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LOCATION OF THE FURNITURE INDUSTRY IN VOIVODSHIPS IN POLAND

Katarzyna ŁUKIEWSKA[1]*, Katarzyna CHROBOCIŃSKA[2]

[1] University of Warmia and Mazury in Olsztyn, Faculty of Economic Sciences;
katarzyna.lukiewska@uwm.edu.pl, ORCID: 0000-0002-3175-5495
[2] University of Warmia and Mazury in Olsztyn, Faculty of Economic Sciences; kasiachr@uwm.edu.pl,
ORCID: 0000-0003-3189-9912
* Correspondence author

Purpose: The aim of the study was to assess the location of the furniture industry in voivodships in Poland in 2016-2018.
Design/methodology/approach: The study uses indicators of the share of business activity of the furniture industry (production value, employment, number of entities) of a given voivodship in the total activity (production value, employment, number of entities) of this sector in the whole country, CR concentration indicators, Herfindahl-Hirschman indexes, Lorenzo curve and location indicators.
Findings: The obtained results confirmed the tendency of the furniture industry to spatial concentration in the layout of Polish provinces. The furniture industry was concentrated mainly in Greater Poland, as well as Warmia and Mazury, Lower Silesia, Lesser Poland and Mazovian voivodship, and it was these regions that were most important in building the national furniture industry. From an intra-regional perspective, the furniture industry had by far the largest share in the economy of the Warmian-Masurian Voivodship.
Practical implications: The results obtained indicate which voivodeships are the most significant in creating the national furniture industry. The information may be used by the national authorities to create a policy of building competitiveness of the Polish furniture industry in the international arena. The information on the importance of the furniture industry in the economies of individual voivodships can be used by local authorities in building the competitiveness of the region.
Originality/value: The article concerns the furniture industry, which is relatively rarely studied in the literature. It includes a study of the location of the industry entities in a spatial arrangement in two dimensions: degree of concentration and structure and intensity of specialization.

Keywords: location, furniture industry, concentration, specialization.

Category of the paper: Research paper.

1. Introduction

The furniture industry has a long tradition in Poland and has been an important branch of the economy for many years (Dyba, Stryjakiewicz, 2014). It consists of over 18.28 thousand enterprises, i.e. about 8.83% of enterprises in the manufacturing sector in Poland. In 2018, the value of sold production was over 47.9 billion PLN, which accounted for 3.63% of industry production. The industry is also an important employer. In 2018, employment in enterprises producing furniture amounted to almost 145.5 thousand people, or 6.28% of all employed in industry in Poland (Statistical Yearbook..., 2019). Moreover, studies by Juchniewicz and Łukiewska (2014) show that the importance of the furniture industry in the Polish economy is relatively greater than in the entire European Union (EU).

The dynamic development of the furniture industry is also worth emphasising. The beginning of the development of the furniture industry in Poland was still in the period of the People's Republic of Poland, when in the block of states dependent on the USSR Poland was to specialise in furniture production (Adamowicz, Wiktorski, 2006). The experience gained during this period contributed to the development of the industry after the changes in 1989. Since that period, and especially after the accession to the European Union, there has been a systematic increase in the value of sold production of the furniture industry in Poland. The average annual growth rate of the sold value of this industry (in current prices) in the years 2005-2015 was 6.08%, and in the years 2015-2018 – 6.99%.

Moreover, research by other authors shows that Poland is among the top European and global manufacturers of furniture (Ulbrych, 2016). Better results in terms of export value are achieved only by companies from the industry from Germany and China. The most important export direction of furniture manufacturers from Poland was Germany, where almost 40% of the group's total exports were received, followed by the United Kingdom, France, the Czech Republic, the Netherlands and Sweden, and the United States outside the EU (Juchniewicz, Łukiewska, 2014). Industry reports show that the furniture industry on international markets is distinguished primarily by its many years of experience in trading furniture with Western European markets, high quality, active product development policy, continuous improvement of design and continuous work on building the image of corporate brands, openness to investment and optimal use of EU funds, relatively lower production costs (especially labour costs), as well as the proximity and abundance of raw material base (Furniture Market..., 2017).

The great importance of the furniture industry in Poland's economy, as well as its high competitive position on the international markets of the EU and the world, were important reasons for choosing this industry as a subject for consideration in the conducted research. Moreover, it was noted that in the literature on the subject, most empirical studies concern the total size of the furniture industry in Poland, as well as the distribution of this industry in the layout of EU countries and the world, especially in the context of international trade (e.g. Sujova, Hlavackova, Marcinekova, 2015; Ciupiński, Łukiewska, 2015; Ulbrych, 2016, Kaczorowska, Staniec, Szczygieł, 2019; Huyen Vu et al., 2019), and the recognition of this issue in the regional aspect is definitely insufficient. Meanwhile, as Grzybowska (2012) points out, perceiving the development of the economy through the prism of global phenomena of international integration and increasing globalisation does not mean that other reference planes have lost their importance. The author emphasises that local or regional space is an integral whole of the 'global village'. Taking the above into account, the aim of the study was therefore to assess the location of the furniture industry in Polish voivodeships in 2016-2018. The results obtained will indicate the level of disparities in the furniture industry in Poland, as well as allow a discussion on its importance in the development and competitiveness of individual Polish regions.

