

DOES REGIONAL SPECIALISATION AFFECT THE GEOGRAPHICAL CONCENTRATION OF COMPANIES WITH FOREIGN CAPITAL? – ANALYSIS BASED ON THE EXAMPLE OF SELECTED CITIES IN POLAND

Katarzyna BUDZYŃSKA

Maria Curie-Skłodowska University, Lublin; k.budzynska@umcs.pl, ORCID: 0000-0001-5465-5748

Abstract: In recent years, the concept of regional specialisation has become an indicator of regional and local development in the Member States of the European Union. The concept of creating smart specialisation is one of the main priorities of the Europe 2020 Strategy, which concerns smart growth based on knowledge and innovation. Smart specialisations are based on economic and scientific potential, and regions had to define their development visions and planned economic effects in regional smart specialisation strategies. The aim of the article was to determine the specialisation of selected Polish cities using the Krugman specialisation index and to take into account the concentration of foreign companies using the location indicator.

Keywords: Krugman specialisation index, LQ, Location indicator, regional specialisation.

1. Introduction

Topics related to the development of the region and its specialisation are becoming increasingly important. Very often local authorities, enterprises and consulting companies want to analyse the development possibilities of a given location. Regional development is associated with many factors that affect it, for example they are related to the adopted development policy described in strategic documents. Increasingly, such strategies place the main emphasis on building the region's competitive advantage. One way to build competitive advantage is to identify their regional specialisation. Cortright in his publication examined whether the region should specialise in one sector or expand different sectors. In recent years, the concept of diversified specialisation has been appearing more and more often, because such cities gain the advantage of external effects both according to the theory of Marshall's location and the theory of urban planning by Jacobs. Marshall's external (also called technical) effects lead to labour

productivity in the sector, and result from joining labour markets, creating specialised suppliers and knowledge transfer.

However, according to urban planning theory, universities or research centres, trade associations and other business support organisations are more likely to occur in more populated cities. The high concentration of such organisations supports the production and assimilation of new innovations, as well as affects cross-sectoral cooperation. The research team of Frenken, Oorta and Verburg also pointed to the positive aspects of diversifying the region's specialisation. They believe that the diverse specialisation of a city or region will not react sharply to sectoral shocks, because they focus on fairly broad groups of industries (Frenken et al., 2007).

The aim of the article was to diagnose the specialisation of selected Polish cities with poviats and an attempt to verify them in the context of concentration of foreign companies. For that purpose, various statistical measures were used for both regional specialisation and geographical concentration, trying to capture the different sides of these phenomena. The article presents a brief overview of the literature related to the subject of regional specialisation and spatial concentration. Further elements of the article were the methodological part used in the work and the presentation of the basic results of empirical research on both regional specialisation and spatial concentration.

2. The concept of specialisation and spatial concentration

The theoretical foundations of the concept of regional specialisation and the location of industrial activity can be found in the theory of international trade. It can be divided into three categories that explain different patterns of specialisation. One of the first categories is the neoclassical theory of trade, which explains the patterns of specialisation through differences in relative production costs defined as "comparative advantages" resulting from differences in production efficiency (Ricardo, 1817) or capital and labour equipment (Heckscher, 1919; Ohlin, 1933) between countries and regions. The main features of these models were the assumption of perfect competition, the use of the same technologies, homogeneous products and a constant return to scale. According to this theory, trade liberalisation and progressive economic integration affects the change of production location and the increase of regions' specialisation in accordance with the theory of comparative advantages (Budnikowski, 2017; Traistaru et al., 2002).

In the late '70s and early '80s of the 20th century, a 'new theory of international trade' appeared, which was developed by Helpman, Krugman, and Lancaster. It included imperfect competition, economies of scale, and product differentiation. According to this theory, production specialisation and trade related to it are connected with growing revenues from the

scale. The size of trade is also affected by the relative economic size of trading partners (Cieślak, 2000).

In 1991, Krugman introduced the core-periphery model and thus provided the basic framework for the new economic geography. This model presents the interaction between the increase in profitability and the level of the company, transport costs and mobility of production factors. A large number of enterprises located in the region allows for the diversification of the products offered (Fujita, and Mori, 2005; Fujita et al., 1999; Fujita, and Krugman, 2004; Zielińska-Głębocka, 2009). This model was the basis of the New Economic Geography (NEG), which attempts to explain the distribution of economic activities in space and regional differences in location decisions. NEG models focus mainly on three factors that determine the choice of business location: economies of scale, cost of transport, and mobility of production factors. The main feature of NEG models is that location decisions are made within the enterprise. This indicates a conscious decision regarding localisation of a business on the basis of available market information in order to e.g. maximise profit (Zaucha et al., 2015). Krugman, using the earlier concept of circular causality, developed by Hirschman and Myrdal, created his own concept of a home market effect (HME). According to this effect, the concentration of production in one place allows its further growth and realisation of economies of scale, and the location next to a large market affects the minimisation of commercial costs (including transport) (Zielińska-Głębocka, 2009, 2012).

