

Community cohesion, well-being, and local development

SCIENTIFIC EDITORS: WŁODZIMIERZ OKRASA, DOMINIK ROZKRUT



Statistical Research Papers
Volume 2

SCIENTIFIC EDITORS:
WŁODZIMIERZ OKRASA
DOMINIK ROZKRUT

Community cohesion, well-being, and local development

Reviewers

Czesław Domański, PhD, DSc, ProfTit (University of Lodz, Department of Statistical Methods)
Krzysztof Zagórski, PhD, DSc, ProfTit (Kozminski University, Department of Social Sciences)

Language editing and proofreading

Statistics Poland, Statistical Products Department, Scientific Journals Division

Editorial work

Statistical Publishing Establishment – team supervised by Wojciech Szuchta

Printed and bound by

Statistical Publishing Establishment

Publication available at srp.stat.gov.pl

Quoting from the publication requires providing the source

Warszawa 2021

© Copyright by Główny Urząd Statystyczny

ISBN 978-83-66466-39-5 (online version)

ISBN 978-83-66466-40-1 (printed version)

Foreword

It is my great pleasure to present to you a collection of papers based on a series of presentations delivered during a conference under a title similar to this publication – *Community Cohesion and Well-Being and Innovative Local Development*, held on 4 December 2018, organised by the Cardinal Stefan Wyszyński University in Warsaw (UKSW) in collaboration with Statistics Poland. The conference focused on a variety of issues related to local development, which were presented from a scientific standpoint, offering a research-based support for the improvement of the welfare of Polish citizens. The cooperation between our institutions proved optimal for this type of purpose, combining the intellectual capital associated with the university with extensive information resources provided by official statistics.

The conference and the articles presented here provide the results of an empirical exploration of the relationship between the well-being (in its broadly understood meaning) of individuals in a local community and its level of development, and features which constitute the pattern of local development. A particular emphasis has been put on factors of spatially-interpreted community cohesion (a significant aspect of community well-being), starting from a focus on the distinction between ‘urban’ and ‘rural’ areas, and taking into account differences between ‘localities’ (approximated in official statistics by gminas as the lowest level of the disaggregation of territorial units). The operational aspect of this complex issue was analysed through interdisciplinary lenses, most notably using socio-economic approaches, which provided opportunities to present several conceptual, measurement, analytical and application-related viewpoints. These complementary approaches pertained to various forms of dependency of individuals’, families’ and households’ quality of life and well-being on the degree of advancement and the ‘type’ of development of territorial units (such as gminas or micro-regions), and on the differences between them. Therefore, what comes to the foreground of the analysis here is the mutual dependency of the well-being of individuals and that of the local community, considered from the point of view of spatial cohesion – for example examining the compatibility of the effectiveness of development programmes (including those financed by EU funds) and the degree of people’s satisfaction with them. Adopting spatial cohesion, regarded as more general and superordinate to other, typically

distinguished kinds of cohesion, e.g. social, economic or territorial cohesion, as the leading perspective here was intended to direct both the researchers' and the practitioners'/decision-makers' attention to the importance of the 'place' and 'space' in the processes of local development, and the evaluation of its results for (first and foremost) the local community.

The joint consideration of various aspects of quality of life and the well-being of different groups in a population, along with issues relating to the development of local communities and their social security systems implied the need for supplementing diagnostic methods and statistical description with research on the interaction of factors of development and objective well-being in the spatial cohesion processes. Such a multi-level and multi-dimensional nature of the studied problem, although difficult to grasp in all its complexity, is nevertheless addressed by the authors of this publication, who analyse its different aspects (and on different scales): from the social economy approaches referring to 'social solidarity', through several development resources and programmes, to behavioural reactions of the subjects and stakeholders (participants in these processes, agents/actors) and innovative group (societal) behaviours generating/providing social capital, the latter being an indispensable element of sustainable and pro-well-being local development.

President
Statistics Poland



Dominik Rozkrut, PhD

Contents

Introduction	7
Marcin Zarzecki	
The university serving as a platform for the exchange of inter-institutional experiences. With the inaugural laudation of the <i>Community Cohesion and Well-Being and Innovative Local Development</i> international scientific conference	9
Włodzimierz Okrasa	
Community cohesion and well-being in a spatial evaluation approach	15
Elżbieta Bojanowska	
The social economy and social services as factors contributing to social cohesion	47
Anna Barwińska-Małajowicz, Patrycja Żegleń	
Social well-being and the use of EU funds at a local level	63
Marek Cierpiał-Wolan	
Impact of the human development level on net migration in Podkarpackie region	76
Semen O. Matkovskyy, Nataliya P. Lutchny	
A subjective assessment of the quality of life in Ukraine: a regional analysis	93
Artur Czech, Teresa Słaby	
Factors affecting the quality of life of urban households in Poland, excluding households located in the capitals of voivodships	104
Second Bwanakare	
Welfare Social Accounting Matrix (W-SAM) applied to household well-being	119
Izabela Mroczkowska-Białasek	
Social cohesion and human capital	133
Piotr Zawada	
The welfare of local communities. Rzeszów as a smart city – case study	144
Michał Kober	
The importance of non-profit organisations for the local innovative development	158

Introduction

The immediate goal of the conference *Community Cohesion and Well-Being and Innovative Local Development* was to provide a forum for the exchange of experiences and research perspectives among experts, representatives of various scientific disciplines and other entities interested in the issues of the cohesion and well-being of local communities in various types of environments, resulting from local development processes. Although not all of the conference papers are included in this publication, their topics and authors jointly testify to a wide spectrum of multidisciplinary and interdisciplinary approaches from an international perspective, with the participation of representatives of sociological, economic, demographic and other sciences, as well as foreign research centres from countries as different from Poland as China, France, Ukraine, and Nigeria. Last, but not least, inter-sectoral relations, including administration, business and the third sector became of special interest in the context of the impact of local development and local cohesion on the well-being of the society. It is these entities that are actively involved in creating an innovative environment, and special emphasis was put on their participation and civic activity in 'endogenous' development (relating to the 'capability approach' at the local community level).

The paradigmatic research approaches emerging as a result of the combination of the above approaches, focusing primarily on local development and on community cohesion as its particularly important aspect, complement each other when the evaluation perspective is adopted. **Marcin Zarzecki** asserted that the university provides a place for the exchange of inter-institutional experiences, proposing the idea of *Universitas*, which should constitute a platform for the seeking of appropriate solutions to complex issues in collaboration with other entities, particularly in a 'praxeological perspective'. The article by **Włodzimierz Okrasa** precedes other works in terms of the applied methodological thesis which provided considerable analytical benefits due to the explicit inclusion of place and space in the analysis of the determinants of the well-being of the local community and its individual members, at the same time demonstrating the mutual enhancement of development and cohesion-related variables. **Elżbieta Bojanowska's** paper discusses the issue of social cohesion and social integrity of a local community from a social policy perspective. The author examines the influence these aspects have within the social economy / social capital-based framework on solving social problems and increasing quality of life. Activities such as 'offering aid to families, the homeless, social integration clubs and social integration centres' were of particular interest in this respect. **Anna Barwińska-Małajowicz** and **Patrycja Żegleń** investigate the effects EU funds have on social well-being. The authors' findings show that the funds are highly significant for the development of the country's local and regional economies; however, particular local units (poviats) have their own development policies and strategies and allocate the funds according to their individual needs. **Marek Cierpiał-Wolan** used various measures of quality of life to demonstrate its impact

on net migration in the Podkarpackie region. The author showed that the phenomenon is rather complex and modified by intermediary factors, such as the changing living conditions observed in other regions and the inhabitants' tendency to perceive their own living environment as somewhat less attractive than that observed elsewhere. **Semen O. Matkovskyy** and **Nataliya P. Lutchny** examined the quality of life in Ukraine through subjective assessment in order to compare the situation across regions. Their findings demonstrate that the satisfaction with selected aspects of life – such as marital status, relations with friends and acquaintances, means of spending and amount of free time, living conditions, level of education, and financial situation – differ significantly both between and within regions (details were provided for the Lviv region). **Artur Czech** and **Teresa Słaby** applied logistic regression in their search for factors affecting the quality of life of urban households (excluding those located in the capitals of voivodships) and found different patterns of influence for different indicators (aspects of quality of life) and also across regions. The authors concluded that the subjective assessment of households' general situation constituting the main component of quality of life is strongly determined by the geographical diversity of urban households. A relatively new approach to analysing household well-being was presented by **Second Bwanakare**, who used the Welfare Social Accounting Matrix (W-SAM) framework, based on the extended version of the Social Accounting Matrix (SAM, which focuses on transactions in the economy), allowing for an insight into the importance and structure of the sources of well-being interactions defined by the households account, which was disaggregated into 7 sub-accounts corresponding with daily life challenges. This was the first study to analyse the utility preference components of households within a macroeconomic framework as the SAM. **Izabela Mroczkowska-Białasek** analysed social cohesion and human capital from an economic point of view. The author presented the spatial dimension of human capital and emphasised the significance of territorial cohesion in the process of planning human capital investments (in the context of the EU cohesion policy), concluding that their optimal level requires an in-depth analysis of territorial cohesion. **Piotr Zawada** described the welfare of local communities focusing on the 'smart city' concept, selecting Rzeszów as a case study, within which the following aspects were examined: smart economy, smart people, smart governance, smart mobility, smart environment, and smart living. The author asserted that Rzeszów has been successful in the implementation of the smart city concept, most importantly in terms of developing a civil society. **Michał Kober** discusses the importance of the role of non-profit organisations in the context of local innovative development, focusing on how they perform towards satisfying the needs, interests and aspirations of individuals and the needs of a community (such as reducing social inequalities), emphasising the organisations' innovativeness and entrepreneurship.

The featured articles prove that the variety of approaches and conclusions presented by particular authors account for a large spectrum of possible scientific perspectives aimed at supporting local development and ultimately improving the welfare of families, households and individuals.

Last but not least, a word of thanks and appreciation to the specially appointed team in the Scientific Journals Division of the Statistical Products Department of Statistics Poland for their high professionalism demonstrated at each stage of the work on this monograph. On behalf of myself and all the authors involved in this publication, I would like to express my gratitude and wish you further success in your professional endeavours.

Włodzimierz Okrasa

The university serving as a platform for the exchange of inter-institutional experiences. With the inaugural laudation of the *Community Cohesion and Well-Being and Innovative Local Development* international scientific conference

Higher education is currently undergoing a phase of unprecedented and permanent changes, witnessing a historic moment marking the transformation of its structures from those inherent to the industrial era into ones characteristic for the information era, and opening to a spectrum of global issues from the perspective of national research. Along with Poland's accession to the European Union, higher education became additionally subject to fundamental legislative and economic transformations, integrally related to the implementation of the idea of building a European Higher Education Area. After years of undergoing a systemic transformation, the condition of Polish science raises concern: the percentage of Polish works in the index of scientific papers citations is low, and the level of the absorption of EU subsidies for the development of the R&D sector, the innovativeness of entities of the national economy, the percentage of GDP dedicated to the financing of science, all place Poland in the lower quartile of European countries. According to Statistics Poland's demographic forecast and the results of a forecast modelling for age-based educational categories, depopulation trends will become permanent in the future. On the other hand, we can currently observe the internationalisation of educational processes, the establishment of collaboration networks between science, public administration and economy, the development of R&D infrastructure, and organisational reforms at universities with the purpose of building a new quality of Polish science, focusing on the development of application-based solutions to social, economic, legal, etc. problems.

