{\sum_{i=1}^{n}(x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \overline{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \overline{y})^2}} \quad (1)$$

where x_i is the ith value of variable x, y_i is the ith value of variable y, $\overline{x}$ means the value of x and $\overline{y}$ means the value of y; the r value close to 1 refers to the strong positive correlation, and the value close to −1 refers to the strong negative relationship. A value close to 0 means a weak or no relationship between variables. This analysis was conducted on data for the whole analyzed period and separately for the periods before the conflict and during it. The analysis included only correlations between demographic and economic variables. In the analysis, economic indicators were employed as regional values of indicators per capita in USD, and demographic indicators were included as the share of the population in each category.

The second part of the analysis was the quantification of the influence of demographic indicators and the effect of conflict on economic variables. For this purpose, the panel model with fixed effects was applied. This type of model was selected due to the nature of the long panel (the small number of cross-sections and the higher number of periods). Each model also includes the F-test for no fixed effects, which verifies the suitability of the fixed-effect model (H0 should be rejected for the suitable fixed-effect model). Models were estimated in the form:

$$Y_{it} = b_0 + b_1 LnUnder14_{it} + b_2 LnYoungwork_{it} + b_3 LnPrimeWork_{it} + b_4 LnOldwork_{it} + b_5 LnElderly_{it} + b_6 conflict_{it} + u_{it} \quad (2)$$

where y_{it} is the economic dependent variable. All variables were used in the form of the natural logarithm, except unemployment measured in %. b_0 to b_6 are parameters of the model. b_0 is the intercept and b_1–b_6 are the estimated effects of explanatory variables on the dependent variable and u_{it} is a random error in the estimated fixed-effect model. Demographic variables were expressed as the logarithm from the number of people in each category.

Conflict is the dummy variable, which was equal to 0 for the pre-conflict period and 1 for the conflict period. Models were estimated for each dependent variable in the same form separately. The final model was estimated using the method of stepwise backward elimination. Results include only the final model for each dependent variable, including parameters significant at least at alpha = 0.1.

The last part of the analysis included the comparison of regions with access to the Azov and Black seas before and during the conflict period. It was conducted using the *t*-test (for variables with normal distribution) or Mann–Whitney test (for variables that were not normally distributed). The distribution of data was verified by application of the Shapiro–Wilk test of normality. The analysis was performed in SAS 9.04.

5. Results

Characteristics of analyzed variables can be found in Table 1. They include basic descriptive statistics for the analyzed group of regions in the upper part of the table and

Ukraine in its bottom part. In the case of economic variables, the high variability of data measured by the coefficient of variation is seen. On the other side, from a demographic perspective, data are expressed by the small variability measured by the coefficient of variation. The demographic indicators in the analyzed group of regions are very similar to the overall demographic variables in Ukraine. The average value of the working ratio is 70% with 41% share of young people, 41% of people in prime-age and 18% of old people in this category. The average share of elderly people is equal to 16%.

Table 1. Descriptive statistics of analyzed variables for five coastal regions and Ukraine.

Descriptive Statistics	Variable	Mean	Median	Standard Deviation	Variance	Coefficient of Variation	Min	Max	Skewness	Kurtosis
Analyzed group of regions—Demographic indicators	under14p	0.14	0.15	0.01	0.00	9.8	0.12	0.17	−0.25	−0.88
	workingp	0.70	0.70	0.01	0.00	1.26	0.68	0.71	−1.10	0.32
	elderlyp	0.16	0.15	0.01	0.00	8.52	0.14	0.20	0.94	0.52
	youngw	0.41	0.41	0.02	0.00	5.44	0.35	0.44	−0.64	−0.33
	primew	0.41	0.41	0.01	0.00	1.84	0.40	0.43	0.37	−0.55
	oldw	0.18	0.18	0.02	0.00	13.19	0.15	0.23	0.23	−1.20
Analyzed group of regions—Economic indicators	GRP	2433.23	2336.00	1025.55	1,051,753.56	42.15	616.00	4942.00	0.53	−0.21
	Income	1966.01	1875.00	739.87	547,402.96	37.63	713.00	3885.00	0.48	−0.26
	unemployment	8.33	8.30	2.18	4.73	26.13	4.40	14.60	0.74	0.84
	export	1261.08	1167.00	873.57	763,128.02	69.27	197.00	3917.00	0.79	0.13
	Import	692.37	633.00	448.52	201,169.40	64.78	68.00	2000.00	1.2	1.5
	openness	0.80	0.80	0.39	0.15	48.40	0.19	1.91	0.55	0.24
Ukraine—Demographic indicators	under14p	0.15	0.15	0.01	0.00	3.54	0.14	0.15	0.15	−1.66
	workingp	0.69	0.69	0.01	0.00	1.16	0.68	0.70	−0.60	−0.39
	elderlyp	0.16	0.16	0.00	0.00	3.4	0.15	0.17	0.18	−1.03
	youngw	0.41	0.41	0.02	0.00	5.44	0.37	0.44	−0.56	−0.92
	primew	0.41	0.41	0.01	0.00	1.23	0.41	0.42	0.66	−0.26
	oldw	0.18	0.18	0.02	0.00	12.68	0.15	0.21	−0.00	−1.64
Ukraine—Economic indicators	GDP	2741.31	2807.50	929.21	863,422.23	33.90	959.00	4188.00	−0.21	−0.52
	Income	2046.53	2005.00	706.52	499,171.41	34.52	840.00	3343.00	0.28	−0.46
	unemployment	8.6	8.10	1.9	1.18	13.48	6.40	9.50	−0.24	−1.42
	export	1090.40	1067.00	282.61	79,869.54	25.92	694.00	1517.00	0.27	−1.29
	Import	1257.13	1273.00	407.53	166,078.70	32.42	616.00	1867.00	0.25	−1.07
	openness	0.86	0.96	0.32	0.10	37.39	0.00	1.37	−1.28	2.39

Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

From an economic perspective, these regions have lower levels of GRP per capita and income, compared to the national level. On the other hand, the coastal regions have a smaller unemployment rate (8.33%) compared to Ukraine in total (8.6%). Export per capita in the regions is higher than on average for Ukraine, and import per capita is almost half of overall Ukraine's average level. The regions' openness of the economy is smaller in comparison with the average level in Ukraine.