The article consists of five parts. After the introduction, the second part presents the theoretical aspects of business location. The third part discusses the applied research methodology. The fourth part contains an empirical analysis of the inter- and intra-regional distribution of the furniture industry in Poland. The last part presents a summary.

2. Literature review

Inequality of location (spatial distribution) of manufacturing activities between countries and regions is a feature of economic development observed for centuries (Zielińska-Głębocka, 2003). This issue is the subject of theoretical and empirical considerations of various trends in economics and geography. In economic sciences, it mainly stems from classical and new trade theories, as well as the theory of specialisation, and in geographical sciences – from the classical theory of location and the so-called new economic geography (Zielińska-Głębocka, 2003). The concept of the location of economic activity is the location of the size and type of economic activity, facility or group of facilities, in a defined area (Budner, 1999). According to Budner (1999), a location can be considered in the functional aspect, as a procedure for selecting the type and place of investment, and in the resultant aspect, as a result of the procedure for a specific location. From the perspective of a company, the choice of an appropriate location for its activity is a decision of an economic nature influencing its functioning and success on the market. Kuciński (2001) indicates that the location of a company affects its competitiveness by influencing the level of costs, work efficiency, market expansion opportunities and economic effects of business activity. According to Skawina (2002), a company must gain a competitive advantage resulting from its location in a specific environment in order to successfully compete on the international market. Huczek (2012), on the other hand, indicates that a demanding local environment can be a stimulus to increase innovativeness and economic efficiency of business management, and thus to shape a better competitive position on the global market.

The process of selecting the optimal location usually requires analysis of many elements. In the literature, a number of different classifications of location factors can be found. Godlewska-Majkowska (2009) includes natural resources which have an impact on the development of investment outlays (during the construction of the facility) and the net profitability of industrial economic activity carried out in these locations. They include: surface shape, hydrographic relations, raw material base, labour resources, water resources, sales market, infrastructure development and existing business entities. Relatively often location factors are divided by object, i.e. (Wieloński, 2005):

1. Natural factors, e.g.: raw material base, energy base, water resources, communication barriers, ecological barriers.
2. Non-natural factors, including:
   - technical and economic factors, e.g. technical infrastructure, market, advantages of the agglomeration, labour force, scientific and technical facilities, the volume of demand and its concentration,
   - socio-political factors, e.g. state policy, social factors, strategic (military) factors.

Other classifications divide location factors by functions of economic activity (production, distribution, organisational factors) (Waldziński, 2005), history (traditional, modern) (Budner, 2007) or the possibility of their measurement (hard, i.e. easy to measure and soft, i.e. hard to measure) (Plawgo, Chylicka, 2008). Firlej (2009) also emphasises that an entrepreneur should bear in mind that the quality of the location of the same place may be different for entities differing in size, organisational structure or type of activity.

3. Methods

The location of business activity in a spatial arrangement can be defined and analysed in two dimensions: degree of concentration/aglomeration and structure and intensity of specialization (Zielińska-Głębocka, 2003). As Antonowicz (2014) emphasises, such phenomena should be analysed in relative terms. Concentration concerns the spatial distribution of a given industry between different regions within a country (or e.g. countries within the EU). The simplest measure used in this article was the share of the economic activity of the furniture industry (production value, employment, number of entities) of a given province in the total activity (production value, employment, number of entities) of this sector in the whole country, in the form of (Zielińska-Głębocka, 2003):

$$l_i = \frac{q_i}{q} \tag{1}$$

where:

q_i – average employment/value of production/number of entities in the furniture industry in a given province and in a given year,

q- average employment/value of production/number of entities in the furniture industry in Poland in a given year.

Then concentration ratios (CR) were applied, which are the sum of market shares in N of the largest entities (voivodeships), according to the following formula (Pavic, Galetic, Piplica, 2016):

$$CR(N) = \sum_{i=1}^{N} l_i \tag{2}$$

where:

l_i – is the share of the furniture industry of the voivodship and (production value, employment, number of entities) in the whole country.

This indicator shows the total market share N of the largest entities (voivodeships) in the whole market (country) (Kryzia, 2016).

