European Research Studies Journal
Volume XXVI, Issue 1, 2023

pp. 433-449

Spatial Variation of Employment Growth in Poland in 2005-2021

Submitted 11/02/23, 1st revision 22/02/23, 2nd revision 20/03/23, accepted 30/03/23

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Abstract:

Purpose: *The aim of the paper is to identify the geographical variation of sectoral employment dynamics in Poland in the years 2005-2021 and to present the most important spatial determinants of different growth trajectories of second-level administrative units.*
Design/Methodology/Approach: *The principal research tool is based on classic shift-share analysis multifactor partitioning model (MFP) as a technique allowing the reduction of compositional effects and avoiding the so-called Simpson's paradox, with which the traditional approach is burdened. According to the conceptual framework, the total employment observed in 380 powiats in five aggregated activity sections (agricultural sector, manufacturing sector, distribution and communication services, producer and business services, public and personal services) between 2005 and 2021 is decomposed into five components - national effect, industry-mix effect, region effect, industry-region interaction effect and allocation effect. Three of the effects are fundamental, reflecting the impact of specific spatial factors on employment dynamics.*
Findings: *Contextual factors are the most important in shaping regional employment dynamics, followed by related variety and regional specialisation. No region with a low region effect has exceeded the national employment growth rate, and some regions with a very good industry-mix have not reached the national growth rate due to a weak region effect. Contextual impacts correlate very strongly with urban-rural polarisation, regional specialisation is reasonably well embedded in the west-east heterogeneity, while related variety performs successfully in both identified arrangements.*
Practical Implications: *The results obtained should contribute to a better understanding of the intricacies of actual development trajectories, taking into account the diversity that exists at the micro-scale, and to an appreciation of the research workshop of socio-economic geography as a science predisposed to speak more forcefully on issues of shaping adequate state regional policy.*
Originality/Value: *The paper is verifying the conceptual assumptions of the multifactor partitioning tool, which is still not well-known and has not yet been approved on Polish materials.*

Keywords: *Poland, regional employment growth, spatial distributions, multifactor partitioning.*

JEL codes: *R12, R15, R58.*
Paper type: *Research article.*

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1. Introduction

The socio-economic transformations taking place over the past few decades have generated new spatial dynamics in the employment domain, as well as explaining the growth and change in urban and regional space has become one of the greatest challenges for the social sciences (Storper, 2011). The question of the factors underlying these dynamics is a complicated and multifaceted problem. These factors include institutional conditions, the current economic conjuncture, technological advancements, infrastructure development, demographic changes, etc.

Socio-economic geographers have long sought to understand the processes that cause uneven spatial development and the reasons why such patterns often persist over time. Nevertheless, there is still a need for a better understanding of the evolution of the economic structures of cities and regions under conditions of progressive deindustrialisation and servitisation of their economies.

Taking after Johnston and Huggins (2018) that different growth trajectories in various sectors employment of different regions may also be the result of various underlying industrial structures observed in the regions themselves and their immediate surroundings, this paper focuses on the spatial determinants related to the totality of more or less unique social, economic, political, cultural and institutional conditions that co-create a region's identity, define its utility for different users and inflict global trajectories on its development.

The literature focuses in this regard on specific issues such as, the role of context and regional differences in forming place-based development (Barca *et al.*, 2012), regional advantages resulting from the existing industry mix, taking into account related variety (Asheim *et al.*, 2011; van Oort *et al.*, 2015) and specialisation issues (Traistaru and Wolff, 2002; Storper, 2011), size, demographics, qualifications and skills of local labour resources (Gennaioli *et al.*, 2013; Autor, 2014), agglomeration economies (Paci and Usai, 2008; Behr *et al.*, 2022), regional policy interventions (Lu *et al.*, 2019), etc.

Studies of regional employment dynamics in Poland are most often undertaken by economists, generally at large administrative scales or covering only part of the country. For this reason, references to spatial determinants, if they even appear, are usually in a cursory manner or in the context of economic mechanisms not always directly related to the impact of geographical space (Gawrycka and Szymczak, 2010; Kusideł, 2011; Batóg and Batóg, 2013; Adamczyk, 2018; Hasińska, 2015).