^a Cardinal Stefan Wyszyński University in Warsaw, Institute of Sociological Sciences.
ORCID: <https://orcid.org/0000-0001-5998-8496>.

The complexity of the role universities play in this process of change is consistent with the meta-scientific reflections trend, whose aim is a precise, academic analysis of the environment which the higher education system functions in and the prediction of the direction and scale of any reorganisation science is likely to require. Different approaches present a philosophical, sociological, demographic, legal and economic perspective, creating a coherent picture of the condition of universities and scenarios of their development. Public discussion on the mission of universities often lacks a fundamental, satellite vision of the idea of *Universitas*, which should constitute a platform for the seeking of appropriate solutions to complex issues.

In particular, the attempt to draw relevant conclusions as to the consequences of the implementation of reforms in the higher education sector necessitates finding an answer to an inherently antipodal question – Is the idea of *Universitas* based on a strategy of the adaptation to the social, legal and economic reality, or does it lean towards the revitalisation of universalist foundations rooted in the idea of freedom? After years of transforming and reforming the higher education system in Poland, no consensus has been achieved among the academic community as to the fundamentals of the development of the *Universitas* concept. Instead, two opposing heuristic models, the corporatist and the idealist, seem to be dominating. The aim of the *Community Cohesion and Well-Being and Innovative Local Development* conference is not the development and popularisation of a ‘third option’, nor the indication of a linear developmental determinism of higher education; but the event is rather a starting point for the reflection on the mission of universities and their collaboration with other entities, particularly in a praxeological perspective. The classical idea of both the Kantian and Humboldtian ‘free university’ (*die frei Universität*) should be recalled here with full awareness. It involves building a partnership within a given environment, creating a platform for the exchange of transdisciplinary experiences, and, above all, educating on the need of undertaking positive and moral social activity, encouraging subjectivity through a universal dialogue where the multidimensional consequences of changes in social, economic and political structures are emphasised. But first and foremost, the idea defines the role of a university as a catalyst and integrator of social change. After all, the principal task and challenge *Universitas* is charged with is integrating normative aspects into public discourse on a society of law-abiding citizens and democratic state structures that ensures the fulfilment of the idea of the common good (*bonum commune*) in the areas included in the dialogue. As Karl Jaspers wrote in 1923 about the university in his work entitled *The Idea of the University*, freedom of teaching is a fundamental and guaranteed element essential to a university’s functioning. In the broader sense, universities should teach the truth, regardless of any voiced wishes or instructions which might constrain them internally or externally. The university is

where the society and the state allow for a given epoch to ‘cultivate the clearest possible self-awareness’ (Jaspers, 2017, p. 31).

Freedom is the idea of the university which constitutes the overall academic identity. According to Louis Menand (1996): ‘The notion of academic freedom is at the heart of the political and academic struggle for the future of the university’ (p. 4). According to Zbyszek Melosik (2017, p. 23), definitions of academic freedom refer to a document published in 1940 by The American Association of University Professors entitled *Statement on Principles on Academic Freedom and Tenure*. This manifesto advocated the right to freely select one’s own research subject, to present its results, assuming an ‘objective professional evaluation by scientists of equal rank’ (Byrne, 1997, p. 3). He suggested ‘the right to teach freely without feeling threatened that they will be ‘institutionally punished’ for the content and ideas they convey’ (Melosik, 2017, p. 24). He guaranteed ‘the right to speak freely on public issues, as well as the right to be active in political organisations without feeling threatened that they will be ‘institutionally punished’ (provided that they are not ‘indiscriminately involved’ in politics)’ (Melosik, 2017, p. 24). He assumed ‘the right to express their opinions about the policies and priorities of the universities in which they work without feeling in danger of being ‘institutionally punished’ (Melosik, 2017, p. 24). In contrast, according to Richard de George:

Those outside the university – the public, lawyers, boards of trustees – may have their own views, ideas and visions that should be taken into account. But they are not guided by knowledge about the university gained from within it or from one of the academic disciplines, hence they do not have the epistemic authority that can inform the design of the university (Byrne, 1997, p. 3).

The problem with the category of freedom as a component of universities is clearly evident in the scenarios for higher education constructed by the Organisation for Economic Co-operation and Development (OECD). The OECD Education Directorate has set six strategic objectives in the higher education sector: 1) promoting lifelong learning and its links to social life and the economy, 2) evaluating and improving educational outcomes, 3) promoting high quality teaching, 4) analysing the role of higher education in the global economy, 5) building social cohesion through education, and 6) developing scenarios for future development of education systems. As good practices of the above objectives, Centre for Educational Research and Innovation (CERI) has developed a number of international expert projects, e.g. the *Schooling for Tomorrow* project (OECD, 2001a) aimed to identify probabilistic scenarios of higher education development. Models were presented in OECD reports: *What Schools for the Future?* (OECD, 2001b) and *Networks of Innovation* (OECD, 2003), differentiating scenarios by the levels of cooperation of universities with public and private entities of the national economy.

The OECD *Open networking* scenario indicates the internationalisation of institutional and personal links, including multi-sector cluster solutions of science-economy. International exchanges of researchers and students constitute a global network of research and education. Research results are disseminated online in real time, strengthening the processes of their internationalisation. Among other things, the Bologna Process in Europe is an example of the efforts made to standardise study programs and increase the level of internationalisation.

On the other hand, in the scenario called *Serving Local Communities*, universities focus on the compatibility with local missions, being actors involved in local communities, meeting their educational and market needs and participating in finding solutions to specific regional and local problems. The system of financing higher education units is based on a budget subsidy, while the primary role of academic staff is teaching and research work for basic administrative units with the support of local authorities and local entrepreneurs. This model is also characterised by a developed educational offer within the framework of regional senior policy and national culture, with the relocation of advanced economic research to the national or international level.

The *New Public Management* scenario, on the other hand, integrates publicly funded universities with private sector-based funding. In general, higher education institutions function as entities of the national economy in an administrative and economic environment, which creates opportunities for market-based collaboration, cooperating or seeking competitive advantages, pursuing active patenting, and diversifying funding sources. From the perspective of the principles of the scenario, the basic point of reference of the undertaken engagements is the labour market as a recipient of the educational market. The labour market verifies the effectiveness of the higher education system by two basic dimensions: probability of employment (or unemployment or professional inactivity) and achieved remuneration, understood as a valuation of skills acquired during formal education. A proper diagnosis of the reasons for professional inactivity of graduates based on the monitoring of the demand and supply of professions is to allow the formulation of strategies for changes in the education system to better adapt to the needs of the contemporary labour market. Moreover, one of the most important objectives of education is to provide the labour market with graduates of the right quality – i.e. graduates with currently sought-after qualifications and one of the key tasks of modelling the supply and demand of professions is to monitor and diagnose the competence index indicated for elementary professions by representatives of labour market entities. In the *New Public Management* model, opening a new field of study requires the decision-makers to carry out a specific legal and organisational procedure resulting from the current legal order, but mainly to analyse the models of matching education with the

labour market needs. The mismatch between graduates and employers' expectations and, more broadly, adaptability to the cyclical labour market is an issue conditioned by the availability of universities to key information at the level of global, national, regional and local labour markets. This problem concerns the decision-making process in a situation of optimal access to information. One of the key commitments of higher education institutions is therefore to systematically measure the professional biographies of graduates and the needs of employers.

Quite a controversial model of higher education development is the scenario called *Higher Education Inc.* The functioning of universities is determined by demand, business decision-making processes, and competitiveness in the education market. The scenario assumes narrow educational specialisation, market segmentation of educational services, and financing based on the use of public funds to support faculties that are poorly adapted to the economy or on the principle of budgeting specific strategic projects from the perspective of state structures and the dominance of the use of private finances on the principles of research monetisation. The model of higher education development emphasises the consequences of market liberalisation for the progress of universities (Zaręba & Zarzecki, 2016).

The conference entitled *Community Cohesion and Well-Being and Innovative Local Development* touches upon an important and interdisciplinary issue. Moreover, on the 100th anniversary of Poland's regaining independence, we are obliged to assess the imponderables of social, economic and cultural development in the aspect of the local communities' changes and persistence, the shaping of a civil society, and at the mesosociological level – to measure subjective well-being in households.

By joining the debate on the evaluation of local communities in Poland, and above all, on the challenges they are facing, including the impact their functioning has on society, culture, the economy and public policy, and the forecast of the direction the categories of territorial subjectivity will evolve in, we have the opportunity to create effective solutions that would allow the implementation of transparent measures, subject to evaluation and supportive of the development of social capitals.

References

- Byrne, J. P. (1997). *Academic Freedom Without Tenure?*. American Association of Higher Education Press.
- Jaspers, K. (2017). *The Idea of the University*. Warsaw.
- Melosik, Z. (2017). Uniwersytet współczesny i rekonstrukcje wolności akademickiej. *Studia Pedagogiczne*, 50, 23–36. <https://www.czasopisma.pan.pl/dlibra/publication/125842/edition/109805/content>.
- Menand, L. (1996). The Limits of Academic Freedom. In L. Menand (Ed.), *The Future of Academic Freedom* (pp. 3–20). Chicago–London: The University of Chicago Press.

- Organisation for Economic Co-operation and Development. (2001a). *Schooling for Tomorrow. What Schools for the Future? (Education and Skills)*. Paris: OECD Publishing. <https://doi.org/10.1787/19900716>.
- Organisation for Economic Co-operation and Development. (2001b). *What Schools for the Future?*. Paris: OECD Publishing. <https://doi.org/10.1787/19900716>.
- Organisation for Economic Co-operation and Development. (2003). *Towards New Models for Managing Schools and Systems*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264100350-en>.
- Zaręba, & Zarzecki, M. (Eds.). (2016). *Quo vadis universitas? Diagnoza i scenariusze rozwojowe*. Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.

Community cohesion and well-being in a spatial evaluation approach

1. Introduction

The multifaceted character of the relationships between community and individual well-being poses challenges to the operationalisation of the research problem while combining appropriate measures within a comprehensive modelling framework. A hybrid approach adopted in this study, embracing the formal (statistical) and the substantive (sociological) perspectives, starts from the assumption of the relevance of a variety of sources of influence and covariates modifying it. Although the sources of influence differ in many ways, their joint analysis within the established framework allows the adoption of various points of view, both theoretical and methodological. It must be emphasised, however, that there are serious limitations imposed on the empirical analysis by the lack of cohesion between data available from public resources, given their variety (including various surveys and public files of administrative data). For this reason, this data should be integrated within an analytical database constructed specifically for such analyses as described herein.

The identification of key elements of a framework suitable for addressing a set of entangled issues needs to be preceded by a specification of the main dimensions of the problem under investigation (taking into account the above-mentioned data restrictions). It involves the clarification of aspects including the type of goods (material vs. non-material), units of analysis (individual/household vs. grouped /community) and the type of the adopted measures of well-being (objective vs. subjective) (e.g. Maggino, 2017; Okrasa, 2017). On the one hand, community is viewed as one of the key components of well-being and is usually incorporated, directly or indirectly, into the interpretation of well-being through the concept of community cohesion. On the other hand, it might be viewed as a factor affecting well-being, and part of the respective community's multi-dimensional index.

