

---

# **PERSPECTIVE SPATIAL MODEL FOR SUSTAINABLE REDIVISION INTO REGIONS AND PROVIDING FOR BULGARIA'S REGIONAL DEVELOPMENT**

---

**Martin Nikolaev Harizanov<sup>1</sup>,**

*<sup>1</sup>D. A. Tsenov Academy of Economics – Svishtov, Bulgaria*

*E-mail: <sup>1</sup>mharizanov@abv.bg*

**Abstract:** Bearing in mind the process of depopulation of Bulgaria's North-west region, the planning and further worsening of the socio-economic indicators of the region necessitate taking actions for the redivision of the NUTS 2 regions. The need of differentiating new division into regions is determined by the high degree of the region's lagging in key socio-economic factors such as: transport infrastructure, demographic characteristics, GDP per capita, average gross salary, etc. The proposed model for division of Bulgaria's regions preserves in the long run the number of citizens in the level 2 regions set in the normative base and allows the differentiation of five regional centers. This means that in a case of lack of force majeure circumstances in the socio-economic aspect in the country, we can achieve economic integration among the regions and development of regional policy for the purposes of the implementation of financial securing of the development of the lagging regions, which as of this moment, encompass the planned North-west region.

**Key words:** division into regions, financial security, NUTS 2, planned North-west region.

This article shall be **cited** as follows: **Harizanov, M.** (2022). Perspective Spatial Model for Sustainable Redivision into Regions and Providing for Bulgaria's Regional Development. *Economic Archive*, (2), c. 64-X82.

**URL:** [nsarhiv.uni-svishtov.bg](http://nsarhiv.uni-svishtov.bg)

**JEL:** R51, R58.

\* \* \*

Over the last years, there have been a series of expert proposals developed on the basis of principles which depict the NUTS 2 regions in different dimensions. As of this moment, the planned divided regions in Bulgaria are six. They have been named as follows: North-west, North Central, South-east, South Central, South-west. In compliance with the adopted nomenclature (NUTS) and the European regulation for common classification of territorial units for statistics (Eur-Lex, 2022), the administrative units are determined on the basis of the average number of citizens in the corresponding administrative unit, as NUTS 1 shall comprise a population from 3 million to 7 million people; NUTS 2 – between 800,000 and 3 million people and NUTS 3 – between 150,000 and 800,000 people. The regions (Architect Belin Mollov: Models for new planned regions in Bulgaria at the NUTS 2 level, 2018) that encompass NUTS 2 form the framework for the implementation of European regional policies and the financial security of the regions (The EU's cohesion policy). In this respect, the **subject** of research in this article is the division into regions in Bulgaria. The **object** is the division into regions in Bulgaria for the purposes of the financial security of the development of the NUTS 2 regions in compliance with the European requirements for number of people at each NUTS level. The **aim** of this research is to differentiate the existing redivision models and to propose a model for new division which aims to secure financially the future development of the NUTS 2 regions in compliance with the European and national regional policies.

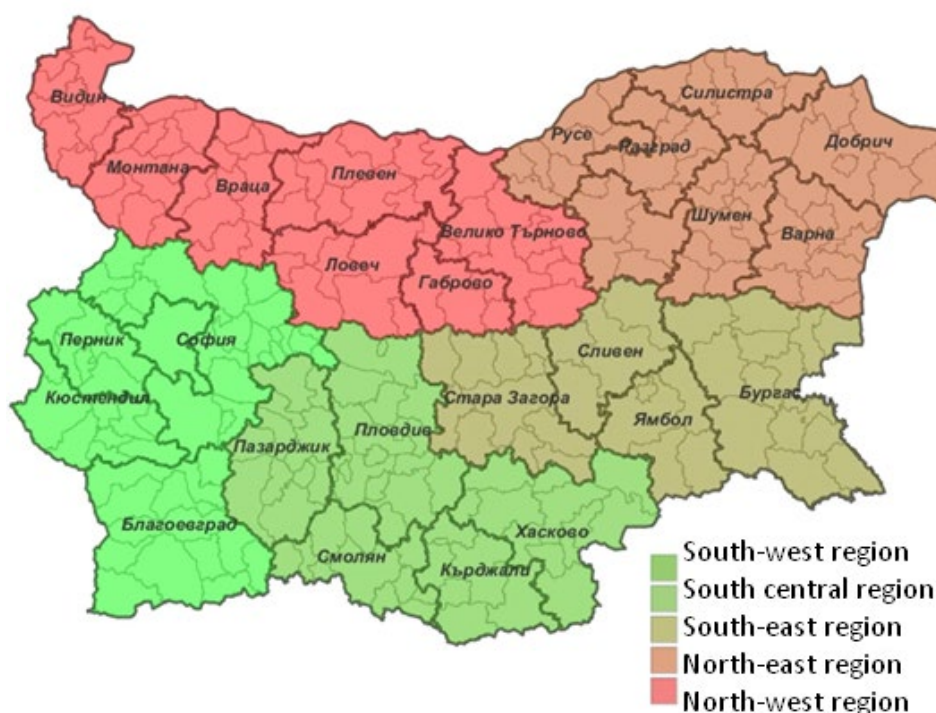
### **1. Planned development of Bulgaria's regions – characteristics and trends**

The research on regional development over the last two decades has versatile and multifaceted aspects. It has been caused mainly by: the changing socio-economic characteristics resulting from Bulgaria's accession to the European Union in 2007, the policies for regional development in Bulgaria (Todorova, 2014), the implementation of methods for improvement of the business environment (Vasileva, 2019), the integration of approaches for the planning of local development (Daskalova, 2020), the financial support for the integrated development of the regions, districts and municipalities through the European funds (Zahariev, Prodanov, Radulova, & Zarkova, 2021), the development of the fiscal positions of the municipalities in Bulgaria (Pavlova, 2021), the processes of digitalization (Angelov & Zarkova, 2021), etc.

The statistical data about the planned North-west region indicates a violation in the requirement for number of citizens who live in the region under the normative minimum. This brings to the foreground the search for an optimal

model for redivision of the NUTS 2 regions. Certain models for the new division have been discussed since 2018. The MRDPW (MRDPW, 2018) (Ministry of Regional Development and Public Works) (2018) has brought up for discussion the following models for spatial division into regions:

According to model 1, Bulgaria can be divided into five NUTS 2 regions. They can be allocated as follows: South-west, South Central, South-east, North-east and North-west. The range of the regions and the districts which they encompass can be seen in Figure 1.



Source: MRDPW, 2018.

*Figure 1. Model 1 for division into regions of Bulgaria with five NUTS 2 regions*

According to another proposal for division into regions, the country is divided into four regions: South-west, Thracian-Rodope, Black Sea and Danube. The districts which those regions encompass can be viewed in Figure 2.



