

LABOUR MARKET ANALYSIS BY SECTORS IN THE REGIONS OF THE CZECH REPUBLIC

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Abstract

The paper deals with structural employment in regions and sectors. Its aim is to point out the worst situation in recruiting new workers in regions or sectors. To assess the situation, the authors use three parameters: the size of the sector in the region (s), the share of job vacancies in the total labour demand (k) and the number of the unemployed per job (l). The worst situation with recruitment is in the Pardubice Region. Furthermore, in all regions except Prague, there are problems with filling jobs in the manufacturing industry. Although these conclusions are not surprising, the authors found other interesting facts by comparing branches and regions. For example, they confirmed the difficult situation is in the Ústí Region with finding workers in the sector of **Human health and social work activities** or in the Liberec region, employers cannot find workers in the sector of **Professional, scientific and technical activities**. The authors succeeded in creating a method that allows a numerical evaluation of the situation of the sectors in regions. By monitoring changes in this evaluation of sectors in the regions, it is possible to determine trends in changes in the demand side of the labour market.

Keywords

Employment, Labour Market, Labour Demand, Unemployment

I. Introduction

The Czech Republic (hereafter only as the “CR”) is currently most characterised by extremely low unemployment and the situation on the labour market. In terms of unemployment, the CR belongs among the countries with the lowest unemployment not only in Europe but also in the OECD countries. Our research focused on the labour market and the demand for labour from the perspective of individual sectors in the regions of the Czech Republic.

The problems associated with low unemployment can vary from region to region and from sector to sector. For this reason, we examined deeper the demand side of the labour market in order to understand the particularities of individual regions and sectors in them.

The aim of this paper is to determine which sectors in regions have a shortage of professional workers. Furthermore, we aim to analyse the labour market at the level of sectors and regions in order to find out which regions will face a critical situation with hiring new employees in the future. The means to achieve these goals is to develop a methodology for the evaluation of sectors in the regions, which will enable us to express in one number how critical the situation on the labour market demand side is. In total, we will process three basic parameters (the sector size, the size of unsatisfied labour demand and number of the unemployed per job). And these three parameters will serve to evaluate the overall state of the sector in the regions.

The issue of structural employment has two main aspects (the demand side and supply side). In this paper, we will focus especially on demand and its excess over supply, which currently belongs among one of the worst in the EU. Companies face two problems in particular. First of all, it is the quantitative aspect of the problem (the lack of workforce) and the qualitative aspect (the lack of demanded professions). Our paper will focus on both sides. The first area will be

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analysed in the form of deviations from the average in the sector, in the region or in the national average. This view of the labour market in the regions and sectors will help us to identify positive and negative peaks representing critical points.

II. Trend of Employment since 1989

After 1989, when the economy was transformed and opened, its restructuring began. With the possibility of entrepreneurship, education and overall freedom, there also came a demand for brand new goods and particularly services. Agricultural employment fell by half over this period. Employment decreased in all industry sectors, especially in metallurgy and construction. Other sectors have either remained at a similar level or have changed little in terms of employment.

“There were debates about the causes of the low unemployment rate in the Czech Republic in the first half of the 1990s, but it may be mentioned that the causes certainly included the undeveloped services stages before 1989, the relatively low proportion of agricultural workers, and the incomplete transformation of the economy.” (Pošta, p. 15, 2015).

We agree with the statement that the extremely low unemployment was also caused by the incomplete transformation of the economy and we dare say that the real (deeper) transformation of the economy did not begin until 1997–2003. This period is characterised by the highest unemployment rate, which has been decreasing since 2004.

The whole examined period was also marked by a cyclical course of employment. Employment in the manufacturing industry was decreasing until 2012 and since 2013, it has been growing again. At present, it has reached the same level as it was in 1993. This development copies the effects of globalisation and since 2013 the return to localization, i.e. an increased number of local producers, e.g. different start-up companies or a focus on local producers. In addition, the rising price level in China has been increasingly leading producers to leave this territory and return to Europe, which results in re-establishing manufacturing companies in the Czech Republic, which often disappeared in the first decade of the 21st century due to the relocation of production to Asia.

In the examined period, the tertiary stage saw an increase in all sectors. The highest increase in employment was found in the sector of information and communication activities and in the sectors of wholesale and retail trade and repair of motor vehicles and motorcycles.

This development is also associated with the Czech Republic’s accession to the European Union and the Schengen area, which allowed Czech manufacturers to enter new markets.

“The free movement of labour within the European Union affects the Czech labour market; in 2011 more than half of economically active foreign nationals in the Czech Republic were citizens of other EU Member States.” (Pošta, p. 11, 2015)

Table 1 shows trends in employment in individual sectors. We have compared the sector sizes according to the employment in individual sectors over the past 24 years (in three periods, i.e. 1995, 2005 and 2017).

Table 1: Development of sector sizes in terms of employment in selected years

| Sector / Year | 1995 | 2005 | 2017 | 1995/2017 |
|--|---------|---------|---------|----------------|
| A – Agriculture, forestry and fishing | 6.29 % | 3.81 % | 2.80 % | -55.48 % |
| B – Mining and quarrying | 1.95 % | 1.03 % | 0.63 % | -67.69 % |
| C – Manufacturing | 27.76 % | 26.22 % | 27.86 % | 0.36 % |
| D – Electricity, gas, steam and air conditioning supply | 1.68 % | 1.30 % | 0.98 % | -41.67 % |
| E – Water supply; sewerage, waste management and remediation activities | 0.87 % | 0.98 % | 1.07 % | 22.99 % |
| F – Construction | 9.56 % | 9.99 % | 7.50 % | -21.55 % |
| G – Wholesale and retail trade; repair of motor vehicles and motorcycles | 12.18 % | 12.61 % | 11.49 % | -5.67 % |
| H – Transportation and storage | 6.78 % | 6.59 % | 6.29 % | -7.23 % |
| I – Accommodation and food service activities | 3.10 % | 3.81 % | 3.30 % | 6.45 % |
| J – Information and communication | 1.92 % | 2.24 % | 2.86 % | 48.96 % |
| K – Financial and insurance activities | 1.86 % | 2.04 % | 2.20 % | 18.28 % |
| L – Real estate activities | 0.53 % | 0.65 % | 0.81 % | 52.83 % |
| M – Professional, scientific and technical activities | 2.72 % | 3.21 % | 5.11 % | 87.87 % |
| N – Administrative and support service activities | 1.86 % | 2.19 % | 2.50 % | 34.41 % |
| O – Public administration and defence; compulsory social security | 5.91 % | 6.79 % | 6.54 % | 10.66 % |
| P – Education | 6.27 % | 6.27 % | 6.61 % | 5.42 % |
| Q – Human health and social work activities | 5.59 % | 6.75 % | 7.19 % | 28.62 % |
| R – Arts, entertainment and recreation | 1.32 % | 1.55 % | 1.79 % | 35.61 % |
| S – Other services activities | 1.82 % | 1.88 % | 1.69 % | -7.14 % |

Source: Czech Statistical Office (2019), own elaboration

Table 1 shows that between 1995 and 2017, there was a particularly significant increase in the sector **M – Professional, scientific and technical activities**, as well as in the sector **Q – Human health and social work activities**. The permanent growth of the still small sector **J – Information and communication** clearly implies the growing trend of this sector, which means that it is possible to expect a growth in the employment in the IT area even in the future. Even though we may observe a decline in the employment in the sector **F – Construction**, it should be noted that the construction output after 2013 has been in deteriorating condition, mainly due to legislative changes and the growing administration when obtaining building permits. However, it should be mentioned that many sectors are struggling to find a workforce and therefore employment as a statistical value is not entirely relevant. It is important to monitor the development of the total demanded number of workers.

