Conference Proceedings „Innovative development of agricultural business and rural areas“, 28 – 29.09.2023, Sofia
DOI: https://doi.org/10.37075/idara.2023.07

IMPACT OF DEMOGRAPHIC FACTORS ON ECONOMIC ACTIVITY IN BULGARIA'S RURAL TERRITORIES

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Abstract
Bulgaria has one of the fastest rates of population decline in the EU and the world. In 2021, the value is observed to be 21.6% lower compared to the value recorded in 2001. Changes in rural areas are even more dynamic and have a negative impact on their development opportunities. This paper aims to examine and analyse the economic activity of the rural population using statistical data obtained from population censuses. The analysis is mainly focused on the interdependencies between economic activity, employment in agriculture and their implications for the rural economy. Correlation and regression analysis were applied to test the research hypotheses. The summary of the obtained results shows that the coefficient of economic activity rises until 2020, but activity is uneven and at different rates in different regions, with the coefficient being lower in villages at the expense of economic activity in cities; • The unemployment rate in Bulgaria has gone through three stages: until 2013, it was in double digits, then it dropped to 4.2 (in 2021), and in 2019, an increase began, which varied greatly by region. The unemployment rate is significantly higher in the villages, with the most significant differences in the younger age groups; • The correlation analysis revealed a weak, positive, and insignificant relationship between the rural population and the coefficient of economic activity, as well as the presence of a medium, positive, and significant relationship between the rural population and the agricultural labour force; According to the regression analysis, Annual work unit has a positive and significant influence on the population in rural areas, indicating that agricultural specialization and automation are still in their early stages in Bulgaria, and the workforce in the industry is structure-determining Demographic processes have a negative impact on rural development. A cyclical pattern emerges wherein a declining local economy and depopulation coexist and mutually reinforce one another. A decline in demographic potential and a lack of human capital may limit investment flow. For these reasons, investing in human capital is regarded as a critical means of reversing unfavourable trends in demographic structures and processes in all countries affected by accelerated aging and depopulation. This includes improving the health-care system, education, and other social services, as well as raising the living standards of rural inhabitants. To achieve this goal, regional demographic policies must be developed that take into account the demographic and socioeconomic characteristics of each region.
Key words: demographic processes, economic activity, rural territories.
JEL: *J11, J43*

The report was developed under the project № КП-06-Н55/1 „Development of Rural Territories in the Conditions of an Economy Transforming to Sustainability“ (RTtowardsSE), financed by the „Scientific Research“ fund (2021-2024).

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Introduction

Bulgaria is one of the European Union member states experiencing a decline in population size, placing it within the group of ten countries with such demographic trends. In 2021, the value is observed to be 21.6% lower compared to the value recorded in 2001. The rate of decline is notably stronger in rural territories of the country and is mainly due to the high level of low incomes, unemployment, and poverty within these areas. Based on the data provided by Eurostat (Eurostat regional yearbook, 2022), it is evident that four out of the five regions with the lowest economic status within the European Union (EU) are located in Bulgaria. These regions indicate a gross added value per capita ranging from 36% to 40% of the average value of this indicator across the EU (EPRS,2021). Along with the reduction of the population and its density, there is also a deterioration of its age structure, the coefficients of demographic replacement, demographic dependence, etc. (Mladenov, 2014; Tsekov 2018; Burdarov, Ilieva 2021; Tsekov, 2021; Doitchinova, Wrzochalska, 2022; Doitchinova, Lazarova, 2023).

Researchers studying demographic processes in rural areas (Brown, Stucksmith, 2016) emphasize that the negative effect is not only the loss of population but also the negative impact on the economy and society. The authors indicate various effects and significant negative effects associated with community transformation and the formation of regional identity. (Emery, Flora, 2006; Reynaud, Miccoli, 2018). The phenomenon of depopulation increases the challenges faced in rural development, as it leads to a shrinkage in local markets and a decline in the availability of skilled and talented workers, accordingly limiting the development of rural industries. (Wood, 2008; Carr, Kefalas, 2009). In practical terms, it is apparent that a cyclical pattern emerges wherein a declining local economy and depopulation coexist and mutually reinforce one another.

