# THE STRUCTURE OF THE WORKFORCE UNDERPINNING REGIONAL ECONOMIC ACTIVITIES

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**Abstract**

Demography changes and other factors are a source of the comparative advantage of a certain area. Two areas were analysed, data for Czechia and Slovakia as one region and Poland as another. Examining the workforce ratio in five-year interval changes supports the suggestions of the measures enhancing the economic activities of the two regions. Apart from the workforce ratio representing the demography factor, other factors, such as creativity, will be described in the context of the regional economic activities. Two more data sets will be employed in the description, i.e. the dataset on creative occupations and the dataset on creativity design applications. A comparison of the two regions is offered and the trend is commented on. In conclusion, the questions of intergenerational coexistence and retirement pathways are discussed. The macroeconomic decisions reflecting changes in the demography will change also the labour market institutions. Possible consequences of changes in labour market institutions are long-term or permanent part-time positions for older employees or retired employees as human capital will become scare.

**Key words:** labour market, region, workforce ratio

**JEL Code:** R23, R12, P26

## Introduction

The paper's idea is the progress in regions that often is linked with people doing the same things in different manners, approaches and methods. Designs are in an interaction with innovations that usually influence productivity. This way of thinking is similar to the text by other authors (Gössling & Rutten, 2007; Hollanders & Van Cruysen, 2009; Paulsen et al., 2024). Innovations and creativity usually help to increase employment and the overall performance of businesses and the economy in a given area.

More on the theoretical setting is in part one of the paper. Part two includes the ratio calculation from secondary data on two regions and the last part, is devoted to discussion and concluding remarks. The obvious reason why Poland, Czechia, and Slovakia are examined

here is that the trading ties are strong and historically embedded. Concluding remarks are apprehensive of the situation around creativity and intergenerational coexistence. The paper provides descriptive statistics to relate economic activities and workforce structure in its detailed description. Data were retrieved with R (Lahti et al., 2017) Eurostat interactive session as cited and from the International Labor Office (ILO).

# 1 Workforce and creative sector

The creative sector (CI)[1] is especially linked to services that rely on intellectual property such as trademarks. Trademarks are registered by companies or persons who wish to distinguish their products or services from others due to certain unique feature(s).

The creative sector tends to be, rightly, linked with culture. It can be perceived as a world of its own. To give an example of meaning, assume that if a fashion designer prepares a dress, it is photographed and posted on a webpage before being bought. Thus, at least the other two occupations are linked to it (sometimes even more than two there is a fashion show, where musicians perform, models with make-up artists take part and the like). This example is a simplification, where one industry is related to another, i.e. fashion to photo or music art. Any artisan has to study in his/her field and use libraries or galleries to perceive inspiration and improve the work technique (e.g., in preparing the right cut). The intervening of activities can be further extended to the people`s or business climate that enhances the creative sector. These ideas will be dealt with in discussion and conclusion. Onwards the paper concentrates on the link between population and innovation process. The data are added to illustrate relations of the two phenomenon.

## 1.1 Working age population and workforce ratio

The first region is comprised of Czechia and Slovakia. It is 127 871 (78,871 plus 49,000) square kilometres in total. The second region – Poland has 312,696 square kilometres, about two and a half bigger than the first region. Data for regions of Czechia and Slovakia were summed up.

Table 1 provides the two regions' working-age populations (aged 15-60). Poland`s population is more than double that of the Czechia and Slovakia regions. Similarly to the old-age dependency ratio[2] (Katiraee et al., 2024) also the workforce ratio will depend on mortality and fertility rates as well as migration.

[1] It is composed sector with sub-sectors.
[2] Authors provide us with their projection of the ratio till the year 2075, based on data of United Nations from 2022.

**Tab. 1: Working age population comparison**

| Years | 2005 | 2010 | 2015 | 2020 | 2023 |
|---|---|---|---|---|---|
| Region of Czechia and Slovakia | 11 109 985 | 11 229 268 | 10 849 209 | 10 508 713 | 10 555 379 |
| Region of Poland | 26 892 993 | 27 149 441 | 26 396 251 | 25 118 729 | 24 405 465 |

Source: (Eurostat, 2024c)

The workforce ratio was calculated as a ratio of older employees over younger employees following the reasoning of applying the Pareto principle[3] to demographic data (Lo & Yang, 2024). The age that separates the two categories is 45, which already counts as an older[4] employee. Table 2 is evidence derived from the ILO data. The ratio favoured the young, especially in the common region of Czechia and Slovakia until 2014. The year 2014 seems to be a turning point for both areas. In Poland, it is also true that the trend of the older generation at work started to prevail in 2014.