It is these findings that are subject to the text below, which will focus on excess demand over supply and identify sectors with difficulties in meeting the demand of companies for the workforce.

III. Methodology

The classification of sectors in this paper is based on the statutory sector classification. Individual sectors will therefore be classified according to the Communication of the Czech

Statistical Office after the introduction of the Classification of Economic Activities (CZ-NACE).²

Sector classification according to CZ-NACE³:

A – Agriculture, forestry and fishing

B – Mining and quarrying

C – Manufacturing

D – Electricity, gas, steam and air conditioning supply

E – Water supply; sewerage, waste management and remediation activities

F – Construction

G – Wholesale and retail trade; repair of motor vehicles and motorcycles

H – Transportation and storage

I – Accommodation and food service activities

J – Information and communication

K – Financial and insurance activities

L – Real estate activities

M – Professional, scientific and technical activities

N – Administrative and support service activities

O – Public administration and defence; compulsory social security

P – Education

Q – Human health and social work activities

R – Arts, entertainment and recreation

S – Other services activities

Sector size

The sector size represents the share of the total number of persons employed in the region and the number of persons employed in the region in the particular sector of the national economy. The data used for the calculation are taken from the CSO public database⁴. The value is determined on the basis of the ratio described below, with the resulting value being given in percentages. It thus expresses the percentage (size) of the particular sector in the region.

$$s = \frac{pe}{te} * 100 \quad (1)$$

pe ... the number of the employed in the specific CZ-NACE sector in the particular region

te ... the total number of the employed in the particular region

s ... the sector size in the region [%]

² Czech Statistical Office (2019a).

³ The sectors in stages of the national economy: primary stage – A; secondary stage – B-F; tertiary stage – G-S

⁴ MLSA (2019).

The resulting data are grouped in a matrix table, sorted **by region** and **by classified sector**. In the following section, this table is analysed from the perspective of the regions (vertical analysis) and from the perspective of the sectors (horizontal analysis).

The vertical analysis – comparison of sector sizes between one another and determining the dominant or key sectors in each region

The horizontal analysis – comparison of the regions between one another from the perspective of individual sectors and determining the regions dominated by individual sectors

Share of job vacancies

The percentage of job vacancies in relation to labour demand is examined by means of both vertical and horizontal analysis. The calculation is based on the equation:

$$k = \frac{f}{(f+pe)} \times 100 \quad (2)$$

f ... the number of job vacancies in the specific CZ-NACE sector in the particular region

pe ... the number of the employed in the specific CZ-NACE sector in the particular region

k ... the percentage of job vacancies in the total labour demand

The denominator contains the sum of the number of job vacancies in the sector in the region and the number of the employed in the sector and in the region, which represents the total demanded number of workers, i.e. the so-called potential demanded quantity which the sector seeks in the specific region. The numerator contains the number of job vacancies in the sector in the region.

A higher percentage of job vacancies represent a higher share of job vacancies in the total demanded number of workers. The sectors with an above-average share represent crisis sectors that have difficulty filling their job vacancies.

The data are again based on the CSO⁵, when the “number of job vacancies” is mentioned under the “Structure of job vacancies according to NACE” and the number of the employed is based on the “Employed in the NE – total”.

Number of job applicants per vacancy

The number of workers per vacancy in a specific sector and region tells us how many workers there are per job vacancy if all the unemployed within one region decide to work in this sector. The indicator constructed in this manner has no real interpretation. It will only help us to compare the values between individual regions. The resulting value is calculated using the equation described below:

$$l = \frac{u}{f} \quad (3)$$

f ... the number of job vacancies in the specific CZ-NACE sector in the particular region

u ... the number of the unemployed in the particular region

l ... the number of workers per job vacancy in the specific CZ-NACE sector in the particular region

The data required for the calculation are available in the public MLSA database⁶. The “unemployed in the region” means the value of all unemployed persons registered at the

⁵ Czech Statistical Office (2019b).

⁶ MLSA (2019).

Employment Office. Job vacancies in the region correspond to the values provided under the title “Structure of job vacancies according to CZ-NACE”. These are job vacancies that are not filled and companies in these sectors demand workforce.

The calculated values are again divided into the maximum and minimum within the region. The resulting values are compared only between regions within the specific sector. The values are rounded to whole numbers, as they represent the number of persons.

The analyses will be supplemented by searching for links between the parameters “ k ” and “ l ” as follows according to the scenarios:

- **Scenario 1:** if it is true that: $k_i^j < \bar{k}_i$ and at the same time $l_i^j > \bar{l}_i$, then the specific sector is characterised by an above-average number of applicants and a below-average number of job vacancies – it may be said that this scenario is the most positive and the sector in it is not in such a big crisis as other sectors.
- **Scenario 2:** if it is true that: $k_i^j < \bar{k}_i$ and at the same time $l_i^j < \bar{l}_i$, then the specific sector is characterised by a below-average number of applicants per job vacancy, yet at the same time, the sectors in these regions have a below-average number of job vacancies.
- **Scenario 3:** if it is true that: $k_i^j > \bar{k}_i$ and at the same time $l_i^j > \bar{l}_i$, then the specific sector faces a lack of qualified workers, as the number of persons per job vacancy is above-average, yet at the same time, there is an above-average number of job vacancies. This implies that the companies in the sector are not capable of finding suitable qualified workers.
- **Scenario 4:** if it is true that: $k_i^j > \bar{k}_i$ and at the same time $l_i^j < \bar{l}_i$, then the specific sector has a below-average number of applicants per job vacancy and at the same time, the sector offers an above-average number of job vacancies. This implies that the companies in the sector with this scenario have difficulties filling the job vacancies with any workforce, let alone qualified workforce.