A graphic comparison of the development of demographic indicators over time in the analyzed group of regions and Ukraine is presented in Figures 1–3. These figures are used to show the influence of the war conflict on the analyzed demographic indicators. The share of the population between 0 and 14 years varied between 12% and 17% in the considered period. The smaller portion of this category over the analyzed period was recorded in the Donetsk region, where, after the small increase in 2015, this indicator continued to have a declining trend. The indicator grew in 2010 after its initial fall in other regions and at the country's level. At the beginning of the analyzed period, its highest portion was observed in the Kherson oblast. Though, since 2011, the highest share of the youngest category has been observed in the Odesa region, reaching its maximum (17%) in 2018.

The development of the working-age population is shown in Figure 2. This figure is divided into four panels. Panel (a) shows the share of the working-age population in the total number of people in each region and Ukraine. The share of this category in the analyzed regions was similar and varied from 67% to 71%. The level of this indicator in the presented regions was higher than its average in Ukraine at the beginning of the research

period. In 2004, the highest value was observed in the Odesa oblast, while its smallest number was seen in the Kherson oblast. After reaching the maximum level in 2011, this indicator started to drop in the majority of the considered regions. In 2018, its smallest value was found in the Donetsk region. Panels (b), (c) and (d) show the portions of the young age, prime-age, and old age working population. The share of young people in the working-age population varied from 35% to 44%. The initial increase was followed by a continuous decline for almost the whole analyzed period. In 2018, the smallest value of this indicator was found in the Donetsk region.

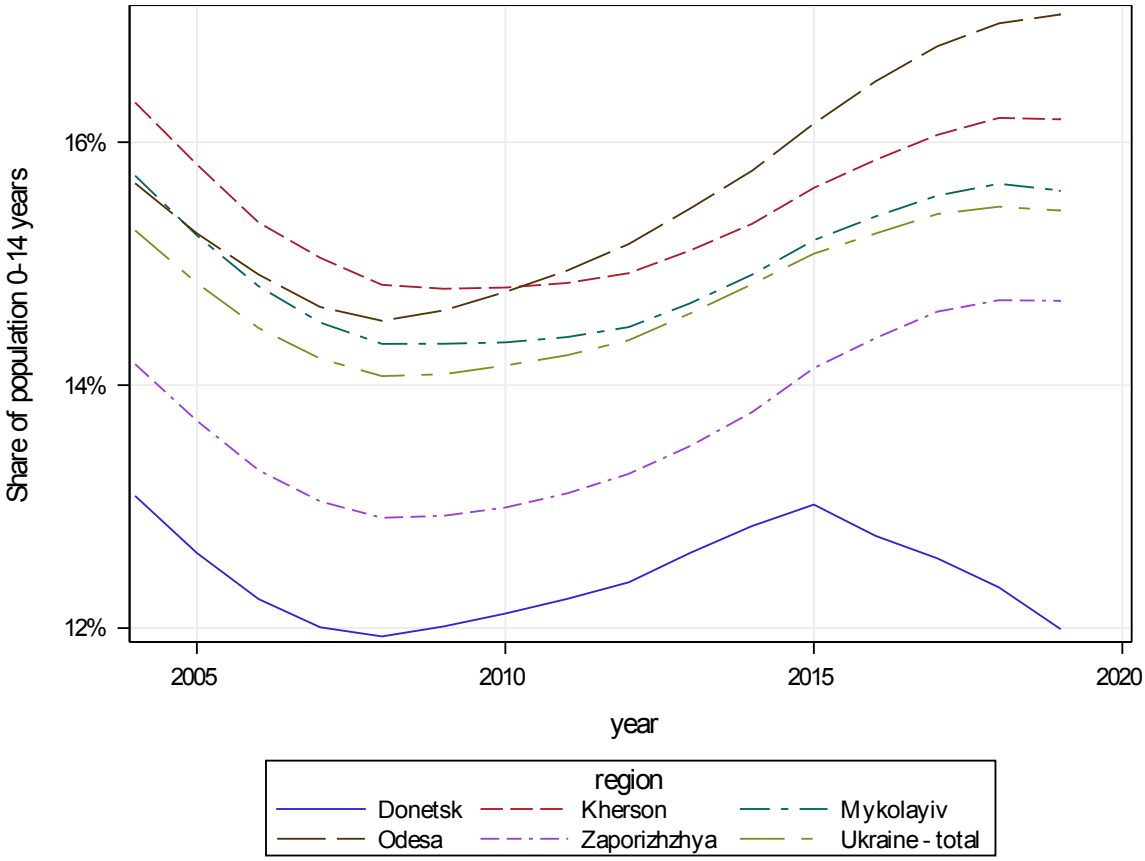

Figure 1. Share of population 0–14 years, %. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

The share of the prime-age population in the working-age category was between 40% and 43% during the analyzed period. This means the small variability in the presented group of regions with its smallest value in the Odesa oblast at the beginning of the given period and in the Kherson oblast at the end of the considered period. Panel (d) shows the development of the old category share in the working population. The indicator continuously increased from its smallest value in 2014 in all analyzed regions, following by its overall trend in the country. The highest share of the old population in the working-age category at the end of the presented period was in the Donetsk region. The growth of the old age category in the working-age population corresponded to the development of the share of elderly people (65+) shown in Figure 3, which had a similar trend in all considered regions. This share varied between 15% and 23%. During the analyzed period, its highest value was in the Donetsk region, and the smallest value of the indicator was in the Odesa region. After its initial increase, this indicator continuously decreased from 2007 to 2013. Then, the indicator has started its further increase until the end of the given period. Based on this trend, it can be expected that it will continue to rise in the short-term.