An important element discussed in the literature is the spatial focus of enterprises. This issue was raised in their research conducted by: Ohlin (1933), Lösch (1940), and Hoover (1948). They noticed that the spatial proximity of enterprises with similar economic activity may bring benefits to the so-called agglomeration. The benefits result from the cooperation and confrontation of these companies, as well as the employee base grows together with the development of the industry (Płaziak, and Szymańska, 2014). Spatial concentration of enterprises in the same industry has a positive effect on the attractiveness of a given location. It informs about the local environment, and the presence of other enterprises in this sector is interpreted as a success factor that minimises the risk in an unknown market. Additionally, many studies have shown positive effects especially for foreign companies, for which the existing concentration of companies with foreign capital shows the potential of location (Deichmann et al., 2003).

3. Research methodology

In order to analyse the phenomena of specialisation, the Krugman index (dissimilarities) was used. Regional specialisation is determined by comparing the economic structure of a given region to the average structure of other regions. We can talk about high regional specialisation

when the region has a different industry structure than the average for the other regions. Geographic concentration is calculated by comparing the regional structure of a given industry with the regional structure of other industries. High geographical concentration of a given industry occurs when its regional structure significantly differs from the average regional structure of other industries.

The Krugman index is defined as follows (Chmielewski, 2010):

$$KS_j = \sum_{i=1}^n |X_{ij} - \bar{X}_{il}| \quad (1)$$

where:

j – the region's index,

X_{ij} – share of those employed in the industry i in the region j ,

\bar{X}_{il} – mean share of those employed in the industry i in all other regions, excluding the province l .

The index values range from 0, which indicates the identical sectoral structure as the other locations studied, to 2, which proves a differentiated structure (Moga, and Constantin, 2011). For the calculation of the above indicator, the number of employees by PKD section groups was used.

An analysis of statistical data for 2017 available through the Regional Data Bank and Statistical Yearbooks of Statistics Poland (GUS) was carried out. As part of the study, a comparative analysis was performed in the field of regional specialisation. The analysis was directed at comparing the degree of regional specialisation between selected Polish cities with poviats.

The study covered the number of employees by groups of PKD sections and the number of entities with foreign capital in individual cities. An analysis of the specialisations of the examined cities and the degree of concentration of economic entities by groups of the PKD 2007 classification sections, and the concentration of entities with foreign capital in individual cities was carried out. To analyse the degree of concentration of companies by group of sections, a common measure of the relative concentration of economic activity was used – Location Quotient (LQ), which is to identify regional clusters (clusters). In this way, assuming the variable number of employees broken down into groups of PKD sections and the number of foreign entities, the density ratio of these entities was determined in accordance with the formula:

$$LQ = \frac{P_{ij}/P_j}{P_{in}/P_n} \quad (2)$$

where:

P_{ij} – number of employees broken down into groups of sections/number of business entities with foreign capital in a city with poviats rights,

j, P_j – total number of employees broken down into groups of sections/number of business entities with foreign capital in a city with poviats rights,

j, P_{in} – number of employees broken down into groups of sections/number of economic entities with foreign capital in total in the country,

P_n – total number of employees broken down into groups of sections/number of business entities with foreign capital in the country.

In the case of the LQ location index of the above units, it indicates the above average concentration of the given characteristic in relation to the national average (due to the fact that the index rarely takes the value equal to 1, a standard deviation of ± 0.15 is allowed). An LQ indicator greater than 1.25 usually indicates regional specialisation in a given sector. On the other hand, the LQ location indicator equal to a unit means that the city has the same share of the number of economic entities from the examined section as the national economy.