In the next step, the Herfindahl-Hirschman index (HHI) was used, which was calculated as the sum of squares of market shares of all entities in the market according to the formula (Naldi, Flamini, 2014):

$$HHI = \sum_{i=1}^{N} l_i^2 \tag{3}$$

The index takes values from 1/N to 1. Due to its construction, the entities with the largest market share have the greatest influence on the size of this measure (Kryzia, 2016). The index would reach its highest value if one entity had a very high market share and the other entities had very small, marginal shares.

The level of concentration of the furniture industry is also graphically presented in the form of the so-called Lorenzo curve (Kleiber, 2005; Gastwirth, Modarres, Buar, 2005). On the curve, on the axis of ordinates, cumulative percentages of values of selected features (production value, employment, number of entities) were marked, and on the cut-off axis – cumulative percentages of the number of communities (voivodeships). The Lorenzo curve was created by merging points with appropriate coordinates. In the case of an even distribution of features, all points would lie on the diagonal of a square with a side equal to 100% called the line of even distribution. The more the Lorenzo curve deviates from the uniform distribution line, the greater the degree of concentration (Wysocki, Lira, 2003).

The location of the furniture industry in the context of specialisation was then examined. Specialisation shapes the structure of production and trade, leading to more intensive development of some areas in relation to others (Zielińska-Głębocka, 2003). The regional specialisation index was used for this purpose, otherwise the location quotient (LQ) (Hildebrand, Mace, 1950). It shows the importance of a specific branch of production in the region compared to the whole country. It indicates the region's specialisation in the production of a branch in relation to the share of that branch in the total production of all examined regions. Therefore, it expresses the degree of similarity between the production structure of a given region and the country. The study adopted the following formula of the indicator (Wang, Hofe, 2007):

$$LQ = \frac{\frac{q_i}{q}}{\frac{q_{ir}}{q_r}} \tag{4}$$

where:

q_i – average employment/production sold/number of entities in the furniture industry in a given province in a given year,

q_b – average employment/sold production/number of total entities in industry in a given province in a given year,

q_{ir} – average employment/production sold/produced/number of operators in the furniture industry in the reference area (Poland) in the year,

q_r – average employment/production sold/number of total industry in the reference area (Poland) in the given year.

If the indicator takes values below 1, the share of branches in the economy of a given province is lower than in the whole reference area. If the indicator is close to 1 (deviations ±0.15 are allowed), it is assumed that the share of branches in the economy of a given province is similar to that of the reference area. If the LQ index is higher than 1, the importance of the branches in the voivodship is higher than in the whole studied area (Bergman, Feser, 2020).

4. Results and discussion

The assessment of the location of the furniture industry started with an analysis of the spatial distribution of this industry in individual provinces of Poland based on the number of entities, employment and production sold (Table 1). The level of the coefficients of variation and the range indicate a relatively high diversification of the sector's activity measured in this way by voivodship (especially in terms of sold production and employment). In Poland, in 2016-2018, there were on average 29.8 thousand enterprises engaged in furniture production. In individual provinces, the number of entities ranged from 634 (2.13%) to 4.3 thousand (14.57%). The largest number of entities were located in the Greater Poland Voivodship (14.57%), followed by the Masovian Voivodship (13.42%) and the Małopolska Voivodship (11.89%). In total, 39.88% of Polish furniture companies operated in these three provinces. The ranking was followed by Silesian, Łódź Voivodships, Pomeranian, Lower Silesia and Podkarpacie

Voivodships, where 5.55% to 8.49% of Polish furniture companies operated. By far the least numerous group of enterprises involved in furniture production (below 5%) were located in the following voivodships: Kuyawian-Pomeranian, Warmian-Masurian, West Pomeranian, Lublin, Podlasie, Opole, Świętokrzyskie and Lubuskie.

Table 1.
Share of voivodships in the furniture industry in Poland in 2016-2018

The voivodship	Number of entities		Employment		Production value	
	%	position	%	position	%	position
Lower Silesia	6,09	7	7,36	3	6,09	5
Kuyavian-Pomeranian	4,64	9	6,73	4	6,76	4
Lublin	3,61	12	4,49	8	3,78	11
ubuskie	2,13	16	4,21	10	3,8	10
Łódź Province	7,26	5	4,43	9	3,89	9
Lesser Poland	11,89	3	3,23	12	2,47	12
Masovian Voivodeship	13,42	2	6,57	5	7,89	3
Opole Province	2,76	14	2,14	13	1,61	14
Podkarpackie Province	5,52	8	5,98	6	4,98	6
Podlasie	3,25	13	1,88	14	1,69	13
Pomeranian	6,38	6	5,11	7	4,59	7
Silesian	8,49	4	4,19	11	3,96	8
Świętokrzyskie	2,2	15	-	-	-	-
Warmian-Masurian	4,15	10	11,82	2	10,64	2
Greater Poland	14,57	1	31,86	1	37,85	1
West Pomeranian	3,64	11	-	-	-	-
Descriptive statistics						
min	2,13	-	1,88	-	1,61	-
max	14,57	-	31,86	-	37,85	-
range	12,44	-	29,98	-	36,24	-
coefficient of variation (%)	63,25	-	105,53	-	128,40	-

Adopted from: own study based on GUS.