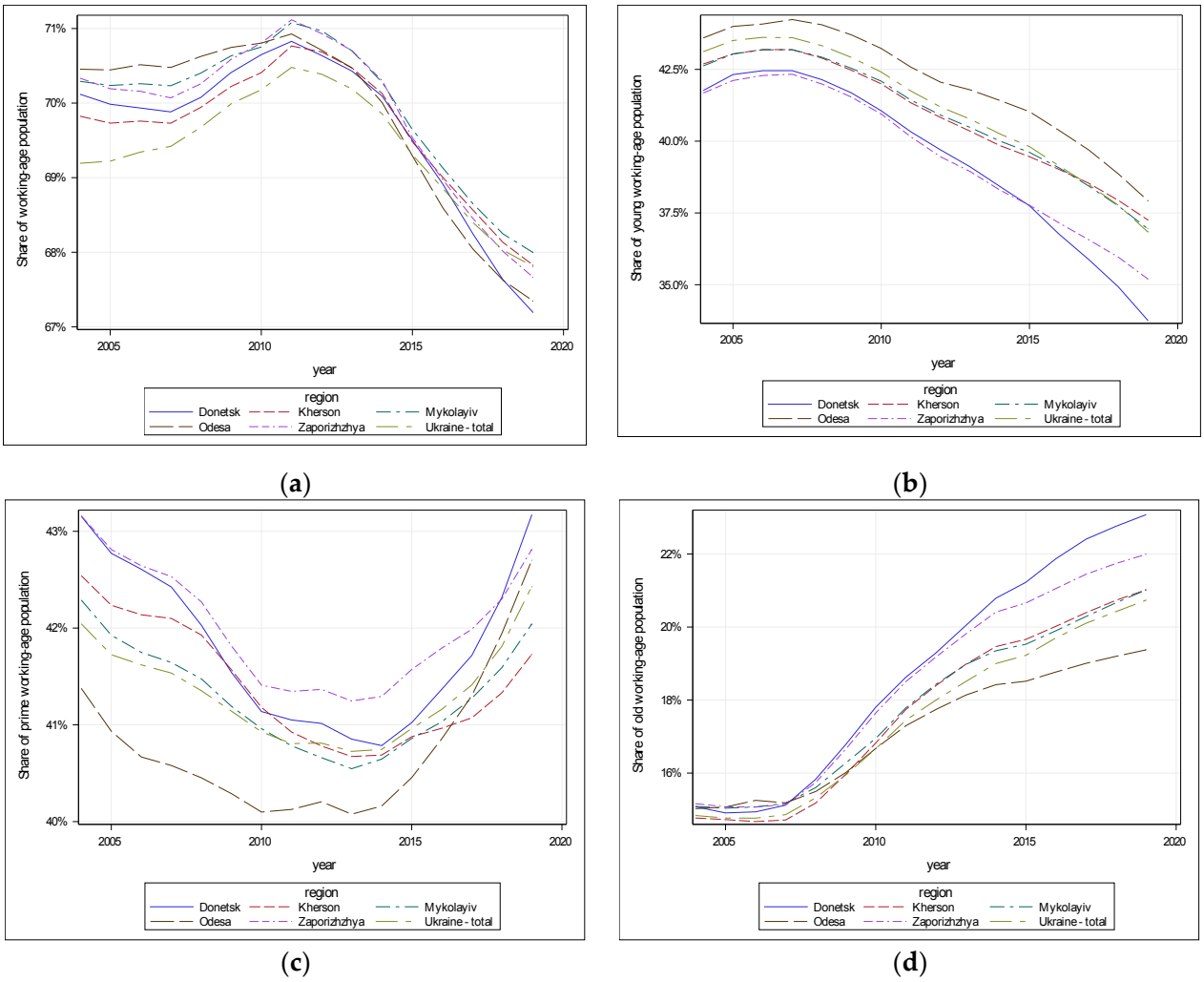

Figure 2. Share of the working-age population (15–64 years), by group, %. This figure contains four panels: (**a**) Share of the working-age population, (**b**) Share of young age population in the working-age category, (**c**) Share of prime-age population in the working-age category, (**d**) Share of old population in the working-age category. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

From an economical point of view, the most important indicator is the gross regional product. Its development is shown in Figure 4. At the beginning of the analyzed period, the Donetsk region had the highest value of this indicator. At the end of the considered period (after the beginning of the war conflict), a substantial drop in the indicator can be seen. The economic situation deteriorated for the Donetsk region to a significant extent, and, at the end of the analyzed period, this oblast had the smallest value of GRP per capita among the presented regions. It is also worth noting that, at the end of the given period, GRP in almost all examined regions (except the Zaporizhzhya oblast) was lower in comparison with its country's level.

It is expected that the war conflict has a significant impact on the development of the chosen regions. In Table 2, descriptive statistics for the analyzed regions, divided into the period before the conflict, which covers years 2004–2013, and the conflict period starting from 2014, are shown. The average value of all economic indicators got worse during the war period. The average per capita values of GRP, export, and import declined by 118 USD, 239 USD, and 261 USD, respectively. The rate of unemployment increased by 2.61%, and the openness of the economy contracted by 0.15. The most significant change was observed in the case of disposable income per capita, which decreased almost by 433 USD.

