

THE QUADRUPLE HELIX VERSUS BARRIERS TO LOCAL DEVELOPMENT: THE EXAMPLE OF 'DUAL MUNICIPALITIES'

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Manuscript received: May 1, 2024

Revised version: July 7, 2024

CYBULSKA M., MANTEY D., DZIEMIANOWICZ W., 2024. The quadruple helix versus barriers to local development: The example of 'dual municipalities'. *Quaestiones Geographicae* 43(4), Bogucki Wydawnictwo Naukowe, Poznań, pp. 169–178. 3 figs, 3 tables.

ABSTRACT: The article addresses the issue of local collaborative relationships between groups of different development actors in municipalities, as well as their perception of barriers to development. The study covered Polish municipalities that represent different dimensions of development dualism. The analyses used the results of 629 questionnaires and applied statistical analysis (Mann–Whitney *U* test and Spearman's rank correlation). The results indicate that the assessment of the importance of different types of relationships and barriers to development varies within some dualisms. At the same time, certain characteristics specific to certain dimensions of these dualisms can be discerned. The relationship between the importance of cooperation and the types of barriers to development showed no statistical significance or very weak relationships.

KEYWORDS: quadruple helix, cooperation, barriers to development, development duality

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Introduction

The concept of dualism, which posits the existence of two opposing realities described by opposing conceptual categories, reveals the mechanisms of development through the use of a simplification involving the prominence of two opposites and the reduction of intermediate situations. At the same time, the existence of dualisms encourages the search for a causal force that maintains the existing dividing lines (Mantey 2020).

The existence of these oppositional realities is evidenced by economic differences in space. These differences are primarily driven by the heterogeneity of development incentives, which

include factors such as development potential, level of wealth, quality of education, actions taken by the administration, climate or geographical conditions, as well as historical conditions, and cultural and social capital (Dziemianowicz et al. 2022). The consequence of these differences may be economic dualism, which is the co-occurrence in the economy of dynamic and stagnant sectors and areas that function relatively independently of each other (Lipowski 2000, Bolonek 2007).

The dualism of development therefore originates in the development incentives available and the opportunities and willingness to utilise them. Development can be defined as a process of change that is both directed and irreversible,

with the structure being the primary subject of these changes (Chojnicki 1989). This process can be understood as a combination of constraints and opportunities for action (Mantey 2020). Likewise, socio-economic development is defined as the implementation of directed and irreversible changes to the structure of society and socio-economic systems (Chojnicki 1999).

The concept of development incentives is divided into two categories: factors and determinants. Parysek (2018) defines the former as endogenous in nature and posits that their absence acts as a barrier to change, particularly in relation to an individual's strengths and weaknesses. Some of the factors are external to the individual, as evidenced by the classic division of development theory into endogenous and exogenous factors (Nelson 1993, Malizia, Feser 1999). However, the ability to exploit factors or eliminate external barriers appears to be crucial (Leigh, Blakely 2017). In contrast to factors, determinants of development are identified with external circumstances that favour the change taking place.

The concept of developmental dualisms can be understood as a direct consequence of two distinct approaches to the relationship between acting actors and developmental stimuli. This is analogous to the structure versus subject causation dualism, as outlined by Archer (1995, 2007). The dual nature of development is expressed in terms of the fact that acting subjects shape developmental stimuli and, at the same time, are themselves shaped by these stimuli. Furthermore, the level of freedom of acting subjects modifies the way in which the two interact (Fig. 1). The

freedom, opportunity and capacity to act and take a variety of initiatives, that is to say, making individuals acting as causal agents (Davidson 1998), is contrasted with a strongly constraining structural-institutional context and low self-consciousness of agency, which inhibits development. This implies that the determination of the degree of autonomy of acting units (Mantey 2020) is of pivotal importance in the field of development research. This is because it is responsible for the formulation of development aspirations, the mobilisation of internal and external resources, activity in shaping the conditions for development and, in general, the perception of barriers and opportunities for desired change.

Given that all four types of actors are in mutual relationships, it follows that development is largely dependent on social capital. This is understood after Coleman (1990) as a network of relations and cooperation between various actors, but also as a shared culture, trust and civicness. This is in line with the studies by Putnam (1993) and Fukuyama (1995). The availability of social capital, understood as a network of relations and cooperation between various actors, results in cognitive resources such as information and normative resources such as trust. These resources permit actors to achieve objectives that would otherwise remain unrealised or that could only be obtained at a significantly higher cost. Social capital can significantly affect the creation of appropriate human capital and the efficient allocation of both physical and financial capital, through effective cooperation between local actors (Triglia 2021).