Researchers (Anderlik, Cofer, 2014) relate the spatial distribution of depopulation to the economy of rural areas. The decline in agricultural employment, as well as the impact of globalization and automation on rural production, are among the leading factors. Previous research findings indicate that regions with high employment shares in agriculture usually experience significant population declines due to the phenomenon of out-migration resulting from enhanced labour productivity (Brezzi, Piacentini, 2010). Furthermore, Johnson and Lichter (2019), establish a correlation between the decrease in population in rural areas of the United States and the diminishing presence of small-scale agricultural operations. On the other hand, specific production specialization within the agricultural sector has an impact on the dynamic nature of demographic processes in rural territories. (Doitchinova, Miteva, 2020; Doitchinova, Stoyanova, 2020; Doitchinova, Stoyanova, 2023).

The aim of this report is to evaluate the economic activity within rural regions of Bulgaria as well as identify the main factors that impact it.

Methodology

Information for the period 2011 – 2022 was used to study the economic activity of the population by region and by place of residence (cities and villages), the unemployment rate by year and by place of residence (cities and villages), as well as by age groups. A demographic analysis was conducted in this paper using data from the National Statistical Institute (NSI), the Agrostatistics Department of the Main Directorate Agriculture and Regional Policy of the Ministry of Agriculture, the results of the Census of Agricultural Holdings in the Republic of Bulgaria in 2020, and the Population Census and the housing stock in the Republic of Bulgaria in 2021. Correlation analysis was applied to identify the relationship between five indicators, namely economic activity of the population, labour force in agriculture (through two indicators: persons in agricultural holdings and annual work unit (AWU)), population in rural areas, and population in the country by district. Based on the literature review, hypotheses were formed regarding demographic changes in rural areas, which were proven in the analytical part.

Assessment of the economic activity of the population

Throughout the examined decade, there was a notable upward trend in the economic activity rate, which ends in 2020. Based on the data obtained from the 2021 Population and Housing Census, it has been determined that as of the beginning of the month of September in the same year, the total number of individuals within the country's population falling within the age range of 15 to 64 years and actively participating in economic activities amounts to 2,835,000. The overall economic activity rate for the nation stands at 69.7%, with a breakdown of 70.8% for males and 68.5% for females.

The region with the highest coefficient of economic activity is Sofia (capital), with 78.6%, followed by Gabrovo, with 73.5%, and Pernik, with 72.1%. The above-mentioned indicator has the lowest values in the districts of Kardzhali (54.1%), Silistra (60.6%), Sliven (61.1%), Lovech (62.2%), and Targovishte (63.4%) (see Figure 1).

Some researchers (Nenov, 2023) have appropriately classified the regions beyond Sofia and its environs into two distinct categories, taking into consideration the proportion of the working-age population in each area. The terms „regions characterized by low unemployment“ and „regions characterized by high unemployment“ refer to these categories. The authors draw a conclusion regarding the significant economic divergence observed over a period of two decades as well as the emergence of „three economies“ progressing at different speeds. In the district of Sofia and its surroundings (in 2021), the relative share of the economically active population of working age is 81%, 72% for the group of districts with low unemployment, and 67% for the group of districts with high unemployment, compared to, respectively, 71%, 73%, and 75% (2001). These differences are also confirmed by the significant average GDP growth (of 6% per year for Sofia and the surrounding area) for the entire period from 2000 to 2019, while for the rest of the country, this annual growth is about twice as low.