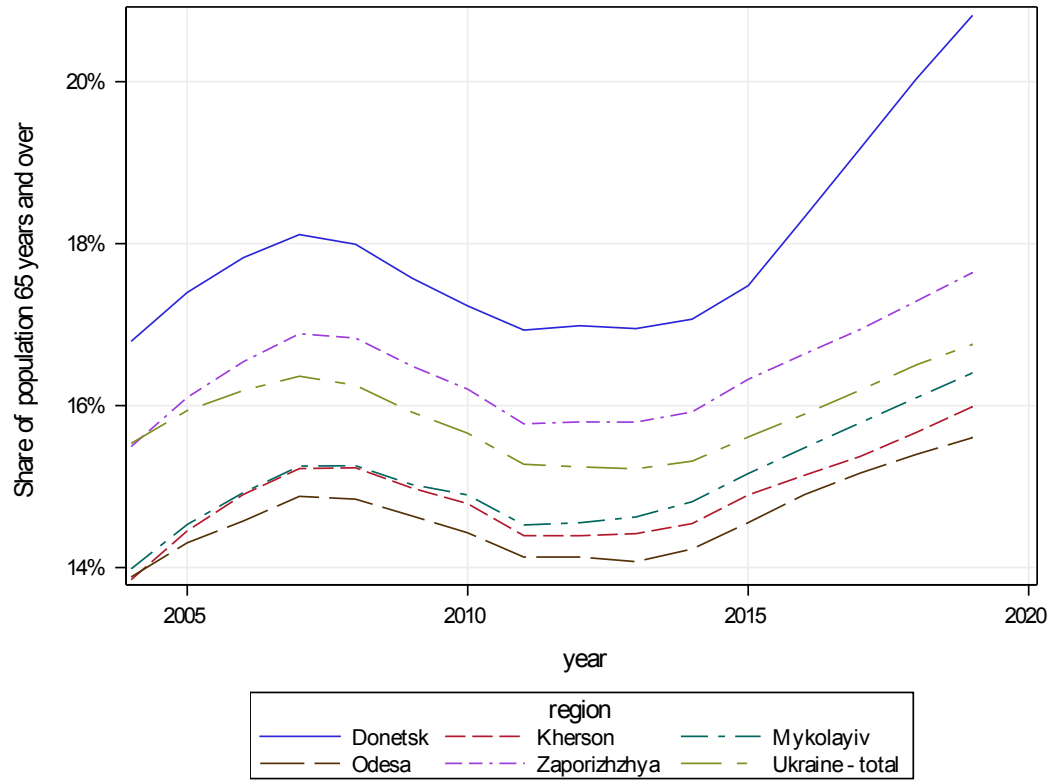

Figure 3. Share of population aged 65 and over, %. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

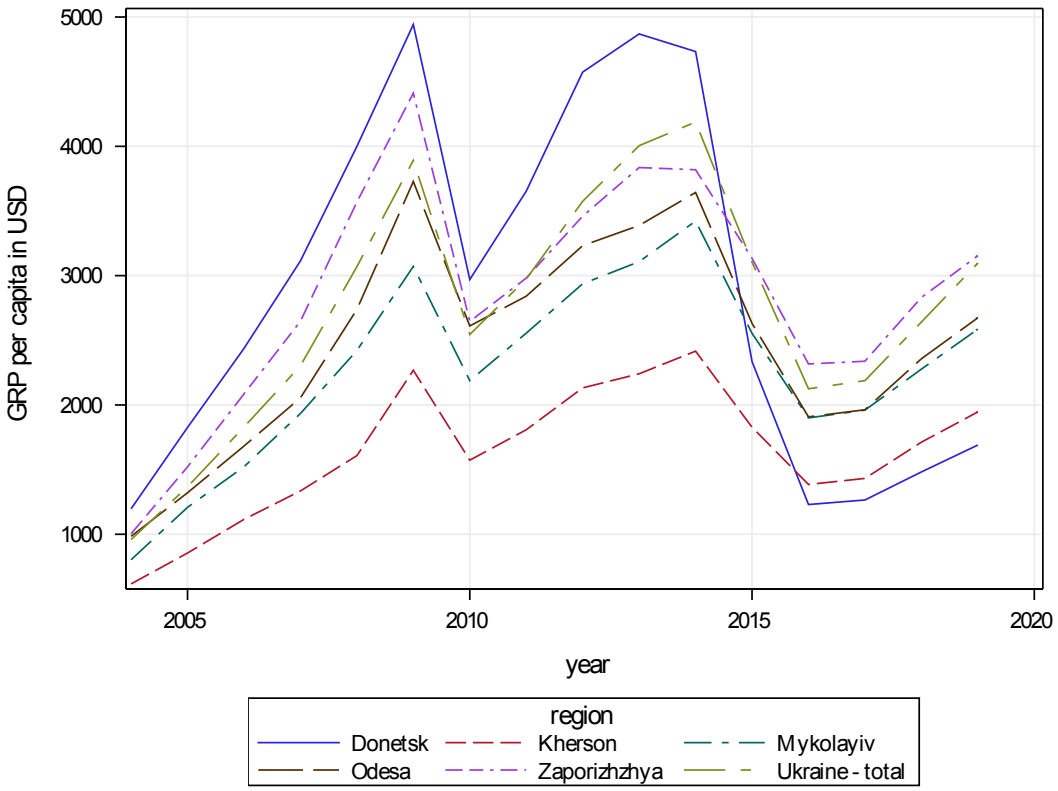

Figure 4. Gross regional product (GRP) per capita, USD. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

Table 2. Descriptive statistics in the pre-conflict and conflict periods.