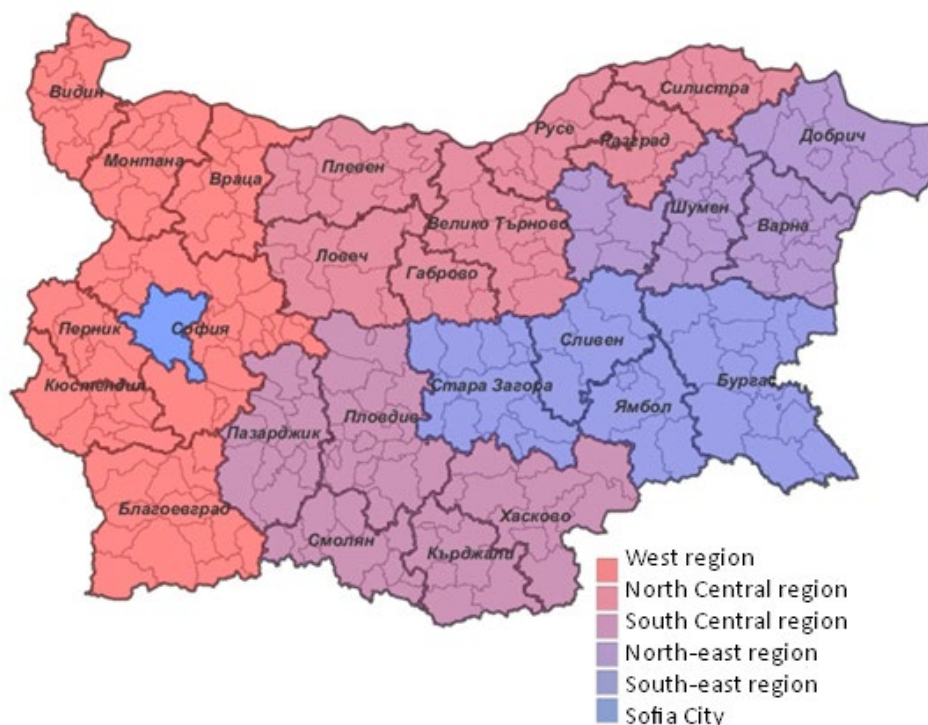
Source: MRDPW, 2018.

*Figure 2. Model 2 for division into regions of Bulgaria with four NUTS 2 regions*

The third model which has been proposed is redividing the country into six regions in compliance with NUTS 2: West, North Central, North-east, South Central and Sofia City. Those regions encompass the districts visualized in Figure 3.

The above presented models aim at establishing specific geographic regions with good capacity and opportunities for development and statistical reporting in compliance with the European requirements. The benefits which can be drawn up from the above presented models do not correspond to the main drawback of decreasing the number of citizens in those regions in the long term.

Bearing in mind the presented expert models for division into regions of the country, the researched socio-economic trends for development in the planned North-west region for future development of the NUTS 2 regions (Zarkova, 2018) will incur significant changes which will lead to inefficient expending of the funds of the EU's cohesion policy or even hampering their realization. This could happen on the basis of decreasing the number of citizens in the regions in the long run in compliance with the requirements of the European Union.



Source: MRDPW, 2018.

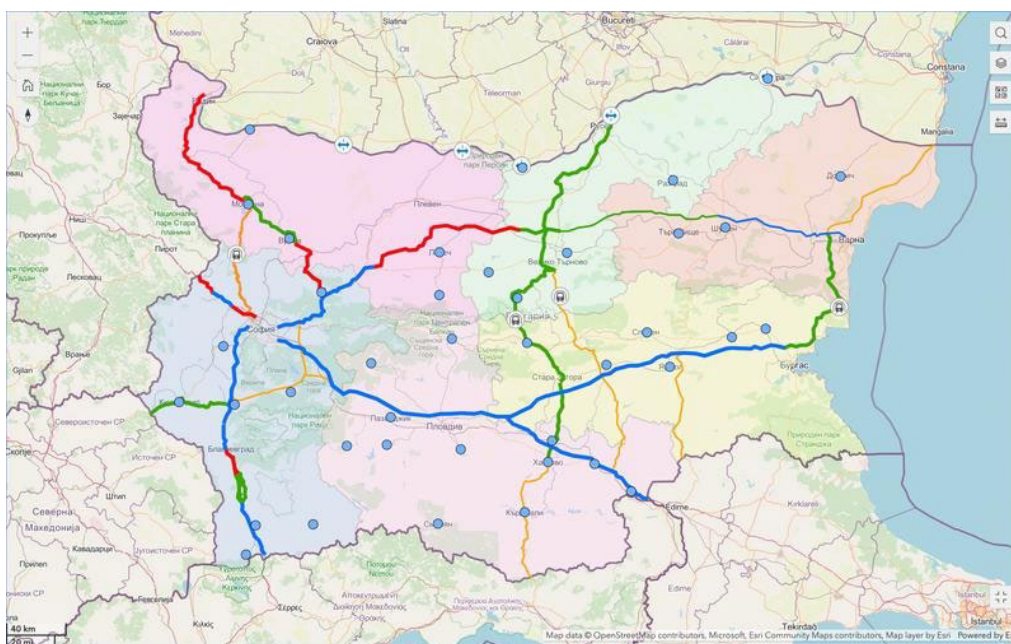
*Figure 3. Model 3 for dividing into regions in Bulgaria with six NUTS 2 regions*

The planned development and the allocation of the regions is closely connected with the trends set in the long term regarding the transportation infrastructure. In this line of thought, Figure 4 visualizes some strategic infrastructure objects in the country which shall be ready for exploitation by the year 2040.

The forthcoming projects that encompass facilities to be constructed (MRDPW, 2022), are: parts of the speedways Struma, Hemus, Europe; Danube Bridge 3 by the city of Ruse, four bridges over the river Danube – by Oryahovo, Nikopol, Svishtov – (Zahariev, Prodanov, Marinov, & Lazarov, 2021) and Silistra and activating the project Green Mobility and parts of key transport corridors.

On the basis of the official forecast data of the National Statistical Institute, the convergence hypothesis states that the number of citizens in the districts in the region by the year 2080 will drop twice as low as the normative requirement of 800,000 people. In the short term, even in the year 2020, we observe a decrease in the number of citizens. This could hamper the efficient

expending of funds (Lilova, R., Zahariev, A., Krastev, L., et al, 2021) provided by the EU for the development of the regions at the level of regions, districts and municipalities (Prodanov & Naydenov, 2020). The official forecast data about the period 2020–2080 in their three varieties (at the convergence hypothesis, the relative acceleration, and the relative delay) can be observed in the tables from 1 to 3.



Source: MRDPW, 2022.

*Figure 4. Interactive map representing the development of transport infrastructure until 2040.*

*Table 1*

*Forecast data about the population in the planned North-west region for the period 2020–2080 (at a hypothesis of convergence)*

<b>Time horizon</b>	<b>Vidin</b>	<b>Vratsa</b>	<b>Lovech</b>	<b>Montana</b>	<b>Pleven</b>	<b>Total for the region</b>
2020	82,065	160,247	122,619	128,011	236,583	<b>729,525</b>
2025	74,467	150,460	114,892	120,680	223,127	<b>683,626</b>
2030	67,667	141,302	107,755	114,026	210,529	<b>641,279</b>
2035	61,535	132,622	101,152	107,946	198,978	<b>602,233</b>
2040	56,051	124,411	94,976	102,460	188,507	<b>566,405</b>
2045	51,231	116,927	89,326	97,597	179,341	<b>534,422</b>
2050	46,948	110,086	84,159	93,258	171,349	<b>505,800</b>