The study included cities with powiat rights, that belong to the first four classes according to Christaller's division, who distinguished seven classes of cities¹. The following cities with powiat rights were included in the study, which have at least 100,000 inhabitants:

- 1st class – the capital city of Warsaw with a population of over 1,000,000,
- 2nd class – the so-called provincial city with a population of 500,000-750,000, the cities are: Kraków, Łódź, Wrocław and Poznań,
- 3rd class – the so-called regional centres with a population of 250,000-500,000, that includes cities such as Gdańsk, Szczecin, Bydgoszcz, Lublin, Białystok and Katowice,
- 4th class – the so-called district centres with a population of 100,000-250,000, that includes cities such as: Gdynia, Częstochowa, Radom, Sosnowiec, Toruń, Kielce, Rzeszów, Gliwice, Zabrze, Olsztyn, Bielsko-Biała, Bytom, Zielona Góra, Rybnik, Ruda Śląska, Tychy, Opole, Gorzów Wielkopolski, Dąbrowa Górnicza, Elbląg, Płock, Wałbrzych, Włocławek, Tarnów, Chorzów, Koszalin, Kalisz and Legnica.

4. Research methodology

The Krugman specialisation index of the lowest and most specialised city with powiat rights is 0.021 and 0.45, respectively (Figure 1). Tychy is the most specialised city. Dąbrowa Górnicza and Ruda Śląska are the next most specialised on the scale of the examined poviats. The subject of specialisation of these cities involves the activities related to group II and V (description of groups of PKD sections under Table 1).

¹ More about the division of cities into classes according to Christaller, among others in Runge, A. (2012), Metodologiczne problemy badania miast średnich w Polsce, Prace geograficzne, 129, pp. 83-101.