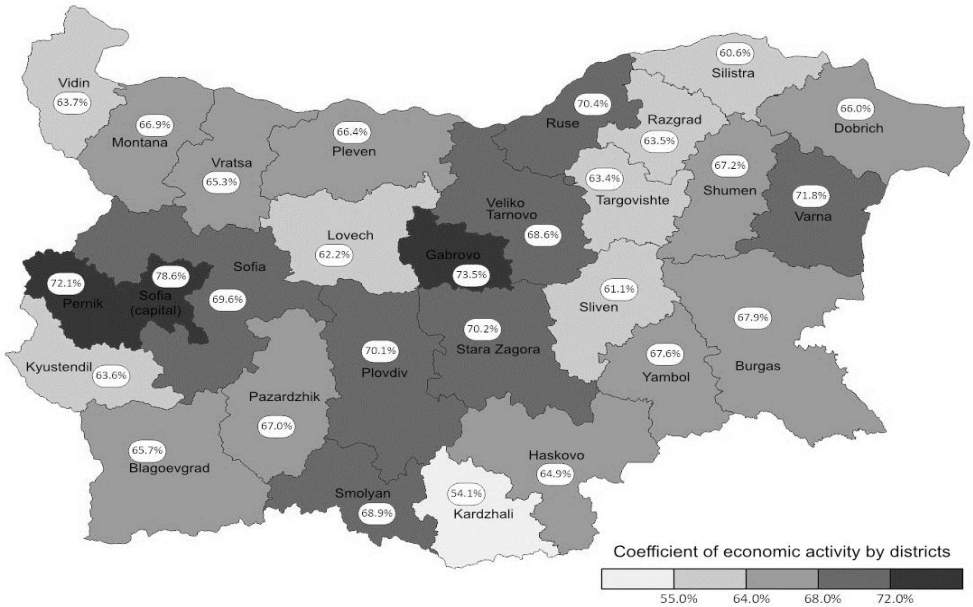

Figure 1. Coefficient of economic activity by districts
Source: NSI, Population and Housing Census, 2021.

The analysis of economic activity coefficients between urban and rural areas reveals a consistent trend of lower coefficients in villages across all age cohorts. The most significant differences are observed within the demographic of individuals aged 25 to 34 years (as depicted in figure 2), while the least significant differences are found among those aged 15 to 24 years.

The impact of regional differences in the unemployment rate on economic activity is noteworthy. During the time range from 2011 to 2021, our country experienced three separate phases of change in its unemployment rate. In the years before 2013, it was double-digit and has since decreased annually, reaching 4.2% in 2019. COVID-19 significantly changed the circumstances and caused the increase in the coefficient.

The data presented in Figure 3 regarding the unemployment rate in cities and villages indicates that the unemployment rate in villages is significantly higher. Regardless of the observed fluctuations during the specified timeframe, the disparities between the two coefficients indicate a decrease in unemployment rates in urban areas compared to rural areas by approximately 196% in 2017 and 243% in 2019. At the same time, the differences are most notable among individuals in the younger age groups. Within the demographic cohort encompassing individuals aged up to 29 years, it is observed that rural areas exhibit a higher unemployment rate of 53.7%, in contrast to the comparatively lower rate of 29.1% observed in urban areas. The differences are most minimal within the demographic of individuals aged 50 years and above.

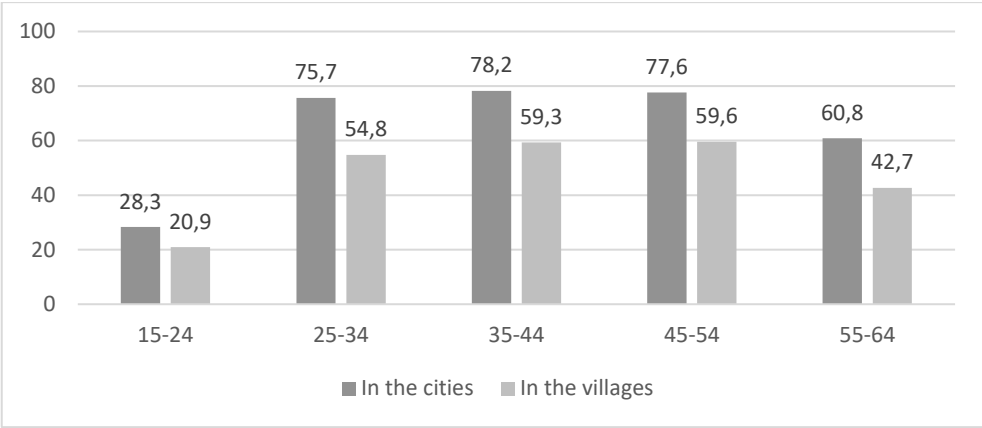

Figure 2. Employment rates by place of residence and by age (September 2021)
Source: NSI, Population and Housing Census, 2021.