Period	Variable	Mean	Median	Standard Deviation	Variance	Coefficient of Variation	Min	Max	Skewness	Kurtosis
Pre-conflict period	under14p	0.14	0.14	0.01	0.00	16,285	0.12	0.16	−0.38	−1.02
	workingp	0.70	0.70	0.00	0.00	0.51	0.70	0.71	−0.20	−0.69
	elderlyp	0.15	0.15	0.01	0.00	33,055	0.14	0.18	0.66	−0.81
	youngw	0.42	0.42	0.01	0.00	44,077	0.39	0.44	−0.55	−0.12
	primew	0.41	0.41	0.01	0.00	43,923	0.40	0.43	0.23	−0.88
	oldw	0.16	0.16	0.02	0.00	29,465	0.15	0.20	0.64	−0.95
	GRP	2472.38	2429.00	1103.12	1,216,871.87	44.62	616.00	4942.00	0.38	−0.50
	export	1340.70	1276.00	974.04	948,760.26	72.65	197.00	3917.00	0.71	−0.34
	import	779.26	744.50	502.79	252,801.09	64.52	68.00	2000.00	0.70	0.08
	disp income	2110.16	2138.00	812.54	660,223.28	38.51	713.00	3885.00	0.20	−0.72
	unemployment	7.49	7.85	1.52	2.31	20.30	4.40	10.70	−0.09	−0.60
	opennes	0.85	0.84	0.41	0.17	48.14	0.19	33,239	0.55	0.19
Conflict period	under14p	0.15	0.15	0.01	0.00	44,440	0.12	0.17	−0.55	−0.77
	workingp	0.69	0.69	0.01	0.00	43,831	0.68	0.70	0.07	−1.09
	elderlyp	0.16	0.16	0.01	0.00	43,709	0.14	0.20	43,101	43,862
	youngw	0.38	0.38	0.02	0.00	45,017	0.35	0.41	−0.25	−0.28
	primew	0.41	0.41	0.01	0.00	12,785	0.40	0.42	0.26	−0.39
	oldw	0.20	0.20	0.01	0.00	28,976	0.18	0.23	0.26	−0.56
	GRP	2354.92	2317.00	865.38	748,878.91	36.75	1230.00	4733.00	43,891	43,922
	export	1101.84	1059.00	613.44	376,304.97	55.67	225.00	2113.00	0.06	−1.31
	import	518.60	541.00	238.65	56,953.67	46.02	133.00	1034.00	0.14	−0.36
	disp income	1677.72	1701.00	458.26	210,005.79	27.31	819.00	2539.00	−0.02	−0.63
	unemployment	10.1	9.90	2.34	5.47	23.37	6.40	14.60	0.36	−0.20
	opennes	0.70	0.70	0.33	0.11	46.26	0.20	44,562	0.12	−1.20

Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

The change in the demographic structure was not so substantial. The notable shift was only in regards to the share of young people in the working population: it reduced by 4%, i.e., the same increased value as for the old category of the working population. The average share of the working population in the total population went down only by 1%, and the average portion of elderly people grew by 1%. In general, it can be concluded that the conflict did not have a strong effect on the demographic structure in the selected oblasts, but it impacted the regions' economic performance to a significant extent.

To verify the hypothesis that the war conflict influenced substantially the relationship between demographic and economic indicators, a correlation analysis was employed. Table 3 includes information about the correlation between the economic variables and demographic structure. This analysis was used to examine three partial assumptions. The analysis was performed on pooled data of the chosen regions, and it was compared with results for Ukraine.

Table 3. Correlation between the economic variables and demographic structure in the analyzed regions and Ukraine.

Correlation Coefficients		Under14p	Workingp	Elderlyp	Youngw	Primew	Oldw
Analyzed regions	GRP	−0.47 ***	0.34 ***	0.24 **	−0.12	−0.36 ***	0.24 **
	income	−0.33 ***	0.38 ***	0.07	−0.08	−0.33 ***	0.18
	unemployment	−0.01	−0.50 ***	0.34 ***	−0.67 ***	0.13	0.59 ***
	export	−0.73 ***	0.19	0.59 ***	−0.22 *	0.20 *	0.14
	import	−0.31 ***	0.31 ***	0.1	0.16	−0.16	−0.1
	openness	–0.50 ***	0.04	0.46 ***	-0.04	0.49	–0.13
Ukraine in total	GDP	−0.32	0.39	−0.31	−0.26	−0.59 **	0.40
	income	−0.50 *	0.58 **	−0.38	−0.12	−0.68 ***	0.25
	unemployment	0.65 ***	−0.37	−0.16	−0.71 ***	−0.12	0.69 ***
	export	−0.44	0.53 **	−0.37	−0.14	−0.63 **	0.26
	import	−0.51 *	0.50 *	−0.23	−0.07	−0.55 **	0.18
	openness	−0.20	0.28	−0.25	0.56 **	−0.08	−0.55 **

*** significant at alpha = 0.01 ** significant at alpha = 0.05 * significant at alpha = 0.1. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

Only a weak correlation was observed between GRP and demographic indicators. It was significantly correlated with the share of the working population. Within the category of working people, it was strongly correlated with the group of old people only. There was a significant moderate correlation between GRP and the share of young people aged 0–14 years. A similar result was also found in regards to income per capita and demographic indicators.

