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CHANGES IN THE NUMBER AND CAPACITY OF HOTELS IN POLAND

Abstract: The author's aim is to identify changes in the rate, intensity and direction of hotel development, as well as their number, type and capacity of in Poland, by category and province in 1990-2015. The objective is to define the influence of both tourism attractiveness and economic development factors (GNP, total capital expenditure, the value of gross fixed capital formation – GFCF) on the changing number of hotel rooms. The identification was based on commonly available materials provided by the Local Data Base (LDB) of the Central Statistical Office (CSO), as well as from statistical year books concerning the tourism sector. The article presents methods for analysing indices, as well as correlation and graphic presentation (graphs, maps). From 1990 to 2015, there was a rapid increase in the number and capacity of hotels in Poland (4.5 times), especially in higher (5* and 4*) and medium standard (3*) hotels. That increase was significantly diversified regionally and strongly depended on the tourism attractiveness and socio-economic development of provinces.

Keywords: hotels, changes, regional diversity, conditions of change, Poland.

1. INTRODUCTION

Authors of different publications on the subject point to the correlation between the increase in the number and capacity of hotels, socio-economic development and tourism assets. As a rule, hotels rapidly develop at a time of economic prosperity (KNOWLES & EGAN 2001 *et al.*), additionally enhanced by the tourism assets of the area. The attempt here to verify this argument is based on an analysis of changes in the number and capacity of hotels, as well as related trends that have appeared in Poland since 1989.

The aim of this article is to attempt to answer the following three research questions:

- 1) Did the number and capacity of hotels in Poland change after 1989 and if so – to what extent and with what spatial differentiation?
- 2) What trends and patterns were observed in these changes?
- 3) What factors intensified those changes?

After 1989, the construction of hotels in Poland was enhanced with the help of large-scale national and foreign capital (WITKOWSKI 2007, SEMMERLING 2016 *et al.*)¹ which brought about a significant increase in the number of hotel rooms (ŁAZAREK 2004, ROGACKI 2009, WOJDACKI *et al.* 2016). Nevertheless, Poland remains one of the EU states with the lowest number of beds

offered by hotels and similar facilities per 10,000 inhabitants (ROGACKI 2009, MILEWSKA & WŁODARCZYK 2015, pp. 301-2), which clearly points to the fact that it falls behind other countries as regards development in the hospitality industry. At the same time, it encourages national and international capital to build new hotels, modernize existing or adapting abandoned buildings for the purpose of providing hotel services.

In the literature (KOWALCZUK 2001, WITKOWSKI 2007 *et al.*), it is indicated that one of the basic issues in research concerning the hospitality industry is an analysis of changes (trends) in the hotel sector concerning the spatial differentiation of hotel categories, how they are being used and to what extent, and the way in which they function. Despite the profound changes taking place in this sector, these issues have not been fully recognized in the Polish academic literature (WITKOWSKI 2007), even though the industry clearly requires analyses and forecasts regarding development trends, the economic situation, the market, competition and so on. Changes in the size, organisation and use of hotels in Poland (its regions and cities) as well as the differences between them have not been researched in depth.

The presentation of changes in the number and capacity of hotels (expressed by the number of rooms and beds), which took place between 1990 and 2015, is based on available data from the CSO, from current reports on hotel facilities, the LDB, and statistical year books on tourism (*Turystyka w...*, 1991-2016 year-books). Current reports on hotels should be regarded as full and credible. The advantage of this data is the opportunity to conduct comparative research in time and space because it is collected on the basis of a consistent methodology while data from these sources can be accessed for individual years. An analysis of changes in the number and capacity of hotels across Poland begins from 1990. At the level of a province (*voivodeship*), changes in the capacity of hotels can be followed from 1995, and additionally including hotel categories, from 1999. The source material includes three variables: numbers of hotels, hotel rooms, and hotel beds over a period of a year. In the course of the analysis, two more variables were added: the number of rooms per 10,000 inhabitants, and per 100 km² of a province. The author adopted the definition of a hotel used in statistics: "a building situated mainly in a city, offering at least 10 rooms, with the majority of beds in single and double rooms, providing a wide range of services connected with the guests' stay. Every hotel serves breakfast. Depending on the facilities and the range of services, five categories of hotel can be distinguished, the highest being a 5-star, and the lowest a 1-star" (*Turystyka w 2014 2015*, p. 17). The source material collected was analysed to define changes in the number, rate and intensity of development, as well as in the organisation and capacity by category and province. It included the influence of tourism attractiveness² and economic development indices (GNP, total capital expenditure, GFCF) on the increase in number and capacity. The research includes methods for analysing indices and correlation, as well as graphic presentation (graphs, maps).

2. THE NUMBER AND CAPACITY OF HOTELS BEFORE 1990

During the interwar period (1918-39), Poland had relatively few hotels of a low capacity and generally of a low standard³. During World War II, many hotels were destroyed or damaged. After the war⁴, the political and socio-economic system was transformed and from 1945 to 1989, Poland functioned as a people's democracy with a planned economy. Within the framework of a socialist state, a particularly well-developed sector was social tourism, a medium to popularize annual recreation among adults (two-week summer

holidays), children and teenagers (summer and winter breaks, camps, etc.), health tourism (three-week stays at sanatoria), sightseeing (especially for children and teenagers), as well as weekend recreation. Social tourism was organized nearly exclusively within Poland, in holiday resorts, sanatoria, etc⁵. In the period of the planned economy, there were over 5,000 such facilities, offering over half a million beds (WAWRZY尼亚K 1975).