(\bar{k}_i and \bar{l}_i are mean values for the whole sector in the specific region)

Overall sector assessment in the regions

The paper will be concluded with the overall evaluation of the sectors in the regions, which will be obtained by multiplying the scenario number (1 to 4) with the sector size (s) in the region. The sector size will thus represent the weights to take into consideration the importance of the scenarios for the specific region.

IV. Analysis

Sector size in the regions

The table below shows the sectors that have the dominant position in the regions (green cells) and the sectors that play the least role in the regions (orange cells).

Table 2: Sector size in the regions (s), (the values in %, and the deviations in the percentage points)

| | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 0.3 | 2.9 | 4.9 | 3.2 | 2.5 | 2.7 | 1.8 | 4.1 | 4.8 | 4.7 | 3.1 | 3.5 | 2.8 | 2.1 |
| B | 0.1 | 0.2 | 0.2 | 0.4 | 2.3 | 2.2 | 0.3 | 0.2 | 0.2 | 0.6 | 0.2 | 0.3 | *) | 2.0 |
| C | 9.2 | 25.5 | 28.4 | 33.9 | 31.0 | 27.7 | 39.1 | 31.4 | 36.5 | 36.3 | 26.7 | 32.5 | 39.0 | 31.1 |
| <i>Deviation C from the mean (p.p.)</i> | -21.39 | -5.09 | -2.19 | 3.31 | 0.41 | -2.89 | 8.51 | 0.81 | 5.91 | 5.71 | -3.89 | 1.91 | 8.41 | 0.51 |
| D | 0.8 | 0.8 | 1.4 | 1.0 | 1.6 | 2.1 | 0.5 | 0.6 | 0.7 | 1.5 | 0.7 | 0.7 | 0.6 | 1.2 |
| E | 0.7 | 1.0 | 1.1 | 1.4 | 1.3 | 1.5 | 0.7 | 1.2 | 1.5 | 1.2 | 0.8 | 1.1 | 1.3 | 1.2 |
| F | 6.7 | 7.6 | 9.1 | 8.3 | 7.1 | 8.0 | 6.9 | 6.6 | 6.6 | 7.9 | 9.0 | 8.2 | 8.5 | 6.1 |
| G | 14.1 | 13.1 | 11.3 | 9.9 | 9.3 | 12.1 | 9.4 | 12.4 | 8.9 | 11.0 | 10.6 | 10.3 | 12.3 | 11.2 |
| <i>Deviation G from the mean (p.p.)</i> | 2.96 | 1.96 | 0.16 | -1.24 | -1.84 | 0.96 | -1.74 | 1.26 | -2.24 | -0.14 | -0.54 | -0.84 | 1.16 | 0.06 |
| H | 6.4 | 7.8 | 6.6 | 7.2 | 7.3 | 7.1 | 5.9 | 5.2 | 5.5 | 4.9 | 5.8 | 6.1 | 3.7 | 6.8 |
| I | 4.8 | 3.7 | 3.9 | 2.6 | 5.4 | 3.4 | 2.7 | 3.0 | 2.7 | 2.7 | 3.1 | 2.2 | 3.3 | 2.4 |
| J | 7.0 | 2.9 | 1.7 | 2.1 | *) | 1.3 | 2.6 | 2.2 | 2.6 | 1.0 | 3.6 | 1.1 | 1.9 | 2.8 |
| K | 4.9 | 2.5 | 1.9 | 1.2 | 1.3 | 1.8 | 1.5 | 2.1 | 2.0 | 1.1 | 2.0 | 1.7 | 1.3 | 1.7 |
| L | 1.5 | 1.1 | 0.3 | 0.7 | 0.7 | 0.4 | 1.1 | 1.0 | 0.4 | 0.6 | 0.9 | 0.6 | 0.4 | 0.7 |
| M | 11.3 | 6.2 | 3.7 | 3.5 | 2.8 | 3.4 | 3.0 | 4.0 | 3.8 | 3.3 | 5.5 | 3.7 | 3.2 | 4.0 |
| <i>Deviation M from the mean (p.p.)</i> | 6.91 | 1.81 | -0.69 | -0.89 | -1.59 | -0.99 | -1.39 | -0.39 | -0.59 | -1.09 | 1.11 | -0.69 | -1.19 | -0.39 |
| N | 4.5 | 2.4 | 2.2 | 2.6 | 2.1 | 2.7 | 2.4 | 2.0 | 1.7 | 1.4 | 2.1 | 2.4 | 1.2 | 2.6 |
| O | 6.6 | 6.4 | 7.4 | 6.3 | 7.7 | 7.4 | 5.9 | 7.3 | 6.4 | 6.5 | 6.9 | 8.1 | 5.0 | 5.4 |
| P | 7.7 | 5.8 | 6.4 | 6.7 | 5.3 | 5.7 | 7.0 | 6.6 | 7.0 | 6.0 | 7.4 | 6.9 | 6.6 | 6.6 |
| Q | 8.6 | 6.6 | 6.7 | 6.6 | 8.8 | 6.4 | 6.1 | 7.2 | 6.4 | 6.3 | 7.6 | 7.1 | 6.4 | 8.4 |
| R | 3.3 | 1.7 | 1.0 | 1.2 | 1.7 | 1.9 | 1.4 | 1.2 | 1.0 | 1.4 | 2.3 | 1.6 | 1.0 | 1.8 |
| S | 1.7 | 1.8 | 1.7 | 1.3 | 1.9 | 2.2 | 1.7 | 1.6 | 1.2 | 1.6 | 1.7 | 1.9 | 1.5 | 1.8 |

Source: Own elaboration on the basis of the CSO data. *) Data not available

It is obvious that all regions except Prague are dominated by **C – Manufacturing**. In 2017, the average share of the manufacturing industry amounted to 30.59%, and the row under the sector share C in Table 2 specifies the deviation from the mean value, owing to which we may identify the regions which focus more or less on the sector (C) **Manufacturing**.

The following regions show the above-average employment in the sector (C) **Manufacturing**:

1. Liberec Region (+ 8.51 p. p.)
2. Zlín Region (+8.41 p. p.)
3. Pardubice Region (+5.91 p. p.)
4. Vysočina Region (+5.71 p. p.)

The following regions are on the opposite side (except Prague):

1. Central Bohemian Region (-5.09 p. p.)
2. South Moravian Region (-3.89 p. p.)
3. Ústí Region (-2.89 p. p.)
4. South Bohemian Region (-2.19 p. p.)

The second most important sector in each region is the sector **G – Wholesale and retail trade; repair of motor vehicles and motorcycle**. In the Czech Republic, this sector employs a total of 11.14% workers. In some regions, it is more dominant, while in other regions, its share is under the national average.

This sector plays the most important role in the following regions:

1. Prague (+ 2.96 p. b.)
2. Central Bohemian Region (+1.96 p. p.)
3. Hradec Králové Region (+1.26 p. p.)
4. Zlín Region (+1.16 p. p.)