<b>Time horizon</b>	<b>Vidin</b>	<b>Vratsa</b>	<b>Lovech</b>	<b>Montana</b>	<b>Pleven</b>	<b>Total for the region</b>
2055	43,014	103,660	79,318	89,249	164,153	<b>479,394</b>
2060	39,297	97,571	74,770	85,451	157,581	<b>454,670</b>
2065	35,825	91,861	70,567	81,883	151,549	<b>431,685</b>
2070	32,803	86,770	66,880	78,722	146,312	<b>411,487</b>
2075	30,267	82,360	63,760	76,028	141,979	<b>394,394</b>
2080	28,124	78,535	61,100	73,723	138,374	<b>379,856</b>
% change in 2080 compared to 2020	34%	49%	50%	<b>58%</b>	<b>58%</b>	<b>52%</b>

**Source:** Data from the National Statistical Institute and author's own calculations.

*Table 2*

**Forecast data about the population in the planned North-west region for the period 2020–2080 (relative acceleration)**

<b>Time horizon</b>	<b>Vidin</b>	<b>Vratsa</b>	<b>Lovech</b>	<b>Montana</b>	<b>Pleven</b>	<b>Total for the region</b>
2020	82,270	160,571	122,858	128,286	237,044	<b>731,029</b>
2025	75,229	151,704	115,771	121,673	224,793	<b>689,170</b>
2030	69,104	143,739	109,493	115,961	213,837	<b>652,134</b>
2035	63,697	136,389	103,813	110,880	203,983	<b>618,762</b>
2040	58,819	129,438	98,496	106,301	195,095	<b>588,149</b>
2045	54,526	123,081	93,628	102,204	187,282	<b>560,721</b>
2050	50,738	117,309	89,184	98,583	180,561	<b>536,375</b>
2055	47,285	111,843	84,998	95,238	174,538	<b>513,902</b>
2060	43,978	106,545	80,986	91,972	168,989	<b>492,470</b>
2065	40,718	101,340	77,129	88,743	163,676	<b>471,606</b>
2070	37,762	96,588	73,657	85,735	158,923	<b>452,665</b>
2075	35,314	92,529	70,781	83,214	155,065	<b>436,903</b>
2080	33,317	89,077	68,424	81,101	151,986	<b>423,905</b>
% change in 2080 compared to 2020	40%	55%	56%	63%	<b>64%</b>	<b>58%</b>

**Source:** Data from the National Statistical Institute and author's own calculations.

Table 3

*Forecast data about the population in the planned North-west region for the period 2020–2080 (relative delay)*

<b>Time horizon</b>	<b>Vidin</b>	<b>Vratsa</b>	<b>Lovech</b>	<b>Montana</b>	<b>Pleven</b>	<b>Total for the region</b>
2020	81,974	160,089	122,505	127,876	236,377	<b>728,821</b>
2025	74,125	149,886	114,472	120,194	222,319	<b>680,996</b>
2030	66,976	140,126	106,920	113,098	208,963	<b>636,083</b>
2035	60,518	130,817	99,861	106,536	196,564	<b>594,296</b>
2040	54,730	121,995	93,261	100,596	185,308	<b>555,890</b>
2045	49,646	113,938	87,236	95,324	175,463	<b>521,607</b>
2050	45,115	106,546	81,691	90,600	166,812	<b>490,764</b>
2055	40,924	99,634	76,504	86,233	159,015	<b>462,310</b>
2060	37,031	93,136	71,668	82,127	151,877	<b>435,839</b>
2065	33,479	87,161	67,275	78,363	145,465	<b>411,743</b>
2070	30,403	81,858	63,455	75,048	139,934	<b>390,698</b>
2075	27,820	77,259	60,192	72,223	135,286	<b>372,780</b>
2080	25,628	73,240	57,361	69,766	131,355	<b>357,350</b>
% change in 2080 compared to 2020	31%	46%	47%	55%	<b>56%</b>	<b>49%</b>

**Source:** Data from the National Statistical Institute and author's own calculations.

The presented forecast data about the districts belonging to the planned North-west region find expression in the three forecast models used by the NSI. These models are characterized as follows (National Statistical Institute, 2022):

- convergence hypothesis – presents the forecast data in a realistic model in compliance with the normative requirements of the EU for demographic and socio-economic development of the countries;

- relative acceleration – it is assumed that the demographic processes will occur in an optimistic mode and will favor the size of the population;

- relative delay – reflects the unfavorable occurrence of processes having an impact on the demographic capacity of the country.

The common among the three forecast models is that all of them reflect the significant decrease of the population in the districts in the region which amount to about 50%. At the convergence hypothesis, we observe a decrease of the population in the planned North-west region by 52%; the largest one is expected in the district of Montana and the district of Pleven – 58% in the year



2080, compared to 2020. The forecast data reflecting the relative acceleration show a decrease of the population in the region by 58%; the major decrease is observed in the district of Pleven at the end of the forecast period – 64%. At the existence of a relative delay, the population of the planned region by the year 2080 will reach 357,350 people or its relative size will decrease by 49%. The most significant decrease is expected in the district of Pleven – 56%. The three forecast models reflect the serious demographic problem which the planned North-west region faces in the long run.

## **2. Developing a division into regions model for the purposes of the financial security of the development of the regions in Bulgaria**

The depopulation of the region can have a profound influence on the possibilities for securing funds from the EU funds for its development. This brings to the foreground the search for new sustainable models for the formation of the NUTS 2 regions, which shall result in a long-term stability of the number of people and a perspective for their development. With all this in mind, Tables from 4 to 6 present a model for the establishment of new regions in Bulgaria through which we can achieve long-term optimization of the number of citizens in the regions, which shall allow the efficient expending of the European funds for funding the development in the regions and the settlements that belong to them, respectively, districts and municipalities (Zahariev, Andrey, 2017).

Table 4

*Division into regions based on realistic forecast data about the population in Bulgaria*

Region (NUTS 2)		2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080
Sofia	Sofia	227,361	218,833	210,228	201,773	193,255	184,869	176,577	168,206	159,733	151,297	143,314	136,133	129,864
	Sofia – capital	1,336,554	1,350,054	1,362,231	1,372,895	1,386,333	1,401,235	1,414,692	1,424,269	1,428,383	1,427,174	1,423,514	1,420,693	1,419,473
	<b>Total value for the region</b>	<b>1,563,915</b>	<b>1,568,887</b>	<b>1,572,459</b>	<b>1,574,668</b>	<b>1,579,588</b>	<b>1,586,104</b>	<b>1,591,269</b>	<b>1,592,475</b>	<b>1,588,116</b>	<b>1,578,471</b>	<b>1,566,828</b>	<b>1,556,826</b>	<b>1,549,337</b>
South-west	Kyustendil	117,143	109,482	102,184	95,328	88,792	82,728	77,080	71,744	66,713	62,051	57,922	54,439	51,651
	Pernik	118,370	111,679	105,066	98,906	93,028	87,494	82,236	77,167	72,314	67,668	63,358	59,637	56,641
	<b>Blagoevgrad</b>	<b>306,370</b>	<b>298,264</b>	<b>287,439</b>	<b>275,429</b>	<b>262,708</b>	<b>249,792</b>	<b>236,619</b>	<b>223,221</b>	<b>209,800</b>	<b>196,707</b>	<b>184,242</b>	<b>172,570</b>	<b>161,902</b>
	Pazardzhik	252,489	241,789	231,076	220,699	210,538	200,639	191,037	181,806	173,138	165,025	157,584	150,881	145,004
	Smolyan	103,230	95,270	87,178	79,364	71,697	64,380	57,505	51,223	45,589	40,555	36,086	32,174	28,886
	Kurdzhali	146,907	141,002	134,548	128,043	121,519	114,945	108,414	102,087	96,125	90,542	85,368	80,648	76,606
	Haskovo	224,911	214,681	205,017	195,933	187,288	179,053	171,248	163,866	156,828	150,106	143,864	138,413	133,888
	Yambol	117,255	111,478	106,269	101,581	97,294	93,437	90,005	86,971	84,240	81,757	79,551	77,679	76,154
	Sliven	186,359	182,389	178,847	175,736	172,965	170,665	168,892	167,562	166,564	165,758	165,248	165,199	165,671
	<b>Total value for the region</b>	<b>1,573,034</b>	<b>1,506,034</b>	<b>1,437,624</b>	<b>1,371,019</b>	<b>1,305,829</b>	<b>1,243,133</b>	<b>1,183,036</b>	<b>1,125,647</b>	<b>1,071,311</b>	<b>1,020,169</b>	<b>973,223</b>	<b>931,640</b>	<b>896,403</b>

