Dynamics of human resources and labor productivity in the Construction and Real Estate Operations sectors for the period 2005-2021

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Abstract. Human resources are a main production factor determining the sustainable development, prosperity and competitiveness of any business unit, industry or the economy as a whole, and labor productivity is a main indicator providing information on the efficiency and quality of this resource in the production process. The object of research in the study is the Construction and Real Estate Operations sectors and the subject of research is the quantitative and qualitative characteristics of human resources and labor productivity of the persons employed in both sectors for the period 2005-2021. The author's goal is to study the dynamics of human resources and labor productivity in two sectors of particular importance for the national economy and, on this basis, outline the trends in their changes, as well as the reasons for these changes. The scope is limited to the study of indicators characterizing the development of both sectors, including the number of functioning enterprises, incl. by the number of persons employed in them, number of persons employed, average salary and educational level of persons employed in both sectors, in a comparative plan, including the general trends in the country, as well as the labor productivity of the persons employed in both sectors, presented by the gross value added (GVA) indicator, relative to the number of employees and time worked by them. The main methods used are the methods of analysis and synthesis, induction and deduction, description and comparison. Based on the analysis, the main conclusions about the dynamics of human resources and labor productivity of the persons employed in both sectors for the period 2005-2021 are summarized, major problems are outlined and measures for their overcoming are proposed, which determines the practical significance of this study. In the Construction sector, both the positives and negatives of the change in the environment are more tangible; stand out: low level of labor remuneration, low educational level and low labor productivity, which are interconnected and to a significant extent mutually predetermine each other. Real estate operations sector characterizes by a more balanced development during the period, employed persons have a higher educational level, but salary slow down their growth, remaining below the national average levels. Labor productivity, as an important economic indicator closely related to economic growth, competitiveness and the living standard in the country, shows a sustainable trend of growth at the national level, although it remains significantly below the EU average levels. In the real estate sector, there is also a positive trend, but with a higher degree of dynamics of the indicator during the period. In the Construction sector after 2012, there is a negative trend, most pronounced at the end of the period, due to in a significant extent to the disproportionate attraction of human resources compared to the realized product.

Key words: Human Resources, Employed Persons, Labor Productivity, Construction Sector, Real Estate Operations Sector.
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1. Introduction

In an environment full of challenges, scientific interest focuses to various aspects of their manifestation not only in business and economic life, but also in various sectors and the economy as a whole. The study period 2005-2021 is "variegated" with national and world events (among them: Bulgaria's accession to the EU, the World Financial and Economic Crisis (2007-2008) and the subsequent recovery period, the Covid-19 pandemic, the political crisis that started at the end of the period, etc.), which inevitably have an impact on the socio-economic development of the country at all levels. Despite the mentioned events of a rather negative nature, the growth rate of GDP (GDP growth, annual %), as the main measure of economic growth, remains above the average for the European Union (European Union) almost throughout the study period (The World Bank, 2023).

In the context of the present study, the object of scientific interest is the Construction and Real Estate Operations sectors, and the subject of research is the quantitative and qualitative characteristics of human resources and the labor productivity of persons employed in the specified sectors for the period 2005-2021. The author's goal is to study the dynamics of human resources and labor productivity in two sectors of particular importance for the national economy and, on this basis, outline the trends in their changes, as well as the reasons for these changes. The purpose thus defined implies the implementation of the following scientific tasks: to briefly examine the theoretical aspects of the terms "human resources" and "labor productivity"; to follow the dynamics of the macroeconomic environment, determining the conditions for carrying out economic activity in the country; to research some indicators characterizing the development of the Construction and Real Estate Operations sectors, including number of operating enterprises, number of employed persons, average salary and educational level of persons employed in both sectors, in a comparative plan, including with the general trends in the country, as well as the labor productivity of the persons employed in both sectors, represented by the gross value added (GVA) indicator, related to the number of employed persons and the time worked by them.

The main thesis of the author is that human resources are the main production factor that predetermines the sustainable development, prosperity and competitiveness of any business unit, industry or the economy as a whole, and labor productivity is the main indicator that providing information about the quality and efficiency of this resource in the production process. The study covers the period 2005-2021, presenting and analyzing data according to the available (collected and officially announced) at the time of the study. The main information source is the National Statistical Institute (NSI). The conclusion summarizes the main conclusions about the dynamics of the studied indicators and their relevance to the general trends in the country, outlines major problems and proposes activities to overcome them.

2. Theoretical aspects of the terms "human resources" and "labor productivity"

A number of mostly Bulgarian authors (Kalchev, Antonova, 2012; Kalchev, Antonova, 2014; Koev, at al., 2017; Hristov, Hristova, 2001; Vedar, 2014), based on a historical approach, derive the understanding of human resources as an essence, content, scope and applicability, based on its comparison with the term "personnel". Thus, R. Kalchev and K. Antonova, researching the management aspects of the two terms, summarize that "... the personnel are the people who work in a given organization. Unlike personnel, human resources are determined the most widely – from the employees of a given enterprise to the population of the country" (Kalchev, Antonova, 2014). In another study, the authors point out "There are human resources in the settlement, in a given economic region, nationwide, etc." (Kalchev, Antonova, 2012), i.e. they associate the term with a specific territorial scope. Therefore, as they explicitly add, "… when talking and writing about human resources management, their scope should be specified."

A different interpretation, but with similar content and scope, we find in certain English-language sources. There is also a comparison of terms, but rather the terms "workforce" and "human resources" (The Economic Times, 2023). The term "workforce" is defined as a group of people who work for an organization, business sector, industry or economy, i.e. overlaps significantly with the understanding of human resources discussed above, and "human resources", (as) a more specific term, refers to employees of a company or a contract workforce, i.e. it comes down to understanding of personnel. More often, however, in English-language sources, the term "human resources" is used to refer both to the people who work for a company or organization, and to the department responsible for managing all issues related to employees (Human Resources Edu., 2023; Resources for Employers, 2023; Cambridge Dictionary, 2023).

The content side of human resources is revealed by authors such as R. Shineva and Iv. Zhelev (Shineva, Zhelev, 2002), who consider the term in a broad, medium and narrow sense, namely: from the number of people forming the population of a given country to the workers and employees in a given enterprise, which as a scope is covered by the specified-above opinions.

A third group of authors, focusing on the qualitative aspects of the considered term, define human resources as:

- human capital, which, with the necessary investment in its development, can provide the desired income; an asset that creates a concrete advantage at the expense of its commitment to work, adaptability and high quality of work (Vedar, 2014);
- the people who work in the organization, together with their knowledge, competences and work motivation; main source of competitive advantages, through their abilities, knowledge, will to change (Gospodinov, 2012);

- the people in the organization with their professional qualifications, who make it possible to achieve its business goals (Shopov, Atanasova, 2003);
- the people who, with their knowledge, skills, habits and attitudes, fulfill organizational goals with high quality and efficiency; the people who realize its (the organization's) goals and provide sustainable competitive advantage through the ability to create uniqueness, value and impossibility to imitate (Harizanova, Mironova, Kicheva, 2018); etc.