Zlín Region ranked (just as in the case of the manufacturing industry) among the first four regions. Manufacturing industry and trade are very developed in this region. This state of employment is probably caused by the strong influence of both the holding company of the original Baťa manufacturing plants and the former production cooperative in Slušovice.

It is also worth mentioning the sector **M – Professional, scientific and technical activities**, which is the second most important sector in Prague. The national average for the sector M equals 4.39%, whereas in Prague, this share reaches 11.30% (i.e. 6.91 p. p. higher). The Central Bohemian Region does not have such a high share, yet it represents a deviation from the average value of nearly 2 p. p. (exactly +1.81 p. p.). And thirdly, there is a significant positive deviation found in the South Moravian Region (+1.1 p. p.). The above regions are characterised by large research centres, e.g. BIOCEV in Vestec u Prahy, CEITEC or ICRC in Brno, research institutes of the Czech Academy of Science both in Prague and Brno, etc. A number of research institutes have their registered office in the vicinity of Prague (Průhonice, Lysolaje, etc.). This knowledge thus fully corresponds to the descriptive statistics of the employment in the individual sectors.

The share of job vacancies in the total demanded number of workers (*k*)

The share of job vacancies is crucial for determining how critical the situation of the specific sector is in the region. The higher the values in the table below, the more difficulties the companies in the specific sector face when attempting to fill the vacancy (the greater the excess of demand over supply).

Table 3: Share of job vacancies in the total demanded number of workers (*k*), (the values in %)

| | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK | Průměr: |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| A | 2.40 | 9.10 | 1.80 | 4.60 | 1.20 | 1.20 | 2.00 | 1.80 | 6.30 | 1.80 | 6.20 | 0.80 | 1.30 | 1.00 | 2.96 |
| B | 4.20 | 3.20 | 3.60 | 1.00 | 0.10 | 0.10 | 4.10 | 2.30 | 1.00 | 1.00 | 1.10 | 2.50 | *) | 2.00 | 2.02 |
| C | 2.10 | 4.20 | 3.60 | 6.30 | 3.40 | 3.40 | 3.60 | 3.30 | 6.40 | 2.60 | 2.90 | 1.80 | 2.90 | 1.60 | 3.44 |
| D | 0.20 | 0.70 | 0.20 | 0.00 | 0.20 | 0.10 | 0.20 | 0.10 | 2.90 | 0.80 | 0.80 | 0.00 | 0.20 | 0.30 | 0.48 |
| E | 1.50 | 3.50 | 0.90 | 2.00 | 1.40 | 0.70 | 2.60 | 1.20 | 1.70 | 1.20 | 0.80 | 1.30 | 1.20 | 2.10 | 1.58 |
| F | 3.80 | 2.00 | 2.40 | 2.10 | 3.70 | 1.40 | 2.50 | 2.40 | 20.80 | 1.90 | 2.80 | 0.80 | 2.80 | 1.80 | 3.66 |
| G | 1.90 | 2.60 | 2.70 | 3.00 | 4.20 | 1.40 | 1.80 | 2.00 | 8.30 | 1.30 | 2.20 | 1.70 | 1.90 | 1.30 | 2.59 |
| H | 1.40 | 2.80 | 4.80 | 4.30 | 2.30 | 2.10 | 1.30 | 3.60 | 5.80 | 4.40 | 1.90 | 1.60 | 3.70 | 1.30 | 2.95 |
| I | 2.20 | 1.20 | 3.60 | 3.80 | 5.20 | 1.50 | 3.10 | 3.40 | 8.60 | 1.50 | 1.30 | 1.70 | 2.50 | 2.30 | 2.99 |
| J | 1.90 | 0.70 | 1.70 | 1.40 | *) | 1.20 | 0.40 | 0.80 | 0.80 | 0.70 | 2.80 | 1.50 | 1.10 | 1.00 | 1.23 |
| K | 0.20 | 0.10 | 0.70 | 1.10 | 1.20 | 0.60 | 1.00 | 0.70 | 0.70 | 0.50 | 0.40 | 0.60 | 0.80 | 1.30 | 0.71 |
| L | 12.20 | 6.90 | 14.60 | 3.30 | 24.60 | 8.60 | 1.90 | 2.00 | 34.20 | 4.80 | 6.30 | 3.20 | 11.60 | 4.20 | 9.89 |
| M | 1.80 | 1.20 | 1.70 | 1.80 | 4.80 | 1.90 | 3.10 | 1.00 | 17.40 | 0.90 | 0.60 | 0.90 | 0.90 | 1.10 | 2.79 |
| N | 3.50 | 10.70 | 7.70 | 13.50 | 5.30 | 6.30 | 6.30 | 2.20 | 21.20 | 9.70 | 4.60 | 2.50 | 13.40 | 2.80 | 7.84 |
| O | 2.20 | 1.00 | 0.30 | 0.30 | 1.00 | 0.60 | 0.90 | 0.30 | 0.80 | 1.10 | 0.40 | 0.40 | 0.20 | 0.90 | 0.74 |
| P | 1.00 | 1.30 | 0.80 | 1.10 | 1.70 | 0.70 | 0.60 | 0.70 | 1.00 | 0.20 | 0.30 | 0.50 | 0.40 | 0.30 | 0.76 |
| Q | 1.30 | 1.70 | 1.20 | 2.30 | 4.70 | 2.10 | 2.70 | 1.80 | 2.40 | 1.00 | 0.60 | 1.30 | 1.50 | 0.70 | 1.81 |
| R | 0.60 | 0.60 | 5.10 | 2.70 | 1.60 | 0.40 | 1.50 | 1.00 | 1.20 | 0.50 | 0.70 | 0.40 | 1.10 | 0.30 | 1.26 |
| S | 2.50 | 9.10 | 1.50 | 2.20 | 3.40 | 1.20 | 0.70 | 1.70 | 3.60 | 1.10 | 0.80 | 1.10 | 1.40 | 0.90 | 2.23 |
| Mean: | 2.47 | 3.29 | 3.10 | 2.99 | 3.89 | 1.87 | 2.12 | 1.70 | 7.64 | 1.95 | 1.97 | 1.29 | 2.72 | 1.43 | 2.73 |