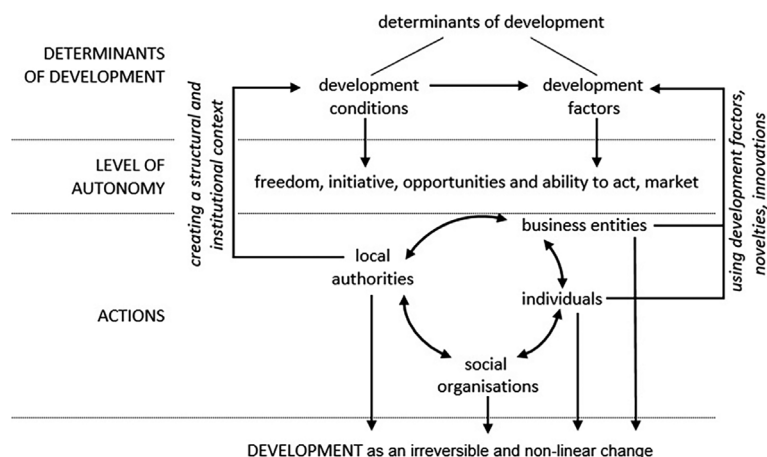


Fig. 1. Relationship between development incentives and actors in the socio-economic development mechanism based on Mantey (2020: 527).

The relationships between various groups of actors involved in the development process determine the creation of synergistic effects that contribute to the resolution of the development challenges facing a given territorial unit. The theoretical concept that encompasses the relations between actors involved in development processes is the quadruple helix (QH) model (Leydesdorff 2012). This model posits that the relationships between individual participants of the network are based on the principle of cooperation rather than on the principle of subordination of some entities dynamising development processes to others (Nowakowska 2011). This model builds upon the triple helix model (Etzkowitz, Leydesdorff 1997), which identified the relationships between academia, decision-makers, and business in the knowledge triangle. It focused on generating innovations for the economy, thereby contributing to the development of a knowledge-based economy (Etzkowitz 2008). In the QH concept, a fourth helix is introduced, namely civil society, which is engaged through the establishment of connections between public authorities, business, and universities/education systems. In this context, the community plays a pivotal role as the primary users of the triple helix system. The outcome of collaboration between citizens, entrepreneurs, the education system and political decision-makers in the context of existing partnerships, cooperation networks and symbiotic relationships is innovation (Herodowicz et al. 2023). The role of the community is to provide information on their

needs and expectations in relation to innovations (Arnkil et al. 2010). According to the QH theory, the economic structure of a territorial unit is constituted by four helices, namely synergistic collaboration schemes, adaptability, and continuous innovation. These elements can encourage economic growth (Afonso et al. 2012).

In the light of the key conceptual concepts presented, three hypotheses are formulated, linking the issues of the QH, barriers to development and the specificity of dualisms:

Hypothesis 1. The impact of different collaborative relationships on municipal development, as perceived by local stakeholders, varies according to the dimensions of dualism.

Hypothesis 2. The barriers impeding the municipal development as perceived by local stakeholders exhibit differences across the dimensions of dualisms.

Hypothesis 3. There is a correlation between collaborative relationships and perceptions of barriers to local development.

Methodology

Study area

The following steps were taken to identify the municipalities that best exemplified the selected dimensions of dualism (Fig. 2):

- analysis of statistical data for 2016–2018, where duality-specific indicators were se-