<b>North - Danube</b>	Vidin	82,065	74,467	67,667	61,535	56,051	51,231	46,948	43,014	39,297	35,825	32,803	30,267	28,124
	Veliko Tarnovo	233,143	222,275	211,173	200,189	189,788	180,218	171,432	163,142	154,991	146,816	138,854	131,292	124,051
	Montana	128,011	120,680	114,026	107,946	102,460	97,597	93,258	89,249	85,451	81,883	78,722	76,028	73,723
	Vratsa	160,247	150,460	141,302	132,622	124,411	116,927	110,086	103,660	97,571	91,861	86,770	82,360	78,535
	<b>Pleven</b>	236,583	223,127	210,529	198,978	188,507	179,341	171,349	164,153	157,581	151,549	146,312	141,979	138,374
	Ruse	215,806	206,373	197,152	188,256	180,038	172,513	165,521	158,838	152,290	145,933	140,023	134,708	129,887
	Silistra	107,055	100,893	94,791	89,015	83,734	78,974	74,623	70,551	66,784	63,370	60,389	57,793	55,540
	Razgrad	111,130	105,824	100,551	95,420	90,504	85,914	81,579	77,448	73,508	69,829	66,541	63,640	61,057
	Targovishte	109,911	105,277	100,771	96,486	92,454	88,672	85,104	81,710	78,476	75,472	72,757	70,388	68,339
	Gabrovo	105,971	98,200	90,634	83,414	76,692	70,598	65,065	59,871	54,869	50,152	45,877	42,214	39,137
	<b>Total value for the region</b>	<b>1,489,922</b>	<b>1,407,576</b>	<b>1,328,596</b>	<b>1,253,861</b>	<b>1,184,639</b>	<b>1,121,985</b>	<b>1,064,965</b>	<b>1,011,636</b>	<b>960,818</b>	<b>912,690</b>	<b>869,048</b>	<b>830,669</b>	<b>796,767</b>
<b>East Black Sea</b>	Shumen	168,221	160,175	152,025	143,957	136,197	128,870	121,878	115,120	108,510	102,100	96,117	90,690	85,802
	Dobrich	171,585	163,102	154,742	146,654	138,932	131,659	124,814	118,287	112,042	106,133	100,745	96,009	91,861
	<b>Varna</b>	469,027	462,175	454,026	445,544	437,179	428,634	419,494	409,354	397,943	385,482	372,837	361,256	351,204
	Burgas	408,054	400,314	391,217	381,878	372,370	362,775	353,074	343,074	332,655	321,870	311,334	301,998	294,286
		<b>Total value for the region</b>	<b>1,216,887</b>	<b>1,185,766</b>	<b>1,152,010</b>	<b>1,118,033</b>	<b>1,084,678</b>	<b>1,051,938</b>	<b>1,019,260</b>	<b>985,835</b>	<b>951,150</b>	<b>915,585</b>	<b>881,033</b>	<b>849,953</b>
<b>Central</b>	<b>Plovdiv</b>	<b>663,500</b>	<b>651,689</b>	<b>639,331</b>	<b>627,533</b>	<b>616,870</b>	<b>607,028</b>	<b>597,461</b>	<b>587,528</b>	<b>577,064</b>	<b>566,220</b>	<b>555,708</b>	<b>546,373</b>	<b>538,676</b>

Stara Zagora	312,265	300,871	289,689	278,972	268,920	259,633	250,987	242,693	234,515	226,467	218,939	212,363	206,881
Lovech	122,619	114,892	107,755	101,152	94,976	89,326	84,159	79,318	74,770	70,567	66,880	63,760	61,100
<b>Total value for the region</b>	<b>1,098,384</b>	<b>1,067,452</b>	<b>1,036,775</b>	<b>1,007,657</b>	<b>980,766</b>	<b>955,987</b>	<b>932,607</b>	<b>909,539</b>	<b>886,349</b>	<b>863,254</b>	<b>841,527</b>	<b>822,496</b>	<b>806,657</b>

Source: Author's adaptation on the basis of data from the NSI.

Table 5

*Division into regions based on optimistic forecast data about the population in Bulgaria*

Region (NUTS 2)		2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080
Sofia	Sofia	1,337,906	1,355,071	1,371,815	1,387,316	1,405,242	1,424,170	1,441,673	1,455,291	1,462,498	1,461,719	1,454,738	1,445,932	1,436,764
	Sofia - capital	227,755	220,345	213,232	206,443	199,605	192,737	185,848	178,726	171,255	163,428	155,653	148,472	142,137
	<b>Total value for the region</b>	<b>1,565,661</b>	<b>1,575,416</b>	<b>1,585,047</b>	<b>1,593,759</b>	<b>1,604,847</b>	<b>1,616,907</b>	<b>1,627,521</b>	<b>1,634,017</b>	<b>1,633,753</b>	<b>1,625,147</b>	<b>1,610,391</b>	<b>1,594,404</b>	<b>1,578,901</b>
South-west	Kyustendil	117,371	110,362	103,902	97,950	92,288	86,971	81,980	77,210	72,624	68,186	64,108	60,627	57,854
	Pernik	118,606	112,523	106,742	101,491	96,508	91,766	87,190	82,697	78,320	73,972	69,727	65,882	62,752
	<b>Blagoevgrad</b>	<b>306,715</b>	<b>299,708</b>	<b>290,484</b>	<b>280,424</b>	<b>269,871</b>	<b>259,119</b>	<b>248,065</b>	<b>236,592</b>	<b>224,899</b>	<b>213,306</b>	<b>202,158</b>	<b>191,614</b>	<b>181,778</b>
	Pazardzhik	252,918	243,407	234,349	225,851	217,664	209,643	201,752	193,987	186,564	179,471	172,844	166,785	161,389
	Smolyan	103,425	96,021	88,730	81,828	75,083	68,564	62,319	56,511	51,260	46,535	42,273	38,429	35,161
	Kurdzhali	147,106	141,822	136,231	130,760	125,350	119,865	114,293	108,807	103,585	98,655	94,022	89,644	85,897
	Haskovo	225,294	216,108	207,849	200,361	193,331	186,605	180,131	173,979	168,052	162,188	156,438	151,264	146,982