^a Cardinal Stefan Wyszyński University in Warsaw, Institute of Sociological Sciences; Statistics Poland.
ORCID: <https://orcid.org/0000-0001-6443-480X>.

Well-being is a positive physical, social and mental state, and is treated as such in official documents. As described in one of the British government's statements on well-being for policy-makers:

well-being [...] is not just the absence of pain, discomfort and incapacity. It arises not only from the action of individuals, but from a host of collective goods and relationships with other people. It is enhanced by conditions that include supportive personal relationships, involvement in empowered communities, good health, financial security, rewarding employment, and a healthy and attractive environment (Steuer & Marks, 2008, p. 9).

Similar elements can be found in the traditional interpretation of social cohesion (Forrest & Kearns, 2001). It is typically referred to as 'harmonious economic and social development and common wealth disparities standards; redistribution of public finances and of opportunities' (Forrest & Kearns, 2001, p. 2129).

It is worth mentioning here that it was only recently that community cohesion has been recognised in the literature as a category separate from social cohesion (and also from social integration). Before 2001 (riots in the UK), the term 'community cohesion' was used in most cases interchangeably with 'social cohesion' (especially in the context of public policy); a clear separation of these two notions occurred following the publication of the Cattle (2001).

Another problem arises from the fact that the analysis has to be carried out at two levels: local communities and their members, and individual persons (or households). As far as a sample of individuals selected from a community (ignoring its representativeness for the time being) can exemplify a hierarchically structured 'nested data', the 'exposure' is measured at community level and 'outcome' at the individual level (e.g. Subramanian, 2010). Consequently, the best way of comprehending the relationship between the respective measures of well-being – community well-being and individual well-being – would be through multilevel modelling; and this method seems to be effective in this context (e.g. Okrasa, 2017).

The variety of interpretations of community well-being also reflects the complexity of the concept of local community and its qualities, such as community development or community cohesion, which are assumed here to be the main source and mediator, respectively, of the community and the individual well-being interaction. Therefore, some general considerations need to be clarified before the results of the corresponding analysis are discussed.

This paper is structured alongside the following major questions and hypotheses: the next section discusses the general considerations and research assumptions, and provides a brief description of data and the applied instruments, including the multidimensional index of local deprivation (MILD).

The third section is devoted to the role of the public development sources (subsidies) accrued to the local community/gmina. This topic begins with the question of

spatial justice and whether the resources are distributed proportionally according to the gmina's level of needs, as indicated by the size of MILD. For this purpose, spatial statistics are provided jointly with the result of the Marginal Benefit Incidence Analysis, used to check if the subsidies are proportional to the level of local deprivation within voivodships.

The fourth section deals with the differences among the members of communities (gminas) in terms of their well-being, measured by means of the U-index. It is defined through the fraction of time spent on performing activities assessed by respondents as unpleasant, compared to the time spent on all activities performed during the past 24 hours, and also on the basis of household disposable income. This section concludes with the results of the Correspondence Analysis concerning the effect of trust in local authorities on subjective well-being based on self-assessment satisfaction reports.

The final section is devoted to the results of the spatial statistical analysis, which show the autocorrelation tendencies of the selected measures of deprivation and well-being. Consequently, spatial dependency is verified using spatial regression (the spatial error model) for individual well-being regressed on selected measures of community well-being (aspects of deprivation) and also on independently measured satisfaction drawn from certain domains of life.

2. Community cohesion and individual well-being

2.1. General considerations and research assumptions

Although community lies at the core of such derivatives and key concepts in the relevant literature as community development, cohesion, deprivation or well-being, it is rarely defined in an explicit way. Instead, the traditional approach involves determining the degree of 'communityness' that characterises a given social organisation seen from a geographical perspective (Hunter, 2008, p. 20). It starts with the conceptualisation of an 'ideal type' of community, including ecological, socio-structural and symbolic cultural dimensions (as originally proposed by Hillery, 1968). Adding a further specification can prove useful when a community is analysed from a particular point of view – for instance, as an inclusive/exclusive or schooling community (e.g. Roffey, 2013), as a unit of local development (e.g. Capello, 2009), a rural/urban community, a resilient/sustainable community (e.g. *Post-disaster Community...*, 2012), a 'neighbourhood', etc.

Since the concept of community remains somewhat elusive, any arising doubts are also transferred to the context of research on well-being. The definition of community alone is not sufficient to clearly establish the meaning in which this concept appears in the analysis. The above distinctions may be interpreted from the point of

view of the possible functions which community may serve or roles it may play in different contexts. As VanderWeele (2019) noted, several types of community well-being can be distinguished: neighbourhood community well-being, city community well-being, workplace community well-being, family community well-being, school community well-being, religious community well-being, and national community well-being. He proposes a template including items from the six domains relevant to community well-being: flourishing individuals, good relationships, proficient leadership, healthy practices, satisfying community, and a strong sense of mission.

A relatively instrumental approach to community (or just stressing its ‘functionality’) in the context of well-being can be found in the Phillips & Wong (2017) interpretation of community, assuming it to be ‘a modifier that distinguishes it from individual well-being or national well-being. [...] community refers to a geographically bound group of people on a local scale who are subject to either direct or indirect interaction with each other’ (p. 30). In general, community well-being involves both objective and subjective aspects, as a ‘concept developed by synthesizing research constructs related to residents’ perceptions of the community, [...] needs fulfilments, observable community conditions, and the *social* and *cultural* context [...]’ (Sung & Phillips, 2016, as cited in Phillips & Wong, 2017, p. 29). It corresponds with the earlier, and perhaps most frequently quoted definition of community well-being provided by Wiseman & Brasher (2008), describing this concept as ‘the combination of social, economic, environmental, cultural, and political conditions identified by individuals and their communities as essential for them to flourish and fulfil their potential’ (p. 358).

Given the wide array of various types of items needed to construct valid indicators suitable for covering the richness of both material and non-material aspects of well-being, Stofferahn (2006) suggested to group them into three categories of multiple measures: socioeconomic well-being, community social fabric, and environmental indicators of well-being. Such a multi-function-oriented approach can be partly operationalised in characterising community, at least as far as objective aspects are concerned, through using public statistics data from the Local Data Bank of Statistics Poland, as outlined below.

When developing an adequate framework for analysing community and individual well-being, we have to remember that community well-being is not a quality attributed to an individual, but to a group. It encompasses domains essential to human beings’ functioning as inhabitants, to their existence and flourishing in their own ‘locality’, such as: education, transportation, public services, access to culture and the arts, employment opportunities, land use, and parks and recreation. In a model proposed by Kim and Ludwigs (2017) for the measuring of community and

individual well-being within a common framework, the community well-being has three dimensions: objective, subjective and intersubjective. On the other hand, sometimes the term ‘community well-being’ refers in analyses to constructs obtained through the simple aggregation of individual (or household) well-being indicators, as is occasionally reported in the literature. For instance, such a reference can be found in the US State Well-Being Ranking study known as the Gallup-Healthways Well-Being Index.¹ Another approach to subjective community well-being is adopted in the ‘psychology of community’ (e.g. ‘sense of community’, Chavis et al., 1986; Davidson & Cotter, 1991), or in a self-assessment of ‘where we live’ (Allin & Hand, 2017).

There are two typical conditions of community development that are treated as a source of community well-being: equity and sustainability. An equitable community is characterised by qualities such as diversity and tolerance, empowerment embracing fairness, and justice towards all its members. Moreover, adequate access to public services, including health, safety and social assistance, meeting basic needs (food, shelter, etc.) and assuring equal opportunities in order to develop individual potentials, all account for an equitable community. Sustainable development involves concern about the natural environment and ecological values.

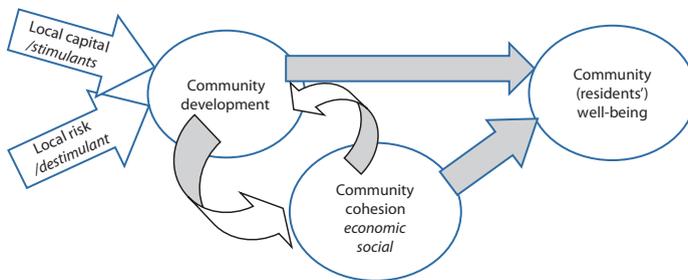
A clear distinction needs to be made between community well-being and community development resources, with a traditional focus in the literature on different types of community capital,² especially on social capital as the most likely ignition spark for the spiralling up of the development process (e.g. Emery & Flora, 2006, p. 22). Nevertheless, the relationship between resources and local capital is considered a critical component of community well-being (Kee, 2017).

According to the structural equation model underlying the forthcoming analysis (see Figure 1), two blocks of (possibly) interrelated variables, representing community development and community cohesion, are assumed to influence well-being in either of the two possible interpretations, i.e. as the community well-being or individual well-being. In other words, these interpretations concern the holistic or distributive approach, when well-being is interpreted either as an attribute of a community (as a unit), or in a collective sense (as an aggregate of values of its members).

¹ ‘Community’ is one of the five dimensions of evaluation – it is defined as ‘linking where you live, feeling safe and having pride in your community’; the other four are: purpose, social, finance and physical (Gallup, n.d.).

² Generally, the following items are listed as types of community capital: natural capital, financial capital, human capital, social capital, physical capital, cultural capital, and political capital (e.g. Emery & Flora, 2006; Okrasa, 2017).

Figure 1. Analytical model – main thesis and hypotheses: community as a ‘place’ with its quality, level of development and cohesion, affecting (subjective) well-being



Source: author's work.

The two types of factors operating as potentials and obstacles for development (or *stimulants* and *distimulants*, respectively), i.e. community capitals and local risk (systemic and idiosyncratic), not only shape the reciprocal influence between the community's level of development and cohesiveness, but also indirectly impact the community well-being. The role of the 'place' becomes prominent in the analysis of the above influences and their determinants. There are two interconnected reasons for this. On the one hand, community cohesion involves creating relationships between individuals conducive to the creation of social capital, which typically comprises such features of a social organisation as 'principally trust, norms of reciprocity and networks of civic engagement' (Kearns & Forrest, 2000, as cited in Coleman, 1990, p. 1000), and such qualities as attachment to the place and identity, i.e. the 'inter-twining of personal and place identity' (Cantle, 2001, p. 13).³ On the other hand, community well-being implies 'satisfaction' of residents with the 'locality' or the neighbourhood. Consequently, the analysis presented in this paper includes both aspects in which community can be operationally interpreted – as a place with a given profile of features, or as a spatial unit in exploration of spatial patterns (clusters) and spatial dependence.

The working hypothesis on the impact of economic factors on community cohesion concerns the policy relating to the allocation of public resources, which is expected to be made according to the principle of spatial justice. Accordingly, the more deprived the gmina as per the local deprivation index, the larger the amount of public resources accrued. Thus, it seems only reasonable to expect a greater reduction of local deprivation among those gminas which were originally more deprived

³ Other characteristics of community cohesion (e.g. according to Cantle's interpretation of the Kearns and Forrest specification), in addition to the attachment to the place and identity, include: common values and civic culture, social order and social control, social solidarity and reduction in wealth disparities, social networks and social capital (Cantle, 2001, p. 13).