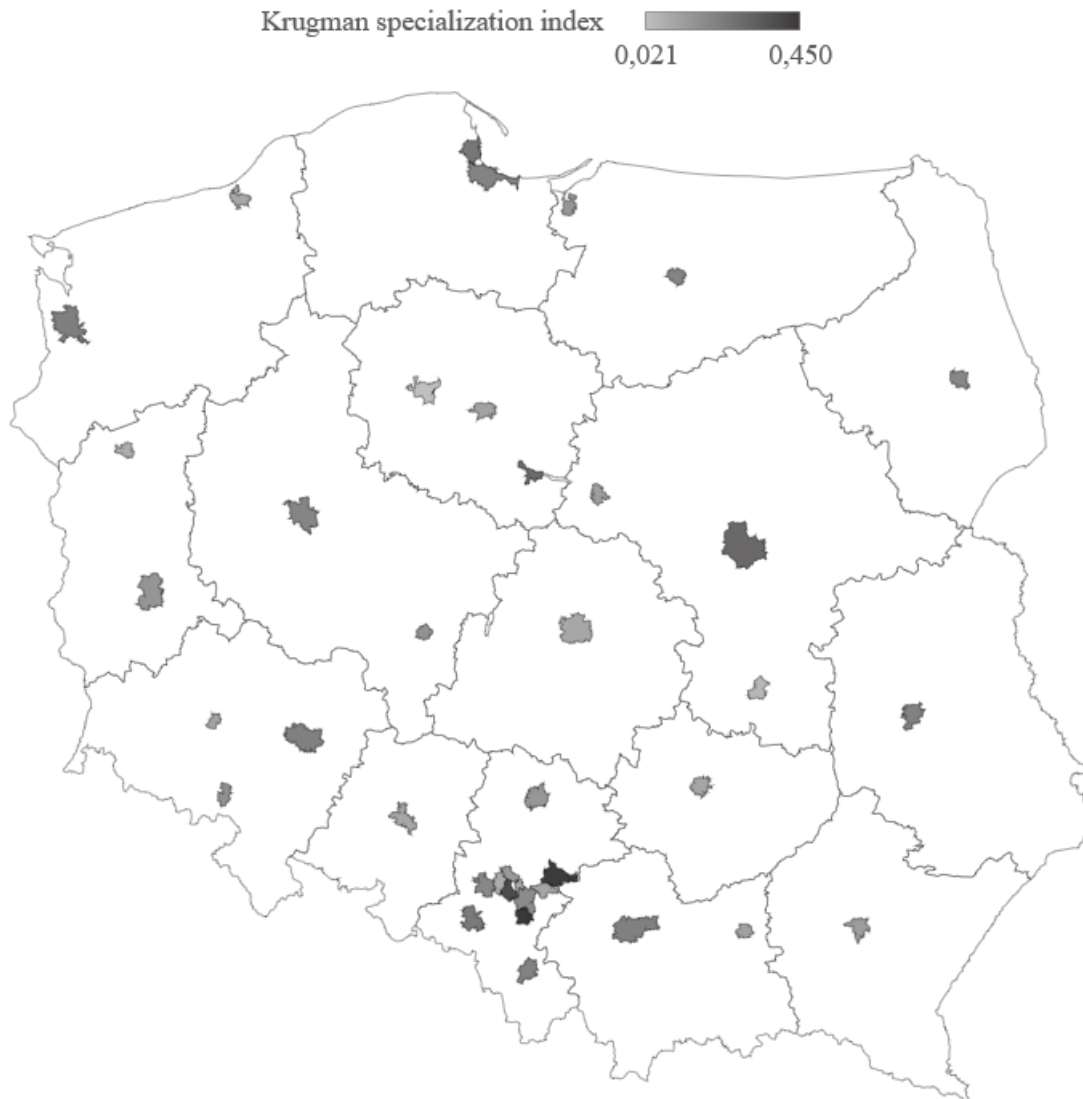


Figure 1. Map showing the specialisation of the cities analysed in 2017. Source: own study.

No city with powiat status has a dominant specialisation in the first group. In the cities of Warsaw, Włocławek, Rybnik, Wrocław, Lublin, Bielsko-Biała, Kraków, Szczecin, Gliwice, Gdańsk, Poznań, Katowice and Białystok there is a high level of Krugman's specialisation index in the second group of sections, which amounted to at least 0.10. The lowest employment structure was around 13% in Warsaw, and the highest employment structure in this group was above 45% in Włocławek.

Gdynia reached the highest level of the Krugman specialisation index in Group III of the section, reaching 0.12. The employment structure in this group of sections in Gdynia was 36%. None of the examined cities with powiat status achieved the Krugman specialisation index in the fourth group above 0.10. However, the highest level of the Krugman specialisation index in the fifth group of sections occurs in Olsztyn, and the employment structure in this city is 48%.

Table 1.
Krugman specialisation index and location indicator – LQ for selected Polish cities with poviat rights in 2017

No.	City	Krugman specialisation index					Total	LQ - number of employees					LQ - number of foreign entities	
		Group of PKD section 2007						Group of PKD section 2007						
		I	II	III	IV	V		I	II	III	IV	V		
1	Legnica	0.005	0.059	0.026	0.006	0.023	0.112	0.05	1.33	1.12	1.12	1.12	1.25	0.70
2	Wrocław	0.008	0.120	0.048	0.034	0.047	0.224	0.03	0.68	1.47	2.19	1.48	1.67	1.67
3	Wałbrzych	0.005	0.094	0.062	0.021	0.006	0.167	0.05	1.45	0.94	0.70	1.31	0.32	0.32
4	Bydgoszcz	0.009	0.003	0.004	0.014	0.006	0.021	0.03	1.11	1.26	1.65	1.30	0.72	0.72
5	Toruń	0.008	0.055	0.040	0.012	0.011	0.113	0.04	0.92	1.43	1.61	1.36	0.75	0.75
6	Włocławek	0.002	0.147	0.065	0.011	0.073	0.288	0.09	1.65	0.92	0.97	1.08	0.50	0.50
7	Lublin	0.024	0.119	0.012	0.018	0.065	0.220	0.19	0.69	1.30	1.77	1.54	0.90	0.90
8	Gorzów Wielkopolski	0.011	0.026	0.037	0.006	0.006	0.080	0.13	1.21	1.06	1.12	1.34	0.92	0.92
9	Zielona Góra	0.002	0.076	0.039	0.003	0.039	0.156	0.08	0.84	1.43	1.19	1.45	0.91	0.91
10	Łódź	0.007	0.054	0.008	0.025	0.028	0.098	0.04	0.92	1.28	1.96	1.42	0.97	0.97
11	Kraków	0.002	0.117	0.046	0.016	0.059	0.224	0.06	0.69	1.46	1.70	1.52	1.90	1.90
12	Tarnów	0.018	0.050	0.024	0.018	0.027	0.119	0.16	1.30	1.12	0.80	1.24	0.42	0.42
13	Płock	0.005	0.067	0.027	0.015	0.030	0.129	0.10	1.36	1.11	0.86	1.23	0.21	0.21
14	Radom	0.024	0.006	0.014	0.017	0.002	0.046	0.19	1.14	1.17	0.80	1.33	0.43	0.43
15	Warszawa	0.010	0.178	0.068	0.078	0.041	0.297	0.03	0.48	1.57	3.41	1.46	3.05	3.05
16	Opole	0.005	0.041	0.004	0.007	0.049	0.100	0.05	0.97	1.26	1.08	1.49	1.10	1.10
17	Rzeszów	0.021	0.062	0.000	0.006	0.046	0.129	0.18	0.90	1.24	1.11	1.48	0.97	0.97
18	Białystok	0.018	0.100	0.024	0.001	0.057	0.199	0.16	0.76	1.36	1.30	1.52	0.51	0.51
19	Gdańsk	0.008	0.108	0.033	0.018	0.065	0.215	0.03	0.73	1.40	1.78	1.54	1.02	1.02
20	Gdynia	0.006	0.099	0.117	0.019	0.031	0.252	0.05	0.76	1.81	1.80	1.22	1.28	1.28

Cont. table 1.

