ROMANIA

Reimbursable Advisory Services Agreement on the Bucharest Urban Development Program (P169577)

COMPONENT 1. ELABORATION OF BUCHAREST'S IUDS, CAPITAL INVESTMENT PLANNING AND MANAGEMENT

Output 3. Urban context and identification of key local issues and needs, and visions and objectives of IUDS, and identification of a longlist of projects.

Chapter 2. Economic Development

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ABRECIETIONS AND ACRONIMS

ALU	Active Local Units
AROPE	A composite indicator adopted at European Union level
BPO	Business Processes Outsourcing
CBD	Central Business District
CFR	Romanian Railways
CLLD	Community-led local development
COR	Romanian Classification of Occupations
DGASMB	Bucharest General Directorate for Social Assistance
DGASPC	and the Bucharest General Directorate for Social Assistance
DGASPC	General Directorates for Social Assistance and Child Protection
EU	European Union
EUROSTAT	Statistical office of the European Union.
FDI	Foreign Direct Investment
FUA	Functional Urban Area
GDP	Gross Domestic product
GVA	gross value added
HORECA	Hotel/Restaurant/Catering
ICT	Information Communication and Technology
IT	Information Technology
IT&C	Information Technology and Communication
IUDS	Integrated Sustainable Urban Development Strategy
LAG	Local Action Group
MRDPA	Ministry of Regional Development and Public Administration
NACE	Nomenclature Statistique des Activités Économiques dans la Communauté Européenne
NBR	National Bank of Romania
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
NTRO	National Trade Register Office
NUTS	The common classification of territorial units for statistics
PHC	Primary Health Care
RDI	Research, Development, Innovation
ROP	Regional Operational Programme
SME	small medium enterprises
UMA	Urban Marginalized Areas
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNICEF	United Nations Children’s Fund

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1.1. Regional competitiveness in a European context

The economic development of Bucharest City should be analyzed in light of its status as European capital, exposed to European and international competition, as well as from a territorial perspective which considers the Capital City's influence on the surrounding area and the Functional Urban Area (FUA) it determines.

Although the Bucharest-Ilfov region is Romania's most developed region and falls within the category of developed regions at a European level, it has a relatively low degree of competitiveness, ranking in the second half of the European classification.

Bucharest City together with Ilfov County represent Romania's most developed region, the Bucharest-Ilfov Region (NUTS 2), ranked 25th among the European Union regions[1] in terms of the GDP/capita value (PPS), accounting for 145%[2] of the EU-28 average in 2017 (the last year for which this indicator was computed).

Compared to other capital city regions (of NUTS 2 level) in Central Europe, Bucharest-Ilfov ranks higher than the regions of Budapest (with 141% of the EU-28 average), Berlin (119%), Attica – Athens (92%), Yugozapaden – Sofia (80%), Lithuania – Vilnius (79%), Latvia – Riga (67%), Kontinentalna Hrvatska – Zagreb (64%) etc. On the other hand, the Bucharest-Ilfov region is surpassed by capital city regions such as Prague (189% of the EU-27 average), Bratislava (181%), Warsaw (154%), and Vienna (152%). Nevertheless, the comparability of data between these statistical and territorial units is questionable at best, as NUTS 2 capital city regions do not have a standard conformation within the EU. In some countries, they do not exist (as is the case of Riga and Vilnius, as the entire country is practically a region), in others there are only two (as is the case of Zagreb and Ljubljana), which extend far beyond the limits of the functional urban area, or capital city regions also include, at least partially, but to varied extents from one case to the next, the functional urban area (e.g. Bucharest, Sofia, Bratislava, Athens, Warsaw), while in other countries they overlap the administrative boundaries of the capital city itself, excluding their functional area (e.g. Berlin, Prague, Vienna, Budapest). These variations also influence the GDP/capita level, making comparisons approximate.

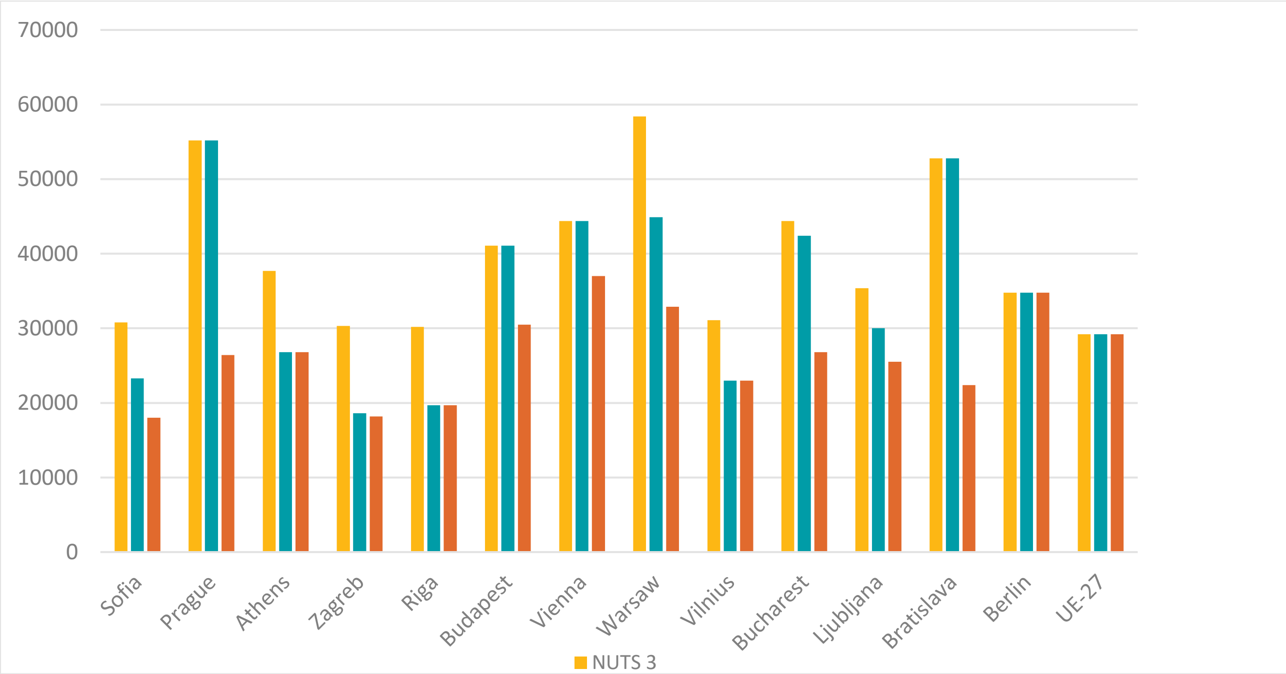
A more relevant analysis may be the one on NUTS 3 region level, although there are limitations in this case as well. Bucharest City, as a NUTS 3 region, is even better placed than a NUTS 2 level, accounting for 152% of the EU-28 average, being outclassed in the region only by Warsaw (200%), Prague (189%) and Bratislava (181%), and standing on par with Vienna. Thus, Bucharest surpasses important capital cities, such as Budapest (141%), Athens (129%) or Berlin (119%). However, if we analyze the surfaces of capital cities' NUTS 3 regions, important variations can be noted: Vilnius has 9730 sq. km, Ljubljana 2334 sq. km, Bratislava 2053 sq. km, Sofia 1329 sq. km, Berlin 892 sq. km, Belgrade 641 sq. km, Budapest 525 sq. km, Warsaw 517 sq. km, Prague 496 sq. km, Vienna 415 sq. km, Riga 304 sq. km, Bucharest 238 sq. km, Athens 89 sq. km (in the central area, as the city is split, from an administrative point of view, into several NUTS 3 regions), etc. As a rule, the lower the area of the NUTS 3 region, the higher the GDP/capita, as the economic activity, concentrated in the urban core, is divided to a smaller number of inhabitants than the total of the functional urban area.

Deepening the analysis, we notice that at the level of NUTS 1 regions (macro regions), nearly all the capitals in the post-2000 waves of accession (except for Budapest) show differences of 2:1 between the GDP/capita

[1] The NUTS system (the common classification of territorial units for statistics) is a hierarchical classification on three spatial levels, from the largest to the smallest, with a regional character. In this system, each Member State is divided into a number of major socio-economic regions, of NUTS 1 level (for smaller countries, this can even be the national level). Each of them is then sub-divided into NUTS 2 regions (basic regions for enforcing regional policies), which, in turn, are divided into NUTS 3 regions (small regions, used for specific analyses and policies).
[2] Eurostat Database.

recorded within the boundaries of the city and the GDP/capita of the macro region they polarize, while in developed countries (e.g. Vienna – Austria), such differences are much lower. Besides, seen from this perspective, cities such as Prague, Bratislava, Warsaw or Bucharest are far from the GDP/capita level recorded in Western capital cities or even in Vienna. Therefore, the exceptional economic performances of Central and East-European capital cities should also be read in light of the administrative and territorial organization, which has a significant influence on hierarchies. Another explanation could also be that countries in this region are more centralized from an administrative point of view, they have less developed secondary cities, and the capital cities have not yet had the capacity to spill over their economic and demographic increase further than 50-100 km around them.

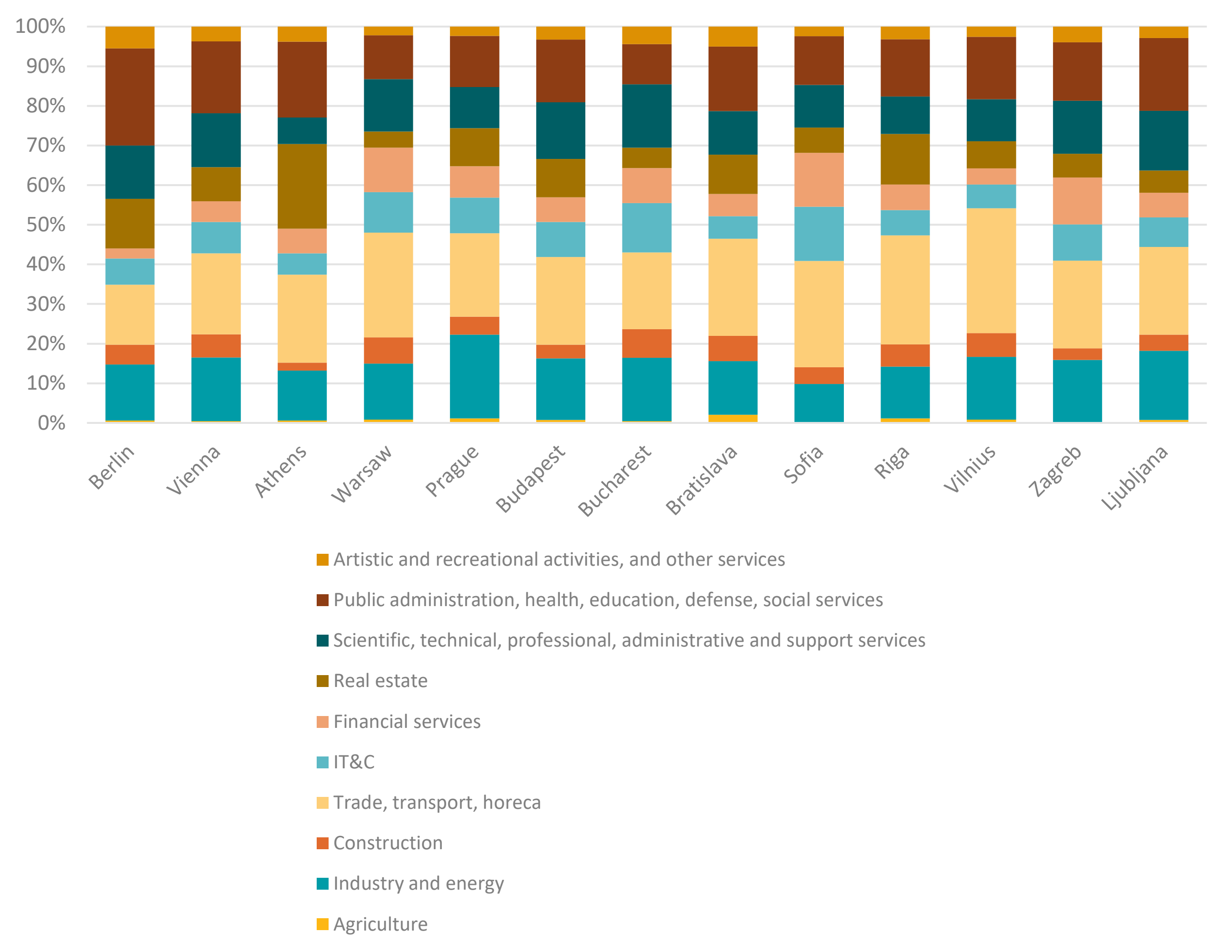
Figure 1 – GDP (PPS)/inhabitant values at the level of the NUTS 1, NUTS 2 and NUTS 3 regions corresponding to the functional urban areas of capital cities, in 2017



Source: The EUROSTAT Database

As for the structure of economies at the level of capital cities, we can notice that Bucharest stands out due to the high share of gross value added in the fields of constructions, IT&C, scientific activities, technical-professional activities, administrative and support services. However, public services and real estate sectors are less developed than those in other capital cities of the region.

Figure 2 – Structure of the Gross Value Added, by sectors and capital cities, in 2017



Source: The EUROSTAT Database

On the other hand, from the point of view of competitiveness, the EU regional competitiveness index[3] shows that, in the case of developed regions, which include Bucharest-Ilfov, the correlation between the GDP/capita value and competitiveness is not a direct and strict one. This can be exemplified by comparing Bucharest-Ilfov to regions with similar GDP/capita (Antwerp; Vorarlberg; Tirol; Karlsruhe; Mittelfranken; Tübingen; Helsinki – Uusimaa; Braunschweig; Köln; the Bolzano/Bozen Autonomous Area; the Prague Functional Urban Area; Upper Austria; the Vienna Functional Urban Area; Åland and Düsseldorf), a comparison that shows a poor performance of the capital city in respect to most dimensions of competitiveness relative to the other regions in the group (for instance, Karlsruhe has a regional competitiveness index that is 50% higher than Bucharest).

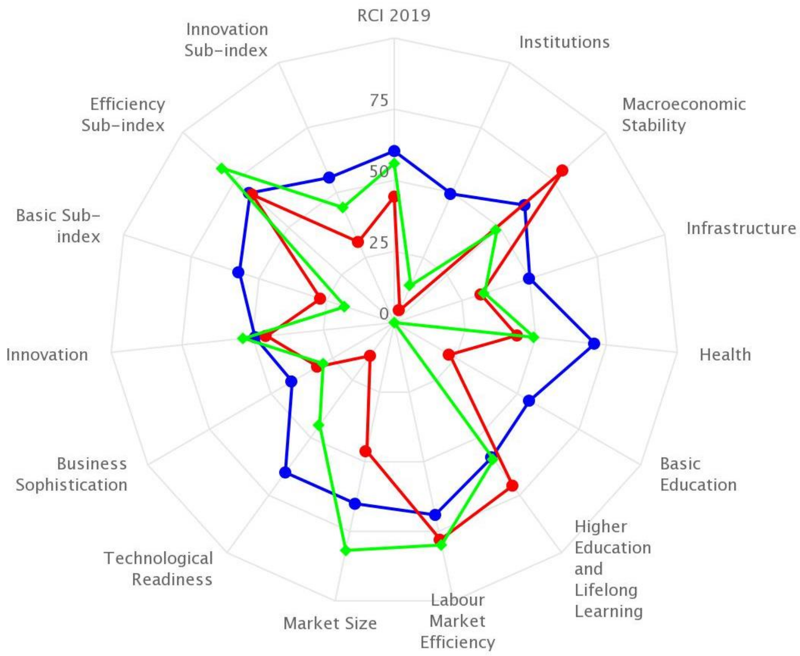
The quality of institutions, macroeconomic stability, healthcare, basic education, labor market efficiency, technological preparedness and business sophistication are directions that the Bucharest-Ilfov region could follow in order to improve its competitiveness.

With a regional competitiveness index value of -0.10, Bucharest-Ilfov ranks 151st among 268 EU regions, moving up as compared to previous years, when it ranked 161st (2016), 165th (2013) and 180th (2010). The

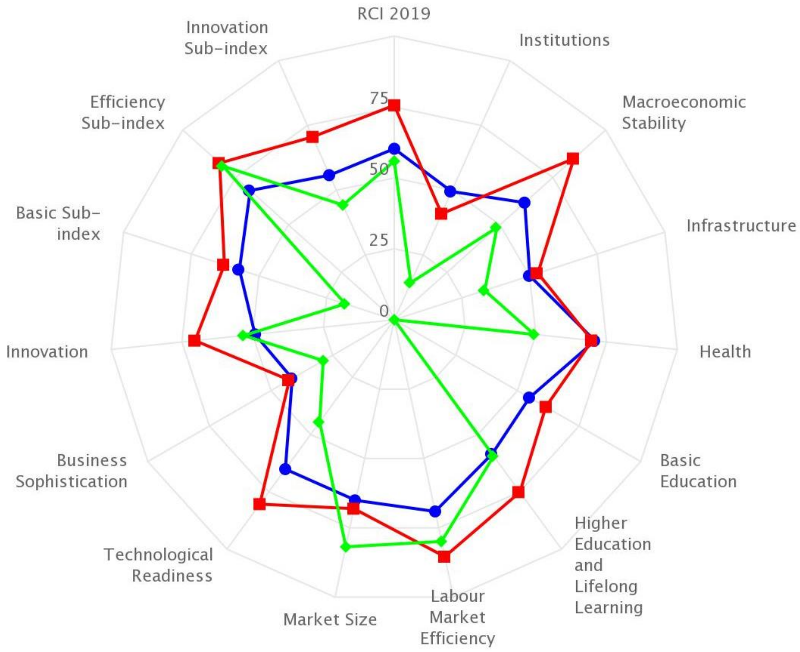
[3] Idem.

quality of institutions, macroeconomic stability, healthcare, basic education, labor market efficiency, technological preparedness and business sophistication are directions that the region could follow in order to improve its competitiveness. From the point of view of performance, Bucharest-Ilfov registers inferior values as compared to other regions in its category on two of the three dimensions of the index, namely its basic dimension and the innovation dimension. The only dimension where the Capital City performs similarly to the other regions in its group is efficiency. More details on the three dimensions and the performance of Bucharest-Ilfov as compared to regions in its category can be consulted in Appendix 1. The analyzed indicators for each of the three dimensions of the regional competitiveness index can be consulted in Appendix 2.

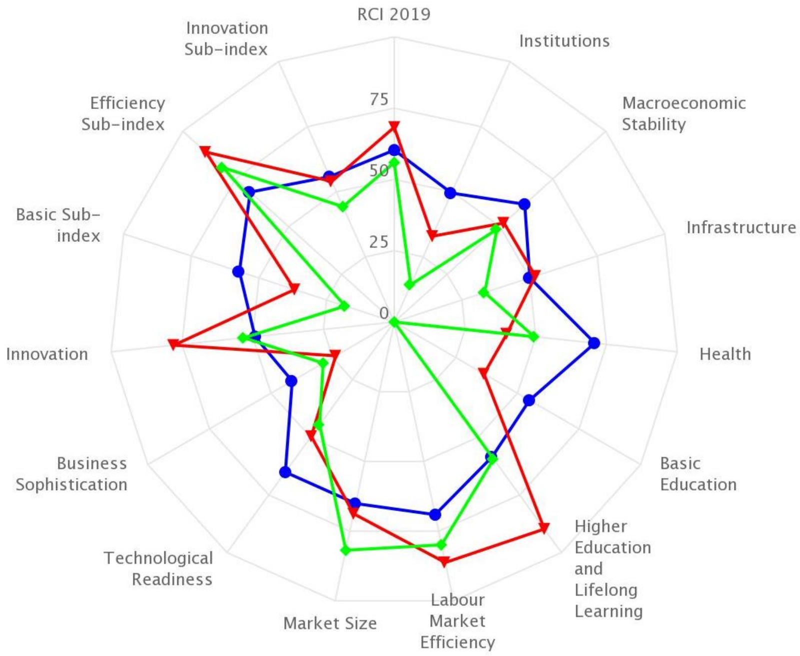
Figure 3 – Competitiveness of Bucharest-Ilfov as compared to other capital city regions (regional benchmarking)



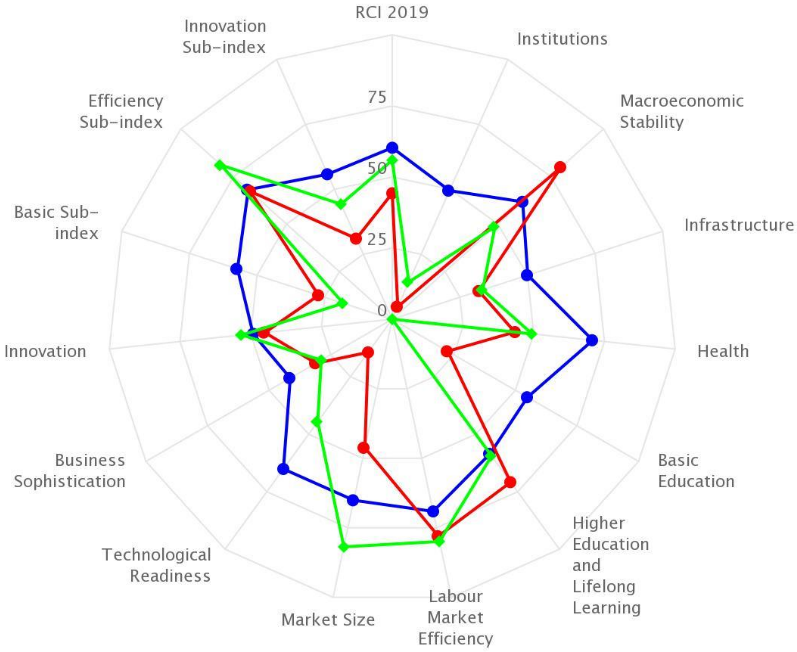
Legend: blue – EU average, green – Bucharest-Ilfov, red – Sofia (Yugozapaden region; score: -0.42, place 181/268)



Legend: blue – EU average, green – Bucharest-Ilfov, red – Prague (score: 0.43, place 69/268)



Legend: blue – EU average, green – Bucharest-Ilfov, red – Warsaw (score: 0.23, place 105/268)



Legend: blue – EU average, green – Bucharest-Ilfov, red – Budapest (score: -0.02, place 139/268)

Source: The EU Regional Competitiveness Index 2019

From the point of view of competitiveness, the Bucharest-Ilfov region stands out, as compared to the EU average, through the potential dimension of its market and through workforce efficiency. Infrastructure (road, rail and air accessibility) represents the main disadvantage when compared to other capital regions in the region.

As compared to the EU average and to the selected regions, Bucharest-Ilfov stands out through the potential dimension of its market and through workforce efficiency, as these two represent the only two dimensions with values above the European average. From the point of view of the regional competitiveness profile, one can notice that Bucharest-Ilfov has a profile similar to Budapest and Warsaw, with the latter two registering better scores in terms of infrastructure (road, rail, and air accessibility) and basic education, which are decisive factors for investment attractiveness and socio-economic development.

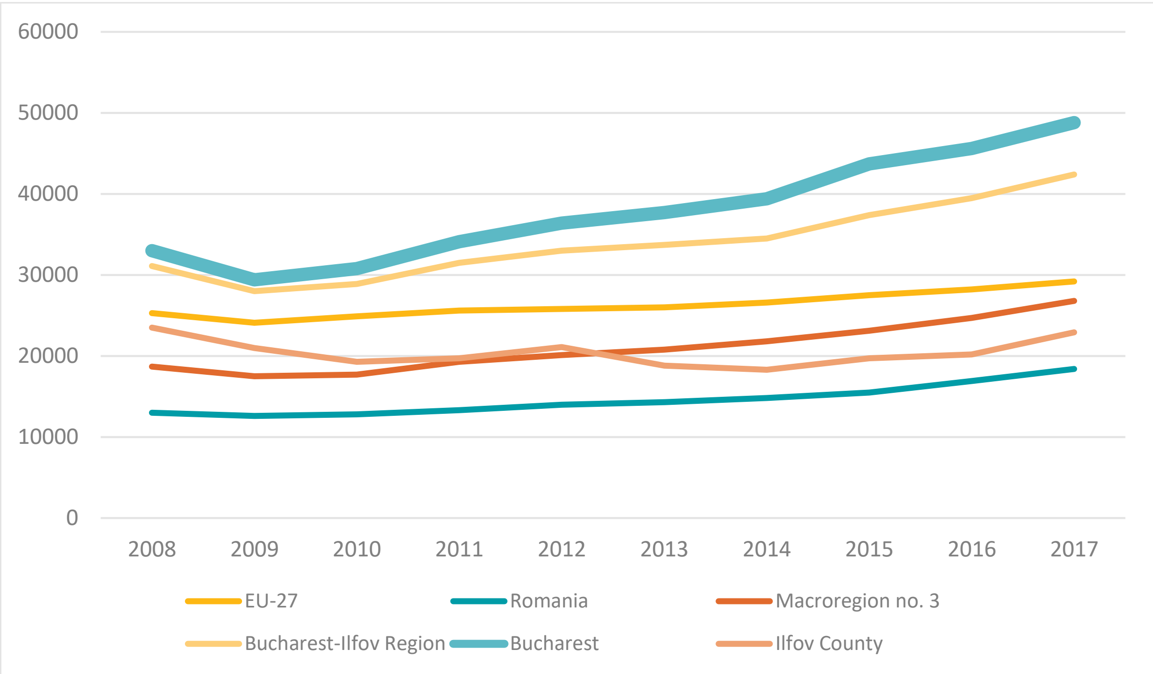
On the other hand, the basic education dimension, described by: (1) the rate of participation in workplace-related, employer-financed trainings and non-formal education (25-64 years old age group), (2) the share of population with access to information on education and training (25-64 years old age group) and (3) the share of people reporting that they did not know any foreign language (25-64 years old age cohort), calculated using national indicators, place Romania last in the EU in 2016, which also affects the profile of the Bucharest-Ilfov region. However, considering that the region concentrates the main national economic actors, as well as a high share of specialized workforce and students, the value of regional/local indicators is likely to be more favorable.

1.1.1. Macroeconomic indicators and economic performance

The Capital City's accelerated development in the post-crisis period has imprinted, on a regional level, an increase rhythm that is higher than the national one, precipitating socio-economic disparities.

The analysis of the main macro-economic indicators shows an accelerated development of Bucharest City during the post-crisis period, and, respectively, a percentual increase of the GDP (PPS)/inhabitant, of over 60%, between 2009-2017. Even as compared to the level before the advent of the global crisis, that is, the one recorded in 2008, the increase is above 40%. The GDP/inhabitant increase rate in Bucharest City is higher than the rhythm registered on a European, national, macroregional, and regional level. At the same time, the increase tendency shown for the Bucharest-Ilfov region and at for Macroregion 3, which follows similar patterns to those of the Capital City, confirms Bucharest City's role as a development driver (Figure 4).

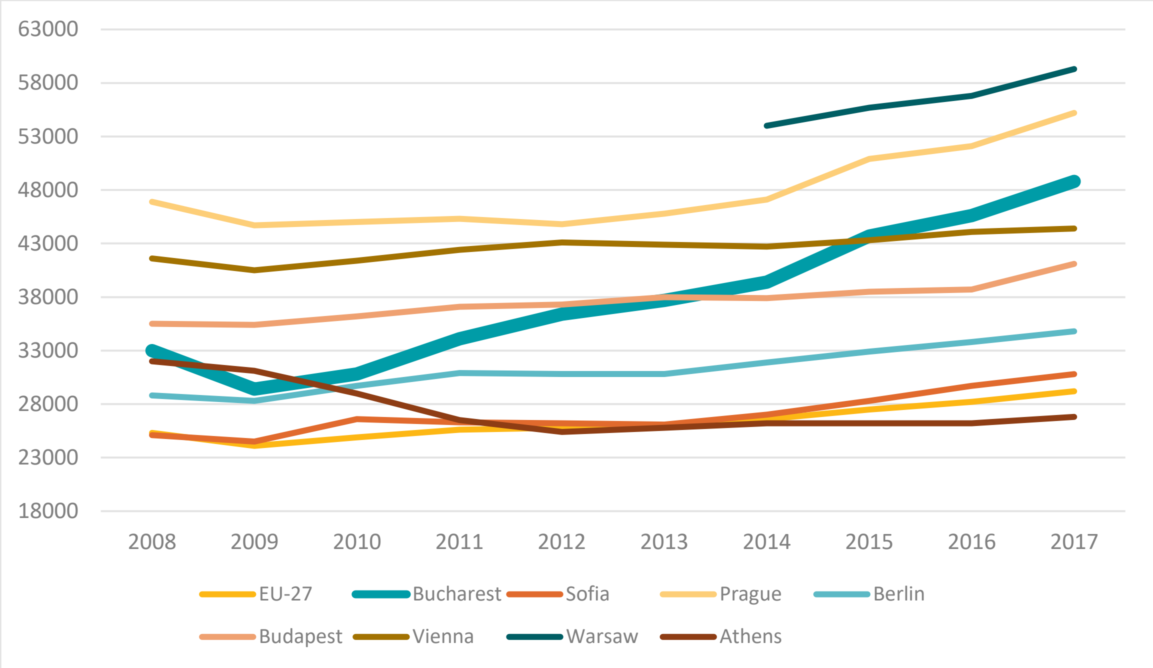
Figure 4 – GDP (PPS)/inhabitant evolution between 2012-2017



Source: The EUROSTAT Database

As compared to other capital cities in the region (on NUTS 3 level), Bucharest has seen the fastest economic increase in the last decade, now reaching values close to those of the regional champions (Warsaw and Prague). If last years' increase rhythms are maintained, Bucharest could become, in 2020, the Central and East-European capital city with the highest level of GDP(PPS)/inhabitant.

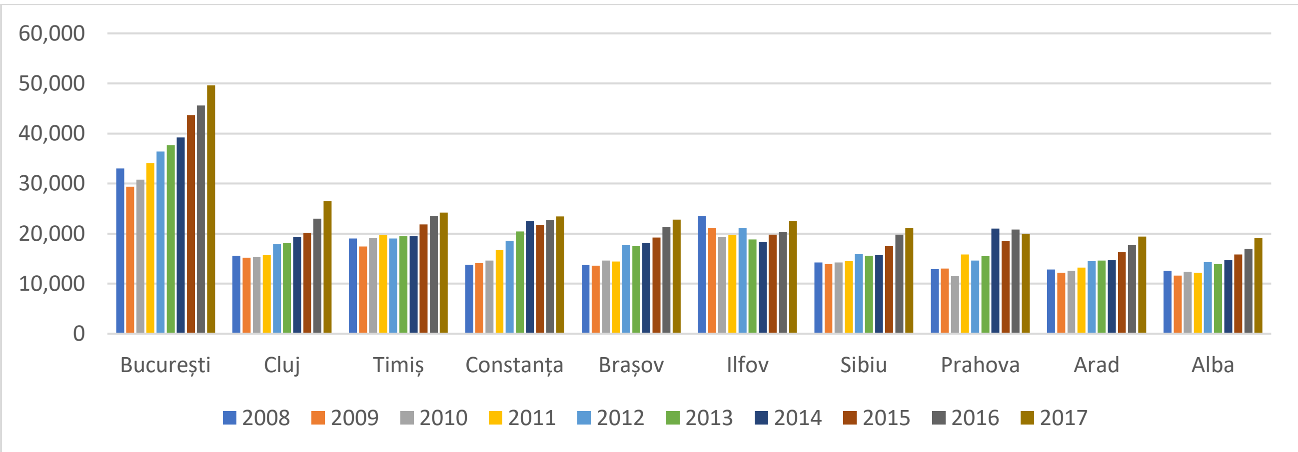
Figure 5 – GDP (PPS)/inhabitant dynamics, in capital cities, between 2008-2017



Source: The EUROSTAT Database

The economic evolution of Bucharest was a remarkable one in a national context, as well, as it focused an increasingly higher weight of the national GDP. Thus, at the level of 2017, Bucharest City was contributing 24.32% of the national GDP and 89.6% of the regional GDP. Together with the surrounding Ilfov County, the Capital City contributes almost 30% (27.15%) of the national GDP. The next three counties on a national level – Cluj, Timiș and Constanța, each contribute 4-5% of the national GDP.

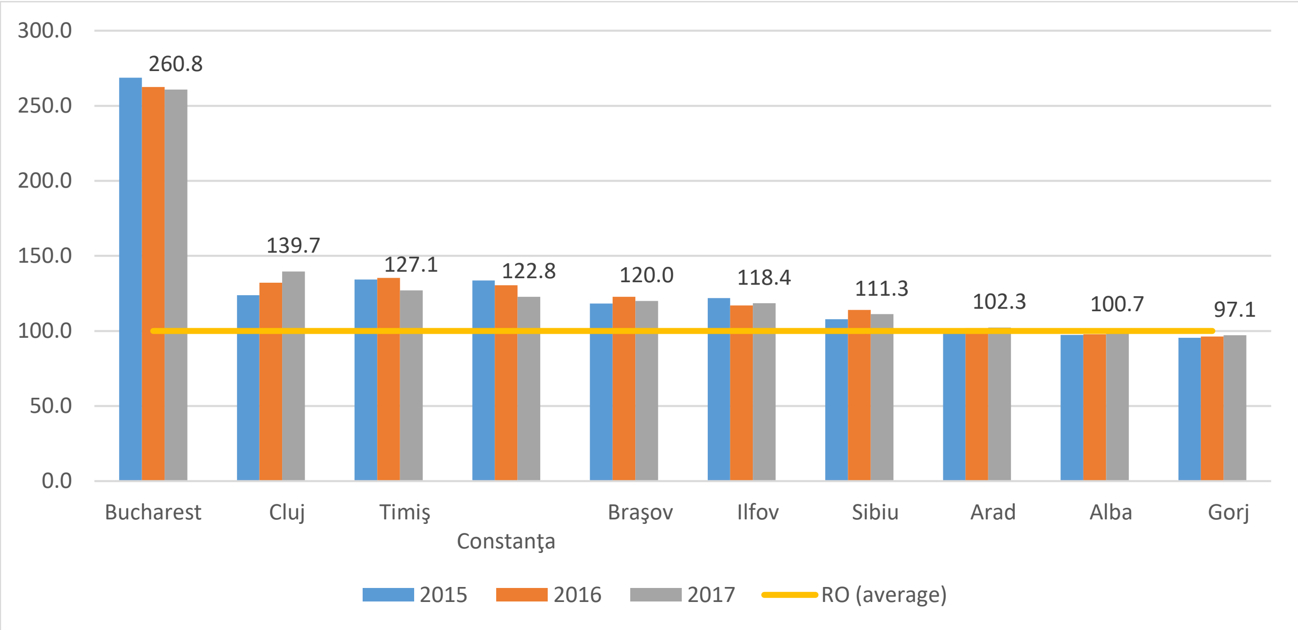
Figure 6 – GDP (PPS)/inhabitant evolution between 2008-2017 – top 10 (counties and Bucharest City)



Source: The EUROSTAT Database

The analysis of disparity indices[4] for the regional gross domestic product per inhabitant in 2017 shows that nine of the total 41 counties and Bucharest City are registering higher indices than the national average (with the national index at 100), showing a superior level of economic development and a more accelerated development. The following cities registered indices higher than the national average in 2017, in decreasing order: Bucharest City, Cluj, Timiș, Constanța, Brașov, Ilfov, Sibiu, Arad, and Alba.

Figure 7 – Disparity indices evolution between 2015-2017 – top 10 counties and Bucharest City



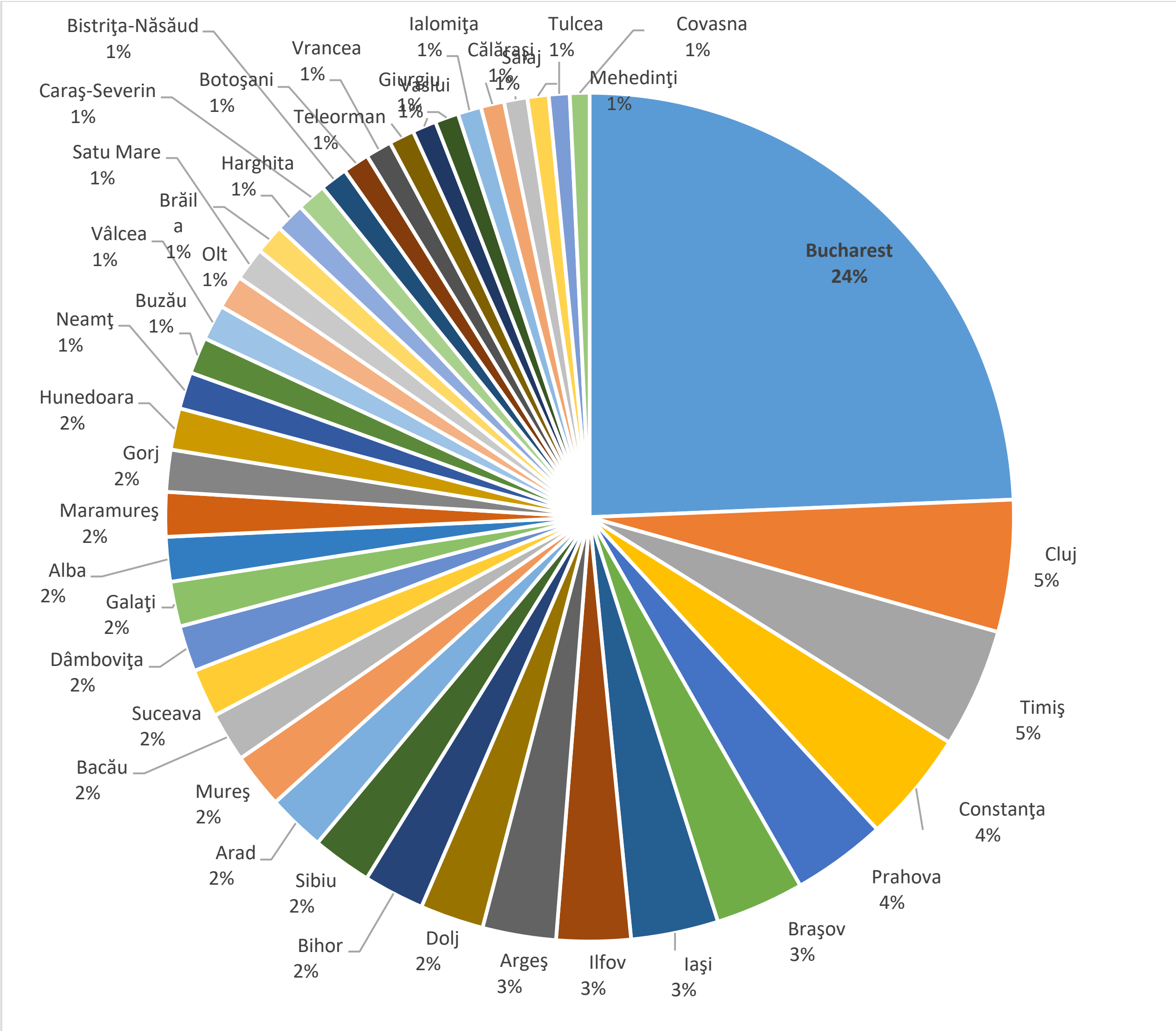
Source: NIS, Regional national accounts (http://www.insse.ro/cms/ro/tags/conturi-nationale-regionale)

As for the evolution of disparity indices between 2015 and 2017, one can note a decreasing tendency for the Capital City region, with drops of approximately 3% both in the case of Bucharest City, and for the Ilfov County, even if Bucharest still has a good lead in the national top. On the other hand, Cluj County registers the most constant increase on a national level, that is, 12.9%, surpassing Timiș County in 2017 and consolidating its position as the second most competitive pole on a national level.

The analysis of the gross value added (GVA)[5] shows, once again, the Capital City's significant contribution on a national level – (24.35% of the national GVA), and on a regional one – 89.63% of the Bucharest-Ilfov region GVA. Thus, together with Ilfov County, Bucharest City was contributing, in 2017, 27.2% of the national GVA (Figure 8), with one percent higher than in 2008 (26.2%).

[4] Disparity indices were calculated as a ratio between the gross domestic product per inhabitant at county level and the gross domestic product per inhabitant at national level.
[5] The gross value added measures the excess goods and services produced over the value of goods and services consumed for production, therefore representing the new added value in the production process.

Figure 8 – Contribution of counties and of Bucharest City to the composition of the Gross value added in 2017



Source: NIS, Regional national accounts (http://www.insse.ro/cms/ro/tags/conturi-nationale-regionale)

The capital city is far ahead on a national level as a center of knowledge-intensive, high-tech services, contributing over 50% to the composition of the gross value added for the branches of information and communications, professional, scientific, and technical activities, financial intermediations and insurance.

Based on the table below, a few important conclusions may be drawn on Bucharest's competitive position in a national context:

- It concentrates, in a very high proportion (over 50%) the industries and services with very high added value, such as IT&C, financial intermediations, insurance, and scientific, technical, and professional activities;
- The sectors that contribute most to the gross value added generated by the Capital City are trade, administrative and support services, IT&C, manufacturing industry and technical and professional activities – as we will also see illustrated in the workforce occupancy structure. Therefore, a mix of rather low knowledge-intensive activities and high-tech activities, responding, to some extent, to the two large occupancy segments: secondary school graduates, and higher education graduates;

- The economic activities that recorded the highest increase in the gross value added over the last decade are real estate activities (real estate development, rentals, sales, real estate management, etc.), support services (especially the outsourcing and call center industry, but also various services for the population and for economic agents – such as maintenance, security, cleaning, recruitment, etc.), and the professional and technical ones (consultancy, advertising, engineering), the sector of public interest services (e.g. healthcare), but also financial services. We cannot therefore speak of a very clear transition to technology-intensive and knowledge-intensive activities (the IT sector had a moderate evolution, below the national trend), but rather of a leveraging of the favorable international context, of the capital city status, and of the important stock of workforce with a higher education, speaking foreign languages;
- Bucharest has consolidated, over the last 10 years, its competitive position on a national level in the energy field (hosting the offices of the largest companies in the fields of oil, hydro energy, thermal energy production, transport, distribution, and trading of electricity, etc.), in financial intermediation and insurance (with over 95% of the banks and insurance companies in Romania having their headquarters here), in the real estate market (especially on the offices and logistic spaces segment), in professional and technical services (against the background of the existing stock of workforce with higher education and linguistic skills), in administrative and support services (against the background of changing some economic agents' and population's consumer behaviors, which tend to outsource an increasing number of activities), and in the sector of social interest services (especially healthcare: hospitals, private clinics, as well as laboratories and education);
- Bucharest has lost, over the last 10 years, some of the importance it used to hold in a national level in fields such as industry (especially branches such as the textiles, leather, printing, construction materials, metallurgical, metal processing, electrical equipment, machinery and equipment, furniture, etc. – which required cheap labor and permissive pollution norms, hardly compatible with those of a capital city, not to mention the real estate pressure on areas taken up by factories), but also constructions, trade, transports, tourism – where reasons are connected to a mix of factors (low level of public investment, labor shortages, etc.). In the area of fields where Bucharest's share in a national context has started to decline, we can also include IT&C (dominated by Bucharest in the sub-branch of less dynamic communications, and limited by the number of specialized graduates – less than 3,000/year). In this field, country counties, polarized by regional increase poles, have seen a more accelerated increase, especially in the field of software production (Cluj +61.82%, +5.5 k and Iași +97.54%, +2.9 k, doubling their number of specialists between 2015 and 2018, as compared to +54.88%, +18.3 k employees in Bucharest City[6]).

[6] Patronatul Investitorilor Autohtoni (PIAROM).2019, Study on the labour market dynamics between 2015-2018 for economic sectors that are Romania's industrial policy directions.

Table 1 – GVA structure in the Capital City and the city's competitive position in a national context

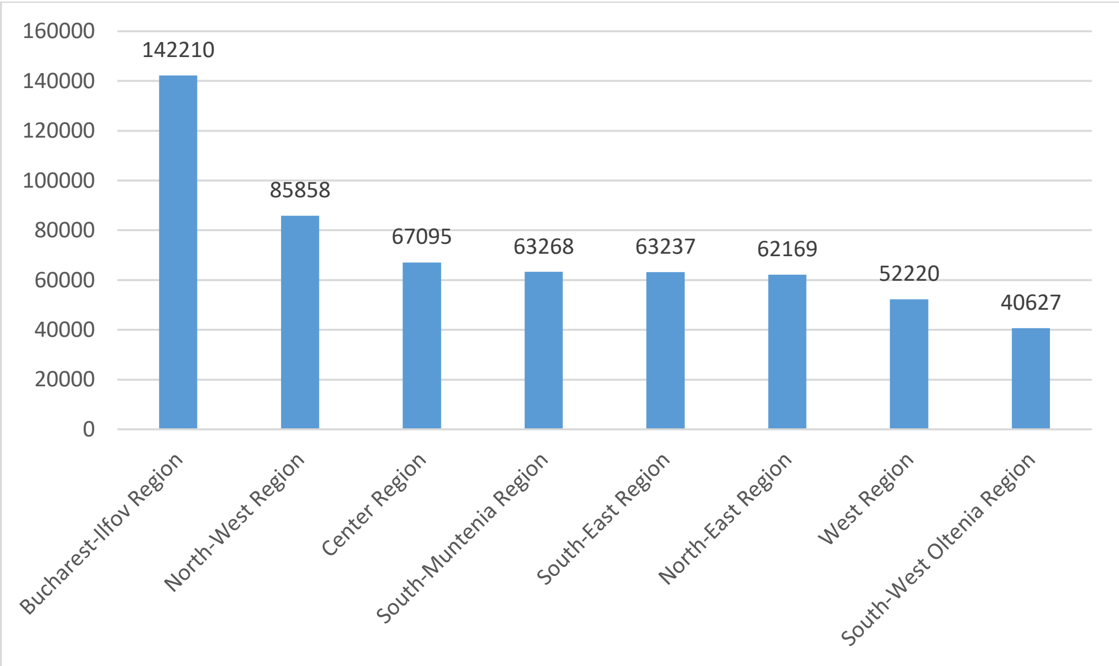
Economic sector	GVA (2017 – mil. EUR)	Sectoral GVA weight (%) in total Bucharest GVA	Bucharest sectoral GVA weight (%) in the national sectoral GVA	GVA dynamics (% 2017 vs 2008) for Bucharest	GVA dynamics (% 2017 vs 2018) on a national level
Agriculture, forestry and fishing	237	0.5	2.9	+128.0	-12.3
Manufacturing	4,731	10.2	12.6	-8.7	+16.4
Mining and quarrying, energy, water and sewerage, sanitation	2,323	5.0	32.5	+43.9	+40.3
Constructions	2,687	5.8	27.8	-51.5	-41.9
Trade, transportation, HORECA	9,434	20.4	27.3	+24.3	+30.9
ICT	5,948	12.9	57.9	+34.1	+61.5
Financial intermediations and insurance	2,953	6.4	64.3	+71.0	+49.9
Real estate activities	3,231	7.0	21.4	+175.0	+54.8
Scientific, professional and technical activities; administrative and support services.	7,707	16.7	54.5	+159.9	+140.7
Public administration, defense, healthcare, education, social services	4,978	10.8	21.5	+77.0	+69.6
Cultural, sportive and recreational activities; other services; households; extra-territorial activities	1,951	4.2	33.6	+52.7	+78.9

Source: Own processing, based on Eurostat Database data

The Capital City and its surrounding region concentrates most of the active enterprises and local units, as compared to the other development regions, and generates 35% of the turnover of national-level active local units[7], being Romania's main economic driver.

The region's and the Capital City's economic performance is also reflected in the number of active enterprises on a regional and local level, as compared to other regions and counties in the country. Thus, the Bucharest-Ilfov Region leads the national classification, registering the most active enterprises – 142,210 in 2018. In the same year, Bucharest City concentrates approximately 20% (19.97%) of national-level active local units[8] and registers the highest density of active local units (no. ALU/1000 inhabitants) in Romania. From the point of view of active local units turnover, the Bucharest-Ilfov Region also overtakes by far the other Romanian regions, ranking first in 2018, with a weight of approximately 35% of the total turnover registered nation-wide. Bucharest City contributes 82.1% to the region's turnover.

Figure 9 – Classification of the development regions from the point of view of active local units, 2018



Source: The eDemos NIS Database

[7] Total industry, constructions, trade, and other services

[8] The local unit is an enterprise or part thereof (workshop, factory, warehouse, mine or station, etc.), located at an identifiable address. An economic activity takes place here, where – apart from exceptional situations – one or several people are working (full-time or part-time), for the same enterprise. Source: NIS, 2017, Regional economic and social landmarks: Territorial statistics

1.1.2. Capital city attractiveness and labor resources concentration

Bucharest City ranks 1st in the top cities where Romanians would most like to live, but last place among the top 5 cities from the point of view of perceived quality of life.

Bucharest City is the most important national urban center, attracting the largest share of migrants and commuters, from all the country's regions. The analysis of Romanian cities where Romanians would most like to live, and of the reasons why[9] rank the Capital City 1st in the top preferences of inhabitants and potential inhabitants, followed by Cluj-Napoca, Timișoara, Brașov and Constanța. It is worth noting that, for the same question, but this time excluding current inhabitants, Bucharest City ranks second in order of preference, after Cluj-Napoca. Nevertheless, nearly 15% of Romanians could move to Bucharest over the next 5 years, if they had the possibility and means.

When analyzing the reasons why respondents prefer a particular city, quality of life was the main reason, followed by job offers and specialized healthcare. This classification highlights the importance of investing in urban infrastructure and quality public services, and of good city management, as well as of attracting investment and providing an attractive job market.

Table 2 – Romanian cities where Romanians would most like to live

FUA	Which city would you most like to live in?	Which city, different than the one you live in now, would you most like to live in?	Share of FUA in total national population	Why do you prefer this city?				
				Job	Quality of Life	Educational Services	Specialized Healthcare	Other Reason
Bucharest	15.23%	14.46%	13.43%	4.24	4.18	4.04	4.13	3.08
Cluj-Napoca	11.37%	15.32%	2.34%	4.22	4.27	3.71	4.11	3.5
Timișoara	9.14%	11.88%	2.52%	4.29	4.49	4.11	3.94	2.32
Brașov	8.53%	11.53%	2.27%	3.8	4.42	3.56	3.74	4.25
Constanța	5.18%	3.96%	2.72%	3.37	4.22	2.82	3.39	4.71

Source: World Bank.2017, Magnet Cities – Migration and Commuting in Romania

In this context, it should be noted that, unlike the following municipalities in the classification, for the Capital City respondents selected jobs as the main attractivity reason. At the same time, although ranked first, Bucharest registers the lowest score in the top 5 cities in respect to the quality of life, which shows the need of intervention on this domain, to increase the Capital City's attractiveness, both in a national, and in a European context.

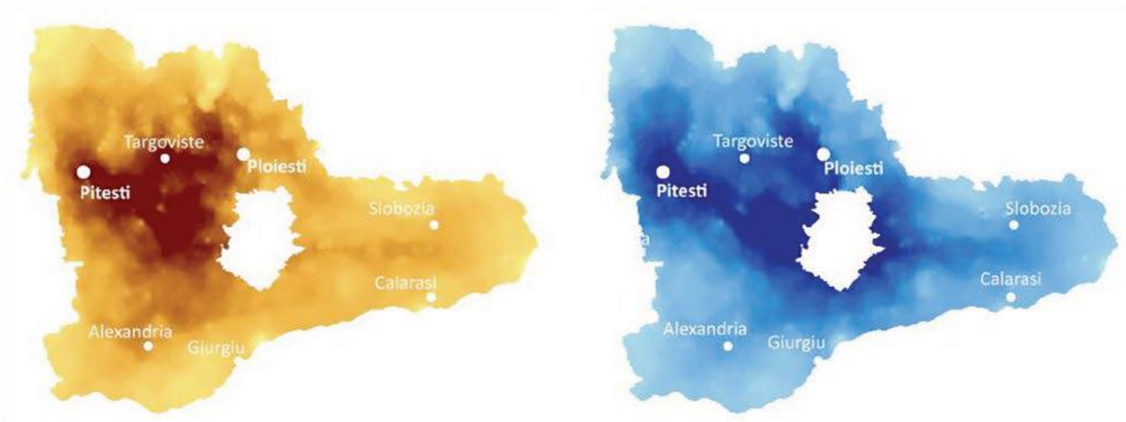
[9] World Bank.2017, Magnet Cities – Migration and Commuting in Romania

The Capital City generates a functional area that attracts the highest number of commuters in the country (over 330,000), and which exceeds the limits of Ilfov County, covering a wide part of the South-Muntenia Region.

Bucharest City's functional urban area gathers a stable population of over 2.7 million inhabitants (of which approx. 1.5 million working population), and attracts the highest share of commuters in the county – over 330,000 commuters, coming mainly from 7 counties (Călărași, Dâmbovița, Giurgiu, Ialomița, Ilfov, Prahova, Teleorman)[10] and representing 22.4% of the total working population in the functional urban area. The FUA is characterized by high population mobility and increased internal migration, depending on the opportunities provided by the labor market.

The analysis of the economic gravitational model of the South-Muntenia Region shows the in-territory expansion of the impact of economic activities in the Bucharest-Ilfov Region, beyond the administrative limits of Ilfov County, mainly along the main axes of transportation – A1 and DN1, that is, on the directions Bucharest–Pitești and Bucharest–Ploiești. At the same time, the demographic gravitational model shows an area with a high population density between Bucharest, Ploiești, Târgoviște and Pitești, but which is economically under-developed, supplying labor for companies in the Capital City and in the Ilfov County. The largest part of commuters to Bucharest is coming from the TAUs in the Ilfov County and from Ploiesti City.[11] On the other hand, in terms of commuters to localities in Ilfov County, employers reported their labor sources to be Bucharest City, and the counties of Prahova, Călărași, Giurgiu, and Dâmbovița[12]. Bucharest City, together with Ilfov County, could capitalize on their position in the region and in relation to labor resources in the neighboring counties, by adequately developing the business infrastructure, which could catalyze and attract the private sector activity.

Figure 9 – Demographic (left) and economic (right) gravity model for the South-Muntenia Region



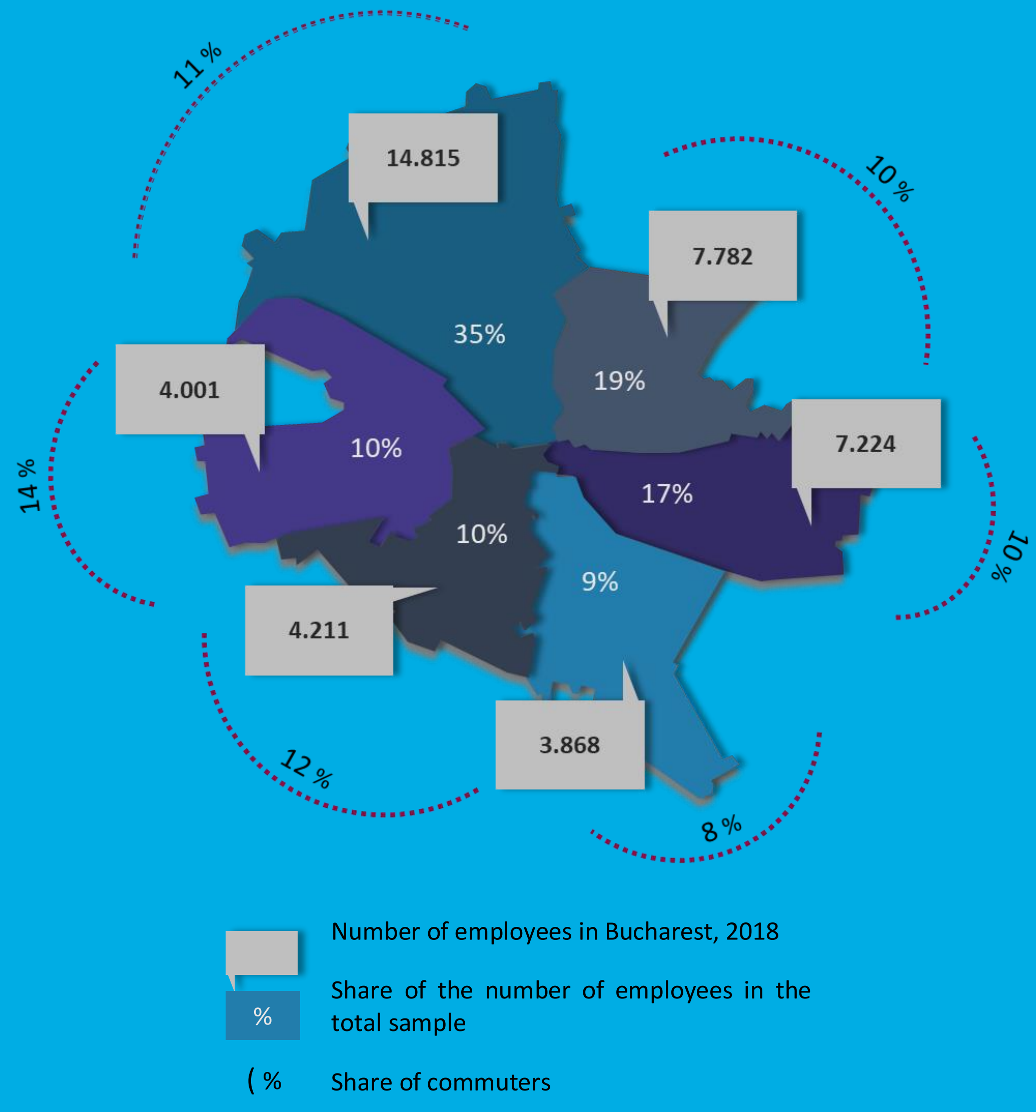
Source: World Bank.2017, Magnet Cities – Migration and Commuting in Romania

[10] Source: World Bank.2017, Magnet Cities – Migration and Commuting in Romania; the data used is that from the Population and Housing Census, 2011.