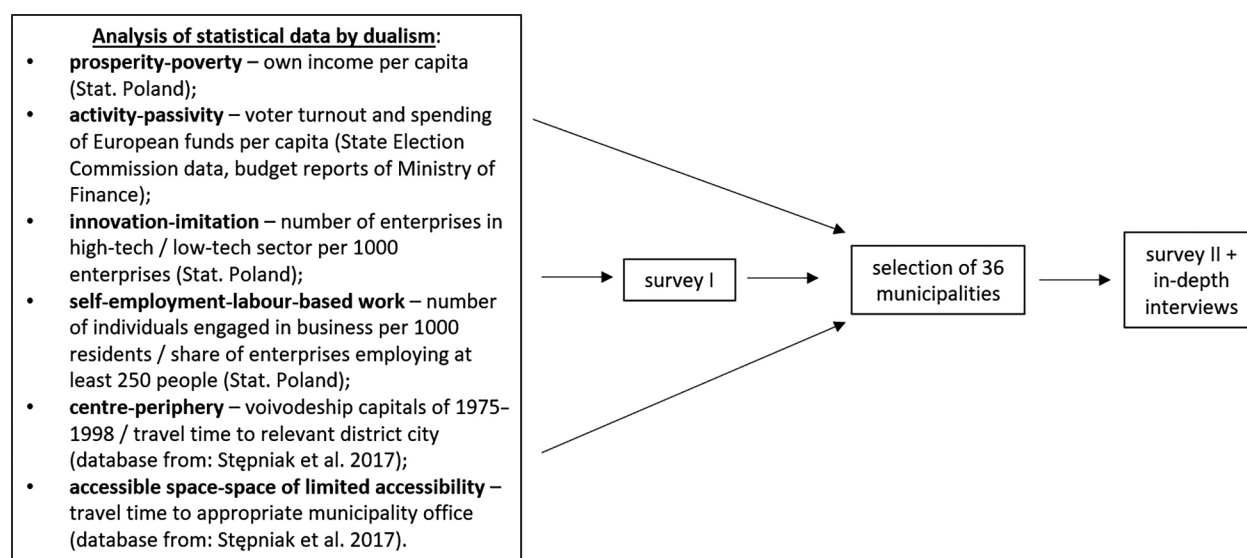


Fig. 2. Survey scheme for dual municipalities.

lected and Polish municipalities were ranked according to maximum or minimum values. A total of 25 units were selected for each dimension, with some of them having several dualities assigned (for a visual representation of this process please refer to Fig. 3),

- survey of local authorities to identify and/or confirm the key features of the municipality's duality,
- selection of the main dimension of duality for the municipality (Fig. 3) based on the co-occurrence of characteristics. This was done by ranking the municipalities according to their high or low position in the data, which was relevant to the duality of the characteristics identified by the local authorities.

The second survey and in-depth interviews with local stakeholders were conducted in 36 selected municipalities (six per duality) with the objective of identifying in detail a number of factors, including barriers to development, collaborative relationships and development aspirations.

Materials and methods

The data analysed were derived from the secondary survey, which comprised 629 questionnaires from 36 municipalities in Poland. The survey was conducted between 2022 and 2023, but included questions about the period 2010–2021. The questionnaire was completed by representatives of various communities, including local authorities, entrepreneurs, social organisations and non-governmental organisations (NGOs). The data did not meet the requirements of parametric tests (scale of measurement, homogeneity of variance and equality of groups), therefore, in order to verify hypotheses 1 and 2, i.e. to identify differences in the occurrence of phenomena between duality dimensions, the non-parametric Mann–Whitney *U* statistical test was applied. Spearman's correlation analysis was employed to ascertain the interrelationships between collaborative relationships and barriers (Hypothesis 3).