In the case of unemployment, the different results were found in the analyzed regions and Ukraine in total. Regarding the examined regions, unemployment was positively correlated with the old working population and elderly people. Additionally, it correlated negatively with the working population and young working population within this category. At the same time, this indicator did not correlate with the age group between 0 and 14 years. On the other hand, a strong positive correlation was found between unemployment and young people aged 0–14 years old and the elderly population category in Ukraine. Moreover, a very strong negative correlation was identified between unemployment and the young working population.

Different results were determined on export and import. Concerning Ukraine, they were substantially correlated with the share of the working population. In the analyzed regions, export was significantly positively correlated with the elderly population, and it had a negative correlation with a young population under 14 years. In the case of import, only the weak positive correlation with the working population and the weak negative correlation with a young population between 0 and 14 years old were identified. The openness of the economy in Ukraine was significantly positively correlated with the young working population and negatively with the old working population. On the other side, we found a significant positive correlation between the openness of the economy and elderly people and the negative correlation among this economic indicator and population aged 0–14 years old in the selected regions. The results presented in Table 3 show that the relationship between economic and demographic indicators in coastal regions differed substantially from the rest of Ukraine.

More detailed results can be found in Table 4. In this case, the analysis was done for the periods before and during the conflict separately. In the pre-conflict period, GRP was correlated positively with the working, old working, and elderly population. All correlations were moderate. Its negative correlations were identified with the 0–14-year age group, young working population and prime working population. A similar result was also received concerning income. While it was moderately correlated with the working population, the indicator's correlation was especially strong with the old working population. Its negative correlation was determined in cases of the population under 14 years and prime working population, while the strong negative correlation was revealed for the young working population. Unemployment was not significantly correlated in the pre-conflict period with any of the considered demographic indicators. Export was significantly positively correlated with the elderly population during the pre-conflict period. It is worth noting that a strong negative correlation was found between export and the 0–14-year age group. Significant correlations with export were also found with a young working population (the moderate negative correlation) and an old working population (the weak positive correlation). Regarding import, only weak correlations with demographic indicators were obtained in the pre-conflict period. Significant correlations were determined in the case of the population between 0 and 14 years old, prime working population (the negative correlation) and working population (the positive correlation). The openness of the economy was significantly correlated with the elderly population, prime working population (the positive correlation) and population under 14 years (the moderate negative correlation).

Table 4. Correlation between demographic and economic indicators in the pre-conflict and conflict periods in the analyzed regions.

Correlation Coefficients		Under14p	Workingp	Elderlyp	Youngw	Primew	Oldw
Analyzed regions—pre-conflict period	GRP	−0.64 ***	0.45 ***	0.49 ***	−0.54 ***	−0.39 ***	0.64 ***
	income	−0.47 ***	0.51 ***	0.30 **	−0.73 ***	−0.48 ***	0.84 ***
	unemployment	0.25 *	−0.11	−0.21	−0.19	0.22	0.04
	export	−0.88 ***	0.20	0.80 ***	−0.59 ***	0.15	0.40 ***
	import	−0.32 **	0.37 **	0.20	−0.07	−0.30 **	0.21
	openness	−0.52 ***	0.03	0.49 ***	−0.13	0.44 ***	−0.12
Analyzed regions—conflict period	GRP	−0.13	0.63 ***	−0.24	0.30	−0.30	−0.26
	income	0.31	0.06	−0.32	0.14	0.12	−0.25
	unemployment	−0.77 ***	−0.15	0.80 ***	−0.74 ***	0.36 *	0.85 ***
	export	−0.42 **	0.13	0.31	−0.36 *	0.35 *	0.33
	import	−0.03	−0.12	0.09	−0.16	0.36	0.05
	openness	−0.41 **	−0.42 **	0.61 ***	−0.63 ***	0.64 ***	0.57 ***

*** significant at alpha = 0.01 ** significant at alpha = 0.05 * significant at alpha = 0.1. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

The results of correlation analysis in the conflict period were substantially different in comparison with the pre-conflict period, which confirmed our hypothesis. In the case of GRP, only one significant positive correlation with a working population (the moderate correlation) was recorded. Income was not substantially correlated with any of the investigated demographic indicators during the conflict period. This was also in accordance with the hypothesis that the gross regional product and income in the war period were not influenced by the demographic structure. The situation also changed for unemployment. While this indicator was not correlated with demographic variables in the pre-conflict period, its strong correlations with the elderly population, old working population (the positive correlation, which means that these categories mostly caused the increase of unemployment) were identified in the conflict period. Strong negative correlations were found between unemployment and the young working-age category and the 0–14-year age group. These results confirmed our hypothesis that unemployment in the conflict period was more impacted by the age structure than in the peace period. Regarding export, only one weak, but significant negative correlation with a population between 0 and 14 years old was identified at significance level alpha = 0.05 in the conflict period. In the case of imports, any significant correlation was not found during this period. On the other hand, the openness of the economy was significantly correlated with all demographic variables. It was positively correlated with the prime working population, old working population, and elderly population (category 65+) in the war period. At the same time, this indicator was negatively correlated with a population under 14 years, working population and young working population. The correlation analysis proved the research assumption, that the war conflict affected the significant relationship between the demographic and economic indicators.