The aim of this paper is to present the geographic variation of the dynamics of employment in Poland in 2005-2021, showing the most important spatial determinants responsible for the different trajectories of growth in the system of administrative units of second-level administrative units (powiats). The adopted hypothesis assumes that the most important determinant responsible for the different

spatial structure of changes in employment are contextual conditions, which are at least in part related to the historically shaped socio-economic inequalities occurring in the country.

Given the nature of the research problem, it was decided to use one of the less well-known and so far underestimated shift-share analysis tools on Polish material, namely multifactor partitioning (MFP) model.

2. Data and Methods

The material for the study consists of information on the number of employees in the years 2005-2021 by 380 powiats, which was prepared by the Statistical Office in Bydgoszcz. The data covers employed persons in national economy entities with 10 or more employed persons and in budgetary sphere units regardless of the number of employed persons, employed persons working on private farms in agriculture, and employed persons in foundations, associations, and other social organisations according to actual place of work and conducted activity. The data does not include employed persons in national economy entities with up to 9 employed persons, clergy and employed persons in budgetary units conducting activity within the scope of national defence and public safety.

The data was aggregated at the first NACE Rev. 2 level, i.e., the section according to the nomenclature of Polish Classification of Activities 2007. The work grouped individual sections into 5 contractual groups defined as: agricultural sector (section A), manufacturing sector (sections B-F), distribution and communication services (G-I sections), producer and business services (sections J-N) and public and personal services (O-U sections).

In this way, service activities are co-created by the last three classes whose content generally reflects the heterogeneous structure of the modern service sector. The use of aggregated sections instead of individual sections was due to the legal conditions in force and the associated numerous data gaps justified by statistical confidentiality. The use of the proposed layout has reduced this problem to a minimum. In only a few cases, missing data were replaced by an average, based on values from the nearest preceding and following periods.

The basic research tool used for the purpose of this paper is the MFP model developed by Ray (1990) based on classical shift-share analysis. The MFP procedures uses instead of crude standardised growth rates to remove the confounding of compositional effects found in conventional shift-share analysis. This avoids so-called Simpson's Paradox in which the trend exhibited by the aggregate population is the opposite of that for each sub-aggregate (Bianchi *et al.*, 2023).

So far, the MFP model has been successfully used to assess changes in the socio-economic structure of Canada (Ray *et al.*, 2012; 2017), the United Kingdom (Gardiner *et al.*, 2013; Johnston and Huggins, 2018; Ray *et al.*, 2019), Italy (Bianchi and Biffignandi, 2014; 2018; Lagravinese, 2015; Martini, 2020; Bianchi *et al.*, 2023), Ireland (Breathnach *et al.*, 2015) and Greece (Xanthos and Psimarni, 2019).

In line with the established concept, MFP decomposes the total employment observed in each region between the terminal and the base year ($E_{.j}^{t} - E_{.j}^{0}$) into five components – national effect (NE_j), industry-mix effect (IME_j), region effect (RE_j), industry-region interaction effect (IE_j) and allocation effect (AE_j):

$$E_{.j}^{t} - E_{.j}^{0} = NE_j + IME_j + RE_j + IE_j + AE_j \tag{1}$$

After detailing the individual components, the above equation takes the form:

$$E_{.j}^{t} - E_{.j}^{0} = E_{.j}^{0} r_{..} + \sum_i^m E_{ij}^{0}(\hat{r}_{i.} - \hat{r}_{..}) + \sum_i^m E_{ij}^{0}\left(\hat{r}_{.j} - \hat{r}_{..}\right) + \sum_i^m E_{ij}^{0}(r_{ij} - \hat{r}_{i.} - \hat{r}_{.j} + \hat{r}_{..}) + \sum_i^m E_{ij}^{0}(\hat{r}_{..} - r_{..}) \tag{2}$$

where i is the number of industries (i = 1,2,3,…, m), j is the number of regions in studied area (j = 1,2,3,…, n), $E_{.j}^{t}$ and $E_{.j}^{0}$ are the total employment in the region j in the terminal and the base year, E_{ij}^{0} is the employment in the industry i in region j in the base year, $r_{..}$ and $\hat{r}_{..}$ are the crude and standardised growth rate of total employment, r_{ij} is the crude growth rate of employment in the industry i in region j, $\hat{r}_{i.}$ is the standardised growth rate of employment in the industry i at the national level, $\hat{r}_{.j}$ is the standardised growth rate of total employment in the region j.