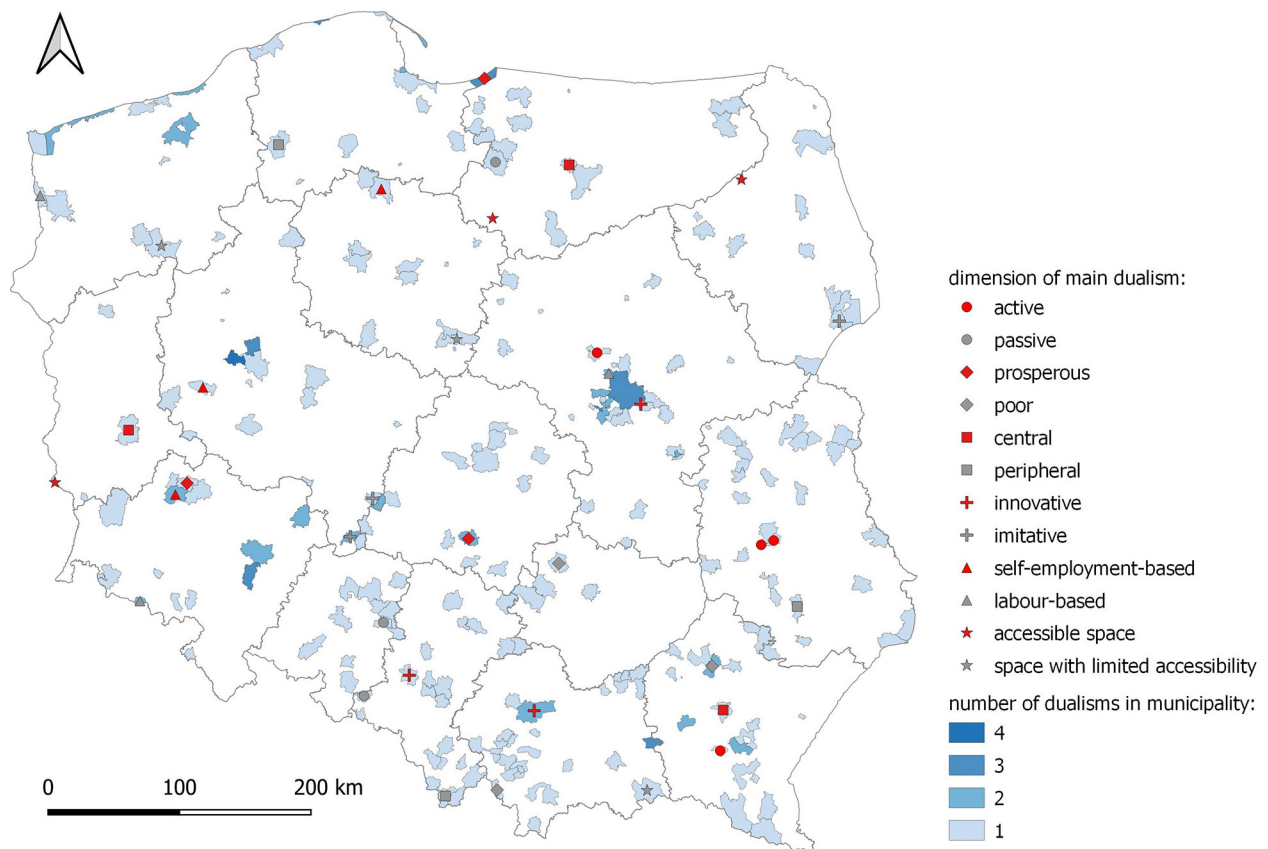


Fig. 3. Dual municipalities in Poland based on the available data (see Fig. 2).

Results

The responses indicate that there are differences in the impact of individual collaborative relationships on the development of the municipality, depending on the dimensions of the dualisms. However, this is not always the case and not in every dualism (Table 1).

The greatest discrepancies were observed in the centre-periphery dualism, with more favourable evaluations observed in the peripheral

municipalities. The only exception was in the case of business-to-business relations, where no differences were identified. No differences were observed within the accessible space and space with limited accessibility dualism. The assessment of each type of relationship differed by a maximum of two dualisms, which already indicates some specificity. Furthermore, the results of the Mann-Whitney *U*-test indicated the presence of specific relationships within some dualisms:

Table 1. Mann-Whitney *U*-test results for assessing collaborative relationships (rating the impact of relationships in the municipality on its development – on a scale of –2 to 2, where 2 is definitely positive).