Another important category is the number of people employed in the industry, which has a direct impact not only on the scale of production, but also on labour productivity and the competitiveness of entities. In Poland, in 2016-2018, the furniture industry employed an average of 141.9 thousand people. The distribution of this feature was characterised by considerable dispersion. By far the highest number of employees, i.e. almost 1/3 of them, was concentrated in the Greater Poland Voivodeship (31.86%). None of the other voivodships reached a similar value. The second place was occupied by the Warmian-Masurian Voivodship, whose share in employment in the national furniture industry was much smaller at 11.82%. The share in engaging the labour resources of the remaining voivodships was even lower and did not exceed 10%. The percentage of employment between 5% and 10% was in the Lower Silesian, Kuyawian-Pomeranian, Lesser Poland, Podkarpackie and Pomeranian Voivodships. The lowest employment levels below 5% were recorded in the Lublin, Łódź, Lubuskie, Silesian, Lesser Poland, Opole and Podlaskie Voivodships.

In assessing the location of the industry's operations, it is also important to analyse the production effects, which in the study were measured by the value of sold production. In the whole country in 2016-2018, the value of furniture sold production was

35.09 billion PLN on average per year. In regional terms, this feature was the most diverse of all analysed. This is indicated by a high coefficient of variation of 128.40% and the highest range, which was 36.24%. The share of individual voivodships in generating the national value of sold production ranged from 1.61% to 37.85%. The Greater Poland Voivodship was the undisputed leader, which was also a leader in terms of the number of enterprises and employment. In this voivodship the value of sold production was PLN 13.28 billion. This was more than 20 times more than in the Opole Voivodship, which was in last place in this respect. The second place was taken by the Warmian-Masurian Voivodship, where the value of production was PLN 3.73 billion on average per year. The voivodship was also second in terms of employment and 10th in terms of the number of entities. This is related to the relatively large number of employees per one company. The third position was occupied by the Masovian Voivodship, whose share in generating domestic furniture production was 7.89%. The next rankings were occupied by the Kuyavian-Pomeranian and Lower Silesia Voivodships, whose shares ranged from 6.09% to 6.76%. The remaining provinces were relatively small (below 5%).