	Yambol	117,470	112,277	107,818	103,930	100,453	97,285	94,471	91,958	89,699	87,591	85,624	83,912	82,540
	Sliven	186,636	183,445	180,932	178,983	177,370	176,090	175,217	174,668	174,346	174,049	173,739	173,729	174,187
	<b>Total value for the region</b>	<b>1,575,541</b>	<b>1,515,673</b>	<b>1,457,037</b>	<b>1,401,578</b>	<b>1,347,918</b>	<b>1,295,908</b>	<b>1,245,418</b>	<b>1,196,409</b>	<b>1,149,349</b>	<b>1,103,953</b>	<b>1,060,933</b>	<b>1,021,886</b>	<b>988,540</b>
<b>North - Danube</b>	Vidin	82,270	75,229	69,104	63,697	58,819	54,526	50,738	47,285	43,978	40,718	37,762	35,314	33,317
	Veliko Tarnovo	233,569	223,877	214,344	205,074	196,303	188,288	180,987	174,170	167,428	160,473	153,473	146,790	140,305
	Montana	128,286	121,673	115,961	110,880	106,301	102,204	98,583	95,238	91,972	88,743	85,735	83,214	81,101
	Vratsa	160,571	151,704	143,739	136,389	129,438	123,081	117,309	111,843	106,545	101,340	96,588	92,529	89,077
	<b>Pleven</b>	<b>237,044</b>	<b>224,793</b>	<b>213,837</b>	<b>203,983</b>	<b>195,095</b>	<b>187,282</b>	<b>180,561</b>	<b>174,538</b>	<b>168,989</b>	<b>163,676</b>	<b>158,923</b>	<b>155,065</b>	<b>151,986</b>
	Ruse	216,176	207,790	199,946	192,566	185,768	179,532	173,790	168,307	162,810	157,221	151,764	146,841	142,338
	Silistra	107,262	101,691	96,390	91,478	86,992	82,973	79,308	75,869	72,581	69,534	66,845	64,549	62,567
	Razgrad	111,336	106,645	102,192	97,981	93,974	90,213	86,650	83,198	79,822	76,521	73,522	70,902	68,610
	Targovishte	110,106	106,019	102,268	98,818	95,600	92,602	89,762	87,013	84,335	81,725	79,291	77,157	75,354
	Gabrovo	106,180	98,988	92,193	85,799	79,828	74,391	69,469	64,845	60,357	55,941	51,795	48,211	45,277
	<b>Total value for the region</b>	<b>1,492,800</b>	<b>1,418,409</b>	<b>1,349,974</b>	<b>1,286,665</b>	<b>1,228,118</b>	<b>1,175,092</b>	<b>1,127,157</b>	<b>1,082,306</b>	<b>1,038,817</b>	<b>995,892</b>	<b>955,698</b>	<b>920,572</b>	<b>889,932</b>
<b>East Black Sea</b>	Shumen	168,517	161,330	154,371	147,643	141,247	135,186	129,447	123,854	118,293	112,699	107,307	102,398	97,963
	Dobrich	171,896	164,323	157,201	150,491	144,145	138,144	132,505	127,077	121,774	116,549	111,631	107,311	103,545
	<b>Varna</b>	<b>469,608</b>	<b>464,487</b>	<b>458,697</b>	<b>452,952</b>	<b>447,429</b>	<b>441,659</b>	<b>435,291</b>	<b>427,929</b>	<b>419,117</b>	<b>408,538</b>	<b>396,706</b>	<b>385,289</b>	<b>375,126</b>
	Burgas	408,589	402,390	395,487	388,684	381,872	374,790	367,468	359,741	351,396	342,100	332,150	322,886	315,078

	<b>Total value for the region</b>	<b>1,218,610</b>	<b>1,192,530</b>	<b>1,165,756</b>	<b>1,139,770</b>	<b>1,114,693</b>	<b>1,089,779</b>	<b>1,064,711</b>	<b>1,038,601</b>	<b>1,010,580</b>	<b>979,886</b>	<b>947,794</b>	<b>917,884</b>	<b>891,712</b>
<b>Central</b>	<b>Plovdiv</b>	664,377	655,075	645,968	637,780	630,688	624,159	617,678	610,453	602,240	592,773	582,526	572,585	563,811
	Stara Zagora	312,785	302,817	293,552	284,985	277,057	269,705	262,857	256,247	249,555	242,589	235,595	229,289	224,034
	Lovech	122,858	115,771	109,493	103,813	98,496	93,628	89,184	84,998	80,986	77,129	73,657	70,781	68,424
	<b>Total value for the region</b>	<b>1,100,020</b>	<b>1,073,663</b>	<b>1,049,013</b>	<b>1,026,578</b>	<b>1,006,241</b>	<b>987,492</b>	<b>969,719</b>	<b>951,698</b>	<b>932,781</b>	<b>912,491</b>	<b>891,778</b>	<b>872,655</b>	<b>856,269</b>

Source: Author's adaptation on the basis of data from the NSI.

Table 6

*Division into regions based on pessimistic forecast data about the population in Bulgaria*

<b>Region (NUTS 2)</b>		<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>	<b>2055</b>	<b>2060</b>	<b>2065</b>	<b>2070</b>	<b>2075</b>	<b>2080</b>
<b>Sofia</b>	Sofia	227,179	218,125	208,777	199,467	190,106	180,916	171,845	162,753	153,689	144,839	136,639	129,337	122,983
	Sofia - capital	1,335,932	1,347,669	1,357,607	1,365,833	1,376,887	1,389,484	1,400,444	1,407,407	1,409,319	1,407,179	1,404,204	1,403,156	1,404,529
	<b>Total value for the region</b>	<b>1,563,111</b>	<b>1,565,794</b>	<b>1,566,384</b>	<b>1,565,300</b>	<b>1,566,993</b>	<b>1,570,400</b>	<b>1,572,289</b>	<b>1,570,160</b>	<b>1,563,008</b>	<b>1,552,018</b>	<b>1,540,843</b>	<b>1,532,493</b>	<b>1,527,512</b>
<b>South-west</b>	Kyustendil	117,033	109,081	101,357	94,056	87,095	80,642	74,641	69,006	63,752	58,939	54,751	51,259	48,447
	Pernik	118,265	111,276	104,268	97,656	91,329	85,371	79,742	74,364	69,256	64,435	60,078	56,368	53,404
	<b>Blagoevgrad</b>	<b>306,204</b>	<b>297,592</b>	<b>285,985</b>	<b>273,024</b>	<b>259,246</b>	<b>245,254</b>	<b>231,043</b>	<b>216,677</b>	<b>202,405</b>	<b>188,549</b>	<b>175,451</b>	<b>163,286</b>	<b>152,302</b>
	Pazardzhik	252,293	241,018	229,520	218,208	207,083	196,234	185,760	175,759	166,417	157,771	149,903	142,850	136,691