Commercial tourism was mostly supported by hotels, camp sites, etc⁶, and available statistics indicate that with time, the number, capacity and standard of those facilities increased to about 4,200 accommodation units, with nearly 330,000 beds (Table 1). Through the development of social and commercial tourism in the times of the Polish People's Republic, tourism became popular and was supported by a sizeable hotel infrastructure. This created a sufficiently strong foundation for a fast and successful restructuring, followed by the development of tourism and its infrastructure, after democracy and a market economy was restored in 1989.

Table 1. Hotel facilities in Poland, in 1960-85 (in thousands of beds)

Year	Type of hotel infrastructure					
	'open'		'closed'		total	
	number	%	number	%	number	%
1960 ^a	72.4	20.5	281.0	79.5	353.4	100.0
1965 ^a	158.7	27.9	409.3	72.1	568.0	100.0
1970 ^a	214.8	26.9	584.3	73.1	799.1	100.0
1975 ^b	332.7	39.9	502.0	60.1	834.7	100.0
1980 ^b	326.3	46.9	369.2	53.1	695.5	100.0
1985 ^b	329.2	47.3	367.0	52.7	696.2	100.0

Source: ^a - according to S. WAWRZY尼亚K (1975) - except summer holidays with accommodation in school buildings, youth camps or rented private rooms; ^b - according to *Roczniki statystyczne PRL*, CSO.

Commercial tourism during the socialist period included hotels (Table 2). In 1950, they were nationalized, and only a small number remained private. Statistics from the 1950s and 1960s (e.g. *Rocznik statystyczny 1966*) show that the percentage of private hotels was 16.7%, their rooms - 3.4%, bed-nights sold - 1.5%, with an occupation rate of 29.7. Private hotels were usually small. The co-operative sector was similar to the private, as regards capacity, organisation and occupancy, while nationalized hotels were incomparably larger, having an average of 39 rooms with 74 beds. They made up about 75% of the overall number, but offered 95.4% of rooms and 92.8% of beds. They offered 97.3% of all accommodation provided by Polish hotels with an average occupancy of 76.8%. The majority were 'communal' hotels, which were focused mainly on providing accommodation

but lacking additional services, most of them were of a low category. By 1979, pre-war hotels had been gradually brought back into use and 10 new ones had been built (KRAŚ 2012) but the state was not very interested in building new hotels. Social tourism, which was treated as a priority, required restoring hotels which had been taken over and building new holiday centres and sanatoria by various bodies including the Workers' Holiday Fund (FWP), workplaces, and other public institutions. The construction of new hotels was of secondary importance.

Table 2. Hotels in Poland: 1955-2015

Year	Number		
	hotels	beds	rooms
1955	456	21,231	10,626
1960	494	25,396	12,933
1965	533	31,856	16,268
1970	527	33,630	17,925
1975	no data	46,521	no data
1980	447	49,906	no data
1985	459	51,291	no data
1990	499	57,396	30,676
1995	668	74,577	39,402
2000	924	95,095	50,413
2005	1,231	127,501	66,212
2010	1,796	176,035	90,592
2015	2,316	235,582	117,448

Source: *Roczniki statystyczne*, GUS, 1954-2016.

Some new hotels were built after 1970 due to loans from abroad, using Polish contractors and lease agreements. According to M. TURKOWSKI (1997, p. 26), from 1973 to 1982, foreign loans enabled 26 new hotels with about 10,000 beds to be built and some were incorporated into international hotel chains. As a result, in 1982, one in five beds was in a hotel newly erected by foreign investors. A number were also built by Polish construction firms. However, as M. TURKOWSKI believed (1997, p. 26), the long period of construction, furnishing the hotels with Polish materials not suitable for such use, the lack of experience of Polish construction firms (mostly specialising in residential) as regards hotels, as well as limited financial resources, had a negative effect on quality. There was an attempt to establish new hotels, based on lease agreements (PP 'Orbis' with an Austrian company), but only two were built (TURKOWSKI 1997, pp. 96-97).

The statistics show that over the whole socialist period, the number of hotels increased only slightly. Alongside times when this number increased, there were periods of decline, despite the fact that new hotels were being built (Table 2). On the other hand, their capacity, measured by number of beds, more than doubled, from 21,200 in 1955 to 57,400 in 1990. This points to systematic reconstruction, the elimina-

tion of the small and old and, at the same time, building the large and modern (on average, 115 beds per hotel).

3. THE NUMBER AND CAPACITY OF HOTELS AFTER 1989

After 1989, companies with foreign capital, joint-stock companies wholly owned by the State Treasury, Polish and foreign private firms⁷, companies created as a result of the reconstruction of state enterprises in order to manage workers' hostels, holiday centres, etc which had become available to the general public, started to invest in the modernization of existing hotels and the construction of new ones. The activity of those investors between 1990 and 2015 resulted in an increase (Table 2) in the number of hotels by nearly 1,800 with 178,200 beds (a 4.5-fold growth in 25 years). Over that period, the proportion of hotels in total accommodation increased from 6.1% to 23%, and of hotel beds from 8.5% to 33.2%. The average capacity of a hotel, measured by the number of beds, decreased from about 115 to about 100. The number of beds per 10,000 inhabitants increased from 19,300 (rooms - 12,200) in 1999 to 61,300 (rooms - 30,500) in 2015.