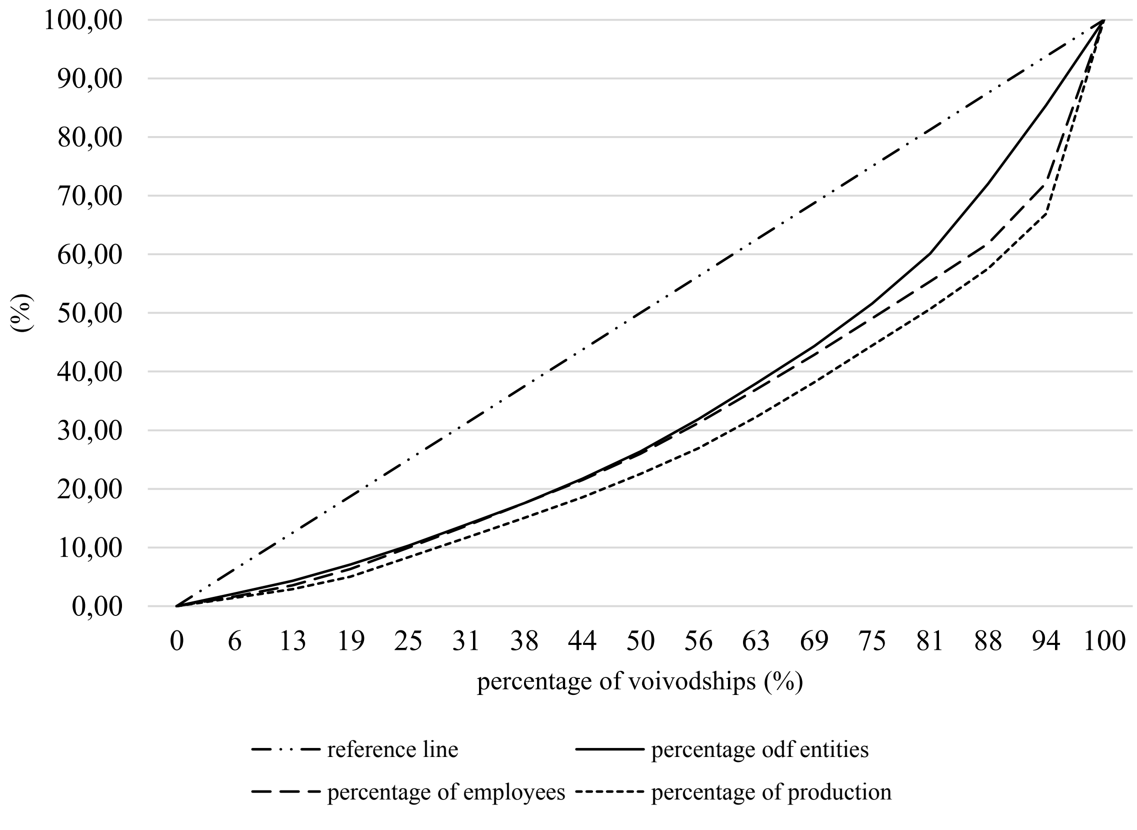

Figure 1. Lorenzo curve of employment, number of enterprises and value of production sold in the furniture industry in provinces in Poland in 2016-2018. Adopted from: own study based on GUS.

The degree of concentration of the furniture industry in Poland was determined using the CR (N) ratios. The concentration coefficients CR (2) indicate that the total share of the two largest voivodships in terms of the number of enterprises, employment and the value of production in industry in the years 2007-2015 was 27.00%, 43.67 and 48.49% respectively

(Table 2). In terms of employment and production value, they were: Greater Poland and Warmian-Masurian, and the number of entities was Greater Poland and Masovian. Considering the CR concentration index (5), it should be pointed out that the total share of five voivodships in terms of the number of enterprises was 55.64%, employment – 62.95%, production value – 68.12%. As regards the number of enterprises, these were: Greater Poland, Masovian, Małopolskie, Silesian and Łódź voivodship, and the employment and production value – Greater Poland, Warmian-Masurian, Lesser Poland, Lower Silesia and Kuyavian-Pomeranian. The HHI coefficients were relatively low, at 0.086-0.146. The occurrence of certain inequalities in the distribution of the number of enterprises, employment and production value in the EU countries is indicated by the Lorenzo curve presented in the graphs, which clearly deviates from the line of uniform distribution (Fig. 1). The analysis carried out indicates that the furniture industry in Poland tends to be concentrated (spatially focused).

Table 2.
Concentration and Herfindahl-Hirschman indicators in the furniture industry in voivodships in Poland in 2016-2018

Description	Number of entities	Employment	Production value
CR (2)	27,99	43,67	48,49
CR (3)	39,88	51,04	56,38
CR (5)	55,64	62,95	68,12
HHI	0,086	0,119	0,146

Adopted from: own study based on GUS.

Next, location indicators were calculated, which show the importance of the furniture industry in the industry of a given voivodship in comparison with a similar relation in all analysed regions (Table 3). They were also compared with the previously calculated structure indices (Fig. 2-4). In the figures, as reference lines for the location indicator, its limit values were assumed, i.e. 0.85 and 1.15, and in the case of structure indicators – 6.25%, i.e. assuming the same share of each voivodship in the analysed categories in Poland.

Table 3.
Indicators of location of the furniture industry in Polish voivodeships in 2016-2018

The voivodship	Number of entities		Employment		Production value	
	%	position	%	pozycja	%	position
Lower Silesia	0,85	11	0,82	8	0,69	9
Kuyavian-Pomeranian	0,99	7	1,1	5	1,38	4
Lublin	0,98	8	1,27	4	1,57	3
ubuskie	0,93	10	1,29	3	1,3	6
Łódź Province	0,98	8	0,62	11	0,68	10
Lesser Poland	1,24	5	0,39	13	0,35	13
Masovian	0,85	11	0,43	12	0,43	12
Opole Province	1,15	6	0,84	7	0,72	8
Podkarpackie Province	1,27	4	1,04	6	1,32	5
Podlasie	1,5	2	0,81	9	0,81	7
Pomeranian	0,79	14	0,78	10	0,63	11
Silesian	0,72	16	0,27	14	0,23	14
Świętokrzyskie	0,8	13	-	-	-	-

Cont. table 3.

Warmian-Masurian	1,54	1	3,10	1	3,84	1
Greater Poland	1,39	3	2,94	2	2,71	2
West Pomeranian	0,77	15	-	-	-	-
Descriptive statistics						
min	0,72	-	0,27	-	0,23	-
max	1,54	-	3,10	-	3,84	-
range	0,82	-	2,83	-	3,61	-
coefficient of variation (%)	25,60	-	76,84	-	83,83	-

Adopted from: own study based on GUS.