(less developed) and, at the same time, more generously endowed with potential. Therefore, the level of a gmina's deprivation can be an indicator of the 'demand for development', while a reduction of deprivation can indicate improvement in the community's cohesion. Of course, policies and programmes include several other aspects besides the economic ones intended to contribute to community cohesion. An interesting interpretation of these issues can be found in a document based on reports of community members (UK Parliament, 2003).⁴

The adopted analytical framework assumes that it is community cohesion that directly affects the community and local capital, while acting as a mediating factor for increasing community well-being. As a result, an implicit expectation about the role of the third sector organisations can be formulated. In contrast to models perceiving community well-being as the direct product of development resulting from the involvement of government and local authorities, the approach proposed in this study emphasises the importance of the locally active non-profit organisations (formal and informal), and civic engagement. They play an important role in mobilising resources for development (especially endogenous development), including generating social capital and mitigating local risk factors, as evidenced in local revitalisation programmes.

For instance, according to the data from the study on revitalisation in gminas (Urząd Statystyczny we Wrocławiu, 2019), a significant partial correlation was observed between the level of subsidies (per person) accrued to the gmina, and the number of non-profit organisations (NGOs) and local associations (per 1,000 residents), indicating the level of local deprivation. However, its intensity was decreasing over the years 2008–2016: from the r -Pearson (partial) equalling 0.31 in 2008 to 0.26 in 2012 and to 0.21 in 2016 (author's calculations).

Since the scope of the third sector organisations' activity in local communities is often identified with social capital (at least as the precondition for it), the two variables – social capital and the third sector activity – are used interchangeably in some calculations, as shown below. The importance of community cohesion as a variable augmenting the influence of a community as a 'place' on the community well-being is also reflected in the further exploration of these relationships. For instance, while the correlation between the level of a gmina's (under)development/deprivation and individual well-being measured with the U-(unpleasant) index is only minor with $r = 0.04$, it increases to $r = 0.19$ after controlling for the level of satisfaction with the

⁴ The key principles stated in this document include: (1) people from different backgrounds should be provided similar opportunities; (2) an awareness of people's rights and responsibilities; (3) people trusting one another and trusting local institutions to act fairly; (4) a shared 'future' and 'sense of belonging'; (5) valuing what communities have in common, alongside the recognition of the value of 'diversity'; (6) strong relationships between people from different backgrounds (see UK Parliament, 2003).

place (an indicator of community cohesion). This latter indicator is, in turn, relatively highly correlated with the level of development (0.24).

2.2. Data and instruments. Multiple-Source Analytical Database

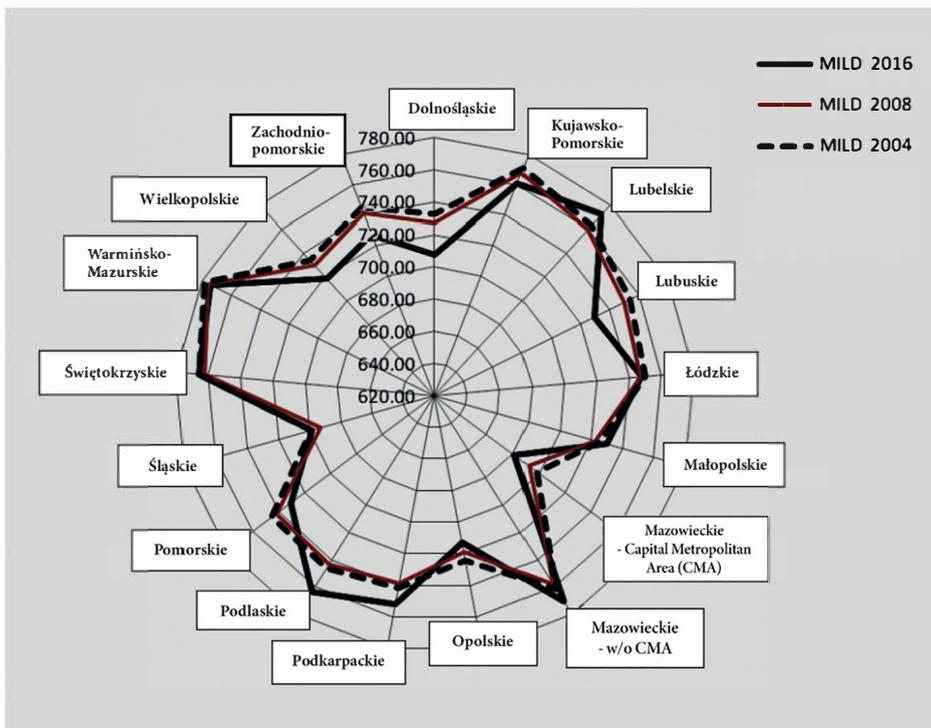
Before employing the framework described above to the relevant data, a brief description of the multiple-source analytical database constructed for this purpose, in terms of its major inputs, is presented below:

1. The data on the community level and the MILD came from public sources, provided by each gmina (LAU2-level) and collected by the Local Data Bank of Statistics Poland. The series of data for the years 2004–2016 were used to create the MILD, which, as mentioned above, is used to determine the level of (under)development/deprivation of each gmina ($N = 2,478$). The Factor Analysis in the confirmatory version was employed to select items based on factor loadings for the first factor extracted for 11 dimensions (pre-selected – each characterised by the number of original items): ecology, finance, economy, infrastructure, municipal utilities, culture, housing, social assistance, labour market, education and health (altogether 65 items) (Okrasa & Gudaszewski, 2017). The selection procedure consisted of the selection of domains and indicators within each area on the basis of factor analysis (principal component analysis), the standardisations in the indicators, aggregation in the index for a given area, normalisations of indicators for each area, and finally a composite aggregation in the global index.

Since the MILD provides major information on gminas and is assumed to be the key variable in the analysis, it enables important differences to be seen between gminas in different regions – as shown in Figure 2.

According to the MILD, Śląskie, Dolnośląskie and Zachodniopomorskie voivodships, as well as Warsaw (the capital of Poland located in Mazowieckie voivodship), are clearly less deprived, or better developed regions. Moreover, there is a strong contrast between the Warsaw metropolitan area and the rest of the Mazowieckie voivodship. In 2004–2016, gminas in the above-mentioned areas along with gminas in Lubuskie and Wielkopolskie voivodships revealed relatively the most significant increase in overall development, i.e. the reduction of local deprivation. On the other hand, only a few regions demonstrated the worsening of their situation (Podlaskie, Podkarpackie and Lubelskie voivodships).

Figure 2. MILD by voivodship, years 2004, 2008, 2016



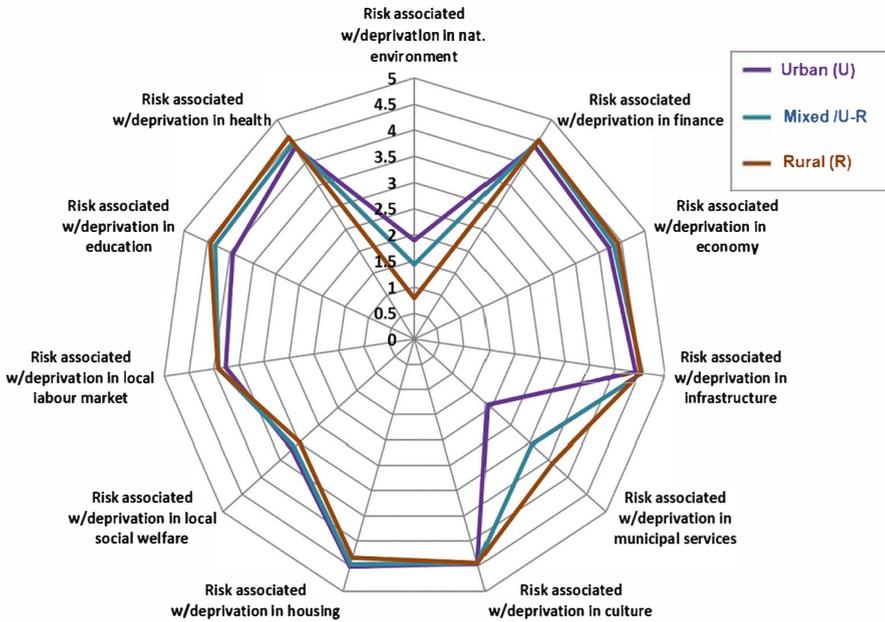
Source: author's work on the basis of data from the Local Data Bank of Statistics Poland.

One of the means of identifying those domains which should be given priority over others in terms of introducing policies focused on pro-community well-being and local development involves the assessment of the scope of risk for each dimension covered by the MILD. The unequal contribution of deprivation in each of the eleven domains to the total value of the MILD also increases when a distinction is made between the three types of gminas – urban, rural and mixed (urban and rural). This is demonstrated in Figure 3, where the risk associated with each of the domains is calculated according to a specific formula, which, in turn, is based on the interpretation of risk most commonly described in the literature (e.g. Rausand, 2011). According to this interpretation, risk is a ‘consequence’ of an event (here local deprivation), and the probability of its occurrence, specified here by a fraction of population defined as the proportion of deprivation in a given domain to the total deprivation in a gmina:

$$Risk_d = \alpha_f \ln MILD + \ln (Population_{gm} \times w_d), \quad (1)$$

where w stands for weight defined as the share of deprivation in domain d in the total deprivation of a gmina, according to MILD.

Figure 3. Risk associated with deprivation in each of the component domains of the MILD in urban, rural and mixed types of gminas (example based on year 2014)



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland.

Most of the domains present quite a similar level of risk in relation to the urban, rural, and mixed types of gminas. The risk is relatively largest in the sphere of health, housing, finance, local economy, and infrastructure. Slightly lower risk relates to deprivation in local social welfare, the labour market and in education. On the other hand, the risk connected with natural environment and municipal services, while remaining relatively low in both areas, forms a contrasting pattern, i.e. the former is the lowest in rural and the greatest in urban gminas, and the latter is the opposite: the lowest in urban and the highest in rural gminas.

2. Individual-level data and (subjective) well-being measures:⁵

- a. The 2013 Time Use Survey (TUS) (*N* = 23,283) by Statistics Poland, used for measuring individual well-being, alternatively referred to as the U-index. It measures the proportion of time the respondent spends on performing an unpleasant or disliked activity, causing them to be in an ‘unpleasant state’ (Kahneman & Krueger, 2006). Since the share of time spent on performing negatively-rated activities was relatively small for most of the performed activities, ‘neutral’ cases were also included in the U-index calculations.

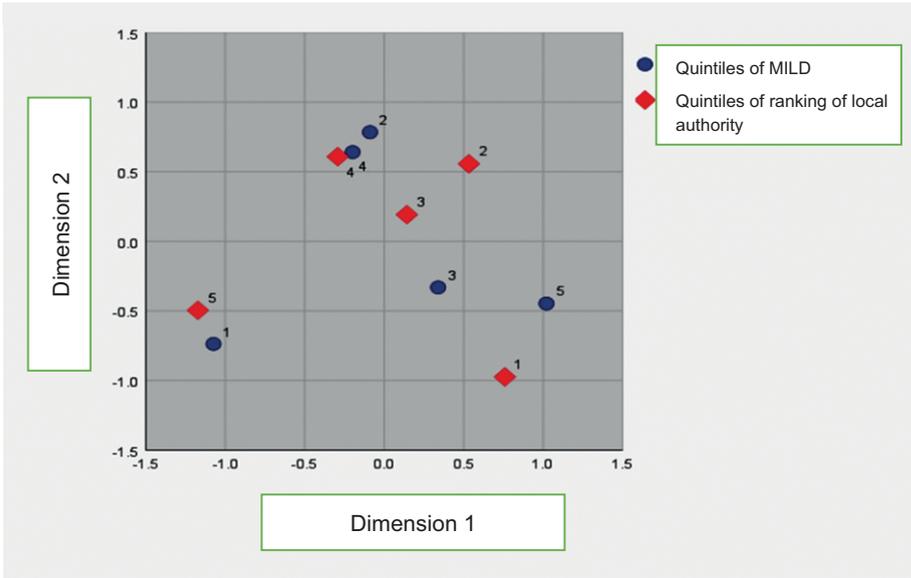
⁵ According to Alkire (2015), the following criteria should be met for an adequate well-being measure: conformity to ‘common sense’ notions of well-being, being able to target the deprived, tracking changes, guiding policy, being technically solid and operationally viable, being understandable and easy to describe, being easily replicable.