The structure and development of hotels in Poland after 1989 was influenced by many factors such as the low supply of hotel rooms (often below international standards) in higher category hotels, the limited demand in Poland (cheaper, lower category hotels tended to be chosen), a tax system which was unfavourable, and so on. Initially, after 1989, there was an increase, followed by a decline. It was not until the late 1990s and the beginning of the 21st century that there was systematic growth in the number and capacity of hotels in Poland⁸. Statistical data regarding hotels shows (Fig. 1) that the development of 5-star hotels in Poland actually started in 2000. The initially large number of 4-star hotels was radically reduced (by two-thirds) in the following years, which reinforced the 3-star category whose number and capacity had started to grow rapidly after 1990. Another increase in the number and capacity of 4-star hotels had come after 1995. 2-star hotels, which at first had a stable position in the Polish hospitality industry (45% of all facilities, about a quarter of rooms and nearly a third of beds), showed a gradual but slow increase, but their significance was falling. The growth of 1-star hotels was different. In the 1990s, they developed rapidly, but after 1998 their percentage in the overall number of Polish hotels considerably decreased. In 2002, statistics concerning hotels included data on categories and initially, they made up nearly 10%, but in the following years their number was reduced to 5%.

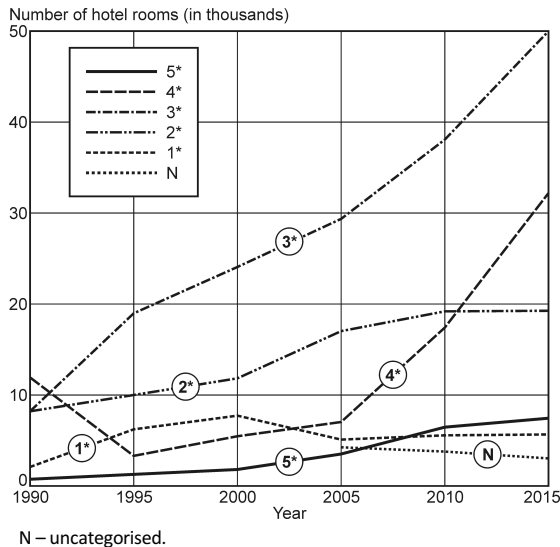


Fig. 1. Increase in the number of hotel rooms by category: 1990-2015

Source: Figs 1-9: author based on *Roczniki* and *Tourism* data

Compared to the general development rate of hotels in Poland in 1990-2015, 5-star and 3-star hotels grew more rapidly, both in number and capacity. The increase in number clearly preceded the increase in capacity resulting from a tendency to invest in smaller facilities (on average in 2015, up to 130 rooms with 246 beds for a 5-star hotel, and 45 rooms with 90 beds for a 3-star hotel). 4-star hotels showed a higher development rate as regards number, but lower for capacity, compared to hotels in general, which also points to a tendency to invest in smaller hotels (up to 100 rooms with 202 beds, on average). Lower category hotels (2* and 1*) had a lower development rate, both in terms of number and capacity, compared to hotels in Poland in general. They were usually small with an average of 35 rooms with about 58-70 beds in 2015.

The uneven increase in the number and capacity of hotel caused changes in their overall organisation which can be expressed by the structural transformation co-efficient (W_p)⁹. The calculated values for this coefficient present a more objectivized and concise picture of the changes taking place, and comparison of the coefficient values across the whole period of 1990-2015 points to extensive structural change in the number of hotels (0.344), hotel rooms (0.227) and beds (0.257).

4. THE REGIONAL DIVERSIFICATION IN THE NUMBER AND CAPACITY OF HOTELS: 1995-2015

The growth in the number and capacity of hotels from 1995 to 2015 displayed quite significant regional diversification. The variation coefficient (V) for the

number of hotels in 1995 was 48.2% which increased to 51.7% by 2015; this was stable in terms of the number of rooms, with a V value of 65.5%, while for beds it dropped from 67.3% in 1995 to 66.0% in 2015.

In presenting the increase in the number of hotels and hotel rooms on Fig. 2, provinces can be divided into four groups: 1) those which showed an increase in both number of hotels and number of rooms exceeding the national average; 2) those which showed an increase in the number of hotels above the national average but lower for number of rooms (more hotels but with smaller capacity); 3) those which showed a smaller increase in the number of hotels, but greater in the number of rooms (fewer hotels but larger); 4) those which showed a smaller increase in the number of hotels and hotel rooms than the national average. The division of provinces into these four groups is presented in Fig. 2.