The location indicator calculated on the basis of the number of entities ranged from 0.72 to 1.54. In five voivodships, such as Warmian-Masurian, Podlasie, Greater Poland, Podkarpackie and Lesser Poland, it was higher than 1.15. This means that in these regions the importance of entities producing furniture in the economy was above average. When comparing these data with the structure of entities, it can be seen that Greater Poland and Wielkopolskie voivodships had a distinguishing importance in the national number of enterprises from the furniture industry, and the remaining voivodships from this group were relatively low (below 6.25%). In 7 voivodships the location indicator (calculated on the basis of the number of entities) oscillated around 1 (with the assumed deviation of ±0.15). These were the Opole, Kuyavian-Pomeranian, Lublin, Łódź, Lublin, Lower Silesia and Masovian Voivodships. The share of the furniture industry in industrial processing did not differ from the national average. Of this group of regions, the Mazovian region had a dominant share in the national number of enterprises. Relatively high importance was also noted in the case of the Łódź Province. In 4 voivodships the location indicator reached the level below 0.85 (Świętokrzyskie, Pomeranian, West Pomeranian, Silesian). This indicates a much lower share of the furniture industry, measured by the number of enterprises, in these regions than in the reference area. Only Silesian and Pomeranian were relatively high in the national industry.

Another variable that was analysed was the average employment in the furniture industry. The location index calculated on the basis of this category ranged from 0.27 to 3.10 and was characterised by relatively high variability. The level above 1.15 was observed in 4 voivodships: Greater Poland, Warmian-Masurian, Lublin and Lubuskie. Among the mentioned, Warmian-Masurian and Greater Poland stood out definitely, where the LQ index was by far the highest and amounted to 3.10 and 2.94 respectively. Considering the interregional comparison of the structure of employees, it should be stressed that the Greater PolandVoivodship is particularly important in the labour resources employed in Poland for furniture production. The Warmian-Masurian Voivodship also had a relatively large share in engaging labour resources in the furniture industry. In two voivodships, a location indicator close to unity was noted. These were Kuyavian-Pomeranian and Podkarpackie. Their share in the national employment of the industry can be described as average (close to 6.25%). A low location ratio was recorded in the remaining voivodships: Opole, Lower Silesia, Podlasie, Pomeranian, Łódź, Opole, Lesser Poland, Silesian and Masovian Voivodeship. Apart from the Lower Silesian and Mazsovian Voivodships, their significance was also low.

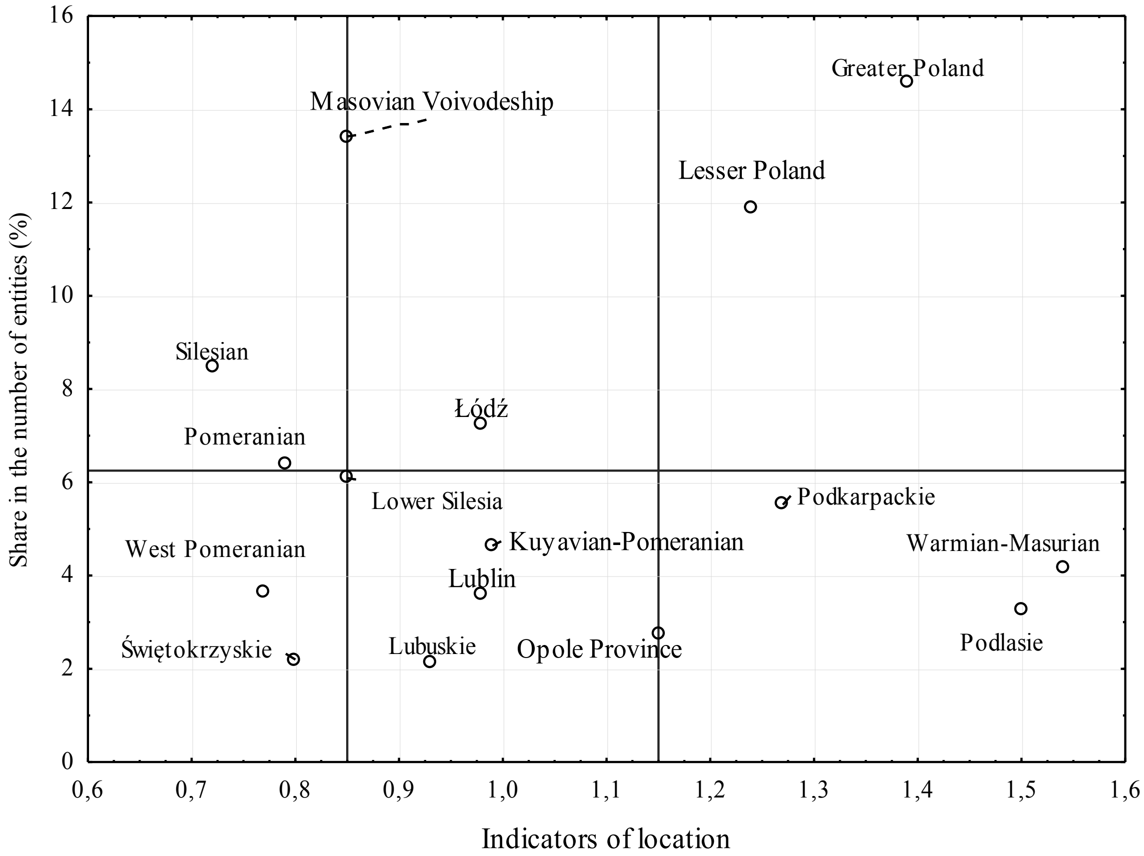

Figure 2. List of voivodships in terms of the level of the location indicator (variable - number of entities) and share in the national number of entities in the furniture industry in 2016-2018 (reference lines: median share in the number of entities, location indicator at 0.85 and 1.15). Adopted from: own study based on GUS.