Regardless of the overall national unemployment rate, there's significant district variation in employment levels. According to data from Census 2021, in three of the districts (Vidin, Silistra, and Targovishte), the unemployment rates are over 17%, respectively 20.1%, 18.1%, and 17.7%. On the next place (between 14% and 17%) are six districts (Razgrad, Shumen, Sliven, Pazardzhik, Montana, and Vratsa), and in eight, the coefficient is in the range of 11 to 14% (Pleven, Lovech, Blagoevgrad, Stara Zagora, Haskovo, Kardzhali, Yambol, and Dobrich).
The largest is the group of districts (9 districts), whose coefficient is between 8% and 11% (Sofia district, Pernik, Plovdiv, Varna, Burgas, Ruse, Veliko Tarnovo, Smolyan, and Kyustendil). Only two districts, Sofia Capital and Gabrovo, have an unemployment rate below 8%, respectively: Sofia, 4.6%, and Gabrovo, 7.4%.

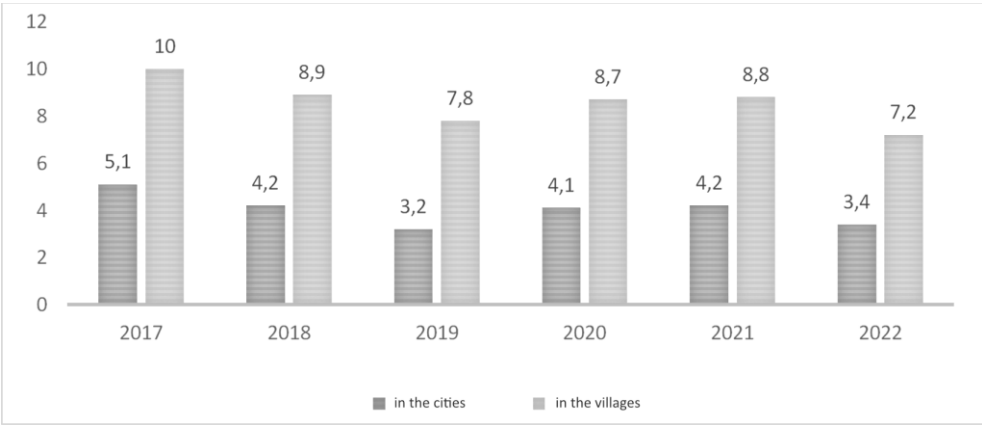

Figure 3. Unemployment rates for the period 2017–2022.
Source: NSI.

The analysis of youth employment in the specified regions reveals that, as of September 2021, the proportion of individuals aged 15–29 who are employed exceeds 30% in five districts, namely Sliven, Silistra, Lovech, Vidin, and Targovishte. There are a total of 18 districts that fall within the range of 20% to 30%, while only 5 districts, namely Varna, Gabrovo, Pernik, Smolyan, and Sofia Capital, have percentages below 20%.

The analyzed information, as well as the results of research by other authors (Tsekov, 2021), give grounds for the conclusion that in a large part of the municipalities in the country, the highly aged local population leads to a rapidly growing deficit of the population of working age in individual small municipalities and many villages. At the same time, there is a decline in the potential for economic growth (Doitchinova, Lazarova, 2023).

Correlation-regression analysis of economic activity in rural territories

Based on the comprehensive examination of existing literature, two hypotheses have been formulated related to the demographic transformations taking place in rural territories. These hypotheses specifically focus on the correlation between indicators such as the economic activity of the population and the labour force engaged in agricultural activities. Consequently, correlation analysis can be employed as a means to empirically evaluate the validity of these hypotheses:

H_1 – A negative correlation exists between the rural population and the coefficient of economic activity.

H_2 – A negative correlation exists between the rural population and the agricultural labour force.