Collaborative relationships	Mann-Whitney test statistics	Active	Passive	Poor	Prosperous	Central	Peripheral	Imitative	Innovative	Labour-based	Self-employment-based	Accessible space	Space with limited accessibility
Local administration – local administration	Average rank	35.2	28.0	50.0	41.4	65.7	107.1	63.7	49.4	49.2	42.6	38.9	41.5
	Z	–1.634		–1.524		–5.536		–2.474		–1.229		–0.994	
	Significance	0.102		0.128		<0.001		0.013		0.219		0.320	
Local administration – business	Average rank	33.4	37.4	48.8	47.9	73.8	93.0	62.2	55.8	52.0	38.6	40.4	38.5
	Z	–0.894		–0.160		–2.570		–1.090		–2.548		–0.435	
	Significance	0.371		0.873		0.010		0.276		0.011		0.663	
Local administration – science / education	Average rank	39.0	29.2	50.9	44.2	71.1	100.0	61.1	54.9	49.7	40.9	40.9	36.8
	Z	–2.218		–1.138		–3.849		–1.049		–1.735		–0.926	
	Significance	0.027		0.255		<0.001		0.294		0.083		0.354	
Local administration – residents / non-governmental organisations	Average rank	37.7	33.5	53.7	41.0	69.0	106.3	62.7	52.1	51.1	42.2	39.5	38.5
	Z	–0.925		–2.202		–4.904		–1.862		–1.675		–0.218	
	Significance	0.355		0.028		<0.001		0.063		0.094		0.828	
Business – business	Average rank	30.1	37.4	43.7	54.7	76.4	70.8	46.7	59.9	45.7	40.5	38.7	36.1
	Z	–1.662		–2.001		–0.749		–2.343		–1.012		–0.553	
	Significance	0.096		0.045		0.454		0.019		0.311		0.580	
Business – science / education	Average rank	32.0	30.7	45.5	47.2	73.0	88.8	49.6	55.9	42.3	44.0	36.3	34.6
	Z	–0.290		–0.287		–2.163		–1.099		–0.341		–0.390	
	Significance	0.772		0.774		0.031		0.272		0.733		0.696	
Business – residents / non-governmental organisations	Average rank	33.4	33.7	46.1	50.7	69.0	96.8	52.6	55.7	45.9	43.7	37.7	36.3
	Z	–0.085		–0.848		–3.763		–0.553		–0.447		–0.310	
	Significance	0.932		0.396		<0.001		0.580		0.655		0.757	
Science / education – science / education	Average rank	31.4	35.6	47.0	43.1	67.2	99.5	51.9	54.5	45.1	44.9	35.2	39.1
	Z	–0.917		–0.665		–4.453		–0.454		–0.027		–0.877	
	Significance	0.359		0.506		<0.001		0.650		0.978		0.381	
Science / education – residents / non-governmental organisations	Average rank	34.6	34.3	44.1	50.9	63.9	105.4	53.3	56.0	43.6	46.9	37.5	38.7
	Z	–0.061		–1.265		–5.741		–0.851		–0.655		–0.274	
	Significance	0.951		0.206		<0.001		0.395		0.513		0.784	
Residents / non-governmental organisations – residents / non-governmental organisations	Average rank	34.8	37.7	46.7	49.2	67.3	97.6	50.5	57.2	41.4	51.2	38.6	39.5
	Z	–0.676		–0.437		–4.144		–1.212		–1.938		–0.187	
	Significance	0.499		0.662		<0.001		0.225		0.053		0.852	

Colour for statistically significant results ($P \leq 0.05$).

Data from the survey (N = 629) were compiled using the PS IMAGO PRO solution, whose analytical engine is IBM SPSS Statistics.

Table 2. Mann-Whitney *U*-test results for assessing the level of significance of the barrier (rating on a scale of 0 to 5, where 5 means the problem is crucial).