The location of activities was also considered in terms of sold production. The LQ ratio measured in this way ranged from 0.23 to 3.84 and in the layout of voivodships it was characterised by the relatively highest disproportions. This is evidenced by the high coefficient of variation, as well as the biggest difference between the biggest and the smallest size, i.e. the range. Similarly to employment, the Warmian-Masurian and Greater Poland Voivodships were particularly distinct. The share of the furniture industry in generating the value of sold production of the industry in the Warmian-Masuria Voivodeship was 3.84 times higher, and in the Greater Poland Voivodeship 2.81 times higher than in all regions of the country. The indicator was much lower, but above 1.15, also in Lublin, Kuyavian-Pomeranian, Podkarpackie and Lubuskie voivodship. In the remaining regions, i.e. Podlasie, Łódź, Opole, Lower Silesia, Pomeranian, Masovian, Opole, Lesser Poland and Silesian, the location indicator was below 0.85. All the voivodships in this group, with the exception of Masovian, also had small, significantly lower employment in the national furniture industry.

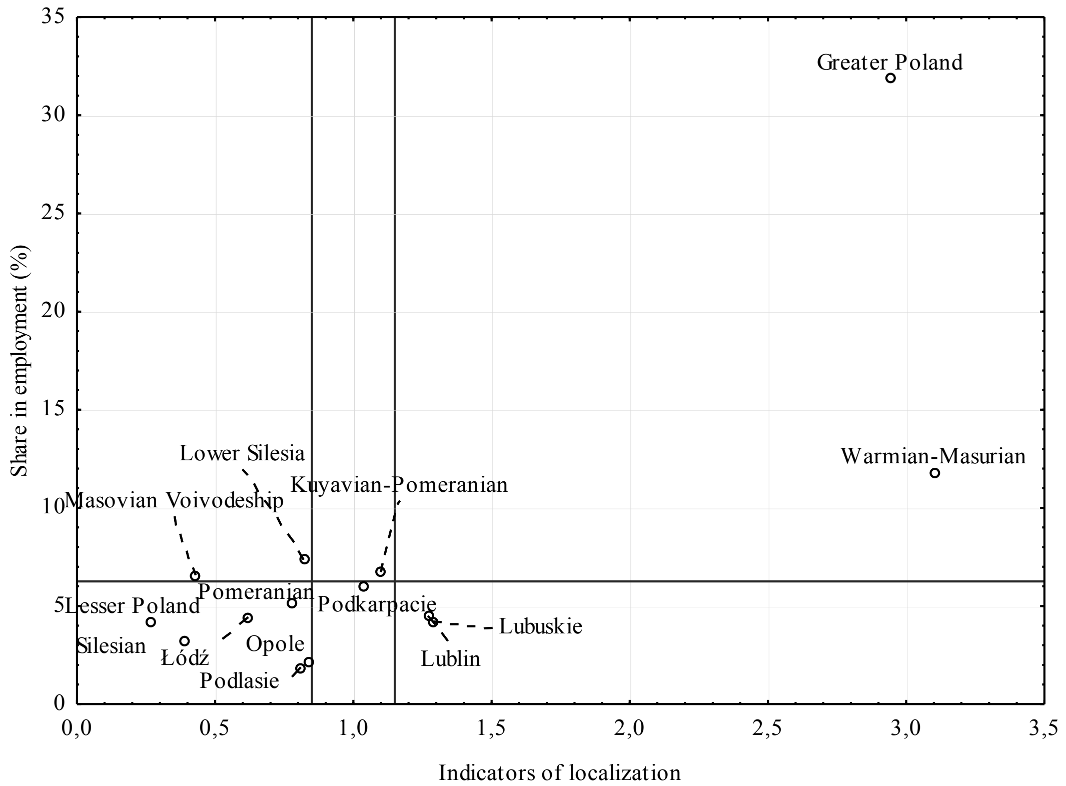

Figure 3. List of voivodships by the level of the location indicator (variable - employment) and share in the national employment of the furniture industry in 2016-2018. Adopted from: own study based on GUS.