In order to establish the existence of this relationship between these indicators, Table 1 presents data on economic activity in Bulgaria in 2021, the workforce in agriculture (Persons and AWU) in 2020, economic activity in agriculture (Gross value added in agriculture (GVA) in 2021), the country's population, and the population in rural territories in 2021 by district.

When examining the characteristics of the labor force employed in agriculture, two indicators were used: persons refers to the number of persons employed in agricultural holdings in 2020, and GRE represents the equivalence of persons employed in agriculture in 2020 within per year (1856 hours worked per year or 232 man-days). Table 1 shows that there are areas where the differences between the two indicators are small (Sofia, Gabrovo and Pernik) and areas where the two indicators diverge almost twice (Plovdiv, Blagoevgrad and Pazardzhik). In the first group of districts, the size of agricultural holdings allows higher employment of agricultural workers within the year. In the second group of districts, small family farms with part-time employment of their household members predominate.

Table 1. Distribution of Persons in Agriculture, Annual work unit in Agriculture, Gross Value Added in Agriculture, Population in Rural Territories, Total Population and Coefficients for Economic Activity (CEA) by Districts

NUTS 3 Districts	Persons 2020 (ppl)	AWU 2020 (ppl)	GVA 2021 (Agriculture) (mln. BGN)	Population in rural territories (PRT) 2021 (ppl)	Total Population (TP) 2021 (ppl)	CEA 2021 (%)
Vidin	4467	2325	148	27561	75408	69
Vratsa	7288	5271	192	91071	152813	65,2
Lovech	4778	2852	165	77695	116394	69
Montana	7114	4367	229	73679	119950	63,4
Pleven	8859	6334	265	112989	226120	69
Veliko Tarnovo	9077	6200	277	64602	207371	75
Gabrovo	2788	1518	93	37326	98387	72,5
Razgrad	7753	5759	246	59565	103223	**61,9**
Ruse	7535	4775	260	52127	193483	74,9
Silistra	9280	5081	253	56004	97770	65,4
Varna	8372	5059	270	112585	432198	75,1
Dobrich	12710	8211	390	76251	150146	68,5
Targovishte	7537	4875	204	49071	98144	62,4
Shumen	9308	5364	324	72298	151465	74,8
Burgas	15603	9400	281	183704	380286	68,2
Sliven	9613	4841	189	59800	172690	68,8
Stara Zagora	10564	7003	267	86573	296507	74,5
Yambol	8455	4888	207	47927	109693	67,7
Blagoevgrad	25185	14315	279	223149	292227	75,3
Kyustendil	8519	4042	115	24861	111736	74,5
Pernik	3644	2221	62	29815	114162	**76,9**
Sofia	1418	1017	191	231989	231989	75,8
Sofia (Capital)	9648	5683	79	0	1274290	**76,9**
Kardzhali	18046	9191	208	79172	141177	69
Pazardzhik	19423	9034	210	138446	229814	70,3
Plovdiv	27881	16237	367	257284	634497	68,5
Smoliyan	10351	2753	88	62596	96284	70,8
Haskovo	19090	9412	211	85591	211565	67,5

Source: Own calculation

On the other hand, the districts that increase the highest GVA in Agriculture, forestry, and fisheries in 2021 are the districts of Dobrich, Plovdiv, and Shumen, while districts such as Pernik, Smolyan, and Gabrovo realize the lowest GVA in agriculture. The largest rural population is in the districts of Plovdiv, Sofia, and Blagoevgrad, while the most populated regions in the country are Sofia-Capital, Plovdiv, and Varna. At the same time, the smallest rural population in 2021 is reported in Kyustendil, Vidin, and Pernik districts, and for the country, the smallest population is in Vidin, Smolyan, and Silistra. From the point of view of the Coefficient of Economic Activity (CEA), the weakest activity is in the districts of Razgrad, Targovishte, and Montana, and the most active are the districts of Sofia-Capital, Pernik, and Sofia.