In addition, authors such as S. Hristov and T. Hristova (Hristov, Hristova, 2001) also pay attention to the temporal aspect of the considered term, namely: the actual and potential personnel of the organization "now" and in perspective. However, as can be seen from the above opinions, human resources as content and scope are reduced priority to the organization level. However, the present study suggests that human resources to be considered at a higher level.

Another term that has been adopted (mainly) for the purposes of National Statistics and accountability is the term "employed persons". Employed persons are employed and self-employed persons engaged in a given production activity. Employed persons are persons working for a given institutional unit and receiving remuneration for their work. Employed persons include employees working under employment, civil or non-contractual employment. Self-employed persons are persons who are sole owners or co-owners of unincorporated businesses in which they work (NSI, 2023).

In an inextricable connection with human resources, resp. employed persons, as a number and qualitative characteristic, is the second basic term for this research, namely: labor productivity. According to the International Labor Organization, labor productivity is an important economic indicator that closely relates to economic growth, competitiveness and living standards within an economy. Labor productivity represents the total volume of output (measured as gross domestic product, GDP) produced by a unit of labor (measured as the number of persons employed or hours worked) during a given period. The indicator provides common information on the efficiency and quality of human capital in the production process (ILO, 2023).

A similar interpretation is also present in NSI's methodology for calculating labor productivity (NSI, 2023), where this economic category is presented as a composite economic indicator that compares the achieved result (newly created product) with the input labor factor in the implementation of a certain economic activity in a certain economic territory for a certain period. At the national level, the result of production activity is measured by gross domestic product (GDP) and gross value added (GVA) created by all production sectors in the national economy. GDP is a basic indicator in the system of national economic accounts, which presents the total result of the production activity of all production units at market prices, and is the basis for international comparisons. For example, according to the International Labor Organization for 2021, Bulgaria ranks 68th out of 185 countries in terms of GDP per hour worked - at 2017 prices (ILO, 2023). GVA is an indicator that is applicable to calculate labor productivity both at the national level and at the level of production activities (sectors) or by region, measuring the result of production activity at base prices.

The labor production factor in the composition of the labor productivity indicator is measured by the number of employed persons in the production units of the national economy and the time worked by them - hours worked.

Labor productivity is influenced by many factors, such as: technical and technological level, educational and qualification level, nature and conditions of work, nature and organization of the production process, labor remuneration, additional resources invested, innovations, etc., a significant part of which remain beyond the scope of the present study.

Based on the above, we can conclude that:

- Human resources are the main production factor for any organization, sector or the economy as a whole, which with their knowledge, skills, competences and motivation for work are the main source of competitive advantages.
- Labor productivity is the main indicator providing information on the efficiency and quality of human capital in the production process.

3. Dynamics of the main macroeconomic indicators of Bulgaria

The development of all sectors of the national economy closely relates to the development of the macro environment, which forms the general conditions under which economic activity is carrying out. The isolated study of certain economic indicators at the sector level, without clarifying their macroeconomic context, would lead to wrong conclusions and generalizations. Table 1 presents data on the main macroeconomic indicators of Bulgaria and their changes for the period 2005-2021.

Table 1.

Main macroeconomic indicators of Bulgaria for the period 2005-2021

Year	GDP at current prices	GDP growth	Final consumption (current prices)		Gross capital formation (current prices)		Foreign direct investment as at 31.12.	Annual average consumer price index, previous year = 100	Unemployed persons, 15 + completed years	Unemployment rate, 15 + completed years
	million leva	%	million leva	% of GDP	million leva	% of GDP	billion euros/ dollars*	%	thousand	%
2005	47 017	7.1	40 865	86.9	13 042	27.7	9.2*	5.0	334.2	10.1
2006	53 608	6.8	45 586	85.0	17 185	32.1	12.4*	7.3	305.7	9.0
2007	63 494	6.7	54 108	85.2	21 338	33.6	15.2	8.4	240.2	6.9
2008	72 847	6.1	60 324	82.8	26 898	36.9	19.2	12.3	199.7	5.6
2009	73 181	-3.3	58 338	79.7	20 885	28.5	20.4	2.8	238.0	6.8
2010	74 878	1.5	60 408	80.7	16 863	22.5	22.1	2.4	352.3	10.3
2011	81 124	2.1	63 676	78.5	17 327	21.4	21.6	4.2	376.2	11.3
2012	82 646	0.8	67 274	81.4	18 088	21.9	22.0	3.0	410.3	12.3
2013	82 242	-0.6	65 432	79.6	17 278	21.0	23.3	0.9	436.3	12.9
2014	84 150	1.0	66 965	79.6	18 098	21.5	21.6	-1.4	384.5	11.4
2015	89 600	3.4	69 984	78.1	18 810	21.0	23.2	-0.1	305.1	9.1
2016	95 390	3.0	72 629	76.1	18 081	19.0	23.5	-0.8	247.2	7.6
2017	102 741	2.8	77 961	75.9	20 349	19.8	24.5	2.1	206.9	6.2
2018	109 964	2.7	83 843	76.2	23 328	21.2	24.9	2.8	173.3	5.2
2019	120 396	4.0	91 229	75.8	25 280	21.0	25.3	3.1	142.8	4.2
2020	120 553	-4.0	93 675	77.7	24 515	20.3	26.9	1.7	168.6	5.1
2021	139 012	7.6	107 384	77.2	29 296	21.1	28.2	3.3	171.1	5.3

Note: The value of FDI for 2005 and 2006 is in billion dollars. The amount of FDI for the period 2008-2021 include all economic activities, except for sectors K, O, T and U.

Source: Developed by the author from NSI data and own calculations
(https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1169, https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1170, https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1517, https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=782, https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=664, https://www.nsi.bg/bg/content/4012/323-безработни-лица-и-коефициенти-на-безработица-национално-ниво-статистически-райони-области).

Several key events mark the studied period, from the viewpoint of their effects on the national economy:

- the accession of Bulgaria to the EU – a process that practically dominated the economic development of the country even before the formal accession in 2007;
- the world economic crisis – the biggest for the last 80 years, called the Great Recession, which began in the world in 2007 and occurred in Bulgaria towards the end of 2008;
- the Covid-19 pandemic – occurred at the end of 2019, but spread rapidly, including in Bulgaria in March 2020, putting the human factor, the health system, a number of sectors and the economy as a whole to the test.

To these we should add the political crisis from the middle of 2021, as well as the increase in the price of energy resources on international markets that started during the year (MF, 2022), the consequences of which will still be subjected to more in-depth analyses, including by the author in subsequent publications..

This gives us reason to follow the dynamics of the main macroeconomic indicators presented in Table 1, divided into four periods.