[11] Idem.

[12] Survey sent to the business environment representatives in Ilfov County.

According to the Bucharest investors' survey, 48% of the responding companies reported they had commuters among their employees, with the average weight of commuters being 10%. The highest weight of commuters (14%) was reported by companies in Sector 6. Of the 48% companies reporting commuters, 22% answered that they provide transportation for those employees, while 13% of the companies which do not currently provide the transportation of employee (57% of respondents), plan to provide their employees with transportation in the future.*



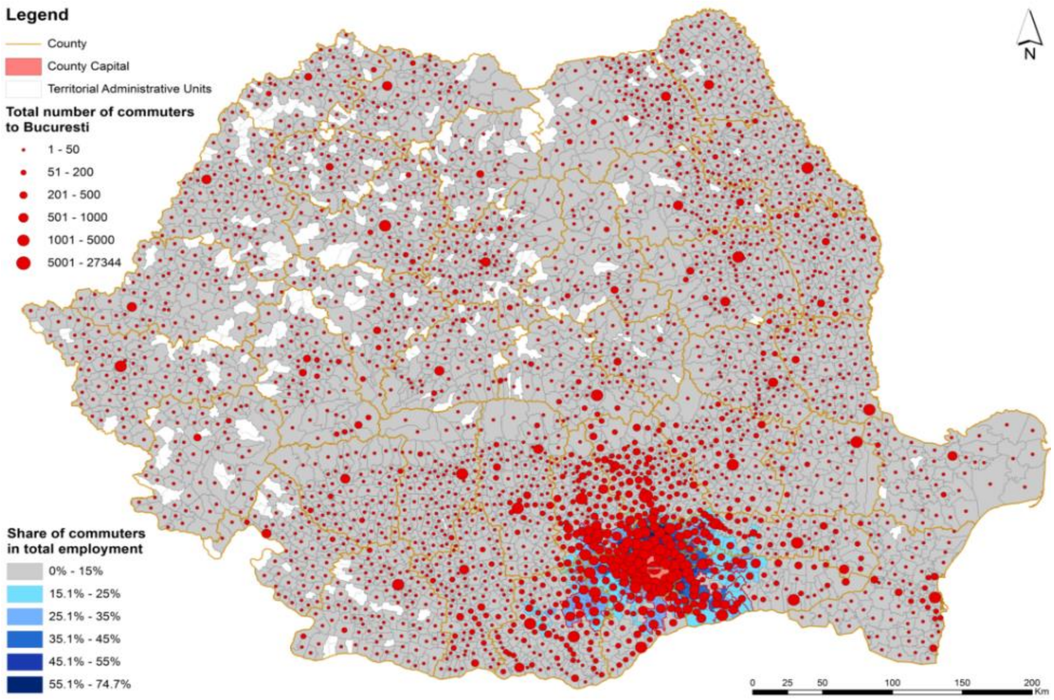
The main counties which provide labour force to responding Bucharest companies are: Ilfov – far ahead in the lead, being mentioned by over 50% of respondents, Prahova (a little under 20% of respondents), Giurgiu and Dâmbovița, each mentioned by approx. 10% of respondents.

**The final sample has the following characteristics: weight of companies with high added value: 85.6%, the average turnover for 2017 was approximately EUR 91 million, with a variance between RON 28,896 (minimum value) – AFT Design SRL (NACE: 72), and RON 162,531,462,540 (maximum value)- BCR headquarters (NACE: 60). By excluding the two extreme values, the adjusted average turnover for 2017, at sample level, was of EUR 18,628,344.514 (for an exchange rate of 4.5 RON/EUR). The total number of employees in the sample, for 2017, was 81,886 people. At the time of research, the total number of employees in Bucharest, at sample level, was 41,901. The maximum volume of employees was recorded for the OMV Petrom company – 13,322 people, with*

The Capital City is attractive to young commuters, with a mainly medium and high degree of specialization.

The territorial-administrative units providing the largest number of commuters[13] in the Capital City's functional urban area, were as follows: Bucharest (27,344)[14], Voluntari (11,886), Ploiești (8,853), Pantelimon (7,215), Popești-Leordeni (6,817), Bragadiru (5,421), Chiajna (5,319), Buftea (4,123), Chitila (3,992), Constanța (3,688), Giurgiu (3,633), Otopeni (3,595), Dobroești (2,870), Măgurele (2,798), Pitești (2,785). A relatively high percentage (37.3%) is represented by long-distance commuters (beyond the boundaries of the Bucharest-Ilfov region), mostly concentrated, as shown in the figure below, along major routes of communications (motorways, European roads, main rail lines converging towards the Capital City. Fields attracting most commuters are trade, constructions, transport, security or public administration. Of the total commuters, most are under 35 years old (50.6%), 34.1% of them graduated from higher secondary education (high school or vocational training), which means they are commuting for low-specialized jobs, in fields without high added value, and 33% graduated from university education, which can mean they chose to purchase a dwelling in areas with lower apartment prices, and that they are willing to commute to work. By occupations, 50.8% of commuters were skilled workers, 24.3% – managers and specialists with university education, 12.8% – unskilled workers, and 12.1% – technicians.

Figure 10 – Commuters to the Bucharest functional urban area



Source: World Bank.2017, Magnet Cities – Migration and Commuting in Romania

[13] Based on the 2011 Population and Housing Census (PHC)

[14] The number reflects the number of working persons with residence in Bucharest City, working in another locality in the functional urban area, mainly from Ilfov County.

Bucharest City concentrates over a third of the total students and participants in university education in Romania, and represents the country's main university center, launching over 40,000 graduates/year on the labor market.

Bucharest City polarizes not only employees, but also students, who are an important source of specialized workforce. Thus, the Capital City represents the main university center at a national level, with 172,528 students registered in the 2018-2019 academic year, which is approximately one third of the total students and course participants registered in the Romanian public university education (32% of the national total), and, respectively, approx. 60% of the students and course participants in the private university education. At the same time, Bucharest universities offer the largest number of places in MA and PhD programs, proving specialization opportunities in a variety of fields.

From a territorial point of view, Bucharest City attracts students from all around the country, most of them coming from outside the arc of the Carpathians, while Cluj-Napoca, the second university center in Romania, gathers mainly students in Transylvania, Timișoara those of Banat, and Iași – those in the central and northern part of Moldavia. .

Most PhD students are recorded in the fields of engineering and technology.

The University of Bucharest concentrates the largest number of students in Bucharest registered for undergraduate studies (22,301) and postgraduate (master) studies (8,023), followed by the Politehnica University of Bucharest (19,250 – undergraduate and 7,545 – master) and the Academy of Economic Studies (15,966 – undergraduate and 5,992 – master). The Politehnica University records the highest number of PhD students (2.119), both on a city level, and on a national one, showing a high interest in the engineering and technology specialization. It is followed by the University of Bucharest (1,341) and the "Carol Davila" University of Medicine and Pharmacy of Bucharest (1,307)[15].

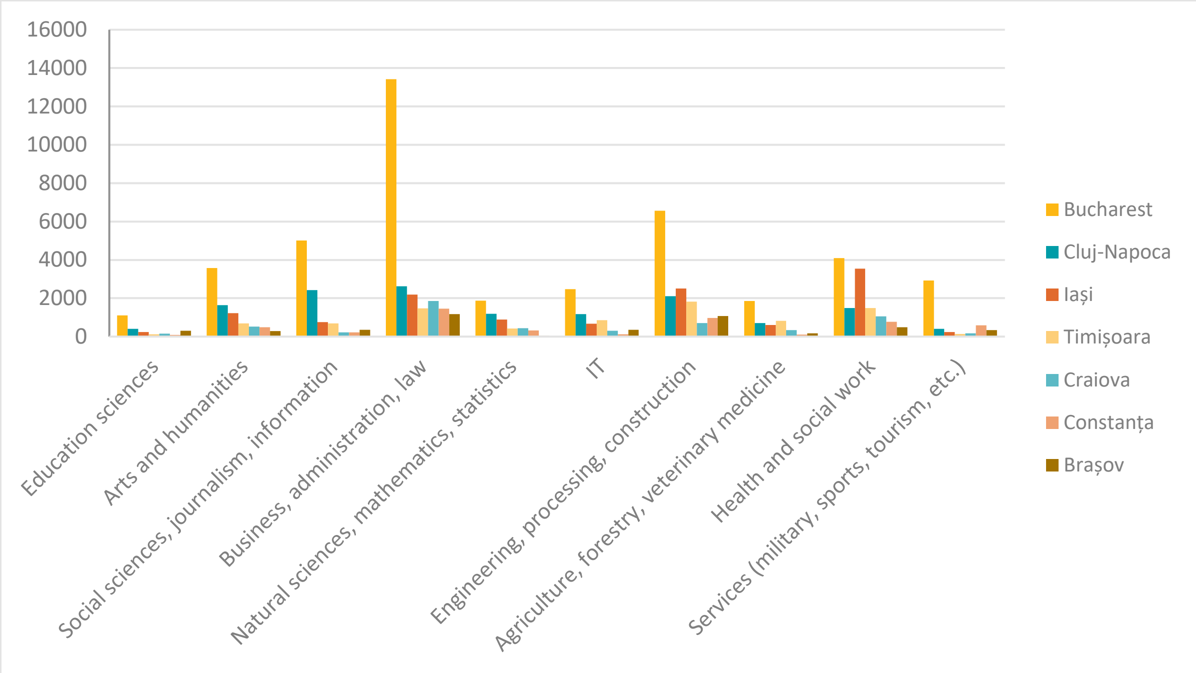
Universities in the Capital City are training specialized workforce, especially in the fields of social sciences and management, engineering and technology (including IT) and healthcare.

The analysis of Bucharest universities' specializations by field of study[16] shows a prevalence of the fields of Social sciences and management, Engineering and technology, Life sciences and medicine, and Arts and humanities. This split by profiles is also confirmed by the situation of higher education graduates. Thus, in 2017, 31% of the graduates in the Capital were specialized in Business, administration and law, 15% in Engineering, processing and constructions, 12% in Social sciences, journalism, and information, and 10% in health and social care activities, the rest of specializations recording less than 10% of the total graduates. In other words, universities in Bucharest City launched on the labor market, in 2017, 13,422 graduates in the field of business, administration, and law, over 6,500 graduates in the field of engineering and constructions, 4,085 graduates in the field of health and social care, approximately 3,000 in services, and approximately 2,500 in information and communications technology (including IT).

[15] Data refers to the 2018-2019 academic year. Source: UEFISCDI-CNFIS, centralization of data reported by universities to the Ministry of Education and Research (https://rei.gov.ro/index.php)

[16] By number of specializations

Figure 11 – Students graduating from higher education (undergraduate, master, PhD) by areas of studies and university centers, in 2017



Source: NIS. The TEMPO Online database

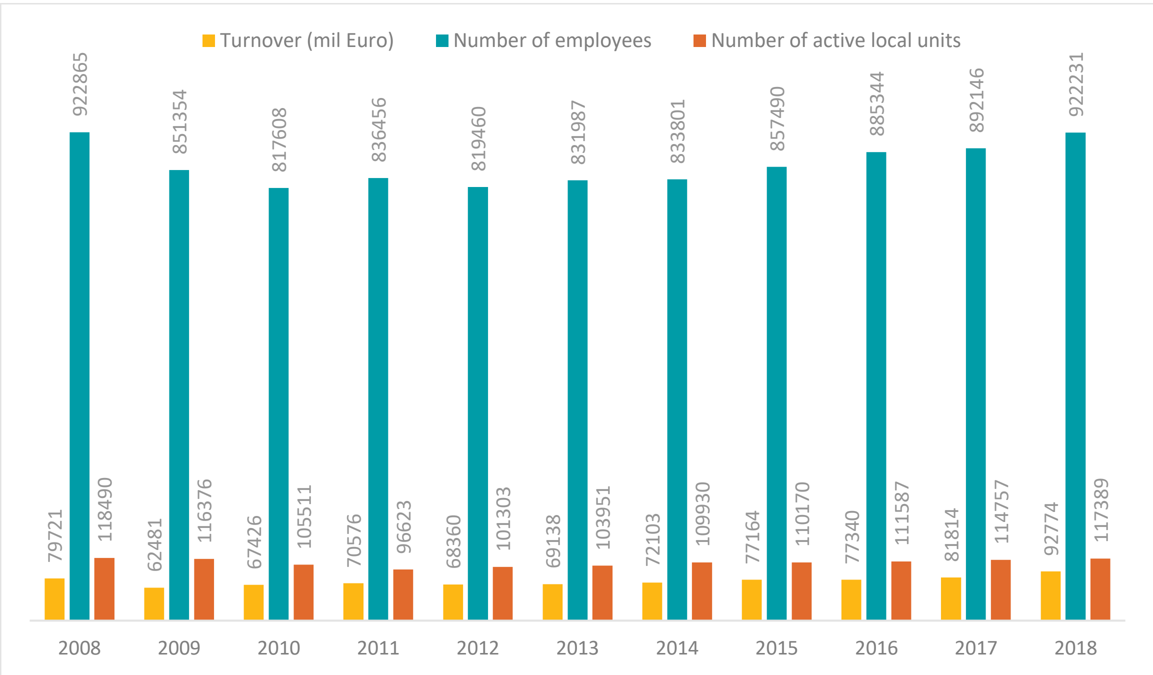
In a national context, one can note that Bucharest stands out by the large number of graduates in the fields of economy, law, political sciences, with 35-40% of the total registered on a national level. The Capital also registers a significant advantage as compared to other large cities in Romania, in the field of construction engineering and architecture (38% of the total number of graduates), food engineering, space engineering, military studies, veterinarian medicine, theatrical arts and cinema, philology and foreign languages, etc. On the other hand, in fields such as medicine, pharmacy, IT&C, mathematics, biology, chemistry, agricultural engineering, pedagogy, history and philosophy, etc., the Capital's competitive advantage as compared to other university centers was less evident. These tendencies also justify Bucharest's standing out as a pole of the BPO industry (Business processes outsourcing in accounting, human resources, purchases, customer technical assistance, etc.), searching mostly for young people with economic, legal and, infrequently, technical studies, with a good command of foreign languages.

2. ECONOMIC PROFILE OF BUCHAREST CITY, MAIN ECONOMIC SECTORS AND THEIR RELEVANCE FOR THE NATIONAL ECONOMY

The values of the main economic indicators have increased over the last 5 years, returning, in 2018, to values close to those before the economic crisis.

The evolution of the main economic indicators that describe Bucharest City's economy show an ascending post-crisis tendency (starting with 2011-2012) in respect to the average number of employees, number of active local units and turnover[17]. However, the main indicators of private companies in Bucharest have registered relatively modest performances between 2008-2018. Thus, the turnover increased (in European currency) only by 16.4%, the number of employees has remained the same, and the number of active local units has seen a negligible decrease. A contribution to this relative stagnation also belonged to the phenomenon of suburbanization of economic activities, that is, their migration or installation in Ilfov County. Thus, Bucharest-Ilfov region indicators had a net superior evolution: turnover increased by 20% (below the national increase, of 25.5%), the number of employees increased by 5.1% (as compared to a 6.2% national decrease), and the number of active local units increased by 9.5% (as compared to the national 4.3%).

Figure 12 – Evolution of the main economic indicators (Bucharest City, absolute values), between 2008-2018



Source: The TEMPO Database of NIS

The average work productivity in the active economic units was, in the Bucharest-Ilfov region, 103,117 EUR/employee in 2018, as compared to 90,341 EUR in 2008, which shows an increase of 14%. In comparison, on a national level, the average productivity was EUR 76,954, approximately 25% lower than in the Capital City area (which also justifies that the average salary in the Capital City was 35% above the national average), but it has increased much more as compared to 2008 (+33.8%). It is worth mentioning, in this context, that the

[17] In order to best reflect the local situation, instead of active enterprises, active local units were analysed, as previously defined (see [5])

gross average salary has also increased during the same interval, by 88% in Bucharest-Ilfov, and, respectively, by 96% on a national level.

Hence, although still above the average, the work productivity of Bucharest employees loses ground to that in other Romanian regions, which will be also felt in the level of salaries, which increased anyhow way over the work productivity dynamics, especially against the background of workforce deficit and of governmental measures of continually increasing the minimum wage.

Answers to the survey of Bucharest investors show a moderate optimism of companies in relation to the economic indicators' growth perspectives. The highest level of optimism refers to the increase in turnover (78% of respondents), and the lowest value was registered by the increase in the number of employees, of only 59% of the respondents – which, depending on the company's activity field, could entail an increase of work productivity or automating certain processes. 64% of respondents consider that there are perspectives to increase the retail market, and 67% see a way to increase profit.

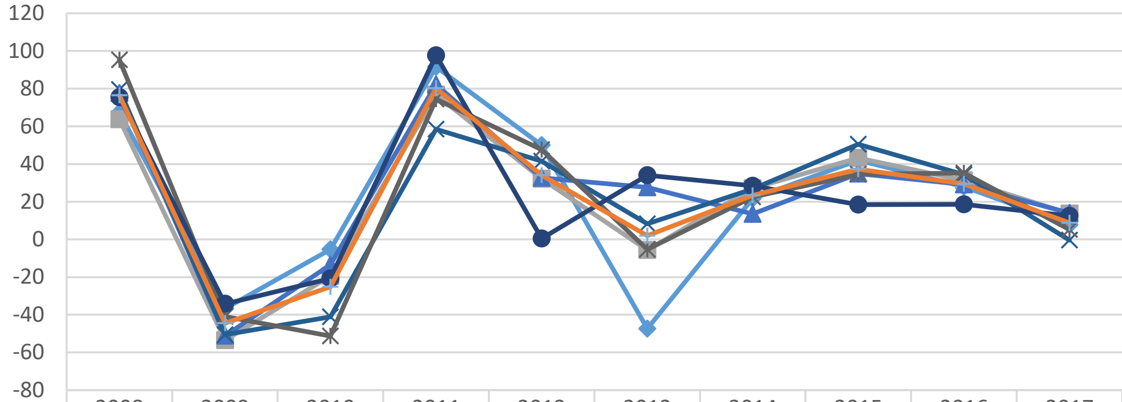
One can note a lower degree of optimism of high value-added companies, as compared to other types of companies, the former registering 1-2 percentages less answers as compared to the average – except for turnover, where values are similar.

Increased entrepreneurial effervescence and development in the peri-urban area, as compared to the relatively constant values in Bucharest City, show a need for cooperation and integrated development in the metropolitan area, to support local economic development.

The natural growth of enterprises[18] was registering positive values on the last available date (2017), both for Bucharest City (8.82‰), and in all its administrative sectors, except for Sector 4 (-0.46‰). The highest values were registered in Sector 3 (14.07‰), followed closely by Sector 2 (13.72 ‰) and Sector 6 (12.57‰). The Capital City average is mainly positive during the analyzed period, with a sharp decrease between 2008 and 2009, after the economic crisis, followed by a sharp, post-crisis increase (2010-2011), and a stabilizing, but slightly negative, tendency, after 2012. The evolution of the indicator in sector level largely follows the same pattern, with bigger fluctuations (both positive, and negative) in Sectors 1 and 6 (see Figure 14). Contrasting to the relatively low values registered in Bucharest City, in Ilfov County the natural growth of enterprises was 83.7 ‰ in 2017 (decreasing from 2011, when it registered 109.5 ‰). The Capital City should therefore capitalize on the high entrepreneurial effervescence and development in the peri-urban area, by creating development conditions and services for entrepreneurs and the business environment in the entire functional/metropolitan territory.

[18] Ratio between the algebraic difference of the number of newly-created enterprises and the number of closed (cancelled) enterprises and the number of existing active enterprises at a certain moment. Source: The eDemos NIS Database

Figure 13 – Evolution of the natural growth of enterprises (‰), 2008-2017

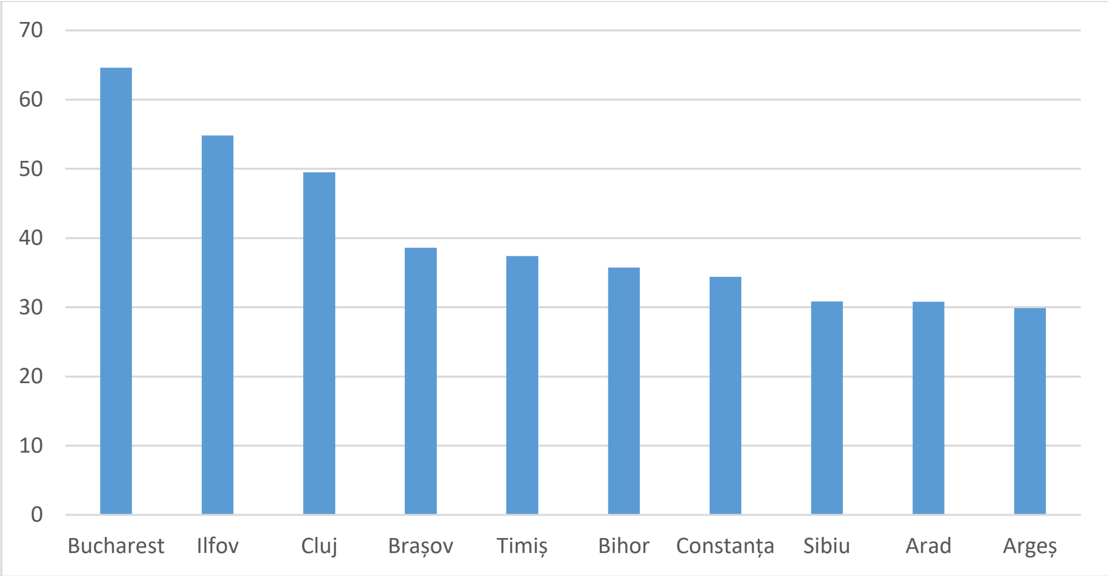


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
District 1	67.24	-36.69	-5.28	91.6	49.96	-47.36	21.57	42.03	27.95	7.82
District 2	63.68	-53.48	-19.41	76.78	32.14	-5.73	27.1	43.23	31.29	13.72
District 3	77.68	-51.18	-13.55	82.25	32.72	27.63	13.48	34.93	29.17	14.07
District 4	79.59	-50.55	-41.16	58.54	41.47	8.21	26.8	50.42	34.33	-0.46
District 5	95.3	-40.99	-51.3	74.49	47.57	-5.33	22.46	34.55	35.3	5.17
District 6	75.43	-34.25	-20.71	97.69	0.51	34.03	28.51	18.51	18.54	12.57
Bucharest	76.49	-44.52	-25.24	80.23	34.06	1.91	23.32	37.28	29.43	8.82

Source: The eDemos Database of NIS

The analysis of active local units density (no. of units/1,000 inhabitants) also shows an increasing tendency. Bucharest City is followed by the Ilfov County, which also registered an increased economic development over the last years, possibly as an effect to recent years' suburbanization and development of office areas outside the Capital City (e.g. Pipera), of logistics areas (close to the A1 Motorway) etc. Thus, the analysis of this indicator on a regional level, together with the increase in turnover and number of employees, shows the tendency of economic increase and the Capital City's driver role, but also Ilfov County's increased development, as a result of increased attractiveness for investment and of the transformation and modernization of the economy in the metropolitan area. All these point to the need for an integrated approach, on a metropolitan/functional level, of the development efforts.

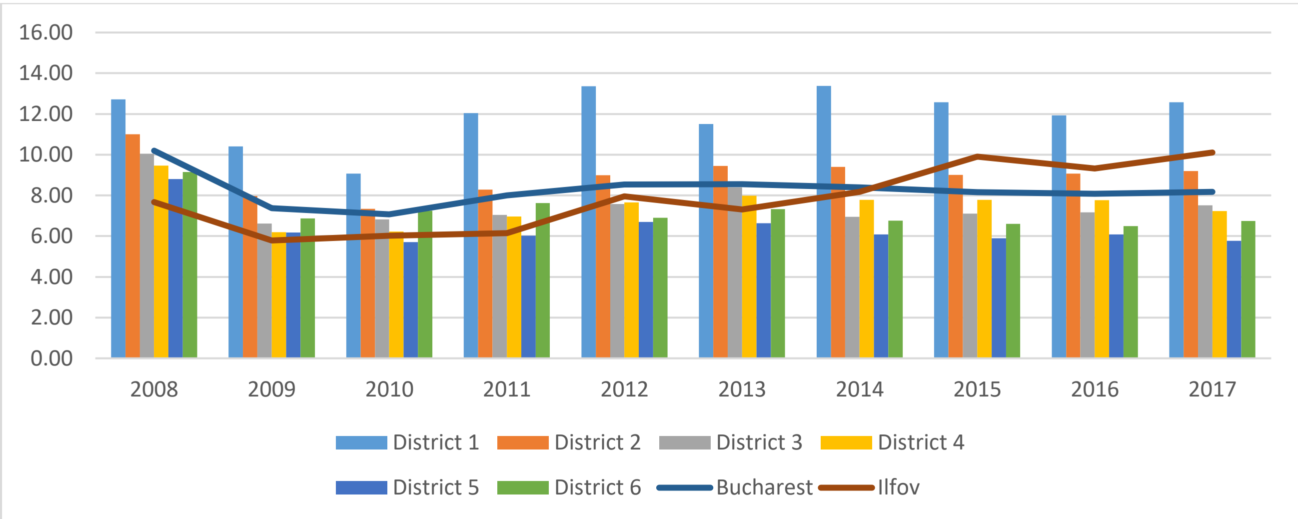
Figure 14 – Density of active local units/1000 inhabitants[19], national classification, 2018



Source: The TEMPO Database of NIS

Disparities between sectors have increased, showing the companies' preference of locating in Sector 1 and the lower development level of sectors and neighborhoods in the southern part of the city.

Figure 15 – Entrepreneurial capacity



Source: The eDemos Database of NIS

[19] Resident population on January 1st by age groups and age, sex, and residential environment, macro regions, development regions, and counties

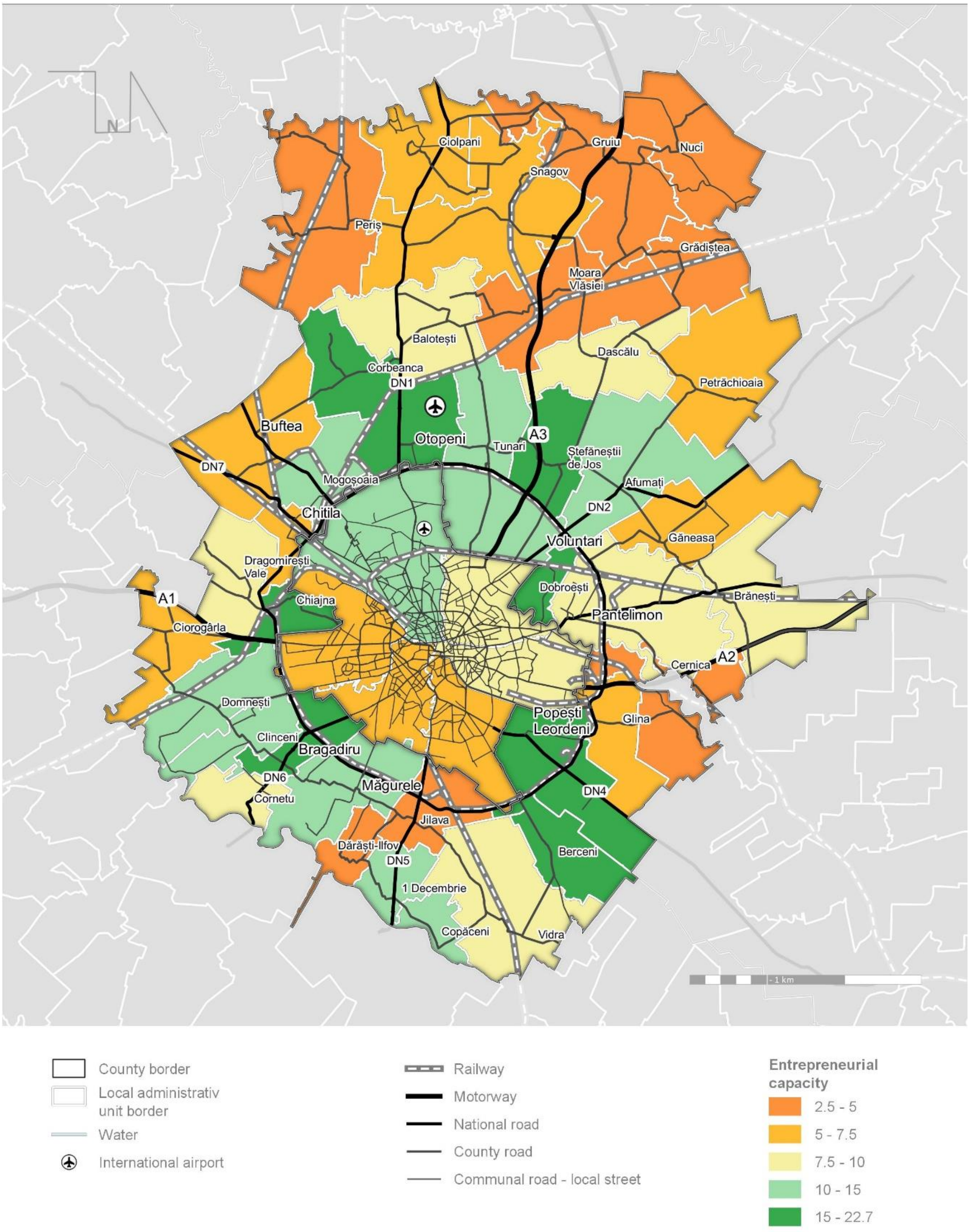
Entrepreneurial activity[20] has also recoded a higher increase in the Capital City's peri-urban area (Ilfov County), as compared to the evolution in Bucharest City, which was rather in a stagnation period over the last years. The highest values of this indicator were registered in Sectors 1 and 2, and the lowest was in Sector 5. It should be noted that, although the sectors' classification by entrepreneurial capacity has remained relatively constant over the analyzed period, disparities between sectors have deepened in the post-crisis period, and were perpetuated up to 2017, highlighting the companies' preference of locating to Sector 1, followed, at a rather significant distance (a value approx. 30% lower) by Sector 2.

The northern side of Bucharest (Sector 1 in particular) and the localities in the first circle of localities in Ilfov County record the highest entrepreneurial capacity, correlated to its access to the main connection routes to the territory.

The territorial analysis of the entrepreneurial capacity (Figure 17) shown a synergic development of the northern side of Bucharest City and of the towns and communes to its north, belonging to Ilfov County (Voluntari, Otopeni, Ștefăneștii de Jos, Tunari), which have become attractive over the last years, both from a residential point of view, and for locating business and developing office areas (e.g. the Pipera area). Otopeni, Voluntari and Ștefăneștii de Jos also benefit from high accessibility, provided by DN1, A3, and proximity to the Henri Coandă International Airport. On the other hand, relatively high values in the southern part of the first circle of localities around the Capital City (Bragadiru, Berceni, Chiajna), as compared to values in Bucharest, show an increase of entrepreneurship and outsourcing of certain economic activities to outside the Capital City (logistics and development, industrial activities, etc.), considered together with the main axes providing access to and from it (A1, DN4) and with the recent years' residential development of the localities in the southern part of Ilfov County. The low entrepreneurial capacity and the limited number of jobs in the southern sectors of Bucharest City show a lower development thereof, and the rather monofunctional, residential profile, with dormitory neighborhoods (e.g. Drumul Taberei, Berceni) and a low concentration of areas destined for economic activities.

[20] Ratio between the total number of newly-created enterprises (recorded in the reporting period, with registered offices in the locality) and the number of inhabitants; new enterprises/1,000 inhabitants. Source: the eDemos NIS Database.

Figure 16– Entrepreneurial capacity in Bucharest City and Ilfov County, 2017

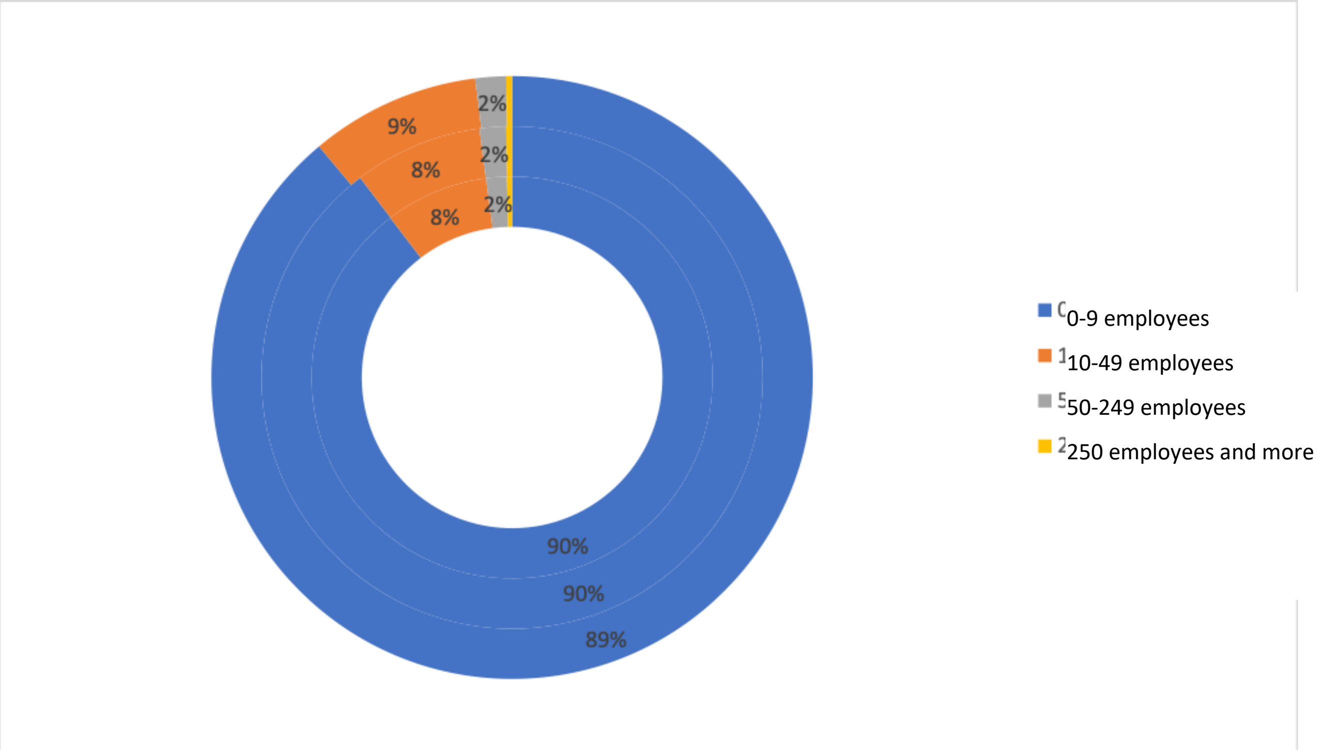


Source: Own processing of data from the NIS eDemos database

The Capital City shows a high attractiveness for entrepreneurs and for large and very large companies.

Analysis per size classes shows that, in 2018, 89.61% of the active local units in the Capital were recording 0-9 employees, 8.32% were had between 10 and 49 employees, 1.67% – between 50 and 249 employees, and the rest 0.41% fit the criterion of large and very large companies, with over 250 employees. This distribution is similar to the regional and national distribution but, when compared to the national distribution, Bucharest City is recording higher shares in the categories of 0-9 employees (0.7% higher than the national level), and over 250 employees (0.41% as compared to 0.32% on a national level). These differences show, on the one hand, a stronger entrepreneurship development as compared to other areas in Romania and, on the other hand, the Capital City's attractiveness for large and very large companies. Among the companies with the highest number of employees registered in Bucharest City[21], there are: Kaufland România (retail sale in non-specialized stores with food, beverages or tobacco predominating), OMV Petrom (extraction of crude petroleum) and RCS & RDS SA (wired telecommunications activities).

Figure 17 – Active local units, by size class (Bucharest City – interior, Bucharest-Ilfov Region – center, national average – exterior), 2018



Source: The TEMPO Database of NIS

The high ratio of the SME sector in the total active local units in the Capital City reflects the flexibility of the local business environment, while stressing the need to support and increase the sustainability of entrepreneurial initiatives.

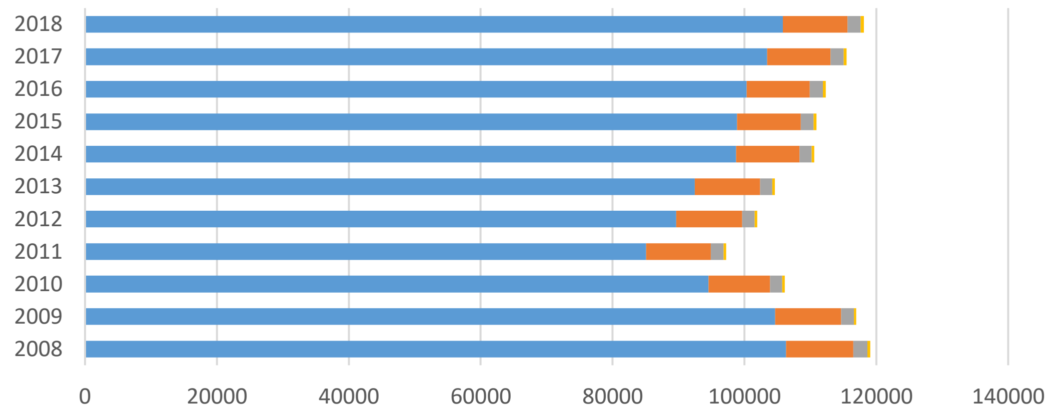
The evolution in the number of active local units shoes a constant and accelerated post-crisis increase in the categories of 0-9 employees and over 250 employees, while the categories of 10-49 employees and 50-249 employees have registered relatively constant values since 2011. On the other hand, the evolution of the

[21] Registered offices, which does not necessarily mean that all employees are working in Bucharest City

number of active local units staring with 2008 shows the vulnerability of the micro category when faced to the effects of the economic crisis, this class being sensitive to economic shocks, registering a decrease of 19.97% between 2008-2011. Besides, except for active local units employing more than 250 people, none of the other three categories had returned to the 2008 values, by 2018.

Thus, on the one hand, the increased ratio of the SME sector, and of the micro class in particular, of the total active local units in the Capital City, reflects the flexibility of the local business environment, imposed by the permanently changing conditions in economy and in the regional dynamics. On the other hand, this distribution by size classes shows a potential vulnerability in the event of a future economic crisis, stressing the need for measures to support and increase the sustainability of entrepreneurial initiatives.

Figure 18 – Evolution of the number of active local units by size classes, Bucharest City

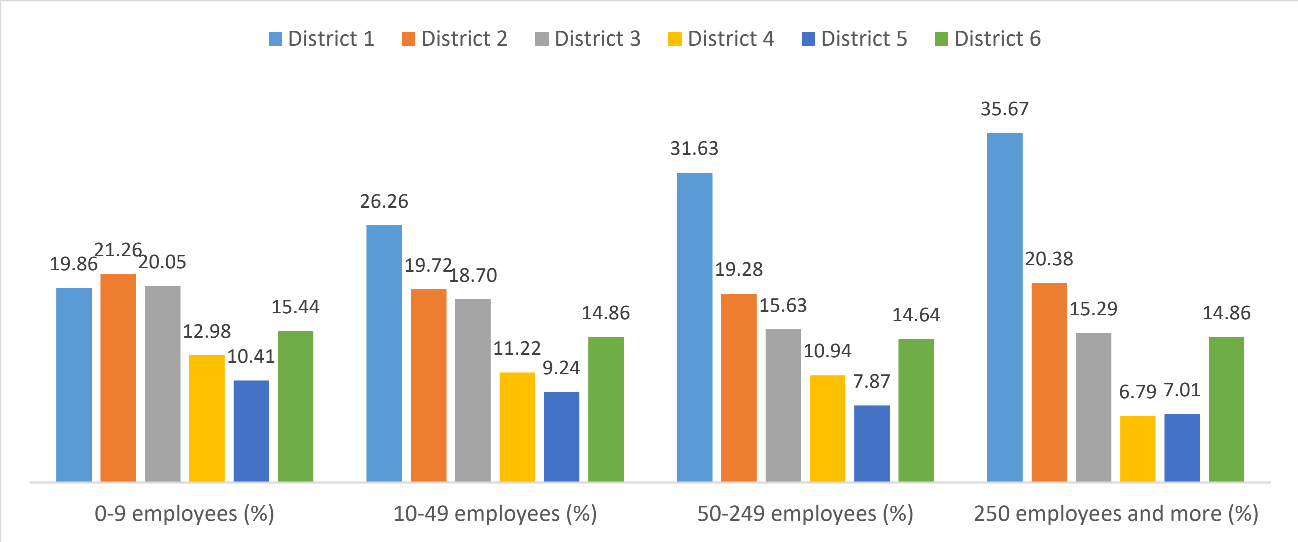


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0-9 employees	106301	104648	94579	85073	89645	92456	98734	98895	100326	103441	105837
10-49 employees	10216	10002	9306	9823	10029	9908	9631	9663	9604	9647	9822
50-249 employees	2122	1942	1847	1945	1897	1843	1841	1920	1948	1945	1967
250 employees and more	434	372	379	373	376	394	403	431	451	451	484

Source: The TEMPO Database of NIS

In respect to the distribution of company subunits (main offices, single office, lucrative facility) in Bucharest City, by size classes and administrative sectors, one can note that Sector 1 polarizes most of the average, large, and very large units, the difference being reduced in the case of units employing 10-49 people. In the case of registered offices and lucrative facilities employing 0-9 people, the top is led by Sector 2, followed by Sectors 3 and 1.

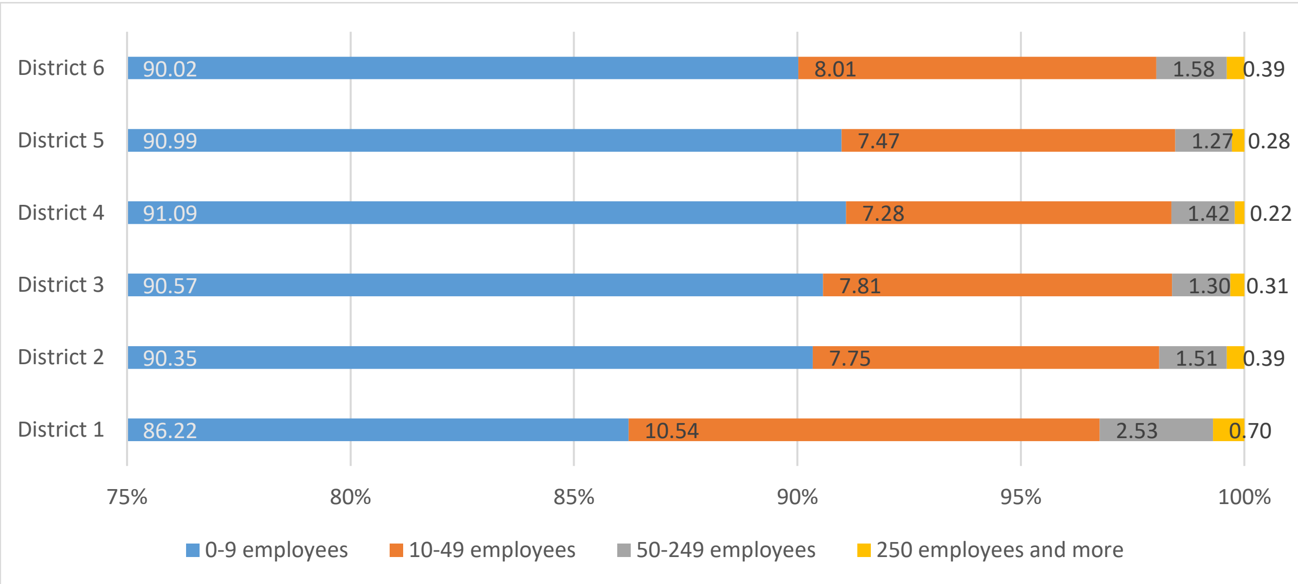
Figure 19 – Distribution by size classes and administrative sectors of the company subunits in Bucharest City (%, 2018)



Source: NIS

When analyzing the ratio of subunits in various size classes at Capital City level, one notes that Sector 1 has a different profile, with the lowest ratio of microenterprises out of the total units registered. On the other hand, Sectors 4 and 5, which register the lowest values in turnover, number of employees and active local units, register the highest ratios of units with 0-9 employees.

Figure 20 **– Distribution by administrative sectors of company subunits in Bucharest City (%, 2018)**



Source: NIS

Over 30% of the Capital City's active local units are active in knowledge-intensive services[22].

The Romanian "Techosystem"[23], and especially the one in Bucharest, is famous[24] for its intellectual human capital and for the large number of companies in the field of cybersecurity, video games, entertainment, and e-commerce. Starting with 2014, there was an increase in the number of start-ups active in hardware, artificial intelligence, 3D printing, virtual reality and augmented reality[25]. Bucharest-based start-ups can benefit from the technical talent pool, as the Capital has competitive developers and marketers. Financing and access to capital remain a challenge and, for that reason, start-up founders call on international investors. There are a few "angel investors" organizations, which are attempting to close the financing gap, but they are not enough. Another vulnerability of the Bucharest tech ecosystem lies in the lack of business and product management skills.

The analysis of the active local units in Bucharest City, from the point of view of the economic sector where they are active, shows that the NACE section wholesale and retail trade: repair of motor vehicles and motorcycles covers the largest number of units (27% in 2018). The second place is taken by active units with the field of activity professional, scientific and technical activities (18%) – knowledge-intensive services, and the third is occupied by units active in the construction field (9%). This field has seen a period of decline following the economic crisis, but returned to a positive evolution after 2012 (an increase of 16.12% between 2012 and 2018, yet failing to return to the 2008 value). The construction field is closely followed by information and communication, a field with high added value, which concentrates 8% of the active local units in the Capital City, and which saw an increase in the number of active local units, of 15.75% between 2008 and 2018.

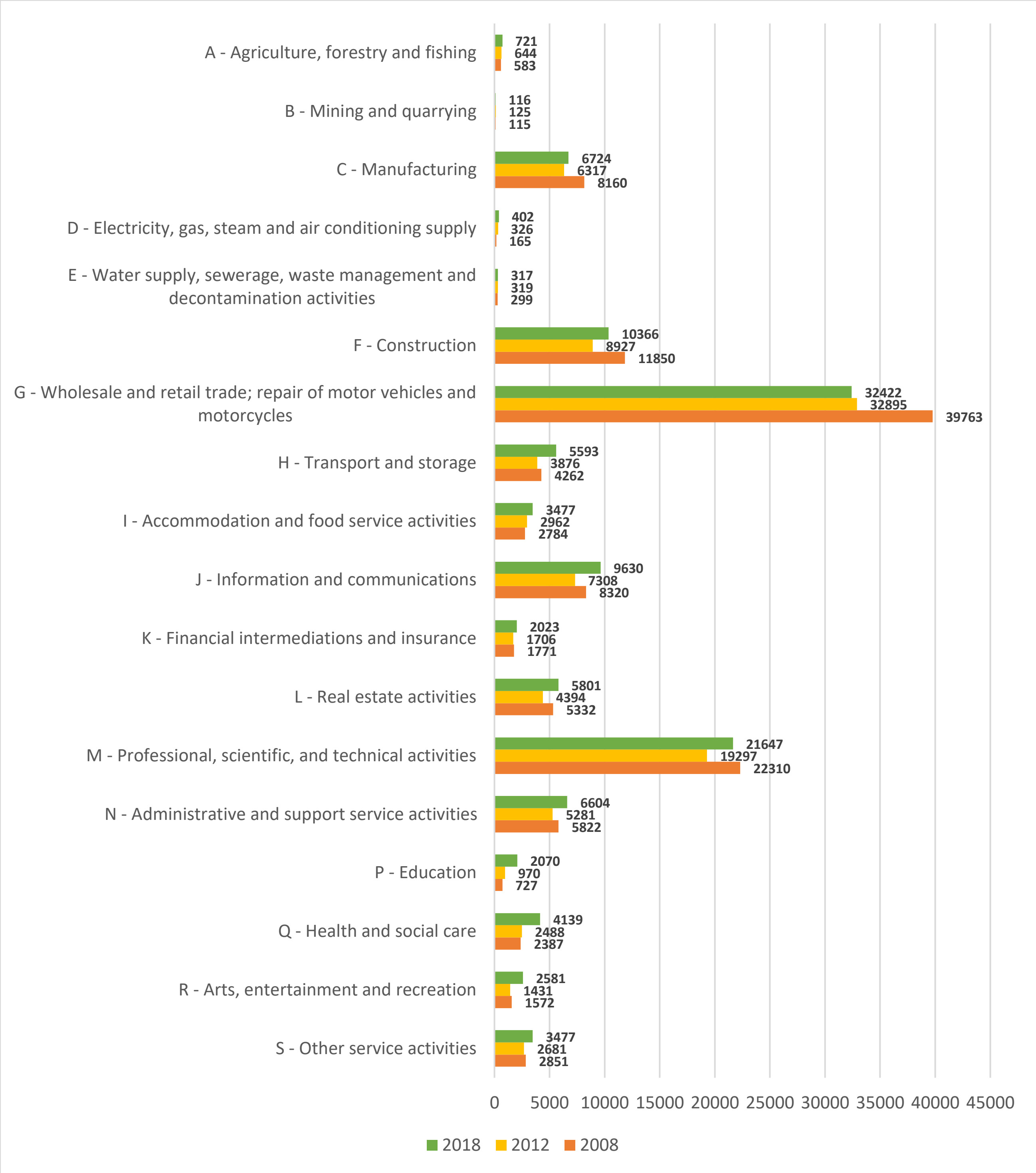
[22] Sections J, M, P, Q, R were considered

[23] "Techosystem" or the ecosystem dedicated to technology start-ups.

[24] According to Nesta – The Innovation Foundation, benchmarking analysing over 60 European cities.

[25] A few examples: Univrse, Symme3D, Medicai etc.

Figure 21 – Number of active local units per national economy activities in Bucharest City



Source: The TEMPO Database of NIS

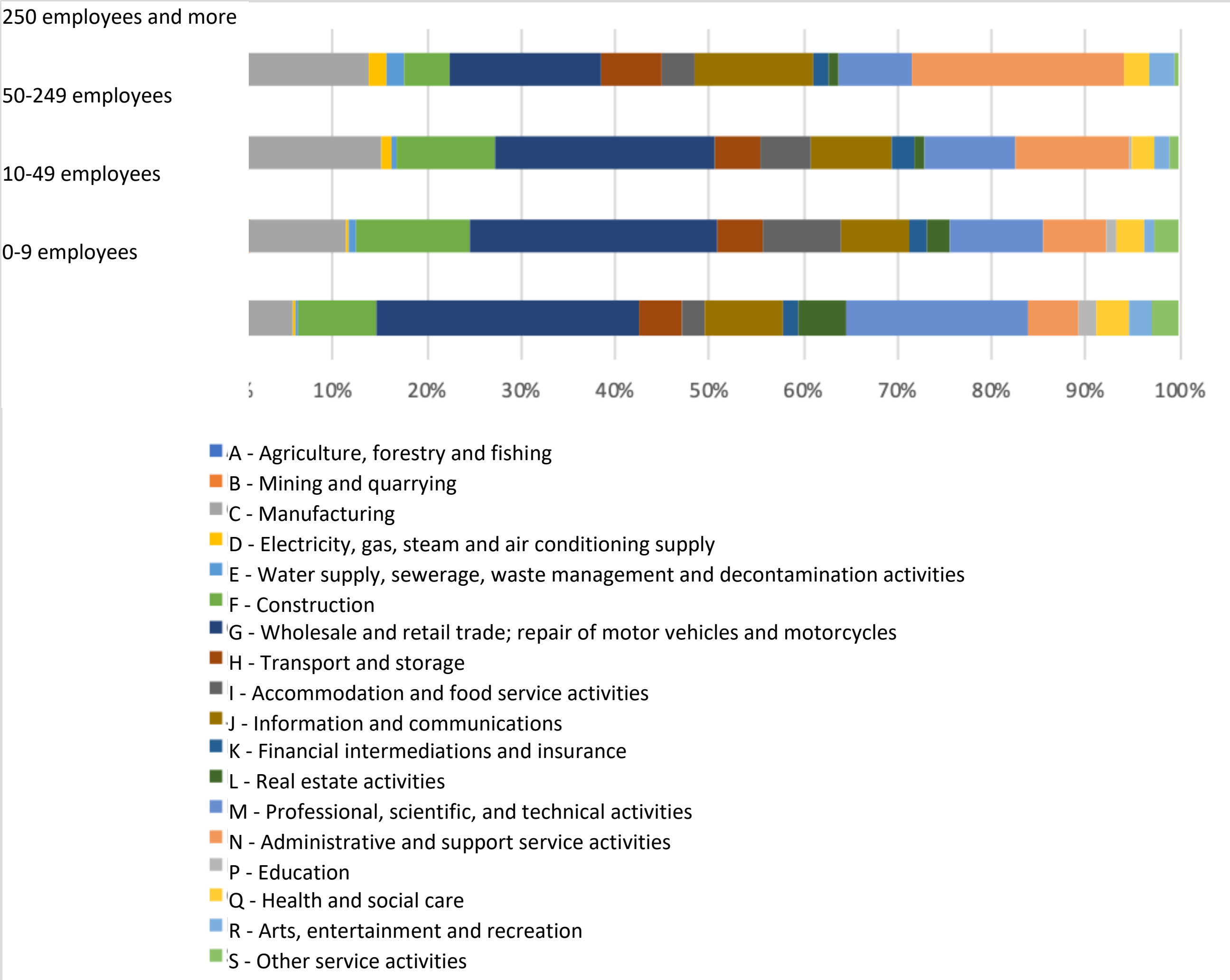
The largest increase in the number of active local units (184.73% between 2012 and 2018) was recorded by the education section, followed by electricity, gas, steam and air conditioning supply (143.64%), health and social care (73.40%), and arts, entertainment and recreation (64.19%), which shows a development of public services and of related fields, as well as the increasing market weight of private actors. At the same time, it needs to be mentioned that in Bucharest City there are registered a series of national companies and societies, active in electricity, gas, steam and air conditioning supply (e.g. Compania Națională de Transport al Energiei Electrice Transelectrica SA, Societatea Națională Nuclearelectrica SA) are registered in Bucharest City.