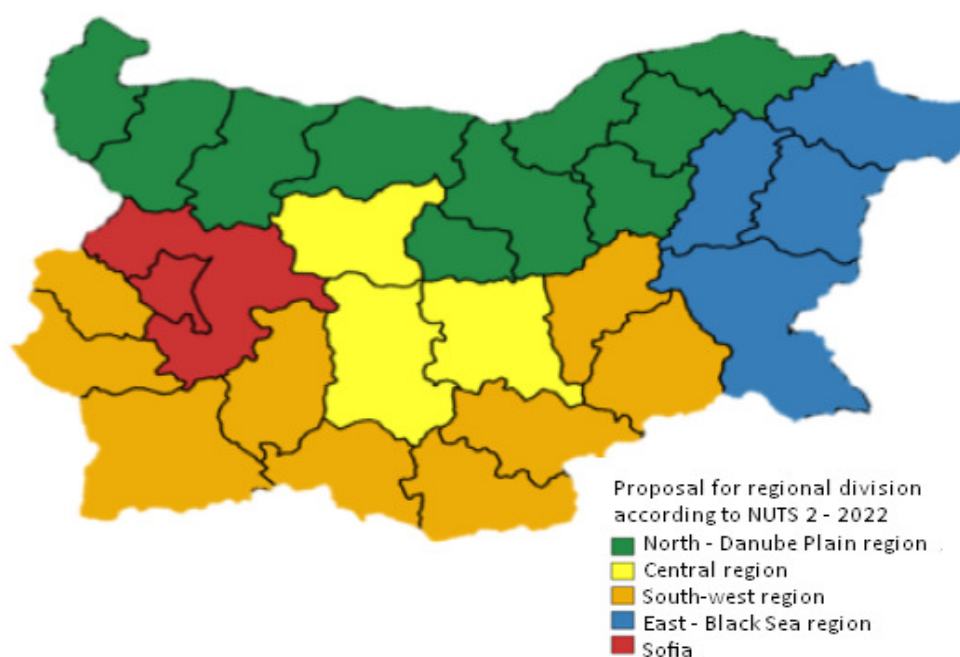
	Smolyan	103,145	94,899	86,450	78,190	70,083	62,388	55,215	48,707	42,901	37,748	33,200	29,291	26,053
	Kurdzhali	146,815	140,625	133,748	126,745	119,677	112,577	105,566	98,816	92,469	86,565	81,130	76,239	72,059
	Haskovo	224,723	214,012	203,666	193,806	184,352	175,357	166,855	158,823	151,212	144,035	137,498	131,848	127,113
	Yambol	117,151	111,099	105,523	100,426	95,756	91,540	87,814	84,486	81,490	78,782	76,408	74,401	72,749
	Sliven	186,224	181,882	177,844	174,150	170,788	167,965	165,700	163,928	162,530	161,414	160,708	160,539	160,884
	<b>Total value for the region</b>	<b>1,571,853</b>	<b>1,501,484</b>	<b>1,428,361</b>	<b>1,356,261</b>	<b>1,285,409</b>	<b>1,217,328</b>	<b>1,152,336</b>	<b>1,090,566</b>	<b>1,032,432</b>	<b>978,238</b>	<b>929,127</b>	<b>886,081</b>	<b>849,702</b>
<b>North - Danube</b>	Vidin	81,974	74,125	66,976	60,518	54,730	49,646	45,115	40,924	37,031	33,479	30,403	27,820	25,628
	Veliko Tarnovo	232,935	221,512	209,654	197,849	186,656	176,300	166,758	157,694	148,814	140,006	131,515	123,503	115,963
	Montana	127,876	120,194	113,098	106,536	100,596	95,324	90,600	86,233	82,127	78,363	75,048	72,223	69,766
	Vratsa	160,089	149,886	140,126	130,817	121,995	113,938	106,546	99,634	93,136	87,161	81,858	77,259	73,240
	<b>Pleven</b>	<b>236,377</b>	<b>222,319</b>	<b>208,963</b>	<b>196,564</b>	<b>185,308</b>	<b>175,463</b>	<b>166,812</b>	<b>159,015</b>	<b>151,877</b>	<b>145,465</b>	<b>139,934</b>	<b>135,286</b>	<b>131,355</b>
	Ruse	215,629	205,689	195,808	186,188	177,271	169,074	161,434	154,128	147,017	140,232	134,001	128,407	123,390
	Silistra	106,963	100,497	94,034	87,840	82,168	77,052	72,341	67,956	63,936	60,325	57,183	54,428	52,024
	Razgrad	111,031	105,439	99,756	94,187	88,841	83,821	79,086	74,601	70,359	66,476	63,014	59,943	57,180
	Targovishte	109,818	104,915	100,051	95,367	90,917	86,742	82,802	79,060	75,539	72,304	69,406	66,877	64,671
	Gabrovo	105,870	97,832	89,900	82,272	75,187	68,767	62,922	57,430	52,185	47,313	42,976	39,272	36,164
		<b>Total value for the region</b>	<b>1,488,562</b>	<b>1,402,408</b>	<b>1,318,366</b>	<b>1,238,138</b>	<b>1,163,669</b>	<b>1,096,127</b>	<b>1,034,416</b>	<b>976,675</b>	<b>922,021</b>	<b>871,124</b>	<b>825,338</b>	<b>785,018</b>

<b>East – Black Sea</b>	Shumen	168,095	159,631	150,907	142,196	133,771	125,785	118,188	110,835	103,705	96,876	90,589	84,897	79,808
	Dobrich	171,445	162,516	153,570	144,813	136,415	128,508	121,049	113,962	107,249	100,976	95,332	90,361	86,000
	Varna	468,751	461,083	451,782	441,945	432,144	422,143	411,509	399,838	386,985	373,445	360,208	348,306	338,035
	Burgas	407,801	399,324	389,168	378,563	367,707	356,802	345,828	334,577	323,000	311,372	300,415	290,846	282,966
	<b>Total value for the region</b>	<b>1,216,092</b>	<b>1,182,554</b>	<b>1,145,427</b>	<b>1,107,517</b>	<b>1,070,037</b>	<b>1,033,238</b>	<b>996,574</b>	<b>959,212</b>	<b>920,939</b>	<b>882,669</b>	<b>846,544</b>	<b>814,410</b>	<b>786,809</b>
<b>Central</b>	<b>Plovdiv</b>	663,082	650,094	636,118	622,538	610,059	598,442	587,169	575,657	563,807	552,010	541,016	531,556	523,912
	Stara Zagora	312,018	299,952	287,833	276,062	264,949	254,647	245,053	235,844	226,836	218,195	210,258	203,414	197,659
	Lovech	122,505	114,472	106,920	99,861	93,261	87,236	81,691	76,504	71,668	67,275	63,455	60,192	57,361
	<b>Total value for the region</b>	<b>1,097,605</b>	<b>1,064,518</b>	<b>1,030,871</b>	<b>998,461</b>	<b>968,269</b>	<b>940,325</b>	<b>913,913</b>	<b>888,005</b>	<b>862,311</b>	<b>837,480</b>	<b>814,729</b>	<b>795,162</b>	<b>778,932</b>

Source: Author's adaptation on the basis of data from the NSI.



On the basis of the presented figures and calculations, the proposed division into regions will allow in the long run preserving the normatively established number of citizens for the NUTS 2 regions within the range between 800,000 and 3 million people. (Eur-Lex, 2022). This will be consistent in all three forecast models. A violation to this can be observed in model 1 in the year 2080 in the North Danube region – the number of citizens in the region is 796,767 people and in model 3 (pessimistic model), where in 2075 and 2080 the population in the North Danube, the East Black Sea and the Central region will be slightly below 800,000 people (between 749,381 and 795,162 people). The complete cartographic representation of the regions is depicted in Figure 5.