- b. Survey Research on Social Cohesion, by Statistics Poland, 2015, for satisfaction- or happiness-type measures of subjective well-being.⁶
- c. Social Diagnosis (SD) 2013 (N = 26,308), a population survey conducted by a university-based research consortium, gathering opinions on important aspects of private life and social situations (carried out every other year since 2003 to 2015); data from the SD are used here to construct indicators of community cohesion based on measures of satisfaction from three place-related domains:
 - locality, housing, security (LHS);
 - social relations in the family, in the neighbourhood, life achievements, self-esteem (FSE);
 - life perspective while living where a person lives / ‘in here’ (LPH).

Local area factors are informative also in other aspects, and they have recently been argued to be among the most important determinants of an overall trust in the government (Organisation for Economic Co-operation and Development [OECD], 2018).

As a digression, the results of the Correspondence Analysis can be cited here – see Figure 4.

Figure 4. Trust in local government serving its communities by their level of local deprivation (MILD 2016) – pattern for selected gminas



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland and 2015 SD.

⁶ Econometric- and psychometric-combined approaches (see also Krueger et al. (2009)), result in the proposal of a U-index as an indicator of emotion, negative vs. positive effects associated with activities (‘time of unpleasant state’):

$$U = \Sigma Ih / \Sigma h \text{ (in TUS: } l = -1, 0, +1 \text{)}$$

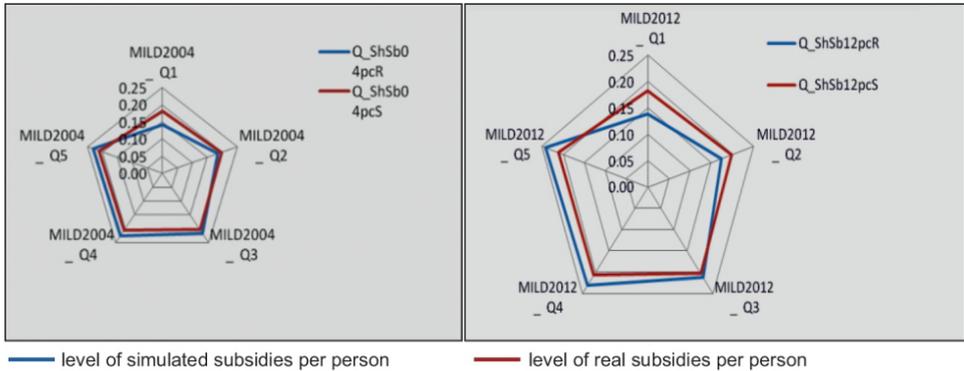
‘Happiness is not all that matters, but first of all, it does matter [...], and second, it can often provide useful evidence on whether or not we are achieving our objectives in general’ (Sen, 2008, as cited in Alkire, 2015, p. 10).

According to Figure 4, a pattern of inhabitants’ high trust in local authorities occurs in most developed gminas (in the 1st quintile of local deprivation), and vice versa – the lowest trust towards authorities is observed among gminas characterised by the highest level of deprivation (in the 5th quintile).

3. Public resources allocation – spatial justice and spatial associations

Since socio-economic characteristics of a gmina determine its demand for development funds, it is justified to expect that the allocation of public subsidies to gminas should be based on the principles of ‘spatial (distributive) justice’, and more specifically, on the Rawlsian version of distributive justice, i.e. the *maximin* principle. Using the same principle, another aspect of community cohesion, i.e. territorial cohesion, could be achieved, contributing at the same time to spatial justice as the base of the resources-allocation policy. Such a hypothesis can be verified by comparing the actual distribution of subsidies with a simulated distribution based on the assumption that resources are allocated to gminas according to the principle of proportionality, using the MILD value as the criterion in the respective basic allocation formula (Okrasa et al., 2006; Okrasa & Cierpiat-Wolan, 2014)⁷ – see Figure 5.

Figure 5. Shares of subsidies accrued to gminas – real and predicted (simulated), proportional to the level of deprivation, by quintiles of MILD, for the years 2004 and 2012



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland.

⁷ The basic allocation formula:

$$b. a. f. \equiv \forall r \left[A(r) \approx \frac{I^r \cdot P^r}{\sum_{i=1}^S I_i \cdot P_i} \right],$$

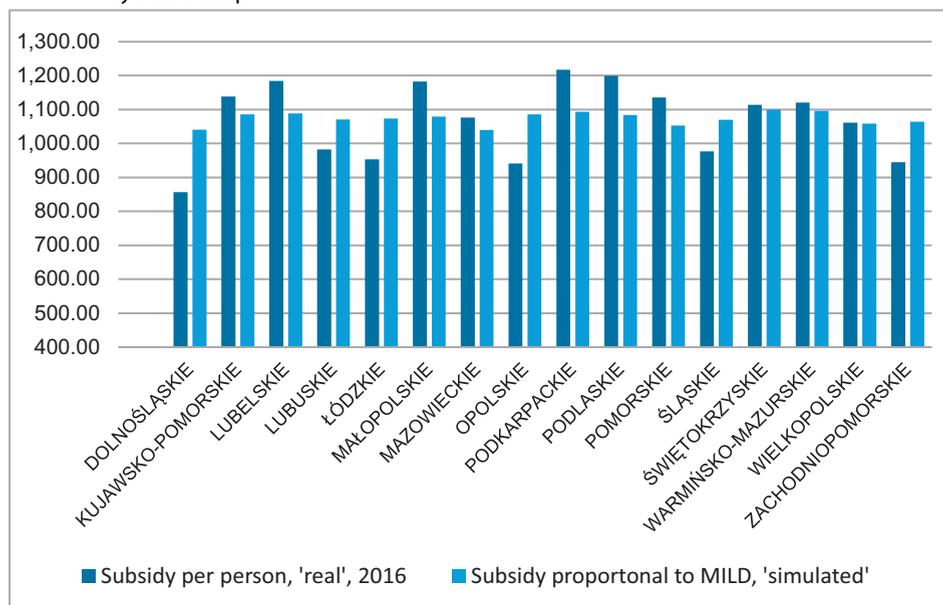
where: I_i and P_i stand for the indicator and population size of the i -th gmina ($i = 1, \dots, S$, and S is a geographic stratum composed of r parts, while r refers to the stratum for which the allocation is being defined, $A(r)$; (Okrasa et al., 2006, p. 1058).

As the fairly regular shape of the charts in Figure 5 suggests, the distribution of subsidies between gminas was generally consistent with the expectations resulting from the principle of spatial justice: less developed gminas (quintiles IV and V MILD) obtained a relatively higher share of subsidies, while the most advanced ones (the smallest quintiles of MILD, Q1 and Q2) scored even less than expected (by the same principle).

This pattern also remains fairly consistent in the geographical perspective, i.e. in cross-regional comparison as shown in Figure 6, which presents the two types of subsidies – real and simulated – for voivodships in 2016. Figure 6 reveals, however, some deviations from the above picture, demonstrating that the actual level of subsidies obtained by gminas was lower than the level expected on the basis of the geographic justice principle, in the following voivodships: Dolnośląskie, Lubuskie, Opolskie, Śląskie, Zachodniopomorskie, and in the capital of Mazowieckie voivodship. Except for the latter, which contrasts with the rest of Mazowieckie voivodship (after dividing this voivodship according to the statistical purposes, as suggested by Eurostat), all the other above-mentioned areas are located in western Poland.

What is also interesting in the context of the distribution of subsidies is the role of local third sector organisations. More specifically, it might be expected that such organisations would be more active in a less developed (or more deprived) living environment.

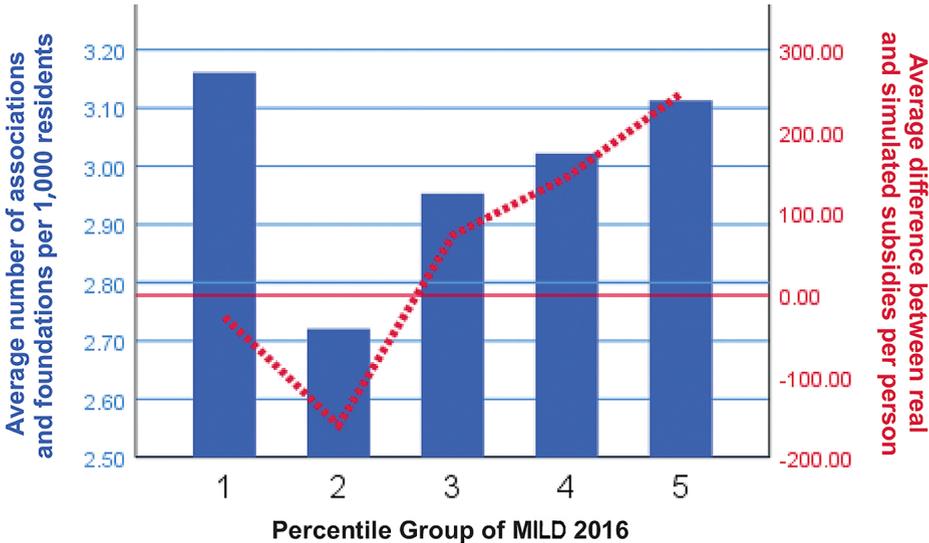
Figure 6. Average subsidies *per capita* actually accrued to gminas, and amounts simulated according to the principle of proportionality by local deprivation – MILD 2016, by voivodship



Source: author's work on the basis of data from the Local Data Bank of Statistics Poland.

Consequently, such gminas should receive more subsidies than their *per capita* amount would otherwise be – as is observed in all voivodships outside western Poland. Moreover, the differences should be proportional to the level of activity of the local NGOs and other organisations formally registered in a gmina. As Figure 7 shows, such trend is generally present in both aspects. Apart from the gminas in the first quantile, generally dominated by the most developed communes in big cities, whose third sector organisations are most active, all the remaining categories show tendencies consistent with the above expectations, i.e. the higher the local deprivation (the less developed gmina), the more active the NGOs and other local organisations, and the bigger share of the subsidies accrued to these gminas, even exceeding the amount expected according to the spatial justice principle. Exceptions are gminas from the two least deprived quintiles, where the actual subsidies are lower than the proportionality rule suggests.