Depending on the size class of active local units, one can notice a different distribution of their weights per NACE domains, still, all categories are pertinent to Bucharest City's service-focused profile. Thus, in 2018, for the micro category, the highest weights were registered in the following NACE sections: wholesale and retail trade: repair of motor vehicles and motorcycles (27.18%), followed by professional, scientific and technical activities (19.5%) and construction (8.54%). At the level of small enterprises as well, wholesale and retail trade: repair of motor vehicles and motorcycles holds the highest weight (24.89%), followed by construction, with 12.48%, and manufacturing with 10.56% (closely followed by professional, scientific and technical activities – 10.28%). The field with the highest weight among medium-sized units is, once again, wholesale and retail trade: repair of motor vehicles, and motorcycles, with a weight of 21.63%, followed by manufacturing, with 15.32%, and administrative and support service activities, with 12.25%. Large and very large enterprises are numerically dominated by administrative and support service activities (of these, the main employers registered in Bucharest are mostly active in the fields of human resources and security), with 21.14%, followed by wholesale and retail trade: repair of motor vehicles and motorcycles, which registers 17.46%, and manufacturing, with 14.52%.

The Capital City's attractiveness for industrial activities is declining, against the transition to a knowledge-based economy.

Manufacturing has seen a 17.60% decrease in the number of active local units between 2008 and 2018, against the decline during the economic crisis, but also of the Capital City's decreased attractiveness for industry investments, due to high labor costs, land costs, urbanistic and environmental restrictions, etc. It has seen a slightly increasing evolution between 2012 and 2018 (6.44%), but the low increase rate for this section leads to a diminishing of its weight in the economy of Bucharest City. A similar evolution was also registered for the wholesale and retail trade: repair of motor vehicles and motorcycles (a decrease of 18.46% between 2008 and 2018 and of 1.44% between 2012 and 2018), which shows a tendency to consolidate retail activities around large shopping chains, at the expense of small family businesses, which used to dominate the urban landscape some 10-15 years ago.

Figure 22 – Distribution of active local units by size classes and national economy activities, Bucharest City, 2018



Source: The TEMPO Database of NIS

The Capital City is concentrating a high number of national companies and societies, as well as many of the largest private companies in Romania. Their activity takes place mostly outside the city, while economic indicators are reported at headquarter level, distorting, in some cases, the actual image of the local economy[26].

In respect to the number of employees reported by Bucharest companies, the highest values are reported by national companies – the first three places correspond to the top three places in the national top by number of employees. Their activity is coordinated from the Capital City, but is carried out mostly elsewhere. The same situation can be noted in the case of private companies, as Bucharest-based companies with the highest number of employees in 2018 are also carrying out their activities all around the country (e.g. RCS & RDS SA, OMV Petrom and Kaufland). Thus, in order to gain a real image of the situation of employees carrying out their

[26] In this context, in order to best reflect the local situation, data on active local units (turnover, personnel, etc.) were used inasmuch as possible

activity in the Capital, data at the level of subunits (offices, lucrative facilities) registered here were further analyzed.

Active local units and main offices of Bucharest companies with the largest number of employees are mainly focused in Sector 1, closely followed by Sector 2.

The analysis of the territorial distribution of active local units and of companies based in Bucharest City show a high concentration in Sector 1, followed by Sectors 2 and 5. The fewest active local units are found in Sectors 5 and 4, the sectors with the lowest economic development in the Capital.

The analysis of company subunits[27] registered in Bucharest City provides a realistic image of the territorial repartition of employees, strictly referring to employees active in the Capital City (Figure 24). Thus, we can notice that Sector 1 concentrates the most employees among the Capital's sectors, nearly 4 times more than Sector 5. The number of subunits in Sectors 1, 2, and 3 is similar, but Sector 1 concentrates the most medium, large, and very large (over 50 employees) subunits, followed by Sector 2.

In respect to the top by number of employees and fields of activity, by local subunits, employers in public transportation stand out (with STB and METROREX in top 10 subunits in the Capital), human resources, IT&C, trade, and services. The main subunits from the point of view of number of employees are focused in Sector 1, followed by Sectors 2 and 5.

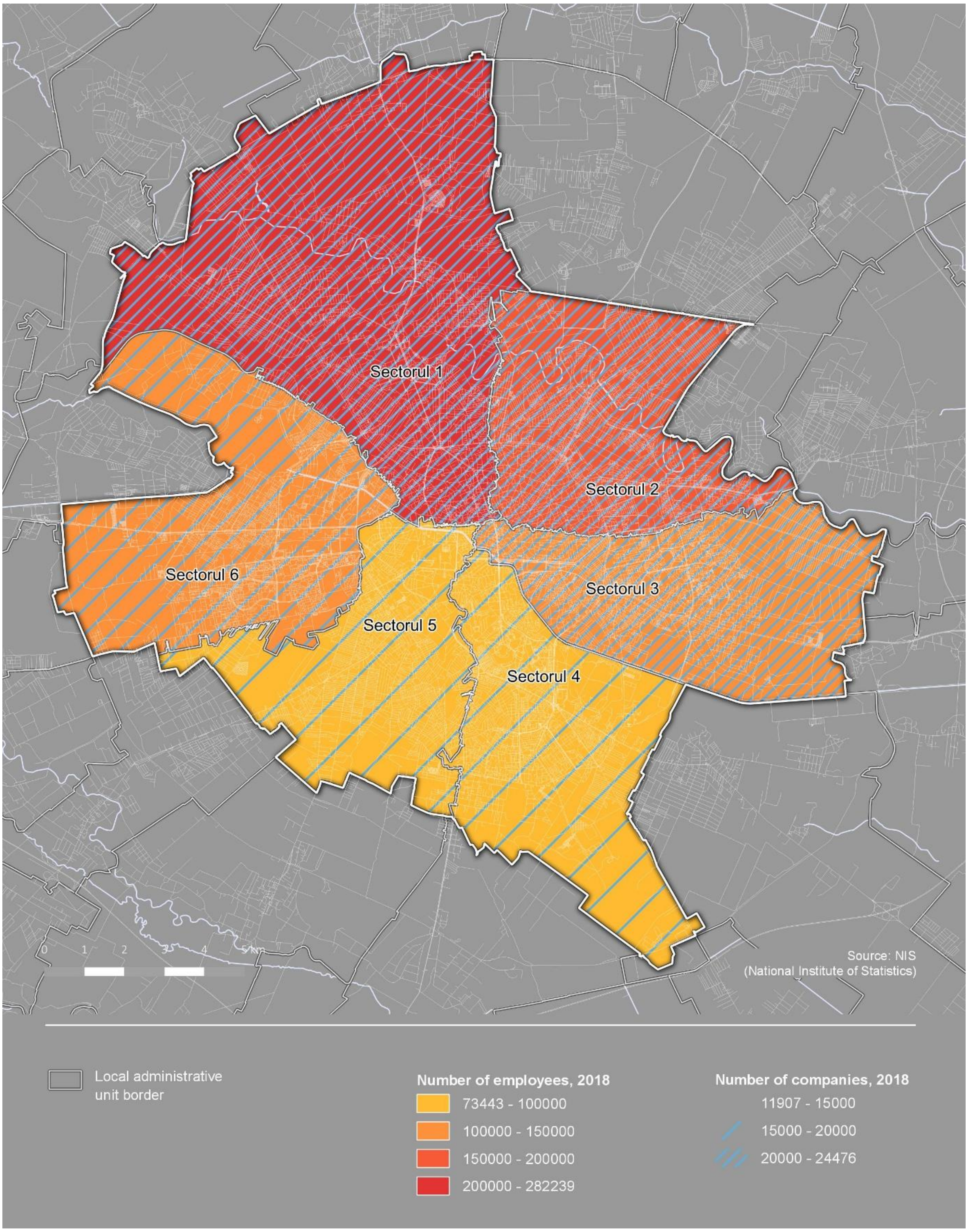
Table 3 – Top 10 subunits of Bucharest City companies, by number of employees, 2018

NAME	SECTOR	NACE	NO. OF EMPLOYEES
SOCIETATEA DE TRANSPORT BUCURESTI STB SA	SECTOR 1	4,931	9,249
SC LUGERA & MAKLER SRL	SECTOR 3	7,820	5,633
SC ORACLE ROMANIA SRL	SECTOR 2	6,201	4,463
COMPANIA NATIONALA POSTA ROMANA	SECTOR 2	5,310	4,461
SC METROREX SA	SECTOR 1	4,931	4,402
SC RCS & RDS SA	SECTOR 5	6,110	4,252
SC MANPOWER HR SRL	SECTOR 5	7,820	3,562
COMPANIA NATIONALA DE CAI FERATE CFR SA	SECTOR 1	5,221	3,286
SC SECURITAS SERVICES ROMANIA SRL	SECTOR 1	8,010	3,140
SC DANTE INTERNATIONAL	SECTOR 6	4,791	3,129

Source: NIS

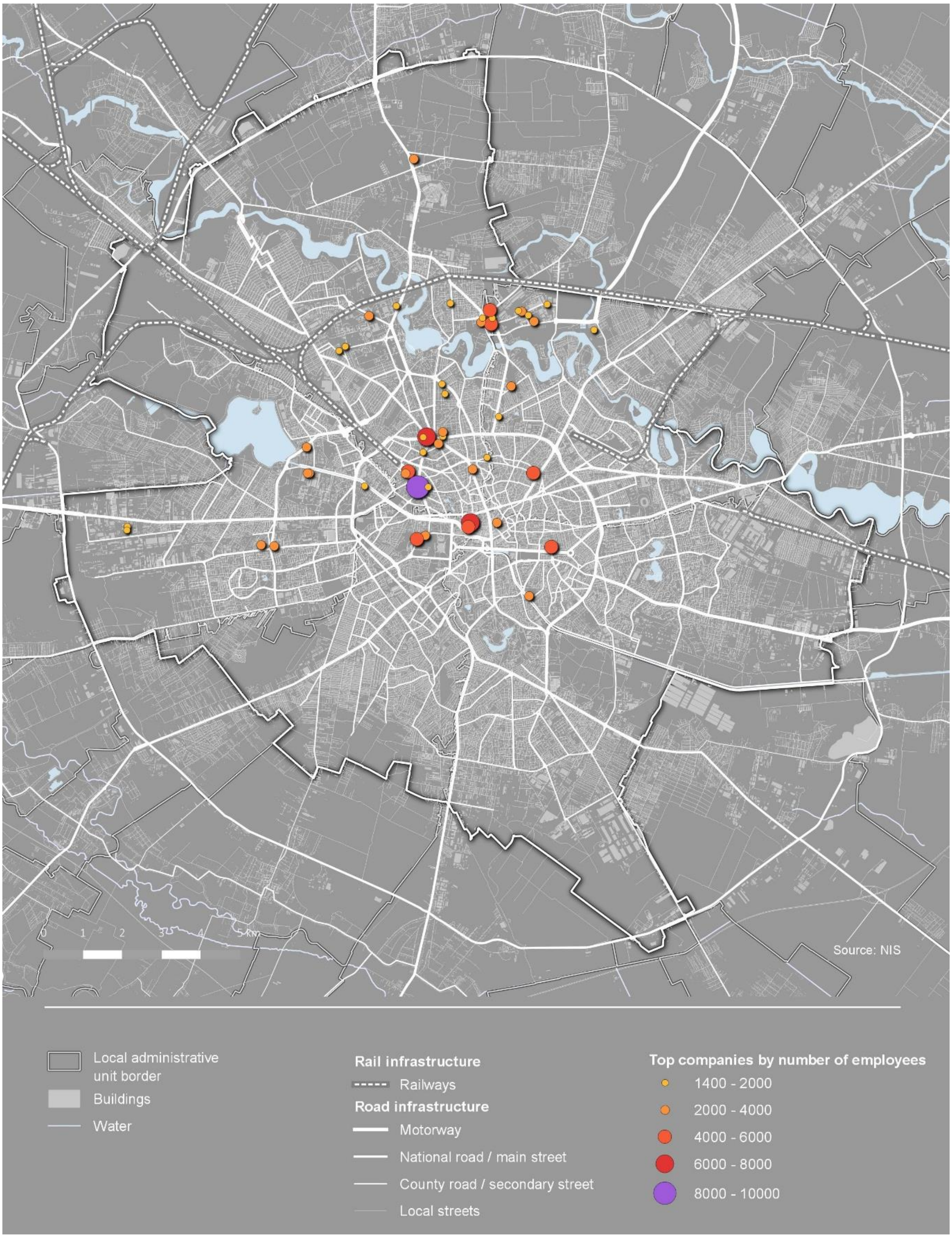
[27] Single offices, headquarters, lucrative facilities, per NIS.

Figure 23 – Distribution of employees and company subunits by Bucharest City sectors, 2018



Source: Own processing based on NIS data

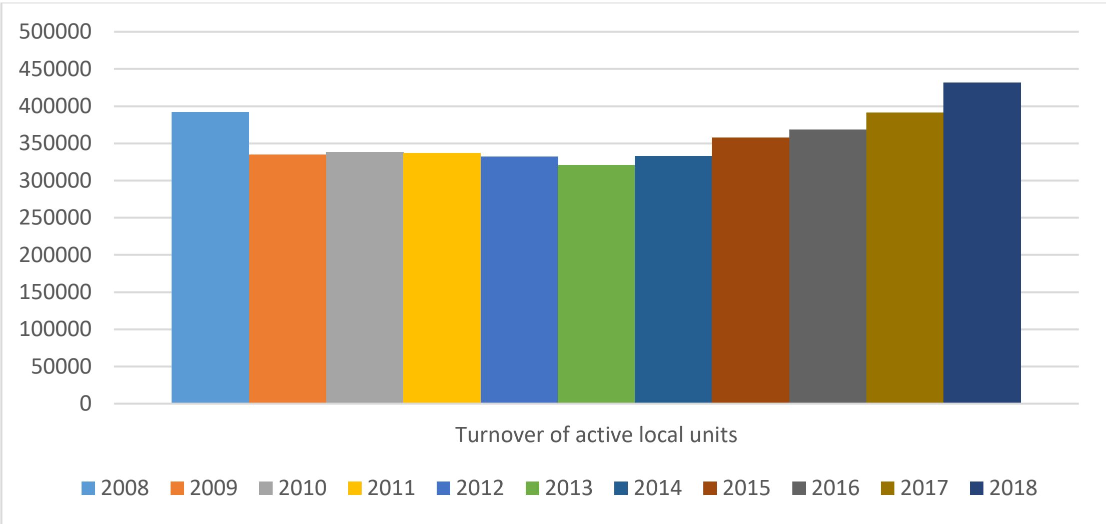
Figure 24 – Territorial distribution of top 50 subunits in Bucharest City, by number of employees, 2018



Source: Own processing based on NIS data

The turnover generated by active local units in Bucharest City was RON 431,722 million in 2018[28]. When analyzing the post-crisis evolution of turnover, one can note that the highest increase between 2012-2018 was registered in the following NACE sections: (1) mining and quarrying (an increase by 259.86% between 2012 and 2018), against the presence in Bucharest of OMV Petrom and of other companies in this field, but whose mining and quarrying activity takes place in other counties, (2) Health and social care (an increase by 133.49%) – e.g. private medical centers and networks are recording the highest turnover (e.g. Centrul Medical Unirea SRL, Med Life SA, Sanador SRL); (3) Accommodation and food service activities (102.15%) – e.g. companies holding the franchises of McDonalds (Premier Restaurants Romania SRL) and KFC (US Food Network SA), companies in the field of luxury hotels and restaurants (București Turism SA, Ana Hotels SA); (4) Education (84.28%) – e.g. private networks of schools/high schools (Lumina Instituții de Învățământ SA, Olga Gudynn International School SRL), carrying out their activities both in the Capital City, and outside it (Ilfov County, Constanța etc.). Information and communication ranks fifth, with an increase of 48.32% between 2012 and 2018. The highest turnover in this field was registered in 2018 by telecommunication services providers Orange România, Vodafone România, RCS&RDS SA, TELEKOM România, followed by Oracle and IBM România (other information technology and computer service activities).

Figure 25 – Turnover evolution of active local units in Bucharest City[29]

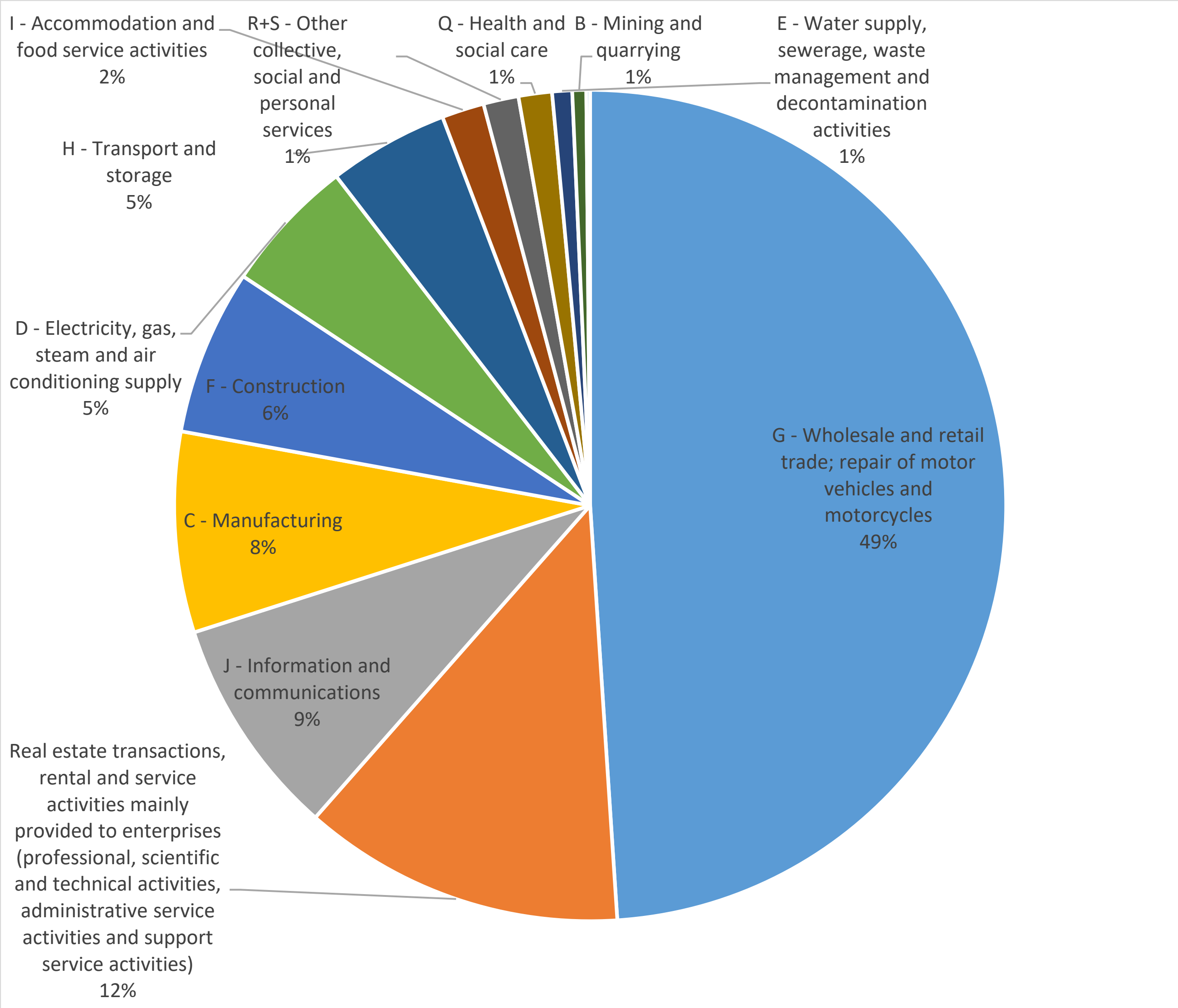


Source: The TEMPO Database of NIS

[28] Provisional data, per NIS TEMPO, on analysis drafting date

[29] In order to provide the most relevant and accurate image, considering inflation, values for 2008 -2016 were updated using the Consumer Price Index (expressed as percentages), per NIS (http://statistici.insse.ro/shop/?page=ipca1)

Figure 26 – Turnover in active local units, per national economy activities, at NACE Rev.2 section level, 2018[30]



Source: The TEMPO Database of NIS

The economy of the Capital City has a profile dominated by services; among these, knowledge-intensive services with a high added value contribute with over 20% to the total turnover and register increasing tendencies.

The analysis of the local economy structure, from the point of view of the turnover of active local units, shows a service-dominated economy, whose activities are contributing by over 79% to the Capital City's total turnover. Among these, wholesale and retail trade: repair of motor vehicles and motorcycles contributes 49% of the Bucharest City's turnover in 2018, and the turnover registered by this section has increase by 19.48% between 2008 and 2017[31]. It is followed by real estate transactions, rental services and service activities provided mainly to enterprises (professional, scientific and technical activities, administrative and support

[30] Provisional data, per NIS TEMPO, on analysis drafting date

[31] In order to provide the most relevant and accurate image, considering inflation, values for 2008 and 2012 were updated using the Consumer Price Index (expressed as percentages), per NIS (http://statistici.insse.ro/shop/?page=ipca1)

service activities, which contribute 12% of the Capital City's turnover, and which saw an increase of 27.15% between 2008 and 2018). The third place in terms of turnover is taken by the information and communications section, which contributes 9% of Bucharest City's turnover, and which saw an increase of 10.5% between 2008-2018, with a more intense increase over the last years (over 48% between 2012 and 2018). Thus, knowledge-intensive services with a high added value contribute with over 20% to the total turnover and register increasing trends.

The contribution of manufacturing to Bucharest City's turnover saw an descending trend, from 11% in 2008, to approx. 8% in 2018. Thus, in 2018, manufacturing was ranked 4th from the point of view of the contribution to the Capital City's turnover. At the same time, the turnover generated in this field decreased by 24.43% between 2008 and 2018, but registered an increase of 22.5% between 2012 and 2018.

Sector 1 registers the highest weight of turnover in Bucharest City, and the offices of the main companies registered in the Capital City are focused in the northern and central regions, with a preference for the Piața Victoriei – Iancu de Hunedoara and Aviației – Barbu Văcărescu areas.

The top of companies in the Capital City, by turnover, is concentrating 6 national top-10 companies and is dominated by one of the main actors in the field of fuel trade, retail trade (large commercial chains), or, in the case of OMV Petrom, extraction of crude petroleum, with the mention that Bucharest City is in fact hosting the administrative center, and extraction activities take place elsewhere in Romania. The very high economic indicators of OMV Petrom, associated to NACE 0610 – extraction of crude petroleum distort thus the data regarding the Capital City's economic profile and specialization, a situation that is also similar for other large and very large public and private companies. From the point of view of territorial turnover distribution, based on the balance of subunits (offices and lucrative facilities) in the Capital City, it is noted that this is focused mainly in Bucharest City's Sector 1, the latter registering a turnover twice the one of Sector 2, which is ranked next, and over 7 times higher than Sector 5, which ranks last. In respect to the field of activity, the top of Bucharest City subunits, by turnover, is dominated by wholesale and retail trade activities and by electricity, gas, steam and air conditioning supply.

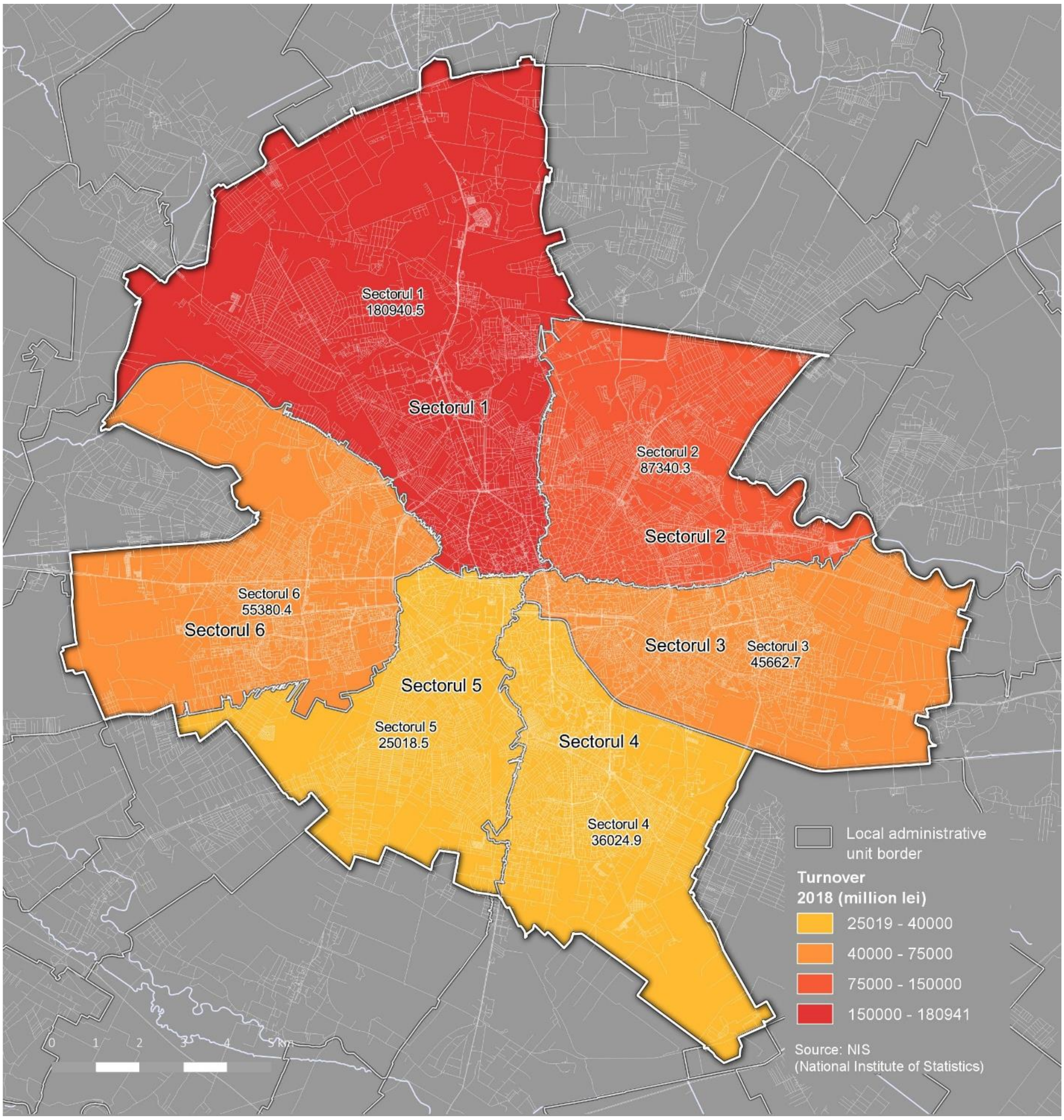
The territorial distribution of the top 50 companies in Bucharest City, by turnover (Figure 29) shows, in turn, a focusing of companies with a high turnover, in the northern and central part of the Capital City, with two areas standing out, namely Piața Victoriei – Iancu de Hunedoara and Aviației – Barbu Văcărescu.

Table 4 – Top 10 subunits in Bucharest City by turnover, 2018

NAME	DISTRICT	PARENT COMPANY	NACE	TURNOVER
SC BRITISH AMERICAN TOBACCO (ROMANIA) TRADING SRL	District 1	SC BRITISH AMERICAN TOBACCO (ROMANIA) TRADING SRL	4,635	9,534,748,854
SC ENGIE ROMANIA SA	District 4	SC ENGIE ROMANIA SA	3,523	6,066,962,460
EXECUTIV	District 1	SC SOCIETATEA DE PRODUCERE A ENERGIEI ELECTRICE IN	3,511	4,247,086,563
SC DANTE INTERNATIONAL	District 6	SC DANTE INTERNATIONAL SA	4,791	4,236,072,083
SC RENAULT COMMERCIAL ROUMANIE SRL	District 6	RENAULT COMMERCIAL ROUMANIE SRL	4,511	4,088,711,580
OMV PETROM MARKETING SRL	District 1	SC OMV PETROM MARKETING SRL	4,730	4,074,635,544
SC NIDERA ROMANIA SRL	District 1	COFCO INTERNATIONAL ROMANIA SRL	4,621	3,902,336,994
SAMSUNG ELECTRONICS ROMANIA SRL	District 1	SC SAMSUNG ELECTRONICS ROMANIA SRL	4,652	3,753,482,769
ADM ROMANIA TRADING SRL	District 2	SC ADM ROMANIA TRADING SRL	4,621	3,564,234,299
SC OMV PETROM GAS SRL	District 1	SC OMV PETROM GAS SRL	4,671	3,322,948,542

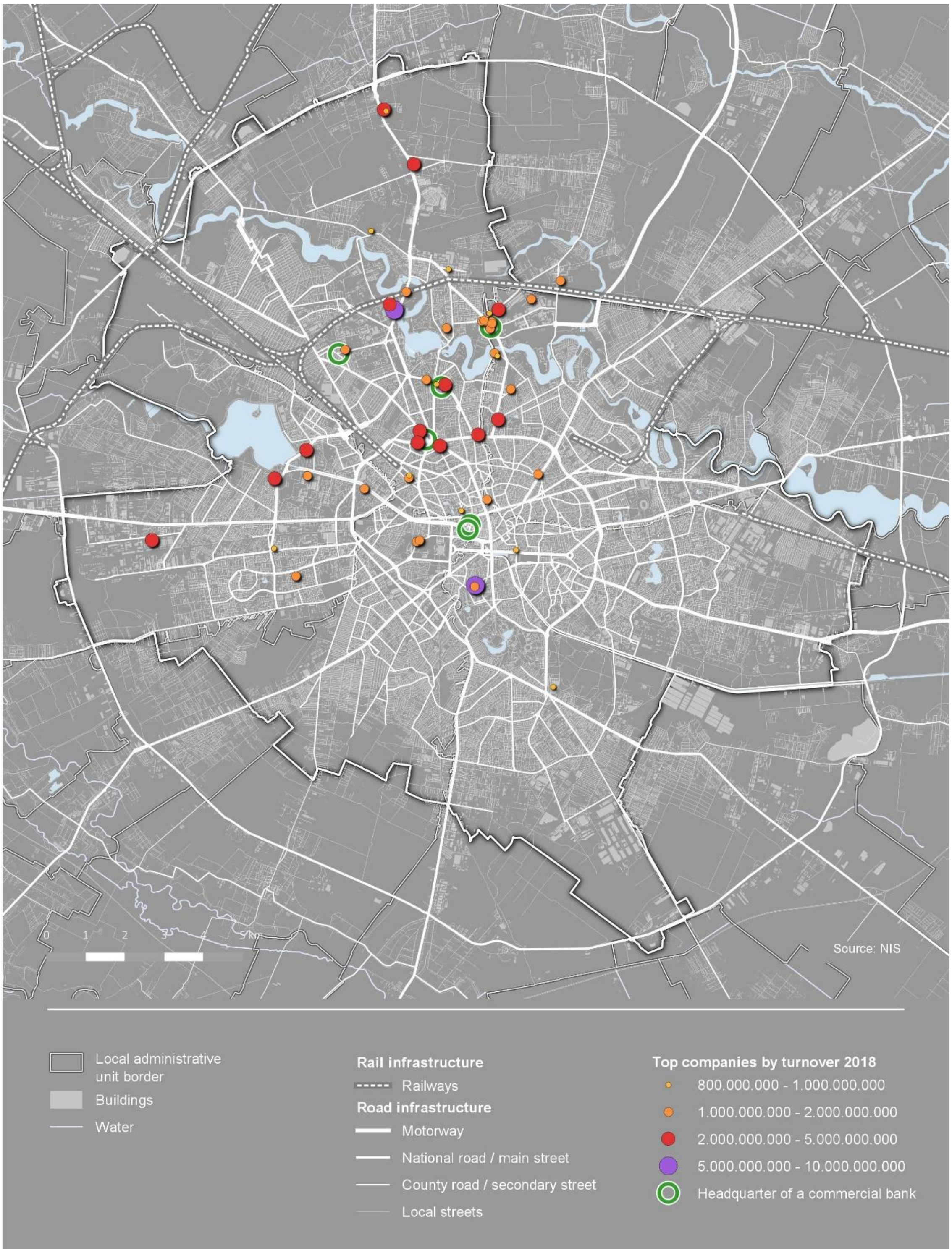
Source: NIS

Figure 27 – Turnover repartition by Bucharest City sectors, 2018



Source: Own processing based on NIS data

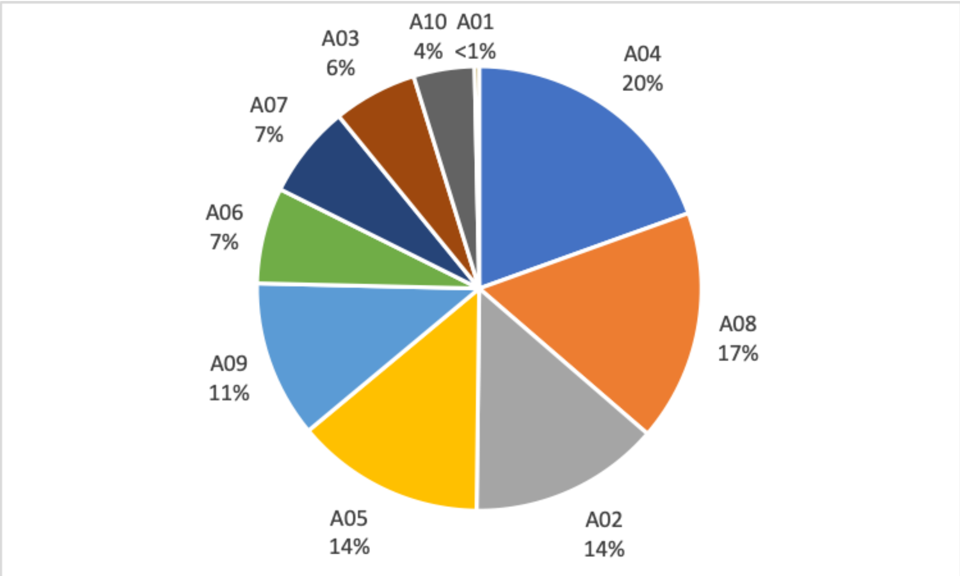
Figure 28 – Territorial distribution of top 50 subunits in Bucharest City, by turnover, 2018



Source: Own processing based on NIS data

In terms of the repartition of GVA per activity branches, the most recent available data (2017) shows that A04 – trade, hotels and restaurants had the greatest contribution to the composition of the GVA for Bucharest City (20%), closely followed by A08 – professional, scientific, and technical activities; administrative and support service activities (17%). Information and communications (A05) ranks third, contributing 14% of the total GVA (equal to A02 – mining and quarrying; manufacturing; electricity, gas, steam and air conditioning production and supply; water supply; sewerage; waste management), and registered a GVA increase by 41.9% between 2013 and 2017.

Figure 29 – Gross value added by activity branches in Bucharest City, 2017



Source: NIS, Regional national accounts (http://www.insse.ro/cms/ro/tags/conturi-nationale-regionale)

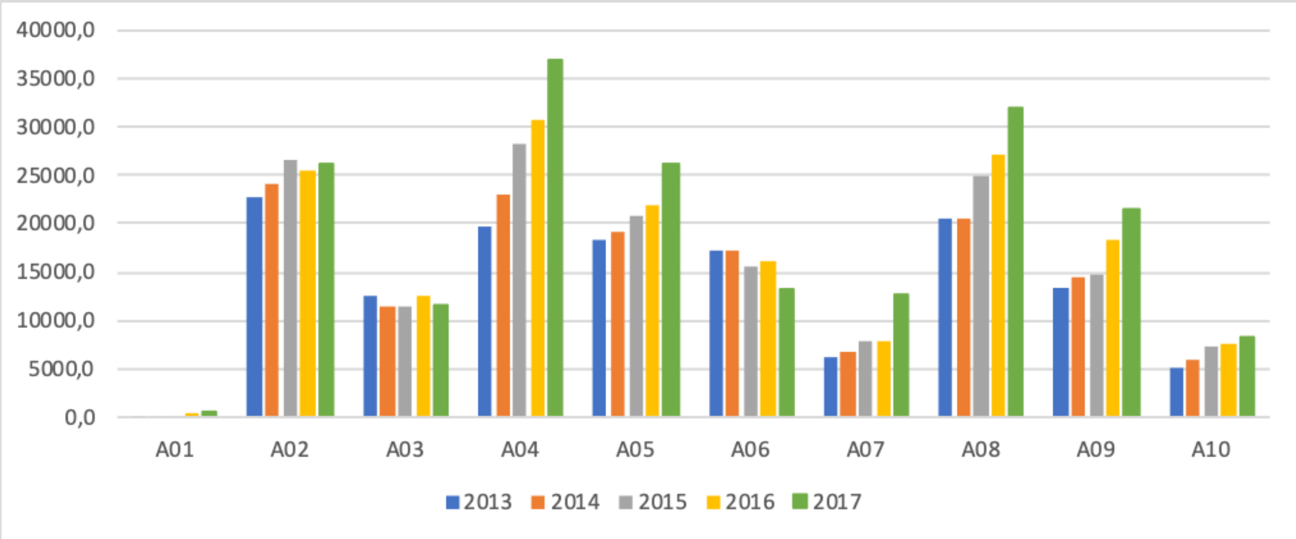
A01 Agriculture, forestry and fishing
A02 Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning production and supply; water supply; sewerage; waste management
A03 Construction
A04 Wholesale and retail trade; repair of motor vehicles and motorcycles; transport and storage; hotels and restaurants
A05 Information and communications
A06 Financial intermediations and insurance
A07 Real estate activities
A08 Professional, scientific and technical activities; administrative and support services activities
A09 Public administration and defense; compulsory social security; education; human health
A10 Arts, entertainment and recreation; repair of household goods and other services

The analysis of the evolution of gross value added by activity branches for Bucharest City (Figure 31) shows that the highest increase between 2013-2017[32] (104.58%) was recorded by branch A07 – Real estate activities, followed by A04 – Wholesale and retail trade; repair of motor vehicles and motorcycles; transport and storage; hotels and restaurants (86.23%), A09 – Public administration and defense; compulsory social security; education; human health (61.03%) and A10 – Arts, entertainment and recreation; repair of household goods

[32] Disregarding A01 – Agriculture, forestry and fishing, which registers low values and the lowest contribution to the total GVA of Bucharest City

and other services (59.31%). Two activity branches have recorded a negative tendency between 2013 and 2017, namely A06 – Financial intermediations and insurance (-23.06%), and A03 – Construction (-7.59%).

Figure 30 – Evolution of gross value added by activity branches in Bucharest City, between 2013-2017 (million RON – current prices)



Source: NIS, Regional national accounts (http://www.insse.ro/cms/ro/tags/conturi-nationale-regionale)

Overall, services saw a GVA increase by 50% between 2013 and 2017, and a 6 percent increase of the Capital's total GVA contribution, from 74% to 80%.

In respect to the evolution of the contribution to the total GVA for Bucharest City between 2013-2017, the highest increases were registered by A04 – Wholesale and retail trade; repair of motor vehicles and motorcycles; transport and storage; hotels and restaurants, whose contribution increased by 6 percent, A07 – Real estate activities, and A08 – Professional, scientific and technical activities; administrative and support services activities, both with an increase of 2 percent. On the other hand, A06 – Financial intermediations and insurance, has reduced its contribution to the Bucharest City total GVA, by 6 percent during the analyzed period (from 13% to 7%). The other two activity branches whose contribution to the total GVA has decreased over the analyzed period, each by 3 percent, are A02 – Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning production and supply; water supply; sewerage; waste management, and A03 – Construction.

Evolution of net investment in active local units show a preference of industry and construction for investment outside Bucharest City, in the peri-urban area.

The analysis of net investment[33] in the active local units in Bucharest City, by national economy activities, shows a negative evolution over the analyzed period[34], namely a decrease of 27.43% in the total volume of

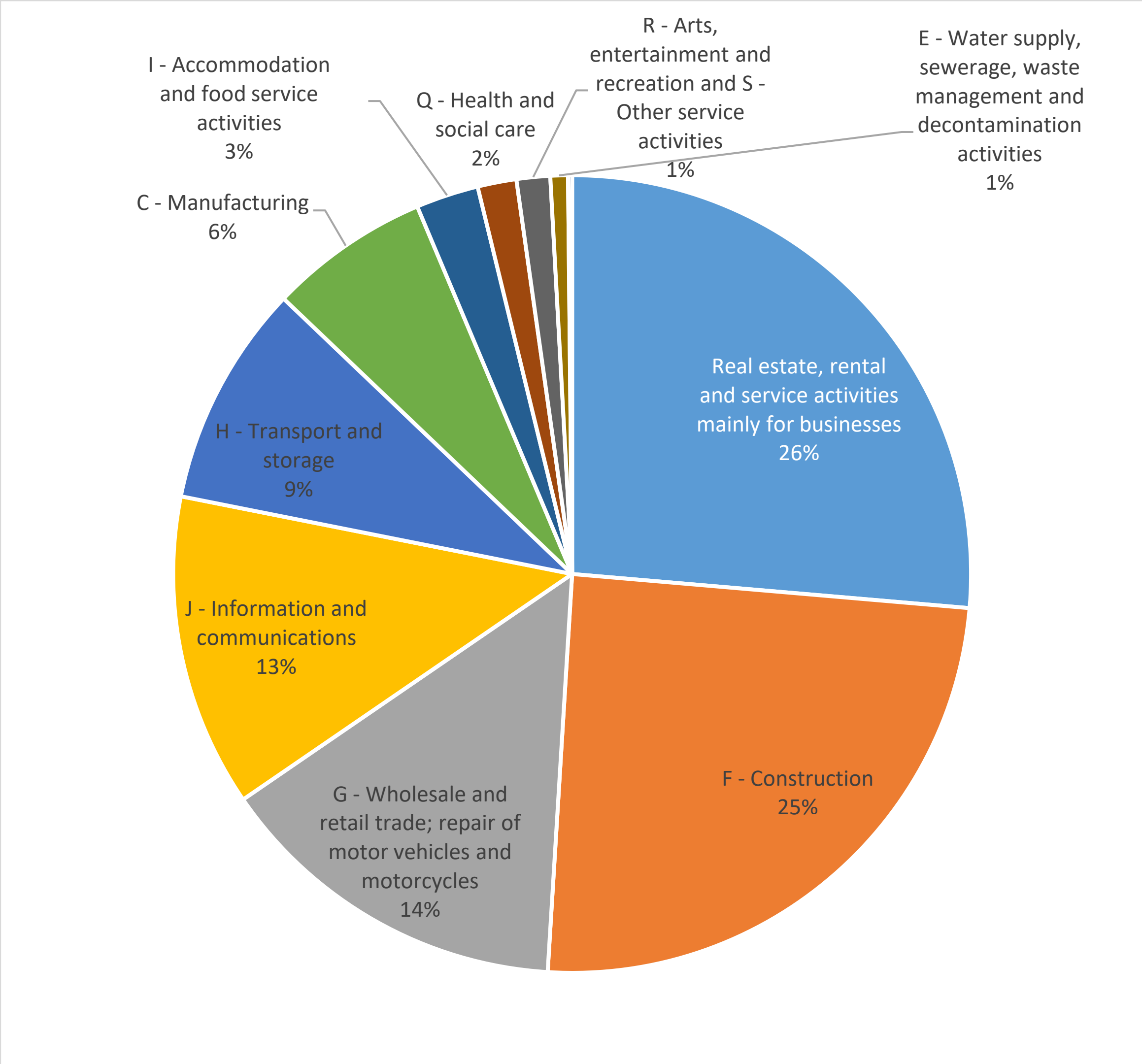
[33] Net investment represents the expenses made for construction, installation and assembly works, for the purchase of equipment, means of transport, other expenses meant to create new fixed assets, for the development, upgrade, reconstruction of existing ones, as well as the value of services related to the ownership transfer of existing fixed assets and of land (notarial fees, mark-ups, transportation expenses, loading/unloading expenses), etc.

[34] In order to provide the most relevant and accurate image, considering inflation, values for 2008 and 2012 were updated using the Consumer Price Index (expressed as percentages), per NIS (http://statistici.insse.ro/shop/?page=ipca1)

investment between 2008 and 2018[35] and a negative evolution in 10 of the 11 analyzed sections, the only field with a positive evolution between 2008 and 2018 being that of health and social care.

Nevertheless, if we analyze the evolution between 2012 and 2018 of ALU net investment, we can see a slower decrease, of 8.18% in the volume of investment and a less favorable situation at NACE section level.

Figure 31 – Net investment in active local units in Bucharest City, per national economy activities, at NACE Rev.2 section level, 2008-2011



Source: The TEMPO Database of NIS

As compared to 2008, the most significant differences (positive and negative) were registered in the fields of wholesale and retail trade: repair of motor vehicles and motorcycles and in manufacturing, which have decreased their weight in the total net investment in active local units in the Capital City, by 6 and 4 percent, respectively, and real estate transactions, rentals and service activities provided mainly to enterprises, whose weight out of the total has seen a significant increase, by 6 percent. It should be noted that knowledge-

[35] The analysis does not include sections B – Mining and quarrying and D – Electricity, gas, steam and air conditioning supply, where data has been confidential since 2013.

intensive services and services with high added value have brought together approximately 41% of the net investment in the active local units in Bucharest City in 2017, 7 percent more than in 2008.

Office real estate investment is concentrated in Sectors 1 and 2, in the central and northern areas, but the opening of new office spaces in the western side of the Capital City is also expected in 2020.

We can find an important concentration in Sector 1 and Sector 2, but also the development of new office spaces, for instance Preciziei, where Renault Bucharest Connected opened in 2019, the new main offices of Groupe Renault România (hosting over 3,200 employees), Grozăvești-Orhideea, Expoziției and Lujerului-Militari, where new spaces are due to open in 2020.

Floreasca-Barbu Văcărescu is the most attractive and most effervescent office area in the country, with the new CBD (central business district) of the Capital City forming here, by the transformation and adaptation of a former mainly industrial area.

In the Floreasca-Barbu Văcărescu area, the most attractive and most effervescent office area in the country, the new CBD (central business district) of the Capital City is forming here, creating an illustrative example for the transformation and adaptation of a former mainly industrial area, to the needs of a service-based metropolitan economy. The area has registered in 2018 one of the lowest vacancy rates in Romania, namely 2.7%, and rent was one of the highest – 14-17 EUR/sq.m. Buildings are 90% recent ones, built over the last 10 years, and the office offer reaches 430,000 sq.m., the area having the most important concentration of office buildings in Bucharest City. At the same time, the area is home to some of the tallest office buildings in Romania, such as Sky Tower or Globalworth Tower. The location criterion continues to be carry a lot of weight in the investment decision, and new offices are expected to be opened in 2020 (e.g. in the Barbu Văcărescu area). It is estimated that, over the next years, the office space will exceed 500,000 sq.m. in the Calea Floreasca-Barbu Văcărescu area. Taking into account newly-opened office spaces or those due to open in 2019-2020 (Oregon Park – 25,000 sq.m., Equilibrium I – 19,000 sq.m., Zone 313 – 5,800 sq.m.), initiatives to attract investors should intensify. At the same time, in 2019, other project with generous leasable areas were started or were due to start: Globalworth Square – 27,000 sq.m., One Verdi Park – 20,000 sq.m. or Green Court D – 16,000 sq.m.

Another real estate pole hosting many investors is grouping together Piața Victoriei – Aviatorilor – Charles de Gaulle Square. The office buildings are hosting mainly company headquarters from sectors such as banking, consultancy, pharma. The area is very attractive, reaching a vacancy rate of 2.5% in 2018, with an office stock of 421,000 sq.m. The area is home to important companies, such as: Orange, BRD, First Bank, OTP Bank, Mastercard, EY, Deloitte, Hidroelectrica or Fitbit. A few examples of important office buildings include: Europe House – 22,000 sq.m., America House – 44,000 sq.m., Charles de Gaulle Plaza – 23,000 sq.m., Tower Center International – 31,000 sq.m., Crystal Tower – 23,000 sq.m., Metropolis Center – 16,500 sq.m., Ștefan cel Mare Office – 8,000 sq.m. etc. The Centre – West hub is also an attractive area for office buildings.

Bucharest City is ranked second in the world in the top 3 cities with high quality office buildings holding 'green' certifications, which could contribute to positioning the Capital City on the international market and to attracting foreign investment.

With 71% of the office buildings holding LEED, BREEM or similar local certifications, Bucharest City ranks second in the world in top 3 cities with high quality office buildings holding 'green' certifications (Cushman & Wakefield[36]), after London, and before Sydney. Thus, the Capital City's relatively new office buildings, with extensive leasable areas and a high quality, can contribute to its positioning on the international market and

[36]Cushman & Wakefield.2019, Winning in Growth Cities 2019/2020 (Global Capital Markets Report),

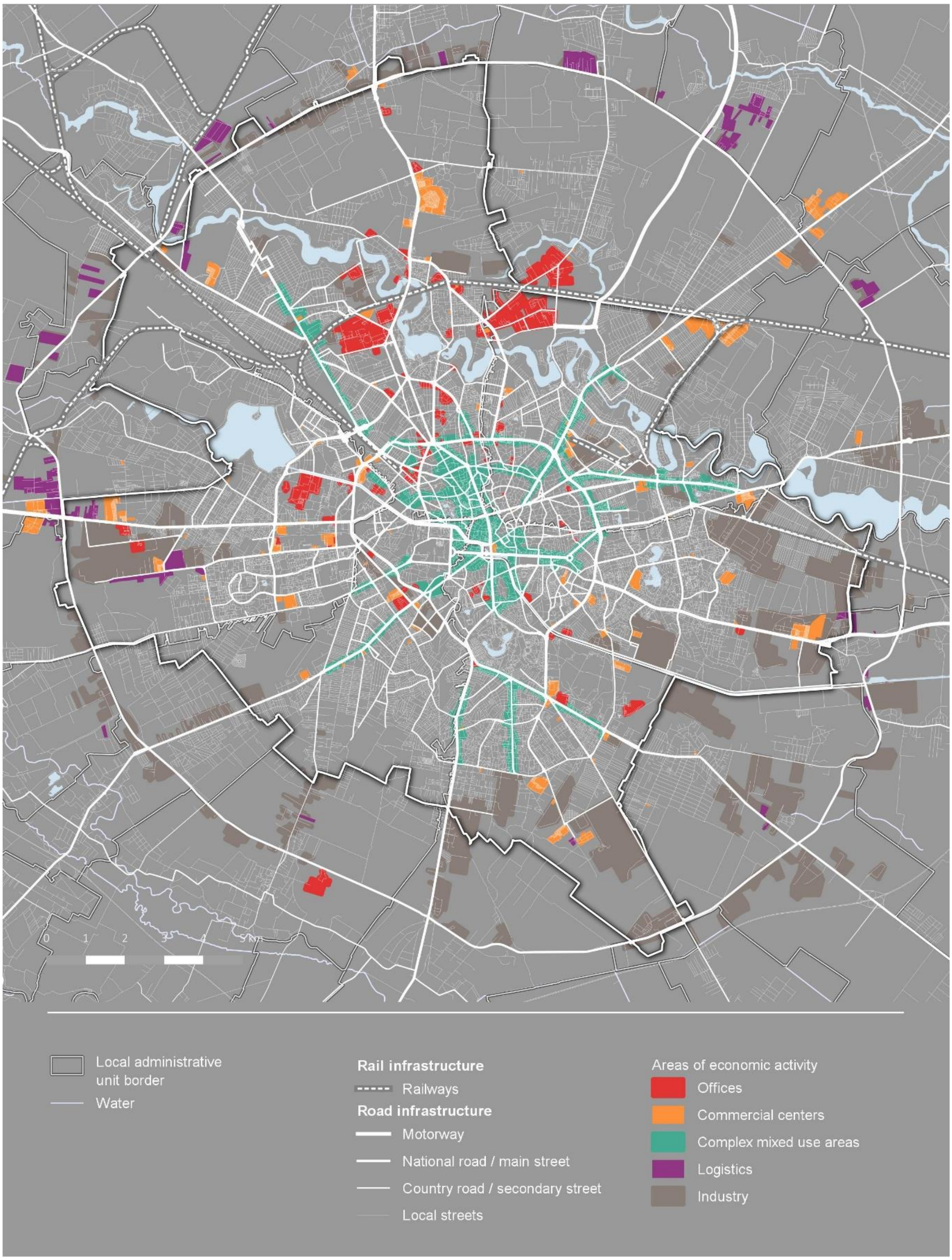
to attracting foreign investment. In this context, a sustained territorial marketing is required, on the one hand, as well as a coherent urban and land policy, which should facilitate the development of economic activities areas. Possible directions in this respect consist of creating urbanism plans for areas with a potential for economic development, the inventory of unused industrial platforms/land, which can be converted as service areas or mixed areas (e.g. housing and offices), or the mapping and endowment of lands fit for attracting investment. At the same time, the urban and real estate development in recent years has shown that infrastructure development can attract investment to neighboring land (e.g. The Basarab Bridge or The Mark Tower development in the area Str. Buzești-Calea Griviței), a fact that should be considered in urban planning.

Decommissioned industrial platforms and areas, as well as unused land represent an important resource for the economic development of the Capital City, which needs a strategic approach.

An important resource in this respect has been identified in the Antiaeriană area[37], in the south part of Sector 6, at the meeting of the Rahova, Ghencea, Pelungirea Ghencea neighborhoods and of the town of Bragadiru. The land has an area of approx. 110 ha and could become a development driver for the West and South-West area of the Capital City, by staged interventions which would create a mixed area, with accessible housing and related public services (education, healthcare, public spaces, trade) and an office area which, in time, it is estimated that it could develop in a similar manner to the Floreasca-Barbu Văcărescu area, should local public authorities (the Sector 5 Municipality and the Bucharest Municipality) invest in the development of the area's transport infrastructure. The initiative of developing this area was initiated by the Sector 5 Municipality, under the name of Proiectul Centenarului [38] (Centennial Project), with two development scenarios being subsequently developed with the assistance of the World Bank[39]. Considering the strategic character of landmark project of this initiative, dialogue between the two municipalities is needed to plan and to operationalize interventions.

[37] World Bank.2019, Key Urban Interventions for Raising the Attractiveness of the Antiaeriana Area
[38] The Bucharest Centenary Project
[39] Idem [43]

Figure 32 – Main economic activity areas in Bucharest City



Source: own processing

3. FOREIGN INVESTMENT AND FOREIGN TRADE

3.1. Foreign investment

Bucharest City is the most attractive urban center in Romania for foreign investors, being seen as the main driver of national economy, and being ranked first on most economic indicators.

At the same time, the Capital City has a special potential for digital entrepreneurship and jobs of the future, which do not require physical in-office presence.

A proof of health for a business ecosystem is entrepreneurial effervescence, measures by the development level of start-ups, especially tech, digital ones, as these show the highest degree of innovation and competitiveness, especially on external markets, and absorb trained human capital, with initiative and creativity. According to the European Digital City Index[40], Bucharest ranks 52nd of the 60 analysed cities, from the point of view of the ecosystem dedicated to digital entrepreneurship. It loses points mainly on indicators related to capital, culture and market. It may be surprising, but it is ranked first from the point of view of digital infrastructure, as it has good quality broadband. But this is under-used, as online activity is lower as compared to other European cities. The increase rate for the use of digital infrastructure is high, which may suggest that the business environment for digital entrepreneurs will see a significant improvement in the near future. This perspective is also supported by the fact that Bucharest ranked 1st in the world, in 2020, according to the Remote Business Index[41], outclassing a series of American cities, such as Houston, Las Vegas and Atlanta, but also Central and East European cities, such as Budapest (5th place), Kiev (8th place) or Warsaw (10th place). Bucharest leads the top due to the highest weight of working places allowing remote work (4.33%), Internet connection high speed (52 Mbps, 4th place) and cost of living (421 £/month, 7th place). Other analyzed aspects were the availability of catering/delivery services and the cost of a laptop.

Bucharest is endowed with a high quality digital infrastructure, and, together with the qualified human capital, these represent 2 attractiveness characteristics that are important to investors.

The "techosystem" is receiving increasingly more appreciation and attention, especially considering that IT&C has come to contribute over 6% to the national GDP. This aspect has led to an increase in awareness for decision-making key actors, who are developing increasingly more support programs for this target group. Thus, at the present, there is a large number of acceleration and pre-acceleration programs, such as: MVP Academy, How to Web Startup Spotlight, Innovation Labs or RICAP.