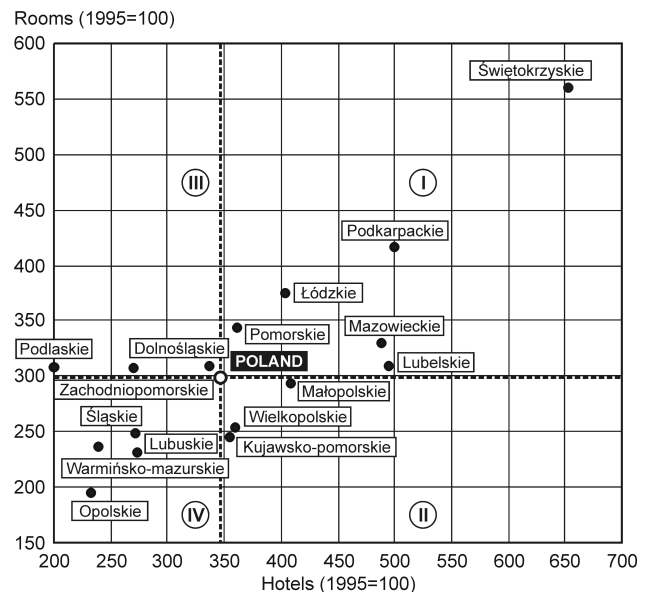


Fig. 2. Increase in the number of hotels and beds: 1995-2015 (1996 = 100.00)

Regions with fewer hotels (before 1995) but with tourism assets, showed the greatest increase in hotel infrastructure by 2015. Above all this took place in Świętokrzyskie Province, where the number and capacity increased more than five-fold, as well as Podkarpackie Province (four-fold), followed by Lubelskie, Łódzkie and Pomorskie (four times more hotels and three times larger capacity). Hotels showing a tendency towards rapid development also included Mazowieckie and Małopolskie Provinces (showing, however, a slightly lower increase as regards hotel capacity), which in 1995 had had the greatest hotel infrastructure in Poland, but mostly in Kraków and Warsaw. In 1995-2015, investments were made in hotels not only in those cities but also outside

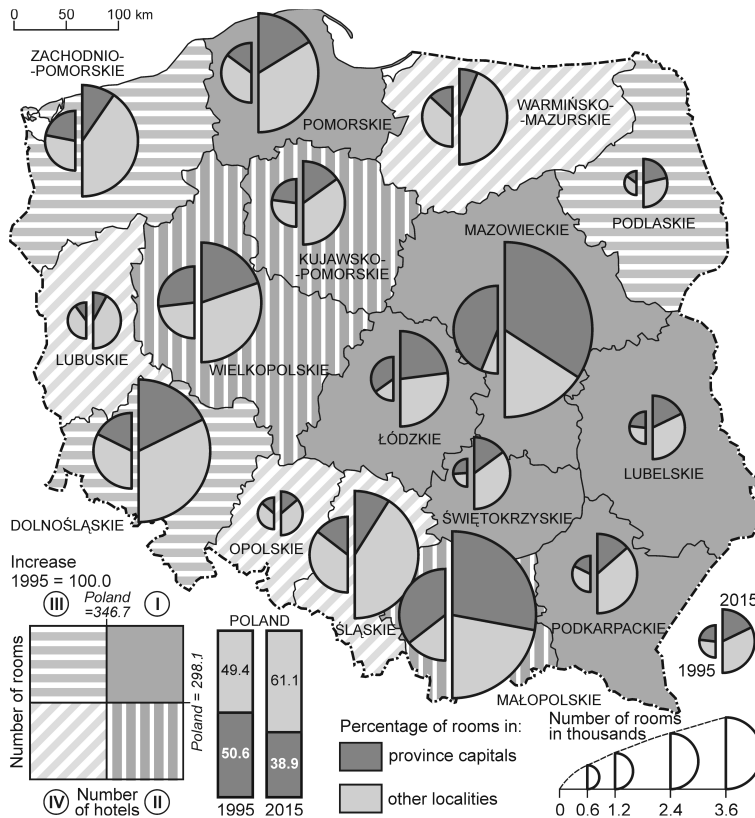


Fig. 3. Increase in the number of rooms in hotels in Poland: 1995-2015

them in areas offering favourable tourism assets but situated nearby. This resulted in an over four-fold increase in the number of hotels and a three-fold increase in their capacity in both regions. Similarly, Zachodniopomorskie and Dolnośląskie Provinces, which had a considerable hotel infrastructure, had increased it over three times by 2015. The growth in other provinces was smaller, but it nearly doubled as well. These provinces included those which in 1995 had a large number of hotels with a large capacity (Śląskie, Wielkopolskie, Kujawsko-Pomorskie), and those with average to significant tourism assets (Warmińsko-Mazurskie).

From 1995 to 2015, the growth in the number and capacity of hotels in province capitals was smaller than in surrounding areas, with exceptions in Gdańsk and Białystok, as well as Opole and Rzeszów, as regards hotel capacity. As a result, most of them decreased their share in their region (Fig. 3). Again, the exceptions included Gdańsk, Białystok, Opole and Rzeszów. This indicates investors' growing interest in locating hotels outside the main provincial administrative centres. Despite the fact that the majority of hotels are still concentrated in the largest cities (one to two thirds), they considerably lowered their share (by

several per cent) over the period 1995-2015 as a result of a more rapid development in the surrounding regions.

In nearly all provinces, the hotels opened in 1995-2015 usually had a smaller number of rooms, (Fig. 4). The exceptions were Podlaskie and Zachodniopomorskie Provinces where new hotels typically had a slightly larger number. Province capitals also showed a tendency towards investing in smaller hotels, exceptions here were Katowice, Białystok, Opole and Wrocław where in 2015 hotels usually had more rooms than in 1995. In provincial administrative centres, the new hotels typically had a larger number of rooms than those in the surrounding regions, but even there (in nine provinces) it was possible to notice a tendency towards building hotels with a larger number of rooms in 2015 than in 1995.