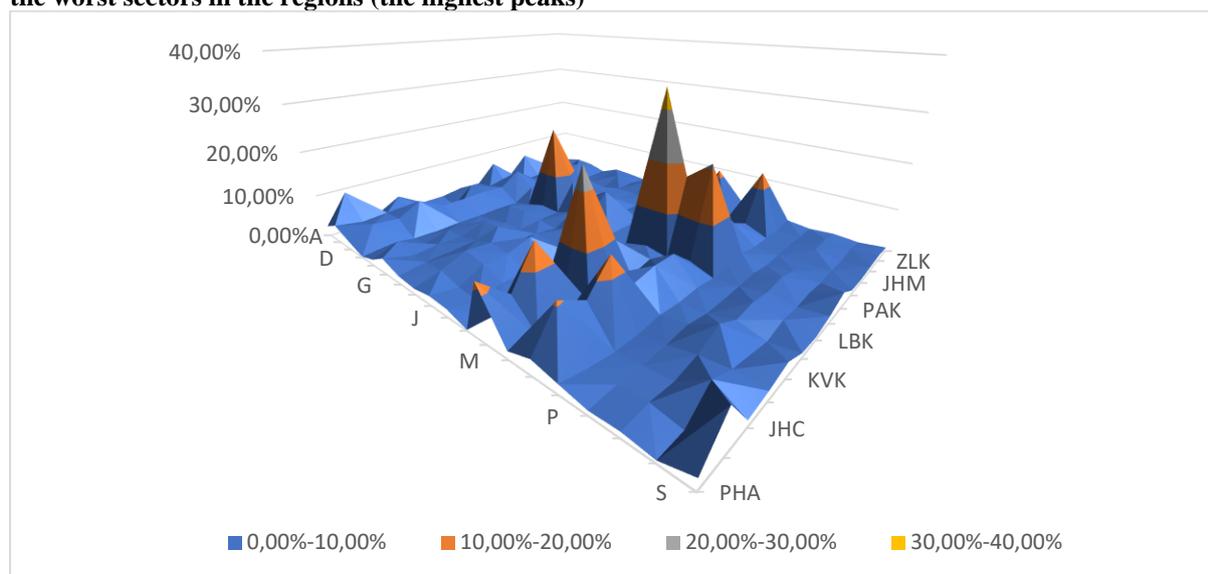
Source: Czech Statistical Office (2019)

*) Unavailable data

In Table 3, at least the first three sectors in the individual regions that show the highest values are marked with green highlight of the cells. Out of all the regions, the average values are the highest in the Pardubice Region. In this region, there are on average 7.64% of job vacancies of the total number demanded. The second is the Karlovy Vary Region, followed by the Central Bohemian Region. The South Bohemian and Pilsen Regions are also above the national average value of 2.73%. Other regions have below-average values, with the lowest share being reported for the Olomouc and Zlín Regions. High values are caused by either:

- **A lack of workers in the specific region** (on the supply side) – there is no one to fill the vacancies, and therefore, the ratio is high.
- **Failure to create new jobs** (on the demand side) – there are only few vacancies owing to a high occupancy of the total number of demanded jobs.

Figure 1 Share of job vacancies in the total demanded number of workers (k) – graphical representation of the worst sectors in the regions (the highest peaks)



Source: Czech Statistical Office (2019)

If we look at the issues horizontally, i.e. per individual sectors, we will find out that in general in the Czech Republic, it is the sector **L – Real estate activities with the value of 9.89%** that shows the worst results. The second place was taken by the sector **N – Administrative and support service activities with the value of 7.84%**. This was followed by two sectors with almost identical values: **F – Construction (3.66%)** and **C – Manufacturing (3.44%)**. All these four sectors exceed the national average of 2.73%.

Other sectors oscillate around the average value, except for the following four sectors which have a vacancy rate below 1% of the total demanded jobs. These sectors are:

- D – Electricity, gas, steam and air conditioning supply (0,48 %)
- K – Financial and insurance activities (0,71 %)
- O – Public administration and defence; compulsory social security (0,74 %)
- P – Education (0,76 %)

When taking a deeper look into individual regions and sectors, we find that the results correspond to the nationwide data. Almost all regions (except Prague and the Hradec Králové Region) have a high share in the sector **N – Administrative and support service activities**. Similar results have been obtained for the sector **L – Real estate activities**, with the value dominating in all regions except the Central Bohemian Region, Liberec Region, Hradec Králové Region, and Pilsen Region.

The following regions are also worth mentioning:

- The Pilsen region shows a high share of job vacancies within the overall demand in the sector **C – Manufacturing (6.3%)**
- The Hradec Králové then in the sectors **H – Transportation and storage (3.6%)** and **I – Accommodation and food service activities (3.4%)**

In terms of sectors, a number of other extreme values may be found, for example:

- In the sector **A – Agriculture, forestry and fishing**, a high share has been founds in the Central Bohemian Region (9.10%) and South Moravian Region (6.4%).
- In the sector **C – Manufacturing**, extreme values have been reported in two regions: the Pilsen and Pardubice Regions.

- In the sector **F – Construction**, a significant extreme value has been found in the Pardubice Region (20.8%), which is 5.7 times as high as the average value for the whole sector (3.66%).

In the Pardubice Region, as already mentioned, the results are the worst also because in several sectors the double-digit share of job vacancies in total demand is achieved.

The share of the unemployed in the regions (as of 30 June 2019) clearly shows that the data for 2017 and 2018 on the structure of employment and the share of job vacancies indicate which regions are currently facing the highest pressure on the labour market (in 2019) on the demand side. The Pardubice Region has the lowest share of the unemployed (Czech Statistical Office, 2019c) at 1.66%. Prague came only second with 1.8%.

Number of applicants per job vacancy by region and sector (*I*)

The third analysis of data on employment in the sectors and regions is based on the number of applicants per job vacancy. The analysis is rather quantitative and lacks a deeper qualitative view, i.e. an assessment of the sectoral structure of the unemployed and a comparison with the structure of the demanded positions.

Table 4 presents all sectors, highlighting extreme values (the lowest and highest values). The analysis always compares the values across the Czech Republic within one sector. From the point of view of construction and economic interpretability of the parameter “*l*”, it is not possible to compare the values within one region, because the individual sectors are disproportionate to each other.

The higher the values, the greater the choice which employers have in the labour market. As mentioned above, the analysis does not compare the structure of the unemployed, and therefore we cannot know exactly whether employers can occupy some job vacancies worse or better because of, for example, missing or excess professions in the labour market.