”Barometrul Bucureștiului Digital” (The Digital Bucharest Barometer) highlights some of the Capital's competitive advantages, which are very interesting, particularly for foreign investors:

- Digital infrastructure – indicator consisting of the download/upload speed, the internet connection cost, mobile download/upload speed, internet fiber availability. The position occupied is 1/60, leading in the following chapters: download/upload speed and internet connection cost. Around these statistics, the Capital could easily position and cam build its strategy of promoting and attracting foreign investors.
- Skills – workforce costs, access to graduates, access to IT&C employees, access to employees in support positions, English language skills, access to training to develop a business. The position occupied is 8/60. Abundant human capital is usually a very important factor in making the decision of investing in a certain location. Bucharest offers competitive salaries, especially to programmers, web

[40] https://digitalcityindex.eu/

[41] https://broadbanddeals.co.uk/remote-working/

designers, etc. (place 11/60), but is also well-positioned when it comes to variables related to access to IT&C employees (place 7/60) and to the availability of trainings to start a business (place 20/60).

Non-digital infrastructure (accessibility and mobility in particular), the living standard and access to culture, the quality and intensity of research and development and the local demand for online services are the main aspect to be improved, so that the Capital should be more attractive for digital investment.

According to the same Barometer, Bucharest City has another few characteristics that could be improved and which could attract even more investors, once solved:

- Non-digital infrastructure – airport access, commuting, rail access. The position occupied is 38/60. The best score (8/60) is registered for the commuting-related variable – *the average commute time and distance from the workplace*.
- Mentorship – indicator consisting of the following variables: networking, access to acceleration programs, assistance availability for start-ups and early stage. The position occupied is 43/60, similar to Hamburg, with good results, especially in the number of accelerators per Bucharest population.
- The business environment - is an indicator consisting of the following variables: ease of doing business, cost of office spaces, data access. The position occupied is 47/60 – Bucharest is doing well in terms of rents, meaning that the price is competitive. It is places just as well as Bordeaux, Tallinn or Valencia.
- Entrepreneurial culture – indicator consisting of the following variables: availability to take risks, multicultural diversity, online collaboration, new business density, trust, absence of negative perception regarding entrepreneurship, digital involvement in the start-up ecosystem, successful digital start-ups. The position occupied is 50/60, with the worst results in successful digital start-ups (19/60), referring to the number of start-ups assessed to worth billions of dollars (unicorns).
- Knowledge dissemination – an indicator consisting of the quality of research institutions (number of research institutions in top 200 worldwide), R&D intensity (R&D expenses/inhabitant). The position occupied is 50/60.
- Access to capital – is an indicator consisting of the availability of early stage financing, crowdfunding and business angels financing. The position occupied by the Capital is 52/60 – crowdfunding campaigns seem to work best, ranking Bucharest 33/52. The big issue is the lack of start-up and early-stage financing.
- Lifestyle – indicator consisting of the standard of living and access to culture. The position held is 59/60.
- Market – is an indicator consisting of the digital market size, online transactions, local demand for digital services, mobile market size, increase of online transactions. The position occupied is 60/60, from the point of view of variables referring to online transactions and to the local demand for online services, Bucharest is ranked last.

Companies are attracted by the Capital City, because here is where they find a well-prepared talent pool, with necessary skills and technical competencies, necessary especially in IT&C.

Bucharest is Romania's largest technological center, also holding the most diverse skills required on the job market by IT&C companies. “The Capital's capital” in IT is based on 25,296 programmers, 5,773 QA engineers, 2,865 business analysts, 2,476 project managers. Competition for talents is extremely high, but there is still in increased interest of foreign companies to open new R&D centers or IT service centers in Bucharest City. According to the study carried out by Brainspotting[42], most localization requests are coming from companies in the USA, UK and Germany. Besides, there is also an increased interest for the Bucharest market from the French, Canadian, Irish, Swiss or Dutch companies. At the beginning of 2019, according to the same study, ”IT Talent Map 2019”, there were serious employment requests for the next 2-3 years from companies such as:

[42] IT Talent Map 2019, Brainspotting

London Stock Exchange, Viavi Solutions, Verint Systems Romania, Edenred Digital, Delphi Technologies, CGI, Molson Coors GBS, Crowdstrike, Taxify, Zone Digital, SonicWall, etc. Most open positions were for C++, Java, .NET, Frontend development, Cloud, Security, Big Data.

> *According to the survey of Bucharest investor, the main reason why foreign capital companies are choosing Bucharest is the quality of the workforce (24% of respondents), and, in the case of mixed-capital companies, it is the access to the national outlet (21% of respondents).*

Bucharest can capitalize on the opportunities provided by the wave of new industries and to position itself strategically in the top preferences of investors in these fields.

According to the study "EY European Investment Monitor 2019"[43], Romania is recording one of the greatest decreases of direct foreign investment projects in 2018 as compared to 2017 – a decrease by 13%, similar to the one in Germany, UK, Hungary, but not as big as in the Czech Republic (-51%), Sweden (-32%) or Portugal (-22%).

From an investment perspective, Europe remains attractive for investors in sales and marketing, manufacturing, logistics, R&D, etc. Most of the investors responding to the E&Y study wish to invest in Europe in order to have access to a new market and to new consumers (70%). Investors are betting on the following sectors with a high increase over the next years: digital economy (39%), cleantech (25%), energy and utilities (21%) biotechnologies and pharma (19%), automotive (17%), business services (17%), logistics and distribution (15%), consumer goods (12%), real estate and construction (7%). Bucharest has a difficult battle to fight against Paris, London, Berlin, Frankfurt, Amsterdam, Munich, Madrid, Warsaw, Barcelona, which lead the top of preferences of investors responding to the "EY Attractiveness Survey Europe June 2019" survey. It is difficult for European cities to make their presence felt in the top cities to host the next "technology colossus", London ranking amid the top 5, followed by Berlin in the top 7.

Bucharest City has a leading position in the national classification from the point of view of attractiveness to foreign investors, considering the value of subscribed capital and the number of companies with foreign capital.

According to the study made by the National Bank of Romania, "Investițiile străine directe în România în anul 2018" (*Direct foreign investment in Romania in 2018*), in the Bucharest-Ilfov region, at the end of 2018, the value of foreign direct investment (FDI) was EUR 49,250 million, namely 60.7% of the total FDI. They were located by the registered office of direct investment enterprises, which is not always the place where the economic activity is carried out.

According to the same study, Bucharest attracted FDIs worth EUR 41,273 million, which is 56% of the total FDI, 6.5% more as compared to 2017. At the beginning of 2018, the share capital subscribed by foreigners was EUR 24.3 billion, placing the Capital city first, with a FDI/capita value of EUR 11,552 k. [44]

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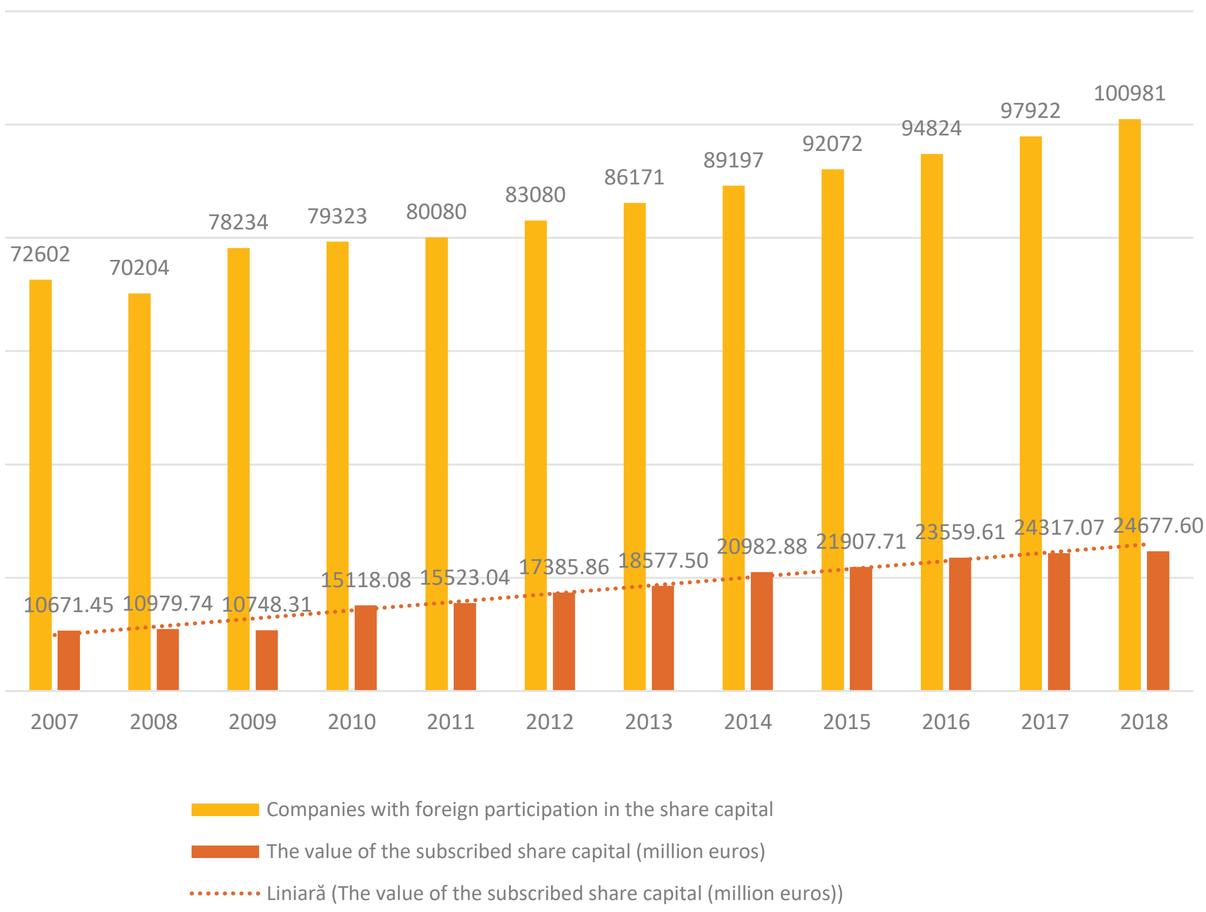
[43] https://www.ey.com/Publication/vwLUAssets/ey-europe-attractiveness-survey-2019/$File/ey-europe-attractiveness-survey-2019.pdf

[44] An important methodological parenthesis is the following: the analysis of the Capital City's economy dimension only includes what is produced locally. For example, the calculations and analysis of the Capital City's economy dimension

From a sectoral perspective, foreign direct investment cumulated at national level are oriented mainly towards manufacturing (30.9% of the total FDI – with important shares in manufacturing of means of transport, metal processing, food, drinks etc.), construction and real estate activities (16.8%) and trade (15.8%).

At the end of 2017, in Bucharest City there were registered, per the records of the National Trade Register Office, 97,922 companies with foreign equity ownership, with a total value of the subscribed capital of over EUR 24 billion (55% of the total registered in Romania). Bucharest City is ranked 1st in Romania in terms of the number of companies with foreign capital and of subscribed capital value. As compared to 2007, the number of companies with foreign capital has increased by 47%, and the share capital has tripled. In 2018, their number reached 100,981 companies with foreign equity ownership, and a total subscribed capital value slightly higher than in 2017 (more precisely, by 1%).

Figure 33 – Foreign direct investment dynamics in Bucharest City, between 2007 and 2018



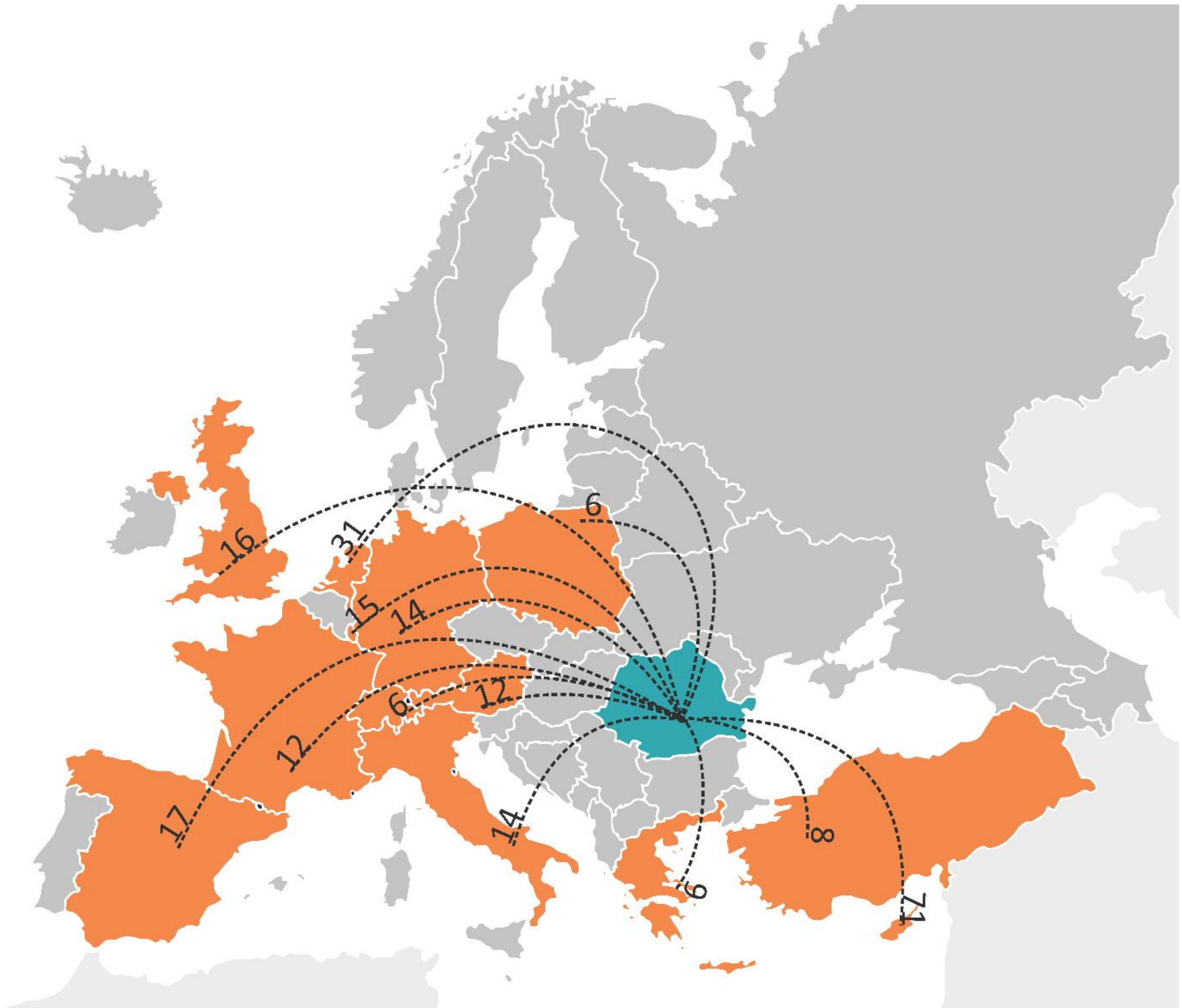
Source: National Trade Register Office (NTRO), 2019

will include only the activity of the main office, for those companies which have their headquarters in the Capital City, but have factories in other counties.

The Capital City is preferred mostly by investors from Cyprus, the Netherlands, Spain, Great Britain, Luxembourg, Germany, Italy, Austria or France, and especially for developing trade activities.

According to the NTRO, most foreign capital companies registered in 2018 in Bucharest City are coming from: Cyprus – 71, The Netherlands – 31, Spain – 17, United Kingdom – 16, Luxembourg – 15, Germany and Italy – 14, Austria and France – 12, Greece – 9, Turkey – 8 companies, Poland and Switzerland – 6.

Figure 34 – Originating countries or FDI flows to Bucharest City



Source: Own processing based on NTRO data

According to estimates, the subscribed foreign capital value stands at approximately 36% of Bucharest City's GDP.

According to the NTRO, the total value of the foreign capital recorded until October 2019 represents approximately 36 of Bucharest City's Gross Domestic Product, value reported against a GDP estimate for 2019, according to the National Commission for Strategy and Prognosis.

Overall, the statistical situation, by country, of the legal entities headquartered in Bucharest City and having a foreign equity ownership, shows:

1. The Netherlands – over RON 18 billion generated by 1349 legal entities;
2. Cyprus – over RON 9.6 billion generated by 3487 legal entities;

3. Austria – over RON 9.4 billion generated by 879 legal entities;
4. Greece – over RON 6.6 billion generated by 2230 legal entities;
5. Italy – over RON 6.4 billion generated by 5836 legal entities;
6. Spain – over RON 6 billion generated by 1450 legal entities;
7. Germany – over RON 4.3 billion generated by 1913 legal entities;
8. The Czech Republic – over RON 4.2 billion generated by 280 legal entities;
9. France – over RON 3.9 billion generated by 1905 legal entities;
10. Hungary – over RON 3.8 billion generated by 552 legal entities.

The number of enterprises with foreign capital in Bucharest City has increased by 6% between 2014-2018, and the foreign capital value by 12% over the same period of reference, while, on a national level, the number of enterprises with foreign capital has decreased by 8.6%, and the value of foreign capital has increased by 26%.

Between 2014-2018, the statistics referring to the number of newly-registered companies with foreign equity ownership and to the value of new inputs of subscribed foreign capital upon registration shows a small increase for the two indicators:

Figure 35 – Dynamics of the number of newly-registered companies with foreign equity ownership and the value of new subscribed foreign capital input upon registration in Bucharest City, between 2014-2018

Source: National Trade Register Office (NTRO), 2019

According to the NTRO, the top 10 companies with registered offices in Bucharest City, from the point of view of foreign ownership to the subscribed capital, include the following:

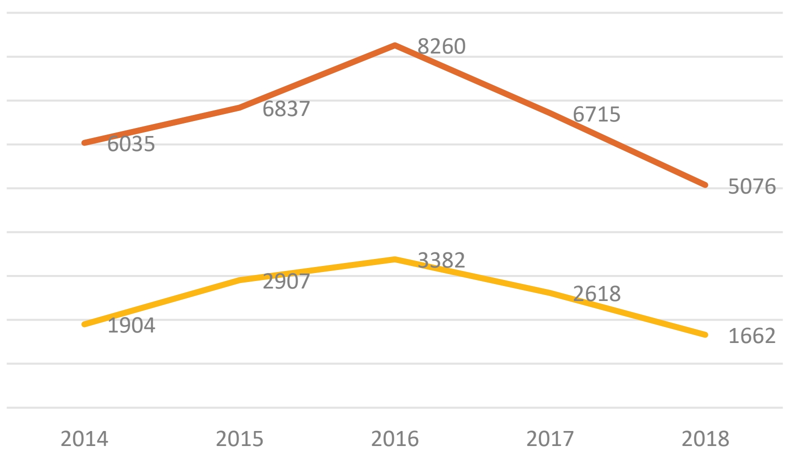
Table 5 – Top 10 companies by foreign ownership to the subscribed capital

Company	Location	Foreign capital value in October 2019 – RON million	Share of foreign ownership in the total capital – %	Country of origin
TELEKOM ROMANIA MOBILE COMMUNICATIONS SA	District 6	3,718	70	Greece
ENEL GREEN POWER ROMANIA SRL	District 3	2,930	100	Italy
OMV PETROM SA	District 1	2,889	51	Austria
TOMIS TEAM S.A.	District 1	2,180	100	Czech Republic/Netherlands
OTP BANK ROMANIA SA	District 1	1,829	100	Hungary
OVIDIU DEVELOPMENT SRL	District 1	1,816	100	Netherlands/Czech Republic
BANCA COMERCIALA ROMANA SA	District 3	1,623	99.87	Austria
KAUFLAND ROMANIA SCS	District 2	1,562	99.9	Germany
PI PSY TECHNO S.R.L.	District 1	1,487	90	Hungary
GARANTI BANK SA	District 2	1,208	100	The Netherlands

Source: National Trade Register Office (NTRO), 2019

In terms of number of de-registrations of companies with foreign equity ownership, between 2014-2018 the situation varies per year, registering a descending tendency as of 2016:

Figure 36 – Dynamics of de-registrations of companies with foreign equity ownership in Bucharest City and in Romanian between 2014-2018



Source: National Trade Register Office (NTRO), 2019

2018 saw the registration of 2,389 companies with foreign equity ownership, but, at the same time, 1,662 companies with foreign equity ownership were deregistered, which means these companies did not manage to make the business work and to gain a significant market share in Bucharest or on the Romanian market, and ended their operations. Another explanation for the increased number of de-registrations related to the drop in consumption, in general, or in the entrepreneurs' trust in the local economy. The in-out ratio or private environment effervescence versus foreign capital companies ending their operations is higher for 2018 –

1.43%. In January 2019, the most important de-registrations of foreign companies were Bel Rom Patru SRL and Militari Property Management SRL, both active in the real estate area.

Top 10 most important foreign investors in Bucharest City, by turnover and number of employees, are shown below, and the extended list can be consulted in Appendix 3.

Table 6 – Top 10 foreign investors in Bucharest City, by turnover and number of employees, 2018, by administrative sectors

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
OMV PETROM	District 1	Oil and natural gas extraction and processing	Austria	17,817	12,498
KAUFLAND ROMANIA SCS	District 2	Retail of food and non-food products	Germany	10,889	12,374
BRITISH AMERICAN TOBACCO TRADING	District 1	Cigarette production	India/Germany	9,534	816
LUKOIL ROMANIA	District 1	Trade in oil products	Netherlands through Lukoil Europe Holdings BV	7,519	2,547
CARREFOUR ROMANIA	District 2	Retail of food and non-food products	France	7,315	9,997
ORANGE ROMANIA	District 1	Telecommunications	France/Belgium	5,744	2,366
MEGA IMAGE	District 6	Retail of food and non-food products	Belgium/Netherlands	5,730	9,741
AUCHAN ROMANIA	District 6	Retail of food and non-food products	France/Netherlands	5,405	10,123
METRO CASH & CARRY ROMANIA	District 3	Wholesale of food and non-food products	Germany/Austria/Netherlands	5,303	3,679
SAMSUNG ELECTRONICS ROMANIA	District 1	Wholesale of IT&C products	The Netherlands / South Korea	4,575	208

Source: NTRO, Statistical Syntheses, and the Ministry of Public Finance, 2019

Many of the above-mentioned companies have their main offices in Bucharest, but their manufacturing units are in other counties in Romania.

It is worth mentioning that there are many internationally-renowned FDIs in the IT&C sector present in Bucharest City, including: Amazon (USA), Avira (Germany/USA), Electronic Arts (USA/UK/Netherlands), Gameloft (France), Optaros (USA) etc.

The presence of foreign companies on the Capital City market does not cancel the necessity to support and develop Bucharest companies on foreign markets.

The competition between foreign companies and local capital ones is fierce, but the latter's ascension in remarkable. Some experts consider this success to be due to the strategic vision and agility of Romanian entrepreneurs, but also on the short business decision chain.

Unfortunately, investments by Romanian companies abroad are very low, at just EUR 737 million, which places Romania on the last place in the region, according to a NBR study carried out on UNCTAD data. For instance, there are 1,200 Polish companies in Romania, but just 28 Romanian companies in Poland.

This situation mostly occurs against a lack of an instrument of economic representation on foreign markets, which should promote the interests of companies and provide information on target markets. At the level of individual companies, the lack of managers' vision or of instruments to assist the data-driven decision-making process, for instance, endanger the companies' strategic development and presence on foreign markets. Nevertheless, we can still provide some examples of Bucharest City companies with brands that have made it to the foreign markets: the Bitdefender technology, used by half a billion people on 130 worldwide markets, the Musette shoes brand, I.D. Sarrieri, manufacturing lingerie, the RoStar biscuits, etc.

According to the Bucharest investors' survey, only 17% of respondent companies have European sales (14%) or international sales (American – 1%, Asian 1%, other markets – 1%). The main markets (over 10% of respondents each) are: Germany (15%), France (14%), Italy (11%) and England (10%).

Most respondents have national sales (54%) – which is due to the sampling method, but also to the concentration of large and very large companies in the Capital City, followed by those with regional/local sales (34%).

In terms of competition, it is felt especially by companies with Romanian capital, 41% of the respondents in this category assessing the competition as high, and 37% as average. At the opposite pole, 35% of mixed-capital companies and 39% of foreign-capital companies reported a high competition, namely 48%, and 50% reported an average competition.

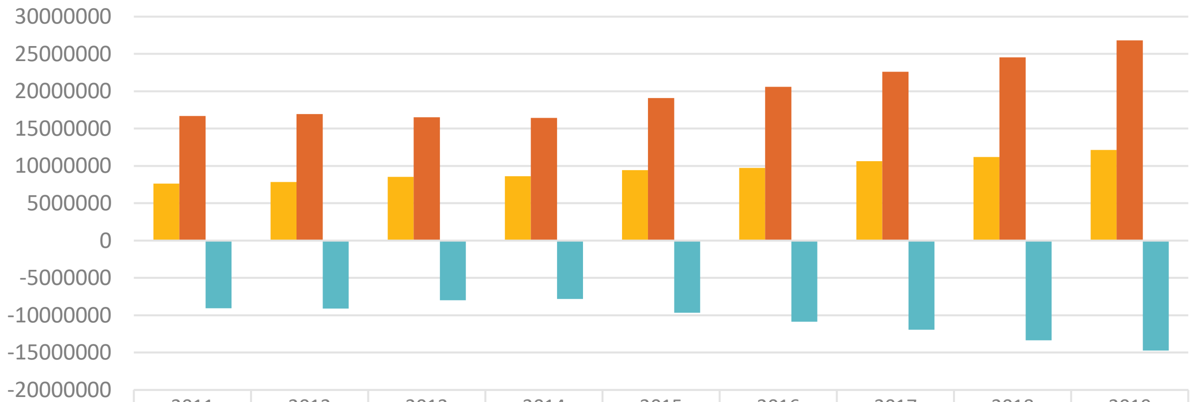
3.2. Foreign trade

On a national level, the highest exporter is Automobile Dacia, and the clusterization of the activity of automotive parts manufacturing around Ford and Dacia makes it a champion of national exports. Where, in the past, Romanian economy was dominated in exports by low added-value products, such as textiles, the situation has changed and we are witnessing an economic progress, with a trade surplus in medium-high tech products. At the same time, service exports in Romania have seen a significant increase, especially those in transports or IT&C, with the largest companies in this field being located in Bucharest City.

Bucharest City leads the top of national exports, and their value has increased by nearly 50% during the analyzed interval.

Bucharest City's foreign trade activity consisted, in 2019, of FOB exports[45] of approximately EUR 12 billion, and, respectively, of imports of approximately EUR 27 billion. Therefore, Bucharest City's trade balance is negative over the analyzed interval, although it leads the top national exports, contributing by 17.6%, followed by Timiș County, with a contribution of 10.6% (hosting companies such as Continental Automotive România, Continental Automotive Products, Hella România, with a high automotive concentration) and Argeș County, contributing 9%, an important participation to national exports being brought by Automobile Dacia, the largest Romanian exporter.

Figure 37 – Dynamics of exports and imports for Bucharest City between 2011-2019, thousand EUR



	2011	2012	2013	2014	2015	2016	2017	2018	2019
Exports	7632034	7854579	8519367	8614984	9438688	9739093	10661828	11205484	12122501
Imports	16689077	16948024	16525310	16442376	19112826	20596527	22603288	24568936	26832450
Trade balance	-9057043	-9093445	-8005943	-7827392	-9674138	-10857434	-11941460	-13363452	-14709949

Source: NIS – Tempo Online, 2019

The Capital City has a comfortable lead in exports, a situation that is explained especially by the large number of companies with factories in Romania, but with registered offices in Bucharest. A strict analysis of companies with manufacturing centers in Bucharest shows that there is no large factory, with over 1,000 employees, left in the Capital City. Moreover, Bucharest's top two exporters in 2018 are fiscal agencies of Honeywell and Flextronics. The sixth place is taken by OMV Petrom SA, Romania's most valuable company, with its administrative offices in Bucharest, but the export activities are not related to the Capital City, being connected to the refining area. Besides fiscal agencies, a significant contribution to Bucharest City's exports

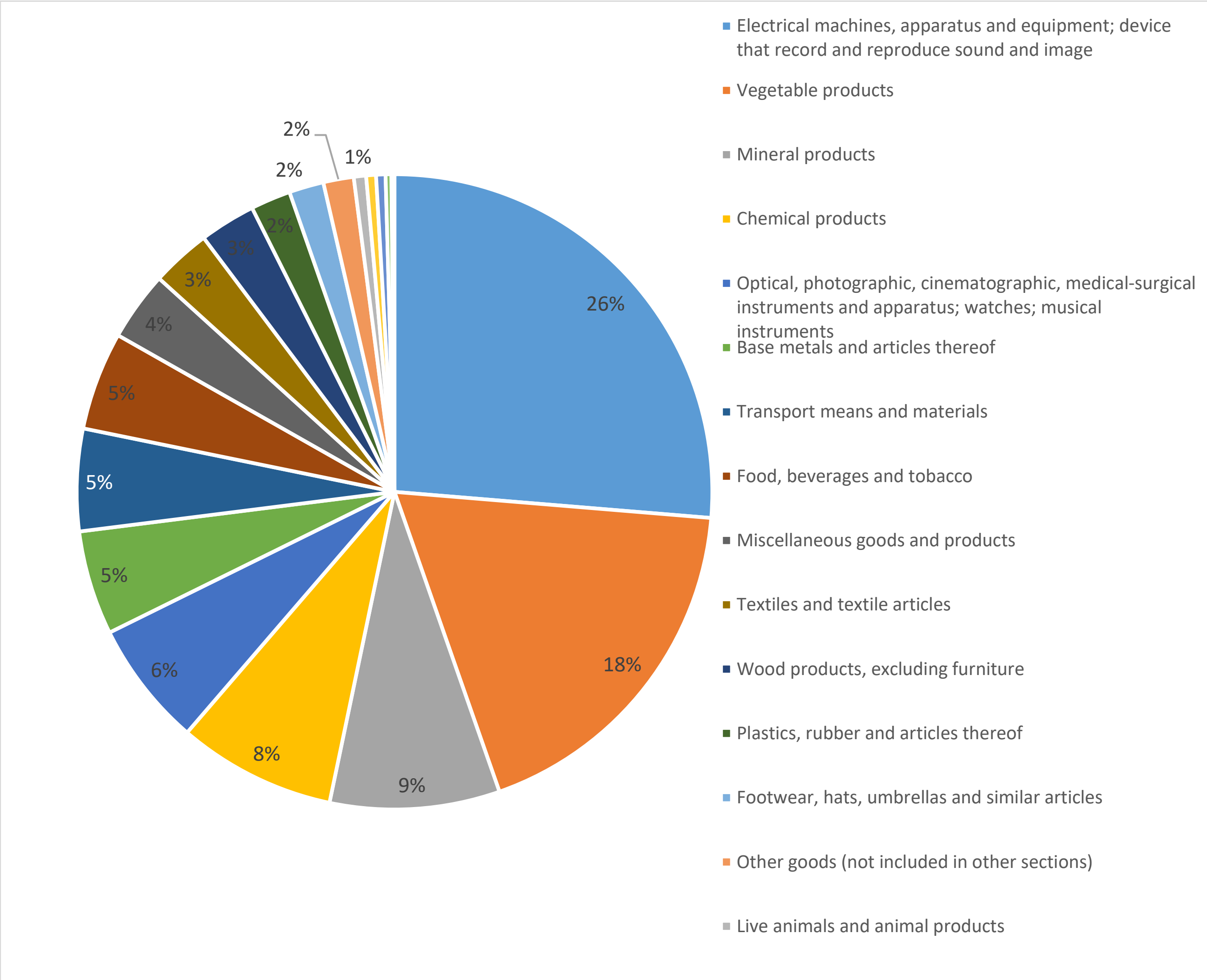
[45] FOB – ”free on board”, term from INCOTERMS – International Commercial Terms, meaning that the seller fulfils his obligation to deliver when the goods have passed over the ship's rail at the named port of shipment. This means that the buyer has to bear all costs and risks of loss of or damage to the goods from that point.

belongs to the large cereal traders (ADM, Cargill, COFCO), companies falling in the category of SMEs, with few employees, and with turnovers of RON 3-4 billion, according to the Ministry of Public Finance.

The highest demand on foreign markets was registered for telecommunication, computer science and informational services, products in the category of electrical machinery, devices and equipment, plant, mineral or chemical products.

Bucharest City companies exported, in 2018 and 2019, mainly goods in the category "electrical machinery, devices and equipment", that is, ones with a higher technological level, goods in the "plant products" category, in that of "mineral products", "chemical products", "optical instruments and equipment", "base metals and articles of base metal".

Figure 38 – Structure of goods export for Bucharest City in 2019



Source: The Tempo NIS Database

During the analysis interval, 2011-2019, an increase of exports for the following product categories was noted:

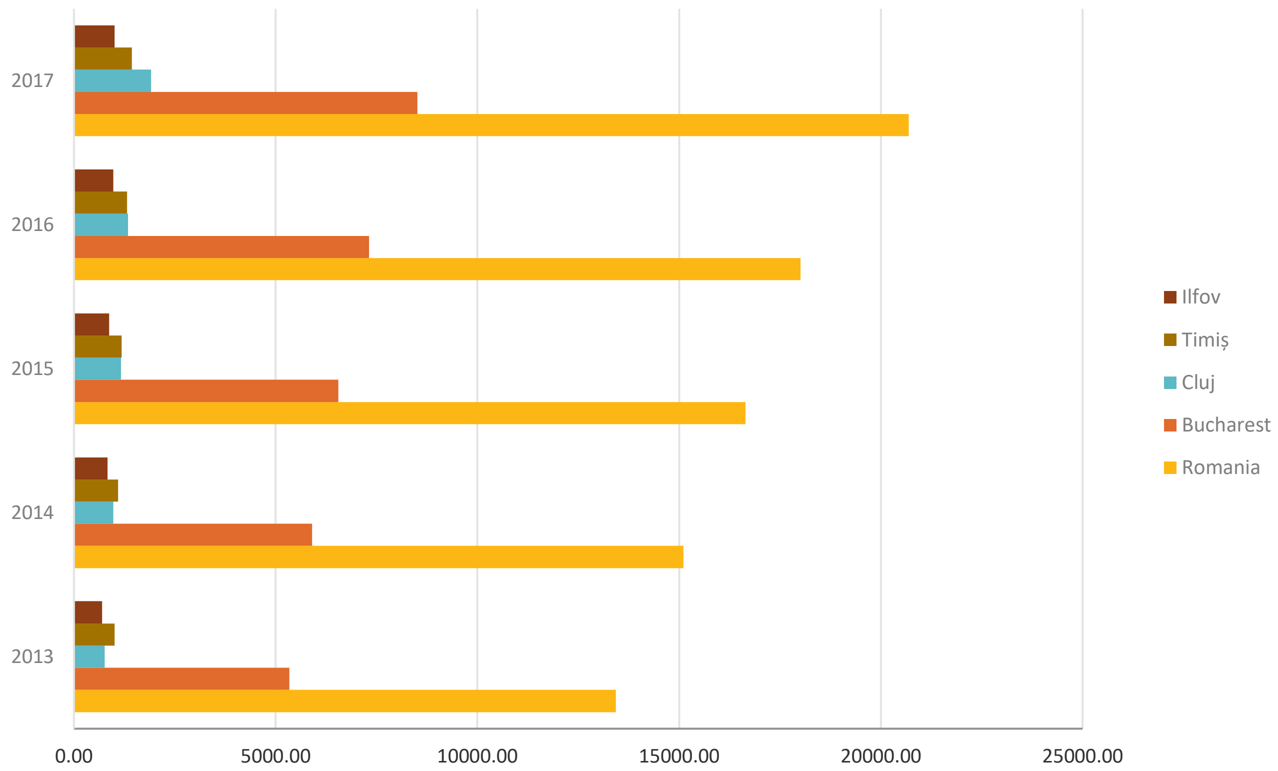
- Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and devices; watches; musical instruments – an increase from EUR 44,494 k to EUR 3,189,411 k;

- Various merchandise and products, where furniture has a significant contribution – an increase from EUR 101,293 k to EUR 426,464 k;
- Raw hides and skins and leather, furs and manufactures thereof – especially raw hides which, on a simple guess, could represent raw materials for the fashion industry. In Bucharest City, the field of scientific research and development for textiles and leather is well represented by the National Research and Development Institute for Textiles and Leather, but with very few companies to tan and finish the hides.
- Wood products, excepting furniture, especially raw wood, timber and articles of wood – an increase from EUR 167,464 k to EUR 345,882 k.

Unfortunately, except for the first category of products shown above, the rest are mainly raw material-intensive ones, which place the Capital City's exports at the bottom of global value chains, without too much added value, as these raw materials would be processed abroad, then imported in Romania for prices to match.

According to the National Bank of Romania, services are registering a positive trade balance on a country level, for most types. Thus, in 2017, the largest exports were registered for telecommunications, computer science and informational services, with a higher weight of computer science services (70% – EUR 1,833 million). Bucharest City contributes an average of 40% to the national service exports.

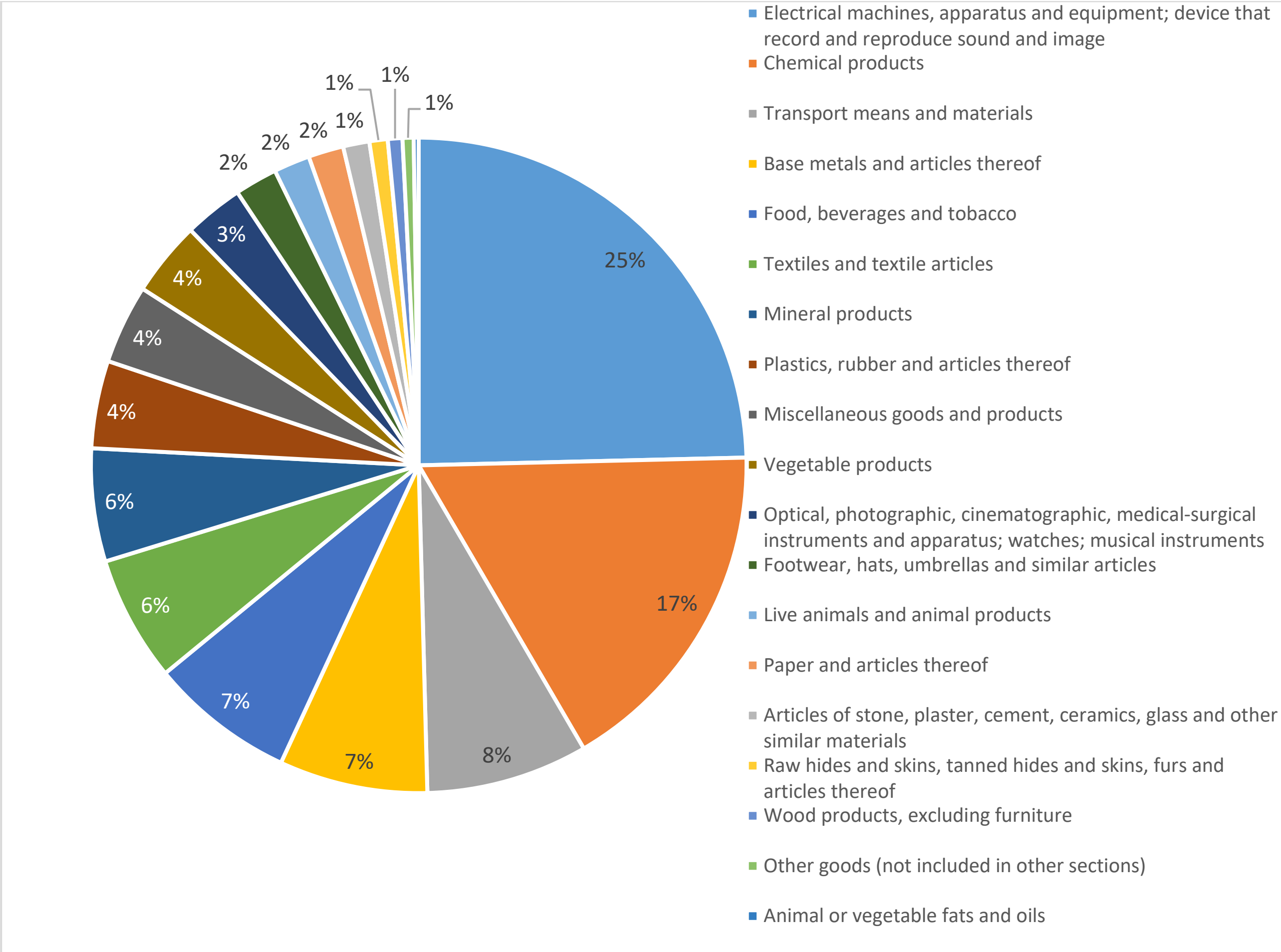
Figure 39 – Structure of service exports in Bucharest City, comparative status in EUR million



Source: The National Bank of Romania

In terms of imports made by Bucharest City companies in 2019, they are dominated by products in the category of "machinery, devices and equipment", especially nuclear reactors, boilers and mechanical devices, "chemical products", especially pharmaceutical products, "base metals and articles of base metal", "vehicles, aircraft, vessels and associated transport equipment", especially cars, tractors and other land vehicles, "food products", "textiles" (imported by outward processing textile manufacturing companies), "plastic materials, rubber", "mineral products" (fuels imported by fuel distribution companies), etc.

Figure 40 – Structure of imports for Bucharest City in 2019



Source: NIS, 2019

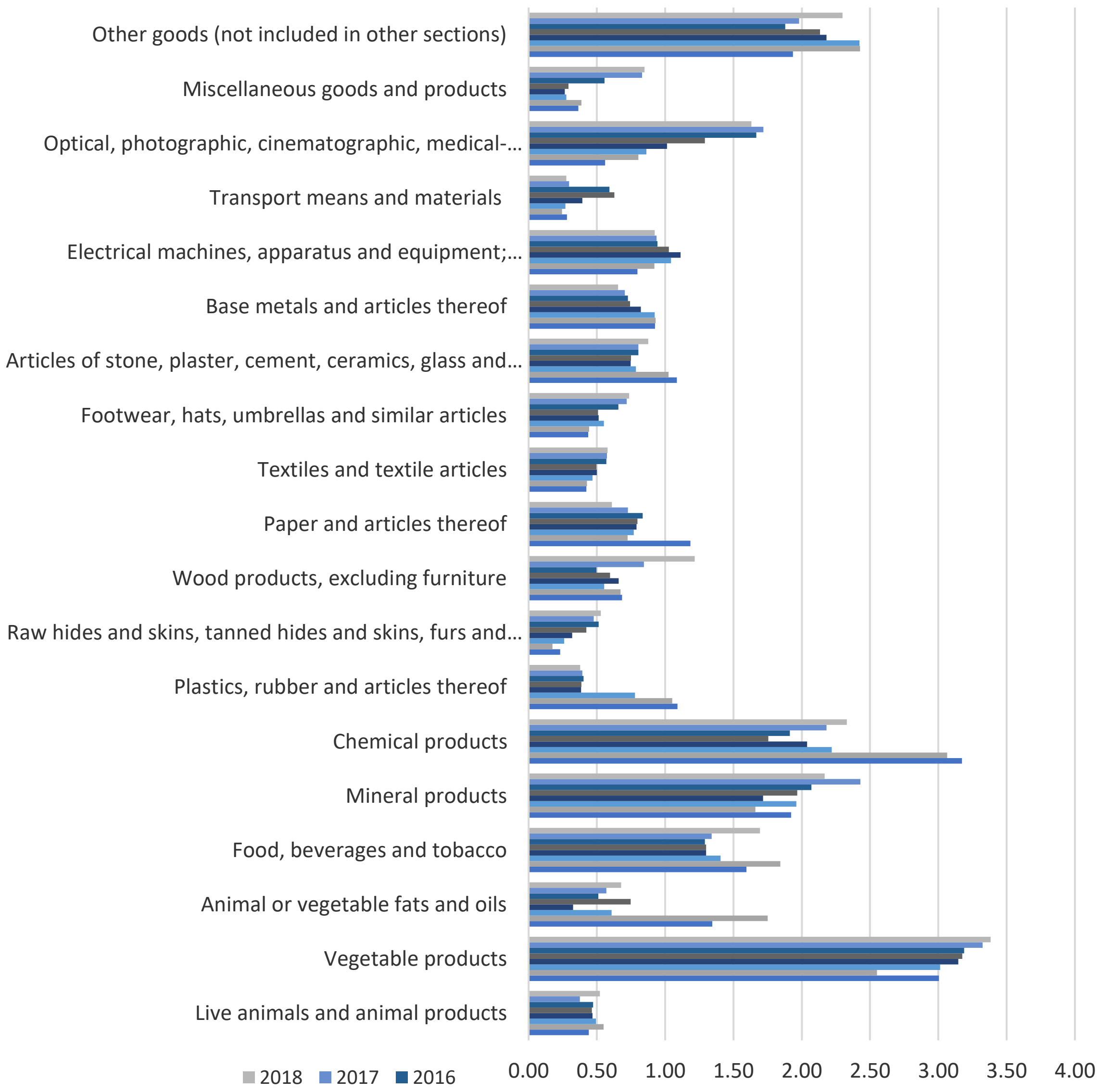
In 2019, a positive trade balance was achieved for the categories: "Wood products" and "Vegetable products".

Vegetable products, chemical products, mineral products, drinks and tobacco are the main product categories in Bucharest City with comparable advantages.

In respect to the RCA (Balassa) indicator, it reports exports recorded for a product category against the total value of exports, making, at the same time, the correlation between the county and national levels[46]

[46] The calculation formula used is RCA=(Xij/Xit)/(Xnj/Xnt), where Xij = export of product j on county level, Xit = total value of exports on county level, Xnj = product j export on a national level and Xnt = total value of exports on national level. A value greater than one shows a comparative advantage of the respective product category.

Figure 41 – Evolution of the revealed comparative advantage indicator (Balassa) at Bucharest City level between 2011-2018



Source: The Tempo Online NIS database, 2019

When analyzing the RCA indicator for the 2011-2018 interval, one notices that the level of exports shows a higher number of products with comparative advantages at the level of Bucharest City. First place is still occupied by vegetable products, chemical products, mineral products, drinks and tobacco, plus a series of categories seeing an increase over the last years, such as: wood products, optical, photographic, cinematographic, medical or surgical instruments and devices; watches; musical instruments. Some products have maintained their comparative advantage during the entire analyzed interval: vegetable products, drinks and tobacco, mineral products and chemical products.

According to the Ministry for the Business Environment, Trade and Entrepreneurship, the Foreign Trade Division, in 2018, the biggest intra-EU exporters in Bucharest City were[47]:

1. Honeywell Technologies SARL – represented for fiscal purposes by Honeywell Garrett SRL – a Fortune 100 technology company, supplying aerospace products and services, control technologies for buildings and industry, performance materials.
2. *Flextronics Manufacturing Europe BV*[48] – represented for fiscal purposes by Flextronics Romania SRL – manufacturer of electronic tubes and other electronic components such as electronic circuit subassemblies, parts of telecommunications systems, subassemblies for the automotive industry, fully assembled electronic products in the medical field.
3. *Robert Bosch GMBH* – is part of the Bosch Group, recording a consolidated sales volume of EUR 452 million in Romania, and net total sales have reached EUR 1.2 billion, according to the company site. The company's main offices are in Bucharest City, where it also has a sales office. Bosch is serving four activity sectors: mobility solutions, consumer goods, construction technology and industrial energy and technology.
4. Kazmunaygas Trading AG – represented for fiscal purposes by KMG Rompetrol SRL – with the object of activity of refining and trading crude petroleum and oil products in Europe.
5. Cargill Agricultura SRL – a company with 145 employees and a turnover of nearly RON 3 billion, active in the wholesale of grain, unmanufactured tobacco, seeds and animal feeds, with Romanian administrators, but having as shareholders the companies Cargill Incorporated and Cargill International Luxembourg 2 SARL.
6. SC OMV Petrom SA – with 12,498 employees and a turnover exceeding RON 17 billion, the company has the object of activity of extraction of crude petroleum.
7. *Adient LTD.&CO.KG* – serving the automotive industry, with 8 registered in Romania.
8. Cofco International România – wholesale of grain, unmanufactured tobacco, seeds and animal feeds, with 75 employees and a turnover of nearly RON 4 billion.
9. British American Tabacco Western Europe Commercial Trading Limited – products containing tobacco and nicotine, with over 800 employees and a turnover in excess of RON 9 billion.
10. ADM România Trading SRL – foreign investment in wholesale of grain, unmanufactured tobacco, seeds and animal feeds, with 68 employees and a turnover of RON 3.5 billion.
11. Samsung Deutschland GMBH – foreign investment in the wholesale of electronic and telecommunications equipment and parts thereof, with 208 employees and a turnover exceeding RON 4 billion.
12. *Fujikura Automotive Europe SA* – foreign investment manufacturing electrical and electronic equipment for motor vehicles, with a turnover in excess of RON 300 million and over 3,700 employees.
13. Glencore Agriculture – foreign investment in the wholesale of grain, unmanufactured tobacco, seeds and animal feeds, with 56 employees and a turnover of nearly RON 2 billion.

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[47] The data on the international trade of goods are set according to the registered offices in the Statistical Registry of Enterprises (REGIS) for economic agents making the imports/exports of goods. Each economic operator performing exchanges of goods with other EU Member States, exceeding a certain value threshold, must supply data for the statistical system. When filling in the questionnaire for the Intrastat suppliers of statistical information, operators must supply data on the unit's executive offices, namely the one where the activity is actually carried out, and declare whether it coincides with the administrative offices (registered offices). Where the two do not coincide, operators must declare the address of the executive offices where the unit actually carries out its activity. In most cases, according to the results obtained, we can conclude that they declare the address of the registered offices. For instance, Robert Bosch has the administrative offices in Bucharest and a factory in Cluj, among others. The exports it performs from the unit's Cluj executive office, according to this questionnaire, can be reported at Cluj County level, but, nevertheless, they are declared for Bucharest City, where the company also has a sales office.
[48] Companies with main offices in Bucharest but with manufacturing facilities in other counties.

14. *Procter & Gamble International Operations SA represented by Detergenți SA* – foreign investment in the field of manufacturing perfumes and cosmetic products, with 271 employees and a turnover of over RON 100 million.

15. *Eldra Kunststofftechnik GMBH, represented by Draxlmaier Group in România* – company developing and manufacturing electrical and electronic systems, luxury interiors and dashboards for cars, having among its most important clients: Mercedes-Benz, Porsche, BMW.

The biggest extra-EU exporters in 2018 were: SC Holzindustrie Schweighofer SRL, Cofco International Romania, SC OMV Petrom SA, SC ADM, SC CHS Agritrade Romania SRL, Schaffler Technologies AG&CO.KG, Glencore Agriculture BV, Actavis International LTD, Honeywell Technologies SARL, Philip Morris International Management SA – represented by Philip Morris Romania SRL.

The classification of intra-EU importers is similar to the exporters'. Nevertheless, there are some investors which, according to the classification, we can assume import more than they export: Actavis International (pharmaceutical company), Raffaello Shoes Factory SRL (footwear manufacturer, with over 800 employees, a company fully controlled by Grisport), Doosan IMGB SA (manufacturer of non-ferrous metals in base forms and ferrous alloys, with 409 employees and a turnover of RON 249 million) – but which has ceased its activity in 2019.

The classification of extra-EU importing companies is slightly different, in that there are large national companies present, which are not on the first positions in the top exporters, which also makes us say that they import more than they export (we can only assume, lacking commercial value, according to their position in the top). These are Novartis Pharma Services Romania SRL, SC Huawei Technologies SRL, SC Engie Romania SA, SC Network One Distribution, Compania Națională Romtehnica SA, SC Blue Air Airline Management Solutions SRL, SC Dante International SA, SC Bricostore Romania SA.

What poses a problem is that less than 15% of exports are made by SMEs, and one exporting company corresponds to 4 importing companies, which is also valid on a national level.

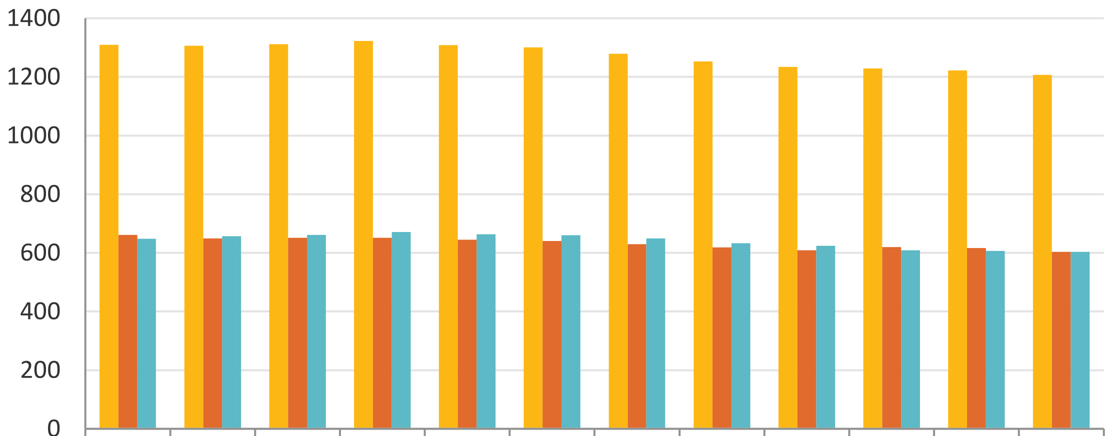
4. WORKFORCE

Bucharest City concentrates approximately 10% of the total national workforce volumes.

According to the NIS, at the end of 2018, in Bucharest City there lived 1,206,700 people of working-age (according to the legislation in force at that time), which represented the Capital City's potential workforce. Thus, the potential workforce represented approximately 57% of the total population residing in the city. Of these, 603.1 k (49.97%) were men, and 603.6 k (50.02%) were women.

As compared to 2007, the city's workforce resources[49] reduced by approx. 8%, and, respectively by approx. 103,100 people, against the background of demographic aging (the number of young people reaching legal working-age is smaller than that of people reaching retirement age) and of internal and external migration with a change of domicile, but also because of various changes occurring over time in respect to legal working-age. Bucharest City concentrates approximately 10% of the total national workforce volumes.

Figure 42 – Bucharest City workforce resources, by gender, between 2007-2018, thousand people



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	1309.8	1305.8	1312.1	1322.2	1308.7	1300.5	1279.2	1252.5	1234	1229.3	1222.6	1206.7
Men	661.5	649.1	651	651.3	645.1	640.6	629.7	619.2	609.4	619.9	616.3	603.1
Women	648.3	656.7	661.1	670.9	663.6	659.9	649.5	633.3	624.6	609.4	606.3	603.6

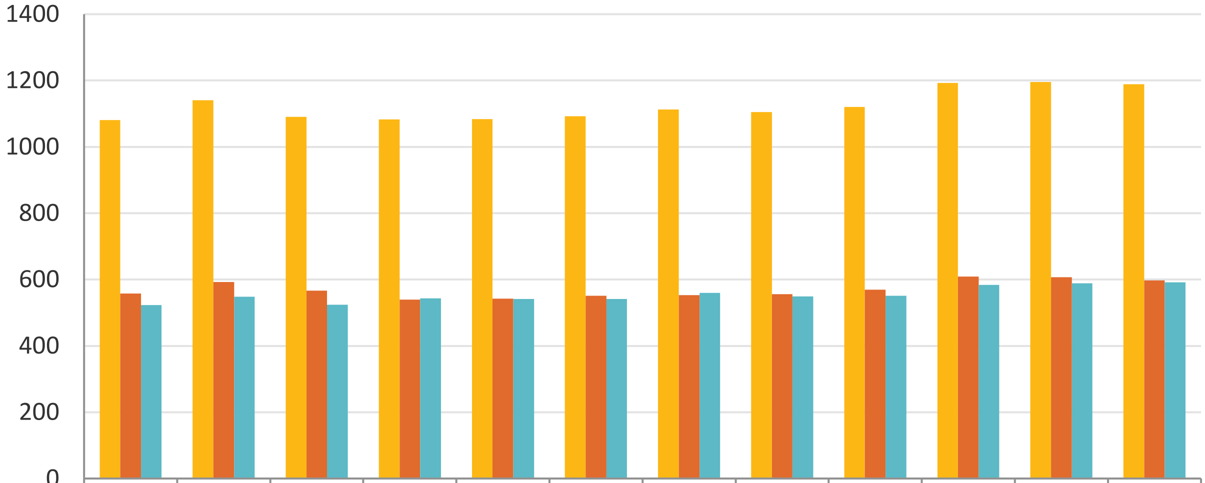
Source: NIS, 2019

Bucharest City is efficient in using the workforce resources it holds, as the number of unused people on the labor market decreased during the analyzed interval, and the activity rate for working-age population was the highest in Romania, and superior to other European capitals (e.g. Riga, Vilnius, Zagreb).