GDP, as the main indicator of economic growth, for the period 2005-2008 records a growth of 6.7 % average on an annual basis, significantly ahead of the average for the EU member states – 2.3 % (The World Bank, 2023). The relative share of final consumption, as a measure of internal demand, varies between 82.8 % - 86.9 % of GDP with a clearly pronounced negative trend, offset by the growth of the indicator of investment activity in the country - gross capital formation of fixed capital (investments made for long-term tangible and intangible assets). From 13 042 million leva (27.7 % of GDP) in 2005, the value of the indicator increases to 26 898 million leva (36.9 % of GDP) in 2008. The growth is both absolute and relative to final GDP. Economic growth during the period researched is additionally supported by the inflow of foreign capital. An indicator of investment activity of international investors in Bulgaria, as well as of their interest in new investments in the country, are direct foreign investments in enterprises from the non-financial sector, showing their size as of a certain date - 31.12., as a sum of investment flows from previous years. The average change in FDI (on a prior year basis) for 2005-2006 and 2007-2008 was 30 %, outpacing the GDP growth rate for the same period (6.7 %). Another important aspect of the macroeconomic development during the period is the development of the labor market in terms of employment, which increases by an average of 3.6 % on an annual basis, accompanied by a decrease in the number of unemployed persons by 40 % and the unemployment rate to 5.6 %.

The carryover of the Great Recession into the country leads to slowed economic growth in the period 2009-2013, shrinking production and limiting economic activity in the country. The GDP growth rate in Bulgaria falls to -3.3 % in 2009, compared to a value for the EU of -4.3 % (The World Bank, 2023). A negative value of the indicator is recorded in 2013 as well -0.6 % (with a value for the EU -0.1 %) (The World Bank, 2023). The relative share of final consumption varies between 78.5 - 81.4 % of GDP. The highest value is realized in 2012 and the lowest - in 2011. Investments in fixed capital characterize by relative stability after 2009. From 20 885 million leva (28.5 % of GDP) in 2009, they fall to 16 863 million leva (22.5 % of GDP) in 2010, after which they increase to 17,278 million leva (21.0 % of GDP) in 2013. However, the growth for the period is rather absolute but not relative to the final GDP used. The average change in FDI for the period 2009-2013 is 4.1 %. Employment is negatively affected, provoking a four-year decline of varying intensity, reaching in 2013 436.3 thousand unemployed persons and unemployment rate 12.9 %.

The period 2014-2019 is a period of recovery of economic stability, albeit at lower levels of economic growth and economic activity. A more significant improvement in economic indicators is observed in 2015 and the following years of the study period. The GDP growth rate reaches 3.4 % in 2015, but remains below levels recorded in the pre-crisis period. The relative decrease in final consumption is mainly due to the positive (since 2015) external trade balance (difference between the value of exported and imported goods and services). The unemployed decreases by nearly 63 % and the unemployment rate reaches its lowest level – 4.2%.

The Covid-19 pandemic and a number of the measures taken to contain it lead to a limitation of business activity in 2020, which in turn results in a slowdown in economic growth. The GDP growth rate in 2020 falls to -4.0 %, but remaining above the EU average (-5.7%) (The World Bank, 2023). The indicator recovers its positive value already in the following year, reaching a maximum value, both relative and in absolute terms. Although 2021 is considered a year of recovery from the crisis, the employment decline observed in 2020 continues into 2021, but at a slower pace. Unemployed people reach 171 000, or an increase of approximately 20 % compared to 2019.

Based on the above, we can summarize that the study period 2005-2021 is "marked" by three key events for the national economy, which to a significant extent (pre)determine the general conditions for carrying out economic activity in the country.

4. Development of the Construction and Real Estate Operations sectors for the period 2005-2021

According to the Classification of Economic Activities – version 2008 (NACE.BG-2008) (NSI, 2008):

- The Construction sector includes general and specialized construction of buildings and facilities; repair, maintenance and reconstruction of buildings and facilities, installation of prefabricated building elements and temporary buildings on the construction site; as well as activities for the implementation of investment projects for buildings and facilities by collecting financial, technical and human resources necessary for the implementation of projects for residential and non-residential buildings intended for later sale. Main sections of this sector are construction of buildings, construction of facilities and specialized construction activities.
- The Real Estate Operations Sector includes activities of landlords, agents and/or brokers when buying or selling real estate, renting real estate, providing other services related to real estate, such as valuation or drafting written agreements. This sector includes also: activities for the implementation of investment projects for buildings, combined with the retention of ownership or renting them, as well as real estate management activities.

To assess the state and analyze the development of the specified sectors in the context of the study, the author accepts the use of the following indicators: number of enterprises, incl. by the number of persons employed in them, number of employees, average salary and educational level of persons employed in the sector.

The indicator "number of enterprises" shows the number of non-financial enterprises that carried out economic activity during the reference year. Here, due to a change in the way statistical information is presented and in view of comparability of the data used, it is necessary to divide the period researched into two sub-periods. Data on the number of enterprises engaged in economic activity in the Construction and Real estate operations, landlords and business services sectors and total for the country for the period 2005-2007 are presented in Table 2.

Table 2.

Number of enterprises engaged in economic activity in the Construction and Real estate operations, landlords and business services sectors and total for the country for the period 2005-2007

Year	Total for the country		Construction sector			Real Estate Operations, Landlords and Business Services Sector		
	Enterprises	Growth rate	Enterprises	Growth rate	Share	Enterprises	Growth rate	Share
	number	%	number	%	%	number	%	%
2005	240 315		12 823		5.34	29 622		12.33
2006	241 390	0.45	14 638	14.15	6.06	32 581	9.99	13.50
2007	257 987	6.88	18 193	24.29	7.05	41 209	26.48	15.97

Note: In total for the country are included the sectors: Mining and quarrying; Manufacturing; Production and distribution of electricity, heat, gaseous fuels and water; Trade, repair and maintenance of motor vehicles and motorcycles, personal and household goods; Hotels and restaurants; Transport, storage and communications; Construction and Real estate activities, landlords and business services. The growth rate is calculated on a chain basis.

Source: Developed by the author from NSI data and own calculations (https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1375).

After a decrease in the number of functioning enterprises in the Construction sector in 2005 by 10 % compared to the previous year, over the next two years it steadily and intensively increased by just over 19 % average on an annual basis, which significantly outpaced the trends at national level (approximately 4 % average per year), reaching 18 193 enterprises in 2007, or 5 370 new enterprises. The share of construction enterprises in the total number of functioning enterprises in the country also grew steadily, but at a more moderate pace.

Up to and including 2007, real estate operations as economic activities are reported in sector K "Real estate activities, landlords and business services". With NACE.BG 2008, these economic activities are represented as a separate sector (sector L) due to their importance in the System of national accounts. However, the summaries that can be made based on the available data cannot be unambiguously attributed to the Real Estate Operations sector. For example, despite the reported growth in the number of functioning enterprises (17.6 % average per year) and their share of the total number of enterprises (approximately 14 % an annual average), the number of enterprises operating in sector L "Real Estate Operations" in 2008 reached 18 736 enterprises, or 5.8 % of all enterprises, which is approximately 55 % of the enterprises operating in the K sector in 2007 (a total of 41 209 in number).