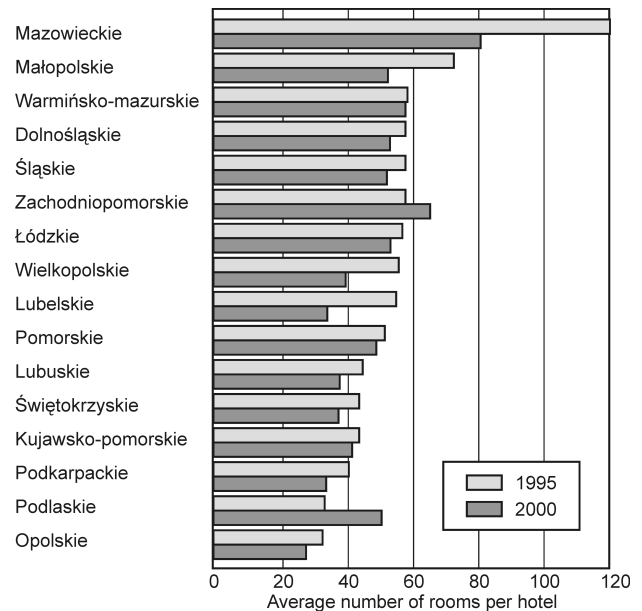


Fig. 4. Changes in the average number of rooms per hotel: 1995-2015

Changes in the number of hotel rooms in individual provinces over the period from 1995 to 2015 are illustrated by the growth rates in the number of hotel rooms per 10,000 inhabitants and per 100 km² (Fig. 5). In 1995, the differences in the number of rooms per 10,000 inhabitants were relatively large ($V = 44\%$). In

half of the provinces, index values dropped below the national average, and there was a 4.5-fold difference between extreme values. An even greater difference was observed in that year as regards the number of rooms per 100 km² ($V = 72\%$). In as many as nine provinces, it was lower than the average for Poland, and there was a 12-fold difference between extreme values. By 2015, difference generally remained at a high level, but showed a falling trend; as regards the number of rooms per 10,000 inhabitants ($V = 38\%$), there was a three-fold difference between provinces, but as regards the number of rooms per 100 km² ($V = 67\%$), it was still large at 11-fold. The largest increase in both indices could be found in the southern and northern regions and in the province including Warsaw (Fig. 5). They were mostly very attractive tourism areas, highly urbanized and well-developed economically.

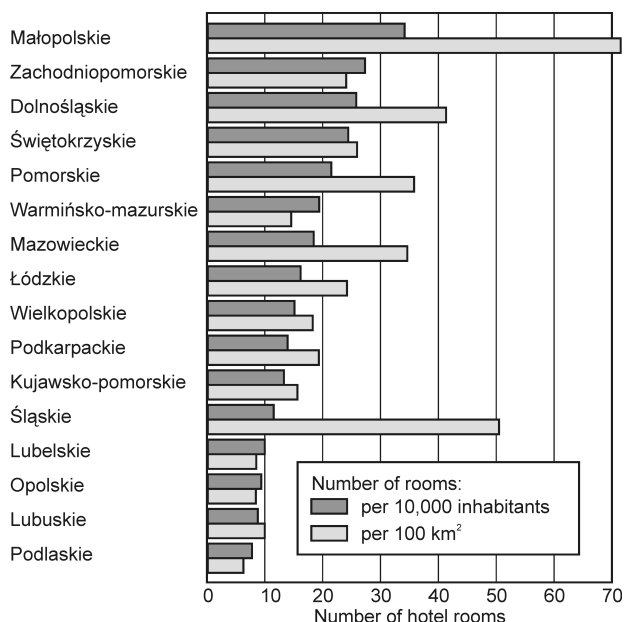


Fig. 5. Increase in the number of hotel rooms in 1995-2015 per 10,000 inhabitants and per 100 km²

The period 1999-2015 brought changes in terms of hotel categories. The scale of those changes differed among the provinces due to varying increases in the number and capacity of specific hotel categories. A pattern could be found however; the higher the category, the greater the increase.

In order to evaluate similarities with regard to hotel categories in provinces, the structural diversity index (W_0) was used (ROGACKI 2009, p. 216)¹⁰. It was calculated for 1999 and 2015. In 1999, the greatest similarity in terms of category was shown by the following pairs of provinces: Kujawsko-Pomorskie – Śląskie (0.039), Łódzkie – Podkarpackie (0.042), Małopolskie – Śląskie (0.046). On the other hand, the greatest difference was between Mazowieckie Province

and nearly all others (except Warmińsko-Mazurskie – 0.185), where W_0 fell within the 0.215-0.434 range, for example for Lubuskie (0.434), Łódzkie (0.394) and Lubuskie Provinces (0.378).

Index W_0 can be interpreted as analogic to taxonomic distances in a multi-variate analysis (ROGACKI 2009, p. 217), which lets us build up a 'dendrite of similarities'. Similarities of the first order make it possible to distinguish three groups of regions (Fig. 6). In all provinces, the largest percentage of rooms was found in 3-star hotels. Only in Mazowieckie Province, was the percentage of rooms in 4-star hotels and in Zachodniopomorskie Province in 1-star hotels was similar to that in 3-star.