Figure 7. Local associations and foundations per 1,000 residents and average differences between the ‘real’ and ‘simulated’ subsidies in 2016, by quintiles of local deprivation – MILD 2016



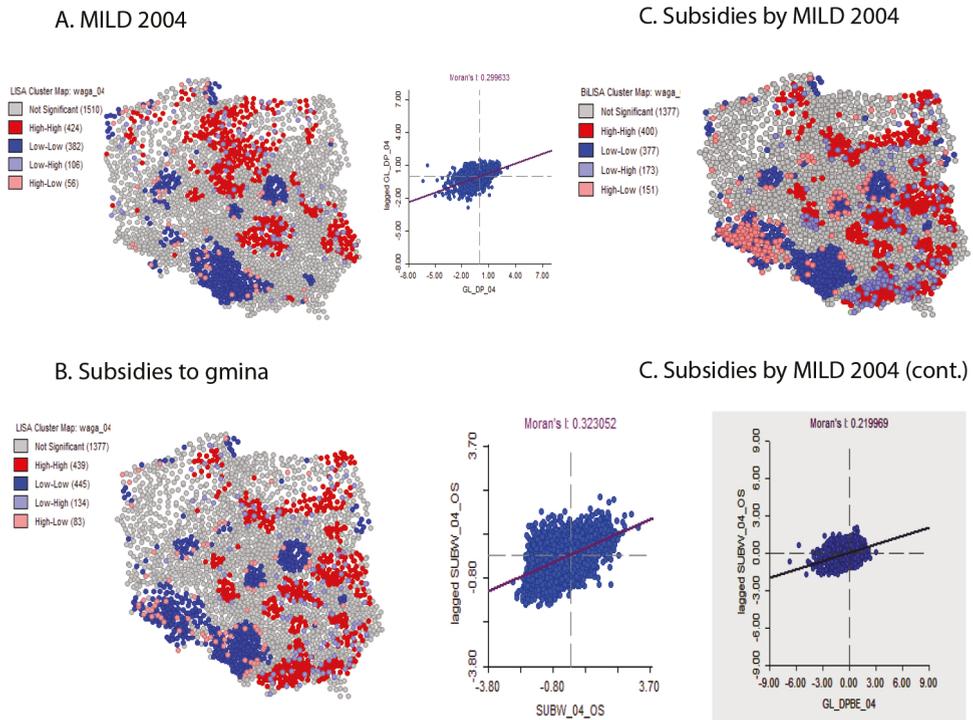
Source: author’s work.

The fact that gminas in several voivodships in western Poland and in the Warsaw metropolitan area obtain less public resources than the rest of the country, raises a question about the geographical pattern of this phenomenon. Hypothetically, a tendency to the occurrence of spatial clusters might be expected, with clusters marking an autocorrelation of subsidies, following a similar pattern of local

deprivation. This is confirmed by the results in Figures 8a and 8b for the years 2004 and 2014, demonstrating the differences occurring over the studied time and the stability of the trends.

The most striking results relate to the visible tendency of gminas to cluster parallel to the level of local development (or deprivation), also reflecting a relatively high autocorrelation (e.g. Fortin & Dale, 2011) – Moran’s I equals 0.29 and 0.32 for local deprivation and subsidies in 2004; and 0.36 and 0.33, respectively, in 2014.⁸

Figure 8a. Moran’s maps (clusters of gminas) and scatterplots for (A) MILD 2004, (B) Subsidies to gmina and (C) Subsidies by MILD 2004



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland.

⁸ The coefficient of autocorrelation I proposed by Moran indicates a tendency to cluster among ‘spatial units’ – gminas, with respect to the selected measure (deviations are calculated from a global mean – see Fortin & Dale, 2011, p. 124):

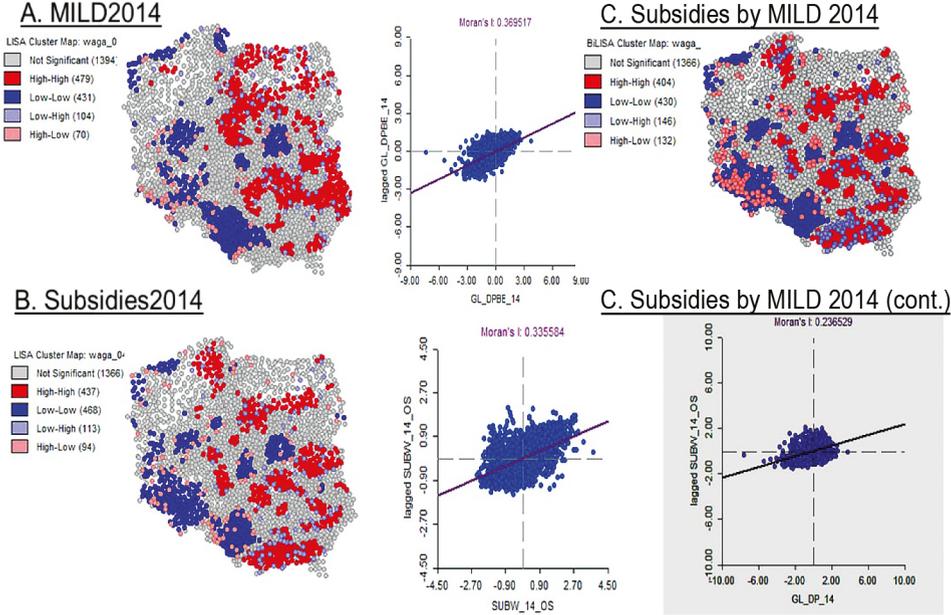
$$I = \frac{n \sum_{i=1}^n \sum_{j=1}^n w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{W \sum_{i=1}^n (x_i - \bar{x})^2},$$

where:

x_i, x_j – values of a measure at each location i, j ,

W – the spatial weights matrix with entries w_{ij} .

Figure 8b. Moran’s maps (clusters of gminas) and scatterplots for (A) MILD 2014, (B) Subsidies to gmina, and (C) Subsidies by MILD 2014



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland.

The figures are consistent with the fairly regularly-shaped scatterplots. However, the above-mentioned deviations in some gminas regarding the distribution of subsidies at an amount below what is considered fair, as it was seen in western Poland, are also clearly marked on the Moran’s maps, with Dolnośląskie and Opolskie voivodships illustrating these differences most distinctly. Panel C on both figures (8a and 8b) demonstrates the tendency of gminas to cluster with regard to both types of features (local deprivation and subsidies) in a relatively similar way – Moran’s I was 0.22 in 2004 and 0.24 in 2014. This generally confirms that the policy on the allocation of public resources is well-targeted and responsive towards the demonstrated needs, regardless of the political option of the changing central governments in the analysed period.

The Marginal Benefit Incidence Analysis (MBIA) was employed to verify the consequences of the policy on the distribution of public resources, particularly at the gmina level, in terms of such aspects of community cohesion as social solidarity, reduction of disparities, and empowerment. In contrast to the Benefit Incidence Analysis (BIA), which ignores behavioural responses, the MBIA allows placing the assessment of the deprivation-reducing (development-increasing) effect of subsidies in a spatiotemporal evaluation perspective. The intention is also to demonstrate how changes in the subsidy programme would be distributed, including the counterfactual

changes, without intervention, i.e. what the beneficiaries would be without the public support programme (e.g. van de Walle, 2009).⁹ Repeated observations of spatial units and assessing any incidence of subsidies for at least two years provide a better insight into the policy regarding the allocation of public resources to gminas.

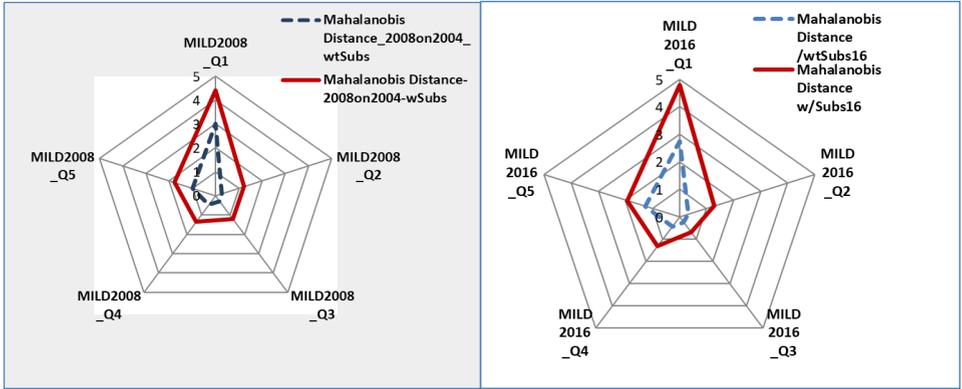
If an average incidence (E_{it}/E_t) and (E_{it+1}/E_{t+1}) is defined as the average share of total subsidies accrued to communes in quintile i in the year t and $t + 1$, respectively, then the change in the quintile-specific share of subsidies is represented by:

$$(E_{it+1} / E_{t+1}) - (E_{it} / E_t). \tag{2}$$

The question of how much public resources matter for local development (meant as the reduction in deprivation / MILD) can be answered by comparing the size of the MILD in time t as predicted (regressed) on MILD in time $t - 1$, with and without taking into account subsidies granted to a gmina. For illustrative purposes, the respective differences can be expressed in terms of the *Mahalanobis Distance* (MD), as in Figure 9, for two pairs of time moments: 2008 vs. 2004 and 2016 vs. 2008.

Figure 9. The size of MILD in time t predicted (regressed) on MILD in time $t - 1$ with and without taking into account subsidies to gmina – differences in the MD

- A. MD for the predicted MILD 2008 on 2004 – with and without subsidies
- B. MD for the predicted MILD 2016 on 2008 – with and without subsidies



Source: author’s work on the basis of data from the Local Data Bank of Statistics Poland.

⁹ While the traditional method of dealing with behavioural response assumes the estimation of the marginal propensity to consume out of social income (PCSI) (e.g. Okrasa, 1999; van de Walle et al., 1994), the advantage of the MBIA is that it allows the identification of marginal incidence through the comparison of incidences across geographic areas with different programme sizes (van de Walle, 2009).

According to the graphs in Figure 9, in both panels A (for years 2004–2008) and B (2008–2016), the reduction in the level of deprivation occurring in the respective periods is substantially greater when resources are accrued to gminas (external diamonds) than it would have been without subsidies (internal diamonds). Moreover, the reduction in local deprivation would have been the lowest among the most developed communes from the 1st quintile. The results of the MBIA are summarised in Figure 10 and Table 1, which actually present the same information in different forms, to highlight certain trends relevant to the interpretation of these results – where the odds of programme participation (obtaining subsidies) is the ratio of the quintile-specific level of subsidies to the mean amount.