21	Bielsko-Biała	0.007	0.118	0.033	0.021	0.057	0.215	0.04	1.54	1.08	0.70	1.14	1.97
22	Bytom	0.004	0.038	0.025	0.006	0.073	0.140	0.06	0.98	1.12	1.10	1.57	0.46
23	Chorzów	0.009	0.024	0.020	0.018	0.031	0.085	0.03	1.03	1.34	0.80	1.43	0.77
24	Częstochowa	0.009	0.074	0.014	0.018	0.051	0.149	0.12	1.38	1.17	0.78	1.16	0.78
25	DąbrowaGórni	0.006	0.232	0.069	0.023	0.134	0.440	0.05	1.95	0.91	0.64	0.88	0.94
26	Gliwice	0.007	0.109	0.011	0.022	0.068	0.196	0.04	1.51	1.19	0.68	1.10	1.33
27	Katowice	0.012	0.103	0.022	0.042	0.050	0.186	0.02	0.75	1.35	2.43	1.49	1.65
28	RudaŚląska	0.006	0.200	0.092	0.013	0.089	0.387	0.05	1.83	0.79	0.93	1.03	0.67
29	Rybnik	0.002	0.127	0.016	0.016	0.096	0.241	0.08	1.57	1.16	0.83	1.01	0.38
30	Sosnowiec	0.007	0.004	0.055	0.007	0.038	0.104	0.04	1.10	1.51	1.10	1.20	0.58
31	Tychy	0.010	0.220	0.061	0.010	0.159	0.450	0.03	1.91	0.94	1.55	0.80	1.87
32	Zabrze	0.010	0.006	0.031	0.005	0.030	0.078	0.03	1.14	1.09	1.40	1.43	0.48
33	Kielce	0.003	0.046	0.000	0.009	0.053	0.102	0.09	0.95	1.24	1.02	1.50	0.42
34	Elbląg	0.002	0.051	0.072	0.007	0.026	0.150	0.08	1.30	0.89	1.09	1.41	0.33
35	Olsztyn	0.008	0.095	0.012	0.005	0.096	0.211	0.04	0.77	1.30	1.14	1.64	0.39
36	Kalisz	0.039	0.045	0.008	0.021	0.072	0.165	0.27	1.28	1.28	0.70	1.09	0.49
37	Poznań	0.008	0.105	0.026	0.017	0.069	0.208	0.04	0.74	1.37	1.74	1.56	1.45
38	Koszalin	0.008	0.025	0.032	0.015	0.034	0.098	0.04	1.21	1.40	0.87	1.21	0.80
39	Szczecin	0.004	0.110	0.062	0.001	0.050	0.225	0.06	0.72	1.54	1.31	1.49	1.36

Note: Symbols in the PKD section group table: I – group of the agriculture, forestry, hunting and fishing section; II – group of industry and construction sections; III – trade; repair of motor vehicles; transport and storage; accommodation and gastronomy; information and communication; IV – financial and insurance activities; real estate market service; V – other services. Source: own study.

Similar conclusions can be drawn based on the results obtained from the LQ indicator calculated for individual groups of PKD sections 2007. The results of the analysis of the degree of sectoral concentration in the examined cities using the LQ location quotient are presented in Table 1. In 2017, none of the examined cities was characterised by a high level concentration of employment in agriculture. In the case of the examined cities with powiat rights, the highest level of employment concentration in the second group of sections was found in Dąbrowa Górnicza (1.95), Tychy (1.91) and Ruda Śląska (1.83). In the case of Dąbrowa Górnicza, such a high level of employment concentration in this group of sections is associated with the location of for example steelworks and glassworks in this town. On the other hand, in Tychy Tyskie Browary Książęce operate, as well as Fiat and General Motors automotive plants. In most Silesian cities (Ruda Śląska, Rybnik, Bielsko-Biała, Gliwice, Częstochowa) due to their geographical location, the largest employers are, among others, hard coal mines, glass and steel works, automotive industry and combined heat and power plants.