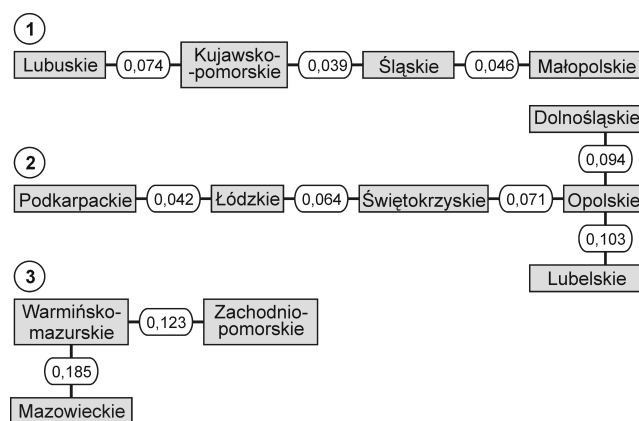


Fig. 6. 'Dendrites' of provinces with the highest degree of similarity by hotel category: 1999

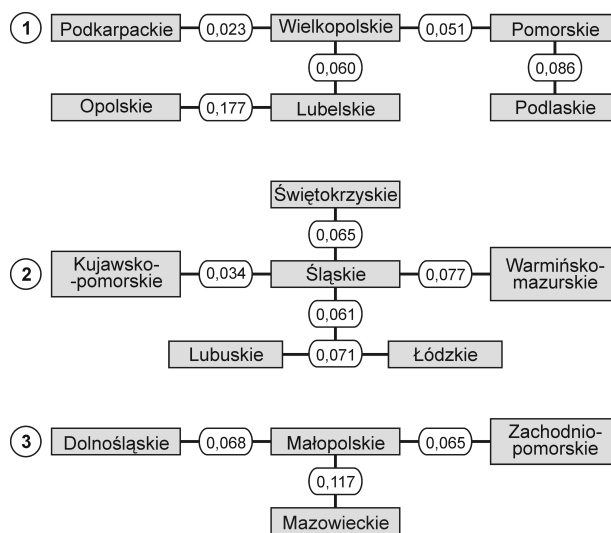


Fig. 7. 'Dendrites' of provinces with the highest degree of similarity by hotel category: 2015

In 2015, the situation was different. With regard to hotels typical of a given category, the regions had become more similar. Similarities of the first order made it possible to divide the provinces into three groups as well, but of a different composition (Fig. 7). The first group consisted of six provinces grouped

around Podkarpackie – Wielkopolskie Provinces (0.023). The second group (six provinces) was formed around Kujawsko-Pomorskie – Śląskie pair (0.034), while the third group included provinces with valuable tourism assets (Małopolskie, Zachodniopomorskie, Dolnośląskie) as well as Mazowieckie Province. In all the provinces, the percentage of rooms in 3-star hotels was still the highest. However, in the Warmińsko-Mazurskie, Małopolskie, Mazowieckie, Śląskie and Zachodniopomorskie provinces, the percentage of rooms in 4-star hotels was similar, and after including 5-star hotels, considerably larger than in 3-star hotels. The percentages of rooms in lower category hotels (2-star and 1-star) were much lower than in 3-star hotels.

5. FACTORS INFLUENCING THE INCREASING NUMBER AND CAPACITY OF HOTELS IN POLAND

In the literature, it is indicated that an increase in hotels largely depends on general socio-economic development (e.g. KNOWLES & EGAN 2001) of a country (region), as well as, to a certain degree, on its tourism attractiveness.

The increase in hotel rooms in 1999-2015 was strongly related to the tourism attractiveness of the province (Pearson’s correlation coefficient: $r = 0.692$), growth in GNP ($r = 0.736$), total capital expenditure ($r = 0.791$), and GFCF ($r = 0.726$). The mutual correlation of the five analysed variables was estimated based