Table 4: Number of applicants per job vacancy (I), 2018

| | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK | Průměr |
|---|------|------|------|-----|------|------|------|------|------|-----|------|------|------|------|--------|
| A | 119 | 12 | 24 | 17 | 65 | 112 | 127 | 22 | 4 | 33 | 36 | 126 | 69 | 343 | 79 |
| B | 279 | 324 | 366 | 665 | 957 | 658 | 866 | 301 | 1300 | 255 | 1405 | 630 | 909 | 99 | 644 |
| C | 10 | 2 | 2 | 1 | 3 | 5 | 2 | 2 | 1 | 3 | 5 | 6 | 2 | 10 | 4 |
| D | 1187 | 500 | 1143 | *) | 1914 | 2567 | 1906 | 8115 | 197 | 352 | 1283 | 6618 | 1999 | 1088 | 2221 |
| E | 221 | 85 | 234 | 117 | 155 | 298 | 207 | 77 | 54 | 248 | 266 | 348 | 213 | 175 | 193 |
| F | 8 | 14 | 9 | 6 | 12 | 32 | 19 | 11 | 1 | 14 | 13 | 44 | 11 | 38 | 17 |
| G | 7 | 7 | 8 | 9 | 7 | 36 | 21 | 8 | 3 | 20 | 15 | 18 | 12 | 34 | 15 |
| H | 16 | 12 | 9 | 8 | 15 | 29 | 47 | 10 | 4 | 17 | 33 | 38 | 17 | 63 | 23 |
| I | 22 | 48 | 17 | 28 | 11 | 86 | 41 | 27 | 6 | 54 | 48 | 139 | 36 | 124 | 49 |
| J | 16 | 139 | 134 | 72 | 101 | 372 | 222 | 166 | 98 | 573 | 26 | 427 | 139 | 340 | 202 |
| K | 211 | 1599 | 190 | 399 | 273 | 1283 | 381 | 232 | 155 | 352 | 257 | 456 | 204 | 328 | 451 |
| L | 9 | 22 | 45 | 91 | 15 | 175 | 217 | 66 | 4 | 127 | 79 | 163 | 48 | 118 | 84 |
| M | 10 | 55 | 34 | 41 | 27 | 84 | 81 | 81 | 2 | 69 | 82 | 119 | 61 | 144 | 64 |
| N | 12 | 6 | 13 | 3 | 35 | 22 | 30 | 21 | 3 | 10 | 27 | 40 | 14 | 75 | 22 |
| O | 12 | 53 | 163 | 72 | 38 | 128 | 81 | 47 | 42 | 43 | 222 | 339 | 217 | 184 | 117 |
| P | 31 | 47 | 93 | 44 | 57 | 158 | 92 | 77 | 39 | 218 | 190 | 132 | 141 | 401 | 123 |
| Q | 18 | 33 | 33 | 16 | 8 | 52 | 24 | 20 | 12 | 54 | 111 | 43 | 29 | 83 | 38 |
| R | 146 | 311 | 44 | 30 | 147 | 828 | 318 | 198 | 51 | 398 | 250 | 551 | 244 | 1228 | 339 |
| S | 60 | 57 | 67 | 89 | 43 | 231 | 329 | 142 | 38 | 155 | 428 | 389 | 112 | 385 | 180 |

Source: Czech Statistical Office (2019)

*) Unavailable data

The above values in Table 4 indicate that the occurrence of extreme values on both sides of the intervals corresponds to unemployment in the regions:

Regions with the lowest unemployment:

- Pardubice Region (13)
- Prague (3)

In these two regions, the worst situation consists in the number of potential applicants per job vacancy. The Pardubice Region has the fewest job applicants per vacancy in 13 sectors and in the case of Prague, this applies to 3 sectors.

On the other hand, in the following regions:

- Moravian-Silesian Region (6);
- Olomouc Region (4);
- South Moravian Region (4);

The availability of the workforce (solely in terms of quantity) is the best. At the same time, these are the regions that have shown a higher unemployment rate than the average in the long-term.

Scenario analysis

Table 5 shows the occurrence of Scenarios 1 – 4 according to the methodology of the paper. The table features the diagrams depicting the intensity of the problem.

Only **six sectors** in the four regions have fulfilled the conditions for Scenario 3, which represents a situation where these sectors have difficulty finding skilled workers in the region (i.e. this is mainly a qualitative problem).

These are the following sectors:

- In the Ústí Region, the sector **Q – Human health and social work activities**
- In the Liberec Region, the sector **B – Mining and quarrying, E – Water supply; sewerage, waste management and remediation activities** and **M – Professional, scientific and technical activities**
- In the Olomouc region, the sector **J – Information and communication**
- In the Moravian-Silesian Region, the sector **O – Public administration and defence; compulsory social security.**

Table 5: Occurrence of Scenarios 1 – 4 in the regions and sectors

| | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| A | ○ | 1● | 4○ | 2● | 4○ | 2○ | 1○ | 1○ | 2● | 4○ | 2● | 4○ | 1○ | 2○ | 1 |
| B | ● | 4● | 4● | 4○ | 1○ | 1○ | 1● | 3● | 4○ | 1○ | 2○ | 1● | 4● | 4○ | 2 |
| C | ○ | 1● | 4● | 4● | 4○ | 2○ | 1● | 4○ | 2● | 4○ | 2○ | 1○ | 1○ | 2○ | 1 |
| D | ○ | 2● | 4○ | 2● | 4○ | 2○ | 1○ | 2○ | 1● | 4● | 4● | 4○ | 1○ | 2○ | 2 |
| E | ○ | 1● | 4○ | 1● | 4○ | 2○ | 1● | 3○ | 2● | 4○ | 1○ | 1○ | 1○ | 1● | 4 |
| F | ● | 4○ | 2○ | 2○ | 2● | 4○ | 1○ | 1○ | 2● | 4○ | 2○ | 2○ | 1○ | 2○ | 1 |
| G | ○ | 2● | 4● | 4● | 4● | 4○ | 1○ | 1○ | 2● | 4○ | 1● | 4○ | 1○ | 2○ | 1 |
| H | ○ | 2○ | 2● | 4● | 4○ | 2○ | 1○ | 1● | 4● | 4● | 4○ | 1○ | 1● | 4○ | 1 |
| I | ○ | 2○ | 2● | 4● | 4● | 4○ | 1● | 4● | 4● | 4○ | 1○ | 2○ | 1○ | 2○ | 1 |
| J | ● | 4○ | 2● | 4● | 4● | 4○ | 1○ | 1○ | 2○ | 2○ | 1● | 4○ | 3○ | 2○ | 1 |
| K | ○ | 2○ | 1○ | 2● | 4● | 4○ | 1● | 4○ | 2○ | 2○ | 2○ | 2○ | 1● | 4● | 4 |
| L | ● | 4○ | 2● | 4○ | 1● | 4○ | 1○ | 1○ | 2● | 4○ | 1○ | 2○ | 1● | 4○ | 1 |
| M | ○ | 2○ | 2○ | 2○ | 2● | 4○ | 1● | 3○ | 1● | 4○ | 1○ | 1○ | 1○ | 2○ | 1 |
| N | ○ | 2● | 4○ | 2● | 4○ | 1● | 4○ | 1○ | 2● | 4● | 4○ | 1○ | 1● | 4○ | 1 |
| O | ● | 4● | 4○ | 1○ | 2● | 4○ | 1● | 4○ | 2● | 4● | 4○ | 1○ | 1○ | 1○ | 3 |
| P | ● | 4● | 4● | 4● | 4● | 4○ | 1○ | 2○ | 2● | 4○ | 1○ | 1○ | 1○ | 1○ | 1 |
| Q | ○ | 2○ | 2○ | 2● | 4● | 4○ | 1● | 3○ | 4○ | 2● | 4○ | 1○ | 1○ | 2○ | 1 |
| R | ○ | 2○ | 2● | 4● | 4● | 4○ | 1● | 4○ | 2○ | 2○ | 1○ | 2○ | 1○ | 2○ | 1 |
| S | ● | 4● | 4○ | 2○ | 2● | 4○ | 1○ | 1○ | 2● | 4○ | 2○ | 1○ | 1○ | 2○ | 1 |