It can be concluded that in certain districts, specifically Gabrovo and Pernik, there exists a minimal gap between the number of persons and the AWU. These districts also exhibit relatively low GVA in the agricultural sector. Additionally, Pernik stands out as a district with the smallest rural population. In those regions, despite the presence of high AWU values, which serve as indicators of increased agricultural employment, the sector's efficiency remains low and its development is insufficient. According to the other indicators, Sofia stands out with the smallest rural population but the most economically active population, while Sofia-Capital is the most economically active but also the most populated district in Bulgaria. Plovdiv, on the other hand, emerges as an area with the largest population, including a rural-type population, but also generates the highest GVA in agriculture, as those employed in this sector are seasonal and/or part-time. In the Plovdiv district, the share of agricultural production is increasing, and this branch is becoming more and more structurally decisive for the region.

As a result of the performed correlation analysis, the relationship of each indicator with the rest of the studied quantities is established. Table 2 presents the results of the analysis. Correlation is determined according to the scales for: 1) Strength of correlation – from 0.7 to 1 – strong correlation; from 0.3 to 0.7 – medium correlation and below 0.3 – weak correlation; 2) Nature of the correlation – positive or negative; 3) Significance of the correlation – P-value > 0.05 – insignificant correlation, P-value < 0.05 significant correlation.

Within the framework of the analysis, it is found that there is the strongest, positive, and significant correlation between indicators of the labour force in agriculture (Persons and AWU, 0.960), followed by a medium, positive, and significant correlation between AWU and GVA in agriculture (0.625), as well as between the AWU factors and the rural-type population by district (0.612). However, it is evident from Table 2 that the correlation between the CEA and the total population and the other indicators is weak.

Additionally, CEA has a weak positive correlation with the country's population and rural population but a weak negative correlation with the agricultural labour

force and agricultural GVA. On the basis of this, it is possible to draw the conclusion that the district's agricultural activity has a minor impact on the economic activity in the district.

The results of the correlation analysis indicate a rejection of the theoretical hypotheses and provide evidence in support of the following assertions:

- H_1 – Rejected because there is a weak, positive, and insignificant relationship between the population in rural areas and the coefficient of economic activity (0.053);
- H_2 – Rejected because there is a medium, positive, and significant relationship between the population in rural areas and the labour force in agriculture (Persons: 0.574 and AWU: 0.612).

The correlation analysis reveals a positive relationship between the indicators, with a particularly significant correlation observed between the population living in rural areas and the labour force engaged in agriculture. This finding highlights the need for further investigation and analysis in this specific direction.

Table 2. Correlation analysis of the indicators Persons in Agriculture, Annual work unit in Agriculture, Gross Value Added in Agriculture, Population in rural territories, Total population, and Economic Activity by districts

		Persons	AWU	GVA	PRT	TP	CEA
Persons	Pearson Correlation	1	**,960****	**,485****	**,574****	,296	–,068
	Sig. (2-tailed)		<,001	,009	,001	,126	,730
	N	28	28	28	28	28	28
AWU	Pearson Correlation	**,960****	1	**,625****	**,612****	,339	–,096
	Sig. (2-tailed)	<,001		<,001	<,001	,078	,628
	N	28	28	28	28	28	28
GVA	Pearson Correlation	**,485****	**,625****	1	**,513****	–,007	–,193
	Sig. (2-tailed)	,009	<,001		,005	,973	,326
	N	28	28	28	28	28	28
PRT	Pearson Correlation	**,574****	**,612****	**,513****	1	,157	,053
	Sig. (2-tailed)	,001	<,001	,005		,425	,790
	N	28	28	28	28	28	28
TP	Pearson Correlation	,296	,339	–,007	,157	1	,354
	Sig. (2-tailed)	,126	,078	,973	,425		,064
	N	28	28	28	28	28	28
CEA	Pearson Correlation	–,068	–,096	–,193	,053	,354	1
	Sig. (2-tailed)	,730	,628	,326	,790	,064	
	N	28	28	28	28	28	28

***. Correlation is significant at the 0.01 level (2-tailed).*
Source: Own calculations in SPSS.

The following regression analysis investigates the influence of the labour force on the population in rural regions. The agricultural workforce in the present study is measured by two indicators that have a strong, positive, and significant relationship, as evidenced by the 0.960 correlation. That is why the AWU is used for the regression analysis, since the relationship between the AWU and the population in rural areas is more pronounced (0.612); moreover, the indicator takes into account the annual use of the labour force in agriculture equal to full annual employment and allows a clearer assessment of its impact.