Barriers	Mann-Whitney test statistics	Active	Passive	Poor	Prosperous	Central	Peripheral	Imitative	Innovative	Labour-based	Self-employment-based	Accessible space	Space with limited accessibility
Difficulties in accessing EU development funds	Average rank	31.9	42.9	54.6	42.6	70.2	112.2	69.3	53.0	47.5	47.4	39.1	41.1
	Z	-2.315		-1.973		-5.329		-2.623		-0.020		-0.409	
	Significance	0.021		0.049		<0.001		0.009		0.984		0.683	
Difficulties in accessing national development funds	Average rank	32.0	42.8	55.8	39.6	75.6	99.3	63.4	57.5	48.7	45.7	40.9	39.0
	Z	-2.291		-2.688		-3.090		-0.950		-0.537		-0.404	
	Significance	0.022		0.007		0.002		0.342		0.591		0.686	
Decline in quality of services provided by municipality	Average rank	35.1	38.5	53.0	46.3	73.6	104.1	60.0	60.0	45.1	51.0	37.0	43.5
	Z	-0.683		-1.091		-3.903		-0.014		-1.061		-1.299	
	Significance	0.495		0.275		<0.001		0.989		0.288		0.194	
Decreasing investment opportunities for local authorities	Average rank	30.4	45.1	53.4	38.3	78.1	93.3	57.2	62.1	44.7	51.7	42.7	37.0
	Z	-3.102		-3.023		-2.058		-0.790		-1.257		-1.209	
	Significance	0.002		0.003		0.040		0.429		0.209		0.227	
Reducing wealth of population	Average rank	30.0	45.6	58.0	34.5	75.9	98.4	67.6	54.3	48.8	45.6	41.4	38.5
	Z	-3.250		-3.918		-3.018		-2.139		-0.577		-0.640	
	Significance	0.001		<0.001		0.003		0.032		0.564		0.522	
Ageing of local community	Average rank	31.2	43.9	53.5	45.2	75.8	98.7	64.3	56.8	52.9	39.5	41.2	38.7
	Z	-2.894		-1.544		-3.336		-1.270		-2.474		-0.579	
	Significance	0.004		0.123		<0.001		0.204		0.013		0.562	
Decreasing population in municipality	Average rank	26.1	51.0	54.5	42.6	71.8	108.5	70.0	52.5	52.8	39.7	41.3	38.6
	Z	-5.191		-2.172		-4.801		-2.826		-2.383		-0.585	
	Significance	<0.001		0.030		<0.001		0.005		0.017		0.559	
Decreasing number of active NGOs	Average rank	29.9	45.7	51.9	48.9	75.5	99.5	66.6	55.1	50.1	43.7	40.8	39.1
	Z	-3.258		-0.488		-3.051		-1.839		-1.148		-0.344	
	Significance	<0.001		0.626		0.002		0.066		0.251		0.731	
Decreasing number of businesses	Average rank	31.6	43.4	57.8	34.9	75.9	98.4	66.7	55.0	54.0	37.9	39.3	40.8
	Z	-2.445		-3.862		-2.959		-1.874		-2.916		-0.292	
	Significance	0.014		<0.001		0.003		0.061		0.004		0.771	
Young people moving out of municipality	Average rank	32.5	42.1	52.7	46.9	75.9	98.4	68.3	53.8	53.5	38.7	41.2	38.6
	Z	-2.137		-1.158		-3.136		-2.379		-2.652		-0.615	
	Significance	0.033		0.247		0.002		0.017		0.008		0.539	
Difficulties in accessing knowledge	Average rank	32.7	41.8	53.6	44.8	73.2	105.1	75.0	48.8	50.2	43.6	36.8	43.6
	Z	-1.872		-1.448		-4.040		-4.273		-1.193		-1.362	
	Significance	0.061		0.148		<0.001		<0.001		0.233		0.173	
Decreasing transport accessibility / accessibility to municipality	Average rank	31.1	44.0	55.4	40.5	70.5	111.6	73.3	50.2	49.8	44.1	38.0	42.3
	Z	-2.675		-2.560		-5.272		-3.689		-1.026		0.939	
	Significance	0.007		0.010		<0.001		<0.001		0.305		0.348	
Pandemic effects	Average rank	39.8	31.8	52.5	47.5	77.0	95.8	53.0	65.3	50.2	43.5	38.7	41.5
	Z	-1.648		-0.887		-2.506		-1.995		-1.217		-0.603	
	Significance	0.099		0.375		0.012		0.046		0.223		0.547	

Colour for statistically significant results ($P \leq 0.05$).

Data from the survey ($N = 629$) were compiled using the PS IMAGO PRO solution, whose analytical engine is IBM SPSS Statistics.

- in the activity-passivity dualism, differences only occurred in the evaluation of the local administration – science/education relationship,
- in the labour/self-employment-based dualism, differences occurred only in the assessment of the local administration–business relationship.

The respondents' indications of the relevance of the barriers also differ between the dimensions

of the dualisms. However, as in the assessment of the collaborative relationship, these are differences of varying degrees that appear in the different dualisms (Table 2). The greatest discrepancies were observed in the centre-periphery pair, where all barriers were perceived to be statistically more significant problems in the peripheral municipalities. Once more, no differences were observed in the accessible space and

Table 3. Spearman's correlation results for the co-occurrence of development barriers and the impact of relationships on municipal development.