To check the research hypothesis about the significant impact of the demographic development on economic performance, the panel model with fixed effects was applied. Table 5 shows estimated panel models with fixed effects for each economic indicator. The dependent variable in each model can be found in the heading. In these models, we estimated the effects of demographic indicators, which are labeled in the first column of the table. Almost all variables were used in the form of the logarithm (except unemployment), which means that estimated coefficients can be interpreted as elasticity (the average percentage change of dependent variable in case of 1% change of the independent variable). Regarding unemployment, coefficients should be interpreted as lin-log semi-elasticity. The variable denoted as conflict is the dummy variable equal to 0 in the period before conflict and 1 in the period of conflict. The significance of this variable means the substantial difference in the dependent variable between the two considered periods. This was confirmed in the case of income, unemployment, and the openness of the economy

that deteriorated substantially during the war period. The average values of all analyzed economic indicators were worse in the conflict period compared to the pre-conflict period, but in the case of GRP and export, the significance of this difference was not confirmed. The significance of the variable "conflict" confirmed the hypothesis that war inhibited economic performance. This was proved especially in the case of income and the openness of the economy (the decrease of the indicators), which was in accordance with our assumption. Regarding import, the difference between these two periods was significant only at 0.1 level of significance. All models explained a significant proportion of variability with good prediction ability measured by R squared. In all panel models, significant differences were found between the investigated regions (according to the f test for no fixed effect), which makes the fixed effect model suitable for the performed analysis. The variable expressing the overall share of the working population could not be included in the model due to perfect collinearity with three categories of working people (young working population, prime working population, and old working population), which were present in it.

Table 5. Estimated parameters of the panel model with fixed effects.

	Dependent Variable					
	Ln GRP	**Ln Income**	**Unemployment**	**Ln Export**	**Ln Import**	**Ln Openness**
const	−175.89 ***	−222.42 ***	10,002 ***	−243.73 ***	72.08	8.51
Lnunder14	-	3.75 **	−13.8 *	-	−5.25 ***	-
lnyoungwork	13.83 ***	11.71 ***	−46.45 ***	9.39 ***	16.45 **	−5.86 ***
lnprimework	−14.55 ***	−16.18 ***	39.29 *	−4.5 *	-	6.75 ***
lnoldwork	7.42 ***	8.38 ***	−21.86 ***	6.98 ***	-	−1.65 **
lnelderly	8.08 ***	11.11 ***	−36.68 ***	8.07 ***	-	-
conflict	-	−0.83 ***	1.72 **	-	−0.17 *	−0.38 ***
R Squared	0.73	0.67	0.77	0.89	0.81	0.82
F test for no fixed effect pvalue	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

*** significant at alpha = 0.01 ** significant at alpha = 0.05 * significant at alpha = 0.1. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

In the case of GRP, the most significant influence was found regarding the young working population. The substantial impact was also determined in the case of the old working population and the category of elderly people. Surprisingly, the working population in prime-age had a negative effect on GRP. This can be probably caused by the positive correlation of this category with unemployment. This table includes only significant parameters, which means that GRP was significantly influenced by all analyzed demographic indicators (except the population category 0–14 years). A similar result was also found in the case of income, which was significantly impacted by all demographic variables. The largest effect was identified in the case of young (0–14 years old) and elderly people. Similar to GRP, income was also negatively affected by the number of working people in the prime age.

Regarding unemployment, a very strong negative impact (causing a decrease in unemployment) of the young working population and elderly people was found. The prime working category influenced unemployment positively, but it was confirmed only at a 0.1 level of significance. This implicates that most of the employed people in the analyzed regions probably belonged to the young working and old working population groups, as well as to the elderly category. The increase in the category of young working people by 1% will decrease unemployment by 0.46%. Export was also substantially influenced by the young working and old working population groups and the elderly population category. The effect of the young working category was the most significant. The increase in this category by 1% will lead to an average increase of export by 9.39%. The impacts of people aged 0–14 years and prime working-age people were not significant at alpha = 0.05. On the other side, the import was significantly influenced only by the category of young

people between 0 and 14 years old and young working category, with the negative effect of the youngest category and the positive impact of working people.

The openness of the economy was significantly positively affected only by the prime working category, and it was negatively impacted by the young working and old working population categories. Based on these results, it can be confirmed that the young working category played a very important role in economic development. Old people (the old working group and the elderly category) still played a significant role in the regions' economic performance. Surprisingly, the role of the prime-age working category was not as important as expected. The carried out analysis also confirmed the hypothesis about the important role of the young working population, which was significant in all estimated equations.

The hypothesis that the war conflict accelerated population aging and its unfavorable impact was more substantial on the economic performance of Azov Sea regions due to their proximity to the war zone was verified by the comparative analysis (*t*-test or Mann–Whitney test according to the distribution of data). The comparison of regions with access to the Black and Azov seas is shown in Table 6, taking into consideration the location of their seaports. It was performed separately for the periods before the war conflict and after its beginning. The table includes average values of indicators for the above-mentioned groups of regions in both periods. From the demographic point of view, the significant difference was determined in the period before conflict on the share of the population aged 0–14 years, young working population, the working population in the prime age, and elderly population. A small change was found in comparison with the period of the war conflict when the difference between these two regional groups became significant in the case of the share of elderly people.

Table 6. Comparison of regions with access to Black and Azov seas in the pre-conflict and conflict periods.

Average/Significance of the Difference	Pre-Conflict Period			Conflict Period		
Variable	**Azov Sea Regions**	**Black Sea Regions**	**Significance**	**Azov Sea Regions**	**Black Sea Regions**	**Significance**
under 14	0.1281	0.1493	<0.0001 ***	0.1351	0.1558	<0.0001 ***
workingp	0.7041	0.7035	0.6818	0.6897	0.6913	0.6685
youngwork	0.4122	0.4222	0.0063 ***	0.3695	0.3897	0.0002 ***
primework	0.4196	0.4146	0.0320 **	0.4162	0.4103	0.0059 ***
oldwork	0.1682	0.1632	0.3600	0.2144	0.2000	<0.0001 ***
elderly	0.1679	0.1471	<0.0001 ***	0.1752	0.1530	0.0003 ***
GRP	3087.1	1864.9	0.0004 ***	2548.5	2088.6	0.2716
income	2432.6	1876.6	0.0325 **	1653.0	1615.3	0.8657
unemployment	7.1000	8.50	<0.0001 ***	11.00	10.0300	0.0594 *
import	956.4	387.6	<0.0001 ***	596.2	395.2	0.0717 *
export	2288.4	762.4	<0.0001 ***	1468.3	928.2	0.1053
openness	1.1682	0.5873	<0.0001 ***	0.8730	0.6098	0.0942 *

*** significant at alpha = 0.01 ** significant at alpha = 0.05 * significant at alpha = 0.1. Source: Authors' calculations based on data from the State Statistics Service of Ukraine.