Based on the literature review of the theory and the correlation analysis performed, the author team generated two additional hypotheses:

- H_1 – AWU has a negative impact on the population in rural areas (theoretical);
- H_2 – AWU has a positive impact on the population in rural areas (empirical).

To test the hypotheses and establish the relationship between the indicators, a regression analysis was conducted (see Table 3).

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,612[a]	,374	,350	51684,71666

a. Predictors: (Constant), AWU
Source: Own calculations in SPSS.

Even though only 37% of the AWU influences the rural population, the significance of the regression is one (0.001), and the model is fit for analysis (see table 4).

Table 4. Assess the statistical significance of the regression model and evaluate its suitability for analysis.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41487025640,970	1	41487025640,970	15,531	<,001[b]
	Residual	69454058353,994	26	2671309936,692		
	Total	110941083994,964	27			

a. Dependent Variable: Population in Rural territories
b. Predictors: (Constant), AWU
Source: Own calculations in SPSS.

On Table 5, the regression coefficients are presented, which allow us to conclude that AWU has a positive (AWU is 11.206) and significant (Sig. 0.001) impact on

the population in rural areas, or in other words, if AWU increases by one unit, the population in rural areas will increase by 11,206 units.
As a result of the correlation-regression analysis, H_1 s rejected and H_2 is confirmed, and it can be summarized that AWU has a positive and significant impact on the population in rural areas. While in other countries, rural depopulation is caused by digitization and automation of production, in Bulgaria, agriculture specialization and automation are still insufficient, and labour force is a structure-determining factor for the agricultural sector.

Table 5

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	21102,563	19661,228		1,073	,293		
	AWU	11,206	2,843	,612	3,941	<,001	1,000	1,000

a. Dependent Variable: Population in Rural territories
Source: Own calculations in SPSS.

Conclusion
As a result of the analysis of the impact of economic activity on the population in rural areas, the following conclusions can be drawn:

- The coefficient of economic activity rises until 2020, but activity is uneven and at different rates in different regions, with the coefficient being lower in villages at the expense of economic activity in cities.
- The unemployment rate in Bulgaria has gone through three stages: until 2013, it was in double digits, then it dropped to 4.2 (in 2021), and in 2019, an increase began, which varied greatly by region. The unemployment rate is significantly higher in the villages, with the most significant differences in the younger age groups.
- The correlation analysis revealed a weak, positive, and insignificant relationship between the rural population and the coefficient of economic activity, as well as the presence of a medium, positive, and significant relationship between the rural population and the agricultural labour force.
- According to the regression analysis, AWU has a positive and significant influence on the population in rural areas, indicating that agriculture specialization and automation are still in their early stages in Bulgaria, and the workforce in the industry is structure-determining.

Demographic processes have a negative impact on rural development. A decline in demographic potential and a lack of human capital may limit investment flow. For

these reasons, investing in human capital is regarded as a critical means of reversing unfavourable trends in demographic structures and processes in all countries affected by accelerated aging and depopulation. (EC, 2020). This includes improving the health-care system, education, and other social services, as well as raising the living standards of rural inhabitants. (Nikolova et al., 2018; Lazarova et al., 2023; Wrzochalska, Łaba, 2022). To achieve this goal, regional demographic policies must be developed that take into account the demographic and socioeconomic characteristics of each region.

References

Anderlik, J. M., Cofer, R., 2014. *Long-Term Trends in Rural Development and Their Implications for Community Banks*, FDIC Quarterly 8(2):44–59.

Brezzi M., Piacentini M. (2010), *Labour mobility and development dynamics in OECD regions*, Paper presented at the OECD workshop „Migration and Regional Development", Paris, 7 June 2010.