The standardised growth rates are computed using a common set of weights:

- the standardised growth rate of employment in industry i at a national level is weighted by the proportion of employment in region j

$$\hat{r}_{i.} = \sum_j^m r_{ij}\, E_{.j}^{0} / E_{..}^{0} \tag{3}$$

where $E_{..}^{0}$ is the total employment in studied area in the base year;

- the standardised growth rate of employment in region j is weighted by the proportion of employment in industry i within that region

$$\hat{r}_{.j} = \sum_i^n r_{ij}\, E_{i.}^{0} / E_{..}^{0} \tag{4}$$

where $E_{i.}^{0}$ is the total employment in industry i at the level of studied area in the base year;

- the standardised growth rate of national employment is weighted by the proportion of employment in both industry i and region j

$$\hat{r}_{..} = \sum_{ij}^{nm} r_{ij} E_{i.}^{0} E_{.j}^{0} / (E_{..}^{0})^{2} \quad (5)$$

We can also express the MFP model in terms of the relative contribution of each component to total employment in region i:

$$r_{.j} = r_{..} + \sum_{i}^{m} (E_{ij}^{0}/E_{.j}^{0} - E_{i.}^{0}/E_{..}^{0}) \hat{r}_{i.} + (\hat{r}_{.j} - \hat{r}_{..}) + \sum_{i}^{m} (E_{ij}^{0}/E_{.j}^{0} - E_{i.}^{0}/E_{..}^{0})(r_{ij} - \hat{r}_{i.}) + (\hat{r}_{..} - r_{..}) \quad (6)$$

Based on experience from past applications of the MFP model, it should be noted that:

- the national effect basically measures the effect of macroeconomic fluctuations on observed change. It illustrates the change that would have occurred if all regional sectors had experienced the same rate of change as total national employment over a given period;

- the industry-mix effect measures the proportion of change attributable to the industrial composition within each region. It refers to the part of the j-th region's total employment change that attributed to the difference between the region's and the nation's concertation of employment in the i-th industry, given the standardized relative employment change in the i-th industry at the national level;

- region effect captures that part of the change for all industries in the region under study that can be attributed to the characteristics of the region itself. It is calculated using the standardised regional growth rates of each industry in the region, comparing the growth performance of individual industries in each region with their national averages. By using the national distribution of employment in each industry rather than the regional distribution, it removes the industry differentiation effect that is problematic in the shifts-share analysis;

- the interaction effect shows the part of the shift that can be attributed to region j's specific resources and locational attributes, which have different values for each industry depending on its specific demands. It involves measuring, for each sector in the region, the difference between the actual change in employment over a given period in that sector and the change that would have occurred if employment in the region had been the same as in that sector at the national level. Aggregating this effect for all sectors gives an overall region-industry interaction effect for the region. Thus, a small regional value may be the result of significant positive and negative values at the sectoral level that cancel each other out;

- the allocation component refers to that part of the change in total employment in the j-th region that results from the distribution of the regions' shares of total employment. It identifies the change in employment that would occur in each region if the distribution of regional employment between sectors were the same as the national distribution. Thus, it highlights the difference in employment growth

between standardised and raw growth rates, illustrating convergence or divergence between regional and national employment structure. Proportionally, this effect is the same for all regions.

From the point of view of achieving the objectives of this research, three of the effects highlighted will be of paramount importance: the industry-mix effect, region effect and interaction effect as they reflect the impact of specific spatial factors on the development of employment dynamics (Johnston and Huggins, 2018). Indeed, the other two effects in relative terms are equal for all regions.

The industry-mix effect provides a useful proxy with which to examine the role of related variety in regional economic development. It highlights the role of the mix of employment opportunities in a region and offers insights into the role of this diversity, particularly in the situation of regions with a concentration of fast-growing industries providing a favourable industry-mix effect.

Related variety focuses on geographical or technological interconnectedness, knowledge bases and cognitive proximity, which provide sufficient absorptive capacity to make knowledge transfer useful. It also increases trade flows, has a positive impact on business start-ups and provides firms with greater opportunities to source inputs, reducing the need for vertical integration.