As the main prerequisites for the intensification of economic entities in the Construction and Real Estate Operations sectors for the period 2005-2007 can be pointed out the positive attitudes related to the accession of Bulgaria to the European Union and the resulting additional effects in the pre- and accession period: GDP growth, foreign capital inflows, including foreign direct investment, employment growth, a number of key reforms towards deregulation, reregulation and initial regulation of markets, etc. (Center for Liberal Strategies, 2017).

Data on the number of enterprises engaged in economic activity in the Construction and Real Estate Operations sectors and total for the country for the period 2008-2021 are presented in Table 3.

Table 3.

Number of enterprises engaged in economic activity in the Construction and Real Estate Operations sectors and total for the country for the period 2008-2021

Year	Total for the country		Construction sector			Real Estate Operations sector		
	Enterprises	Growth rate	Enterprises	Growth rate	Share	Enterprises	Growth rate	Share
	number	%	number	%	%	number	%	%
2008	323 003		22 628		7.01	18 736		5.80
2009	368 229	14.00	24 323	7.49	6.61	20 192	7.77	5.48

2010	366 929	-0.35	22 081	-9.22	6.02	20 672	2.38	5.63
2011	366 240	-0.19	20 418	-7.53	5.58	21 061	1.88	5.75
2012	372 036	1.58	19 959	-2.25	5.36	21 166	0.50	5.69
2013	377 383	1.44	19 603	-1.78	5.19	21 555	1.84	5.71
2014	383 905	1.73	19 869	1.36	5.18	22 538	4.56	5.87
2015	393 460	2.49	20 377	2.56	5.18	23 216	3.01	5.90
2016	404 937	2.92	20 533	0.77	5.07	23 635	1.80	5.84
2017	406 310	0.34	20 370	-0.79	5.01	23 280	-1.50	5.73
2018	413 535	1.78	20 936	2.78	5.06	24 031	3.23	5.81
2019	419 681	1.49	21 580	3.08	5.14	25 083	4.38	5.98
2020	411 564	-1.93	21 893	1.45	5.32	25 515	1.72	6.20
2021	412 878	0.32	22 728	3.81	5.50	27 207	6.63	6.59

Note: All economic activities are included in total for the country, except for sectors K, O, T and U. The growth rate is calculated on a chain basis.

Source: Developed by the author from NSI data and own calculations (https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=789).

The presented data shows that the dynamics in the change in the number of operating enterprises in both sectors during the period researched follows the trends at national level after some slowdown in 2009 (almost twice as low growth) – the beginning of the crisis period. There is a more significant deviation with a negative trend in terms of the number of enterprises in the Construction sector in the period 2010-2013, with its strongest manifestation in 2010 and 2011, as a consequence of the restriction of economic activity. This leads to a shift of the Construction sector from its leading position, both in terms of the number of enterprises and in terms of share occupied, relative to the real estate sector. This situation maintains until the end of the study period (see Fig. 1).

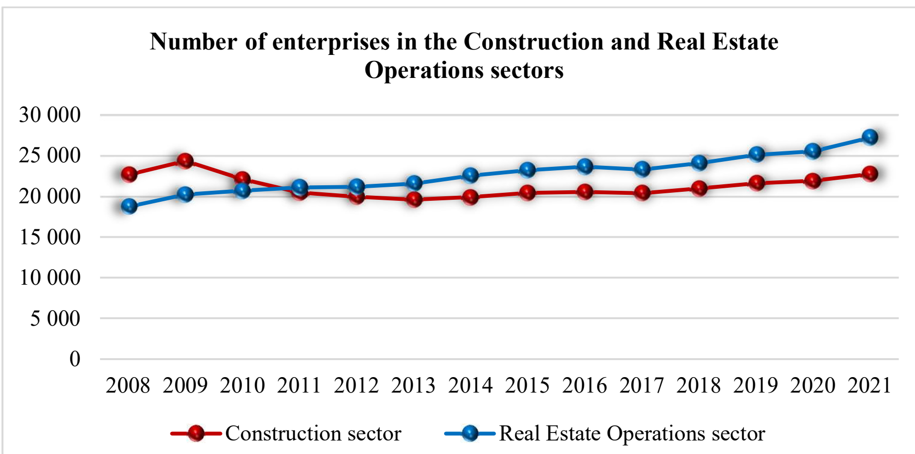

Figure 1. Number of enterprises carrying out economic activity in the of Construction and Real Estate Operations sectors for the period 2008-2021

Source: Developed by the author from NSI data.

The slow, but almost uninterrupted, positive trend of increase in the number of functioning enterprises in the Real Estate Operations sector leads to a 45 % increase in their number in 2021 compared to 2008, reaching 27 207 enterprises, significantly outpacing the 28 % increase at national level and less than 0.5 % increase in the Construction sector. Growth is also observed in terms of their relative share of the total number of enterprises, but by less than one percent.

Based on the presented data on the number of functioning enterprises in the Construction and Real Estate Operations sectors we can summarize that in the Construction sector the effects (both positive and negative) resulting from the change in the environment are more reflected, and the nature and peculiarities of the construction production process are a prerequisite for its slower recovery..

According to the number of persons employed in them, the largest relative share, both at national level and in the Construction and Real Estate Operations sectors, are enterprises with up to 9 employees, ranging between 78.2 % - 86.7 % in the Construction sector, following the general trend of enterprises in the sector, and between 97.1 % - 98.4 % in the real estate sector. In the real estate sector, their number increased almost continuously throughout the period, reaching 26 763 enterprises in 2021 (compared to 19 700 construction enterprises). In second place are enterprises with up to 49 employees, whose number in the real estate sector steadily decreases, both absolutely and relatively, reaching 412 enterprises in 2021, or 1.5 % relative share (compared to 2 529 construction enterprises and 11.1 % relative share). Here it is noteworthy that the share of enterprises with up to 49 employees in the Construction sector is almost twice as high as the national average levels and nearly six times higher than the Real Estate Operations sector, which is indicative of the presence of some concentration of the activity of enterprises in the construction sector. The smallest or rather insignificant share are enterprises with up to 249 and over 250 employees (on average 2.5 % and 0.2 % in the construction sector and only 0.2 % in 2010 in the real estate sector or for which the data are declared confidential) (see Fig. 2).