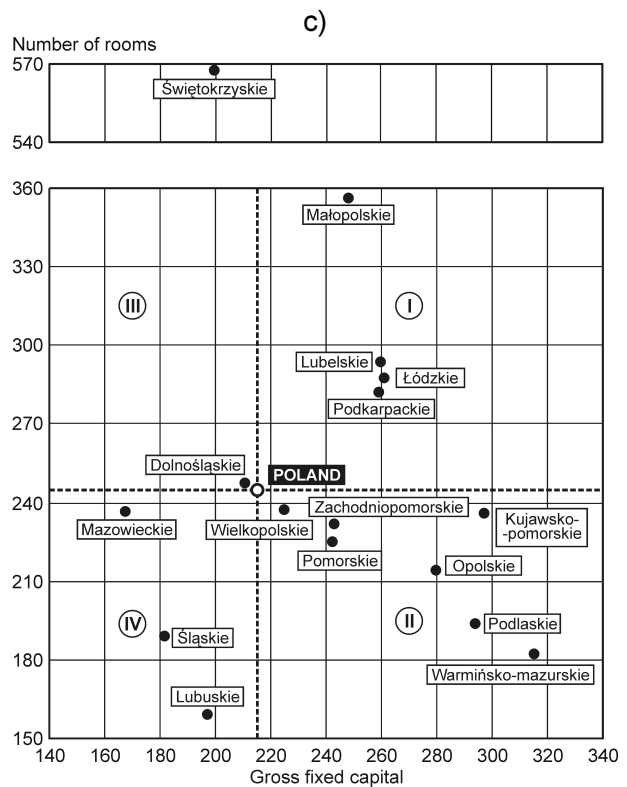
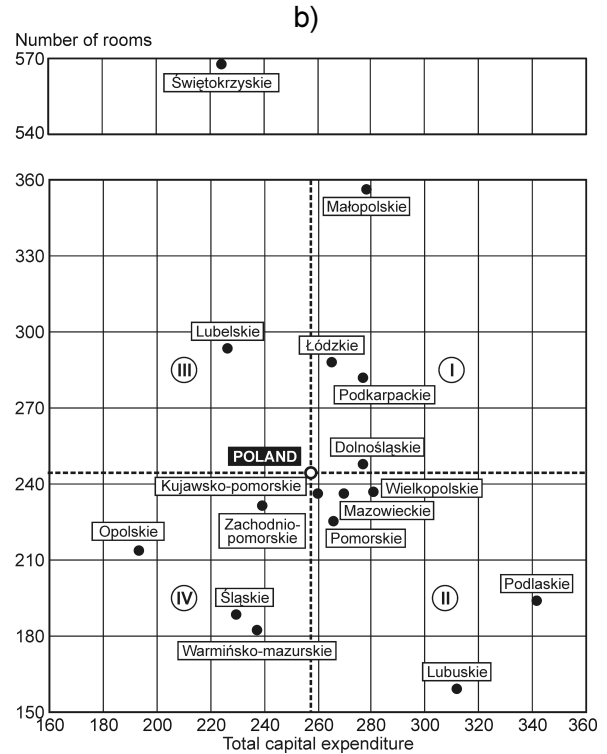
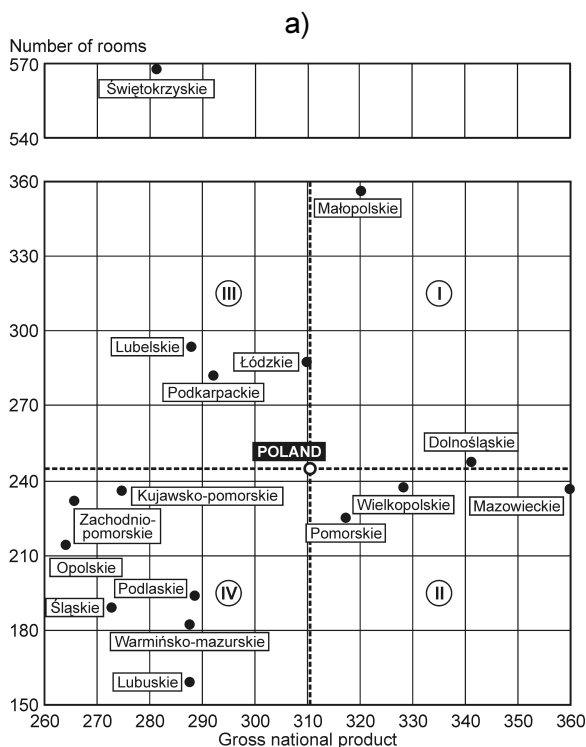


Fig. 8. Increase in hotel rooms, gross national product (a), total capital expenditure (b), gross fixed capital (c)

on Kendal & Babington-Smith’s convergence correlation coefficient r_w (Steczowski & Zeliaś, p. 174, quoted after: RUNGE 2006, p. 508), which is a normalized correlation measure ($0 < r_w < 1$). The value of the con-

Table 3. Convergence between the increasing number of hotel rooms with increasing GNP, total capital expenditure and GFCF: 1999-2015 (1999 = 100.00)

No.	Province	Group											
		One			two			three			four		
		GNP	TI	GFCF	GNP	TI	GFCF	GNP	TI	GFCF	GNP	TI	GFCF
1	Dolnośląskie	+		+								+	
2	Kujawsko-Pomorskie					+	+					+	
3	Lubelskie		+					+		+			
4	Lubuskie						+					+	+
5	Łódzkie	+	+	+									
6	Małopolskie	+	+	+									
7	Mazowieckie				+		+						+
8	Opolskie					+						+	+
9	Podkarpackie		+	+				+					
10	Podlaskie					+	+					+	
11	Pomorskie				+	+	+						
12	Śląskie											+	+
13	Świętokrzyskie							+	+	+			
14	Warmińsko-Mazurskie					+						+	+
15	Wielkopolskie				+	+							+
16	Zachodniopomorskie					+						+	+

Key: GNP – gross national product; TI – total investment; GFCF – gross fixed capital.

Source: author.

vergence coefficient for indicated variables was $r_w = 0.778$, which was high. The tool used to verify its significance was χ^2 (chi-squared) test. The calculated value of χ^2 was 291.75, a value placed in the table at $\alpha = 0,05$ was 24.996, thus the correlation ($\chi^2_{obl.}$) $\chi^2_{tab.}$) between the increase in the number of hotel rooms by province in Poland in 1999-2015, and tourism attractiveness, increased GNP, total capital expenditure and GFCF, was highly significant.

Fig. 8 (a-c) and Table 3 compare the increasing number of hotel rooms with growth in GNP, total investment and GFCF in 1999-2015. They show that in Group 1 (an extraordinary growth for all indices) and Group 4 (growth in all indices below the national average), a clear convergence between the increasing number of rooms and the indices illustrating socio-economic development of regions. Group 3 included provinces (Świętokrzyskie, Lubelskie and Podkarpackie) where the increase in hotel rooms was higher than socio-economic development. Hotels were invested in because it was expected that in the future they would stimulate the socio-economic development of those regions. They all possess recognized tourism assets, still waiting to be properly developed. In Group 2 (especially in Pomorskie, Wielkopolskie, Mazowieckie, Podlaskie, Kujawsko-Pomorskie Provinces), the increase in hotel rooms could not catch up with the regions' wider socio-economic development.