Region effect fits into the theoretical strand on regional context, emphasising the contribution of local socio-economic conditions (the region's unique assets and resources, both tangible and intangible, overall regional productivity, as well as socio-spatial, cultural and institutional characteristics) to employment growth, regardless of sectoral composition.

Consequently, it is reasonable to argue that, where these effects appear to prevail, the regional context can be seen as key to development. Region effect can also be seen as a measure of overall regional competitiveness (or lack thereof). A strong region effect may also reflect the sheer size of a region's population and the resulting agglomeration economies. It may also result from the proximity of such a region and the relocation of economic activity within it from a larger centre, perhaps to take advantage of lower business costs. Conversely, remote rural regions may have negative region effects with industries growing slower than the national average.

The interaction effect highlights the existence of industry-specific advantages for a particular industry in a particular location. Interaction effects are specific to individual industries in specific regions and measure the relative regional shifts in employment in each industry after removing the relevant region and industry effects.

They are therefore an unbiased measure of those industries that have performed better or worse in employment creation in each region. It can therefore be considered as an indicator covering the relationship between industry and place for examining

specialisation as a basis for regional competitiveness. If a sector in a region performs better than a sector nationally, this indicates the existence of circumstances in the region that favour the sector, as in the case of agglomeration economies that are formed around sectorally specialised industrial clusters.

Regional specialisation generates external benefits for all actors within a location by attracting a workforce with the required skills, the presence of specialised suppliers and the generation of knowledge transfers. Interactions for each industry in a region measure the changing economic structure of that region. Interactions for a single industry across the country determine the interregional redistribution of that industry.

3. Results

3.1 Patterns of Regional Employment Change

An analysis of the dynamics of the number of employment persons over the period 2005-2021 shows an overall increase in employment in the country of 10.5%. The largest growth was recorded by the distribution and communication services and producer and business services sectors - by 51.1% and 46.8% respectively.

Consequently, the share of these activities increased from 17.1% and 8.3% in 2005 to 23.4% and 11.0% respectively in 2021. As for the third service sector, here the increase was 17.7%, while the share of total employment changed from 23.8% to 25.3%. The agricultural sector was the only sector to see a decline of -47.2%, with its share decreasing more than double from 21.5% in 2005 to 10.3% in 2021. The largest share was consistently occupied by the manufacturing sector (29.4% in 2005 and 30.1% in 2021), although the increase here was relatively the smallest at 13.0%.

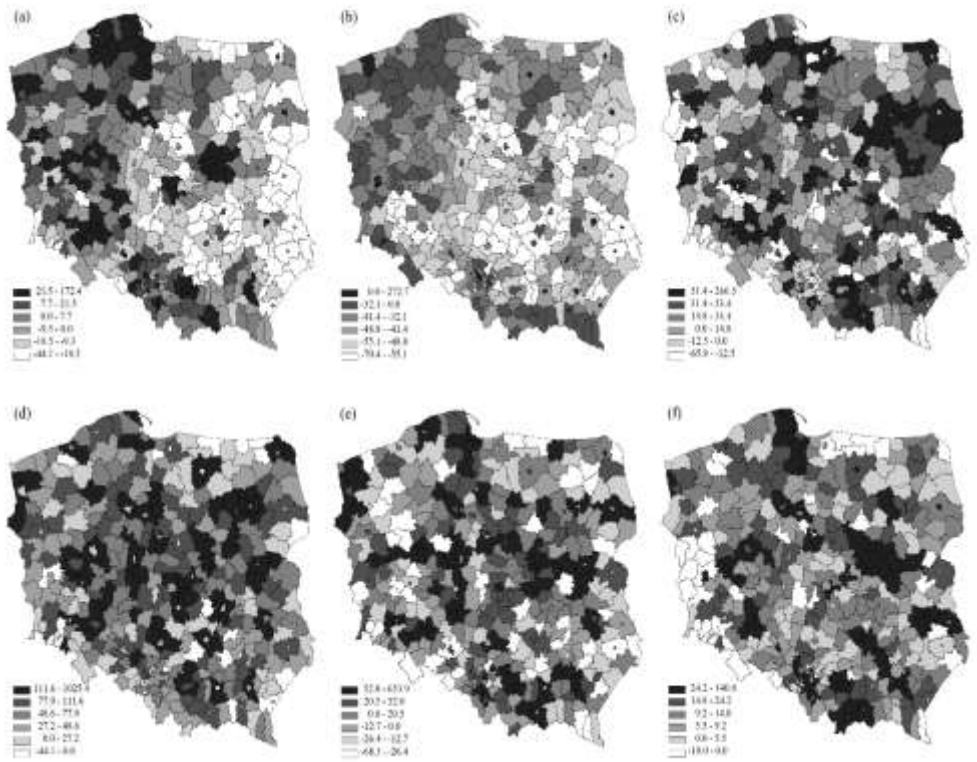
While the countrywide changes seem to suggest a fairly good labour market situation, the descent to lower levels of territorial organisation is indicative of much greater complexity. This is made fully apparent at the level of powiat units demonstrating very different trajectories of change. For example, four powiats in eastern Poland (zamojski, krasnostawski, hrubieszowski, kazimierski) show a decline of over 40% in the number of employed persons, while the powiat wrocławski shows an increase of 172.4% over the same period.