Relations ((-2)-2) Barriers (0-5)	Local administration – local administration	Local administration – business	Local administration – science / education	Local administration – residents / non-governmental organisations	Business – business	Business – science / education	Business – residents / non-governmental organisations	Science / education – science / education	Science / education – residents / non-governmental organisations	Residents / non-governmental organisations – residents / non-governmental organisations
Difficulties in accessing EU development funds	0.133** (p) 0.001	0.097* 0.016	0.029 0.481	0.083* 0.041	0.032 0.441	-0.008 0.854	0.039 0.353	0.047 0.266	0.069 0.097	0.058 0.163
Difficulties in accessing national development funds	0.073 0.076	0.064 0.114	0.040 0.332	0.069 0.090	0.014 0.734	0.042 0.321	0.072 0.085	0.049 0.238	0.083* 0.046	0.086* 0.037
Decline in quality of services provided by municipality	-0.026 0.534	-0.099* 0.015	-0.081* 0.048	-0.061 0.137	-0.031 0.464	0.008 0.844	0.050 0.227	0.045 0.284	0.027 0.516	0.046 0.269
Decreasing investment opportunities for local authorities	-0.039 0.350	-0.040 0.327	-0.058 0.154	0.009 0.832	-0.016 0.711	0.035 0.406	0.007 0.861	0.003 0.936	-0.024 0.562	0.024 0.556
Reducing wealth of population	0.049 0.236	0.046 0.256	0.020 0.622	0.071 0.082	0.017 0.693	0.066 0.119	0.054 0.198	0.110** 0.009	0.060 0.146	0.057 0.167
Ageing of local community	0.077 0.064	0.060 0.143	0.006 0.879	0.070 0.087	0.067 0.108	0.085* 0.044	0.049 0.239	0.106* 0.011	0.054 0.191	0.058 0.157
Decreasing population in municipality	0.092* 0.0027	0.032 0.437	0.005 0.907	0.086* 0.033	-0.063 0.130	0.002 0.956	0.040 0.335	0.127** 0.002	0.069 0.097	0.095* 0.021
Decreasing number of active NGOs	0.050 0.230	0.017 0.680	-0.024 0.559	0.043 0.285	-0.029 0.492	0.040 0.340	0.052 0.212	0.036 0.384	0.036 0.391	0.052 0.212
Decreasing number of businesses	0.062 0.135	0.018 0.654	0.014 0.725	0.077 0.057	-0.011 0.794	0.070 0.095	0.049 0.236	0.107* 0.010	0.044 0.289	0.007 0.873
Young people moving out of municipality	0.014 0.742	0.001 0.986	-0.032 0.430	0.023 0.564	-0.003 0.952	0.039 0.353	0.011 0.801	0.067 0.109	0.052 0.210	-0.015 0.713
Difficulties in accessing knowledge	0.097* 0.018	0.000 1.000	-0.032 0.426	0.044 0.277	0.096* 0.021	-0.032 0.450	0.019 0.643	0.057 0.174	0.054 0.191	0.045 0.279
Decreasing transport accessibility/accessibility to municipality	0.086* 0.038	0.020 0.625	0.012 0.771	0.041 0.317	-0.014 0.734	-0.008 0.855	0.080 0.054	0.103 0.013	0.119** 0.004	0.100* 0.015
Pandemic effects	0.141** 0.001	0.066 0.107	0.066 0.106	0.070 0.087	0.020 0.631	0.090* 0.032	0.125** 0.003	0.164** 0.000	0.190** 0.000	0.152** 0.000

* correlation significant at the 0.05 level.

** correlation significant at the 0.01 level.

Data from the survey (N = 629) were compiled using the PS IMAGO PRO solution, whose analytical engine is IBM SPSS Statistics.

space with limited accessibility dualism. The barriers in the individual dualisms have their own specific characteristics. For instance, the barriers indicated as statistically more significant in the employment-based municipalities are strictly related to the weakness of the labour market and demographic problems.

Statistically significant relationships were identified between the incidence of collaborative relationships and barriers to development. However, the strength of these relationships was weak, and no linear relationship was observed (values <0.2) (Table 3). The strongest relationships were observed between the barrier of 'pandemic effects' and the six types of cooperation. Conversely, there are also barriers and relationships that do not show any relationship, as well as such 'pairs' that can be considered specific:

- reducing the wealth of the population and science/education/education relationship,
- reducing the number of actors and science/education/education relationship.

Given the rating scale employed in both questions, it is of particular interest to examine the relationships of a negative nature. These include the co-occurrence of negative relationship ratings with a high level of barrier relevance, as well as the reverse relationship. The only relationships of a negative nature are those between the barrier 'deterioration of the quality of services provided by the municipality' and the relationship between the local administration and business and science/education. The presence of positive correlations, which were numerous, suggests that, despite the municipality's apparent ability to cooperate effectively, it is still struggling to overcome certain barriers. Nevertheless, the scale of the interpretative possibilities indicated above is limited by the weakness of the relationships.