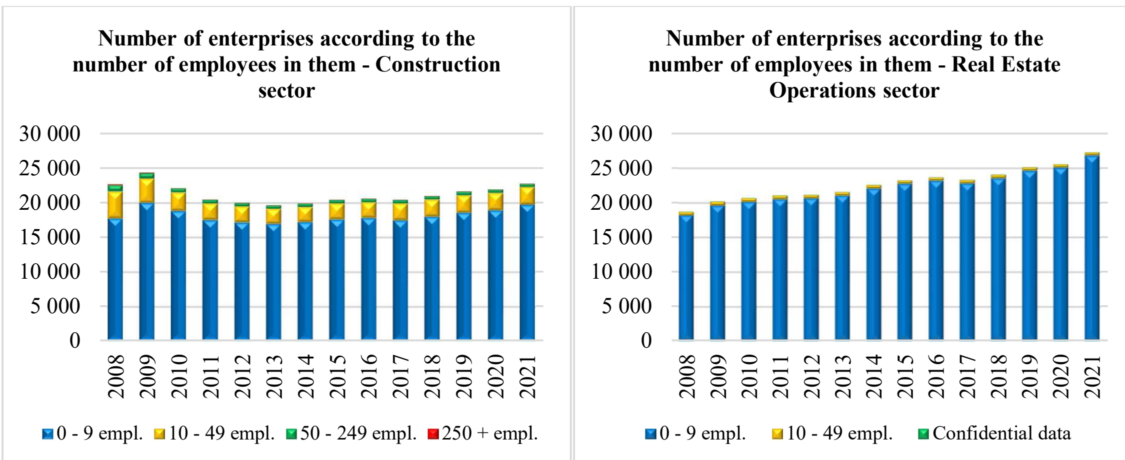

Figure 2. Number of enterprises in the Construction and Real Estate Operations sectors according to the number of persons employed in them
Source: Developed by the author from NSI data.

The indicator "persons employed" includes employees and self-employed persons engaged in a productive activity. Data on the number of persons employed in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021 are presented in Table 4.

Table 4.

Persons employed in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021

Year	Total for the country		Construction sector			Real Estate Operations sector		
	Employed	Growth rate	Employed	Growth rate	Share	Employed	Growth rate	Share
	number in thousands	%	number in thousands	%	%	number in thousands	%	%
2005	3 495.3		171.2		4.90	17.6		0.50
2006	3 612.0	3.34	213.7	24.83	5.92	19.0	8.23	0.53
2007	3 726.7	3.18	251.1	17.50	6.74	20.8	9.35	0.56
2008	3 814.6	2.36	297.7	18.56	7.80	23.4	12.42	0.61
2009	3 749.3	-1.71	277.3	-6.86	7.40	24.7	5.53	0.66
2010	3 603.9	-3.88	225.0	-18.87	6.24	29.0	17.41	0.80
2011	3 524.6	-2.20	198.4	-11.80	5.63	29.1	0.43	0.83
2012	3 436.4	-2.50	185.9	-6.29	5.41	27.3	-6.09	0.80
2013	3 421.6	-0.43	179.4	-3.54	5.24	26.5	-3.11	0.77

2014	3 434.2	0.37	177.9	-0.81	5.18	26.8	1.26	0.78
2015	3 446.2	0.35	182.4	2.52	5.29	26.1	-2.68	0.76
2016	3 463.3	0.50	175.2	-3.95	5.06	26.5	1.33	0.76
2017	3 525.4	1.79	175.4	0.15	4.98	27.0	2.15	0.77
2018	3 521.6	-0.11	184.5	5.19	5.24	26.5	-2.04	0.75
2019	3 533.6	0.34	195.7	6.02	5.54	26.5	0.07	0.75
2020	3 451.7	-2.32	192.3	-1.71	5.57	26.1	-1.49	0.76
2021	3 458.4	0.19	195.8	1.82	5.66	24.9	-4.67	0.72

Note: The growth rate is calculated on a chain basis.

Source: Developed by the author from NSI data and own calculations (https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=181).

The presented data shows that the dynamics in the change in the number of employed persons in the first years of the study period is higher in the Construction and Real Estate Operations sectors, varies between -18.9 % – 24.8 % and 5.5 % – 17.4 %. Over the next ten years, there is a weak dynamics of the indicator with a weak positive trend at national level and in the Construction sector, and a weak negative trend in the real estate sector. The highest value of the indicator in the Construction sector is reached in 2008, when the number of persons employed was nearly 300 thousand people, or 7.8 %. In the real estate sector, the "peak" is reached in 2011 with just over 29 thousand employed, or 0.8 %. The share of employees in the total number of persons employed in the Construction sector in turn realized a maximum value in 2007 – 92.1 %, and in absolute terms – in 2008. In the real estate sector, the share of employees is the highest in 2011 – 91.1 % (both relative and in absolute terms). At the end of the researched period (2021), construction companies engaged just under 196 thousand people, approximately 5.7 %, and in the real estate sector - nearly 25 thousand people, or 0.7 %, while the national average of about 3.5 million persons employed, with the share of employees falling to 80.1 % in the Construction sector and to 86.7 % in the real estate sector (vs. a national value of 75.1 %).

Two further facts deserve attention here: firstly, the share of persons employed in the real estate operations sector remained below 1 % throughout the researched period; secondly, in terms of the number of functioning enterprises and the number of employees in the real estate sector, two opposite trends emerge in the last two years of the researched period – growth of enterprises in the sector and a decrease in the number of employees, which corresponds to a significant extent with the processes at macro level – the recovery of economic activity, but not employment. In the Construction sector, employment is recovering at pre-crisis 2019 levels.

The indicator "average salary" (presented with the indicator "Average gross salary of employees under labor contract") is a basic indicator of salary levels, and remuneration of labor is a major factor for labor motivation. Gross salary is the remuneration that the person receives for the work performed by him before the deduction of the compulsory and voluntary social and health insurance contributions and the tax accruals at the expense of the employee. Includes basic salary and all additional accruals under the Labor Code and/or agreed by collective or individual employment agreement, as well as additional material incentives in the form of premiums. The average annual gross salary calculates by dividing the accrued salary resources for the reference year by the average number of employees under an employment relationship excluding persons on maternity leave (NSI, 2023). The data for the study period are presented in Table 5.

Table 5.

Average salary (annual) in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021г.

Year	Total for the country		Construction sector		Real Estate Operations sector	
	Average salary	Growth rate	Average salary	Growth rate	Average salary	Growth rate
	leva	%	leva	%	leva	%
2005	3 885		3 210		3 891	
2006	4 324	11.30	3 577	11.43	4 662	19.81
2007	5 167	19.50	4 249	18.79	6 005	28.81
2008	6 538	26.53	5 531	30.17	6 875	14.49
2009	7 309	11.79	6 766	22.33	7 630	10.98

2010	7 777	6.40	7 042	4.08	7 875	3.21
2011	8 230	5.82	7 283	3.42	8 130	3.24
2012	8 773	6.60	7 662	5.20	8 822	8.51
2013	9 301	6.02	7 998	4.39	9 124	3.42
2014	9 860	6.01	8 782	9.80	9 312	2.06
2015	10 535	6.85	9 212	4.90	10 118	8.66
2016	11 379	8.01	9 289	0.84	10 838	7.12
2017	12 448	9.39	10 044	8.13	12 058	11.26
2018	13 755	10.50	11 083	10.34	12 982	7.66
2019	15 209	10.57	12 236	10.40	14 355	10.58
2020	16 687	9.72	13 471	10.09	15 391	7.22
2021	18 733	12.26	14 669	8.89	17 267	12.19

Note: For the period 2005-2007, the specified data refer to sector K "Real estate operations, landlords and business services". The growth rate is calculated on a chain basis.