In general, only slightly more than half of the analysed units (50.8%) recorded an overall increase in jobs, while the remaining 49.2% saw a decrease in employment. As for powiats with a growth rate higher than the national one, their total number is 112, or about 30% of the total. It should be noted that the situation is definitely more favourable in the western part of the country, where an extensive massif of powiats with positive employment dynamics is formed.

It takes the shape of a kind of crescent stretching from Warmia through Pomerania and Greater Poland, Lubusz and Silesia to Lesser Poland, with a particular emphasis on the areas of larger cities and agglomerations.

The central-eastern area, on the other hand, is definitely a region with negative employment dynamics, increasing towards the state border with Belarus and Ukraine. The exceptions here are cities and metropolitan areas highlighted as enclaves of positive dynamics surrounded by areas characterised by declining employment (Figure 1).

Figure 1. *The spatial structure of the employment growth rates (2005-2021, in %)*



Notes: *a) total, b) agricultural sector, c) manufacturing sector, d) distribution and communication services, e) producer and business services, f) public and personal services*
Source: *Own elaboration.*

A sectoral view allows further spatial nuances to be seen. As far as the agricultural sector is considered, over 95% of all powiats show a decrease in the number of employment persons, especially in the central-eastern part of the country. Positive dynamics, of relatively low intensity, can only be observed in a few urban units.

However, it should be associated with non-economic factors related to the expansion of the administrative boundaries of cities and the absorption of adjacent rural areas. An outstanding example in this case is Zielona Góra, where an increase of 272.7% has been recorded, and whose area has almost quintupled since 2015 due to the absorption of the entire rural municipality of the same name.

In the manufacturing sector, the situation is quite different. More than two-thirds of the total number of powiats record an increase in employment with the maximum value (266.5%) found in the powiat wrocławski. The most characteristic feature of the employment dynamics in this sector is undoubtedly the shift of the centre of gravity away from larger cities to suburban areas and more remote regions.

As far as the service sectors are concerned, each has its own specific characteristics. The distribution and communication as well as public and personal services sectors stand out with almost widespread positive dynamics (approx. 90% of the districts). The greatest intensity of employment growth in distribution and communication services is usually characterised by powiats located in the neighbourhood of large cities, while in the case of public and personal services these are generally the overall metropolitan areas.

In the latter case, a certain similarity can be found with the situation in production and business services, which are also attracted to large cities and agglomerations. At the same time, it should be stressed that the metropolitan areas in this case are centres specialising in this type of services, while the more remote areas (more than 40% of the powiats) record a marked decline in employment in the relevant activities.