The highest level of employment concentration in the third group of the studied cities was the characteristic of Gdynia (1.81) and Warsaw (1.57). Due to the geographical location of Gdynia and Gdańsk, a large number of people are employed in transport and warehouse management, such as the harbour and shipping companies. In Warsaw, the largest number of enterprises is from group III. However, in Warsaw, a large number of business entities is also noticeable from other sections. This is due to the fact that Warsaw is the capital city, there is a high availability of educated staff as well as a large number and high standard of real estate.

The highest concentration of employment in the fourth group of sections occurs in Warsaw (3.41), Katowice (2.43), and Wrocław (2.19). In all of the above cities, there is the largest number of real estate companies. In the case of the fifth group of sections, most cities recorded a high concentration of employment in this category. However, the greatest concentration was recorded in Olsztyn. This may be related to a large number of enterprises from the section related to professional, scientific and technical activities.

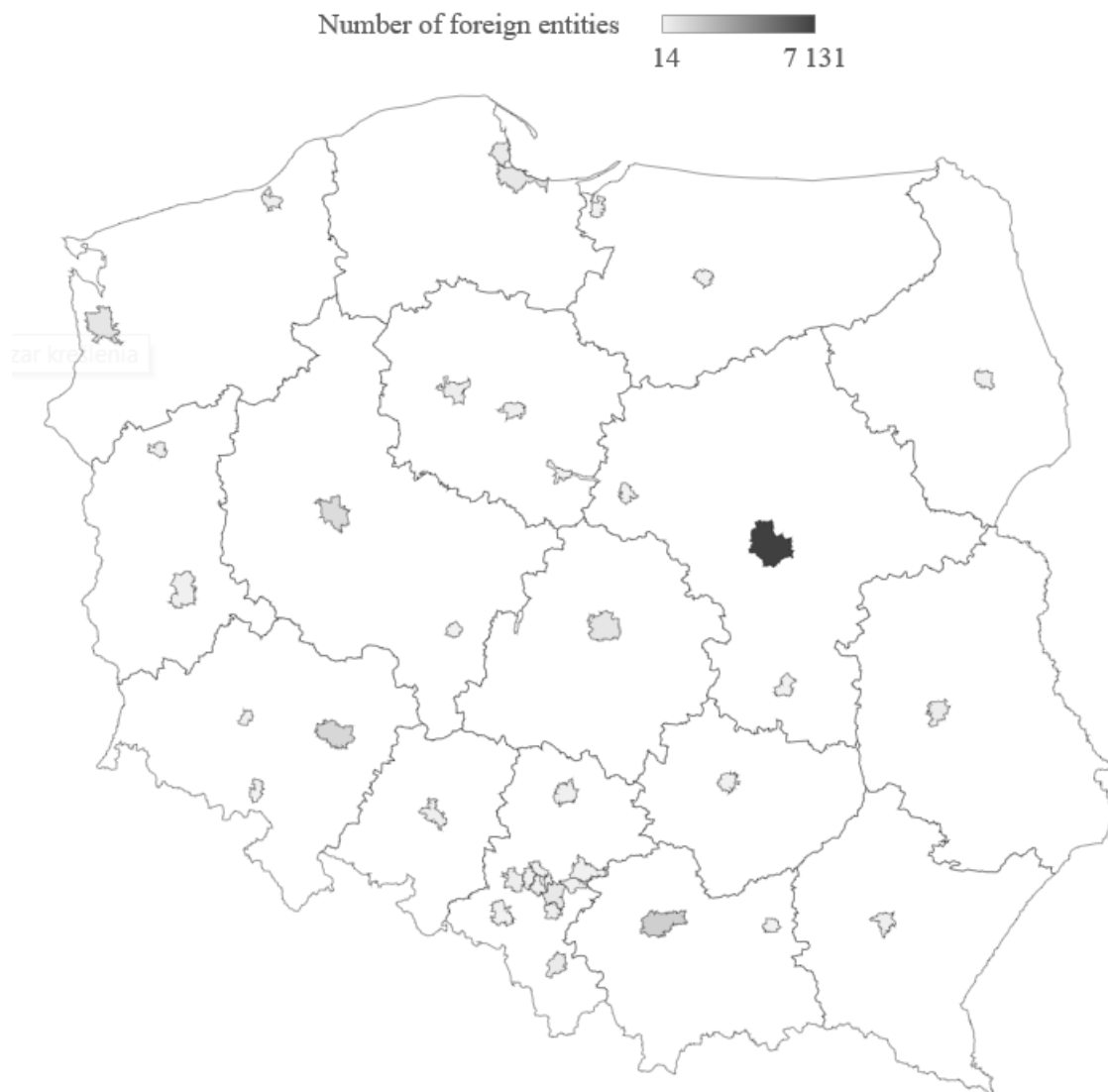


Figure 2. Map showing the spatial concentration of foreign entities in the cities studied in 2017. Source: own study.