[49] Workforce resources represent the population category holding all the physical and intellectual abilities to allow it to perform useful work in one of the national country's activities. Workforce resources include working-age population, fit to work, as well as active people under and above the working-age.

In 2018, the Bucharest City active population was estimated by the NIS at 1,188,800 people, of which 597.4 k men (50.25%) and 591.4 k women (49.74%). As compared to 2007, the active population has increased by approximately 10%, that is, approximately 108.2 k people.

Figure 43 – Bucharest City active population, by gender, between 2007-2018, thousand people



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	1080.6	1140.4	1090.5	1082.5	1083.7	1092.7	1113.1	1105.3	1120.5	1193.1	1195.9	1188.8
Men	557.9	592.5	566.3	539.3	542.7	550.9	553.2	556	569.6	609.4	607.3	597.4
Women	522.7	547.9	524.2	543.2	541	541.8	559.9	549.3	550.9	583.7	588.6	591.4

Source: NIS, 2019

The difference of 17,900 people between the two indicators (workforce resources and active population) shows that a relatively low part of the city's potential working resources are not (officially) used on the local labor market. As compared to 2017, there is an improvement, as the number of unused people has decreased from 26,700 to 17,900 in 2018. These people are most likely part of various categories: student fit to work but enrolled in the educational process, early retirees; homemakers; people working abroad, etc. According to Eurostat[50], in 2018, other European capitals registered the following volume of working population: Sofia (e) – 555,306 people, Riga – 341,600 people, Vilnius – 323,577 people, Zagreb – 388,420 people, Tallinn – 250,700 people, etc.

The activity rate of working-age population in Bucharest City (98.5%) is the highest in Romania and it saw an increase during the analyzed interval. This is understandable, considering the varied opportunities provided by the Capital's job market.

Bucharest City is registering the highest coverage of the active population by labor agreements.

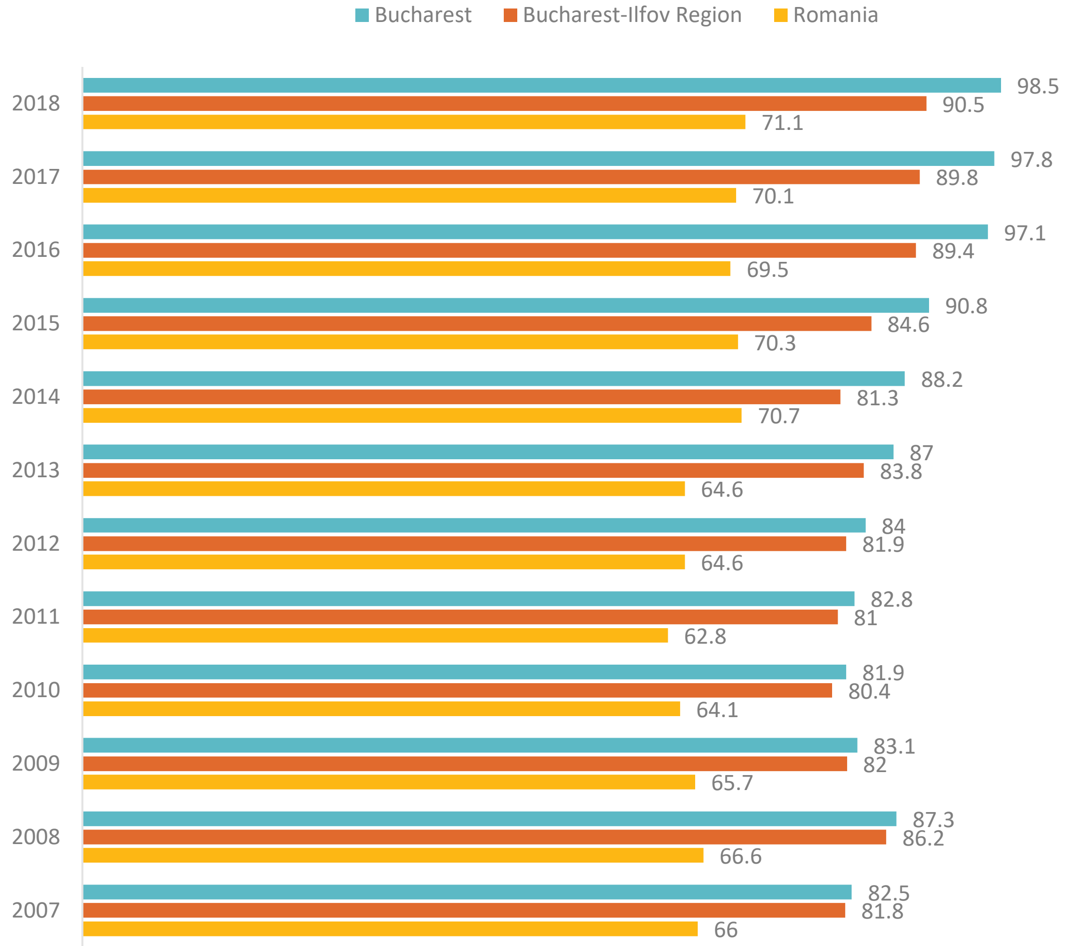
According to the PIAROM study[51], the most labor agreements in Romania are recorded in Bucharest City (1,228,713 individual labor agreements). Also, the highest coverage rate of the active population by labor

[50] Eurostat, Labour market – cities and greater cities. (e) = estimate data. Unfortunately, no information is available on this indicator for Bucharest in the Eurostat database.

[51] "Studiu privind dinamica pieței muncii la nivelul principalelor industrii angajatoare din România în perioada 2016-2017" (*Study of the labour market dynamics for the main employer industries in Romania, between 2016-2017)*, PIAROM

agreements is registered in Bucharest City, even exceeding the active population, a situation explained by the high weight of employees employed at working facilities registered in Bucharest, but residing in other counties.

Figure 44 – Activity rate of working-age population, on a national and regional level, and in Bucharest City, between 2007-2018



Source: NIS, 2019

The activity rate, according to Eurostat[52], in other European capitals, is much lower as compared to the one in Bucharest: Riga – 63.9%, Vilnius – 71%, Zagreb – 56.6%, Tallinn – 69.3% etc.

According to the NIS, in Bucharest City in 2018 there were 1,173,100 working persons, of which 590,200 men (50.31%) and 582,900 women (49.68%), increasing by approximately 5% as compared to 2008.

Bucharest City stands out by the highest workforce occupancy in Romania, especially in high added-value fields – IT&C, R&D, creative industries.

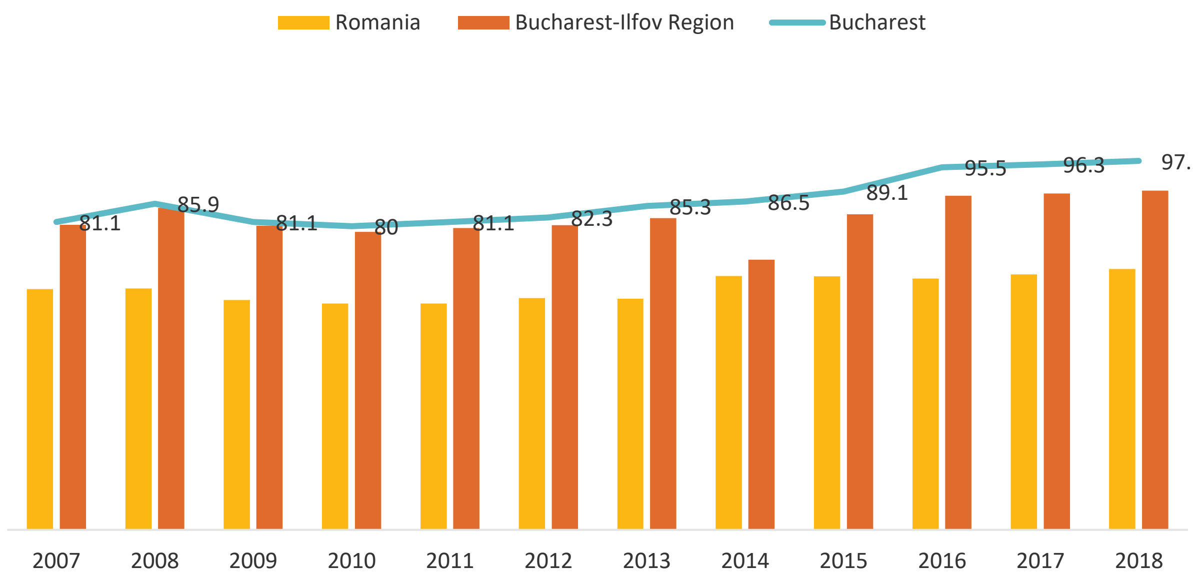
The workforce occupancy in Bucharest City was estimated by the NIS to be the highest in Romania. Bucharest stands out by occupancy in emerging sectors, which are beginning to take over the structures of developed economies (scientific research and development services, financial services, IT&C, creative industries, etc.).

[52] Eurostat, Labour market – cities and greater cities. (e) = estimate data. Unfortunately, no information is available on this indicator for Bucharest in the Eurostat database

On the other hand, from the point of view of specialized work resources, NIS data show that, in 2017, of the persons graduating higher education, 31% have obtained diplomas in business, administration, and law, 15% in engineering, processing and construction, and 12% were graduates of social sciences, journalism and information. One can notice a very high weight of humanities graduates, whereas the emergent domains have a high request of STEM employees (science, technology, engineering, mathematics). Also, only 8% of graduates received a diploma in arts, whereas the Romanian market has also seen an increase of jobs related to graphic design, UX/UI, advertising, theatre/movies, video games, etc.

Bucharest City is importing human capital from all around the country, by attracting the highest number of young people as compared to other cities, due to its status of Romania's main university center. In order to attract foreign investors, especially in high added-value sectors, whether knowledge-intensive, or creativity-intensive, the Capital needs to identify means to increase its number of students and to preserve the existing ones – the so-called Young Wealth Creators, as they are creating the jobs of tomorrow and are creating wealth, having a high purchasing power. They will be: entrepreneurs, researchers, designers, engineers, physicists, bloggers, artists, application or video games designers, people building on already existing businesses or identifying and increasing new industrial niches and markets. They are creating trends which often reconfigure economic structures.

Figure 45 – Population occupancy, at a national and regional level and in Bucharest City, between 2007-2018

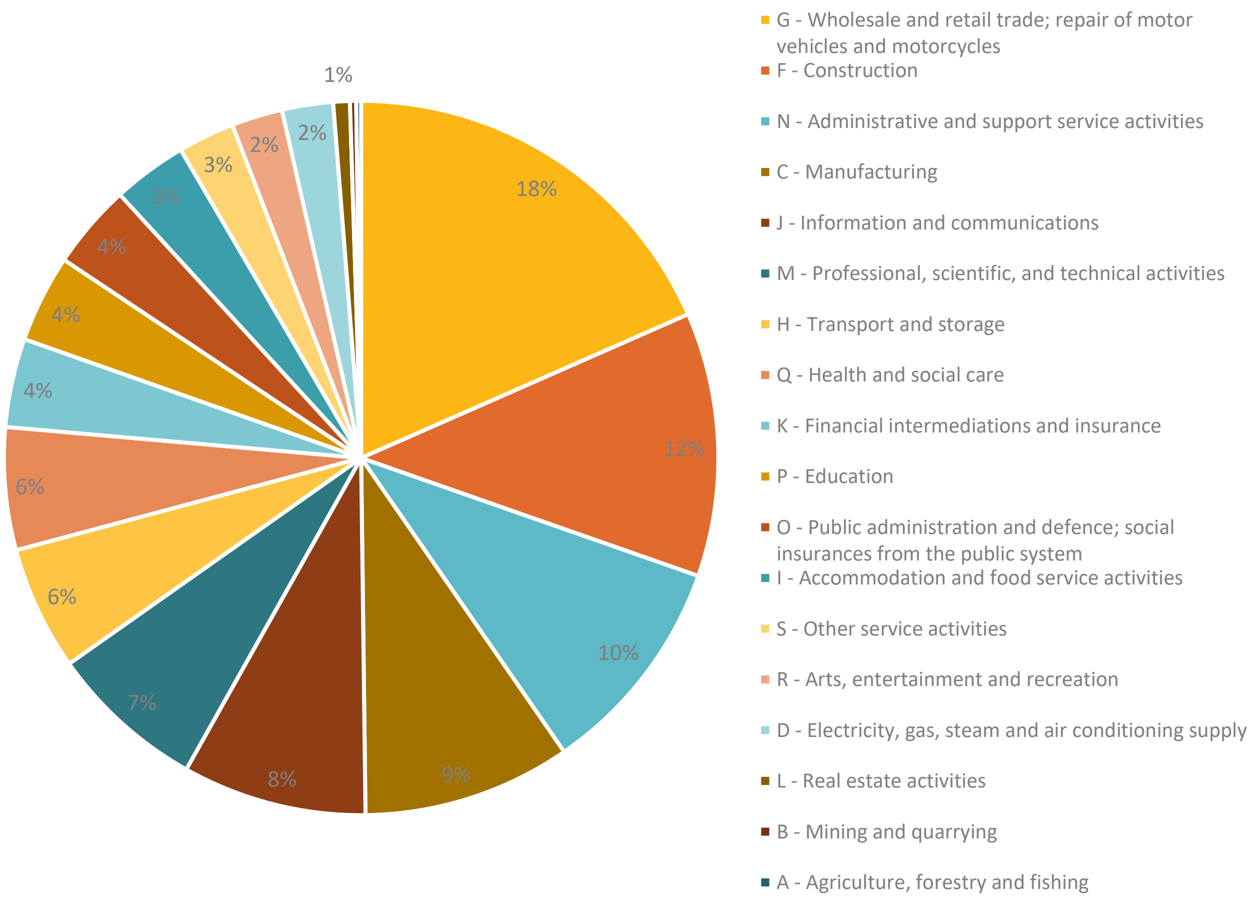


Source: NIS, 2019

The services sector is occupying over 75% of the population, the Capital being strongly "tertialized", with a similar structure to that of large urban agglomerations.

By fields, most working persons were registered in trade (18.39%), construction (11.94%) and service, administrative and support activities (10.01%), activities that characterize Bucharest City from an economic perspective. The Capital is strongly "tertialized", as the economy is over 75.8% based on the services sector, decreasing from the 87% they represented in 2017. One of Romania's strategic objectives is to reach, until 2020, a 70% occupancy rate for persons aged 20 to 64. Bucharest City has recorded a 97.2% occupancy rate in 2018, and the trend is ascending.

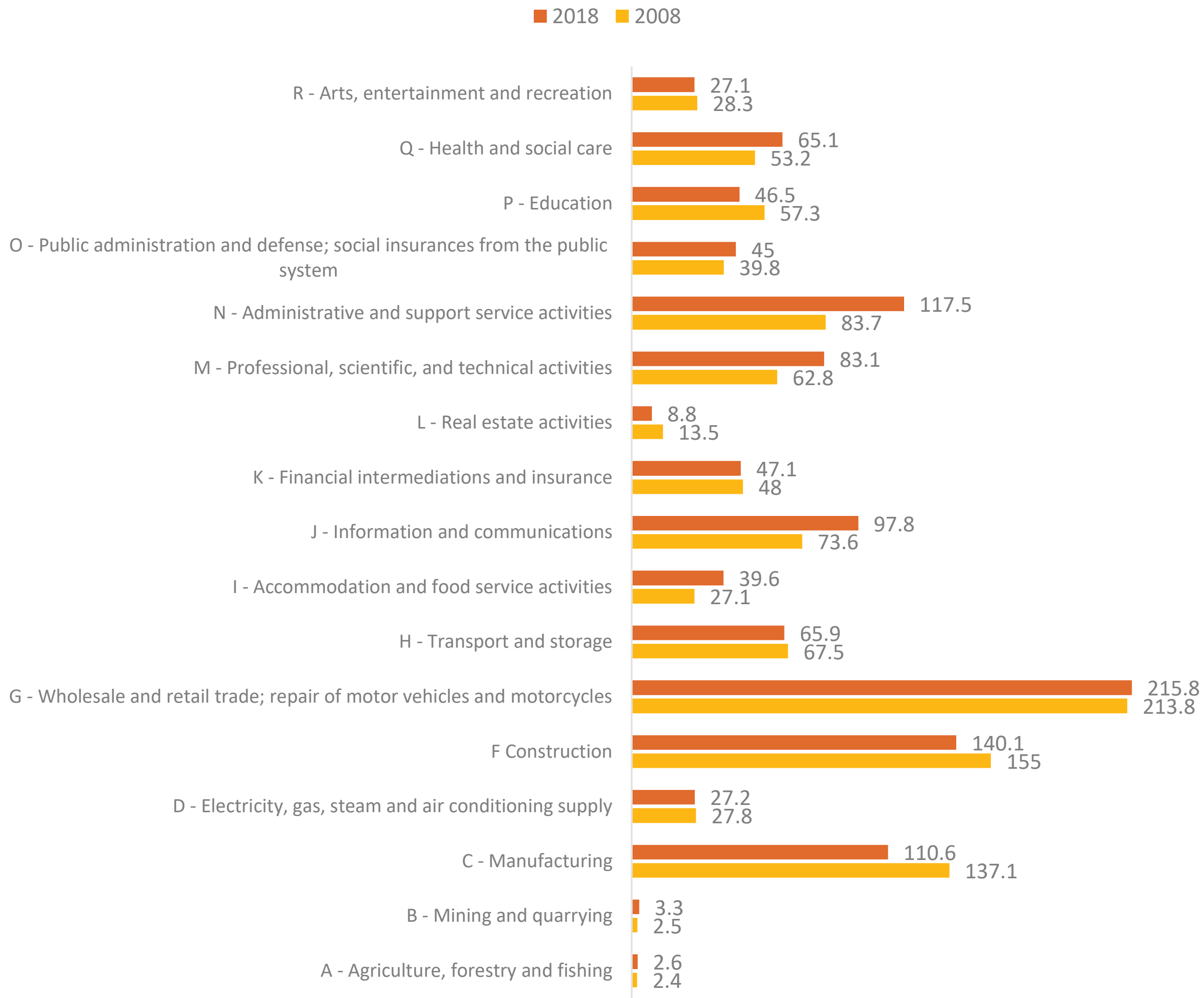
Figure 46 – Occupational structure of the population of Bucharest City in 2018



Source: NIS, 2019

As compared to 2008, the occupational structure of the Bucharest City population has seen an increase of approximately 5% overall, but there are sectors registering decreases in the number of working persons, such as: real estate activities (-34%), manufacturing (-19%), education (-18.84%), electricity production and supply (-15.71%), especially against the job restructuring, etc. The biggest increases were registered for accommodation and food service activities, administrative and support service activities, IT&C, professional, scientific and technical activities, mining and quarrying, etc.

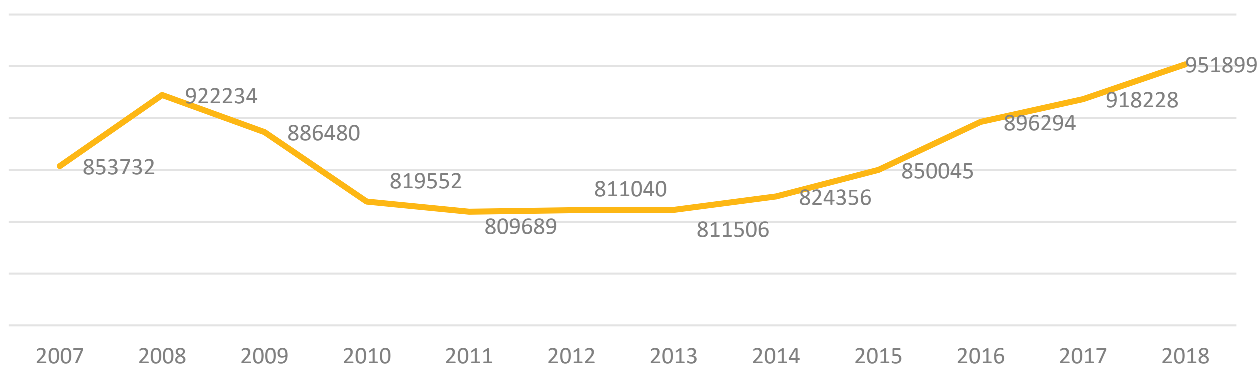
Figure 47 – Working population dynamics, by main economic activities, in 2008 and 2018, thousand people, in Bucharest City



Source: NIS – Tempo Online, 2019

As concerns the number of employees in Bucharest City, it was estimated, by the NIS, at 951,899 persons in 2018, with an increase of over 3% as compared to 2008 and of nearly 4% as compared to 2017. By comparison to the working population, we can find a difference of 221,201 persons not falling under the employee category, but who are carrying out freelancing activities. According to PIAROM, the ratio between the number of labor agreements and the number of persons involved in some individual entrepreneurship (PFA – registered sole traders/PFI – authorized professional sole traders/ÎI – freelancers) place Bucharest City on the first place in Romania.

Figure 48 – Total number of employees in Bucharest City, between 2007 and 2018



Source: NIS, 2019

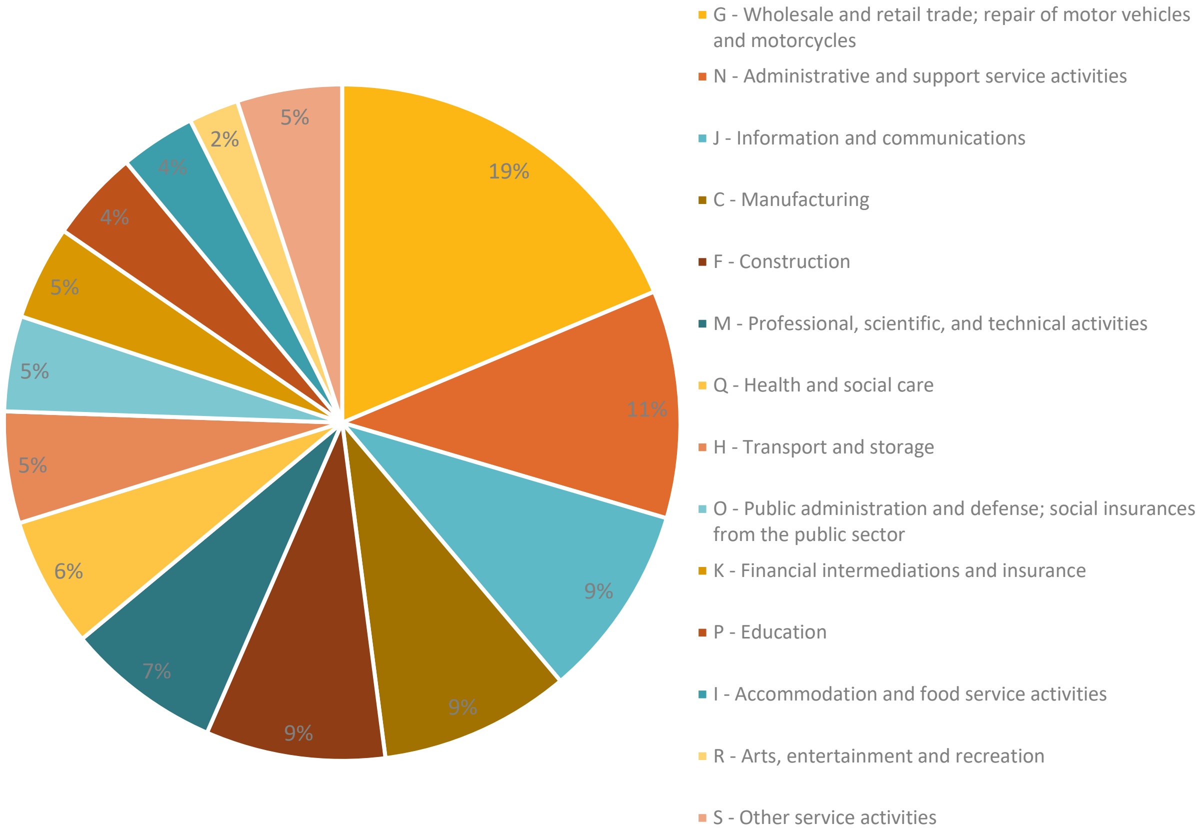
The biggest difference between the working population and the number of employees is found in the construction sector – 58,379 persons. These persons are most likely working on their own, some, perhaps, without legal forms.

According to PIAROM, the number of registered unemployed persons is supported by a higher number of employees in Bucharest, as compared to other counties in the country. Thus, for each unemployed person registered in Bucharest City, there are 66.74 individual labor agreements, which places the Capital on the 2nd place, after Ilfov County (110.8 labor agreements/unemployed person), but ahead of Timiș County (63.86 labor agreements/unemployed person) and far ahead of the counties that rank poorly from this point of view: Teleorman (2.54 individual labor agreements/unemployed person), Mehedinți (3.12 individual labor agreements/unemployed person), Vaslui (3.31 individual labor agreements/unemployed person).

Most Capital City employees are active in trade, administrative and support service activities and information and communications

Most employees are active in trade (approximately 19%), administrative and support service activities (11%), IT&C (9.27%), manufacturing, especially in the manufacture of food products, printing and reproduction of recorded media, metal constructions industry, construction (8.58%), professional, scientific and technical activities (7.41%) etc. On the other hand, the fewest employees are registered in the following fields: mining of iron ores (0.006%), manufacture and processing of coke (0.029%), wood processing (0.034%), manufacture of tobacco products (0.04%), water transport (0.05%), forestry (0.05%), etc.

Figure 49 – Structure of Bucharest City employees, by main economic activities, in 2018



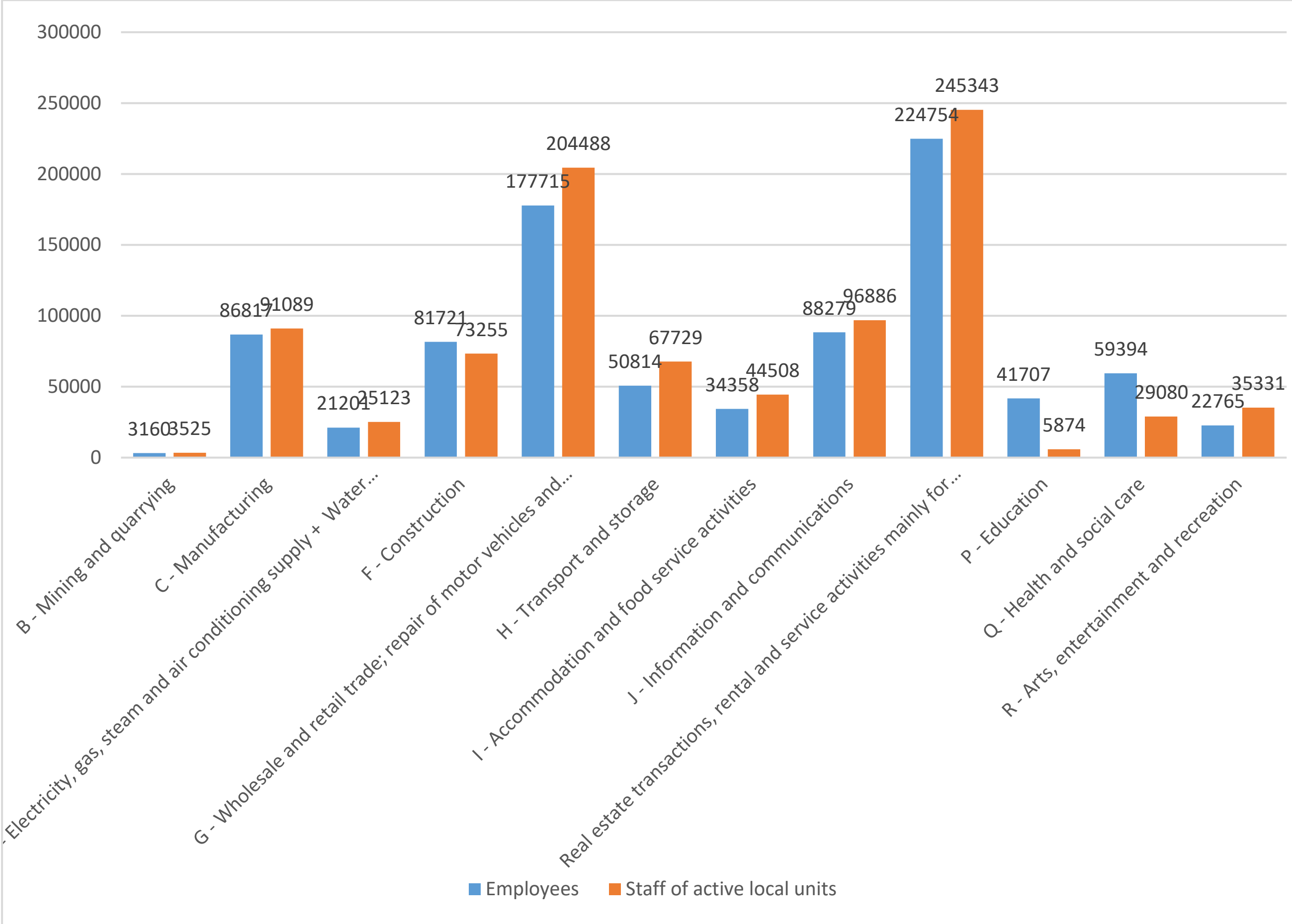
Source: NIS, 2019

The comparison between the situation of employees[53] in Bucharest City and the personnel in active local units[54], by main economic activities, excluding sections A – Agriculture, forestry and fishing and O – Public administration and defense; compulsory social security, shows a similar repartition, except for the fields of health and social care and education, where the category of employees records more persons than those in the active local units, as the first one also includes public employees. On the other hand, the large volume of active local units personnel, as compared to employees, mainly in the various service categories, shown Bucharest's central role on a national level, also hosting active local units (secondary offices, offices etc.) of companies registered elsewhere in Romania. At the same time, the differences between the two categories can also be explained through their different definitions (for instance, in the case of arts, entertainment and recreation).

[53] Employees are persons employed on a labour agreement/service contract for a determined or undetermined period of time (including seasonal workers, managers and administrators), whose labour agreement/service contract has not been suspended over the reference year.

[54] The personnel of active local units includes persons exercising their activity under a labour agreement in an economic or social unit – regardless of the type of ownership – or with individuals, in exchange for remunerations as salary, paid cash or in kind, as commission, etc.

Figure 50 – Employees and personnel of active local units in Bucharest City, by main economic activities, in 2018

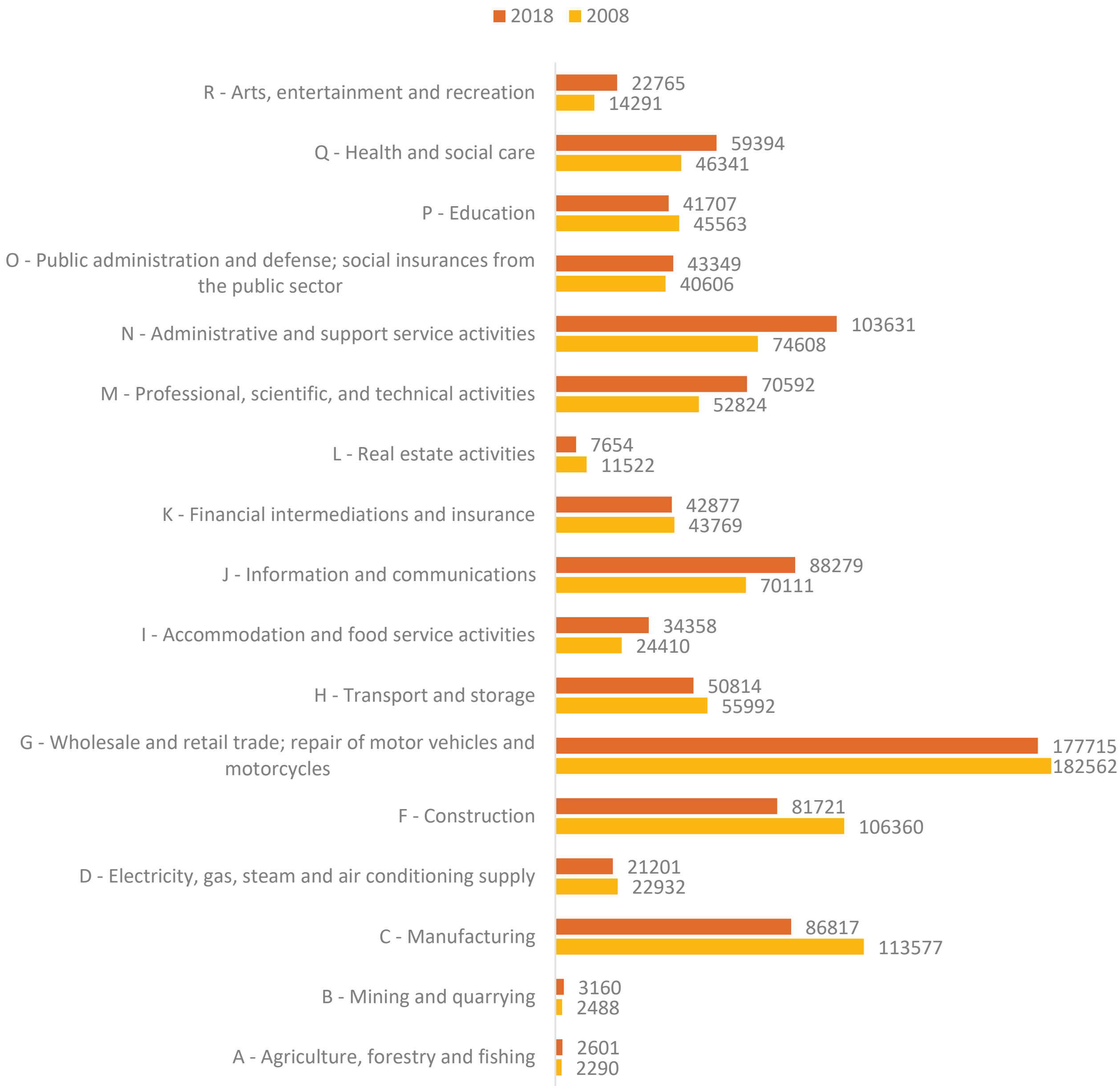


Source: The TEMPO Database of NIS

The highest increase in the number of employees was registered in computer programming, consultancy and related activities (140%).

As compared to 2008, the first where data on economic sector is collected per the revised NACE codification, the number of employees saw a significant increase in computer programming, consultancy and related activities (140%), sewage disposal and treatment (109%), mining support service activities (81%), air transport (79%), manufacture of engines for motor vehicles (excluding motorcycles) and for agricultural tractors (66.77%), creative and cultural industries (59.29%), activities auxiliary to financial services (52%) etc. On the other hand, there were significant decreases in the number of employees of other industrial branches (wood processing, the tanning and dressing of leather, manufacture and processing of coke and of products obtained from crude oil processing, manufacture of other non-metallic mineral products, manufacture of wearing apparel, manufacture of computers and of electronic and optical products, the industry of metal constructions and metal products, manufacture of machines, machinery and equipment), real estate activities, electricity and heat production and supply, etc.

Figure 51 – Dynamics of the number of employees in Bucharest City, by main economic activities, in 2008 and 2018

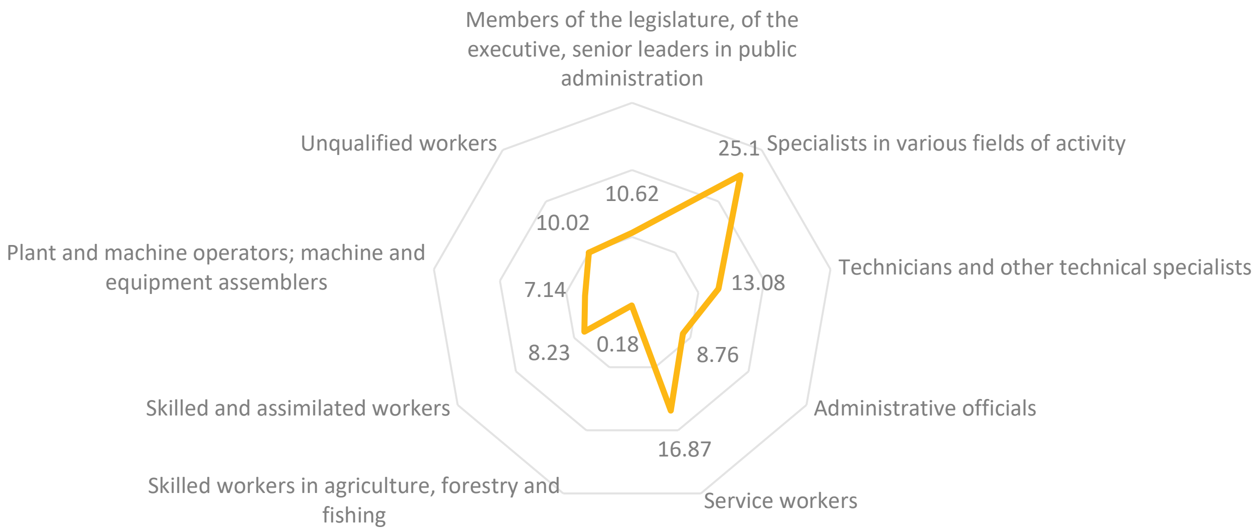


Source: NIS, 2019

According to the "Study of the labor market dynamics for the main employer industries in Romania, between 2016-2017", made by the Romanian Investment Employers' Association – PIAROM, the analysis of the workforce structure by employee groups according to the Romanian Classification of Occupations (COR) shows that Bucharest City absorbs among the most technicians and specialists in the technical field (1st place in Romania), members of the legislative body, of the executive, high leaders in public administration (2nd place after Ilfov), administrative officers (2nd place after Gorj), specialists in various fields of activity (3rd place, after Cluj and Iași).

In Bucharest City, according to the PIAROM study, between 2016-2017 there existed one of the highest concentration of specialists in various fields (25.1%), especially due to the presence of high concentration of higher education facilities.

Figure 52 – Workforce structure, by group of employees according to the COR Code, percentage of total, 2016-2017



Source: "Studiu privind dinamica pieței muncii la nivelul principalelor industrii angajatoare din România în perioada 2016-2017" (*Study of the labour market dynamics for the main employer industries in Romania, between 2016-2017)*, PIAROM

The survey among Bucharest investors shows that, from the point of view of employers, the Capital City workforce has a relatively high level of work discipline (84% of respondents chose average and high levels) and of theoretical and practical training. Loyalty to the company is considered by 22% as being low, and by 45% as being average, which may lead to a decrease of work productivity and profitability in companies. This value is nevertheless aligned to the international statistics, which say that ,on average, 85% of employees are not involved/dedicated to their workplace (in some EU countries, the percentage of involved employee drops down to under 10%), and 81% of employees are considering changing their job should an opportunity arise, even if they are not actively looking for a job.*

62% of respondents consider that Bucharest workforce has high expectations, especially when related to its profile. Thus, only 32% of those considering that salary expectations are high see them as justified by the high level of the employees' work discipline, loyalty and theoretical and practical training.

As for recruitment in the Capital City, 38% of respondents see it as a difficult task, and 41% see it as having an average difficulty. Only 13% of employers declared they had no difficulty in personnel recruitment. In the case of foreign companies, employees' salary expectations are the highest, and recruitment is seen as the most difficult. Depending on the type of employees, the highest recruitment difficulty has been identified for personnel with technical skills (engineers, IT specialists, artists), and most respondents claiming this issue are coming from foreign companies (48% as compared to the average 32%). Skilled workers come second, followed by the personnel with economic skills.

	AVERAGE	OT	HVA	FOREIGN	MIXED	ROMANIAN
Personnel with technical skills (engineers, IT specialists, artists)	32%	33%	32%	48%	17%	33%
Skilled workers	27%	52%	23%	19%	25%	29%
Personnel with economic skills	17%	7%	18%	9%	18%	17%
Unskilled workers	17%	30%	15%	9%	25%	17%
Personnel with medical skills	15%	10%	16%	11%	14%	15%
Managing personnel (managers)	14%	10%	15%	11%	17%	14%
Personnel with law education	13%	7%	15%	17%	9%	14%
Personnel with humanities education (foreign languages, art, human resources, sociology, etc.)	6%	1%	7%	9%	7%	6%

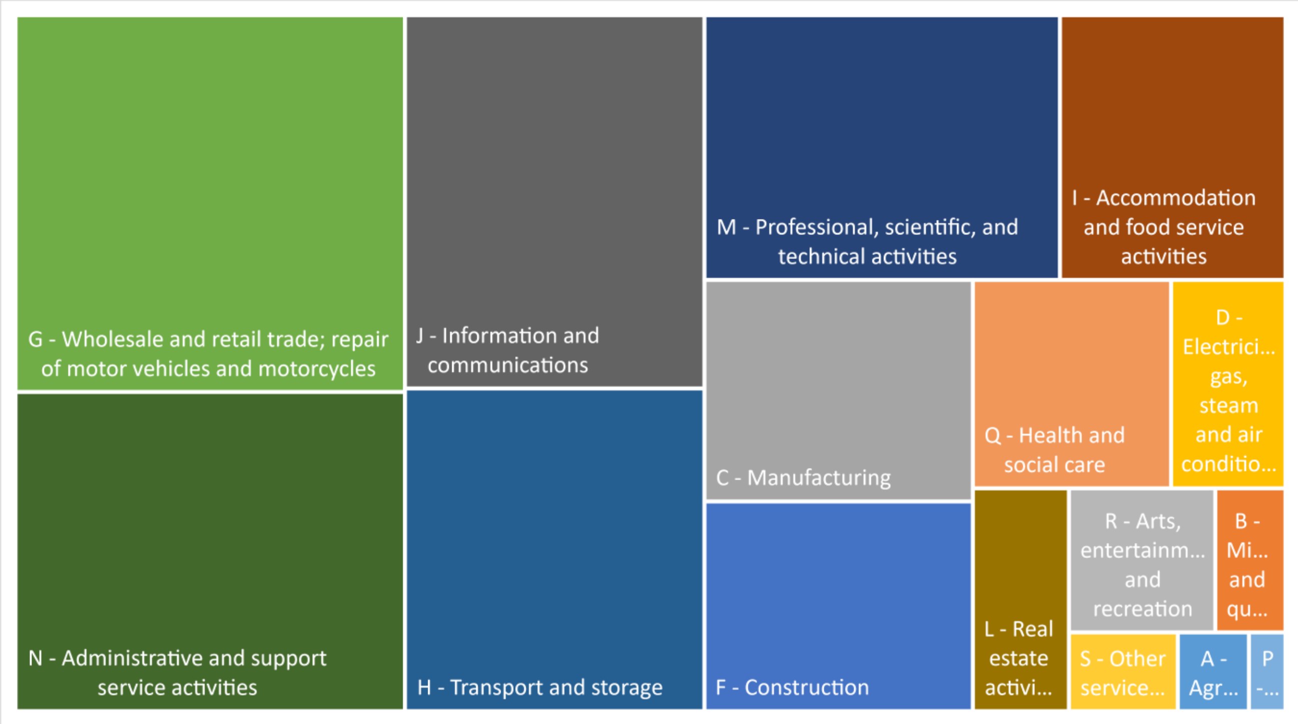
HVA – high value-added companies, OT – other types of companies

**https://blog.smarp.com/employee-engagement-8-statistics-you-need-to-know*

Sector 1 is the Capital's largest workforce pole, focusing approximately 32% of the total number of employees, especially against a higher salary level.

In 2018, according to the NIS, Sector 1 is the largest workforce pole in the Capital. It attracts over 282,000 employees with the following sectoral concentration:

Figure 53 – Structure of employees in Sector 1 – Bucharest City, by main economic activities, in 2018

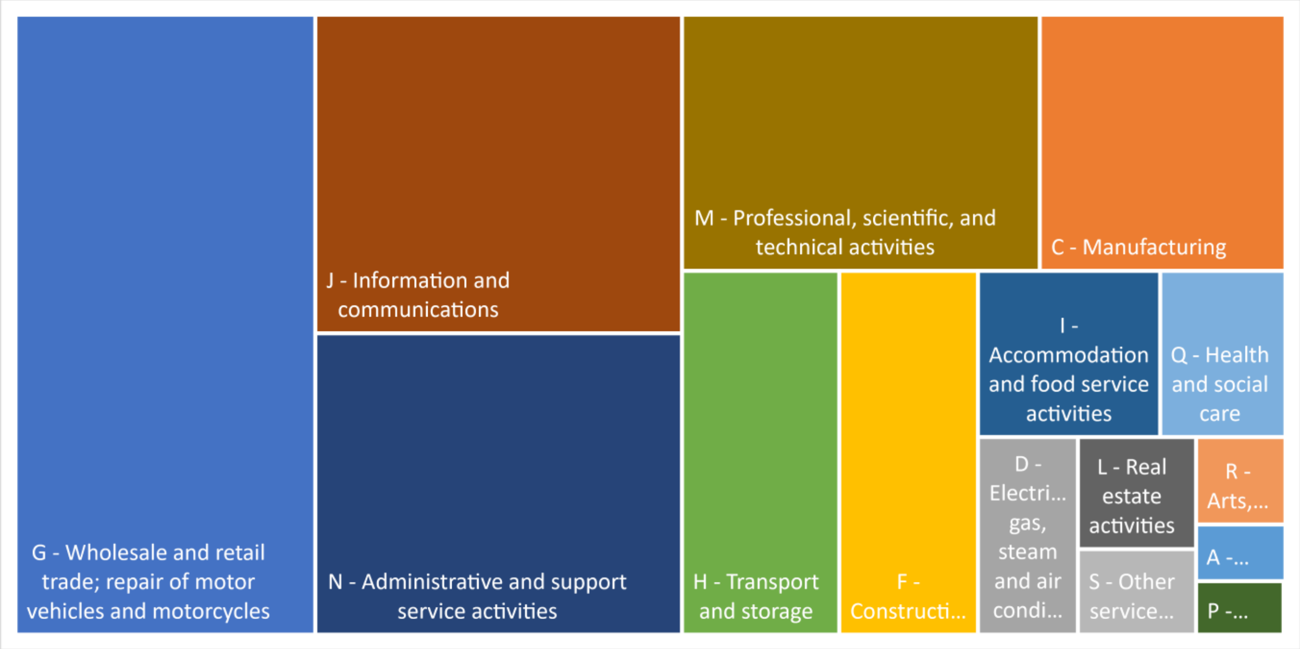


Source: NIS

The important companies contributing to the labor market in Sector 1 include: Societatea de Transport București STB SA, SC METROREX SA, Compania Națională de Căi Ferate CFR SA, SC Securitas Services Romania SRL, SC US Food Network SA, SRTFC București, SC Superbet Betting & Gaming SA, SC Compania ROMPREST Service SA, SC Telekom Romania Communications SA, SC MED LIFE SA etc.

Sector 2 brings together over 181,000 employees. The main employers situated in this sector include: SC Oracle Romania SRL, Compania Națională Poșta Română, SC Genpact Romania SRL, SC FAN Courier Express SRL, Kaufland România (Bucharest main offices), SC SUPERCOM SA, SC Apa Nova București SA, SC Vodafone Romania Technologies SRL, SC ADECCO Resurse Umane SRL, Stefanini Romania SRL.

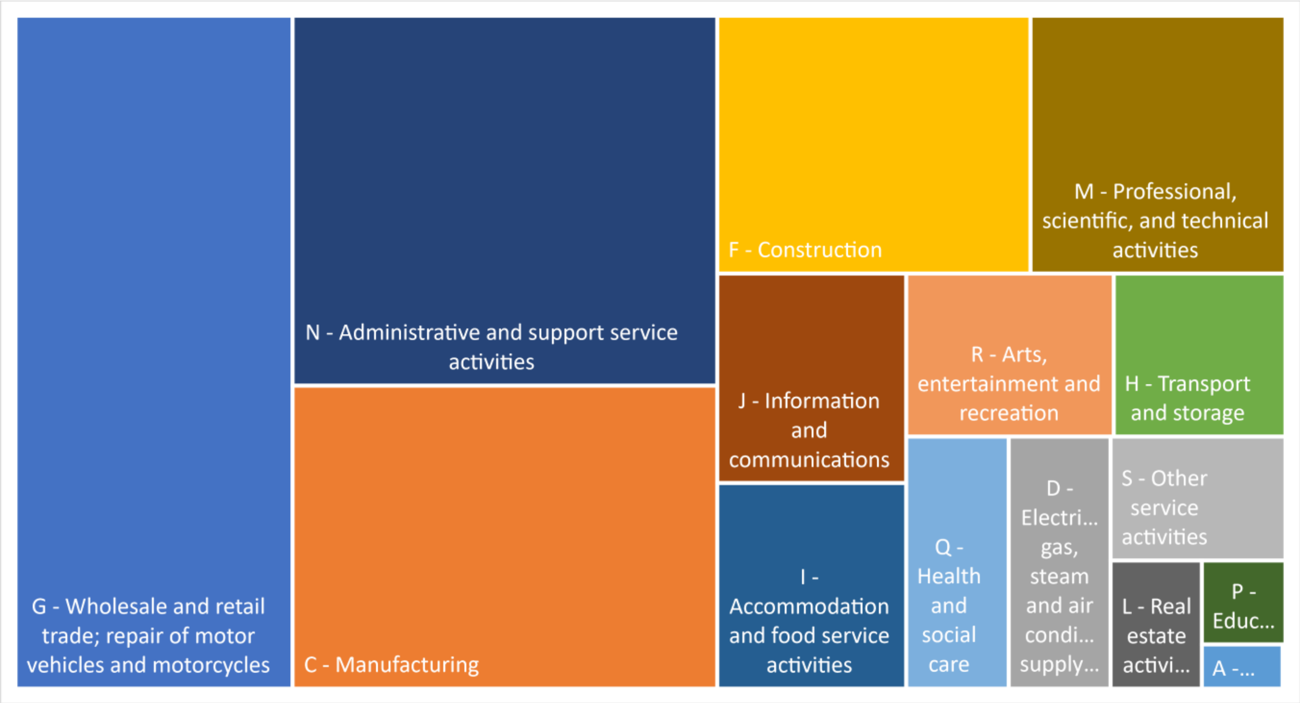
Figure 54 – Structure of employees in Sector 2 – Bucharest City, by main economic activities, in 2018



Source: NIS

Sector 3 concentrates a little under 150,000 employees. The main employers in Sector 3 include: SC Lugera & Makler SRL, Regia Autonomă de Distribuție a Energiei Termice, SC Hattrick Bet SRL, SC Agenția de Servicii Professional SRL, SC Bet Active Concept SRL, SC BGS Divizia de Securitate SRL, SC Metaplast SRL, SC Diaverum Romania SRL, SC Tiger Security Services SA, SC Tinervis Group SRL.

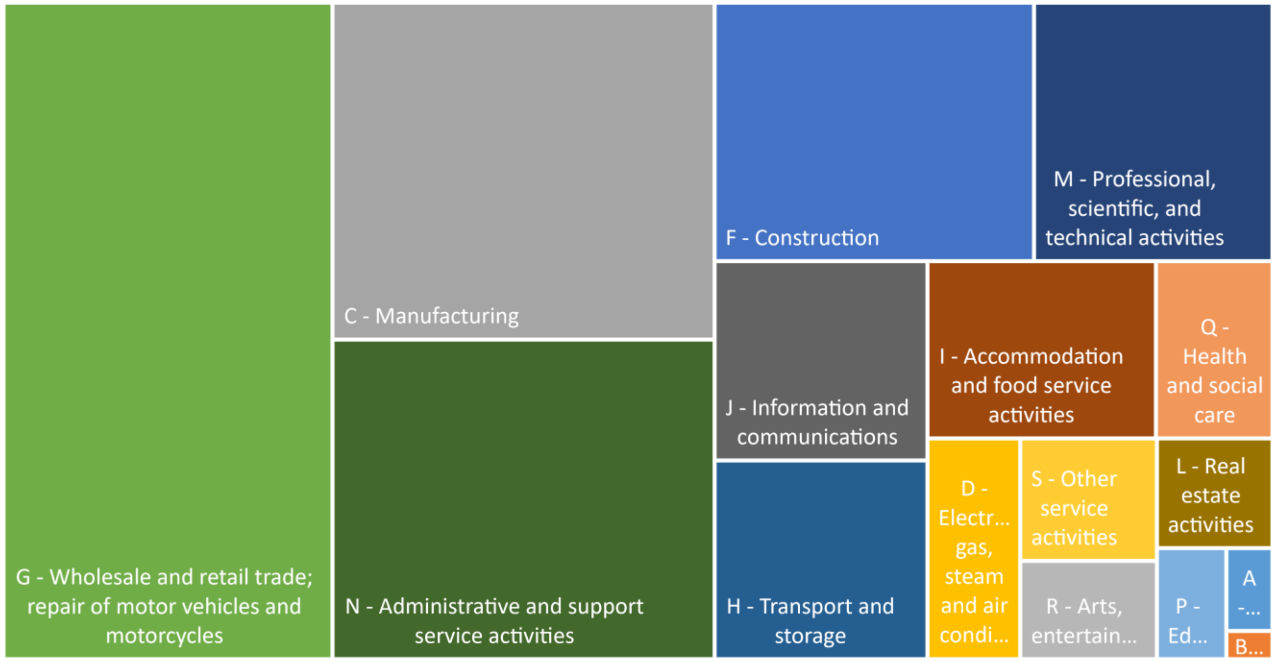
Figure 55 – Structure of employees in Sector 3 – Bucharest City, by main economic activities, in 2018



Source: NIS

Sector 4 registers over 82,000 employees, with the following structure:

Figure 56 – Structure of employees in Sector 4 – Bucharest City, by main economic activities, in 2018

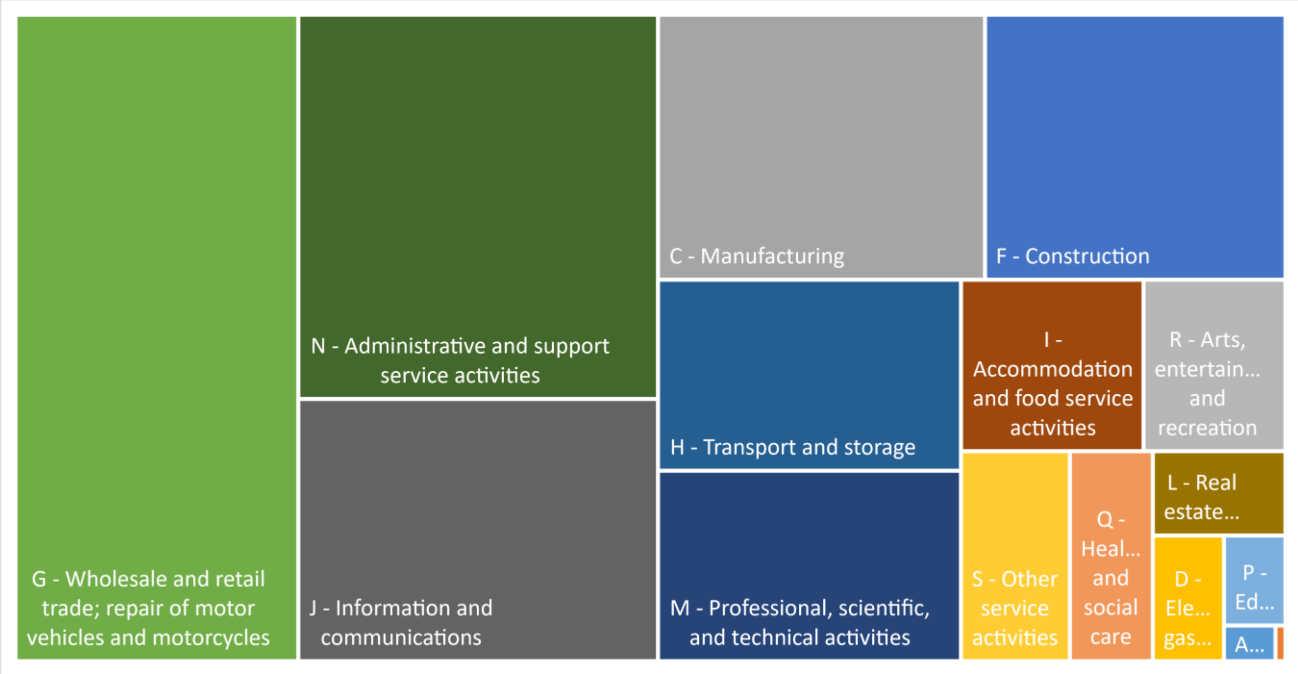


Source: NIS

The main employers in Sector 4 include: SC Vel Pitar SA, SC Amenajarea Domeniului Public 4 (A.D.P. 4) SA, SC AEK Security Division SRL, SC Guard One SRL, SC Distrigaz Sud Rețele SRL, SC Mega Image SRL, SC Eurofrutas Temporar SRL, SC Romstal Imex SRL, SC General Turbo SA, SC SGPI Security Force SRL

Sector 5 concentrates approximately 73,500 employees, and among the main employers we mention: SC RCS & RDS SA, SC Manpower HR și Manpower Romania SRL, SC Westgate Romania SRL, SC Schenker Logistics Romania SA, SC S 800 Customer Service Provider SRL, SC Argo Security SRL, SC Practicom SRL, SC Sensiblu SRL, Electromagnetica S.A., SC Kandia Dulce SA

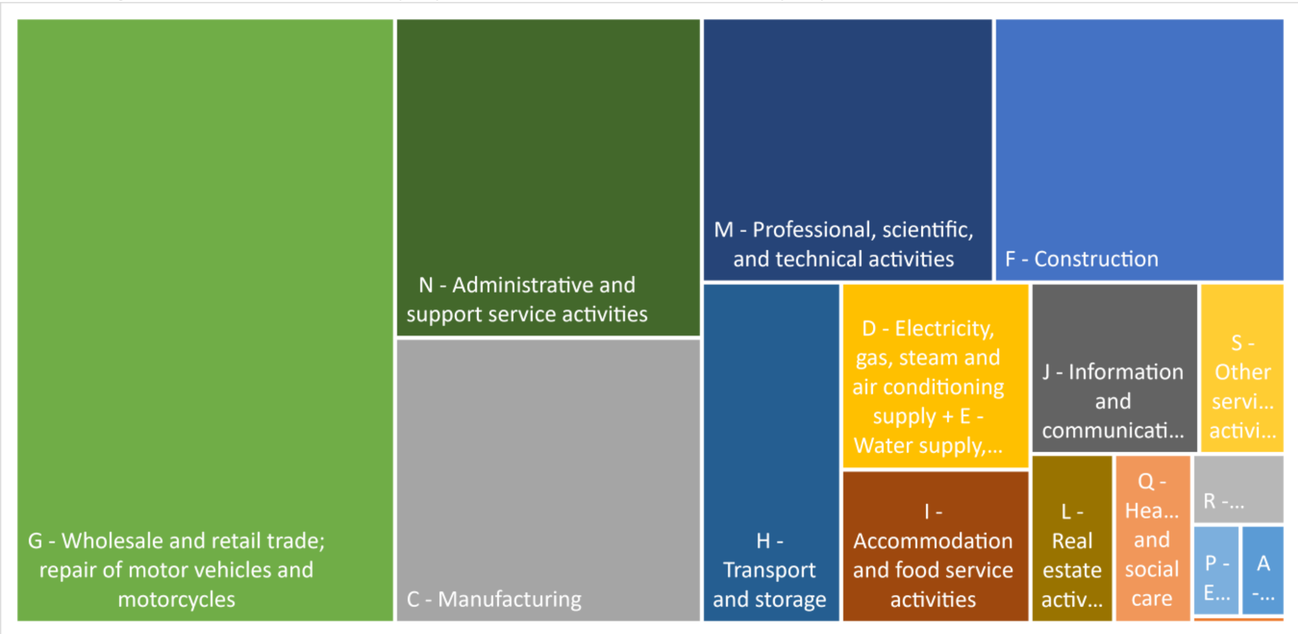
Figure 57 – Structure of employees in Sector 5 – Bucharest City, by main economic activities, in 2018



Source: NIS

Sector 6 concentrates approximately 128,500 employees. The main employers include: SC Dante International, SC Computer Generated Solutions Romania SRL, SC Mega Image SRL, SC Urban SA, Electrocentrale București SA, SC Accenture Services SRL, Société Générale European Business Services SA, SC IBM Romania SRL, SC Assystem Romania SRL, SC AD Auto Total SRL.