The comparative analysis confirms the correlation between number of hotel rooms in different regions and their wider socio-economic development (represented by an increase in GNP, total investment and GFCF, as well as their tourism attractiveness).

6. CONCLUSIONS

The transformation of the economic system (after 1989) as well as joining the European Union in 2004 caused an acceleration in socio-economic development, including hotels which increased 4.5 times between 1990 and 2015. This increase is illustrated by the exponential trend function, pointing to growth acceleration in subsequent years. The increase in number of hotels in Poland was accompanied by proportional changes in hotel categories. A particular increase was noted in the highest categories (5* and 4*), while medium category hotels (3*) still dominated, and the significance of economy hotels (2* and 1*) definitely decreased. The distribution also changed. Hotels in areas which were touristically attractive but had a less developed tourism infrastructure were growing faster. Nevertheless, there are still large disproportions among provinces as regards hotel resources. Also, a pattern was confirmed that an increase in hotels in Poland (and in individual regions) largely depends on the economic situation. Similar to tourism assets, economic growth was beneficial for the development of the hotel infrastructure.

ENDNOTES

¹ A. SEMMERLING (2016) writes that in 2001-12, a total of 21 billion zloty was invested in hotels (which can be estimated at about 1% of the total spent on all investments in Poland over that period – *author's comment*). Investment in hotels was also supported with EU funds, e.g. in 2007-2013 EU subsidies for hotel investment reached 765,5 million euros (SEMMERLING 2016).

² The tourism attractiveness index for provinces has been calculated by the Central Statistical Office as the arithmetical mean of the tourism attractiveness index for *powiats* (which takes into account cultural, environmental and business-hotel attractiveness) belonging to a given province (*Turystyka* 2015, p. 162).

³ According to J. WARSZYŃSKA & A. JACKOWSKI (1979, pp. 181-182): "In 1929, in Poland, there were about 1,700 hotels offering about 17,000 rooms and about 1,200 guesthouses with about 20,000 rooms. The majority of hotels were small and very modestly furnished". Referring to Fularski's work (1935), the authors continue: "According to treasury statistics, out of 4,031 hotel establishments and furnished rooms for rent, the first category made up only 0.1%, and the second category - 14.4%. Most beds were found in 3rd (50.4%) and 4th (35.1%) category establishments".

⁴ J. WARSZYŃSKA & A. JACKOWSKI (1979, p. 186) report that initially (in the three-year plan period of 1946-49), the main objective was to secure the hotel infrastructure that had remained after the war and to make the necessary repairs. In 1950-55, investments in tourism were withheld. A breakthrough year in tourism development was 1967, in which planned policy was started.

⁵ So-called 'closed facilities', available only to certain groups (e.g. the employees of a given institution/workplace), including FWP (Workers' Holidays Fund centres, workplaces, trade unions, public institutions and organizations, sanatoriums).

⁶ So-called 'open facilities', publicly available, including hotels, motels, guesthouses, excursion houses, tourist shelters, campsites.

⁷ According to the PKO BP sector analysis conducted in May 2016, the hotel market comprised 24 Polish (145 hotels and over 16,000 hotel rooms) and 15 international (158 hotels and over 25,000 rooms) hotel chains. The hotel network in Poland was relatively small. The mean percentage was about 12%, but it was strongly varied regionally: highest in Mazowieckie (22%), and Łódzkie (18%) Provinces, lowest in Opolskie (3%), Podkarpackie (4%) and Lubuskie (4%) Provinces. In large cities, the hotel network was much better developed, e.g. in Warsaw (80%), Katowice (77%) and Łódź (69%). The hotel chains consisted mostly of the highest categories: 5-star (53% of hotels and 72% of hotel rooms) and 4-star (27% and 50%, respectively). Lower category hotels (1*-3*) usually remained outside chains (under 10% of hotels in a given category). The distribution of hotel chains in Poland has been presented by T. NAPIERAŁA (2013).

⁸ K. WOJDACKI (2015) uses the exponential trend function for the description of the increase rate of hotels in Poland, in 1995-2013.

⁹ It was proposed after H. Rogacki (2009, p. 114). It is calculated according to the following formula:

$$W_p = \frac{1}{200} \times \sum |a_{i(t_1)} - a_{i(t_2)}|'$$

where W_p - structural transformation index, $a_{i(t_1)}$ - percentage of hotels (rooms, beds), of categories 'i' initially distinguished in Poland, $a_{i(t_2)}$ - percentage of hotels (rooms, beds) of the categories distinguished in the final period. The index value falls within the 0-1 range. In 1990-2015, the higher the value was, the greater the structural change (measured with the percentage of hotel categories).

¹⁰ According to H. ROGACKI (2009, p. 216),

$$W_o = \frac{1}{200} \times \sum_{i=1}^n |a_i - b_i|'$$

where W_o - structural difference/ dissimilarity index, a_i - the percentage of province a in the number of rooms in hotels of

category "i"; b_i - percentage of province b in the number of rooms in hotels category 'i'. Structural dissimilarity index values (W_o) fall within the 0-1 range. The higher the value of W , the more diverse the structure of hotel rooms by category. With an index value = 0, the compared provinces have an identical pattern of hotel rooms by category.

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