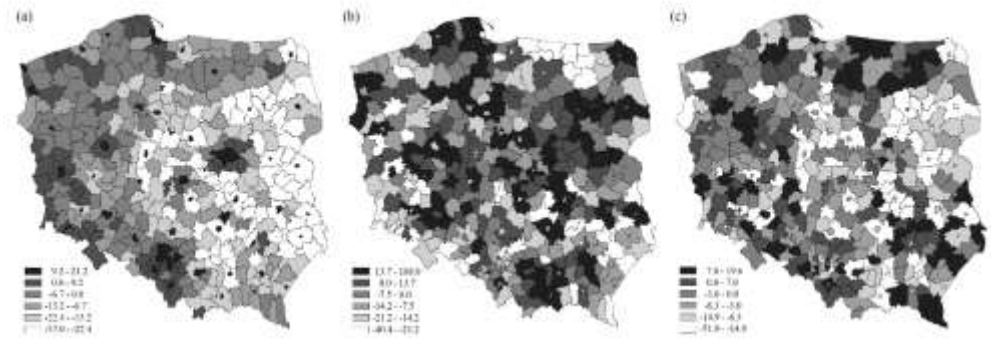
3.2 Partitioning the Components of Employment Growth

The results of modelling with the MFP tool allow us to conclude that of the three main effects identifying interregional differences in employment dynamics between 2005 and 2021, i.e., the industry-mix effect, region effect and interaction effect, the region effect is the most significant, with as many as 84 powiats exceeding the national growth rate and being the strongest in around 40% of the analysed units.

Second in order of importance is the industry-mix effect, whose size exceeded the national growth rate in 55 powiats and which ranked first in just over 1/4 of all regions. The interaction effect, although ranked in the lead in just over a third of the units analysed, only in three cases did it reach a size above the national growth rate.

It is characteristic that, in each of the three cases, there is a more negative than positive picture of the observed effects. Negative values of industry-mix or interaction effects were recorded in the case of 1/3 of the districts. As far as the region effect is concerned, this indicator is even higher and concerns almost 40% of the surveyed units (Figure 2).

Figure 2. *The spatial structure of MFP aggregated effects (2005-2021, in %)*



Notes: *a) industry-mix effect, b) region effect, c) interaction effect*
Source: *Own elaboration.*

The cartographic image of the industry-mix effect intensity very clearly shows large cities and metropolitan zones as areas with highly positive employment dynamics and rural areas, within which the analysed effect takes a more or less negative form.

Moreover, it is difficult not to notice the difference between central and south-eastern parts of the country, which clearly appear as areas developing in terms of the labour market well below the national average, and the areas of northern, western and south-western Poland, which record positive or at least not very high negative values.

The spatial structure of the region's effect is completely different. In this case, we have a fairly clear picture of the majority of metropolitan areas distinguished by high and very high (in the case of grudziądzki and wrocławski powiats - at the level of 175.3 and 188.0% respectively) intensity of the discussed effect. It is important to emphasise that these are primarily the outer areas of the respective systems.

The central cities themselves usually record negative values of the region effect. It should also be noted that old industrial centres associated with, inter alia, mining and heavy industry, such as the Upper Silesian conurbation or the Lubin-Głogów district, which are in the negative part of the region effect spectrum, are not to be found here.

As far as the spatial presentation of the interaction effect is concerned, the aggregated picture for all sectors points most generally to the already mentioned West-East dichotomy, where the areas of the north, west and south-west of the country show much more favourable dynamics than those of central and south-eastern Poland.

The sectoral approach is much more suggestive. With regard to the agricultural sector, which influenced the aggregate picture to the greatest extent, there is first and foremost a deficit of any specific benefits for this industry, which is strongly losing

jobs in the central-eastern part of the country. Western and northern Poland look relatively better, where there are positive or at least low negative values

Region-manufacturing interactions clearly indicate a favourable situation in selected areas of the country, including in particular areas south of Wrocław (powiats: oławski, średzki, świdnicki), in the vicinity of Poznań (poznanski, szamotulski, obornicki), in the functional area of Szczecin (goleniowski, policki, Świnoujście), in Central Pomerania (słupski powiat) and Gdansk Pomerania (gdański and tczewski powiats) and in the hinterland of Chełm and Zamość (hrubieszowski, krasnostawski, biłgorajski).

The interactions associated with the three service sectors seem to share a common motif. A low, but positive intensity of this effect is each time found in non-metropolitan areas, and in the case of public and personal services - with an additional indication of the areas of central and south-eastern Poland.