Source: Developed by the author from NSI data and own calculations
(https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=568, https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1393).

From the presented data, it can be concluded that the average salary shows a steady trend of growth both at national level and in the Construction and Real Estate Operations sectors, with some slowdown (growth below 10 %) in the period 2010-2016/2017. Salaries in the Real Estate Operations sector until 2012 (except for 2011) are slightly above the average – between 1 and 16 %, since 2013 they are close, but below the average levels (between 92 and 98 % of them) (see Fig. 3).

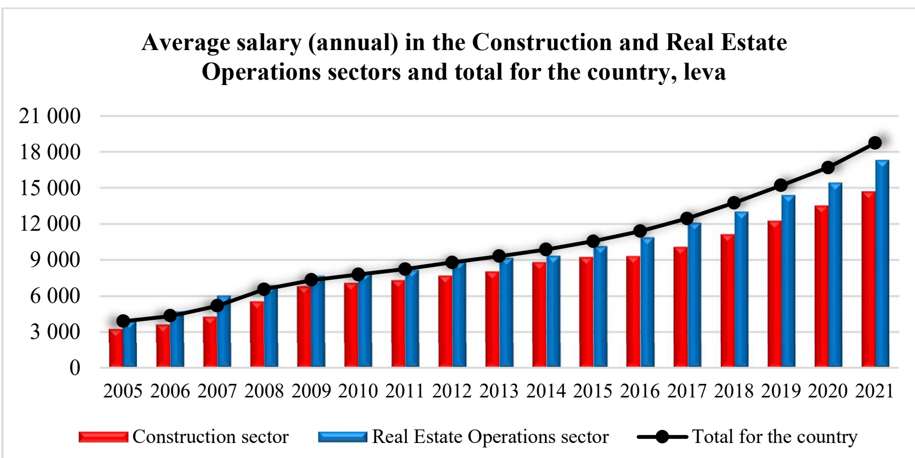

Figure 3. Average salary (annual) in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021, in leva

Source: Developed by the author from NSI data.

For comparison, in 2021 the highest average salaries are reported in the field of information technology and information services – 51 665 leva (2.8 times above the national average levels, 3 times higher than those in the Real Estate Operations sector and 3.5 times above those in the Construction sector), and the lowest – in the textile and clothing industry – 10 622 leva. This directly correlates with the low educational attainment of those employed, especially in the Construction sector (see Fig. 4).

For example, according to NSI data, in 2021 30.3 % of the employees in the Construction sector have primary or lower than primary education (vs. 10.5 % national average); 56.7 % have secondary education, 25.3 % of which have no professional qualification (comparable to the national values – 55.6 % and 23.9 % respectively); and only 13.0 % of the persons employed in the sector have higher education (vs. 33.9 % nationally). In the real estate sector, these indicators have much more favorable values: less than 1 % of the persons employed in the Real Estate Operations sector have primary or lower than primary education, 41.1 % have a secondary education, as only 17.1 % of them have no professional qualification, and 58.9 % is the share of those employed with higher education. However, this does not correspond to the low remuneration of employees in the sector, which, as stated above, is close to but below average levels since 2013.

For comparison, in sector J "Creation and dissemination of information and creative products; Telecommunications", including activities in the field of information technology and information services (the activities with the highest salaries for the year), in 2021 from nearly 102 thousand employed persons, 76.9 % have higher education, 22.7 % have secondary education, including 8.4 % - without professional qualifications and only 0.4 % are persons with primary or lower than primary education.

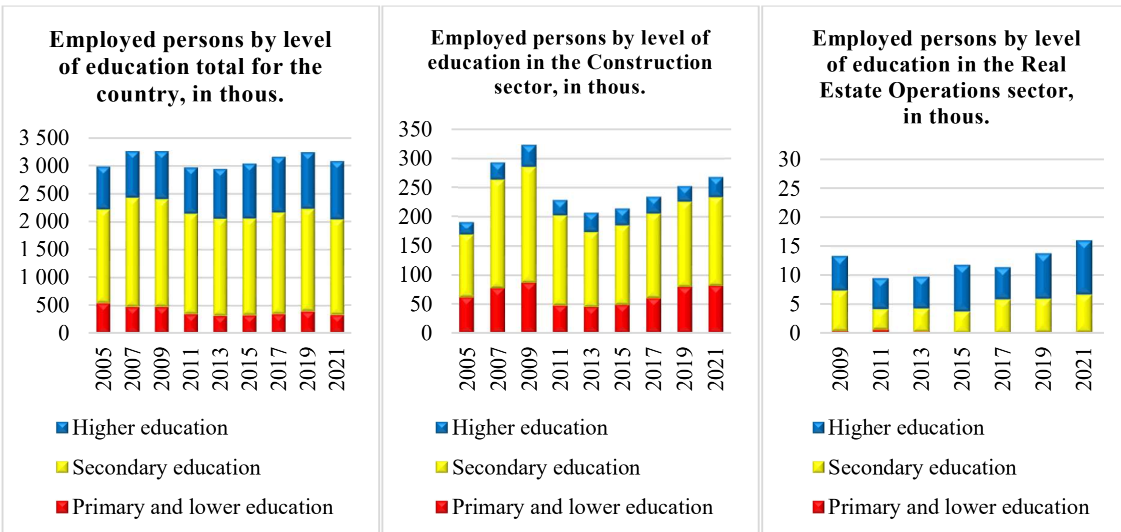

Figure 4. Employed persons by level of education in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021, in thousand

Source: Developed by the author from NSI data.

These ratios in the number of employees by level of education in the Construction and Real Estate Operations sectors show a certain resilience, at least for the research period, which inevitably has an impact on the efficiency, quality and productivity of labor in the surveyed sectors.

Based on the above, we can summarize the following conclusions:

- In the Construction sector, both the positives and negatives of the change in the environment are more tangible; economic activity is strongly influenced by the global economic crisis and significantly less – by the pandemic-related – in terms of number of enterprises and employees, which stems to a significant extent from the nature of labor and the peculiarities of the production process; salaries in the sector remain below the national average levels, correlating with the low educational level of employees.
- The Real Estate Operations sector is characterized by a more balanced development during the period, which gives it a leading position in terms of the number of operating enterprises, but not in terms of the number of employees who remain below 1% throughout the period; employed persons have a higher educational level, but salaries remain below the national average levels.

5. Labor productivity in the Construction and Real Estate Operations sectors

Labor productivity is a main indicator of the quality and efficiency of labor in the production process, comparing the achieved result (newly created product) with the amount of labor input (number of employees and time worked by them – hours worked). In this study, to measure the result of production activity, GVA is the more appropriate indicator. It represents a difference between the final value of output and the value of goods and services consumed to produce it (intermediate consumption) (Infograf, 2023). Data on GVA of the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021 are presented in Table 6.

Table 6.