Analysing the spatial concentration of foreign entities, the value of $LQ > 1.15$ was achieved by the following cities: Warsaw, Bielsko-Biała, Kraków, Tychy, Wrocław, Katowice, Poznań, Szczecin, Gliwice and Gdynia (Figure 2). This means that there is a larger number of business entities with foreign capital in the studied area than on average in the reference area. Warsaw, Krakow and Wrocław are the leaders among cities in terms of foreign investors. These three cities are seen as places with access to qualified staff, with high availability of office and warehouse space. A large number of universities, teaching different languages (not only English), and access to the workforce are an additional advantage of these locations. Bielsko-Biała, due to its geographical location, close proximity to Katowice Agglomeration or Kraków, makes this city an important cross-border centre. Also, a good economic climate and pro-investment policy of local governments have an impact on investment attractiveness for foreign enterprises (e.g. Fiat Auto Poland S.A., Nemak Poland Sp. z o.o. or GE Power Controls Sp. z o.o.). A similar situation occurs with other cities in the Silesian Voivodeship (Tychy,

Katowice and Gliwice) that more and more often are chosen for the location of foreign investments. Good flight connections with various parts of the world, good road connections with other major urban centres, access to educated staff and low labour costs affect the investment attractiveness of these cities.

Most of the foreign capital in Poznań in 2018 was invested in industrial production, mainly automotive (e.g. Volkswagen, Bridgestone, Exide or Kimball Electronics Group), food (e.g. Unilever, Wrigley, SABMiller, Pernod Ricard), pharmaceutical (e.g. GlaxoSmithKline), trade and real estate market (Investment attractiveness, 2017). In the report "Foreign direct investment in the Greater Poland voivodeship" prepared by a team of the Poznań University of Life Sciences, the geographical location, business environment, qualifications of the workforce and transport infrastructure were mentioned by entrepreneurs among the factors encouraging investment in Poznań (Pawlak et al., 2015). The geographical location of Szczecin is an asset of this city, the proximity of the western border and the presence of the harbour attract foreign investors, especially in industrial activities and advanced technologies. Gdynia is perceived as an attractive investment destination due to the availability of office space. The business-related environment is very well developed, as well as the great potential of human capital and, above all, access to the largest harbour in Poland (BiznesTrójmiasto, 2019).

In Opole, Gdańsk, Rzeszów, Łódź, Dąbrowa Górnicza, Gorzów Wielkopolski, Zielona Góra and Lublin, the LQ index was close to 1. This means that the distribution of the analysed variable in the studied areas is very similar to the distribution of this variable in the reference area. In other examined cities with powiat rights, the LQ indicator was below 0.85, which may indicate a low level of local concentration of foreign entities in these locations.

5. Summary

Very often the specialisation assigned to a given city determines its value, especially in such activities as production, services, IT, finance and logistics. Such specialisation is associated with the concentration of enterprises from a given sector. As Kemeny and Storper indicate in their publication, the richest cities in the world are the ones with the largest employment concentration in finance and IT in their economy. Researchers have highlighted the declining income and population of production regions in developed countries. In developing countries, on the other hand, production regions that are export oriented have an increasing tendency. Therefore, these researchers believe that specialisation allows perception, labelling and classifying a given city by enterprises or policy makers (Kemeny, and Storper, 2015).

The analysis provided some information on the structure and results of the cities studied. The study shows that none of the analysed cities specialised in only one group of PKD sections. Usually, specialisation occurred in at least two groups, which may testify to the diverse

specialisation of these cities. The main conclusion of this article is that the diversified specialisation in the structures of individual cities can attract foreign investment. A greater concentration of enterprises with foreign capital is noticeable in cities with a diversified specialisation and concentration of employment among groups of PKD sections. Such concentration of enterprises may indicate low risk of doing business and the availability of specialised staff.

The above conclusions provide useful information that local authorities should consider when creating regional development strategies. Further research will be needed to examine the drives of specialisation and concentration in Polish regions and to deepen the analysis, not only at the national, but also at the EU level. Due to the lack of publicly available statistical data related to employment in foreign enterprises broken down into sections of PKD 2007 at the level of cities with powiat rights, no detailed analysis could be carried out. However, in the future, such studies can be conducted at the voivodeship level (NUTS2) and compared to other countries. Particular emphasis should be placed on the impact of location factors in the new context of an integrated EU and their influence on location decisions made by enterprises.