Discussion

The analysis considered selected barriers to local development and key elements of the QH. The results permit the initial hypothesis to be validated to a limited extent. The most frequent statistically significant differences in the importance of cooperation between different actors are observed in the centre-periphery duality. It is noteworthy that peripheral municipalities are more

likely to perceive a positive impact of cooperation on their development. Such responses may be unexpected, given that the network economy is characterised by innovation and wealth, which in turn contribute to competitiveness (Camagni, Capello 2017). In peripheral municipalities with low population potential and poor location conditions, subjective assessments of cooperation may be overvalued. This form of cooperation may not be directly related to competition and innovation, but rather to the construction of a favourable social climate and an adequate quality of life, as Tuziak (2013) has observed.

The second hypothesis has also been corroborated, with the results aligning with intuitive expectations in some instances of dualisms and remaining debatable in others. The majority of discrepancies in the evaluation of obstacles can be attributed to the centre-periphery dualism, thereby substantiating the significance of this issue, which has been acknowledged for numerous years and across diverse socio-economic settings (Perroux 1970, Malikova et al. 2016). The difficulties of passive and poor municipalities in accessing external resources are widely described in terms of both the capacity of the local administration and the matching of resources to the needs of these municipalities (Szlachta, Dziemianowicz 2016). The assessment of barriers in the duality of paid work and self-employment is somewhat less obvious. The results indicate that municipalities based on hired labour are significantly more affected by various barriers than municipalities based on resident entrepreneurship. These findings are consistent with the hypothesis that small-scale entrepreneurship contributes to the flexibility and resilience of territorial units (e.g. Williams et al. 2013, Strykiewicz et al. 2014). Conversely, the distinction between imitation and innovation is most pronounced in the perception of limited access to knowledge, which is particularly emphasised in imitation municipalities. It remains unclear whether this is due to the characteristics of social capital, the quality of human capital, or the nature of the municipality. The latter may lack adequate institutional facilities internally as well as in the neighbourhood (Dziemianowicz et al. 2017).

The third hypothesis, which has been partially verified, indicates that there is a correlation between collaborative relationships and

perceptions of barriers to local development. However, the strength of this relationship is relatively weak. A robust barrier, such as the challenge of accessing European funds, is positively correlated with effective local administration and local administration cooperation. This suggests that horizontal networks of institutional cooperation may not necessarily lead to overcoming development difficulties through learning (Perry 2010). Conversely, the effects of the pandemic, which were acute in a group that highly values collaborative relationships, mainly within the local community and with learning and education, suggest that this may be a result of having to deal with lockdowns. During the pandemic, the education system underwent a period of significant reorganisation, accompanied by shifts in social relationships (Carrion-Martinez et al. 2021).

Conclusions

The concept of dualisms is a pervasive feature of both socio-economic and political life. The demonstrated differences between municipalities from different dualisms can be used as an argument in the discussion about the shape of local policies. The identification of specific solutions (e.g. how to reduce the effect of a particular barrier on the development of a municipality) should be done at local level and take into account the full specificities of the municipality.

However, above all, the results point to the necessity of regional and central policies for different territories. In order to be effective, evidence-based policies must be tailored to the specific characteristics of the territory in question. The objective is not to identify the most effective regional instruments for development, but to determine the most appropriate response of local communities to instruments that are tailored to their needs. Subsequently, the potential for synergies can be explored. The results obtained can be the beginning of a discussion (and further research) on the design of areas of strategic intervention.

We are aware that the survey carried out obviously has some limitations, which are related, among other things, to the different number of questionnaires in municipalities and dualities, which necessitated the use of less sensitive statistical methods. At the same time, however, it

allowed units of different sizes but still characterised by similar features to be compared with each other. Further studies of dualisms should be aimed at extending the time series studied (and therefore also use other methods – such as panel regression) and take into account changing external factors affecting the local level.

Acknowledgements

This paper is the result of the scientific project 'Dualism in commune development in Poland in the context of policies and aspirations of local communities as well as external factors – compared to the chosen communities in the EU', funded by National Science Centre, Poland; grant number DEC-2018/31/B/HS4/00260.

Author's contribution

MC: conceptualisation, data curation, investigation, methodology, visualisation, formal analysis, writing – original draft, writing – review & editing; DM: conceptualisation, investigation, visualisation, writing – original draft, writing – review & editing; WD: conceptualisation, funding acquisition, investigation, methodology, project administration, writing – original draft; writing – review & editing.

The process of investigation which means collecting surveys was led by a broader (than just the authors) project team.

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