Gross value added of the Construction and Real Estate Operations sectors and total for the country in 2015 prices for the period 2005-2021

Year	Total for the country		Construction sector			Real Estate Operations sector		
	GVA	Growth rate	GVA	Growth rate	Share	GVA	Growth rate	Share
	million leva	%	million leva	%	%	million leva	%	%
2005	60 553		2 949		4.87	6 430		10.62
2006	64 879	7.14	3 368	14.20	5.19	6 908	7.42	10.65
2007	69 127	6.55	3 876	15.09	5.61	7 216	4.47	10.44
2008	73 379	6.15	4 463	15.13	6.08	6 852	-5.04	9.34
2009	72 749	-0.86	4 764	6.76	6.55	6 936	1.23	9.53
2010	74 069	1.81	3 874	-18.68	5.23	7 187	3.61	9.70
2011	75 486	1.91	3 721	-3.97	4.93	7 184	-0.05	9.52
2012	75 683	0.26	3 553	-4.49	4.70	7 389	2.87	9.76
2013	74 420	-1.67	3 330	-6.29	4.47	7 222	-2.26	9.70
2014	75 151	0.98	3 263	-2.01	4.34	7 375	2.11	9.81
2015	77 389	2.98	3 377	3.49	4.36	7 544	2.30	9.75
2016	79 395	2.59	3 110	-7.91	3.92	7 973	5.68	10.04
2017	82 015	3.30	3 235	4.03	3.94	8 549	7.22	10.42
2018	84 868	3.48	3 270	1.10	3.85	9 523	11.40	11.22
2019	88 029	3.72	3 393	3.74	3.85	10 003	5.03	11.36
2020	84 514	-3.44	3 359	-0.99	3.97	9 367	-6.35	11.08
2021	91 270	7.99	2 786	-17.07	3.05	10 089	7.70	11.05

Note: The growth rate is calculated on a chain basis.

Source: Developed by the author from NSI data and own calculations (https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=1169).

The presented data shows that GVA shows a steady trend of growth (except for 2008/2009, 2013 and 2020) at national level and in the real estate sector. However, this is not the trend in the Construction sector, where after an average growth of 12 % on an annual basis, reaching 4 764 million leva in 2009, GVA began to decrease, reaching at the end of the research period a value lower than at the beginning of the period. This is especially indicative of **the power of influence of global (respectively macroeconomic) processes on construction production**, as well as **the investment policy of the government and local authorities**. To this should be added the fact that **the construction sector is one of the most resource-intensive sectors of the national economy**, which inevitably has an impact on the result of production activity.

Similar trends are observed with regard to the share of GVA of the surveyed sectors in the national total. Reaching a maximum value of 6.5 % in 2009, the share of the Construction sector decreases more than doubled by the end of the period. The share of the Real Estate Operations sector remains somewhat stable and although in the period 2008-2015 it remains below 10 %, in 2019 it reaches 11.4 % of the country's GVA.

Another interesting fact that emerges on the basis of the presented data is that **the result of production activity in the real estate sector, measured by GVA, exceeds 2, even 3 (2021) times that in the Construction sector**. An exception is observed in the period 2007-2011, when it varies between 1.5 and 1.9. However, this in no way corresponds to the effectiveness of the activities of the business operators in the sector (at least according to reporting). **For the period 2009-2016, the enterprises in the real estate sector have incurred more operating expenses than the realized operating income for the respective year**, and the negative difference is mainly due to a decrease in the revenues of the economic entities in the crisis year 2009 and the next - 2010, which decrease is compensated only in 2017.

The labor factor, as a constituent element of labor productivity, as stated above, measures by the number of persons employed and the time worked by them – hours worked. In Fig. 5 graphical data are presented for the hours worked (total) and per employee in the Construction and Real estate operations sectors and total for the country for the period 2005-2021.

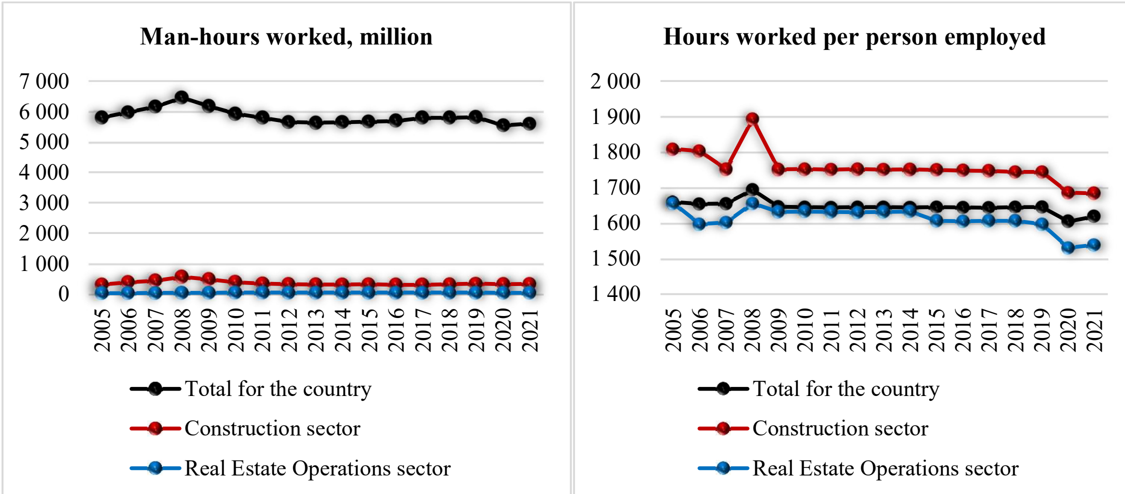

Figure 5. Hours worked (total) and hours worked per person employed in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021
Source: Developed by the author from NSI data and own calculations.

From the data presented, it can be concluded that similar trends are emerging, albeit with varying degrees of intensity. For example, the hours worked by employees in the Construction sector increase in the period up to and including 2008, similar to those at national level, but with a higher degree of intensity (on average by 21 % an annual basis compared to 3 % at national level), after which they begin to decrease, but at a slow pace (until 2014). From 2015 to the end of the study period, there are low dynamics of the indicator, varies between +6 and -5 %. In the real estate sector, the "peak" is reached in 2011 (with an average growth of 7.6 % on an annual basis), similar to the indicator of the number of employees, after which hours worked begin to decrease, with a more pronounced negative trend at the end of the period.

Of more importance here are the hours worked per person employed, which decrease during the study period, both at national level and in the Construction and Real estate operations sectors, with **employees in the Construction sector working on average between 7 and 9 % more hours than all employees and employees in the real estate sector**.

Data on annual productivity, measured by GVA per person employed and GVA per hour worked, are presented in Fig. 6.