**Tab. 2: Workforce ratio**

| Variable | Workforce ratio for the sum of male and female | | | | | |
|---|---|---|---|---|---|---|
| Year | 1994 | 1999 | 2004 | 2009 | 2014 | 2019 |
| Region of Czechia and Slovakia | 0,79 | 0,84 | 0,88 | 0,89 | 1,02 | 1,00 |
| Region of Poland | 0,85 | 0,90 | 0,90 | 0,94 | 1,16 | 1,09 |

Source: (ILO, 2024 ) and author´s calculation.

The productivity of the younger generation (especially the group aged 25-44 influences economic performance. As the structure of the workforce is changing and the population is ageing it could be expected that creativity, innovations and productivity will decrease. We shall next take one piece of evidence from creative occupation changes over the last decade to confirm the estimation.

## 1.2 Creative occupations

If we are to separate the creative occupation we rely on the distinction of previous research (Boschma & Fritsch, 2009). In general, there are three groups. Fashion and jewellery designers` products are examples of often copied products as symbols of creativity and novelty. These would be in the first group of Bohemians. The second group is creative professionals such as

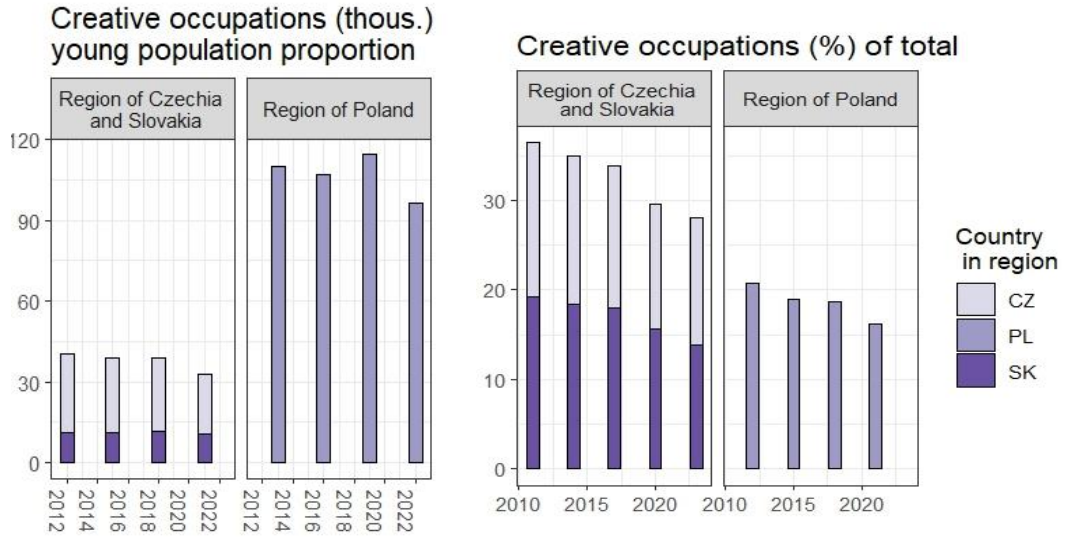
[3] Means that smaller part of population (older) may bear the wage costs in production disproportionately
[4] Or according to new view on these intervals middle-aged 45-60 as labelled in Quiggin (2001)

nursing and midwifery professionals or physical and engineering science are called associate professionals. The last group is the creative core, e.g. architects, and computing professionals.

The importance of creative occupations was explained when verifying the reasons for the London innovation paradox (Lee & Drever, 2013). The paradox can be briefly described as hidden innovation. This means that innovation is not reflected in statistics until the creative industries are considered for observation.

Figure 1 illustrates the situation in two regions regarding creativity in the labour force only for the young generation with the help of the International Standard Classification of Occupations (ISCO, it is 264-265, and objections can be raised against this particular choice of ISCO). This is a subset of data Persons working as creative and performing artists, authors, journalists and linguists by individual and employment characteristics. It could be further distinguished by employment status such as self-employed, or full-time employment. However, we emphasise the power of the young generation to be a driver of innovations and creativity. Nonetheless, the data show a tendency to decline in that occupation among the young generation. Here, it is worth repeating that the working-age population is in favour of the young generation that has entered the labour market. It could be the case that these data are insufficient and do not measure occupations, such as advertising on all social media or other reasons.