Figure 58 – Structure of employees in Sector 6 – Bucharest City, by main economic activities, in 2018

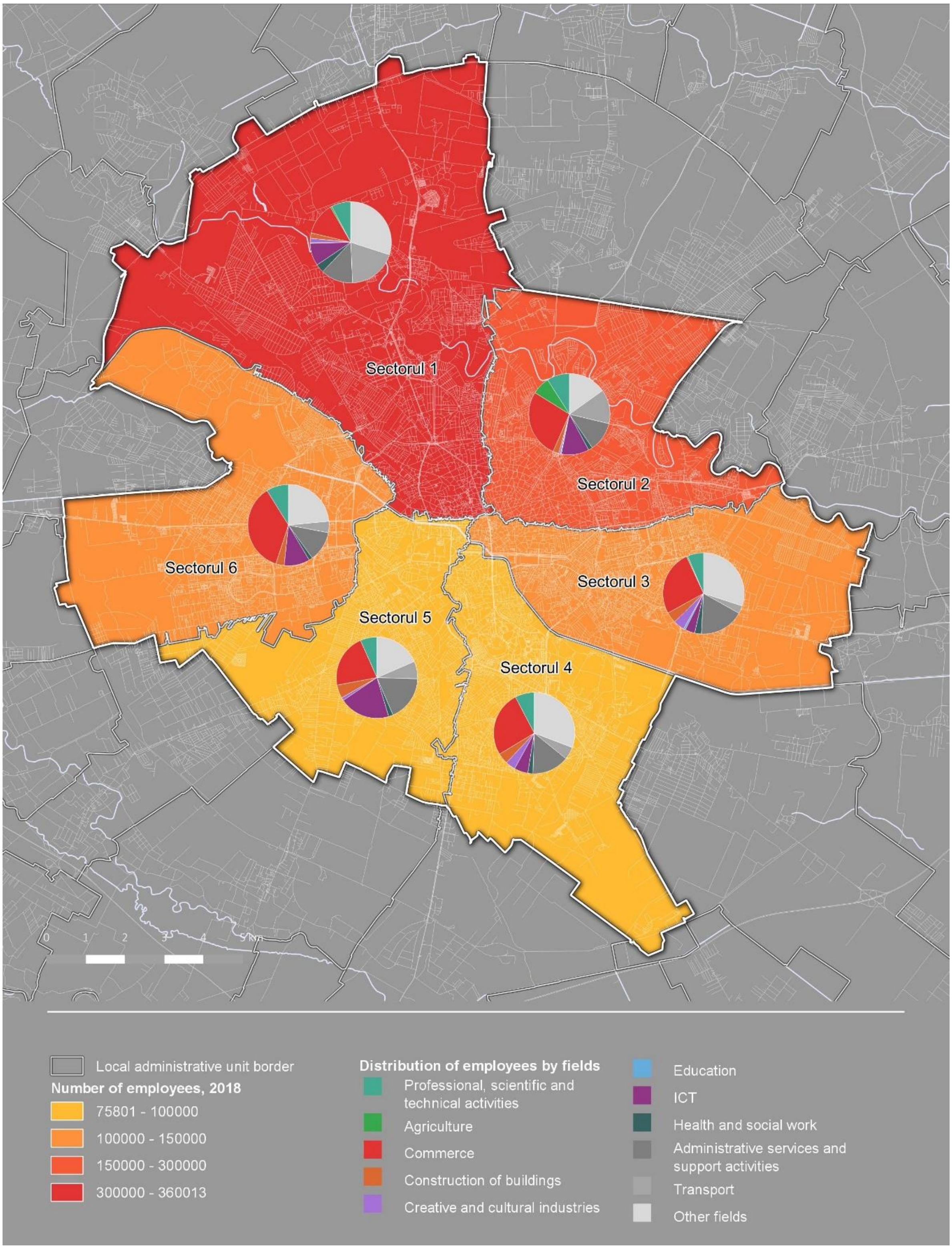


Source: NIS

Most employees are concentrated in the center and north of the Capital City, in Sectors 1 and 2. This situation is also due to the fact that Sector 1 holds the biggest employers, and that it has the most numerous and modern office buildings and spaces in Bucharest, as it is the Capital's business pole. A great number of employees from other sectors commute to the Capital's central and northern regions, attracted by the facilities offered by employers, but mainly by the salary levels. Thus, the development of administrative sectors is not balances, Sectors 1 and 2 being one step ahead of the others, because, among others, the higher salary level, the variety of economic activities, accessibility and better connectivity. In this context, in 2018, Sectors 1 and 2 were bringing together approximately 60% of the total employees. As compared to 2017, a series of investments were made and new jobs were created. A few examples to support this statement: the Work Link SRL company, established in 2018, created over 230 jobs in Sector 1; the Procema RWP SA company, set up in the same year, created 136 jobs, again in Sector 1 or the Deloitte Shared Services SRL, ISD company located to Sector 2, more specifically in the Oregon Park office building, creating over 130 jobs.

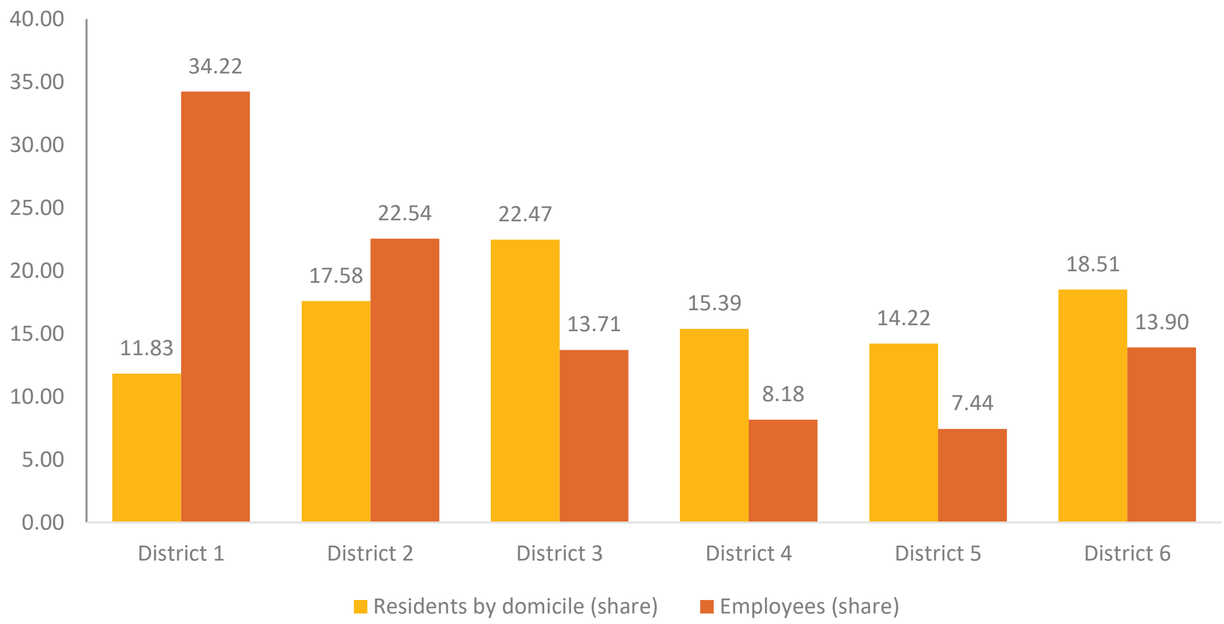
On the other hand, Sectors 4 and 5 bring together just 17.44% of the jobs, and we can speak of advanced commuting between the South and the Central-North areas in Bucharest, but also between the southern sectors and Ilfov County localities, which, in turn, are concentrating jobs.

Figure 59 – Distribution by territory and by main economic activities for Bucharest City employees, 2018



Source: own processing based on NIS TEMPO data

Figure 60 – Population by domicile, per sectors, on January 1st 2018 and the number of employees for the 2018 financial year, in Bucharest City, by administrative sectors



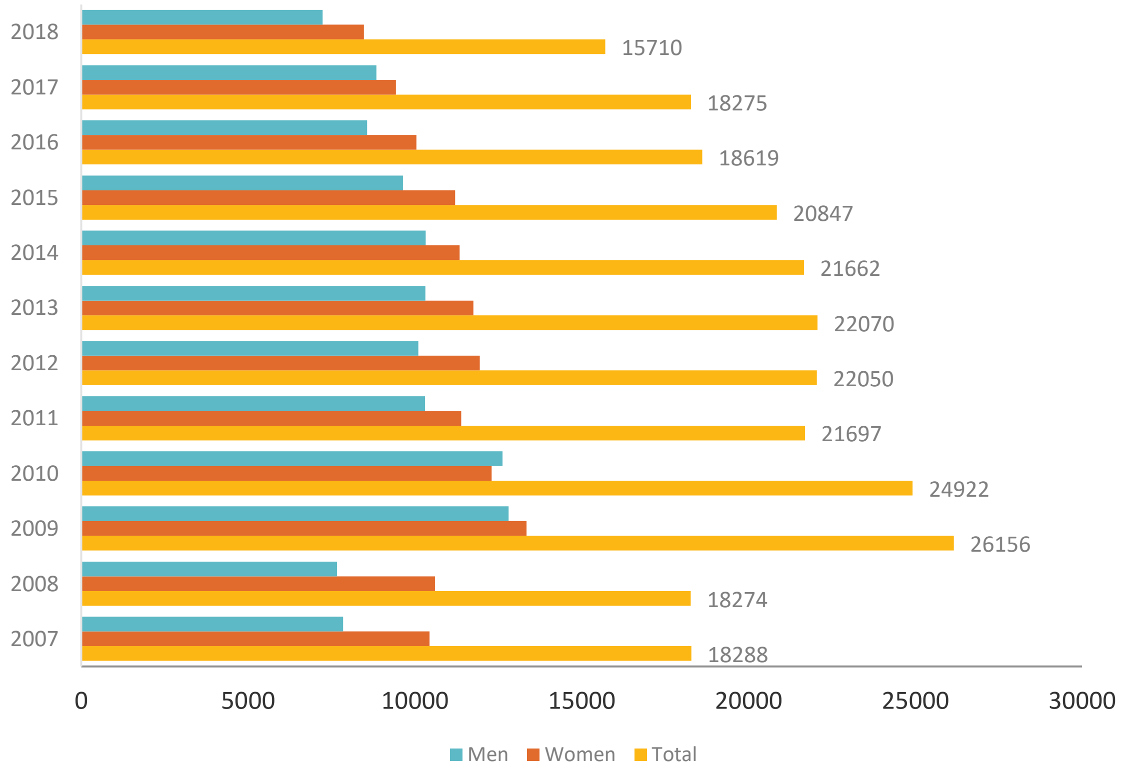
Source: Bucharest City Division of Statistics and NAFA

The number of vacant jobs in the Bucharest-Ilfov region has decreased by over 30% in the 2008-2018 interval, with the steepest decrease in education (-90%), construction (-63%), and health (-59%). Most jobs registered in 2018 in the Bucharest-Ilfov region are in administration (3,212), wholesale trade (1,939), IT&C (1,713), healthcare (1,576), transport and storage (1,408), manufacturing (1,350), etc. Even if the labor market is well supplied, with 16,661 available jobs, there are 951 less unemployed in the Capital as compared to the number of vacant jobs.

Bucharest City is registering a low unemployment rate (1.5%), which indicates a potential labor deficit and a limited capacity to meet the needs of current and potential employers, which could also discourage large (foreign and Romanian) investors from investing in the local market.

According to NIS estimates, in 2018, there were approximately 15,710 unemployed persons in Bucharest City, of which 8,477 (53.95%) were women, and 7,233 (46.04%) were men. Of the total unemployed in the Capital City, 36% were primary, secondary, vocational school graduates, 35% were high school and post-secondary school graduates, and 29% were university graduates. According to the NIS, most unemployed did not receive any monetary rights in 2018 (13,712 people, decreasing from 2007), and these were people with a low level of training and qualification, with primary, secondary and vocational studies.

Figure 61 – Total number of unemployed officially registered in Bucharest City, between 2007-2018

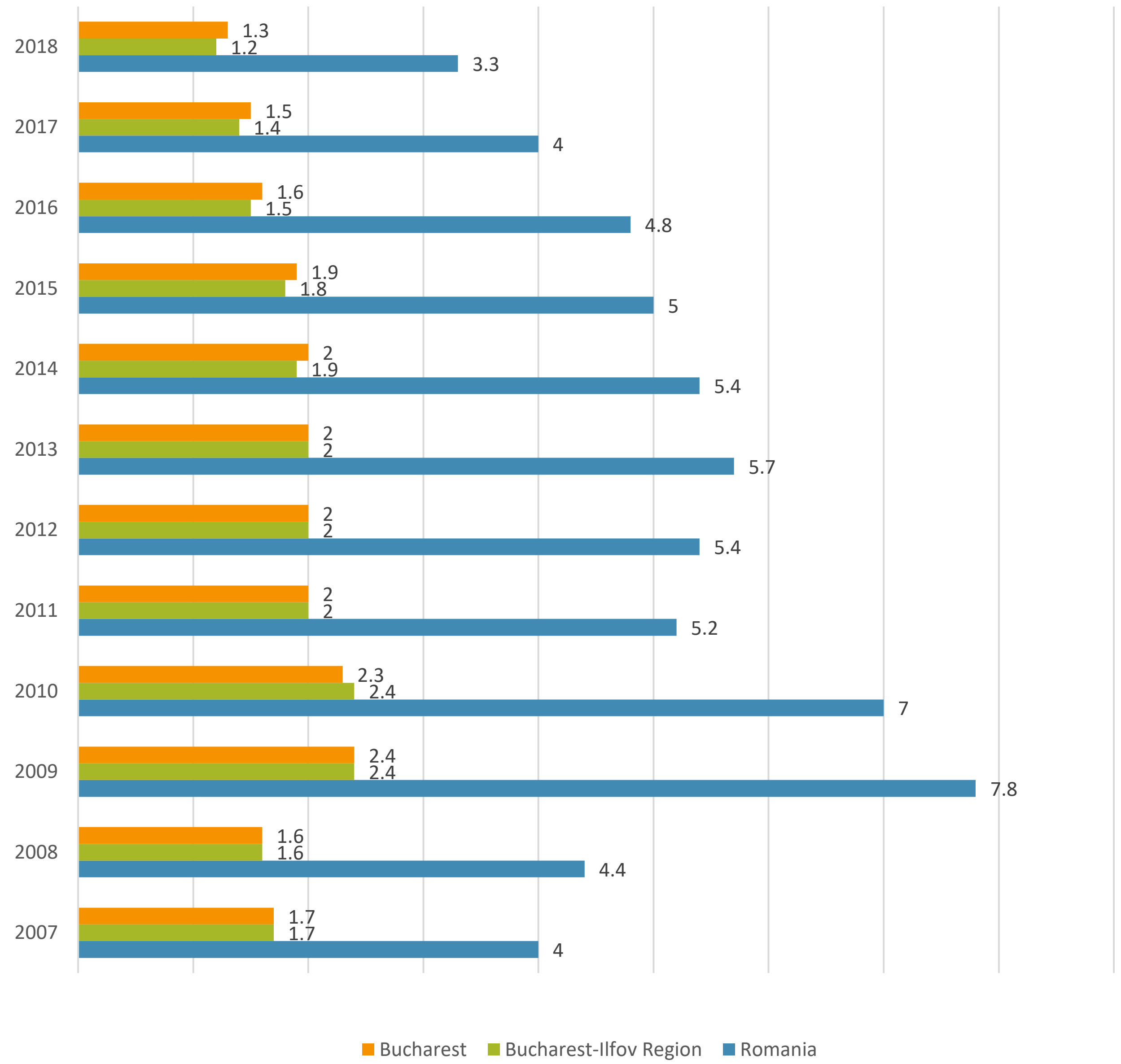


Source: NIS, 2019

The unemployment rate registered for Bucharest City in 2018 was, according to the NIS, of 1.3%, way below the national and regional average, but the Capital does not have the lowest national unemployment rate. From the point of view of this indicator, Bucharest City is surpassed by the Ilfov and Timiș counties. The low unemployment rate is not always a positive aspect, especially from the point of view of FDIs, as it may discourage foreign investors from investing on the local market, thinking they do not have a sufficient workforce to rely on.

The unemployment rate was higher among women (1.4%) as compared to the unemployment rate for men (1.2%). The highest unemployment rate was recorded in 2009, as an effect of the global economic crisis. The number of employees started to decrease as early as 2008, throughout the country. Where, until the crisis struck, many companies called on other types of measures to reduce personnel costs, such as: not renewing contracts, encouraging retirement, technological unemployment, reducing the working hours; afterwards, many employees were let go. On the other hand, after the crisis, the unemployment rate decreased year after year, and the National Prognosis Commission estimates a continuous decrease by 2022, when the unemployment rate will be 1.1% in Bucharest City.

Figure 62 – Unemployment rate, at a national and regional level and in Bucharest City, between 2007-2018



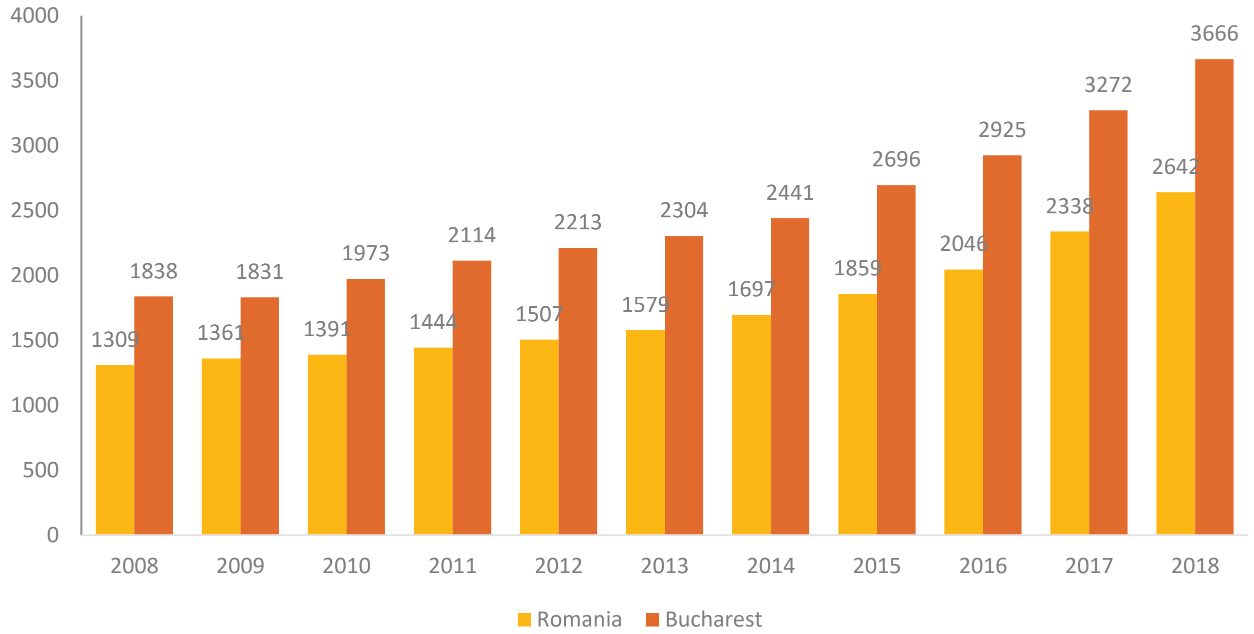
Source: NIS, 2019

The salary level recorded in Bucharest City is higher as compared to the one in the other counties – of approximately 800 EUR/month, the Capital City holding the highest weight of labor agreements paid with over 1000 EUR/month (16.2%).

In respect to the average labor cost, in 2017 Romania was ranked last in Europe, with 3.9 k EUR/person, as compared to the European Union average – 19.4 k EUR/person. Bucharest City registers an average salary for 2018 of EUR 607, ranking last in the classification of European capitals, according to the jobseurope.net site. The salary is low when compared to the one in Budapest (EUR 729), Athens (EUR 730), Warsaw (EUR 947), Tallinn (EUR 1,080), Prague (EUR 1,096) and way behind the peaks registered in Luxembourg (EUR 3,276), Copenhagen (EUR 2,871) or London (EUR 2,817).

In 2018, the monthly net average nominal wages in Bucharest City were RON 3,666, that is, 1024 more than the national average. As compared to 2008, despite the global economic crisis, the monthly net salary early doubled in absolute terms and in national currency, an increase rhythm that is similar to the one reported on a national level.

Figure 63 – Dynamics of the net average monthly wage at the national level ad in Bucharest City between 2008-2018



Source: NIS, 2019

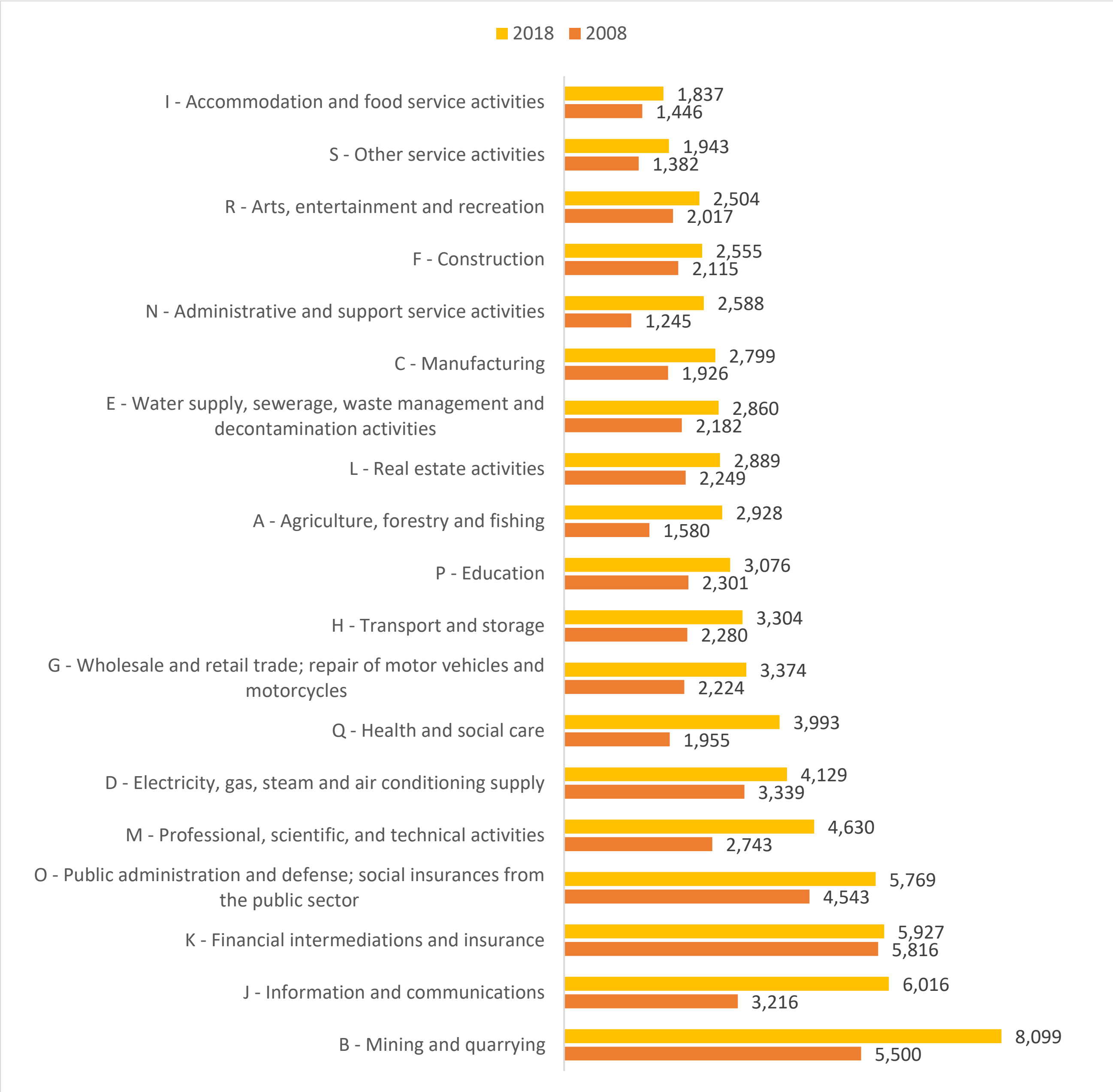
According to the PIAROM study, the gross salaries in Bucharest City are 24.71% higher than the national average. Overall, salary levels are higher in Bucharest as compared to the rest of the counties in Romania. Bucharest City is registering the lowest share of individual labor agreements under EUR 350 (34.52%), and the highest share of individual labor agreements paid with over 1,000 EUR/month (16.2%).

67.25% of the employees in Bucharest City, namely 640,177 people, were working, in 2018, in fields where the average net salary exceeded the national average net salary

As compared to the average net salary in the economy, which registered a value of RON 2,642 in 2018, one can notice that approximately 70% of the Capital's employees were working, in 2018, in fields where the monthly nominal average net salary exceeded this value.

The highest average salaries in Bucharest City were offered, in 2018, to employees in the field of mining and quarrying, more specifically in the extraction of crude petroleum (RON 10,938) and the mining of iron ores (RON 8,640), IT&C (RON 7,404), the manufacture and processing of coke (RON 7,291), publishing activities (RON 6,776), mining support service activities (RON 6,329), financial intermediations (RON 6,161) etc. On the other hand, the lowest salaries were paid in certain branches of manufacturing (e.g. the manufacture of furniture – RON 1,535, manufacturing of handbags and footwear – RON 1,591, the processing of wood – RON 1,658, the manufacture of wearing apparel – RON 1,748 etc.), accommodation and food service activities (RON 1,837), cultural and recreational activities (RON 2,504), construction (RON 2,555), administrative services (RON 2,588), etc.

Figure 64 – Dynamics of the net average monthly wage in Bucharest City, by main economic activities, between 2008-2018[55]



Source: NIS, 2019

As compared to 2008, the net average salaries increased for most fields. The most important increases were registered for publishing activities (148.71%), IT&C (118.61%), administrative service activities (107.92%), healthcare (104.23%). The fields registering decreases of the monthly net salary in 2018 as compared to 2008 are water transport (-26.89), the manufacture of coke and refined petroleum products (-22.58%), auxiliary

[55] In order to provide the most relevant and accurate image, considering inflation, values for 2008 were updated using the Consumer Price Index (expressed as percentages), per NIS (http://statistici.insse.ro/shop/?page=ipca1)

activities for financial intermediations and insurance and pension funds (-17.41%), other mining and quarrying (-13.10%) and manufacture of wood and of products of wood and cork, except furniture (-4.65%), the manufacture of tobacco products (-2.06%).

Table 7 – Monthly gross average wages in Bucharest City by national economy activities (NACE divisions), 2018

Top 10 activities (NACE divisions) by salary level	% employees	Average net salary	Last 10 activities (NACE divisions) by salary level	% employees	Average net salary
06 – Extraction of crude petroleum and natural gas	0.16	10,938.00	10 – Manufacture of food products	1.30	2,272.00
07 – Mining of iron ores	0.01	8,640.00	32 – Other manufacturing	0.24	2,243.00
62 – 63 – Computer programming, consultancy and related activities; Information service activities	4.05	7,404.00	17 – Manufacture of paper and paper products	0.12	2,182.00
19 – Manufacture and processing of coke and of refined petroleum products	0.03	7,291.00	S Other service activities	1.39	1,943.00
58 – Publishing activities	1.41	6,776.00	Accommodation and food service activities	3.61	1,837.00
09 – Mining support service activities	0.10	6,329.00	13 – Manufacture of textiles	0.15	1,775.00
64 – Financial service activities, except insurance and pension funding	3.37	6,161.00	14 – Manufacture of wearing apparel	0.76	1,748.00
52 – Warehousing and support activities for transportation	0.83	5,950.00	16 – Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.03	1,658.00
65 – Insurance, reinsurance and pension funding, except compulsory social security	0.66	5,889.00	15 – The tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	0.40	1,591.00
O Public administration and defense; compulsory social security	4.55	5,769.00	31 – Manufacture of furniture	0.57	1,535.00

Source: The TEMPO Database of NIS

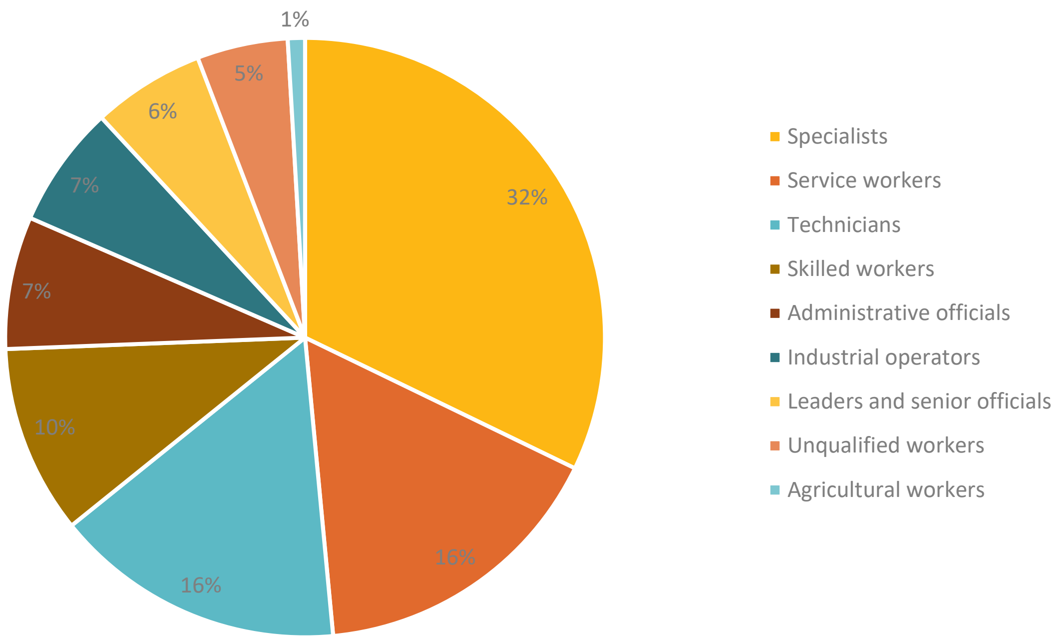
One can notice that, during the analyzed period, the activities with the highest salaries registered the highest values in computer programming, consultancy and related activities and information service activities (an increase by 139.99% in the number of employees and by 118.61% in the salary value), mining support service activities (an increase by 81.05% in the number of employees, but considering a low number of employees), and air transport (an increase by 79.04% in the number of employees). On the other hand, most activities with salaries below the national average, mainly in manufacturing, registered significant decreases in the number of employees, despite the increase of salaries (most often) by 20-30%. Thus, manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials has lost 70% employees between 2008 and 2018 (reported to a low number of employees, which could indicate the closing/relocation/re-technologization of a main actor in the field/a low number of actors), the tanning and dressing of leather; the manufacture of luggage and handbags, of saddlery and footwear; the preparation and dyeing of furs has lost 50.01% of the number of employees, and the manufacture of wearing apparel – 42.62%. These activities have a low added value, being mostly carried out in outward processing system, and the decrease in their volume and, similarly, of other branches of manufacturing, raise the issue of re-employment or the probability that the employees migrate to Ilfov County or to other neighboring counties, in search for jobs in less knowledge-intensive/low-tech fields. Thus, an important stake for the metropolitan economy consists of the training and retraining of the workforce in declining fields, with low added value, for the reemployment of the workforce on the local market, thus supporting the development of knowledge-intensive, high-tech or medium-high-tech services – especially support services thereof, which are already seeing an increase and providing a high salary level.

The survey of Bucharest investors shows that the average net salary is approx. 12.6% higher in companies with foreign capital, as compared to companies with Romanian capital (RON 4,115 vs. RON 3,656), the difference being a bit smaller (11%) as compared to mixed-capital companies. Thus, it can be considered that foreign companies are more attractive for workforce, considering the higher level of salaries.

As exhaustive data on the labor market are only collected during population censuses, which takes place once every 10 years, we present below, for comparison, the conclusions of the Population and Housing Census (PHC) of 2011 concerning the labor market.

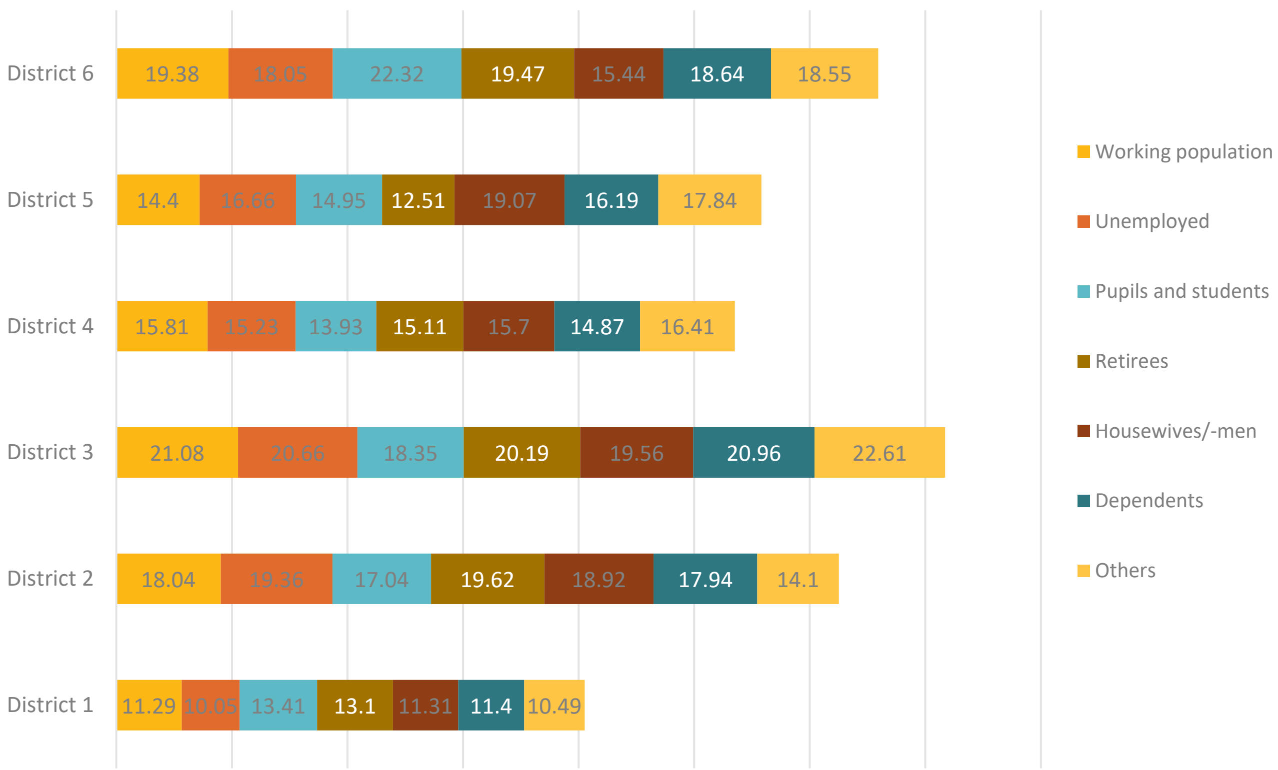
According to the PHC, a large part of the stable population in Bucharest City aged over 10 years old had higher education (34%), the same 34% percentage of the population had high school and post-secondary education, 9% vocational, and the rest 23% had basic education (primary and secondary). Bucharest City stands out through good results in this category, with the highest weight of university education graduates, and, respectively, the highest share of population engaged in high value-added activities. Most university graduates remain in Bucharest, as the market provides them with tempting jobs, adequate for their training. At the same time, from the point of view of investors, the trained human capital is a very important criterion in the decision to invest in a certain place.

Figure 65 – Structure of the working population in Bucharest City, by groups of occupations, PHC 2011



Source: NIS. Final 2011 PHC results

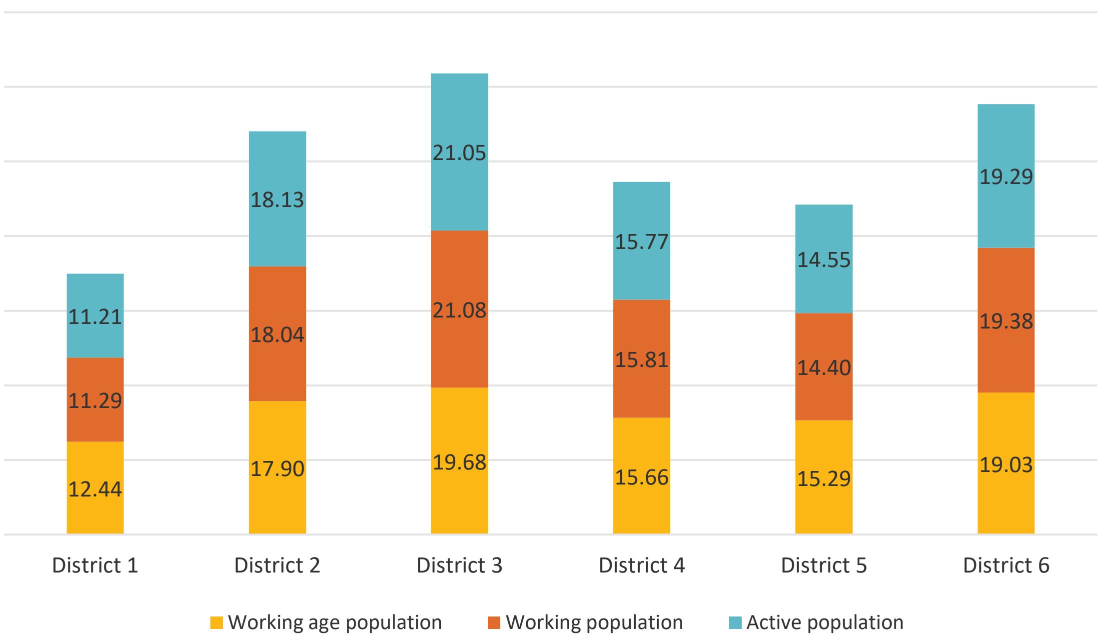
Figure 66 – Occupational structure of the population of Bucharest City at sector level in 2011



Source: NIS. Final GPHC [General Population and Household Census] 2011 results

Out of the total working-age population (aged 15-64) in Bucharest City – 1,377,118 persons – only 959,531 were economically active (working population plus the unemployed). It results therefore that 417,587 are not engaged in any economic activity, therefore the labor resources are under-utilized. The real unemployment rate is higher than the official unemployment rate and is strongly concentrated in a number of marginalized communities, most of them being located in Sector 5. (e.g. the Ferentari neighborhood). Therefore, measures need to be identified for this population segment to be integrated on the labor market, thus diminishing the risk of widening social and economic gaps. A recommendation would be to put these persons in touch with public or public institutions carrying out professional trainings, thus facilitating their integration on the labor market.

Figure 67 – working-age population, working population and active population in Bucharest City, by sector in 2011

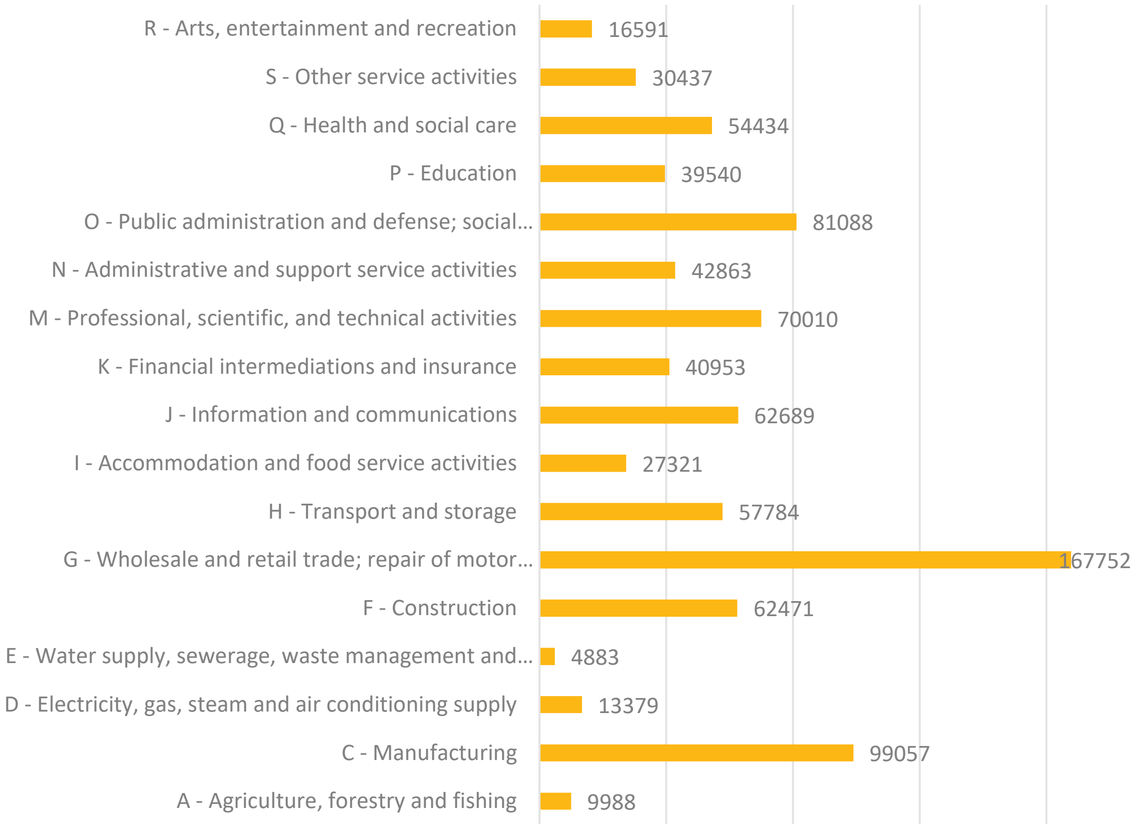


Source: NIS. Final 2011 PHC results

The graph above shows that the least under-used labor resources were registered in Sector 3. Considering these data, there results an unemployment rate that is much higher than the one reported by the NIS which, indeed, is calculating this indicator based on the data provided by the National Employment Agency. We shall consider the unemployment rate to be the share of unemployed persons registered out of the total active population. Following this reasoning, the unemployment rate by sectors is: Sector 1 – 6.17%, Sector 2 – 7.34%, Sector 3 – 6.75%, Sector 4 – 6.64%, Sector 5 – 7.87%, Sector 6 – 6.43%. Since 2011, the situation has improved against the appearance of new jobs, with the unemployment rate reaching 1.5% in 2017.

There are differences in respect to the population structure by occupations according to NIS estimates and the 2011 PHC results, in terms of numbers. In terms of distribution by economic activities, the situation is somewhat similar, as the census confirms that most of the population is engaged in trade activities. Then, there are a few differences: according to the PHC, an important share of the population is working in manufacturing (11%), but currently there are more persons working in construction.

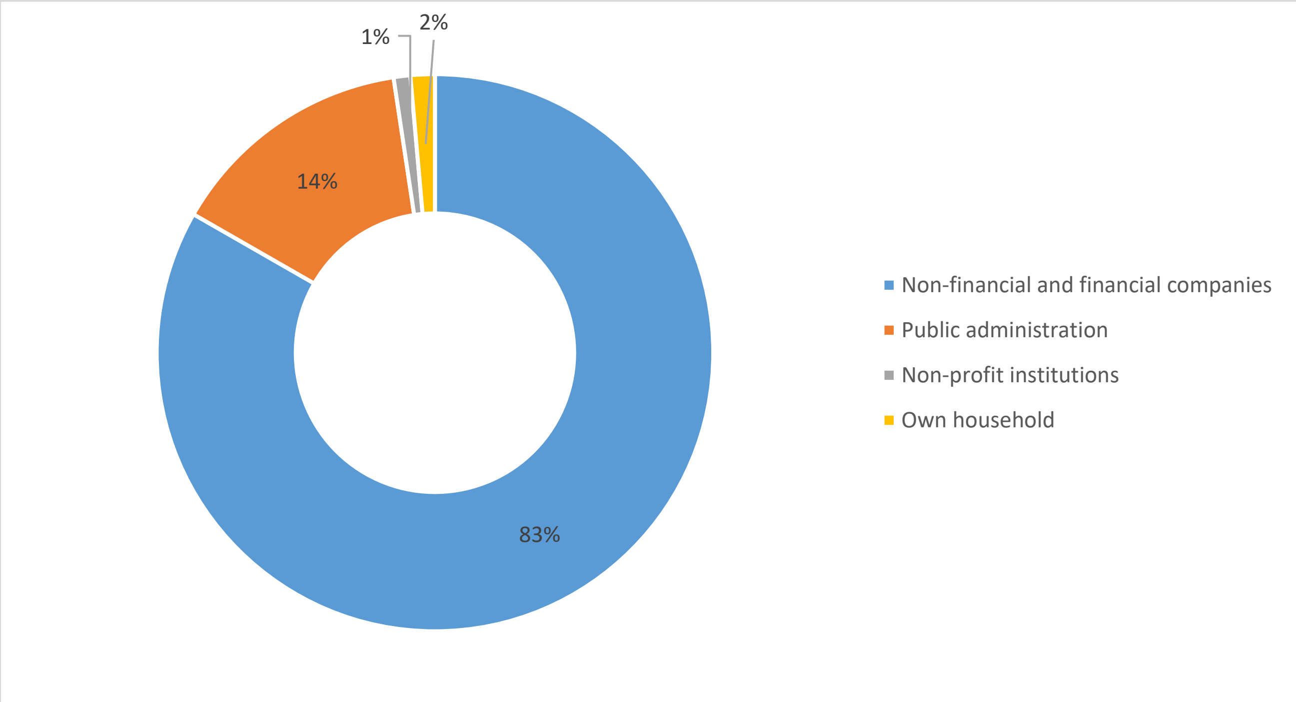
Figure 68 – Occupancy structure per economic activities in Bucharest City, at the 2011 PHC



Source: NIS. Final 2011 PHC results

Out of the total working population at the 2011 census, approximately 744,112 persons were active in the private environment (83% of the total), 128,104 were active in the public sector (14%), 12,628 in their own households (1.41%), and only 8,657 in the NGO sector.

Figure 69 – Occupancy structure by sectors and residential environments, Bucharest City, at the 2011 PHC



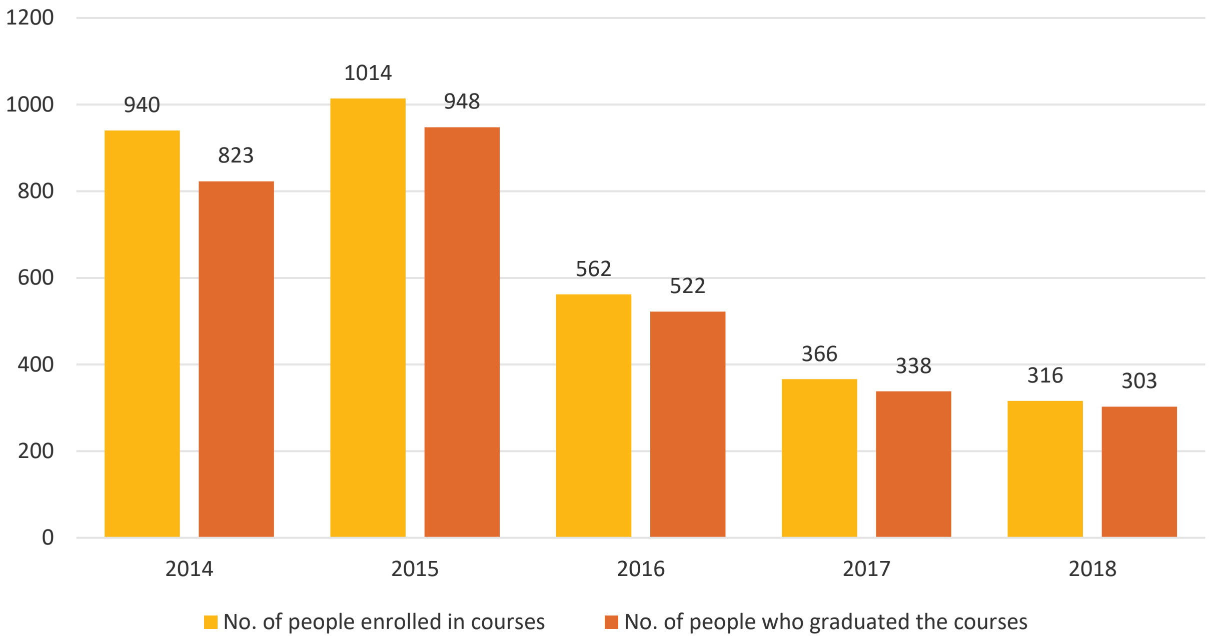
Source: NIS. Final 2011 PHC results

The 2011 PHC is providing relevant information regarding the range of occupations for the inhabitants. Thus, out of the 893,501 working inhabitants in Bucharest, most were specialists in various activity fields (32% of the total), service workers and technicians and other technical specialists (16%), closely related to the structure of the local activity, focused on high value-added activities, especially in services. Comparatively, Cluj-Napoca City had a higher share of population with high-school and post-secondary education, and of the population with vocational studies, while the Capital is leading the top from the point of view of the working population with higher education, another important aspects that the investors should be considering.

4.1. Training

According to the Bucharest City Employment Agency (AMOFM), the status of trainings varied from one year to the other, so, where 49 training classes were organized in 2014, only 22 classes were created in 2018. The graph below shows the situation of the number of people enrolled in these classes and the number of graduates:

Figure 70 – Number of people enrolled in classes and number of graduates, between 2008-2018



Source: AMOFM Bucharest, 2019

In 2014, the most demanded trainings were those for “real estate manager”, “cook”, “accountant”, “web page designer”, “hairdresser, mani-pedi”, “butcher”, and in 2018 the attendants preferred training as “real estate manager” and “OHS inspector”. The offer of AMOFM trainings reduced each year, with just 13 trainings in 2018, as compared to 27 in 2014 or 28 in 2015. Most classes (66) were registered in 2015, with a very high demand for training in: “babysitter”, “commercial worker”, “hairdresser, mani-pedi”, “real estate manager”, “plumber”, “car mechanic”, “forklift driver”.

If, in 2014-2015 there was a demand for training in the industrial field, this was less interesting for attendants over the last years. Also, besides the “web page designer” class falling under the IT&C domain, no other trainings were organized in this field. A possible explanation could be the students’ preference for trainings organized by informal school (for instance, the “IT Informal School”), even if some of them do not provide a certificate recognized by the Ministry of Labor, but provide skills related to the current demands of the labor market.

From a territorial point of view, we can see that most attendants in the 2015-2018 interval, when statistical data were provided, are domiciled in the sectors with a lower concentration of employees, namely: Sector 3 (581 trainees), followed by Sector 5 (421 trainees), and, respectively, Sector 4 (398 trainees).

According to the data on the website of the National Qualifications Authority, in 2019, in Bucharest City, there were public and private training centers, offering over 338 initiation, specialization, improvement or qualification trainings. The legal form of training suppliers, as well as the training fields, are extremely varied. Among suppliers we find, for instance, consultancy firms, professional training centers, foundations or companies. The trainings provided are generally dedicated to services (management, HoReCa, trainer, trade, human resources, et.), industry (forklift driver, CNC operators, crane operators) or social services (social economy entrepreneur, personal assistant for the severely disabled, caretaker for the elderly, etc.).

According to the number of accredited trainings, the biggest professional training provider in the city, according to 2019 permits, is the company Quality Team Performance SRL, with a portfolio of 8 trainings, followed by Compania Națională pentru Controlul Cazanelor, Instalațiilor de ridicat și Recipientelor sub

Presiune SA, with 7 trainings. A relatively low number of accredited trainings in the IT&C field were noted: "digital skills of using information technology". By type of program, 96 are qualification trainings, 12 are initiation trainings, 26 are improvement trainings, 204 are specialization trainings. Most trainers are coming from Sector 1 and Sector 6, and the fewest are coming from Sector 5.