References

1. *Badam.poznan.pl*. Available online https://badam.poznan.pl/en/iii_work-and-entrepreneurship/investment-attractiveness/, 12 August 2019.
2. *Biznes.trojmiasto.pl*. Available online <https://biznes.trojmiasto.pl/Inwestorzy-enia-Trojmiasto-Ranking-town-firmy-Antal-n134876.html>, 12 August 2019.
3. Budnikowski, A. (2017). *Ekonomia międzynarodowa*. Warszawa: PWE.
4. Chmielewski, R. (2010). Diversification and specialisation processes in regional development of new EU countries. Warszawa: Ministerstwo Rozwoju Regionalnego. In: D. Miłek, and P. Nowak (2015), Regional Specialisation as an Endogenous Factor in the Development of Poland's Provinces. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 10(2), 115-135, DOI: <http://dx.doi.org/10.12775/EQUIL.2015.016>.
5. Cieślak, A. (2000). *New theory of foreign trade in the light of empirical research*. Warsaw: Fundacja Edukacyjna Przedsiębiorczości, PWN.
6. Deichmann, J., Karidis, S., and Sayek, S. (2003). Foreign direct investment in Turkey: regional determinants. *Applied Economics*, 35(16), 1767-1778.
7. Frenken, K., Van Oort, F., and Verburg, T. (2007). Related variety, unrelated variety and regional economic growth. *Regional Studies*, 41, 685-697
8. Fujita, M., and Krugman, P. (2004). The New Economic Geography: Past, Present and Future. *Regional Science*, 83, 139-164.

9. Fujita, M., and Mori, T. (2005). Frontiers of the New Economic Geography. *The Regional Science Association International*, 84 (3), pp. 377-405.
10. Fujita, M., Krugman, P., and Venables, A.J. (1999). *The Spatial Economy, Cities, Regions, and International Trade*. London, England: The MIT Press Cambridge.
11. Kemeny, T., and Storper, M. (2015). Is Specialisation Good for Regional Economic Development? *Regional Studies*, 49, 6, 1003-1018, DOI: 10.1080 / 00343404.2014.899691.
12. Majewska, J. (2014). The phenomenon of spatial concentration of business entities from the tourism sector – the example of Poland and Germany. *Workshops on Geography of Tourism*, 5(21), doi: <http://dx.doi.org/10.18778/7969-262-0.15>.
13. Moga, L.M., and Constantin, D.L. (2011). Specialisation and geographic concentration of the economic activities in the Romanian regions. *Journal of Applied Quantitative Methods*, 6(2), 12-21.
14. *Official statistical information of the Local Data Bank in Poland*, <https://bdl.stat.gov.pl/BDL/start>.
15. Pawlak, K., Standar, A., Kołodziejczak, M., and Kołodziejczak, W. (2016), *Bezpośrednie inwestycje zagraniczne w województwie wielkopolskim (Raport z badania 2015)*. Poznań: Wydawnictwo Uniwersytetu Przyrodniczego.
16. Płaziak, M., and Szymańska, A.I. (2014). The role of modern location factors in the decision-making process of enterprises on the example of construction sector companies. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*, 28, 144-161.
17. Runge, A. (2012). Metodologiczne problemy badania miast średnich w Polsce. *Prace Geograficzne*, 129, 83-101.
18. Traistaru, I., Nijkamp, P., Longhi, S. (2002). *Regional specialisation and concentration of industrial activity in accession countries*, ZEI Working Paper, No. B 16-2002. Bonn: Rheinische Friedrich-Wilhelms-Universität Bonn, Zentrum für Europäische Integrationsforschung (ZEI).
19. Zaucha, J., Brodzicki, T., Ciołek, D., Komornicki, T., Mogiła, Z., Szlachta, J., and Zaleski, J. (2015). *Territorial dimension of growth and development*. Warszawa: Difin.
20. Zielińska-Głębocka, A. (2009). Przegląd koncepcji teoretycznych dotyczących perspektyw rozwoju handlu światowego. In: J. Winiecki (Ed.), *Kryzys globalny: początek czy koniec?* Gdańsk: Regan Press.
21. Zielińska-Głębocka, A. (2012). *Contemporary global economy: changes, innovations, crises, regional solutions*. Warszawa: Oficyna a Wolters Kluwer Business.