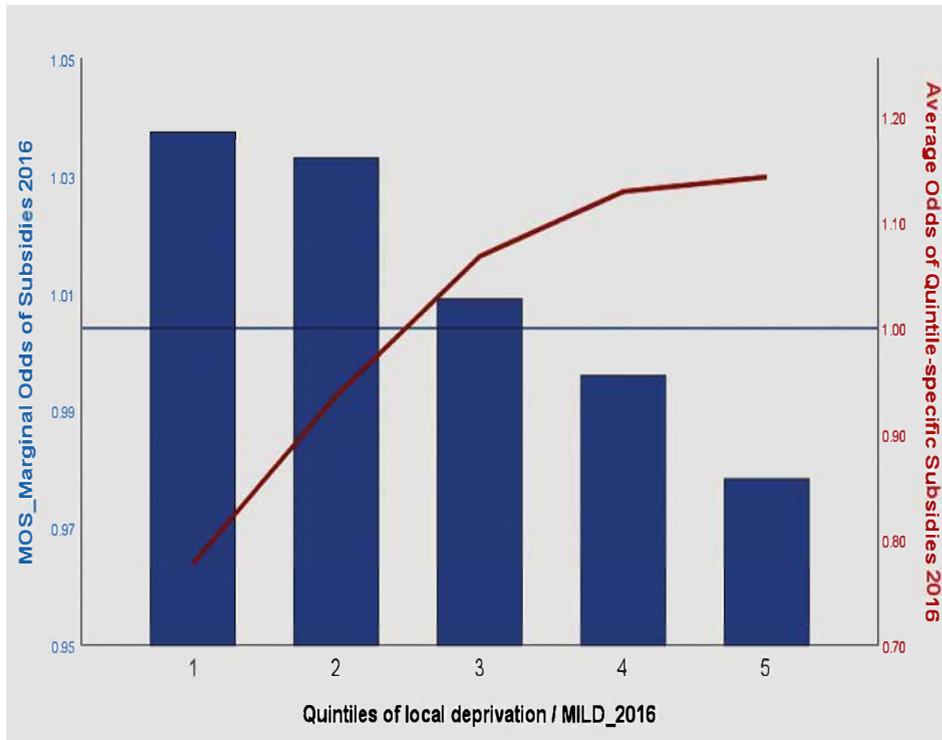
In order to obtain the deprivation group/quintiles-specific Marginal Odds of Subsidies (MOS) presented in Figure 10 and Table 1, the regression of deprivation of quintile-specific subsidies across regions on the average amount of subsidies for region was performed. While the average odds of subsidies increase significantly along the level of deprivation (the poorly-developed gminas were indeed provided with higher resources on average per person), the deprivation reduction effect proves inversely related to the original level of deprivation, meaning that it is in general greater in less deprived areas. This is consistent with the earlier observation of a larger reduction in local deprivation in the western part of the country. Moreover, it explains a growing deprivation in certain south-eastern regions, along with a relatively largest reduction of deprivation due to subsidies among gminas in the 1st quintile (Figure 8). In other words, technically, the better use of public resources can be expected in the more developed gminas.

Table 1. Average odds of subsidies by voivodship and MOS 2016

Quintiles of MILD	Average odds of subsidies 2016 Q-mean, by voivodship	MOS 2016
1. Least deprived gminas	0.78	1.04
2	0.94	1.03
3	1.07	1.01
4	1.13	1.00
5. Most deprived gminas	1.14	0.98

Source: author’s calculation.

Figure 10. Marginal Odds (participation in) Subsidies – MOS 2016 – and odds of quintile-specific values to gminas, across voivodships (country-wide)



Source: author's work.

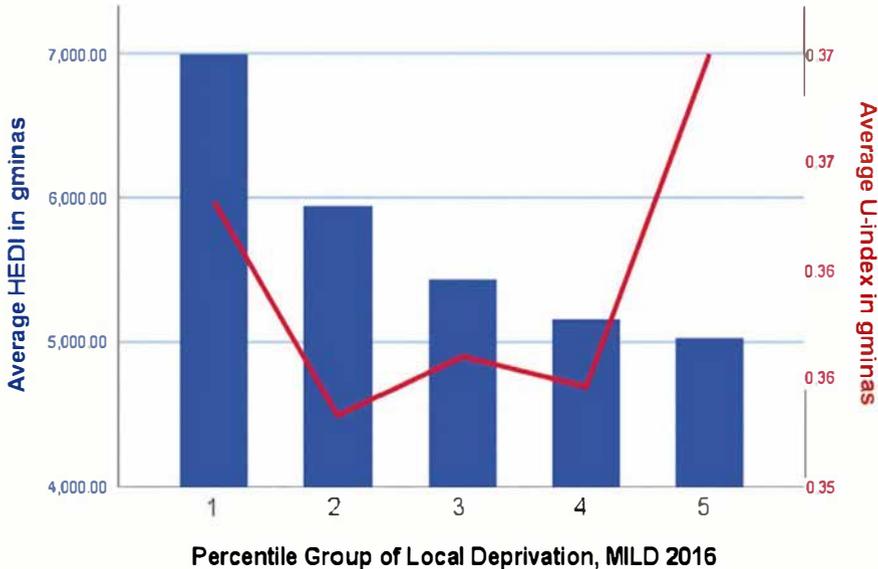
4. Community-related factors of individual well-being

The application of an econometric and psychometric combined approach (e.g. Krueger et al., 2009) with a U-index calculation based on the Time Use Survey data made it possible to verify several hypotheses or generalisations concerning the determinants of individual well-being. Moreover, the effect of contextualisation was achieved in the analysis by referring to the locality/gmina. A preliminary exploration of the relationship between the objective community well-being according to the MILD and the U-index for all activities (excluding sleep) performed by means of logistic regression revealed a tendency of the relative odds of the U-index to diminish along with the MILD-quintiles of gminas. It shows a generally greater chance of being discontent as relatively more time is spent in the 'non-positive state' by people living in more affluent gminas (Okrasa, 2017). The questions about relationships between community development (or deprivation), community cohesion and individual well-being were initially addressed through regressing each of them on the local deprivation (MILD), and more specifically, using some of the measures

introduced earlier, i.e. the LHS/locality etc., the FSE / social relation and neighbourhood, the LPH / life perspectives, and the U-index. They all remain in a statistically significant negative association with the level of local deprivation, yet the influence of deprivation on the life perspectives in connection with the living place has been the strongest (Okrasa & Rozkrut, 2018).

The further exploration of individual well-being determinants and covariates require adopting an appropriate framework – for instance as the one discussed by Clark (2018) in connection with work vs. income balance. Before including the two variables among the predictors of well-being, it seems worthwhile to mention that, according to several research results (e.g. Luttmer, 2005), subjective well-being (W) is affected positively by one’s own income (Y), but negatively by the income of a reference group (Y^*): $W = F(Y, Y^*)$. As Clark (2018) mentions, individuals are more pleased when they earn more, but less pleased when others earn more, regardless of the level of their own income (e.g. due to the fact that income is indicative of social status). Since such an interpretation suggests that greater well-being could be observed in same-income communities, it might be of interest to ask how the two variables – individual income and subjective well-being, measured by the U-index – relate to each other in differently developed (deprived) environments. Some initial results are presented in Figure 11.

Figure 11. Average Household Equivalised Disposable Income (HEDI) and average U-index in gminas, by quintiles of local deprivation – MILD 2016



Source: author’s work.

As one could expect, household equivalised disposable income significantly varies between the groups of gminas distinguished by their level of development, with the average income decreasing linearly along the growing level of local deprivation. Income is much more varied when seen through the inequality measure (also within each of the gminas) in the two most affluent groups (quintiles 1 and 2) than in the remaining ones. This was discovered by means of the provisional measure of inequality, i.e. the coefficient of variation (not presented herein). While such a pattern discords with Williamson's hypothesis stating that, in general, this relationship resembles Kuznet's inverted pattern, the individual well-being measured by the U-index showed an opposite tendency, in some ways similar to the aforementioned pattern. The similarity is demonstrated in its rising to a point of inflection and falling with the increasing level of local deprivation. Here, according to Figure 10, individual well-being (U-index) follows the household income level along the diminishing trend, with the exception of the last category of gminas, i.e. the most deprived ones, where it increases again towards high dissatisfaction with the activities performed (at least among households in gminas where respondents participated in both independently conducted surveys, TUS and SILC, which provided data for the calculations of the average for gminas).

The impact of income on well-being should not be considered in isolation from the time spent at work as the main source of income, however, and such a trade-off is included in the basic equation of well-being (e.g. Clark, 2018):

$$\text{Well-being} = \beta_1 Y + \beta_2 h + \theta' X + \varepsilon, \quad (3)$$

where β_1 and β_2 are coefficients of influence of income Y (here the average income of households in a gmina, based on SILC) and time at work h (average in a gmina, based on TUS), respectively, and θ' is a vector of coefficients associated with variables characterising important aspects of a gmina, as shown in Table 2, containing the results of the estimation.

The results of the estimation of the above model, despite its generally low predictive ability, provide statistically significant information useful to compare the impact of income and time at work on well-being (although to a limited extent, given that their averages were used with respect to gminas, instead of individual households' values) while keeping several relevant factors under control. These factors include the level of local deprivation, MILD (for the year 2014, nearest to the year when the TUS was conducted, i.e. 2013) and the risk connected with two areas of deprivation – local social welfare and the local labour market. These have contrasting influence

on well-being, with the former affecting it in a negative way – the more effective the social assistance, the lower the measure of dissatisfaction (either due to less time spent on unpleasant activities, or positive rather than negative feelings associated with performing them), and the latter in a positive way.

A generally lower U-index (i.e. higher overall well-being) could be expected in gminas where the real subsidies remain below the level considered fair as per the ‘proportionality to the deprivation’ principle, so generally in more affluent gminas, where the working population exceeds the number of those out of work. This phenomenon is consistent with the observation of a negative impact of ‘household income’ on the U-index, i.e. a positive effect of income on well-being. This, in turn, contrasts with the ‘time at work’, which contributes to the increased U-index (signifying lower well-being). As mentioned before, the data the analysis is based on came from separate surveys, each providing data independently, from respondents coincidentally occupying (and selected for the sample from) the same local unit (gmina), which was an integrating factor here.

Table 2. Estimations of parameters of the ‘basic equation of well-being’ (U-index) by Ordinary Least Squares (OLS) regression

Model: predictors for U-index	Coefficients		Std. Coefficients Beta	t	Sign.
	B	Std. Error			
Constant	0.014	0.025	.	0.553	0.580
Job-time (main and additional)	0.005	0.000	0.297	26.766	0.000
Income of household <i>per capita</i> – monthly (average in year)	-1.836E-05	0.000	-0.087	-7.353	0.000
MILD 2014	0.000	0.000	0.117	6.865	0.000
Subsidies Real < Simulated as ‘fair’	-0.011	0.002	-0.068	-7.043	0.000
Risk associated w/deprivation in local social welfare	-0.036	0.002	-0.637	-15.921	0.000
Risk associated w/deprivation in local labour market	0.001	0.003	0.799	18.934	0.000
Ratio of ‘in-work’ to ‘not-in-work’	-0.010	0.001	-0.078	-6.995	0.000
Rural	-0.005	0.003	-0.023	-1.599	0.110
Urban-rural (mixed)	-0.013	0.002	-0.067	-5.262	0.000

Note. Adjusted R-Squared = 0.18. $F_{(9,11101)} = 268.594$. $p < .000$.

Source: author’s calculation on the basis of data from the Local Data Bank of Statistics Poland and 2013 TUS.

These data are not adequate for addressing issues discussed in the literature such as the determination of a point of equilibrium between income and working time, in terms of the hourly wage, at which people are willing to work an additional hour without losing their achieved level of well-being (e.g. Clark, 2018). However, in the context of this study, the fact of using a gmina as an integrator allows including the spatial aspect in the analysis of the well-being determinants.