It should be mentioned that strongly significant differences between the Azov Sea and the Black Sea regions were identified for all investigated economic indicators in the pre-conflict period. In contrast, substantial differences were not determined for the majority of the presented indicators between the Azov Sea and the Black Sea regions at alpha = 0.05 and at alpha 0.1 during the conflict period. They were only found in case of unemployment, import and the openness of the economy. Thus, it can be seen that significant differences existed between these two compared regional groups in the pre-conflict period that disappeared during the conflict period, which confirmed our research hypothesis. On the other side, differences in the age structure between regions persisted. Table 6 also shows the substantial increase in the share of the old working and elderly population. This was also in accordance with our research assumptions.

So, the results of the conducted analysis show that the relationship between economic indicators and demographic structure differed substantially in Ukrainian coastal regions, compared to the whole country. This relationship was significantly influenced by the war conflict, in particular regarding income, unemployment, and the openness of the economy. The performed analysis also compared the pre-conflict and conflict situations in regions with access to Azov and Black Seas. Our findings confirm that while there were clear differences in the economic development among these two regional groups in the pre-conflict period, they disappeared during the conflict period because of the economic deterioration of the Azov Sea regions.

In general, it can be concluded that the results of the conducted analysis confirmed our basic hypothesis that war adversely affected the demographic structure and inhibited the growth and economic development of Ukrainian coastal regions.

6. Discussion

In this article, we investigated peculiarities of two periods, i.e., the pre-conflict period and conflict period, in the context of the influence of the population's demographic structure on the economic growth and development of Ukrainian coastal regions. The received results proved the overarching research hypothesis of the paper that the military conflict impacts adversely the demographic structure of the population, which inhibits the growth and economic development of Ukrainian coastal regions.

The findings confirmed the hypothesis that the military conflict influences significantly the relationship between demographic and economic indicators, which is in accordance with Anderton and Carter [6]. The unfavorable impact of the war on the economic performance of Ukraine and its coastal regions should be understood in the following way. On the one hand, while Russia realized its war plans regarding Ukraine to a certain extent, Ukraine had negative outcomes of the conflict situation. That is why the positive economic effects of the war were observed for Russia, and the negative influences of the military conflict were determined for Ukraine. So, the study of the Institute for Economics and Peace [7] is in line with our results. On the other hand, Ukraine with the support of the international community managed to prevent Russia's plans to occupy other parts of the Ukrainian territory. The sanctions imposed by the European Union, USA, and other countries weakened Russia's economy and reduced the intensity of the country's military activities against Ukraine.

Our research also showed that GRP and income were not affected by the demographic structure during the military conflict, and this result differed from Wei and Hao [21], Zhang et al. [22], and Benassi and Salvati [23]. At the same time, unemployment was impacted by this structure more substantially in the conflict period, compared with the pre-conflict period.

The obtained results proved the hypothesis that demographic development has a substantial influence on the regions' economic performance. This was particularly related to income, which is similar to Sánchez-Romero et al. [14], as well as to the openness of the economy. It was also confirmed that the young working population played the most significant role in economic development, which coincided with findings obtained by Macunovich [33]. However, our result on the young population was different in comparison with Brunow and Hirte [24].

Also, the hypothesis was positively verified that war accelerates population aging and its unfavorable impact is more substantial on the economic performance of Azov Sea regions due to their proximity to the conflict zone. It was revealed that while demographic differences occurred between the Azov Sea regions and the Black Sea regions before and during the military conflict, economic differences disappeared between these regions in the conflict period, in contrast to the pre-conflict period. Thus, the proximity to the conflict zone had a larger negative impact on the economic performance of the regions, compared with their demographic structure.

In future publications, attention could be given to the evaluation of the influence of demographic changes on the economic development of all Ukrainian regions, as well as regional disparity.

7. Conclusions

The main conclusion of our paper is that the war affects adversely the population's demographic structure, which inhibits the growth and economic development of Ukrainian coastal regions. This study allows us to discover some important aspects for a better understanding of processes in the regions, connected with the military conflict.

Firstly, it was identified that the war had a negative impact on the economic performance of the coastal regions. Thus, it can be stated that this substantial shift will hamper the further economic development of the regions.

Secondly, while the overall effect of the military conflict was negative, the degree of its influence was different. This was seen when we compared demographic and economic variables before and during the military conflict, particularly for the Azov Sea regions and the Black Sea regions.

It should be also mentioned that Ukraine made the choice in favor of the European democratic model, which is being implemented in the country with the support of the EU member states. At the same time, Russia defends its imperialist position, since the cause of the war was the conclusion of the Association Agreement between Ukraine and the European Union. Russia uses this conflict to seize new territories, expand its political and economic influence in the post-Soviet area, and reorient Ukraine to the authoritarian model.

The war conflict had a negative impact on various economic and social aspects of Ukraine's development. At the same time, it led to the economic shift of Ukraine toward the EU countries, which was possible owing to the Ukraine–EU Association Agreement.

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