5. RESEARCH, DEVELOPMENT, INNOVATION AND BUSINESS SUPPORT SERVICES AND INFRASTRUCTURE

Bucharest City is the most important national competitiveness pole in research, development, innovation (RDI), ranking first on a national level

Bucharest City is a national competitiveness pole in the field of research, development, innovation (RDI), as it concentrates the highest number of research institutes, as well as the most active enterprises and employees in this field, which places it on the first place on a national level.

Table 8 – National ranking by enterprises active in RDI

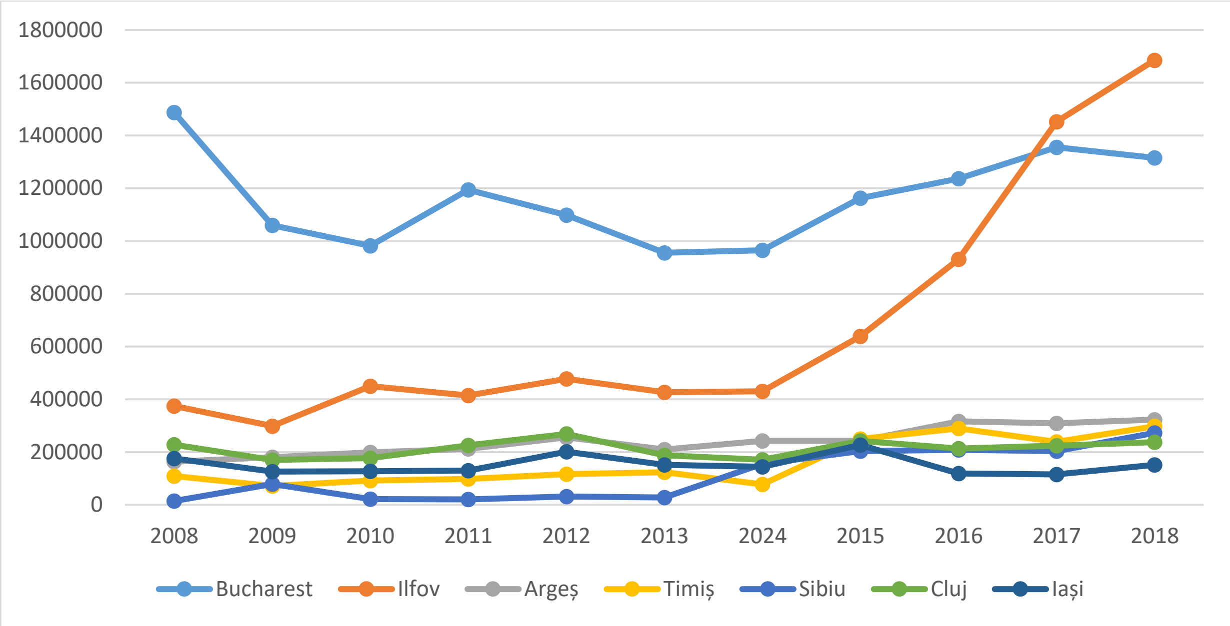
TOP NO. SUBUNITS		TOP NO. EMPLOYEES		TOP TURNOVER	
COUNTY	NO. OF ENTERPRISES	COUNTY	NO. OF EMPLOYEES	COUNTY	Turnover
Bucharest	**597**	**Bucharest**	**5,736**	**Bucharest**	**1,032,460,440**
Cluj	109	Ilfov	2,654	Ilfov	422,792,138
Ilfov	103	Argeș	832	Argeș	80,365,659
Iași	60	Cluj	541	Cluj	65,506,633
Timiș	60	Timiș	430	Timiș	65,407,794

Source: NIS

In 2018, the Bucharest-Ilfov Region was focusing approximately 70% of the personnel in RDI organizations in Romania. Over the last year, namely between 2016 and 2018, the Capital saw a slight decrease in the number of RDI employees (-2.02%), while maintaining its leading position in the national top. When comparing the number of RDI employees with the total number of employees, Bucharest City ranks 5th (0.50%), after Ilfov (1.83%), Călărași (1.34%), Argeș (0.62%), and Vâlcea (0.55%).

Regarding RDI expenses, Bucharest City ranked first until 2016, but it was surpassed by Ilfov County as of 2017. In 2018, Bucharest City maintains the second position, with Ilfov County exceeding the Capital City expenses by 28.1%.

Figure 71 – Total expenses for the scientific research and development activity – current prices, national top for Bucharest City and for the most representative counties



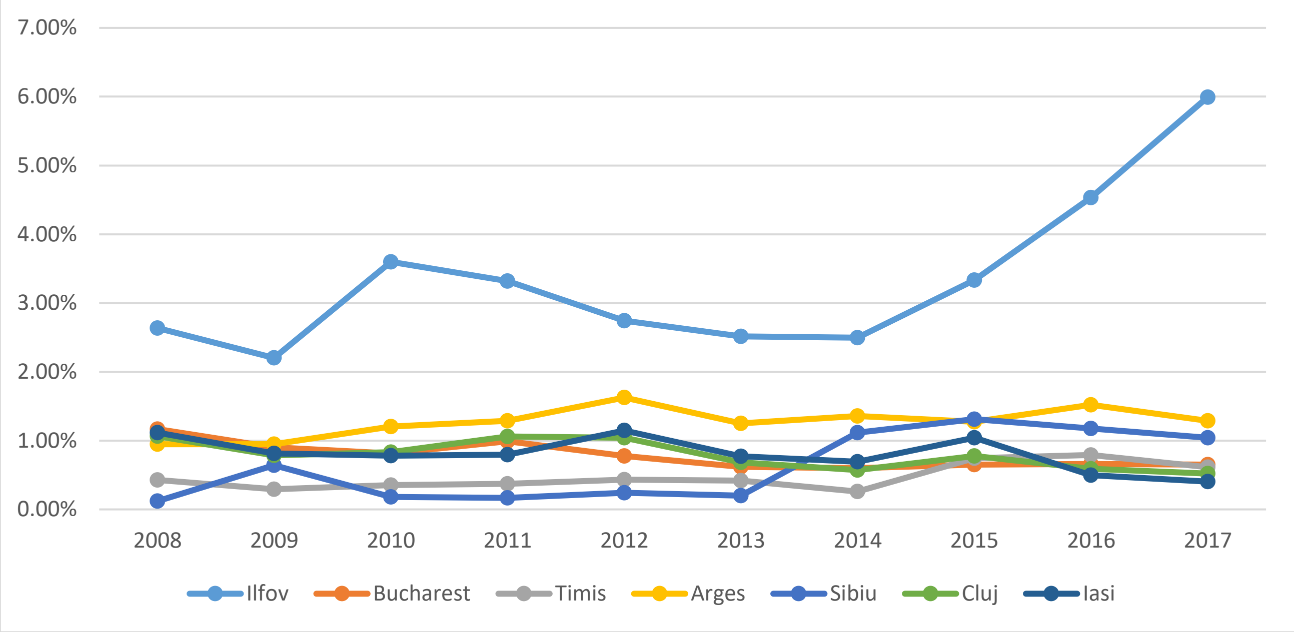
Source: The TEMPO Database of NIS

Bucharest City, together with the counties of Ilfov, Cluj, and Iași, hold the highest innovation potential in Romania

RDI expenses had a share of 0.65% of the GDP at city level in 2017 (last available data), the Capital City being ranked fifth on a national level, after the counties of Ilfov, Argeș, Sibiu, and Vâlcea. Nevertheless, Bucharest City registers a value above the national average, which stood at 0.50%. At the same time, according to the Domestic Business Owners' Association (*Patronatul Investitorilor Autohtoni*[56]*)*, based on the ratio between the number of labor agreements in the RDI sector and the total number of labor agreements (per 1,000 agreements), Bucharest City, together with Ilfov, Cluj, and Iași, show the highest innovation potential in Romania.

[56] Patronatul Investitorilor Autohtoni PIAROM "Studiu privind dinamica pieței muncii la nivelul principalelor industrii angajatoare din România în perioada 2016-2017" (*Study of the labour market dynamics for the main employer industries in Romania, between 2016-2017)*.

Figure 72 – GDP ratio corresponding to RDI expenses



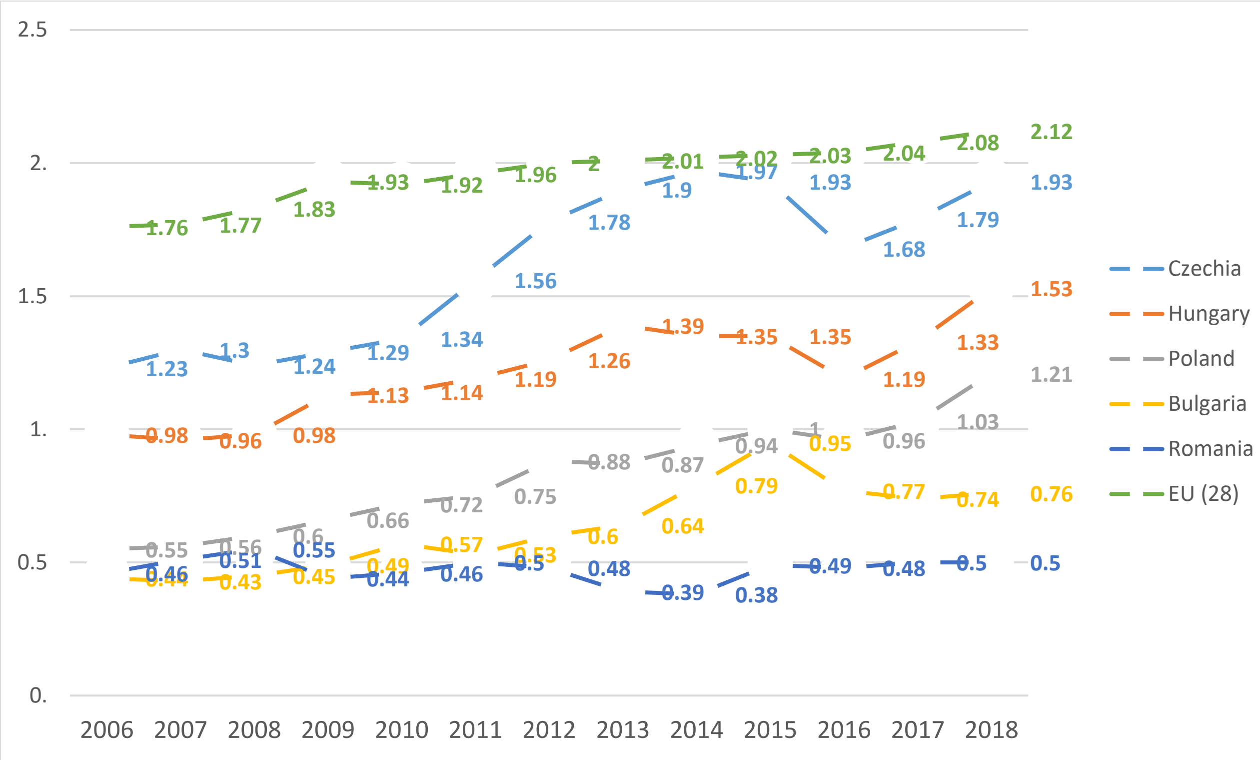
Source: The TEMPO Database of NIS

The aim at a national level is that of reaching 2% (1% out of government contribution) of the GDP in relation to RDI expenses, by 2020 (as undertaken when negotiating the EU accession, in 2007), but is rather far away. When analyzing the European data provided by Eurostat, one can note that the RDI system in Romania is very poorly financed. In 2018, RDI expenses out of the GDP registered the lowest value in the classification of EU countries, the value of 0.5% being far behind the European average of 2.12%. The graph below shows the comparative situation with other countries, having a similar economic level as Romania's. The value of 0.5% is among the lowest when compared to the other EU countries over the last decade. At the same time, compared to the country's economic development trend, the RDI expenses out of the GDP are placed under the forecasted level. [57] [58].

[57] Romania Laser Valley (World Bank Group)

[58] The highest level of RDI expenses (out of GDP) was registered in 2008 (before the economic crisis), at 0.52%.

Figure 73 – RDI expenses (% of GDP)



Source: Eurostat

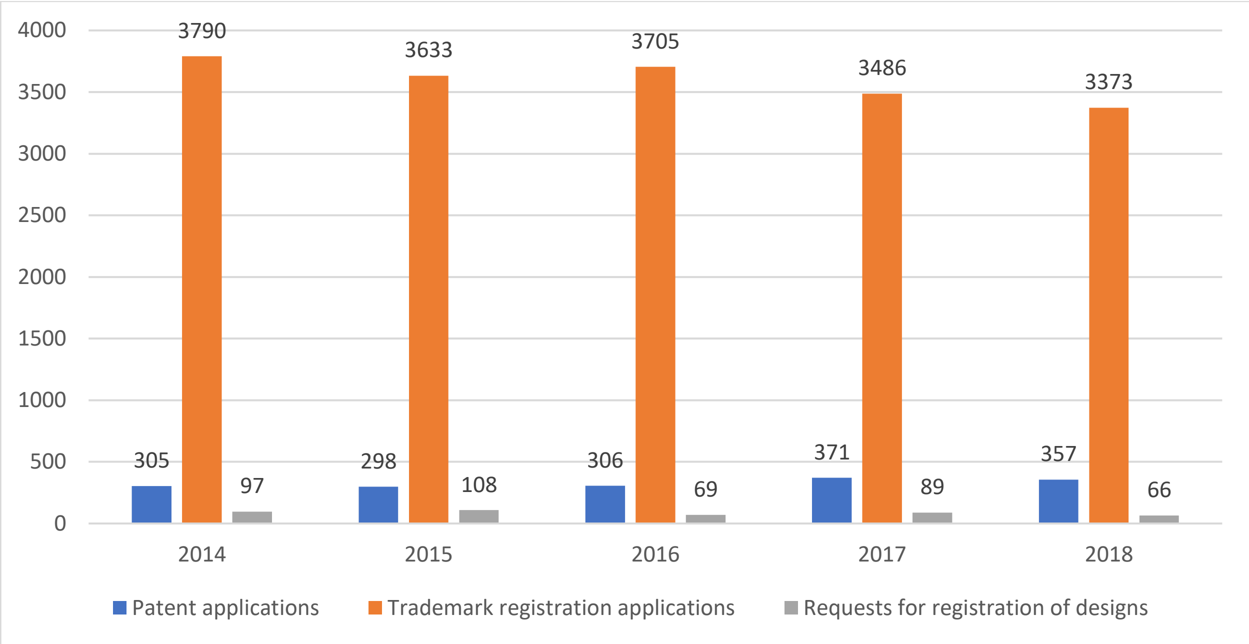
The Bucharest-Ilfov region is characterized by a high contribution to national research, through the high ratio of the number of submitted patents or magazines with "ISI" indexing/citation

In 2016, of the 56 Romanian magazines with "ISI" (Information Sciences Institute) indexing/citation, and, respectively, included in the Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI) or Arts and Humanities Citation Index (AHCI), 32 are magazines either created by research institutes of the Romanian Academy or of Bucharest universities, or by foundations, scientific or trading companies in the Bucharest-Ilfov Region.

In 2018, the last year of available data, 32.4% of national patent applications and 33% of national issued patents were registered in Bucharest City. Alongside Ilfov County, the Capital concentrated over 40% of patent applications.

According to the State Office for Inventions and Trademarks (OSIM), over the last 5 years, the number of applications related to the protection of intellectual property, registered in Bucharest City, saw a decreasing tendency, with lower values in the categories of trademark applications and design applications, and a slightly increasing tendency in patent applications. The Capital City maintains its position as national leader, but we can note the more favorable evolution of regional centers, such as Cluj, Iași or Timiș.

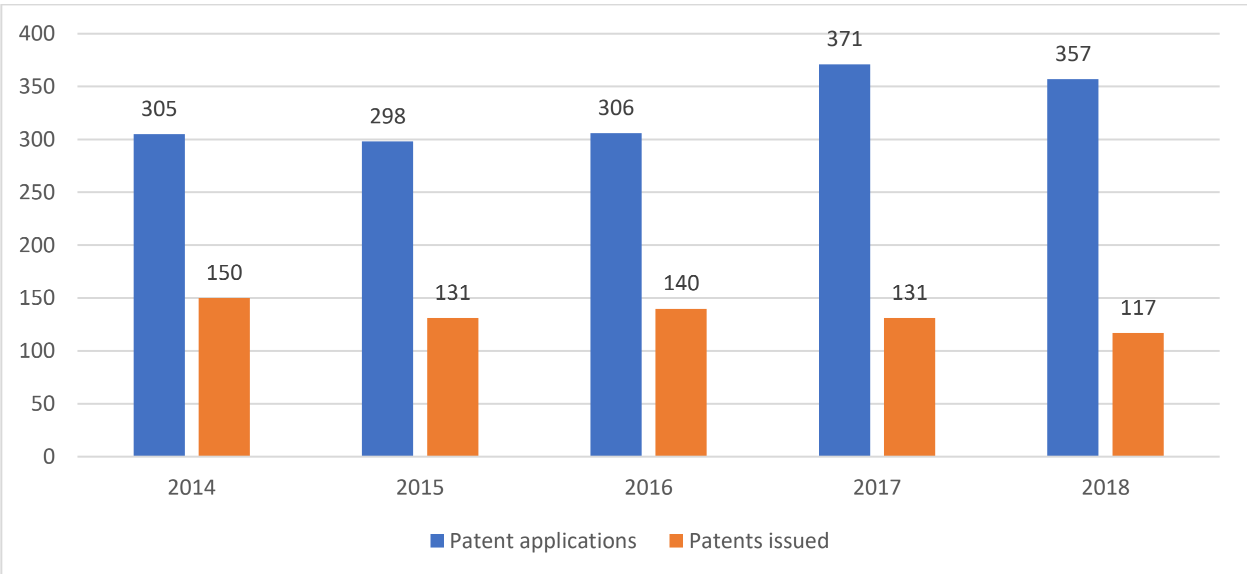
Figure 74 – Number of applications for intellectual property protection, Bucharest City



Source: State Office for Inventions and Trademarks, 2018. Annual Report

In 2018, patents were issued for 32.77% of patent applications registered in Bucharest City (as compared to 32.21% on a national level), the success rate of applications registering a decreasing tendency over the last years, from approx. 50% (49.18%) in 2014. This tendency is also manifested on a national level, with application success rate reducing by approximately 5% between 2014 and 2018.

Figure 75 – Patents (applications vs. issues), Bucharest City

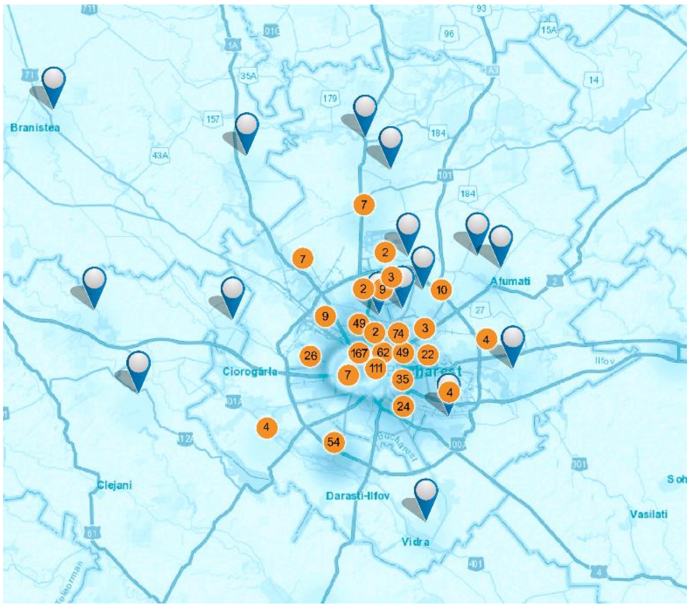


Source: State Office for Inventions and Trademarks, 2018. Annual Report

In terms of the status of patent applications registered by universities, of the total 172 patent applications in Romania in 2019, 31 were located in Bucharest City (18%). Of these, most were initiated by the Politehnica University of Bucharest (23 applications), followed by the University of Medicine and Pharmacy "Carol Davila" Bucharest (4 applications) and the University of Bucharest (3 applications). In terms of patents granted in 2019, the Politehnica University of Bucharest leads the top, with 5 of the 9 patents granted to Bucharest universities. On a national level, the top is led by the "Ştefan Cel Mare" University of Suceava (20 patents), the ''Gheorghe Asachi'' Technical University of Iași (10 patents) and the "Transilvania" University of Brașov (9 patents).

The Bucharest-Ilfov region is registering the highest concentration and variety of organizations carrying out research, development, innovation activities in Romania.

Figure 76 – RDI infrastructures providing research and technological services in the Bucharest-Ilfov region



Source: ERRIS Platform (Engage in the Romanian Research Infrastructure System), UEFISCDI

Bucharest City stands out by the presence of several types of organizations carrying out RDI activities: research and development institutes, research centers, enterprises, technological transfer and technological information centers, and, respectively, innovation entities. Their list can be consulted in Appendix 4. They are completed by enterprise support infrastructures and services – incubators, industrial parks and a series of clusters in relevant fields, which local companies can join. Most clusters are affiliated to the Romanian Cluster Association (CLUSTERO), some being among the founding members of this association (e.g. The Romanian Textile Concept Cluster), and part of them hold ESCA certification[59], at the time of analysis, with a silver label (IND-AGRO-POL, Strategic Innovative Cluster for Mechatronics Smart Specialization Domain - «MECHATREC» and ELECTRONIC INNOVATION CLUSTER (ELINCLUS)) or a bronze label (ROHEALTH – THE HEALTH CLUSTER and START INOVARE). Part of them are also active in international and European networks or have entered partnerships with representative actors in other European countries:

- Clusters such as: BIODANUBIUS, Cluster for Promoting Nearly Zero Energy Buildings (pRO-nZEB), Control & IT Cluster, Different Angle Cluster, Electronic Innovation Cluster (ELINCLUS), Glocal Romania Cluster, Health Romania The Medical Cluster, IND-AGRO-POL, ROHEALTH - Health Cluster Romania, Romanian Textile Concept, Romanian Cluster PROECO-CBRNE, Smart Alliance Cluster, START INOVARE, Strategic Innovative Cluster for Mechatronics Smart Specialization Domain - «MECHATREC», are registered on the European cluster collaboration NEW ECCP platform, whose aim is to provide instruments to streamline cooperation on a European and international level, to support the

[59] www.cluster-analysis.org

emergence of new value chains by inter-sectoral cooperation, as well as to increase members' competitiveness.

- CLUSTERUL BIOGASINNO – is a member of the "Balkan Clusters Network", an initiative of the business development organization in Serbia, CLUSTER HOUSE, with the main aim to support the development of Balkan clusters.
- ROHEALTH – THE HEALTH CLUSTER – has concluded partnerships with Cluster of Health, Wellness and SPA Tourism Serbia (WELLNESS SERBIA), Cassovia Life Science Slovakia and Health and Wealth Ukraine.
- IND-AGRO-POL is an affiliate in the project "Future materials and products for advanced smart packaging" (AdPack) (Call COS–CLUSTER-2014-3-03 Cluster Go International), nut also in the "biomastec Danube Network", Balkan&Black Sea Cluster Network and Meta-Network of Clusters within the ClusterPolisee Project.
- STRATEGIC INNOVATIVE CLUSTER FOR MECHATRONICS SMART SPECIALIZATION DOMAIN (MECHATREC) – has entered international partnerships with clusters such as: MECHATREC Cluster – Belgium, PLASTIC Cluster, Lowe – Austria, MECHATRONIC CLUSTER – Austria, the PIMURMANGET Cluster – Hungary etc.

Although not within Bucharest City, there are 2 science and technology parks in Ilfov County, which support RDI development in the region, namely: The Science Park in the town of Măgurele, near the ELI–NP project, and he Science and MINATECH-RO Technology Park of Micro and Nanotechnologies in the town of Voluntari.

Bucharest City is polarizing private environment actors, active in the field of innovation, organizations with a support role for entrepreneurship and innovation, and business and RDI events

In respect to private environment actors, active in innovation, and organizations having a support role for entrepreneurship and innovation, the Map of innovation actors[60] shows their concentration, mainly in Bucharest City (Figure 80).

As regards research – development – innovation within companies, the Bucharest investor survey shows a relatively low share of positive answers – 31%, especially when considering the sampling method and the fact that high added value companies were targeted. Of the companies with internal RDI activities, 58% are making product innovation, 31% service innovation, and the rest 11% – process innovation.*

Of the companies performing RDI activities, most are carrying out these activities within their own centres (86% of foreign companies, 80% of Romanian companies, 44% of mixed capital companies) or within RDI centres in other countries of the parent company, as is the case of mixed capital companies (29%) and foreign capital companies (7%). A rather popular option is also the cooperation with universities and research institutes abroad, especially in the case of mixed-capital companies (20% of respondents), and those of local capital (15%). We should note the companies' preference to cooperate with universities and research centres abroad, to the detriment of those in Romania, a preference which could be explained by developed relations in the countries where capital originates, in the case of mixed capital companies, by the lower attractiveness and RDI service offer and infrastructure in Romania, or by various bilateral relations and/or specific needs of the companies.

In Bucharest City, there are 3 industrial parks, which can support enterprises in the region:

- The Metav Industrial Park (set up per G.O. no. 65/2001), in the North of the Capital, created both for large companies, in need of large warehousing and production spaces, and for small and medium-

[60] UEFISCDI 2018, part of the project "Development of the administrative capacity of MRI to implement some actions established in the National RDI Strategy 2014-2020", SIPOCA code 27.

sized enterprises. Societatea de administrare Metav SA has been a member of the Association of Industrial, Technological and Scientific Parks and Business Incubators (APITSIAR) since 2006 and holds an area of 188,699.41 sq.m., of which the industrial park is spread over an area of 165,760 sq.m.;

- The Sema Industrial Park (set up per G.O. no 65/2001), located in the West of Bucharest City, provides all the necessary facilities for the organization and carrying out of commercial, logistical or production activities.
- The FAUR Industrial Park (set up per art.23 para.2 of G.E.O. No. 115/2003) is located in the East of the Capital City, and holds a series of warehousing and production spaces which can host a wide range of industrial and logistic activities.

Besides these, close to the Capital City, in Ilfov County, there can be identified a series of private investments in logistics platforms, industrial and warehousing spaces, focused along the A1 Motorway, for instance, in the commune of Ștefănești, etc.

Figure 77 – Private environment actors, active in innovation (1) and support organizations for entrepreneurship and innovation (2)

Source: Map of innovation actors (https://geo.uefiscdi-direct.ro/firme-inovative), UEFISCDI

As concerns business events, specifically events on topics related to research, development, innovation, and innovative entrepreneurship[61], we can note they are concentrated mainly in the areas of Romexpo – the traditional area for fairs and exhibitions, the Barbu Văcărescu – Fabrica de Glucoză (Hotel Caro) area, the Politehnica University, the central area and hotels and high-capacity event halls (for instance, cinemas) for punctual events [62]. Considering Bucharest City's role of national economic center, as well as its attractiveness for foreign investment, it is important to provide an infrastructure of fairs and exhibitions at European standards. In this respect, the upgrade and development of the ROMEXPO area could be considered, as well as building a new exhibition complex within the Capital or the coordination with the Ilfov County Council to create a new exhibition and business center, for instance, in the Măgurele area.

[61] Based on UEFISCDI analysis, Map of events related to innovation and entrepreneurship.

[62] Idem.

The City's support for business and RDI is at an incipient stage, and it is necessary to assume a strategic priority in this respect and to establish a platform of dialogue and cooperation with the private environment

As for the city's support for local entrepreneurs, the Bucharest Municipality has initiated, in 2019, in partnership with the National Council of Small and Medium-Sized Enterprises in Romania, the Bucharest Start-Up City program, targeting the support of minimum 200 beneficiaries (start-ups), with a maximum value of the *de minimis* aid of EUR 50,000 per start-up (RON equivalent). The program's regulation was submitted to public debate, but afterwards its actual start, namely the financing of business plans, was delayed for lack of funding[63], as the 2019 Bucharest City budget could not include the necessary allocations. Considering the public's interest in the program, it would be advisable to resume it as soon as the necessary financial resources can be provided.

Moreover, during consultations with the business environment representatives to issue this strategy, they mentioned the need for a strategic approach to economic development, attracting investment, supporting and maintaining them, as well as the joint work of local authorities and the business environment. They have expressed their availability for consultations and dialogue, an idea in this respect consisting of creating a consultative council for economic development and dialogue with the private environment.

The survey of enterprisers/entrepreneurs (average no. of employees – 5) in Bucharest has identified the top 5 measures which the administration can take to make the city more attractive for business:

1. *Tax regulations that should encourage business development;*
2. *Investments to improve employee mobility;*
3. *Investing in education and workforce training;*
4. *Investing in increasing merchandise mobility (merchandise transport);*
5. *Development of business centres, co-working, hubs, research, innovation.*

1. *Traffic congestion;*
2. *Undeveloped infrastructure;*
3. *Excessive public sector bureaucracy.*

Workforce availability is another important issue signalled by the respondents.

As for the measures to increase the Capital City's attractiveness for business, respondents in all categories selected the same three main answers:

1. *Investing in education and workforce training;*
2. *Tax regulations that should encourage business development and innovation;*
3. *Investments in quality infrastructure and public services, to make the city attractive for the Romanian workforce.*

Besides, foreign capital companies also selected – by giving them the same score as the answer ranked third (35% of respondents) – city planning regulations that should encourage the development of the business and innovation infrastructure and investments to improve employee mobility.

Mixed capital companies also selected for the second position (30% of the respondents in this category) the ease of receiving necessary approvals and endorsements and promoting Bucharest as a regional and even global investment destination, and attracting foreign workforce.

[63] https://bucharesstartupcity.ro/2019/05/15/se-amana-implementarea-programului-start-up-city/

In the near vicinity of Bucharest (in the first circle of localities), Măgurele represents the most important national physics fundamental research pole, recognized on a European level

Although not inside Bucharest City, Măgurele represents the most clearly profiled research, development, innovation pole, from the point of view of thematic concentration, as it represents, alongside the Faculty of Physics of the University of Bucharest, the most important pole of fundamental physics research on a national level (due to the concentration of national research and development institutes).

The research platform in the town of Măgurele creates the premises of developing a state-of-the-art science park, which should facilitate the dialogue between research and development and the academia, on the one hand, and the entrepreneurial and business sector, on the other. The science park, currently in development[64], will contribute to the development of innovative entrepreneurship on a regional and national level, by creating connections between industry and research and by providing the necessary framework for the permanent dialog between the two. The objectives of the Măgurele science park refer to attracting and supporting talents, with the purpose of changing the tendency of Romanian brain drain, of contributing to the upgrade and transformation of the urban profile in the town of Măgurele and of the Bucharest-Ilfov Region, and of supporting the trading in research and development results and those of spin-off systems within universities and research institutes, including the participation in creating the relevant culture in this respect. The town of Măgurele is even more important as, besides the creation of this science park, it is here that the project for the ELI-NP laser is being developed, the most advanced research infrastructure in the world (consisting of two 10PW ultra-short pulse lasers), and the brightest adjustable beam of gamma rays. ELI-NP has been selected by the most important science committee in the field of nuclear physics in Europe (NuPECC) within the Long-Term Plan of Nuclear Physics in Europe, as a major infrastructure.

Also, Ilfov County's Orizont 2020 strategy suggests two complementaries, whose implementation is directly conditioned by the development of the Măgurele Science Park, which could contribute to the development of the metropolitan economy: *Developing an industrial park* and *Developing the Business and Exhibition Center of Ilfov County*. Besides the contribution to the development of the Măgurele area, both projects could contribute to balancing the development of Bucharest's metropolitan territory, completing, at the same time, the palette of business and RDI infrastructures on a regional level.

[64] The technical project is currently underway

6. ECONOMIC DEVELOPMENT DRIVERS AND SPECIALIZATION POTENTIAL

Identifying the economic development drivers and the specialization potential should be done at the level of the capital city region.

The analysis of Bucharest City competitiveness should be done from the viewpoint of the regional and national context it belongs to, considering the ecosystem which contributes to its development. Thus, in identifying the economic development drivers and specialization potential, the analysis should target at least the regional level (the Bucharest-Ilfov Region), Bucharest thus competing and being compared on a European and international level with other capital-regions, as shown before (see Chapter 2.1), and not so much analyzed in isolation. Bucharest City has a particular situation, considering its status of capital city and engine of the most developed Romanian region. At the same time, its complementarity with Ilfov County can be noted, as are the effects of peri-urbanization and of the functional connections between the city and the territory (commuting, development of economic activity areas outside the city, etc.). In this context favorable for competitiveness, Bucharest is registering high values in respect to the activity of enterprises, entrepreneurial dynamics and investments, being, together with Ilfov County, the main regional and national growth driver.

In order to identify those fields where the metropolitan economy is showing comparative and competitive advantages on a national level, the analysis of regional economy performances has been conducted (the Bucharest-Ilfov Region), by using three main instruments: The Location Quotient (LQ), the Differential Variation of the number of employees (DV)[65] and the Shift-Share analysis, based on the data concerning the personnel in active local units. The location quotient is a useful tool within this analysis, as it shows the excess or, on the contrary, the lack of qualified workforce for a certain sector. In order to identify those fields which have a competitive advantage (proximity to production factors), developing at a faster pace, the indicator used was the Differential Variation in the number of employees. The shift-share method is used for the comparative analysis of regional economic performances, for prognosis (the assessment of the regional impact of national and local policies), as well as for planning. The shift-share analysis starts from the interpretation of the in-time variation of economic phenomena, as a result of combining national, regional, and sectoral influence factors, allowing the identification of locally/regionally competitive fields, with potential as development drivers.

In order to ensure the coherence of the strategic effort, the regional data were used, following an approach that is complementary to the Smart Specialization Strategy for the Bucharest-Ilfov Region. The analyses used the national economy classification of activities and the data on active local units personnel (which refer only to the employees in the private sector), and, as comparison, the analysis has been conducted on a national level. The analyzed period is 2012-2017, in order to catch the post-crisis evolution of the regional economy.

The sectors providing an advantage similar to a territory and having the potential of economic driver are the sectors registering a location quotient greater than 1. Such sectors are attractive for both companies in the field (which need access to skilled workforce), and for experts (who want to live in an area providing many opportunities in their area of expertise).

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65 The location quotient (LQ) is an indicator which compares the local concentration of an activity sector to the regional/national concentration of the respective activity field. The location quotient represents the degree of specialization of an area in a certain industry. The differential variation in the number of employees (DV) represents the difference between the increase or decline rates of a sector or local field, as compared to the increase or decline of the sector in the reference area, in this instance, the decline or increase of the sector on a national level.

At the same time, the analysis of economic activities in the Bucharest-Ilfov Region based on the Eurostat classification on high technology and knowledge-intensive services, using the intensity level of research and development activities as qualification criterion for economic sectors into categories such as high technology, medium-high technology, medium-low technology, and low technology, shows the degree of technologization regarding industrial activities and the sophistication level of services provided by enterprises in the Capital's metropolitan area. In this context, the identification of competitive advantages for Bucharest in high technologies or knowledge-intensive sectors - generating a high added value and above-average income for workers in the field – could constitute an important contribution to tracing directing lines for the development of the local economy and the assessment of the potential for smart specialization.

Table 9 – Competitiveness of Bucharest City economy in a national context (NACE sections)

NON-COMPETITIVE SECTORS	COMPETITIVE SECTORS
Transforming sectors (LQ>1, DV<0)	**Developing sectors (LQ>1, DV>0)**
M – Professional, scientific, and technical activities P – Education S – Other service activities	G – Wholesale and retail trade; repair of motor vehicles and motorcycles I – Accommodation and food service activities J – Information and communications L – Real estate activities N – Administrative and support service activities Q – Health and social care R – Arts, entertainment and recreation
Declining sectors (LQ<1, DV<0)	**Promising sectors (LQ<1, DV>0)**
C – Manufacturing D – Electricity, gas, steam and air conditioning supply H – Transport and storage	B – Mining and quarrying E – Water supply, sewerage, waste management and decontamination activities F – Constructions

Source: Own processing of NIS data

The Capital's competitiveness stands out on a national level, especially in services, with a higher localization of activities in high tech and knowledge-intensive services

The LQ and DV analysis at NACE section level shows the competitiveness of the Capital's economy, especially in services, with a higher localization of activities in high tech and knowledge-intensive services, which constitute potential development drivers. Thus, section J – Information and communications, has registered the highest LQ increase (2.06), followed by M – Professional, scientific, and technical activities (1.93), N – Administrative and support service activities (1.88), and L – Real estate activities (1.74). We should note that section M – Professional, scientific, and technical activities, although registering a strong localization, falls within the category of transforming sectors, thus losing regional competitiveness, despite the potential provided by the Capital City status. On the other hand, this section is one of the most competitive in the Ilfov County, considering the RDI concentration in Măgurele, and not only. Thus, the support of public authorities and the cooperation between Bucharest and Ilfov are necessary to develop a strong pole in the science and RDI field.

The steepest increase in LQ and the highest DV value were registered in Section B – Mining and quarrying, against the presence, in Bucharest, of OMV Petrom and of other companies in the field, but whose mining activities are carried out in their counties, so this section does not represent region driver *per se*. The following positions by LQ increase and DV value are occupied by section I – Accommodation and food service activities – the increase has been sustained by public catering/restaurant services, hotels and accommodation falling under the decline sectors, and section N – Administrative and support service activities.

The Capital's central role from an academic and research point of view, of air access and specialized and administrative services, determine regional specialization fields.

When analyzing the LQ and DV at NACE division level (Table 12), one can note that the most competitive activities (developing sectors) are 51 – Air transport, 59 – Motion picture, video and television program production, sound recording and music publishing activities, 72 – Scientific research and development (also supported by 74 – Other professional, scientific and technical activities), three representative categories, traditional for the Capital City, considering the proximity of the Henri Coandă International Airport, Romania's most important airport, or the presence, within Bucharest City and nearby, of prestigious motion picture studios, but also of the Romanian Television (Societatea Română de Televiziune), as well as the Capital's role as main university and economic center, focusing the most numerous and representative universities and research centers.

The development of air transport could also impact related activities which, in turn, stand out as potential economic drivers (LQ higher than 1) – for instance, Warehousing and support activities for transportation, Restaurants and other eating places. At the same time, it should be noted that the 2016-2017 period has marked an important evolution in the number of jobs (+10.52%) within the national air transport industry, as low-cost company expansion has led, between 2016-2017, to an increase by approx. 23% in the passenger traffic (+3.8 million passengers). This evolution was mainly illustrated by the Bucharest-Ilfov Region, followed by the counties of Timiș, Constanța and Bacău[66].

Bucharest City and its metropolitan region show a high degree of specialization in high-tech and knowledge-intensive services, the most representative in this respect being computer programming, consultancy and related activities.

Other developing sectors, with a high specialization potential, are those in the area of high tech, knowledge-intensive services. Of this category, the highest LQ values were registered by divisions 58 – Publishing activities, 62 – Computer programming, consultancy and related activities, and 61 – Telecommunications. As previously shown, the section Information and communications, of which these are part, has registered a significant increase over the last years, presenting favorable values for all indicators (workforce, turnover, etc.). On the other hand, considering the growth potential of this field and the profile of Capital City graduates, it is necessary to supplement technical and IT&C specializations, to be able to meet the demand for specialized workforce, as well as to attract workforce from other areas in the country, by promoting existing opportunities.

Less knowledge-intensive administrative services activities represent developing sectors (70 – Activities of head offices; management consultancy activities, 78 – Employment activities), providing, support services that are important in turn for the development of the companies and of the metropolitan economy.

[66] Patronatul Investitorilor Autohtoni PIAROM "Studiu privind dinamica pieței muncii la nivelul principalelor industrii angajatoare din România în perioada 2016-2017" (*Study of the labour market dynamics for the main employer industries in Romania, between 2016-2017)*.

Last but not least, public service activities[67] such as health and social care or cultural activities, fall under developing sectors, as the Capital City is hosting, on the one hand, the main offices of numerous medical networks and private clinics with national activity, and providing, on the other hand, a variety of services which should meet the needs and demands of a dynamic and diverse population, noting, in this respect, the emergence of independent cultural activities.

We can see a tendency of decreasing competitiveness for the cultural and creative industries, which could have a negative impact on the Capital's competitiveness and attractiveness.

On the other hand, the analysis of transforming sectors shows a tendency of competitiveness loss for activities in the cultural and creative industries (CCI), representing 6 out of the 10 sections in this category: 60 – Programming and broadcasting activities, 73 – Advertising and market research, 90 – Creative, arts and entertainment activities, 63 – Information service activities, 71 – Architectural and engineering activities; technical testing and analysis, 93 – Sports activities and amusement and recreation activities. This transformation of the metropolitan economy can attract losses in socio-cultural vitality and a decrease of the attractiveness of Bucharest City and of the region for the “young wealth creators” and, in general, for the creative and cosmopolitan population. Considering the still-high localization of these domains, an intervention could be made on a strategic level, positioning the Capital City as a CCI destination, together with the endeavors initiated by competing for the title of European Capital of Culture 2021 and the Cultural Strategy. Last but not least, there are opportunities to develop some niche activities at the intersection of the CCI and of competitive IT&C competitive activities – for instance, digital media – cinemas and gaming, selected within the Smart Specialization Strategy for the Bucharest-Ilfov Region – Potential Analysis, based on the specific existing resources in the Bucharest-Ilfov Region, such as the movie-making tradition or the existence of a developed human capital in the IT field. At the same time, gaming has taken off over the last years, by locating some important multinational companies in the region, which not only carry out testing activities, but also product development ones. Resources mobilized at region level are supported both by the presence of an important mass of companies and human resources, and by the current digitization and innovation tendencies in media and gaming. The development of virtual reality (VR) brings the two areas even closer together, and value chains hold common elements (for instance, the two companies are becoming increasingly closer in terms of marketing techniques). In this context, local public authorities should get involved in identifying potential development and smart specialization niches, by participating in the process of entrepreneurial discovery, in informing the companies in the field concerning financing and development opportunities, based on the Smart specialization strategy, as well as to ensure direct support through programs intended for the business environment.

The category of perspective sectors includes mostly activities in manufacturing and mining, as results have shown they have a high localization potential, due to the administrative offices of certain companies, whose production facilities are, nevertheless, located in other counties in Romania (e.g. OMV Petrom). Therefore, they will not be considered local development drivers. Declining sectors include, in turn, activities in manufacturing which, as shown before, are registering negative values in the Capital, considering most indicators.

[67] As the analysis is performed based on data concerning the personnel of active local units, we are speaking of public services provided by private suppliers.

Table 10 – Competitiveness of economic activities in Bucharest City in a national context (NACE divisions) – selection[68]

NON-COMPETITIVE SECTORS			COMPETITIVE SECTORS			
Transforming sectors (LQ>1, DV<0)			Developing sectors (LQ>1, DV>0)[69]			
Sector	LQ	DV	Sector	LQ	DV	
60 – Programming and broadcasting activities	2.61	-0.02	51 – Air Transport	3.33	0.05	High employee concentration
73 – Advertising and market research	2.55	-0.03	59 – Motion picture, video and television program production, sound recording and music publishing activities	3.01	0.00	
90 – Creative, arts and entertainment activities	1.91	-0.22	72 – Scientific research and development	2.70	0.01	
69 – Legal and accounting activities	1.89	0.00	88 – Social work activities without accommodation	2.40	1.14	
21 – Manufacture of basic pharmaceutical products and pharmaceutical preparations	1.72	-0.01	70 – Activities of head offices; management consultancy activities	2.40	0.10	
63 – Information service activities	1.71	-0.46	78 – Employment activities	2.23	0.13	
86 – Human health activities	1.53	0.00	58 – Publishing activities	2.19	0.06	
71 – Architectural and engineering activities; technical testing and analysis	1.46	-0.12	62 – Computer programming, consultancy and related activities	2.09	0.03	
			87 – Residential care activities	2.02	0.03	
85 – Education	1.34	-0.06	80 – Security and investigation activities	1.89	0.19	
93 – Sports activities and amusement and recreation activities	1.28	-0.03	61 – Telecommunications	1.83	0.13	
			91 – Libraries, archives, museums and other cultural activities	1.47	0.02	
			74 – Other professional, technical and scientific activities	1.29	0.03	

[68] Knowledge-intensive or high-tech/medium-high-tech economic activities were selected, as they represent the highest potential from the point of view of competitiveness and added value. Please see Appendix 5 for the full list.

69 Top 10 on county level, ordered by LQ.

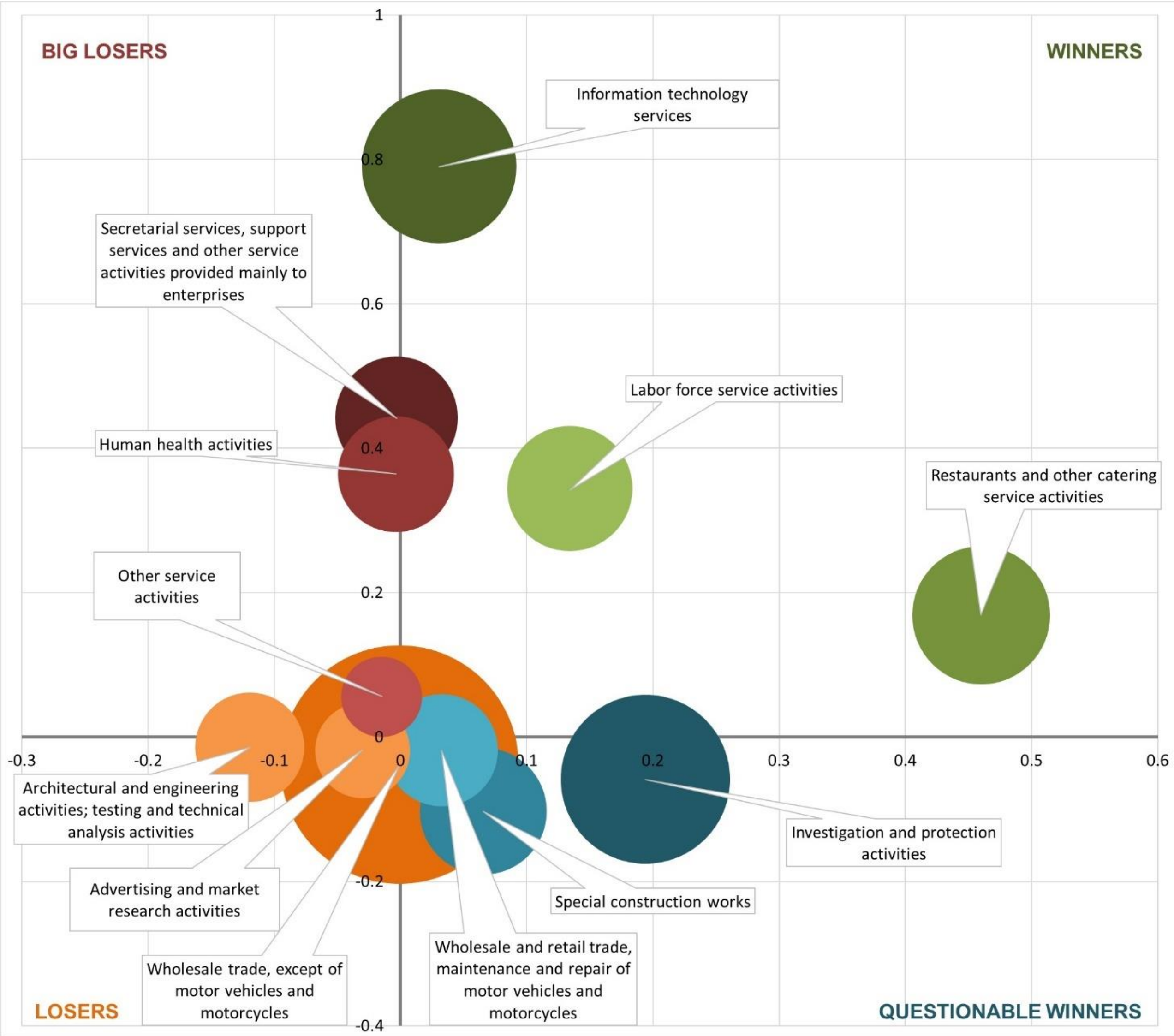
Declining sectors (LQ<1, DV<0)			Promising sectors (CL<1, DV>0)[70]			
Sector	**LQ**	**DV**	**Sector**	**LQ**	**DV**	Low employee concentration
42 – Civil engineering	0.86	-0.01	41 – Construction of buildings	0.90	0.03	
50 – Water transport	0.55	-0.32	20 – Manufacture of chemicals and chemical products	0.80	0.55	
28 – Manufacture of machinery and equipment n.e.c.	0.45	-0.04	75 – Veterinary activities	0.79	0.10	
26 – Manufacture of computer, electronic and optical products	0.34	-0.55	30 – Manufacture of other transport equipment	0.51	0.05	
27 – Manufacture of electrical equipment	0.28	-0.32	08 – Other mining and quarrying	0.37	0.16	
			19 – Manufacture and processing of coke and of refined petroleum products	0.37	1.16	
			06 – Extraction of crude petroleum and natural gas	0.36	1.69	
			29 – Manufacture of motor vehicles, trailers and semi-trailers	0.08	0.70	

Source: Own processing; based on NIS data

[70] Idem.

The shift share analysis indicates the performance of the metropolitan economy's potential drivers, including economic activities which concentrate the largest personnel in active local units and which have registered values greater than 1 of the location quotient (activities which can be considered localized). With the exception of research and development, all the other selected domains are recording a personnel in excess of 10,000, and in total they are focusing approximately 60% of the ALU personnel in the region.

Figure 78 – Shift-share analysis for the Bucharest-Ilfov Region, 2012-2017



Source: Own processing; based on NIS data

The development of high-tech, knowledge-intensive services is led by computer programming, consultancy and related activities.

When analyzing sectors marked as WINNERS, those developing faster than the economy and registering a faster growth on a local level, as compared to the evolution of the same sector on a national level, three main directions can be noted:

1. The development of high-tech, knowledge-intensive services is led by computer programming, consultancy and related activities. When analyzing the evolution of this section at class level, one can note that computer consultancy activities are the most competitive, registering the highest location

quotient and an increase of 15.2% in LQ between 2012 and 2017, and concentrating approx. 25% of the section's personnel, with a tendency of accelerated increase (99.7% over the analyzed period). The other two groups, on the other hand, have lost their competitiveness over the last years, registering a slower increase than the national one. Where group 6209 Other information technology and computer service activities has registered a modest increase in personnel over the analyzed period, group 6201 Computer programming activities, which concentrates 68.54% of the section's personnel, has registered an increase of persons employed in ALU, by 98.1%. According to the Wall-Street (2019)[71], on a European level the Romanian capital stands – alongside London, Madrid, Dublin or Budapest – in the first continental category (over 70,000 employees in the field) of the most active cities in terms of high-tech industry workforce. In order to maintain this position and also considering the competition of other urban poles in the IT field on a national level (Cluj-Napoca, Iași, Timișoara), it is necessary to fight the tendency of reducing competitiveness, by active measures to support the field, by approaching it in the process of regional smart specialization, by territorial marketing and strategic positioning and by active programs meant for private actors and by supporting entrepreneurship.

Table 11 – Competitiveness of computer programming, consultancy and related activities

Economic activities	LQ (2012)	LQ (2017)	evolution	DV	Remarks
6201 Computer programming activities	2.07	1.93	-7.0%	-0.03	Transforming sector
6202 Computer consultancy activities	2.44	2.81	15.2%	0.36	Developing sector
6209 Other information technology and computer service activities	2.34	2.03	-13.4%	-0.10	Transforming sector

Source: The Smart Specialization Strategy for the Bucharest-Ilfov Region - Analysis of Potential; based on NIS data

Still in the knowledge-intensive services' category there is also the division 70 – Activities of head offices; management consultancy activities, the fourth winning sector from the point of view of employed personnel (27,540 in 2017), showing, unsurprisingly, the Capital City's leading role as concerns administrative, management, and consultancy activities in the field.

2. Low-knowledge-intensive administrative service activities are concentrating a relatively high volume of personnel and provides the support for urban and socio-economic development (for instance: workforce services, services to buildings and landscape activities, warehousing and support activities for transportation, etc.). At the same time, Bucharest City fulfils the role of coordinating center for a series of activities (including administrative, logistics, etc.), serving the entire national territory, which explains in part the high values in these fields.

3. Public catering and recreational activities, meant for leisure, are more concentrated and are developing more rapidly in the Capital City as compared to the rest of the country, considering the volume, dynamics, and more diverse character of the population and of urban life, which generates a higher demand in this respect.

Telecommunications and professional, scientific and technical activities are representative for the metropolitan economy and show a potential for development and specialization.

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71 https://www.wall-street.ro/articol/IT-C-Tehnologie/240391/cele-mai-active-orase-din-romania-in-domeniul-it.html#gref

Sectors marked as QUESTIONABLE WINNERS are those developing faster on a local level, but with a lower evolution on a national level, as compared to the global economy. Thus, even though these sectors have seen a faster increase locally, they have a limited potential of increase, when we consider the national market. This category includes knowledge-intensive services from information and communications, such as telecommunications and publishing activities, and from professional, scientific and technical activities, with the most representative ones being research and development activities. All these stand out as developing sectors for the Capital's metropolitan area, and are representative for its economic profile. At the same time, the highest national service exports were registered for telecommunication, computer and information services, with the Capital playing an important role in this respect. To support the development of research and development activities, an important role belongs to the facilitation of collaboration between the private environment and the academia and technological transfer, on the one hand, and the connection to international networks and the promotion of local RDI, on the other.

Sectors marked s LOSERS are sectors with a poor development, when compared to the national economy, with an even worse local evolution. This category includes some professional, scientific, and technical activities, with the most numerous personnel in architecture and engineering, technical testing and analysis and advertising and market research, but also some industrial branches and trade activities.

Sectors under BIG LOSERS show those sectors which have lost competitiveness despite a fast national development, and which, respectively, have lost workforce to other areas in Romania. They will not, therefore, represent economic development drivers for the Capital City. This category includes, in descending order, by number of employees: land transport and transport via pipelines, office administrative, office support and other business support activities, human health activities.

7. CONCLUSIONS, ISSUES AND TRENDS, STRATEGY RECOMMENDATIONS

w	RECOMMENDATIONS
ECONOMIC COMPETITIVENESS	
Considering the status of Bucharest City as Capital and the fact that it is the national and regional economic development driver, there is a need for inter-institutional cooperation and for developing a metropolitan vision to support the implementation of strategic initiatives in order to increase its economic competitiveness. This need is also highlighted by: • the high values of indicators regarding entrepreneurship and socio-economic development in the Ilfov County, • the limitations regarding the development of certain economic activities and business support infrastructures within the city (availability and pricing of land and of workforce, city planning regulations, etc.) • the need to ensure connectivity with the territory (especially with the Henri Coandă International Airport).	• Set up, within the Bucharest Municipality, a structure (office/department/division) responsible with the planning and implementation of initiatives to increase the Capital City's competitiveness and to foster dialogue at local and metropolitan level (consulting and ensuring the dialogue with the private environment, facilitating the dialogue between the private environment and the educational sector to support dual education, managing local financing mechanisms for SMEs, incubator programs, participation in fairs/events and promoting the city as a business destination, attracting CSR initiatives from companies, involvement in clusters, etc.) • Include the city in a metropolitan development vision and foster an integrated promotion of projects that have an impact on the metropolitan economy, initiated by the Ilfov County and by the administrative sectors (e.g. the science and technology park of Măgurele, the Ilfov Business Hub, the development in the Antiaeriană area) • Continued major infrastructure projects which do not fall exclusively under the jurisdiction of the Capital City Municipality (subway, ring road, A0 Motorway, main arterial roads for access to Bucharest) • Where possible, align the urban planning regulations, systematize the road layout (between the localities of Ilfov County and the Capital City, between sectors or between development projects and the surrounding territory) • Endow the lands with infrastructure and utilities, ensuring coherence for the future development projects
Bucharest City and its metropolitan region show a high degree of specialization in high-tech and knowledge-intensive services, the most representative in this respect being computer programming, consultancy and related activities. Nevertheless, harnessing these advantages is not yet a locally-assumed public policy, being left to the responsibility of the private environment. • On a European level, Bucharest City ranks – alongside London, Madrid, Dublin or Budapest – in the top continental category (over 70,000 employees in the field) of the most active cities in terms of high-tech industry workforce.	• Considering the growth potential of this field and the profile of Capital City graduates, it is necessary to supplement technical and IT&C specializations, to be able to meet the demand for specialized workforce, as well as to attract workforce from other areas in the country, by promoting the existing opportunities • Support the IT&C field through regional smart specialization instruments (considering it a general purpose technology), territorial marketing, and strategic positioning to attract investment and workforce. • Connect IT&C with the traditional industries in order to create tech verticals.