Source: Author's adaptation.

*Figure 5. Model for division into regions of Bulgaria for the purposes of the financial security of the regions in the country in compliance with the NUTS 2 nomenclature*

The centers of the proposed regions are the cities with a socio-economic significance, respectively, with good development in a demographic aspect:

- North – Danube region – the city of Pleven
- Central region – the city of Plovdiv
- South-west region – the city of Blagoevgrad
- East – Black Sea region – the city of Varna
- Sofia – Sofia city

## Conclusion

The division into regions we have presented preserves in the long term (until the year 2080) the normatively established number of citizens in the regions of level 2 and differentiates five regional centers. Thus, if no force majeure circumstances are cited, the socio-economic aspect in the country could achieve economic integration among the regions and a development of regional policy for the purposes of the implementation of the lagging regions, which as of this moment encompass the planned North-west region. At the same time, we could achieve optimal realization of the set transportation infrastructure projects, and we could refer to a method of achieving an improvement of the environment and a precautionary measure for preventing the risk of Bulgaria's financial lagging compared to the rest of the EU member states.

## References

- Angelov, P., & Zarkova, S. (2021). The Financial Transparency of Bulgaria's Municipalities within the European Economic Digitalization: Influence of the Investment and Macroeconomic Trends. *Economic Archive* (4), pp. 22-35. Retrieved from <https://nsarhiv.uni-svishtov.bg/samagazine/public/dl.asp>
- Architect Belin Mollov: Models for new planned regions in Bulgaria at the NUTS 2 level.* (2018, April 23). Retrieved from [https://gradat.bg/news/2018/04/23/3167498\\_arh\\_belin\\_mollov\\_varianti\\_za\\_novi\\_raioni\\_za\\_planirane](https://gradat.bg/news/2018/04/23/3167498_arh_belin_mollov_varianti_za_novi_raioni_za_planirane)
- Daskalova, T. (2020). Integrated Approach for Planning. *Economic and Social Alternatives, issue 4*, 39-48. Retrieved from <https://www.unwe.bg/doi/alternativi/2020.4/ISA.2020.4.03.pdf>
- Eur-Lex. (2022, March 23). *Common classification of territorial units for statistics (NUTS)*. Retrieved from <https://eur-lex.europa.eu/legal-content/BG/LSU/?uri=CELEX:32003R1059>
- Lilova, R., Zahariev, A., Krastev, L., et al. (2021). *Introduction to Finance*. Svishtov: Tsenov Publishing. Retrieved from [https://www.researchgate.net/publication/350354290\\_VVEDENIE\\_VV\\_FINANSITE](https://www.researchgate.net/publication/350354290_VVEDENIE_VV_FINANSITE)
- MRDPW. (2018, January 26). *The MRDPW proposes changes in the range of the planned regions*. Retrieved from <https://www.mrrb.bg/bg/mrrb-predlaga-promeni-v-obhvata-na-rajonite-za-planirane/>
- MRDPW. (2022, April 4). *The interactive map presents the development of the transport infrastructure by the year 2040*. Retrieved from <https://www.mrrb.bg/bg/interaktivna-karta-predstavva-razvitiето-na-transportnata-infrastruktura-do-2040-g/>
- National Statistical Institute. (2022, March 23). *Forecast of the population by districts and gender*. Retrieved from [https://infostat.nsi.bg/infostat/pages/reports/result.jsf?x\\_2=236](https://infostat.nsi.bg/infostat/pages/reports/result.jsf?x_2=236)

- Pavlova, M. (2021). Fiscal Position of Municipalities in the Conditions of Decentralization in the Public Sector - Relevant Problems and Opportunities for Growth. *Scientific Research Almanac, Volume 29*, 369-405. Retrieved from <https://dlib.uni-svishtov.bg/bitstream/handle/10610/4442/3481b2554b0c5ae4c79a75b021d5fb38.pdf?sequence=1&isAllowed=y>
- Prodanov, S., & Naydenov, L. (2020). Theoretical, qualitative and quantitative aspects of municipal fiscal autonomy in Bulgaria. *Economic Studies, Vol. 29 (2)*, 126-150. Retrieved from [https://www.iki.bas.bg/Journals/EconomicStudies/2020/2020-2/8\\_S.Prodanov\\_f-f.pdf](https://www.iki.bas.bg/Journals/EconomicStudies/2020/2020-2/8_S.Prodanov_f-f.pdf)
- Todorova, S. (2014). Policies for Regional Development in the Republic of Bulgaria - evolution, challenges, directions for improvement. *Economy and Management of Agriculture 59, 2*, 55-64.
- Vasileva, E. (2019). Directions for Improvement of the Business Environment in Support of Sustainable Regional Development. *Business Research*. Retrieved from <https://bjournal-bfu.bg/bg/broy-1/nasoki-za-podobrya-vane-na-biznes-sreda-v-podkrepa-na-ustoychivo-regionalno-razvitiie/>
- Zahariev, A., Prodanov, S., Marinov, I., & Lazarov, B. (2021). The bridge Danube South: Svishtov-Zimnicea as an economic growth factor for Bulgaria and Romania. *International Symposium: Experience. Knowledge. Contemporary Challenges. 8th Edition. Back to the Future. Social - economic Challenges and Perspectives*, (pp. 88-98). Bucharest, Romania. Retrieved from [https://www.researchgate.net/publication/353659467\\_The\\_bridge\\_Danube\\_South\\_Svishtov-Zimnicea\\_as\\_an\\_economic\\_growth\\_factor\\_for\\_Bulgaria\\_and\\_Romania\\_2021\\_International\\_Symposium\\_Experience\\_Knowledge\\_Contemporary\\_Challenges\\_8th\\_Edition\\_Back\\_to\\_the\\_Future](https://www.researchgate.net/publication/353659467_The_bridge_Danube_South_Svishtov-Zimnicea_as_an_economic_growth_factor_for_Bulgaria_and_Romania_2021_International_Symposium_Experience_Knowledge_Contemporary_Challenges_8th_Edition_Back_to_the_Future)
- Zahariev, A., Prodanov, S., Radulova, A., & Zarkova, S. (2021, February 26). *Plan for Integrated Development of the Municipality of Belene for the Period 2021 - 2027*. Retrieved from SSRN: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3781619](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3781619)
- Zahariev, Andrey. (2017). *Fiscal Decentralization and Financial Management of the Municipalities in Bulgaria*. Retrieved from Researchgate: [https://www.researchgate.net/publication/313576435\\_Fiskalna\\_decentralizacia\\_i\\_finansovo\\_upravlenie\\_na\\_obsinite\\_v\\_Blgaria](https://www.researchgate.net/publication/313576435_Fiskalna_decentralizacia_i_finansovo_upravlenie_na_obsinite_v_Blgaria)
- Zarkova, S. (2018). Regional disparities in Bulgaria today: economic, social and demographic challenges. *Economic Archive 3*, 44-54. Retrieved from <https://www2.uni-svishtov.bg/samagazine/public/dl.asp>

**Martin Nikolaev Harizanov** is a PhD student at the Department of Finance and Credit at the D. A. Tsenov Academy of Economics – Svishtov, Bulgaria. **Scientific interests:** regional development, fiscal decentralization, financial management of municipalities.