**Fig. 1: Young adults taking part in the creative industry compared for two regions**




**(a)** **(b)**

Source: own based on data (Eurostat, 2024b)

Figure 1 part (b) refers to totals and the highest percentage noticeable is 20.8% in Poland in 2012, followed by 19.2% only in Slovakia in 2011. In Figure 1 part (a) concentrates on young aged 15 to 29 years old. In thousands of persons in Czechia it is 29,3 thousand, i.e. the highest number in the year 2012 and 22,4 thousand in 2021, in Slovakia 11,3 and 10,5 in the years 2012 and 2021 respectively. In Poland, in 2012 it was 109,8 and in the year 2022 it dropped to 96,1 thousand, however, there was an increase in the year 2019, where it reached 114,3 thousand.

As for the earnings in creative occupations the inequality exists (Been et al., 2024). Mainly, because of the "quality" and popularity of the author's work, design.

Older workers look for new challenges in their life and the creative sector is open for almost everyone without the need for special education. Sometimes you only need talent or training. It can also be enhanced by coaching, mentoring or self-development strategies, in line with author Legnerová (2014). Another approach towards coping with ageism is intergenerational learning, and digital learning solutions (Ranasinghe et al., 2024). This makes it better to interact - the older workers with younger ones.

## 2 The measurement of creativity

Community design is measured in variables with different measurement units. This paper focused on the number of Trademark applications per million of inhabitants[5] is an officially available indicator for measuring the creativity that text is working with, the creativity within a population. If a design wants to be valid (as a property right) in 27-member states of the European Union one has to apply to The European Union Intellectual Property Office (EUIPO). It is in charge of shaping the enforcement of policies concerning supporting innovation and creativity.

The small and medium-sized companies (SMEs) or self-employed need more time to prepare applications. Assuming that in a region there is a prevailing number of SMEs this would influence the number of applications for trademarks, apart from other factors. These factors could be cities or the environment. Cities play an important role in the cooperation of self-employed and other sub-contracting industries. Urban development (as mentioned the London innovation paradox points it out) is then a condition for innovation and creativity progress.

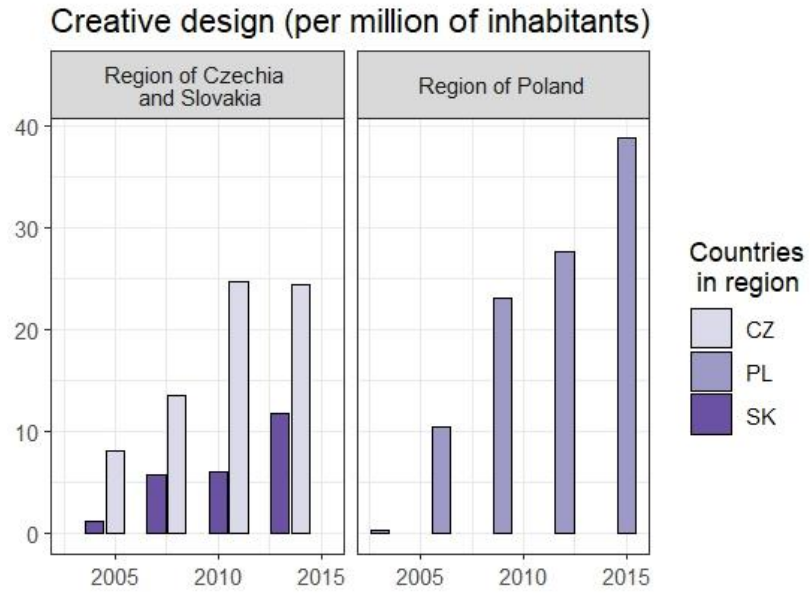
[5] Data on European Union trade marks, the million inhabitants refer to each year January1, Eurostat collection Population, it can be also found as per GDP billions of Euro

## 2.1 Community design perspective of EUIPO

Community Design describes creativity in numbers. Under the label of community design, is the number of trademarks registered in the region. The database by Eurostat was used to obtain data, although registration is done at EUIPO. To understand some details of this process we refer to (Hunter et al., 2021). Authors are preoccupied with frequent copyright infringement, especially in e-commerce. EUIPO grants the monopoly for applicants up to 25 years, provided that you renew your application every five years. These are Registered community designs (RCD). It is not only a product it is also the packaging that is being protected as a trade dress.

In Figure 2 it is noticeable that the two regions are quite competitive concerning community design. Czechia itself (in the years 2011 and 2014, i.e. 24.7 and 24.45 respectively) provided more or almost as many trademark applications as Poland (in 2009 reached 23.15 and in 2012 it was 27.64). This means that Czechia and Slovakia can be fair partners to the larger region of Poland. As for Slovakia, it reached its highest value in the year 2013, exactly 11.83.

**Fig. 2: Comparison of applications of trademarks**




Source: own based on data (Eurostat, 2024a)

It also exists Unregistered community design (UCD) which is not included in our observation by now. UCD is given protection only for three years compared to registered 25 years. For both, RCD and UCD, in case of infringement, the Court of Justice of the European Union can impose various sanctions, e.g. monetary or seize of material.