4. Summary and Discussion

The results obtained allow us to conclude that, as expected, the powiat units are characterised by very different spatial dynamics of employment in the period 2005-2021, both in terms of overall growth and the specific factors determining it. As this paper has shown, although there is a positive balance at the national level, this does not change the fact that almost half of the powiats have experienced a decline in employment. The service sectors are growing most rapidly (with particular emphasis on distribution and communication as well as producer and business services), while the agricultural sector is losing jobs at a similar rate.

The observed transformations are generally in line with contemporary development trends, associated with a shift of employment from agriculture to manufacturing, and further from manufacturing to services (McMillan *et al.*, 2017). However, it is important to note the Polish specificity, which is also visible in the regional pattern, where the manufacturing sector clearly dominates and agriculture accounts for a very significant proportion of employment.

According to Eurostat (2023), at the beginning of 2021, among EU countries only Bulgaria, Romania and Greece had a higher share of the agricultural sector. As far as the service sectors are concerned, according to their common share in the employment structure, only Romania and Bulgaria have lower rates.

When analysing the geography of employment growth in particular activity sectors, two complementary spatial patterns can be observed, which can conventionally be described as urban-rural polarisation and east-west heterogeneity. Urban-rural polarisation is associated, on the part of larger cities and metropolitan areas, with relatively high positive dynamics in almost all the distinguished sectors of activity, albeit most strongly expressed in services, while in the case of predominantly rural

powiats, with a large decline in the number of employed, with a particular emphasis on the agricultural sector, with a simultaneous moderate increase in the manufacturing sector, distribution and communication as well as public and personal services.

As a separate sub-dimension, differences within metropolitan areas involving a significantly higher intensity of analysed values within the suburban zone in relation to the central city should be considered.

The west-east heterogeneity manifests itself in differentiated tendencies observed within larger spatial wholes represented by the aforementioned crescent stretching across the areas of northern, western and south-western Poland, where generally positive dynamics of total employment is recorded, and the decline in the agricultural economy is much weaker on the one hand, and by a sufficiently continuous mass of powiats located in the central and south-eastern part of the country characterised by negative overall employment dynamics and a particularly high intensity of employment decline in the agricultural sector, on the other hand.

An attempt, using the MFP tool, to identify the factors responsible for the differing growth trajectories of the various powiats showed that of the three factors behind the employment growth rates effects detected (related variety revealed by the industry-mix effect, regional context behind the region effect and regional specialisation shown by the interaction effect), the context factor was the most significant.

The related variety factor was found to be relatively weaker, followed by regional specialisation. This hierarchy is also indicated by studies Ray *et al.* (2011) in Canada, Breathnach *et al.* (2015) in Ireland or Martini (2020) in Italy. Similar to Ray *et al.* (2011), we can also find that no region with a low region effect exceeded the national employment growth rate, and some regions with a very good industry-mix did not reach the national growth rate due to a weak region effect.

Contextual impacts correspond most strongly to the urban-rural dimension mentioned earlier, privileging metropolitan areas, or rather their outer parts (satellite cities and suburban areas) within a 30-50 km radius around the central city.

Undoubtedly, the growth of employment in the metropolitan context should be linked to agglomeration economies and the fundamental benefits associated with them - the idiosyncratic effects of location, urbanisation and scale. Their positive impact is noticeable above all in the service sectors, with particular emphasis on producer and business services, which benefit from the diversity and qualifications of their workforce, typical of metropolitan areas.

The regularities found are confirmed by other studies. Barbonne (2004), using the Québec-Chaudières-Appalaches region as an example, finds, among other things, that in most cases, although the central poles of metropolitan regions had higher

absolute employment balances than suburban areas, the latter experienced higher relative growth, so that their share of metropolitan employment continued to increase.

He further adds that higher employment growth is also experienced by non-metropolitan areas close to metropolitan regions compared to more peripheral non-metropolitan areas, noting a particularly significant dynamic in a radius of about 50 km around the metropolis. In turn Guillain *et al.* (2006), analysing changes in the intensity of employment rates in the Ile-de-France region, note the prevalence of suburbanisation of employment, stressing that the location of high-level economic functions in the suburbs leads to a new perception of contemporary cities, the CBD is no longer the only dominant location for high-level economic activity, and cities show a polycentric rather than a monocentric pattern.