Brown, D. L., Shucksmith, M. (2016). *A new lens for examining rural change. European Countryside, 8(2), 94–188*. doi:10.1515/euco-2016-0015

Carr, P.J., Kefalas, M.J., (2009). *Hollowing Out the Middle: the Rural Brain Drain and what it Means for America*, Beacon Press, Boston.

Doitchinova, J., Miteva, A. (2020). *Agriculture and rural development: paths of change and consequences*. Scientific Papers. Series „Management, Economic Engineering in Agriculture and rural development", Vol. 20 *Issue 3, p.207-214.*

Doitchinova, J., Stoyanova, Z. (2020). *Regional Differences and Impact of Agriculture in Rural AREAS*. Ikonomika i upravlenie na selskoto stopanstvo, 65(4), 66-73 (Bg).

Doitchinova, J., Stoyanova, Z. (2023). *Production specialization – factor for increasing added value in the farms*. Bulgarian Journal of Agricultural Economics and Management, 68(3) 39-47

Doitchinova, J., Wrzochalska, A., (2022). *Demographic processes and problems in rural areas of Poland and Bulgaria, in Innovative development of agricultural business and rural areas*, UNWE Publishing complex, p. 115-124.

Doitchinova, J., Lazarova, E. (2023) *Demographic changes and inequalities: regional differences with a focus on rural area in Bulgaria,* Scientific papers series management, Economic engineering in agriculture and rural development, vol. 23, issue 4.

Emery, M., Flora, C. (2006). *Spiraling-up: Mapping community transformation with community capitals framework*. Community Development, 37(1), 19–35. doi:10.1080/15575330609490152

Eurostat regional yearbook – (2022)

EPRS (2021) *Demographic Outlook for the European Union*

European Commission (2020) *Report on the Impact of Demographic Change* https:// ec.europa.eu/info/sites/default/files/demography_report_2020.pdf
Johnson, K., Lichter, D. (2019) *Rural Depopulation: Growth and Decline Processes over the Past Century*, Volume84, Issue1, March 2019, p. 3-27.
Ilieva, N., Bardarov, G. (2021*) Regional demographic imbalances in Bulgaria*. Quantitative dimensions, causes, policies and measures to optimize the situation, Friedrich Ebert Foundation
Lazarova, E., Pavlov, P., Petrova, M., Shalbayeva, S. (2023) *Analysis and Assessment of Infrastructural Potential in Rural Territories*. Economics. Ecology. Socium 2023, 7, 1-14.
Ministry of Agriculture, Food and Forestry (2022) *Census of Agricultural Holdings 2020*.
Mladenov, C. (2014). *Depopulation – the „plague" in the settlement network.* – In: A. Hristova (ed.) Col. reports from the Conference „The Demographic Situation and Development of Bulgaria", February 26 and 27, 2014, Sofia, pp. 461-476.
National Statistical Institute, 2023.
National Institute of Statistics, Population and Housing Census, 2021.
Nenov, P. (2023) *History of three economies*, SIA Analysis No. 01/2023. (Bg)
Nikolova, M., Linkova M., Nenova, R. (2018). *Rural Development*. AI „Tsenov", Svishtov.
Reynaud, C., Miccoli, S. (2018) *Depopulation and the Aging Population: the Relationship in Italian Municipalities* : https://www.mdpi.com/2071-1050/10/4/1004
Tsekov, N. (2018). *Rural depopulation in Bulgaria and Europe after 1945*. Ed. „Veles Consult", S., pp. 162-175. (Bg)
Tsekov, N. (2021). *Regional aspects of the depopulation and aging of the population and labor resources of Bulgaria at the beginning of the 21st century*, Problems of Geography, 1/21, p.60-75. (Bg)
Wood, R.E., (2008). *Survival of Rural America: Small Victories and Bitter Harvests*, University Press of Kansas, Kansas
Wrzochalska, A.; Łaba, S. (2022). *Demographic and educational structural changes in Polish villages*, 2000–2021. Ikonomika i upravlenie na selskoto stopanstvo, 67(4), 45-59 (Bg).