### 2.2 Community design - other perspectives

Trademarks and designs we referred to are part of industrial property. For details, it could be mentioned that there are subsets of cultural domains, the broader view is the one of UNESCO (for more see (Franck & Beck-Domazalska, 2012, p. 54)).

Another even broader perspective is community-led design. Meaning, that a self-defined community of people, who share an interest in a place, are working together on a project. They do not necessarily need to be experts in design. Such groups work and bring new values to regions through their creative powers and leadership resulting in innovations. As we have mentioned before people need capabilities to be creative and they were identified as follows: "*information, knowledge, abstraction, evaluation, participation and authority*" (Alexiou et al., 2022). The cited paper is written with a complex view of assets that bring together cultural, social and financial capital and capabilities to move all sorts of innovations into life that take place in reality. Therefore, the built capital is a number one condition, buildings, real places to meet to design things and processes.

## 3 Brief discussion

Population changes in its structure. Activities are the same, but there are changes in the way how we do them. The change in several decades was towards the digitalisation of almost everything. Each worker over time indeed acquires age-enhanced skills. Because of that, it is not surprising that people change their profession during their lifespan, as also pointed out in the roadmap for retirement (Katiraee et al., 2024). It can be a change from and to the creative industry that is possible and happens due to inequality in earnings, better work-life balance or another factor.

This paper suggests that older workers can be innovative and supportive in CI. Older workers incentivise automation and are creative despite the fact claimed by Lo and Yang (2024) that older hamper labour productivity. Older skills have their place in the company. Especially, with the option of easier access to training, learning-by-doing and other manners to cope with changes that older people have seen many times.

It also is possible that regions will accept new inhabitants, such as refugees, and migrants. Often regions prefer younger and educated people, who bring their talent and experience to new areas. As for the regions in this paper, it is rather cross-border moving due to family relations, education, and business.

Even though the region of Poland has a bigger area and more inhabitants, the variable of the community design in applications is comparable to the smaller region. This fact can mean that the number of inhabitants does not imply a greater effort to submit design applications. It could be researched whether the smaller nations feel bigger pressure to have their design and intellectual property protected and more visible or another hypothesis for further research.

The limitation of the paper is that it does not provide the distinction on community design application by age or by companies, where the workforce structure could be identified, and estimated. Here it is worth noticing that perhaps the country of origin of application is not so important as well as you can register in any of the offices. Nonetheless, it can be assumed that people use the office nearest to their activity. Otherwise, the office where they know their design should be registered primarily for they would like to efficiently prevent the infringement of their property rights.

## Conclusion

Research that supports the idea of the relation between population, workforce and innovations exists. Gőssling and Rutten (2007) proved relatively high correlation, but only in simple regression analysis (not in model as a whole) between employment in Knowledge-intensive services (KIS - that includes more occupations than only the creative class) and innovations. Thus, it was relevant to work on this topic further and match the creative occupations as a part of the workforce and creative design in this paper.

As the structure of the workforce is changing for both regions Poland and Czechia, Slovakia have shown the trend of the older generation at work started to prevail in 2014. The population is ageing, it could be expected that creativity, innovations and productivity will decrease. This can be prevented by the first source of measure which is the coexistence of generations. In households is the coexistence natural and so shall be in SMEs. Creativity and intergenerational coexistence will become easier to grasp and then harness as it becomes an opportunity to include them in retirement plans. It can be further extended to the people`s or business climate (e.g. volunteerism and agreeable milieu for older) that enhances the creative sector.

A second source of prevention of the aging crises (to come in about 2034) is a measure that can enhance the capacities (of the for-profit creative sector) and capabilities (of the non-profit arts). Measure number three is the environment for creativity, i.e. cities. Cities play an important role in the cooperation of self-employed and other sub-contracting industries. The

environment encourages young and old to work together and coexist. The climate of cooperation in SMEs enhances self-development strategies and strategies for active retirement schemes in CI.

In general, it is known that the regional economy focuses on a few sectors depending on its conditions. Younger and older with a set of skills typical for their age are more prone to particular industries and sectors. This could also imply that because of disparities, moving from one area to another will be inevitable at a given age. This way of thinking is also discussed by Quiggin (2001), who distinguishes two scenarios of the new economy based on the demography transition. The labour market institutions and policies must adjust adequately to changes that are evident from data in the demography and society as a whole. Possible consequences of changes in labour market institutions are long-term, e.g. permanent part-time positions for older employees or retired employees, due to scarcity of human capital.

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