Similarly, Desmet and Fafchamps (2005), based on research using US county data, find a clear trend towards a concentration of service activities in centres 20-70 km away from the metropolitan core, while employment in manufacturing sectors is becoming increasingly deconcentrated away from centres of high economic activity to less congested non-metropolitan areas.

Unlike the contextual factor, the related variety operates in both identified spatial dimensions, contrasting the richness of employment opportunities in large cities and metropolitan areas with the poorness of rural areas, on the one hand, and the relatively better situation in northern and western Poland with the decline of central and south-eastern areas, on the other. In turn the benefits of specialisation are generally shaped by reference only to the west-eastern division.

Thus, it is appropriate to mention at this point similar cases known from the literature, fixed for example in the space of Canada - Heartland-Hinterland contrasts (Ray *et al.*, 2012), the UK and Italy - North-South divide (Gardiner *et al.*, 2013; Lagravinese, 2015) or Germany - West-East differences (Margarian and Hundt, 2023).

The problematic nature of the Polish East is due to the poor diversification of most regional economies and the significant role of the agricultural sector, which has been and remains an important domain of the Polish labour market. The agricultural character of this part of the country is very well exposed by interactions specific to this sector, which is moreover experiencing a deep decline in employment.

In general, however, the persistent socio-economic imbalance between the western and eastern parts of the country demonstrates a global link to the 19th century political divisions and their consequences related to the functioning of different parts of today's Poland under different socio-political and economic conditions until 1945. This historical legacy is reflected both in contemporary socio-economic structures (West-East differences in the level of industrialisation, in the equipment of technical

infrastructure, in the size structure of farms and, ultimately, in the level of development achieved) and in socio-cultural structures (economic pragmatism and worldview openness versus the primacy of national-Catholic values and community traditions of the inhabitants of the western and eastern parts of the country, respectively) (Bartkowski, 2003; Zarycki, 2007; 2015).

Thus, the historical background seems to be a specific determinant of development processes, including the shaped specialisation and overall competitiveness of the two distinct parts of contemporary Poland, rooted according to the path dependency principle (Churski *et al.*, 2020). Contemporary trajectories of employment growth appear to be the result of these basic economic structures.

As an example, the areas of manufacturing specialisation mentioned in the context of the analysis of region-manufacturing interactions may serve as a case in point, which in fact correspond to thriving industrial clusters and technology parks. It is hardly a coincidence that the vast majority of them have been established in the western part of Poland.

Finally, the place of service sectors in the context of the interaction effect should also be mentioned. As already mentioned, the observed interactions point primarily to non-metropolitan areas. Talking about their specialisation in such activities does not seem appropriate. Rather, it should be assumed that it is employment shifts to these areas as a compensation for lost jobs in agriculture. Knowing that the Polish service sectors only accumulate about 60% of the total number of employed persons, while the EU average is 73%, one should still expect a dynamic development of these activities and, consequently, a significant transformation of the relevant spatial structures.

5. Final Remarks

Studies of the regional dynamics of employment in Poland are usually carried out by economists focusing on the level of the largest units of administrative division, i.e. voivodeships, or less frequently - sub-regions. Although such work is based on more or less advanced economic theories and a robust econometric instrument, due to a kind of lack of a 'sense of space', it is objectively unable to capture more detailed patterns of geographical dynamics.

One of the consequences of such an approach is probably the limping regional policy in Poland, which in principle aims at reducing the existing disproportions and bringing about geographically balanced development under the slogans of somewhat mutually exclusive social justice and economic efficiency, but is in fact conducted in a rather chaotic and inconsistent manner.

It is enough to mention that at the declarative level, successive governments alternate between a polarisation-diffusion model, assuming priority investment in

areas with the greatest development potential, and a model of sustainable development more favourable to the underdeveloped eastern regions. At the same time, most Polish regions are still among the least developed in the EU.

The author hopes that this paper will contribute to a better understanding of the nuances of the actual development trajectories, taking into account the diversity occurring at the micro-scale, and to the appreciation of the research workshop of socio-economic geography as a science predisposed to speak more decisively on the issues of shaping an adequate regional policy of the state.

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