Source: Own elaboration (2019)

The findings correspond to the problems which we encounter in the regions. In the Ústí Region, health workers prefer to migrate for work in neighbouring Germany, and as a result, they miss in the labour market in the region. The Liberec Region is facing Scenario 3 in 3 sectors. We can therefore confirm from statistical data that it is more difficult to find qualified workers in these sectors, as is the case in the Olomouc Region and the Moravian-Silesian Region.

Table 6: Frequency of occurrence of individual scenarios in regions

| Scenario | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK | SUM | Share (%) |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----------|
| S 1 | 3 | 1 | 2 | 2 | 2 | 17 | 8 | 2 | 1 | 9 | 10 | 17 | 3 | 14 | 91 | 34.2% |
| S 2 | 9 | 8 | 8 | 4 | 5 | 0 | 2 | 14 | 3 | 6 | 5 | 0 | 11 | 2 | 77 | 28.9% |
| S 3 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 2.3% |
| S 4 | 7 | 10 | 9 | 13 | 12 | 1 | 6 | 3 | 15 | 4 | 4 | 1 | 5 | 2 | 92 | 34.6% |

Source: Own elaboration (2019)

The situation on the labour market on the demand side may be demonstrated by the share of individual scenarios currently occurring in all the regions:

34.6% of the sectors experience problems related to the quantitative side of the missing workers. These sectors undoubtedly include those which at the same time have problems with the quality of workers, but statistics cannot distinguish them at this level.

2.3% of the sectors (6 out of 266 observations in total) cannot find skilled workers, i.e. even if the number of job applicants in the labour market is above the average, companies are unable to find suitable candidates.

28.9% of the sectors are currently facing a potential deeper crisis and in the event of a mere increase in orders and, as a consequence, an increase in labour demand, they will fall into Scenario 4 (quantitative labour shortages).

The remaining 34.2% of the sectors follow Scenario 1, which represents a quantitative sufficiency of workforce on the labour market and at the same time, these sectors do not have any vacancies. In the case of sectors where highly skilled workers or specific professions work, an increase in demand for goods and, as a consequence, an increase in demand for such workers, there could be a shift to Scenario 3 (qualitative shortage of workers).

Overall assessment of the demand side of the sectors in the regions

In the event that the assessment also takes into account the importance of the sector in the particular region (due to its size), we will obtain the numerical assessment of all 266 sectors in all the regions. The resulting values are shown in Table 7. The nationwide average is 0.13. Any values above this value represent sectors in the regions that are most affected by the extremely low unemployment.

In terms of the sector assessment, the worst situation was found in the sectors C – Manufacturing (0.75) and G - Wholesale and retail trade; repair of motor vehicles and motorcycle (0.27). These sectors differ significantly from the mean value because of their size and the high share of the sectors in the economy (around 42%).

The following sectors are also worth the attention:

- O – Public administration and defence; compulsory social security (0.17)
- Q – Human health and social work activities (0.17)
- P – Education (0.16)
- F – Construction (0.16)
- H - Transportation and storage (0.15)

Below average scores were found in the case of other sectors.

Table 7: Overall assessment of the demand side of the labour market

| | PHA | STC | JHC | PLZ | KVK | ULK | LBK | HKK | PAK | VYS | JHM | OLK | ZLK | MSK | CR |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A | 0.00 | 0.12 | 0.10 | 0.13 | 0.05 | 0.03 | 0.02 | 0.08 | 0.19 | 0.09 | 0.12 | 0.04 | 0.06 | 0.02 | 0.07 |
| B | 0.00 | 0.01 | 0.01 | 0.00 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.04 | 0.01 |
| C | 0.09 | 1.02 | 1.14 | 1.36 | 0.62 | 0.28 | 1.56 | 0.63 | 1.46 | 0.73 | 0.27 | 0.33 | 0.78 | 0.31 | 0.75 |
| D | 0.02 | 0.03 | 0.03 | 0.04 | 0.03 | 0.02 | 0.01 | 0.01 | 0.03 | 0.06 | 0.03 | 0.01 | 0.01 | 0.02 | 0.02 |
| E | 0.01 | 0.04 | 0.01 | 0.06 | 0.03 | 0.02 | 0.02 | 0.02 | 0.06 | 0.01 | 0.01 | 0.01 | 0.01 | 0.05 | 0.03 |
| F | 0.27 | 0.15 | 0.18 | 0.17 | 0.28 | 0.08 | 0.07 | 0.13 | 0.26 | 0.16 | 0.18 | 0.08 | 0.17 | 0.06 | 0.16 |
| G | 0.28 | 0.52 | 0.45 | 0.40 | 0.37 | 0.12 | 0.09 | 0.25 | 0.36 | 0.11 | 0.42 | 0.10 | 0.25 | 0.11 | 0.27 |
| H | 0.13 | 0.16 | 0.26 | 0.29 | 0.15 | 0.07 | 0.06 | 0.21 | 0.22 | 0.20 | 0.06 | 0.06 | 0.15 | 0.07 | 0.15 |
| I | 0.10 | 0.07 | 0.16 | 0.10 | 0.22 | 0.03 | 0.11 | 0.12 | 0.11 | 0.03 | 0.06 | 0.02 | 0.07 | 0.02 | 0.09 |
| J | 0.28 | 0.06 | 0.07 | 0.08 | 0.00 | 0.01 | 0.03 | 0.04 | 0.05 | 0.01 | 0.14 | 0.03 | 0.04 | 0.03 | 0.06 |
| K | 0.10 | 0.03 | 0.04 | 0.05 | 0.05 | 0.02 | 0.06 | 0.04 | 0.04 | 0.02 | 0.04 | 0.02 | 0.05 | 0.07 | 0.04 |
| L | 0.06 | 0.02 | 0.01 | 0.01 | 0.03 | 0.00 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 |
| M | 0.23 | 0.12 | 0.07 | 0.07 | 0.11 | 0.03 | 0.09 | 0.04 | 0.15 | 0.03 | 0.06 | 0.04 | 0.06 | 0.04 | 0.08 |
| N | 0.09 | 0.10 | 0.04 | 0.10 | 0.02 | 0.11 | 0.02 | 0.04 | 0.07 | 0.06 | 0.02 | 0.02 | 0.05 | 0.03 | 0.06 |
| O | 0.26 | 0.26 | 0.07 | 0.13 | 0.31 | 0.07 | 0.24 | 0.15 | 0.26 | 0.26 | 0.07 | 0.08 | 0.05 | 0.16 | 0.17 |
| P | 0.31 | 0.23 | 0.26 | 0.27 | 0.21 | 0.06 | 0.14 | 0.13 | 0.28 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 | 0.16 |
| Q | 0.17 | 0.13 | 0.13 | 0.26 | 0.35 | 0.19 | 0.24 | 0.14 | 0.26 | 0.06 | 0.08 | 0.07 | 0.13 | 0.08 | 0.17 |
| R | 0.07 | 0.03 | 0.04 | 0.05 | 0.07 | 0.02 | 0.06 | 0.02 | 0.02 | 0.01 | 0.05 | 0.02 | 0.02 | 0.02 | 0.03 |
| S | 0.07 | 0.07 | 0.03 | 0.03 | 0.08 | 0.02 | 0.02 | 0.03 | 0.05 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 | 0.04 |
| CR | 0.13 | 0.17 | 0.16 | 0.19 | 0.16 | 0.06 | 0.15 | 0.11 | 0.20 | 0.10 | 0.09 | 0.05 | 0.11 | 0.06 | 0.13 |