**ORCID ID:** 0000-0002-3446-8491

**EDITORIAL BOARD:**

Prof. Andrey Zahariev, PhD – Editor-in-chief  
Prof. Yordan Vasilev, PhD – Deputy Editor  
Prof. Stoyan Prodanov, PhD  
Assoc. Prof. Iskra Panteleeva, PhD  
Assoc. Prof. Plamen Yordanov, PhD  
Assoc. Prof. Svetoslav Iliychevski, PhD  
Assoc. Prof. Plamen Petkov, PhD  
Assoc. Prof. Anatoliy Asenov, PhD  
Assoc. Prof. Todor Krastevich, PhD

**INTERNATIONAL BOARD:**

**Prof. Mihail A. Eskindarov, DSc (Econ)** – Financial University under the Government of the Russian Federation, Moscow (Russia).  
**Prof. Grigore Belostechnik, DSc (Econ)** – Moldovan Academy of Economic Studies, Chisinau (Moldova).  
**Prof. Mihail Zveryakov, DSc (Econ)** – Odessa State Economic University, Odessa (Ukraine).  
**Prof. Andrey Krisovatiy, DSc (Econ)** – Ternopil National Economic University, Ternopil (Ukraine).  
**Prof. Yon Kukuy, DSc (Econ)** – Valahia University, Targovishte (Romania).  
**Prof. Ken O'Neil, PhD** – University of Ulster (Great Britain)  
**Prof. Richard Thorpe, PhD** – Leeds University (Great Britain)  
**Prof. Olena Nepochatenko, DSc (Econ)** – Uman National University of Horticulture, Uman (Ukraine)  
**Prof. Dmytro Lukianenko, DSc (Econ)** – Kyiv National Economic University named after Vadym Hetman, Kyiv (Ukraine)  
**Assoc. Prof. Maria Cristina Stefan, PhD** – Valahia University of Targoviste (Romania)  
**Assoc. Prof. Anisoara Duica, PhD** – Valahia University of Targoviste (Romania)  
**Assoc. Prof. Vladinir Klimuk, PhD** – Baranovichi State University, Branovic (Belarus)

**Support Team**

Rositsa Prodanova, PhD – Technical Secretary  
Anka Taneva – Bulgarian Copy Editor  
Ventsislav Dikov – Senior Lecturer in English – Translation from/into English  
Petar Todorov, PhD – Senior Lecturer in English – Translation from/into English

**Editorial address:**

2, Emanuil Chakarov street, Svishtov 5250  
Prof. Andrey Zahariev, PhD – Editor-in-Chief  
☎ (+359) 889 882 298  
Rositsa Prodanova, PhD – technical secretary  
☎ (+359) 631 66 309, e-mail: nsarhiv@uni-svishtov.bg  
Blagovesta Borisova – computer graphic design  
☎ (+359) 882 552 516, e-mail: b.borisova@uni-svishtov.bg

*In 2022, the journal will be printed using a financial grant from the Scientific Research Fund – Agreement № KP-06-NPZ-69 from Bulgarska Nauchna Periodika – 2022 competition.*

© Academic Publishing House “Tsenov” – Svishtov  
© D. A. Tsenov Academy of Economics – Svishtov

**EDITORIAL BOARD:**

Prof. Andrey Zahariev, PhD – Editor-in-chief  
Prof. Yordan Vasilev, PhD – Deputy Editor  
Prof. Stoyan Prodanov, PhD  
Assoc. Prof. Iskra Panteleeva, PhD  
Assoc. Prof. Plamen Yordanov, PhD  
Assoc. Prof. Svetoslav Iliychevski, PhD  
Assoc. Prof. Plamen Petkov, PhD  
Assoc. Prof. Anatoliy Asenov, PhD  
Assoc. Prof. Todor Krastevich, PhD

**INTERNATIONAL BOARD:**

**Prof. Mihail A. Eskindarov, DSc (Econ)** – Financial University under the Government of the Russian Federation, Moscow (Russia).  
**Prof. Grigore Belostechnik, DSc (Econ)** – Moldovan Academy of Economic Studies, Chisinau (Moldova).  
**Prof. Mihail Zveryakov, DSc (Econ)** – Odessa State Economic University, Odessa (Ukraine).  
**Prof. Andrey Krisovatiy, DSc (Econ)** – Ternopil National Economic University, Ternopil (Ukraine).  
**Prof. Yon Kukuy, DSc (Econ)** – Valahia University, Targovishte (Romania).  
**Prof. Ken O'Neil, PhD** – University of Ulster (Great Britain)  
**Prof. Richard Thorpe, PhD** – Leeds University (Great Britain)  
**Prof. Olena Nepochatenko, DSc (Econ)** – Uman National University of Horticulture, Uman (Ukraine)  
**Prof. Dmytro Lukianenko, DSc (Econ)** – Kyiv National Economic University named after Vadym Hetman, Kyiv (Ukraine)  
**Assoc. Prof. Maria Cristina Stefan, PhD** – Valahia University of Targoviste (Romania)  
**Assoc. Prof. Anisoara Duica, PhD** – Valahia University of Targoviste (Romania)  
**Assoc. Prof. Vladinir Klimuk, PhD** – Baranovichi State University, Branovic (Belarus)

**Support Team**

Rositsa Prodanova, PhD – Technical Secretary  
Anka Taneva – Bulgarian Copy Editor  
Ventsislav Dikov – Senior Lecturer in English – Translation from/into English  
Petar Todorov, PhD – Senior Lecturer in English – Translation from/into English

**Editorial address:**

2, Emanuil Chakarov street, Svishtov 5250  
Prof. Andrey Zahariev, PhD – Editor-in-Chief  
☎ (+359) 889 882 298  
Rositsa Prodanova, PhD – technical secretary  
☎ (+359) 631 66 309, e-mail: nsarhiv@uni-svishtov.bg  
Blagovesta Borisova – computer graphic design  
☎ (+359) 882 552 516, e-mail: b.borisova@uni-svishtov.bg

*In 2022, the journal will be printed using a financial grant from the Scientific Research Fund – Agreement № KP-06-NPZ-69 from Bulgarska Nauchna Periodika – 2022 competition.*

© Academic Publishing House “Tsenov” – Svishtov  
© D. A. Tsenov Academy of Economics – Svishtov

---

# ***ECONOMIC ARCHIVE***

**YEAR LXXV, BOOK 2 – 2022**

---

## ***CONTENTS***

**Sofia Benjakik, Badr Habba**

The Relationship Between Chief Executive Officer Duality and Bank Efficiency: Evidence from African Banking Sector /3

**Hrabrin Bachev**

An Approach to Understanding and Assessing the Governance Efficiency of Agricultural Enterprises /21

**Venelin Boshnakov, Mariya Kazakova**

The Use of Digital Services by Bulgaria's Population: Major Prerequisites, Trends and Regional Dimensions /39

**Lyubomir Dimitrov Lyubenov**

Budget for Marketing Stimulation of Regional Bee Products on the Basis of Value /51

**Martin Nikolaev Harizanov**

Perspective Spatial Model for Sustainable Redivision into Regions and Providing for Bulgaria's Regional Development /64