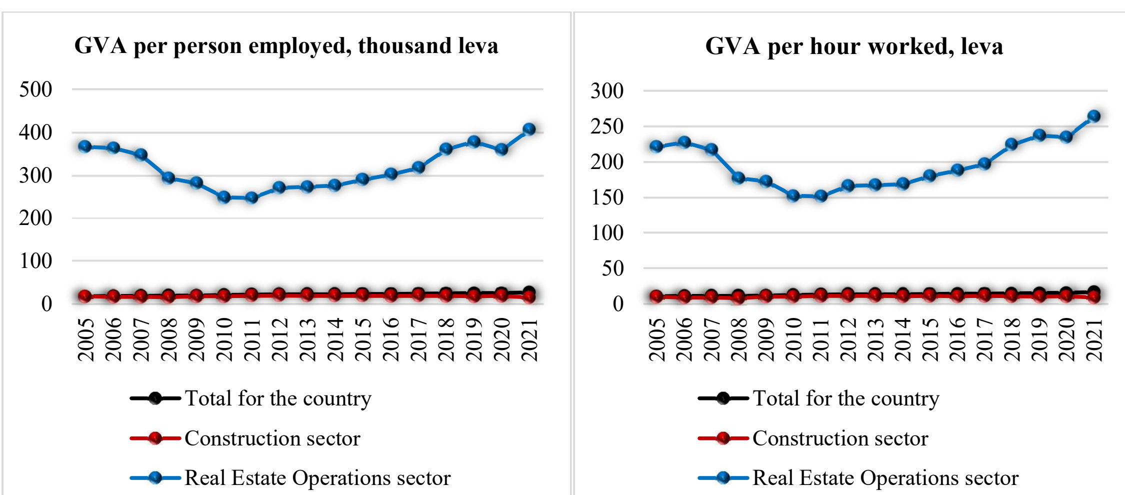

Figure 6. GVA per person employed (in thousand leva) and one hour worked (leva) per employee in the Construction and Real Estate Operations sectors and total for the country for the period 2005-2021
Source: Developed by the author from NSI data and own calculations.

The labor productivity per person employed in the Construction sector during the study period varies between 14.2 and 19.1 thousand leva annually and between 8.4 and 10.9 leva per hour worked, being the highest in 2012 and the lowest at the end of the period (2021). **The outpacing growth (respectively delayed decline) of the persons employed in the sector compared to the result of production activity, measured by the GVA indicator, has a direct impact on the labor productivity of the persons employed in the sector during the period**. This is particularly indicative in the last year of the survey period, when the low result of production activity of construction enterprises, measured by GVA, combined with the recovery of employment at pre-crisis 2019 levels, lead to the lowest labor productivity for the period.

The labor productivity per person employed in the Real Estate Operations sector during the period varies between 246.8 and 405.6 thousand leva per person employed per year and between 151.2 and 263.6 leva per hour worked, with the lowest value realized in 2011 and the highest at the end of the period (2021). Here, there are also periods of outpacing growth (respectively delayed decline) in employment (2006-2011, 2020) compared to the result of manufacturing activity, during which labor productivity decreases.

Despite the above, **the higher GVA in the real estate sector, exceeding 2, even 3 times that in the Construction sector, the lower number of persons employed, who remained below 1 % during the survey period, and the lower number of hours worked, on average 2 % fewer hours worked than all employed and 9 % - of the employees in the Construction sector, lead to nearly 15 times higher productivity than the national average and nearly 20 times higher productivity compared to the average in the Construction sector for period**.

At the national level, a positive trend is emerging, reaching 26.4 thousand leva by the end of the period annual productivity per employee and 16.3 leva per hour worked. Despite this, however, according to Eurostat data, **labor productivity in Bulgaria per person employed and hour worked in 2021 is 53.5 % of the EU average** (EU27_2020=100) (Eurostat, 2023). In the ranking of the International Labor Organization, the country ranks 69th out of 189 countries in terms of labor productivity, measured by GDP per hour worked at 2017 prices for the same (2021) year (ILO, 2023).

Based on the above, we can summarize that labor productivity, as an important economic indicator closely related to economic growth, competitiveness and living standards in the country, shows a steady trend of growth at national level, although remaining significantly below European levels. In the real estate sector there is also a positive trend, but with a higher degree of dynamics of the indicator during the period. In the construction sector until 2012 there is a positive and after 2012 - a negative trend, most pronounced at the end of the period, due to a significant extent to the disproportionate attraction of human resources compared to the product realized.

6. Conclusion (conclusions and recommendations)

Based on the presented analysis, we can draw the following more important conclusions about the dynamics of human resources and labor productivity in the Construction and Real Estate Operations sectors for the period 2005-2021:

Economic activity in the Construction sector during the period is strongly influenced by economic (and political) processes at macro level. The number of enterprises and employees increases in periods of economic growth and decreases with the deterioration of environmental conditions. Stand out: low level of salaries, low educational level and low labor productivity of the persons employed in the sector, which are interconnected and to a significant extent mutually predetermine each other.

The low level of remuneration has a direct impact on the motivation of employees in the sector and the opportunities for attracting qualified specialists. The lack of enough qualified construction workers in Bulgaria is becoming more tangible and has been observed in recent years by a number of specialists (BNR, 2017; Dnes.bg, 2020). For the decrease in labor productivity in the industry, especially in periods of growth, some authors (Stefanov, Dimitrova, 2012) point out the following reasons (factors): the attraction of lower-qualified staff at a time of growth in the industry, the insufficiently effective planning of activities, the entry of developers without the necessary experience in business, the rise in the prices of various raw materials, etc., adding also, that despite the continuous entry into the construction of new materials, products, technologies and mechanization, no increase in labor productivity is achieved. Here we should add the disproportionate attraction of human resources found in the analysis compared to the realized product.

In this aspect, we consider the following measures appropriate: precise planning of human resource needs, according to production needs; more efficient use of construction workers in the production process; technical and technological innovations accompanied by an increase in the professional and qualification level of employees; and last but not least - increasing labor productivity with a proportionate increase in wages.

The Real Estate Operations Sector is characterized by a more balanced development during the period in a challenging environment, both in terms of the number of operating enterprises and the number of employees. This brings it to the forefront (relative to the Construction sector) in the number of operating enterprises and their relative share, but not in the number of employees who remain below 1% throughout the period. Employed persons have a higher educational level, but salaries since 2013 have slowed down, remaining below national average levels. Labor productivity has a pronounced positive trend, with a certain dynamics of the indicator during the period. Here we consider appropriate measures aimed mainly in two directions: increasing salaries and their recovery above average levels, by reviewing the applied salary systems and introducing flexible forms, taking into account the qualitative aspects of human capital (such as educational and qualification level, motivation for work, labor performance, etc.); improving the financial performance of the business operators operating in the sector on the basis of optimizing the cost side and achieving higher cost-effectiveness.

Within the national economy, labor productivity shows a steady upward trend, reaching 53.5 % of the EU average in 2021. However, this growth does not sufficiently provide the desired catch-up effect for the country's economy, remaining significantly below European levels. In this aspect, studying the low labor productivity in Bulgaria, D. Sabev concludes that: "the struggle to increase labor productivity should not be an end in itself, but a way to achieve higher well-being of people." (Sabev, 2021).

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