• The Information and communications section has registered a significant increase over the last years, showing favorable values for all indicators (workforce, turnover, etc.). The development of this sector is led by computer programming, consultancy and related activities, of which information technology consultancy shows the highest competitiveness. IT&C belongs to the category of general purpose technologies (GPT) which enhance the added value in traditional industries.	• Support innovative start-ups that arise out of this intersection through open innovation. Initiatives can be launched to connect multinational companies/industrial partners and start-ups working together to solve some of the challenges of the communities.
We can see a tendency of decreasing competitiveness for the cultural and creative industries, which could have a negative impact on the Capital's competitiveness and attractiveness. • CCI activities, such as programming and broadcasting activities; advertising and market research; creative, arts and entertainment activities; information service activities; architectural and engineering activities; technical testing and analysis; sports, leisure and recreation activities, all show a tendency toward lower competitiveness. • The transformation of the metropolitan economy can attract losses in socio-cultural vitality and a decrease of the attractiveness of Bucharest City and of the region for the "young wealth creators" and, in general, for the creative and cosmopolitan population. At the same time, the lack of spaces (managed by local public authorities) dedicated to the creative community (workshops, offices, galleries, etc.) is an obstacle to the development of CCI. [public consultation result]	• Implement measures aimed at positioning the Capital City as CCI destination, along with the efforts initiated by competing for the title of 2021 European Capital of Culture and the Cultural Strategy. • Harness the specific resources existing in the Bucharest-Ilfov region, such as the movie-making tradition or the rich human capital in the IT field, so as to support, develop, and promote niche activities where CCI meets the competitive activities of the IT&C sector – for instance, digital media: movie making and gaming[72] • Participate in the process of entrepreneurial discovery and in informing companies in the field about funding and development opportunities, based on the Smart Specialization Strategy, • Provide direct support through programs dedicated to the CCI business environment. • Identify and designate unused buildings and spaces, owned/managed by the local public authorities, which could be assigned to the use of entrepreneurs in the creative and cultural industries – e.g. as offices, co-working space, workshops, sales points, etc. [public consultation result] • Develop specific support infrastructures for the CCI, by public effort or in partnership (e.g. https://base.milano.it/), such as makerspaces or fablabs (spaces for co-working, prototyping, small production and event organizing, endowed with modern equipment)
Digitization is a challenge to the entire society. It is felt both by citizens and by the economic actors and local public authorities. Automation is unavoidable as it facilitates an increase in productivity. Most of the population is not digitally literate and only carries out few digital operations; moreover,	• Develop lifelong educational, training and learning programs, as well as workforce retraining and upgrading programs aimed at preparing the workforce for the digital transformation (e.g. develop digital skills for teleworking, etc.). • Digitize public services and the interaction with citizens and with the business environment.

[72] Selected within the Smart Specialization Strategy for the Bucharest-Ilfov Region – Analysis of Potential.

companies complain about the insufficiency of "digital consumers", according to the Digital Bucharest Barometer. In the context of the economy of the future, a large proportion of jobs run a high risk of automation. Sectors relying on STEM employees are subject to high specialization and require a higher and more specific level of qualification. This is also true for creative activities, which cannot be automated.	• Develop a municipal center responsible for education, promotion and outreach regarding the concepts of digitalization and automatization. • Initiate or support retraining programs for people whose jobs could be adversely affected by automation. • Innovate and identify short-term training options (including online learning) and use digital platforms to develop specific skills (e.g. online classes). • Promote digital solutions: e-commerce, e-logistics, digitization of industries, data economy, trading platforms, fintech etc.
ENTREPRENEURSHIP	
Public support for business development is relatively low in Bucharest, in the absence of coherent public policies aimed at attracting private investment and encouraging entrepreneurship. In this context, public authorities have a rather passive role in attracting investment and in supporting businesses. Most business support services and infrastructures in the Capital City are private; the city does not hold a business and exhibition center at European standards and has a low presence on the market of business fairs and events.	• Support the development of low cost services (which, theoretically, should not represent a big financial effort for the local public administration), such as: - *investment readiness schemes* for entrepreneurs who start a business and wish to improve their business plans; - mentorship programs for innovative start-ups and SMEs, held by top managers; - *soft landing schemes* – for companies interested in internationalization; - *competitions of innovative business plans* (especially in the smart specialization niches) for students etc. • Support the development of costly services/projects which entail a financial effort from the local public administration, but have a high added value, measured especially in the resulting know-how: - *Online open innovation platform* which also involves citizens in co-creation, especially in the online environment; - *Living labs* – co-creation and testing of new products together with the end consumer; - *Fab labs* – prototyping centers; - *Voucher programs* for companies. • Create business support public infrastructures, such as incubators, co-working spaces, markerspaces, etc., which should meet the entrepreneurs' needs; • Create a metropolitan business/exhibition center (e.g. in the Măgurele area or edge city in the airport/Moara Vlăsiei area), in partnership between the Capital City and Ilfov County, or by upgrading and developing the ROMEXPO area.
The dialogue between local public authorities and the business environment is little developed and is carried out punctually, reactively, as a response to the occurring issues.	• Create a Board of Advisors for economic development in the private environment, which should support the public administration in its relationship with investors and entrepreneurs, and, respectively, in designing programs dedicated to them. [public consultation result]

	• Encourage entrepreneurial/business tourism through events, financing opportunities, networking, conventions, etc. [public consultation result] • Organize periodic consultations with business environment representatives.
Financing and access to capital, especially to start-up and early stage financing, remain a challenge and, for that reason, start-up founders turn to international investors. The Digital Bucharest Barometer shows that access to financing for start-ups is a problem, especially in case of start-up and early stage financing, which require small investments (USD 10,000-60,000) and are targeted to companies in their first four years of operating. For this reason, start-up founders turn to international investors.	• Support angel investor networks and venue capital networks that would cover the financing deficit. • Resume the Bucharest Start-up City program or design other financing programs for the local entrepreneurs. • Develop coordination mechanisms between the stakeholders, coordinated/facilitated by the local public authorities: roundtables, permanent consultation and programs to support public-private partnerships for the development of the local ecosystem
WORKFORCE	
Bucharest City has a low unemployment rate (1.3%), which suggests a potential labor deficit and a limited capacity to meet the needs of current and potential employers, which could also discourage large (foreign and Romanian) investors from investing in the local market. On the other hand, the high salary level in Bucharest as compared to the rest of the country and its increase over the last year has contributed to an increase in commuting from neighboring counties.	• Capitalize on the position to the neighboring counties that have workforce resources, through interventions aimed at improving the accessibility and increasing the quality of life, coordinated with investment-attracting measures. • Provide the services needed by commuters (e.g. public transport, information, etc.) to facilitate their access to Bucharest jobs. • Actively encourage immigration (from within the country and from abroad) by promoting the opportunities offered by the Capital City labor market and by establishing partnerships with other local authorities/institutions.
The lack of personnel competent in product management is an obstacle to the development and attraction of tech investors. As a matter of principle, Bucharest-located start-ups could benefit from the technical talent pool, as the Capital has competitive developers and marketers, but a vulnerability of the local tech ecosystem resides in the lack of business/entrepreneurship and product management skills, which are in high demand on the market.	• Organize specialization courses/informal schools, according to the market needs. Most students in Bucharest City are graduates of economic or law faculties, so there is a critical mass which could be specialized. • Organize accelerated 'bootcamp' programs to narrow the skills gap according to market requirements (they focus intensely both on programming and on entrepreneurial and business skills). Such programs could also be targeted to a less educated population, providing the opportunity to acquire a set of basic skills, as demanded by the tech ecosystem, thus facilitating labor market absorption.
From a specialization point of view, Bucharest is Romania's largest technological hub, with a most varied workforce that shows skills which are in high demand on the labor market, being especially sought by IT&C companies or by companies in other high added-value fields.	• Facilitate the dialogue between the business environment and the representatives of the education system (high school and university), in order to adapt the educational offer to the employers' needs. An example in this respect could be the implementation

The competition for talents among companies, especially between the high added value ones, is extremely high and very often translates into a war of very attractive salary packages for the potential employees. The insufficient specialized workforce, especially in terms of personnel with technical skills (engineers, IT specialists, generally speaking graduates of sciences) is one of the main problems reported by investors, especially by foreign investors. The investors' high demand for STEM (science, technology, engineering, mathematics) employees is not satisfied, whereas most university graduates in the Capital specialize in social sciences and management.	of a program that promotes STEM education since secondary school. • Support the development of dual education • In order to attract specialized workforce (from Romania and from abroad), it is necessary to increase the quality of life and that of urban spaces, to provide public services at a high standard of quality and a varied leisure offer, but also to promote the Capital City.
Automation will transform jobs and will prove a challenge for the working population, which will definitely look different in 2030.	• Develop the necessary skills by supporting access to tertiary education, correlating employment criteria with professional skills and supporting retraining/re-qualification (by public–private partnerships, cooperation between banks and companies, etc.); link the tertiary education programs with employers in order to create a continuous pipeline of talents. • Support the development of dual professional education, based on a more active involvement of the private sector in the process of initial training of the workforce. • Retrain people who could be adversely impacted by automation. • Grant facilities to companies, so that they invest in training employees on the job, and support apprenticeships.
TERRITORIAL MARKETING, FOREIGN DIRECT INVESTMENTS AND FOREIGN TRADE	
The image Bucharest City has within the national and international business environment is a rather negative one, being associated with a low quality of life, crowding, corruption, etc. At the same time, the Capital is little present on the European and global economic scene. The need for promotion can also be felt at the level of Bucharest City companies. For instance, Bucharest investors questioned within the survey pointed out the need to promote Bucharest as a regional and even global investment destination and to attract foreign workforce.	• Make investments to improve and develop the urban infrastructure and to improve the quality of life • Create an identity for the city/metropolitan area and actively promote it – branding and marketing strategy • Better communicate the initiatives, projects, and events of the city [public consultation result] • Create a structure/office for the relationship with foreign investors and (international) public relations, in order to attract foreign investment and to increase the Capital's notoriety at an international level.
The in-out ratio or private environment effervescence versus foreign capital companies ending their operations is higher for 2018 – 1.43%. There are a lot of de-registrations of companies with foreign equity ownership, which could mean that those	• Promote the Capital City as a business destination at international level, by participating in specialized networks and events and by "promotion packages", defined based on an international marketing strategy.

companies did not manage to grow on the national market and ended their activities.	• Develop a one-stop-shop support platform for local and international companies, which should provide support in all the development stages of a business, and at the same time help out expats with useful information on Bucharest City daily life (e.g. https://viennabusinessagency.at/)
The analysis of foreign direct investment gives a warning on the high difference between the number of FDIs held by foreign investors in Romania, and that of FDIs held by Romanian investors abroad. Investments made by Romanian companies abroad are very low, placing Romania last in the region. For instance, there are 1,200 Polish companies in Romania, but there are just 28 Romanian companies in Poland[73].	• Support the development of economic promotion/representation offices on foreign markets, to promote the interests of companies and provide information on target markets (they can be mixed, with staff from Government ministries and from business organizations – associations, foundations, clusters, etc.). Such promotional offices would have the role of providing information about the target markets and of providing support by: integrating the national companies into global value chains; generating new business models for Romanian entrepreneurs; ensuring a continuous flow of knowledge to and from international markets. • Develop a support program for Romanians living abroad, who would be interested in developing businesses in the Capital City, including for students who received Erasmus scholarships to study abroad; thus leveraging their knowledge of the markets in the country where they have lived/studied.
Most entrepreneurs are facing difficulties in the process of internationalization, due to the lack of knowledge, connections or information on the target market. The lack of an efficient and coherent economic representation instrument is a ceiling that limits the level of representativeness of Romanian companies on foreign markets. A very small share of exports is generated by SMEs (the ratio between exporting/importing companies is 1:4).	• Develop branding and internationalization programs for Romanian companies, through: company internationalization awareness campaigns and training programs, identifying the products of companies (in the Capital City and beyond) that hold competitive advantages and actively promote them abroad. • Develop a network of business incubators and accelerators, which should act by encouraging internationalization or granting support to the already-existing infrastructures, helping them diversify their service portfolio for SMEs.
There is a lack of businesses with a potential to scale up and penetrate foreign markets, according to the Digital Bucharest Barometer.	• Develop programs that identify entrepreneurs with a business potential and vision, interested in innovating and mobilizing capital, in recirculating it and in reconfiguring the technological solutions and business

[73] The Bucharest-Ilfov region attracts over 61% of foreign investments in Romania. Starting from this reality, we considered that most companies with the financial power to penetrate new markets are in Bucharest. The statement remains true on a territorial level: even though not all 28 companies were Bucharest-based, but only 17, the percentage is still low.

	models to solve some challenges faced by the Capital City's community. • Develop an online platform that enables the public administration to launch challenges and entrepreneurs to propose business solutions that might solve them (“online solutions competition”). Afterwards, the winning solutions should be helped to scale up and penetrate foreign markets.
RESEARCH, DEVELOPMENT AND INNOVATION	
Although Bucharest City is the main national competitivity pole in research, development and innovation (RDI), the local RDI ecosystem is rather poorly developed, with a low degree of RDI cooperation and intensity, as well as with a modest quality of research institutes. The cooperation between innovation actors (ideally a quadruple helix: public authorities, academia, the business environment, and the civil society) is relatively low, with organizations/institutes carrying out their own projects. Moreover, the investor survey has shown a preferences for cooperating with foreign universities, despite the high concentration of academic institutions in the Capital and in Ilfov County. At the same time, over the last years the Capital City has seen a decrease in the number of specialized staff, albeit maintaining its leading position in the national top.	• Promote and communicate the results of local research and encourage technological transfers. • Facilitate partnerships and active participation in processes of entrepreneurial discovery. • Develop “Partnership for innovation” programs (in a quadruple helix system, focusing on encouraging companies to cooperate with universities/research institutes to develop innovative solutions). • Actively support the development of innovation clusters (e.g. by organizing meetings between the administration, the local business environment, the academic and research environment, catalyst-organizations, by supporting wide research projects, etc.). • Develop programs that promote a career as a researcher among the young (starting in secondary school), organize study visits to research facilities for students (for instance, within the activities of “Scoala Altfel” – *The Different School Week*) • Create hubs for the STEM education of students, by PPP. • Endow school laboratories with state-of-the-art equipment and train the teachers to use it, including with the support of the private sector.
URBAN PLANNING	
The development of the Capital's sectors is not balanced, with Sectors 1 and 2 seeing a higher progress due to the numerous modern and attractive office spaces located there, as well as to the presence of the largest companies in terms of turnover and number of employees, and to the many company headquarters or shopping centers. At the same time, a high share of inhabitants with a high purchase power live here. A great number of employees from other sectors commute to the Capital's central and northern regions, attracted by the facilities offered by employers, but mainly by the salary levels. Sectors 1 and 2 attract nearly 60% of the total employees. Over the last years, new office and economic activities areas have been developed or have the perspective of	• Adopt an integrated approach to the development of the metropolitan territory, by correlating the socio-economic and urban development efforts with those in Ilfov County and in the administrative sectors. • Encourage the development of new office and economic activities areas, outside the central and northern areas, mainly to the west of the city. For instance, the Antiaeriană area (Sector 5) shows a unique potential on a regional level right now, having the possibility of somehow balancing the Capital's polarized north-south development. • Develop of Municipality-financed idea competitions for rehabilitating of buildings/areas and integrating them in the economic circuit, especially in the less-developed sectors (e.g. Sector 5).

developing outside the central and northern area, mainly in the western part of the city, among them the Antiaeriană area showing a currently unique potential on a regional level. The peri-urban area of Bucharest City (especially the first ring of localities around the Capital) is very attractive from an economic standpoint, with a high entrepreneurial capacity, and has an economic profile which complements the Capital.	In order to create/support a local economic ecosystem, the public administration may provide freelancers and entrepreneurs with equipped spaces free of charge, for temporary use, within a program aimed at reactivating vacant spaces (e.g.: https://urbact.eu/urbact-guidebook-reactivation-and-reuse-larger-vacant-buildings). • Create opportunity areas that provide facilities to investors, so that they redirect their capital to areas that are generally characterized by higher unemployment, smaller income and less training of the population, in order to balance the socio-economic development.
Right now, urban design is done reactively, according to punctual development initiatives. This deepens the gap between the rhythm of the Capital's economic growth and the pace of urban planning. Moreover, investors do not have an urban development vision and an updated master plan to relate to [issue mentioned within consulting meetings].	• Completing the new General Urban Plan provides the opportunity to align the economic development endeavors with the urban development ones. • Identify areas with a potential for economic development and make an inventory of unused industrial platforms/brownfields, which can be converted into service areas or mixed areas, as well as of other lands that can to attract investments. Adopt land development policies that support their development. • Meet the specific accessibility requirements – including by ensuring high-capacity public transport (subway/tram/urban trains), public endowments and services, and provide for adequate infrastructure on lands that are fit for investments. • Issue zonal urban plans for the large areas that are fit for investments. • Develop a centralized online system regarding Bucharest buildings, their legal status and the land/buildings available for investments [public consultation result]

Last but not least, following consultations, Capital City investors and entrepreneurs suggested a series of measures to increase the city's attractiveness for business:

The **entrepreneurs** suggested:

1. Tax regulations that should encourage business development;
2. Investments to improve employee mobility;
3. Investing in education and workforce training;
4. Investing in increasing merchandise mobility (merchandise transport);
5. Development of business centers, co-working, hubs, research, innovation.

The **investors** suggested:

1. Investing in education and workforce training;
2. Tax regulations that should encourage business development and innovation;
3. Investments in quality infrastructure and public services, to make the city attractive for the Romanian workforce;
4. City planning regulations that encourage business development and innovation infrastructure;

5. Investments to improve employee mobility;
6. Easy issuing of the necessary approvals and permits;
7. Promoting Bucharest as a regional and even global investment destination and attracting foreign workforce.

APPENDIX 1 – REGIONAL COMPETITIVENESS INDEX FOR THE BUCHAREST-ILFOV REGION

Romania	*București - Ilfov*					*RO32*	
RCI 2019	Score	Score 0-100	Rank*	GDP per head PPS - EU28=100	Value	Rank	Stage of development (1 = Lowest; 5 = Highest)	5
	-0.10	55.92	151/268		139	25/268		

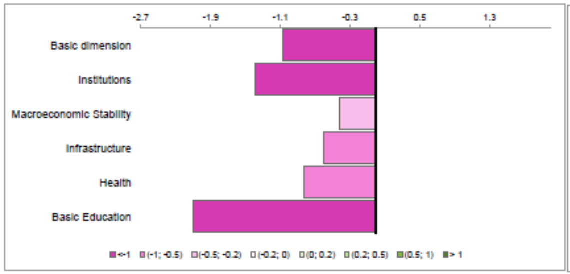
Peer Regions: Antwerpen; Vorarlberg; Tirol; Karlsruhe; Mittelfranken; Tübingen; Helsinki-Uusimaa; Braunschweig; Köln; Prov. Autonoma di Bolzano/Bozen; Praha and its commuting zone ; Oberösterreich; Wien and its commuting zone; Åland and Düsseldorf

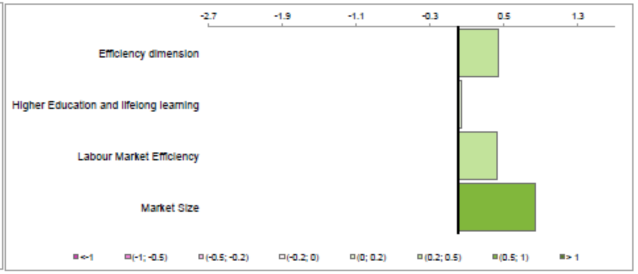
	score (EU28=0)	peers comparison
Basic dimension	**-1.07**	Underperforming
Institutions	-1.39	Underperforming
Macroeconomic Stability	-0.42	Underperforming
Infrastructure	-0.60	Similar
Health	-0.83	Underperforming
Basic Education	-2.11	Underperforming

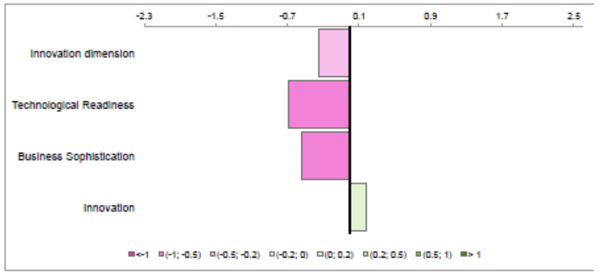
	score (EU28=0)	peers comparison
Efficiency dimension	**0.43**	Similar
Higher Education and lifelong learning	0.04	Similar
Labour Market Efficiency	0.42	Underperforming
Market Size	0.84	Similar

	score (EU28=0)	peers comparison
Innovation dimension	**-0.35**	Underperforming
Technological Readiness	-0.69	Underperforming
Business Sophistication	-0.54	Underperforming
Innovation	0.18	Similar

Overperforming with respect to its peers
Similar to peers
Underperforming with respect to its peers







* Equal ranking is assigned if the difference in score is equal or below 0.1 on the 0-100 scale

Note: Macroeconomic Stability and Basic Education at the country level

APPENDIX 2 – COMPONENT INDICATORS OF THE REGIONAL COMPETITIVENESS INDEX

SUB-INDEX	PILLAR	SUB-PILLAR	INDICATOR
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Corruption – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Quality and responsibility – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Impartiality – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Country corruption percentage – 2018
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Regional corruption percentage – 2018
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Voice and responsibility – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Political stability – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Governmental effectiveness – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Regulation quality – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Rule of law – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Corruption control – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Ease of doing business – 2019
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Ownership – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Intellectual property protection – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Legal framework efficiency in solving disputes – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Legal framework efficiency in challenging regulations – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Transparency of issuing governmental policies – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Business expenses for crime and violence – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Organized crime – 2017
BASIC	INSTITUTIONS	REGIONAL INSTITUTIONS	Rehabilitation of police services – 2017
BASIC	MACROECONOMIC STABILITY		General government deficit/surplus – 2016-2018 average
BASIC	MACROECONOMIC STABILITY		National savings – 2015-2017 average
BASIC	MACROECONOMIC STABILITY		Government bond efficiency – 2016-2018 average

SUB-INDEX	PILLAR	SUB-PILLAR	INDICATOR
BASIC	MACROECONOMIC STABILITY		Government debt – 2016-2018 average
BASIC	MACROECONOMIC STABILITY		Net position of international investment – 2016-2018 average
BASIC	INFRASTRUCTURE		Road accessibility – 2016
BASIC	INFRASTRUCTURE		Rail accessibility – 2014
BASIC	INFRASTRUCTURE		Number of passenger flights – 2016
BASIC	HEALTHCARE		Traffic fatalities – 2014-2016 average
BASIC	HEALTHCARE		Life expectancy – 2014-2016 average
BASIC	HEALTHCARE		Infant mortality – 2015-2017 average
BASIC	HEALTHCARE		Cancer fatalities – 2015 (published as a 3-year average)
BASIC	HEALTHCARE		Heart attack fatalities – 2015 (published as a 3-year average)
BASIC	HEALTHCARE		Suicide rate – 2015 (published as a 3-year average)
BASIC	BASIC EDUCATION		Employer-sponsored training – 2016
BASIC	BASIC EDUCATION		Access to learning informational material – 2016
BASIC	BASIC EDUCATION		No foreign languages – 2016
EFFICIENCY	HIGHER EDUCATION AND LIFELONG LEARNING		Population aged 25-64, with higher education – 2015-2017 average
EFFICIENCY	HIGHER EDUCATION AND LIFELONG LEARNING		Lifelong learning – 2015-2017 average
EFFICIENCY	HIGHER EDUCATION AND LIFELONG LEARNING		Dropout rate – 2015-2017 average
EFFICIENCY	HIGHER EDUCATION AND LIFELONG LEARNING		Completion of secondary studies – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Employment rate (without agriculture) – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Long-term unemployment – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Unemployment rate – 2015-2017 average

SUB-INDEX	PILLAR	SUB-PILLAR	INDICATOR
EFFICIENCY	LABOUR MARKET EFFICIENCY		Labor productivity – 2015
EFFICIENCY	LABOUR MARKET EFFICIENCY		Unemployment balance – men vs women – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Employment balance – men vs women – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Unemployment rate – women – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Share of the population aged 15-24, not in education, employed or in training (NEET) – 2015-2017 average
EFFICIENCY	LABOUR MARKET EFFICIENCY		Share of the population aged 30-64, employed in non-voluntary part-time or temporary activities – 2015-2017 average
EFFICIENCY	LABOUR MARKET SIZE		Available income per inhabitant – 2014
EFFICIENCY	LABOUR MARKET SIZE		Potential market size expressed in GDP – 2016
EFFICIENCY	LABOUR MARKET SIZE		Potential market size expressed in population – 2018
INNOVATION	TECHNOLOGICAL READINESS	REGIONAL TECHNOLOGICAL READINESS	Households with Internet access – 2018
INNOVATION	TECHNOLOGICAL READINESS	REGIONAL TECHNOLOGICAL READINESS	Individuals making Internet purchases – 2018 average
INNOVATION	TECHNOLOGICAL READINESS	REGIONAL TECHNOLOGICAL READINESS	Households' internet access – 2018 average
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	Availability of latest technologies – 2017
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	Company-level technology absorption – 2017
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	FDI and technology transfer – 2017

SUB-INDEX	PILLAR	SUB-PILLAR	INDICATOR
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	Enterprises making online purchases (at least 1%) – 2016-2018 average
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	Enterprises receiving online orders (at least 1%) – 2016-2018 average
INNOVATION	TECHNOLOGICAL READINESS	NATIONAL TECHNOLOGICAL READINESS	Enterprises with fixed internet access – 2015-2017 average
INNOVATION	BUSINESS SOPHISTICATION		Workforce occupancy (sectors K-N) – 2014-2016
INNOVATION	BUSINESS SOPHISTICATION		Gross value added (sectors K-N) – 2014-2016
INNOVATION	BUSINESS SOPHISTICATION		Innovative SMEs collaborating with others – 2017
INNOVATION	BUSINESS SOPHISTICATION		Marketing organization innovators – 2017
INNOVATION	INNOVATION		Basic employment of creative class – 2015-2017 average
INNOVATION	INNOVATION		Knowledge workers – 2015-2017
INNOVATION	INNOVATION		Scientific publications – 2015-2017 average
INNOVATION	INNOVATION		Total expenses for the research and development activity – 2015
INNOVATION	INNOVATION		Human resources in science and technology – 2015-2017
INNOVATION	INNOVATION		Technology and knowledge-intensive workforce employment – 2015-2017 average
INNOVATION	INNOVATION		Average-high/high technology fabrication exports – 2017
INNOVATION	INNOVATION		New market product sales and new innovations for companies – 2017

APPENDIX 3 – FOREIGN INVESTORS IN BUCHAREST CITY

Table 12 – Foreign investors in Bucharest City, by turnover and number of employees, 2018, by administrative sectors

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
OMV PETROM	Sector 1	Oil and natural gas extraction and processing	Austria	17,817	12,498
KAUFLAND ROMANIA SCS	Sector 2	Retail of food and non-food products	Germany	10,889	12,374
BRITISH AMERICAN TOBACCO TRADING	Sector 1	Cigarette production	India/Germany	9,534	816
LUKOIL ROMANIA	Sector 1	Trade in oil products	Netherlands through Lukoil Europe Holdings BV	7,519	2,547
CARREFOUR ROMANIA	Sector 2	Retail of food and non-food products	France	7,315	9,997
ORANGE ROMANIA	Sector 1	Telecommunications	France/Belgium	5,744	2,366
MEGA IMAGE	Sector 6	Retail of food and non-food products	Belgium/Netherlands	5,730	9,741
AUCHAN ROMANIA	Sector 6	Retail of food and non-food products	France/Netherlands	5,405	10,123
METRO CASH & CARRY ROMANIA	Sector 3	Wholesale of food and non-food products	Germany/Austria/Netherlands	5,303	3,679

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
SAMSUNG ELECTRONICS ROMANIA	Sector 1	Wholesale of IT&C products	The Netherlands / South Korea	4,575	208
DANTE INTERNATIONAL (EMAG)	Sector 6	Online trade	USA/Hungary/Poland/Netherlands	4,236	2,720
RENAULT COMMERCIAL ROUMANIE	Sector 6	Wholesale of cars	France	4,088	177
COFCO INTERNATIONAL ROMANIA	Sector 2	Wholesale of agricultural products	Netherlands / Italy	3,902	75
VODAFONE ROMANIA	Sector 2	Telecommunications	India/Netherlands / France	3,813	2,340
ADM TRADING ROMANIA*	Sector 2	Wholesale of agricultural products	Switzerland/Ireland/Netherlands	3,564	68
FARMEXPERT DCI	Sector 6	Wholesale of medicines	Germany/Italy/UK	3,263	942
ROBERT BOSCH*	Sector 1	Production and trade of automotive components, machine tools	Germany	3,001	3,287
CARGILL AGRICULTURA*	Sector 1	Wholesale of agricultural products	USA/Luxembourg	2,820	145

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
PHILIP MORRIS TRADING	Sector 2	Cigarette production	Croatia/Greece/Netherlands/Switzerland	2,508	237
ENEL ENERGIE MUNTENIA	Sector 3	Electricity trade	Greece/Italy	2,491	233
ENEL ENERGIE	Sector 3	Electricity trade	Italy	2,390	226
GLENCORE AGRICULTURE ROMANIA	Sector 2	Wholesale of agricultural products	Netherlands/France/Russia	1,901	56
HUAWEI TECHNOLOGIES	Sector 2	Wholesale of IT&C equipment, outsourcing, software development	The Netherlands / China	1,894	1,018
URSUS BREWERIES*	Sector 2	Production of beer	USA/Japan/Belgium	1,846	1,504
HOLZINDUSTRIE SCHWEIGHOFER	Sector 1	Wood processing	Austria	1,787	1,779

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
ROMANIA HYPERMARCHE	Sector 3	Retail of food and non-food products	The Netherlands / France	1,753	3,781
TINMAR ENERGY	Sector 1	Electricity trade	Switzerland	1,650	70
CHS AGRITRADE ROMANIA	Sector 5	Wholesale of agricultural products	Italy/Ukraine/Switzerland	1,459	0
COLUMBUS OPERATIONAL	Sector 2	Retail of food and non-food products	Netherlands/France/Belgium	1,285	2,665
JT INTERNATIONAL	Sector 2	Cigarette production	The Netherlands / USA	1,274	687
HOLCIM	Sector 1	Cement production	Germany/France	1,270	780
ȚIRIAC AUTO	Sector 1	Car trade	Cyprus	1,228	1,017
SANOFI ROMANIA	Sector 2	Wholesale of medicines	France	1,206	215

Company name	BC sector	Object	Country of origin of the capital	Turnover (2018) – million RON	No. of employees – 2018
HEINEKEN ROMANIA	Sector 1	Production of beer	The Netherlands / USA	1,179	1,177
RENAULT TECHNOLOGIE ROUMANIE	Sector 6	Engineering	France	1,087	2,091
BAYER	Sector 1	Wholesale of chemical products	Netherlands/Germany/France	1,010	196
CRH CIMENT	Sector 1	Cement production	United Kingdom/Italy/France	974	726
ORACLE ROMANIA	Sector 2	Software	Netherlands/UK/Ireland	961	4,463
HEIDELBERGCEMENT ROMANIA	Sector 1	Cement production	The Netherlands / Germany	945	968
IBM ROMANIA	Sector 6	Software	Netherlands/Slovakia	932	3,207
ROMINSERV	Sector 1	Oilfield services	Kazakhstan/Netherlands	389	593

Source: NTRO, Statistical Syntheses, and the Ministry of Public Finance, 2019

Many of the companies previously mentioned have their main offices in Bucharest, but their manufacturing units are in other counties in Romania.

1. **Robert Bosch** also has, besides its head offices and the sales office in the Capital City, a branch of BSH Hausgeräte GmbH, active in household appliances. In Cluj, Bosch is operating a research and development center and a manufacturing unit for automotive technology. A linear technology production unit and an automotive technology one are found in Blaj. The company also has a business process outsourcing center in Timișoara.
2. **Rominserv SRL** has, besides the Bucharest central offices, 2 working facilities (Năvodari and Ploiești) and a direct participation of over 25% in 2 subsidiaries (Rominserv Valves Iaifo SRL – formerly Armătura Zalău and Palplast Sibiu – manufacturer of polyethylene pipes and fittings).
3. **Heidelbergcement Romania** – has 1 main office in Bucharest, 5 gravel pits, 7 quarries, 3 cement factories, 2 working facilities, 21 batching plants all around Romania. The company has a direct participation of over 25% in the companies: Carpat Cemtrans SRL, Carpat Beton Servicii Pompe SRL, Recyfuel SRL.
4. **Oracle Romania** – has a joint administration with companies MD Consulting Services SRL and New Vision Com SRL.
5. **CRH Ciment SA** – the administrative offices are in Bucharest, but it has 21 cement stations and baching plants, 1 cement factory in Brașov County, and a participation of min. 25% in the companies CRH RMX & Agregate SRL, Recy Eco Combustibil SRL.

6. **Bayer** – has a participation of min 25% in the company Monsanto Romania SRL, active in the wholesale trade of cereal, being the most likely supplier of agriculture inputs. Pharma manufacturing companies are generally held by foreign investors: Zentiva SA, Labormed-Pharma. Part of the companies active on the medical service market also have foreign capital, such as: Medicover, Diaverum Romania.
7. **Heineken Romania SA** – has a participation of over 25% in the companies Green Resources Management SA, Stockday SRL, Livada cu Mere Bune SRL, which seems to be an internal value chain, where companies are covering production (through the 4 factories in Miercurea Ciuc, Craiova, Constanța and Târgu Mureș), raw material supply, distribution.
8. **Holcim** – holds cement factories in Câmpulung and Aleșd, a grinding station and the cement terminal in Turda, 13 ecological baching plants and 3 aggregates stations, as well as 2 stations of special binders and the cement terminal in Bucharest. It holds over 25% in the companies Cenextra SA – trade, Geocycle SRL – recyclables recovery and Start Casa Visio SRL – trade.
9. **JT International** – holds a factory in Pipera.
10. **Holzindustrie Schweighofer** – with manufacturing units in Sebeș, Rădăuți, Reci, Siret and Comănești and main offices in Bucharest.
11. **Ursus Breweries** – holds 3 beer factories in Brașov, Buzău and Timișoara and a mini-production facility in Cluj, and the main offices are in Bucharest.
12. **Philip Morris Trading** – has a factory in Otopeni.
13. **Cargill Agricultura** – has the central offices in Bucharest, with silos in the counties of Constanța, Mehedinți, Ialomița, being a direct competitor of the company ADM Romania Trading and COFCO International, a Chinese leader on the cereal trade market, also in the top exporters.
14. **ADM Romania Trading** – is one of the largest port operators in the Constanța Port, a cereal trader, especially barley, rapeseed, wheat, sunflower seeds and corn. They hold a transport and trading office in Bucharest.

APPENDIX 4 – SUPPORT INFRASTRUCTURE FOR R&D AND BUSINESS

Table 13 – Research infrastructure offering research and technological services in Bucharest City

NO.	AUTHORITY	NAME
INSTITUTES OF NATIONAL INTEREST		
1	**MRI**	The Romanian Space Agency
NATIONAL INSTITUTES FOR RESEARCH AND DEVELOPMENT		
2	**MRI**	The National Institute for Research and Development for Optoelectronics
3	**MRI**	The National Institute for Research and Development for Gas Turbines – COMOTI
4	**MRI**	The National Institute for Research and Development in the Domain of Geology, Geophysics, Geochemistry, and Remote Sensing
5	**MRI**	The National Research and Development Institute for Textiles and Leather
6	**MRI**	The National Institute of Research and Development for Machines and Installations Designed for Agriculture and Food Industry
7	**MRI**	The National Institute For Chemical – Pharmaceutical Research and Development
8	**MRI**	The National Institute for Research and Development on Marine Geology and Geo-ecology
9	**MRI**	The National Institute of Research and Development for Biological Sciences
10	**MRI**	The National Institute for Research and Development in Microtechnologies
11	**MRI**	The National Institute for Research and Development in Electrical Engineering – Advanced Research
12	**MRI**	The "Elie Carafoli” National Institute for Aerospace Research
13	**MRI**	The National Institute of Research and Development for Mechatronics and Measurement Technique
14	**MRI**	The National Research and Development Institute for Industrial Ecology
15	**MRI**	The Research and Development National Institute for Metals and Radioactive Resources
16	**MRI**	The National Institute for Research & Development in Chemistry and Petrochemistry

NO.	AUTHORITY	NAME
17	**MRI**	The National R&D Institute for Nonferrous and Rare Metals
18	**MRI**	The National Research and Development Institute for Energy
19	**MRI**	The National Institute for Research and Development in Constructions, Urbanism and Sustainable Spatial Development
20	**MRI**	The National Communications Studies and Research Institute
21	**MRI**	The National Research and Development Institute of Occupational Safety (INCDPM) – "Alexandru Darabont"
22	**MRI**	National Research and Development Institute for Environmental Protection
23	**MRI**	The “Victor Babeș” National Institute for Research and Development in Pathology and Biomedical Sciences
24	**MRI**	The National Research and Development Institute for Food Bioresources
25	**MRI**	The National Research and Development Institute for Soil Science, Agrochemistry and Environment
26	**MRI**	The National Research-Development Institute for Animal Biology and Nutrition
27	**MRI**	The National Institute for Research and Development in Forestry “Marin Dracea”
28	**MRI**	The National Institute of Research and Development in Tourism
29	**MCSI**	The National Institute for Research and Development in Informatics
30	**MARD**	The National Research and Development Institute for Land Development
RESEARCH INSTITUTES AND CENTRES, SUBORDINATE TO THE ROMANIAN ACADEMY		
31	**RA**	The Astronomical Institute
32	**RA**	The Francisc I Rainer Institute of Anthropology
33	**RA**	The Vasile Pârvan Institute of Archaeology
34	**RA**	The Institute of Biochemistry
35	**RA**	The Institute of Biology
36	**RA**	The Nicolae Simionescu Institute for Cellular Biology and Pathology

NO.	AUTHORITY	NAME
37	**RA**	The Research Institute for Quality of Life
38	**RA**	The Legal Research Institute Acad. Andrei Rădulescu Institute
39	**RA**	The Research Institute for Artificial Intelligence
40	**RA**	The “Ilie G. Murgulescu” Institute of Physical Chemistry
41	**RA**	The Institute of Agricultural Economics
42	**RA**	The Costin Murgescu Institute for World Economy
43	**RA**	The Institute of National Economy
44	**RA**	The "Constantin Brăiloiu" Institute of Ethnography and Folklore
45	**RA**	The "Constantin Rădulescu-Motru" Institute of Philosophy and Psychology
46	**RA**	The Sabba S Ștefănescu Institute of Geodynamics
47	**RA**	The Institute of Geography
48	**RA**	The Nicolae Iorga Institute of History
49	**RA**	The G. Oprescu Institute of Art History
50	**RA**	The “G. Călinescu” Institute of Literary History and Theory
51	**RA**	The Institute for the History of Religions
52	**RA**	The "Iorgu Iordan – Al. Rosetti" Institute of Linguistics
53	**RA**	The Simion Stoilow Institute of Mathematics
54	**RA**	The Institute of Solid Mechanics
55	**RA**	The National Institute for Economic Research "Costin C. Kiritescu"
56	**RA**	The National Institute for the Study of Totalitarianism
57	**RA**	The Institute for Economic Forecasting
58	**RA**	The Dimitrie Gusti Institute of Sociology
59	**RA**	The Emil Racoviță Institute of Speleology
60	**RA**	The "Gheorghe Mihoc-Caius Iacob" Institute of Mathematical Statistics and Applied Mathematics
61	**RA**	The Institute for South – East European Studies

NO.	AUTHORITY	NAME
62	**RA**	The Institute of Political Sciences and International Relations
63	**RA**	The Stefan S. Nicolau Institute of Virology
64	**RA**	The “Vladimir Trebici” Demographic Research
65	**RA**	The Centre for Financial and Monetary Research “Victor Slavescu”
66	**RA**	The Centre of Organic Chemistry 'Costin D. Nenitescu'
67	**RA**	The Centre for Industrial and Services Economics
68	**RA**	The European Center for Ethnic Studies
69	**RA**	The Center of Immunology
70	**RA**	The Center for Economic Information and Documentation
71	**RA**	The Centre for Macroeconomic Modelling
72	**RA**	The Center for New Electronic Architectures
73	**RA**	The Romanian Center for Comparative Economics and Consensus
74	**RA**	The Center for Advanced Studies in Physics
75	**RA**	The Center of Studies and Research in Biodiversity and Agro-Forestry Acad. David Davidescu
76	**RA**	The Center of European Law Studies
INNOVATION AND TECHNOLOGICAL TRANSFER ENTITIES		
77	**MRI**	The TE ICPE Technology Information Center
78	**MRI**	The IRECSON Technology Information Center
79	**MRI**	The ICF Technological Transfer Center
80	**MRI**	The ICPE-CA Technological Transfer Center
81	**MRI**	The ECOIND Technological Transfer Center
82	**MRI**	The ICECHIM Technological Transfer Center
83	**MRI**	The CRTTC Technological Transfer Center
84	**MRI**	The PRO TRANSFER Technological Transfer Center

NO.	AUTHORITY	NAME
85	**MRI**	The INCDPM Technological Transfer Center
86	**MRI**	The BINNOTEH Technological and Business Incubator
87	**MRI**	The TEXCONF Technological and Business Incubator
88	**MRI**	The INMA Technological and Business Incubator
CLUSTERS		
89	-	Romanian Cluster PROECO-CBRNE
90	-	Cluster for Promoting Nearly Zero Energy Buildings (Pro-Nzeb)
91	-	Rohealth – the Health Cluster
92	-	Agri-Bio-Tech
93	-	ECOIND
94	-	START INOVARE
95	-	All Electric Pole
96	-	The Biogasinno Cluster
97	-	Go Electric Regional Cluster
98	-	DIFFERENT ANGLE CLUSTER
99	-	BUCHAREST FURNITURE DESIGN CLUSTER
100	-	IND-AGRO-POL
101	-	Romanian Textile Concept
102	-	CONTROL & IT CLUSTER
103	-	SMART ALLIANCE CLUSTER
104	-	SIS-AUTOM-INT-POL BUCURESTI
105	-	Health Romania the Medical Cluster
106	-	GLOCAL ROMANIA CLUSTER
107	-	TRACIALAND NETWORK OF CLUSTERS
108	-	BIODANUBIUS

NO.	AUTHORITY	NAME
109	-	Strategic Innovative Cluster for Mechatronics Smart Specialization Domain – «MECHATREC»
110	-	ELECTRONIC INNOVATION CLUSTER (ELINCLUS)
111	-	POLE OF COMPETITIVENESS FOR MECHATRONICS INDUSTRY „INDMECATRON"

Source: Smart Specialization Strategy for the Bucharest-Ilfov Development Region – Analysis of Potential

Innovation and Technological Transfer Entities (ITTEs) in the Bucharest-Ilfov Region, by fields

No.	Name	ITTE type	Field	Location
1	CIT TE ICPE	Technology Information Center	Electrical Engineering, IT&C, Energy	B
2	CIT IRECSON	Technology Information Center	Economic and social statistics Modelling of economic and social phenomena Sales marketing	B
3	CTT ICF	Technological transfer center	Chemistry and physics Micro and nano materials Environmental Protection	B
4	CTT TTIPMD ISS	Technological transfer center	Space and security IT&C Health and eco-technologies	IF
5	CTT ICPE-CA	Technological transfer center	Electrotechnics and electronics Machine building Metallurgy	B
6	CTT ECOIND	Technological transfer center	Environmental Protection	B
7	CTT ICECHIM	Technological transfer center	Environment and agriculture Healthcare Chemical-petrochemical industry	B
8	CTT AVANMAT	Technological transfer center	Material engineering	IF
9	CTT CRTTC	Technological transfer center	Mechatronics and measurement technology Fine mechanics, optics and medical instruments	B
10	CTT PRO TRANSFER	Technological transfer center	Creative industries	B
11	CCTT INCDPM	Technological transfer center	Environmental Protection	B

No.	Name	ITTE type	Field	Location
12	CTTIM INFLPR	Technological transfer, innovation, and marketing center	IT&C The physics of lasers, plasma and radiation Space and security	IF
13	ITA BINNOTEH	Technological and Business Incubator	Biotechnologies and biomaterials Environmental protection IT&C	B
14	ITA TEXCONF	Technological and Business Incubator	Textiles and apparel	B
15	ITA INMA	Technological and Business Incubator	Technologies and technical equipment for agriculture, agricultural farms and the food industry	B

Source: Ministry of Research and Innovation, July 2018

Support infrastructure for R&D and business

Name	Typology	Location	Site	Source
MINATECH-RO	Scientific and Technological Park	IF	https://www.minatech.ro/en/	https://geo.uefiscdi-direct.ro/firme-inovative
CTT AVANMAT	TTC – Technological Transfer Center	IF	http://imnr.ro/avanmat/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
ITA TEXCONF	TBI – Technological and Business Incubator	IF	http://www.certex.ro/Incubator/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
CTTIM INFLPR	Technological transfer, innovation, and marketing center	IF	http://www.nipne.ro/research/departments/cttm.php	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
CTT TTIPMD ISS	TTC – Technological Transfer Center	IF		Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
ITA INMA	TBI – Technological and Business Incubator	B	http://www.inma-ita.ro/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
Metav Industrial Park	Industrial estate	B	http://www.metav.ro/	G.O. no. 65/2001 + https://geo.uefiscdi-direct.ro/firme-inovative
Caron Incubator	Business Incubator and Accelerator	B	https://carbon-incubator.com/	https://geo.uefiscdi-direct.ro/firme-inovative
Gemini Solutions Foundry	Accelerator	B	https://gemsfoundry.ro/	https://geo.uefiscdi-direct.ro/firme-inovative

Name	Typology	Location	Site	Source
Innovation Labs	Accelerator	B	https://innovationlabs.ro/	https://geo.uefiscdi-direct.ro/firme-inovative
CTT ICF	TTC – Technological Transfer Center	B	http://www.icf.ro/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
CTT ICECHIM	TTC – Technological Transfer Center	B	https://www.icechim.ro/ctt/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
ITA BINNOTEH	TBI – Technological and Business Incubator	B	http://www.incdsb.ro/structura-organizatorica/bucuresti/incubatorul-tehnologic-si-de-afaceri/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
Parcul Industrial Sema	Industrial estate	B	http://www.semaparc.ro/	G.O. no. 65/2001 + https://geo.uefiscdi-direct.ro/firme-inovative
Impact Hub	Hub	B	https://www.impacthub.ro/	https://geo.uefiscdi-direct.ro/firme-inovative
WeLoveDigital	Hub	B	http://www.welovedigital.ro/	https://geo.uefiscdi-direct.ro/firme-inovative
Ingenius-Hub	Hub	B	https://ingenius-hub.eu/	https://geo.uefiscdi-direct.ro/firme-inovative
CIT CENTIREM	TIC – Technology Information Center	B	http://incdmrr.ro/centirem/	https://geo.uefiscdi-direct.ro/firme-inovative
Tech Hub	Hub	B	https://bucharest.techhub.com/	https://geo.uefiscdi-direct.ro/firme-inovative
CIT TE ICPE	TIC – Technology Information Center	B	http://www.icpe.ro/ro/	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
CTT ICPE-CA	TTC – Technological Transfer Center	B	http://www.icpe-ca.ro/pdf/prezentare_ctt_30_06_2009.pdf	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
Nod Makerspace	Hub	B	https://nodmakerspace.ro/	https://geo.uefiscdi-direct.ro/firme-inovative
360hub	Hub	B	https://360hub.ro/	https://geo.uefiscdi-direct.ro/firme-inovative
CTT CRTTC	TTC – Technological Transfer Center	B	http://5.2.207.15/compartimente.php?action=sub&p=0&cID=54	Ministry of Research and Innovation + https://geo.uefiscdi-direct.ro/firme-inovative
CIAf	Business Incubator	B	http://www2.ciaf.ro/	https://geo.uefiscdi-direct.ro/firme-inovative

APPENDIX 5 – LOCATION QUOTIENT

NON-COMPETITIVE SECTORS			COMPETITIVE SECTORS			
Transforming sectors (LQ>1, DV<0)			Developing sectors (LQ>1, DV>0)[74]			
Sector	LQ	DV	Sector	LQ	DV	
60 – Programming and broadcasting activities	2.61	-0.02	**51 – Air Transport**	3.33	0.05	High employee concentration
73 – Advertising and market research	2.55	-0.03	**59 – Motion picture, video and television program production, sound recording and music publishing activities**	3.01	0.00	
90 – Creative, arts and entertainment activities	1.91	-0.22	**72 – Scientific research and development**	2.70	0.01	
69 – Legal and accounting activities	1.89	0.00	**88 – Social work activities without accommodation**	2.40	1.14	
82 – Office administrative, office support and other business support activities	1.80	0.00	**70 – Activities of head offices; management consultancy activities**	2.40	0.10	
18 – Printing and reproduction of recorded media	1.75	-0.05	**78 – Employment activities**	2.23	0.13	
21 – Manufacture of basic pharmaceutical products and pharmaceutical preparations	1.72	-0.01	**58 – Publishing activities**	2.19	0.06	
			12 – Manufacture of tobacco products	2.15	0.00	
63 – Information service activities	1.71	-0.46	92 – Gambling and betting activities	2.12	0.07	
			62 – Computer programming, consultancy and related activities	2.09	0.03	
77 – Rental and leasing activities	1.57	-0.01	87 – Residential care activities	2.02	0.03	
86 – Human health activities	1.53	0.00	80 – Security and investigation activities	1.89	0.19	
71 – Architectural and engineering activities; technical testing and analysis	1.46	-0.12	79 – Travel agency, tour operator and other reservation service and related activities	1.88	0.01	
96 – Other service activities	1.45	-0.02	61 – Telecommunications	1.83	0.13	
46 – Wholesale trade, except of motor vehicles and motorcycles	1.41	0.00	68 – Real estate activities	1.74	0.05	

74 Top 10 on county level, ordered by LQ.

NON-COMPETITIVE SECTORS			COMPETITIVE SECTORS			
85 – Education	1.34	-0.06	81 – Services to buildings and landscape activities	1.58	0.28	
95 – Repair of computers and personal and household goods	1.31	-0.01	91 – Libraries, archives, museums and other cultural activities	1.47	0.02	
93 – Sports activities and amusement and recreation activities	1.28	-0.03	74 – Other professional, technical and scientific activities	1.29	0.03	
			53 – Postal and courier activities	1.27	0.12	
			56 – Food and beverage service activities	1.16	0.46	
			52 – Warehousing and support activities for transportation	1.13	0.10	
			43 – Building completion and finishing	1.07	0.07	
			45 – Wholesale and retail trade and repair of motor vehicles and motorcycles	1.03	0.03	
Declining sectors (LQ<1, DV<0)			**Promising sectors (CL<1, DV>0)**[75]			Low employee concentration
Sector	**LQ**	**DV**	**Sector**	**LQ**	**DV**	
42 – Civil engineering	0.86	-0.01	41 – Construction of buildings	0.90	0.03	
35 – Electricity, gas, steam and air conditioning supply	0.76	-0.08	47 – Retail trade, except of motor vehicles and motorcycles	0.89	0.09	
49 – Land transport and transport via pipelines	0.69	-0.16	11 – Manufacture of beverages	0.88	0.03	
55 – Hotels and other accommodation facilities	0.62	-0.11	36-39 – Water supply, sewerage, waste management and decontamination activities	0.85	0.12	
23 – Manufacture of other non-metallic mineral products	0.58	-0.04	20 – Manufacture of chemicals and chemical products	0.80	0.55	
50 – Water transport	0.55	-0.32	75 – Veterinary activities	0.79	0.10	
22 – Manufacture of rubber and plastic products	0.50	-0.03	32 – Other manufacturing	0.68	0.10	

[75] Idem.

NON-COMPETITIVE SECTORS			COMPETITIVE SECTORS		
17 – Manufacture of paper and paper products	0.47	-0.19	33 – Repair and installation of machinery and equipment	0.68	0.16
28 – Manufacture of machinery and equipment n.e.c.	0.45	-0.04	10 – Manufacture of food products	0.60	0.12
25 – Manufacture of fabricated metal products, except machinery and equipment	0.41	-0.18	30 – Manufacture of other transport equipment	0.51	0.05
26 – Manufacture of computer, electronic and optical products	0.34	-0.55	08 – Other mining and quarrying	0.37	0.16
27 – Manufacture of electrical equipment	0.28	-0.32	19 – Manufacture and processing of coke and of refined petroleum products	0.37	1.16
24 – Metallurgical industry	0.21	-0.02	06 – Extraction of crude petroleum and natural gas	0.36	1.69
09 – Mining support service activities	0.20	-0.22	15 – The tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	0.36	0.06
07 – Mining of iron ores	0.16	-0.01	31 – Manufacture of furniture	0.29	0.05
05 – Mining of coal and lignite	0.00	-0.47	14 – Manufacture of wearing apparel	0.29	0.10
			13 – Manufacture of textiles	0.27	0.00
			16 – Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.10	0.08
			29 – Manufacture of motor vehicles, trailers and semi-trailers	0.08	0.70

APPENDIX 6 – SHIFT-SHARE ANALYSIS

Table 14 – Shift-Share Analysis for (NACE Rev.2) divisions with an ALU personnel over 5,000 persons, Bucharest-Ilfov Region, 2017

Division	ALU personnel, 2017	Result
46 – Wholesale trade, except of motor vehicles and motorcycles	112,958	Loser
47 – Retail trade, except of motor vehicles and motorcycles	107,899	Questionable Winner
80 – Security and investigation activities	56,832	Questionable Winner
62 – Computer programming, consultancy and related activities	47,150	Winner
49 – Land transport and transport via pipelines	45,576	Big Loser
41 – Construction of buildings	38,018	Questionable Winner
56 – Food and beverage service activities	37,842	Winner
43 – Building completion and finishing	31,808	Questionable Winner
78 – Employment activities	31,061	Winner
82 – Office administrative, office support and other business support activities	29,928	Big Loser
70 – Activities of head offices; management consultancy activities	27,540	Winner
86 – Human health activities	26,641	Big Loser
45 – Wholesale and retail trade and repair of motor vehicles and motorcycles	25,034	Questionable Winner
10 – Manufacture of food products	23,690	Questionable Winner
71 – Architectural and engineering activities; technical testing and analysis	23,614	Loser
61 – Telecommunications	19,378	Questionable Winner
52 – Warehousing and support activities for transportation	19,002	Winner
68 – Real estate activities	18,637	Winner
36-39 – Water supply, sewerage, waste management and decontamination activities	18,003	Questionable Winner
73 – Advertising and market research	17,950	Loser
81 – Services to buildings and landscape activities	17,219	Winner
42 – Civil engineering	14,836	Loser
92 – Gambling and betting activities	14,299	Winner
96 – Other service activities	12,811	Big Loser
53 – Postal and courier activities	12,563	Questionable Winner
69 – Legal and accounting activities	10,823	Big Loser
35 – Electricity, gas, steam and air conditioning supply	10,798	Loser
58 – Publishing activities	10,376	Questionable Winner
25 – Manufacture of fabricated metal products, except machinery and equipment	10,137	Big Loser
14 – Manufacture of wearing apparel	10,082	Questionable Winner

Division	ALU personnel, 2017	Result
72 – Scientific research and development	8,213	Questionable Winner
22 – Manufacture of rubber and plastic products	8,141	Big Loser
55 – Hotels and other accommodation facilities	7,865	Big Loser
18 – Printing and reproduction of recorded media	6,889	Loser
63 – Information service activities	6,729	Big Loser
60 – Programming and broadcasting activities	6,181	Loser
28 – Manufacture of machinery and equipment n.e.c.	5,967	Loser
23 – Manufacture of other non-metallic mineral products	5,667	Loser
85 – Education	5,471	Big Loser
74 – Other professional, technical and scientific activities	5,268	Winner

Source: Own processing based on NIS data