Source: Own elaboration (2019)

From the perspective of individual regions, it has been confirmed that the worst situation is in the Pardubice Region. Although Prague is the region with the second lowest unemployment rate, the second is the completely different region: the Pilsen Region, followed by the Central Bohemian, South Bohemian and Karlovy Vary Regions. In these regions, there is the highest incidence of Scenario 4, which represents the shortage in workforce supply. Companies in these regions have difficulty finding any job applicants. The opposite situation is in the Olomouc, Ústí and Moravian-Silesian Regions, where there is the lowest occurrence of Scenario 4 and the highest occurrence of Scenarios 1 and 2.

The colour highlighting distinguishes the cell with the maximum values within a sector for all the regions (red) and the above-average values (pink). The table thus presents a map of maximum and above-average values in the sector and indicates that, for example, Prague dominates in the secondary and tertiary sectors. Prague and the Karlovy Vary Region report the highest number of maximum values, both in tertiary sectors. Other regions correspond to the overall assessment number.

The output of this paper consists not only in the identification of critical sectors and regions, but also in the development of a methodology for the evaluation of the sectors in the regions, which can be used for long-term monitoring and with the help of which we can easily monitor the development over time.

V. Conclusion

From the point of view of the overall assessment, it is first important to note the fact that in all sectors and in all regions, the demand for workforce exceeds the supply. There was not a region or sector with a higher number of job applicants than vacancies.

In terms of the sector size, the highest employment was found in the sector (C) **Manufacturing**. In the overwhelming majority of regions, it achieved many times higher employment than in

other sectors of the individual regions. Within this paper, it was thus assessed as a dominant sector. The reason for high employment in the sector (C) **Manufacturing** consists in the fact that the CR belongs to the most industry-focused countries in the EU. On the contrary, the sector (B) **Mining and quarrying** was found to be the least dominant sector. This sector employs the fewest employees in each region. The reason most often mentioned in this paper consists in the fact that there are no mines or power plants in the individual regions where the employment minimum values in the particular sector were measured.

As for the measurement of the potential demand for workforce in the vertical analysis, the highest number of maximum values was found in the sector (L) Real estate activities and (N) Administrative and support service activities. In most regions, employers in these two sectors face difficulties in finding workers on the labour market. Interestingly, it was revealed that in these two sectors, the values always alternate, in most cases, in two neighbouring regions. There is no unambiguous reason for the difficulty in finding the missing number of employees. Each region has demonstrated certain particularities within these sectors.

The Pardubice Region may be evaluated as the worst region ever to fill job vacancies. On the one hand, it is a region that has a double-digit share of job vacancies in total demand, yet at the same time, there are very few job applicants per vacancy in this region. Although these two factors are interdependent, it may be stated that the situation in the Pardubice Region tends to be critical owing to the fact that there is no more workforce on the labour market (there is also low unemployment).

The problems faced by the labour market are obvious to everyone. In the analysis, within the individual regions, we searched for the sectors in which the share of job vacancies in total demand was high (above the average of the specific sector in the CR) and at the same time there were an above-average number of workers per job vacancy. This would mean that the sector in the region could not find the necessary professions (despite the high number of persons per job vacancy in the region, the share of vacancies is above the regional average).

Scenarios 1 to 4 unambiguously confirm not only that the situation on the labour market is not very positive, but at the same time also point to small nuances in the regions, especially border regions, where there are very few skilled workers due to labour migration to Germany or other areas.

The regional and sectoral structure of employment differs at the regional level. Although the biggest differences are between Prague and other regions, it must be stated that dominance can be determined as follows in the sector areas. In the **South Moravian Region**, the largest share of the employed in the region was found in the **primary stage**. The tradition of agricultural activity in the region still guarantees its dominant role. The **secondary stage** has its dominant role in the **Zlín Region**, which, as in the previous case, has achieved such results due to traditions in the manufacturing industry since the time of Tomáš Baťa. The **tertiary stage** of the national economy developed most in Prague, as a territory with dominant trade and services.

The sector analysis in the regions reveals some detailed knowledge of the labour market in the Czech Republic. The data indicate that almost 64% of the sectors in the regions suffer or will suffer shortages of any workers in the near future. The labour market in these sectors is completely depleted, yet the paper works with the data for 2018 and it can be expected that in 2019, this share will be significantly higher.

34% of the sectors in 2018 did not suffer entirely from the labour shortage, yet in the case of a further increase in demand for workers, these sectors may fall into Scenario 3, i.e. a shortage of skilled workers.

These two key conclusions lead us to the conclusion that the task for economic policy makers is to open the labour market for foreign workers and to promote robotics and automation. In

order to improve the qualitative aspect, i.e. the lack of skilled workers, the issue may be addressed by improving the salary conditions of these professions, which may contribute to both short-term (attracting workforce migrating for work abroad) and long-term solutions, as increasing remuneration will make the profession more attractive, which in turn leads to an increase in students' interest in these professions or the individual fields of study.

Acknowledgements

This paper is based on the Bachelor's thesis of the student and co-author or the paper (Mlejnková, 2019), being complemented with new outputs and conclusions not mentioned in the Bachelor's thesis, including the comprehensive methodology for the sector assessment in the regions.

The paper was prepared with the financial support of the Internal Grant Agency of the University of Economics in Prague, grant number: F5/3/2019.

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