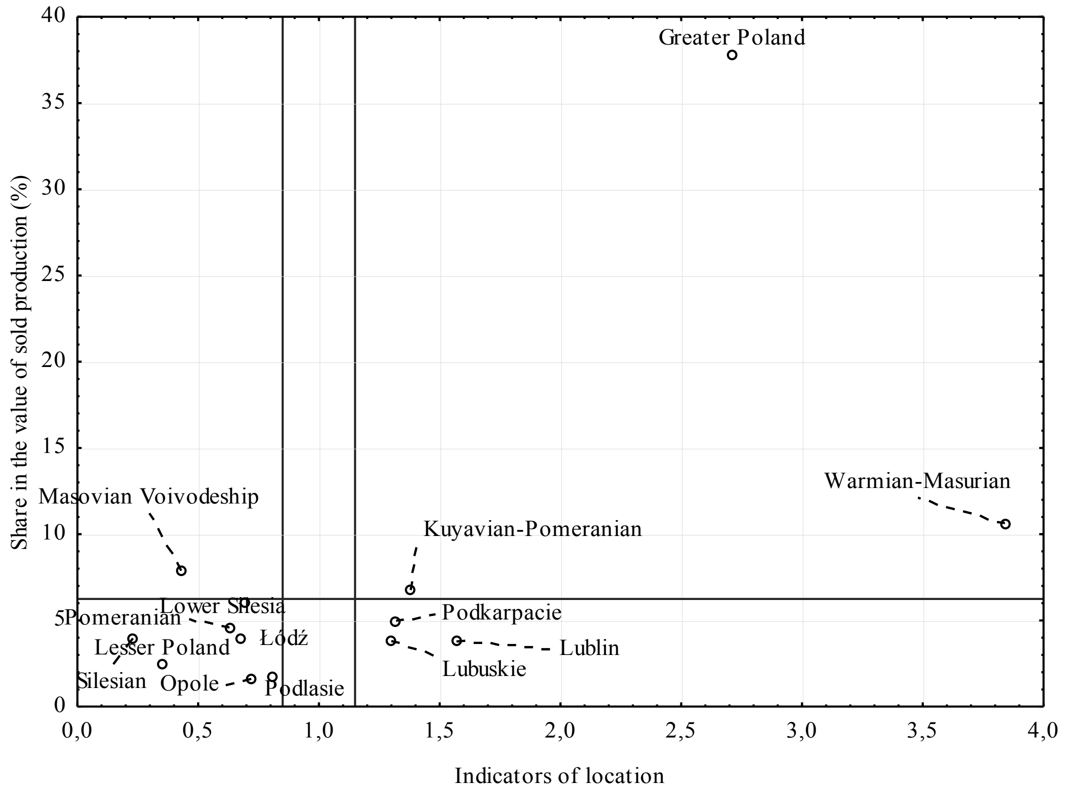

Figure 4. List of voivodships by the level of the location indicator (variable - sold production) and share in the national value of sold production of the furniture industry in 2016-2018. Adopted from: own study based on GUS.

5. Conclusion

The functioning and success of companies and industries depends to a significant extent on location, especially in the context of dynamic competitive processes. This also applies to the important furniture industry in the Polish economy, which achieves a high competitive position in the European and world arena. The study has confirmed the existence of disproportions in the distribution of the furniture industry in the layout of the country's provinces and a clear tendency to spatial concentration. Companies producing furniture are located in all provinces in Poland. However, in the analysed years, the furniture industry was concentrated mainly in several voivodships. The leader's position was held by the Greater Poland Voivodship, which had by far the largest share in the national number of entities, employment and the value of production sold. A large share of employment was also recorded in the case of the Warmian-Masurian and Lower Silesia Voivodships, in the number of entities – Małopolskie and Masovian, and in the number of sold production – Warmian-Masuria and Masovian. In total, 40% of companies from the domestic furniture sector were located in Wielkopolskie, Masovian and Małopolskie Voivodships. More than 51% of the employed industries were concentrated in Greater Poland, Warmian-Masuria and Lower Silesia. In turn, almost 49% of the value of furniture production in Poland was generated in two voivodships: Greater Poland and Warmian-Masurian. These voivodships therefore have the largest share in the construction of the domestic furniture industry.

The location considered interregionally was not fully consistent with the intraregional approach. By far the highest degree of regional specialisation, measured by the location indicator, was recorded in the Warmian-Masurian Voivodship. This means more intensive development of the industry in this region compared to the reference area, i.e. Poland. In the internal structure of the voivodship's economy, the furniture industry was also particularly important in Greater Poland Voivodship. A high localization rate calculated on the basis of the number of entities was recorded in Podlasie Voivodship, and on the basis of employment and production sold in Lublin and Lubuskie Voivodships. The prevalence of the indicated regions over other voivodships may contribute to the competitiveness of these regions.

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