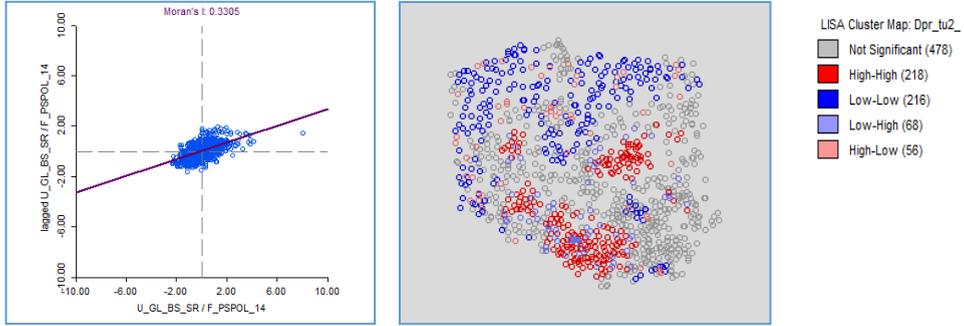
5. Spatial aspects of diffusion and variation in well-being

There are several reasons for bringing *space* into the exploration of the patterns of the impact of community-related factors and covariates on individual well-being. In addition to the time-lag dependency, as was shown in reference to local deprivation (MILD) changes over time, also to subsidies to the gmina, a question arises concerning the tendency amongst gminas to cluster along a similar level of their residents' well-being measure (like the U-index), given a vector of characteristics as its possibly significant determinants (predictors).

5.1. Spatial autocorrelation and spatial clustering

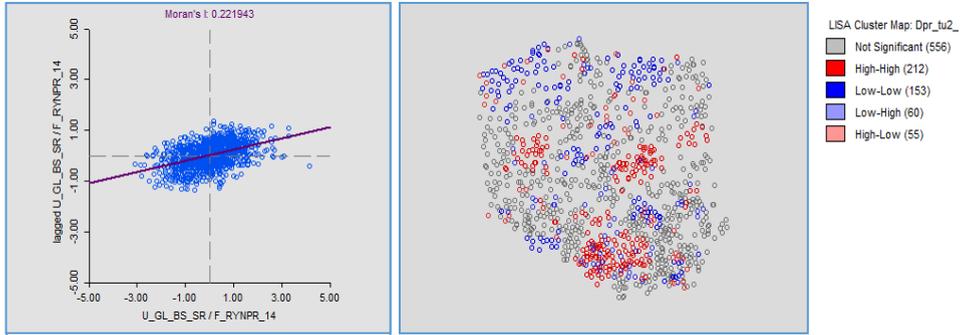
Since both local deprivation and distribution of subsidies (or public resources) to gminas presented a strong tendency to spatial autocorrelation reflected in very similar patterns of clusters, it seems reasonable to expect that their influence on individual well-being might also be significant in terms of spatial parameters. As regards spatial autocorrelation, the previously shown significant but weak influence of local deprivation (MILD) on subjective well-being (U-index) persists as such also in the spatial context, remaining positive, but minor – Moran's I equalling 0.10. However, deprivation in some domains of the multidimensional index of deprivation, especially *local social welfare* and *local labour market*, exerts a comparatively strong effect on gminas' tendency to cluster along with the growing level of deprivation in these domains. This is illustrated in Figure 12a and 12b, with Moran's I equalling 0.33 and 0.22 for the social welfare and labour market, respectively. No other domains showed such a clear pattern of influence. While people's growing dissatisfaction with everyday activities in gminas with a low level of social assistance and a weak labour market is consistent with what might be expected, a clear distinction can be seen between the northern part of the country, where gminas with a higher level of well-being and lower deprivation within each of the two domains clearly prevail, and the southern part, where an opposite trend dominates (especially noticeable in the case of social assistance).

Figure 12a. Subjective well-being by U-index and the level of gmina's local deprivation in the domain of local social welfare



Source: author's work on the basis of data from the Local Data Bank of Statistics Poland and the 2013 TUS.

Figure 12b. Subjective well-being by U-index and the level of commune local deprivation in the domain of local labour market



Source: author's work on the basis of data from the Local Data Bank of Statistics Poland and the 2013 TUS.

In the case of local social assistance it is worth noting that it exemplifies a more general issue – the community-based social policy (CBSP), often described in the literature as difficult to indisputably define as it involves some informal mechanisms, without clearly measurable results and outcomes (Browne, 2013). The literature tends to focus more on the formal part of the CBSP, like health, micro-insurance and savings. But well-being can be especially sensitive to the overall quality of the CBSP due to its vulnerability to the ‘elite capture’ or manipulation resulting from corrupted power relations within the community. In consequence, households with better (and richer) social connections are likely to achieve more through informal social protection than others (Browne, 2013, p. 6). With such a pathology in mind, some authors make a distinction between inclusive vs. exclusive communities, with the latter inclined to stigmatise ‘others’ or ‘strangers’, accepting individual differences as long as these are embedded within a framework of inclusion and collaboration (see

Roffey, 2013, p. 6). Also, the local social protection system is susceptible to covariate risk, but it is more effective for idiosyncratic risk since it facilitates widening the risk pool (Browne, 2013, p. 2). The question what kind of covariates make some gminas more prone to belonging to one category or the other (inclusive or exclusive), contributing to the advancement of well-being of their residents, requires an analysis of the spatial dependence, using a spatial regression model.

5.2. Spatial dependence – spatial regression of subjective well-being

Two types of spatial models were employed using the gmina's attributes and compositional characteristics (created as aggregates averaged for all the studied gminas) as explanatory variables t . Spatial dependence can be included into an analysis either as an additional regressor in the *spatial lag* model (as a spatially-lagged dependent variable Wy), where W is the $N \times N$ matrix – a spatial weights matrix for each location in the system, specifying which of the other locations in the system affect the value at that location, or in the error structure ($E[\varepsilon_i \varepsilon_j] \neq 0$) – see Anselin (2003). A spatial lag model is appropriate when the focus of interest is the assessment of the existence and strength of spatial interaction, while a spatial error model is preferred when the concern is with correcting for the potentially biasing influence of the spatial autocorrelation (Anselin, 2003, p. 316).

Checking for spatial dependency means estimating parameters of a given regression model of a general form (notation for individual observation i) first, under the assumption that in the spatial regression model, disturbance term ε_i is meant as the *spatially lagged* term.

$$\varepsilon_i = \rho W_i y_i + X_i \beta + \varepsilon_i, \quad (4)$$

with the symbols signified as above.

These two types of models allow the examination of the impact one observation has on another. Proximate observations, however, are not identically interpreted.¹⁰ Table 3 presents the results of the spatial lag model and the estimations of the spatial error model parameters are provided in Table 4. They are the outcome of the GeoDa methodology and Exploratory Spatial Data Analysis (ESDA) software (e.g. Fischer & Getis, 2010).

¹⁰ The traditional distinction between spatial dependence and spatial heterogeneity as parallel to spatial lag models and error models has been recently challenged in the literature following LeSage & Pace (2010). The former involves a spatial lag of the dependent variable and implies a form of spatial heterogeneity where the impacts measure the heterogeneity across observations; on the other hand, heterogeneity impacts do not result from the error models (LeSage & Pace, 2010, p. 373).

Table 3. Spatial regression – summary of output of a Spatial Lag Model

Variable	Coefficient	Std. Error	z-value	Probability
U-index (rho)	0.260122	0.0599264	4.3407	0.00001
Constant	0.277333	0.0763009	3.63472	0.00028
Risk associated with labour market	0.0292562	0.0117072	2.49899	0.01245
Risk associated with local social welfare	-0.0298416	0.0100005	-2.984	0.00285
Subsidies Real<Simulated	-0.0194871	0.00849883	-2.29291	0.02185
Trust in local authority	-0.000301933	0.000180878	-1.66927	0.09506
Sense of belonging to neighbourhood	0.000468094	0.000258127	1.81343	0.06977
Sense of belonging to church/parish	0.000486641	0.000269012	-1.80899	0.07045

Note. Dependent variable: individual well-being by U-Index. Number of observations: 605. Mean dependent var: 0.359008. S.D. dependent var: 0.101473. Degrees of freedom: 597. Lag coeff. (Rho): 0.260122.

Source: author's calculation.

Although the values of the included variables are either some of a gmina's attributes or are calculated as averages from individual (household) data for the units (gminas), where they were provided by a sufficient number of respondents of the relevant surveys, instead of individual-level values (generally small numbers, as this is also reflected in the low strength of the coefficients of the predictors' influence), several interesting conclusions can be drawn from these results. One of them concerns the opposite direction of influence which selected aspects of deprivation have on subjective well-being indicated by the U-index. More specifically, the risk associated with the labour market has a positive impact: the lower the risk, the higher the average well-being in the gmina, and the impact of the risk relating to local social welfare on the index is negative: the lower the risk, the lower the average well-being in the gmina.

This tendency resembles the one mentioned in the discussion on the influence of the same variables used as predictors in the OLS regression equation for subjective well-being (in Table 2). It confirmed at the same time that the effect of space-related characteristics accords with the non-space-related pattern of relationships. In other words, wealthier households (in terms of subjective well-being) might, on average, be expected to be found in gminas where the local labour market functions well, but the functioning of the local system of social assistance poses problems shared by a significant part of the gmina. Moreover, such gminas tend to occur in similar areas – spatial clusters. Subsidies to gminas also act in an analogous manner to that discussed on the example of Table 2 – their impact as a space-related feature is a regular one, i.e. a lower subsidy *per capita* to the gmina entails an overall lower subjective well-being of its inhabitants.

The impact of each of the three subjective indicators of community cohesion (community subjective well-being) – trust in local authority, the sense of belonging

to the neighbourhood, and the sense of belonging to the church (parish) – does not provide a straightforwardly interpretable picture.

While trust in local authority conforms to the pattern showed in Figure 4, where it was high in gminas characterised by a low overall deprivation, here high trust means also a high level of community subjective well-being. The other two, i.e. the sense of belonging to a neighbourhood and the sense of belonging to a local church (parish) inversely affect the spatial aspects of community subjective well-being. The tendency to the spatial co-occurrence of a stronger feeling of local identity (sense of belonging) in gminas with a lower level of community subjective well-being (given that the U-index in Figure 11 proved the highest in extreme groups of gminas, i.e. Q1 – the wealthiest, or Q5 – the poorest), suggests that some personal characteristics of their inhabitants may have an influence on these relations.

The primary candidates for such features are: average household income, education and age used in the spatial error models of regression in Table 4, along with several attributes of the community – indexes of local deprivation in ecology and of local social welfare, a fraction of the unemployed population in the gmina, and subsidies *per capita* accrued to it. As expected, household monthly income *per capita* and age affect the U-index in a negative way, at the same time contributing to the spatial co-occurrence of gminas with higher subjective well-being of the residents, while the dominant level of their education has an opposite effect. The impact of only three explanatory variables, i.e. age, education and the fraction of the population out-of-work, are shown to be statistically significant. This leads to the conclusion regarding Table 4 that the gminas tending to cluster along their individual (subjective) well-being (measured by the U-index) are those composed of, on average, older inhabitants with a lower level of education and less active on the labour market. All these characteristics are specific to the rural and mixed (rural-urban) gminas rather than urban ones (see Table 3). This may also explain the paradoxical, negative impact of the out-of-work fraction on the U-index (i.e. positive on well-being), which, however, corresponds with the result presented in Table 3, which suggests that more time spent on work increases the U-index.¹¹

¹¹ Despite the fact that 'employed full time' is next to 'household income', 'no health problem', 'freedom to choose', and 'having some college diploma' on the list of correlates of life satisfaction around the world (Graham et al., 2018), the amount of time spent on work is not appreciated by respondents of time-use surveys. It may be especially justified in Poland, where – according to the OECD methodology – the average annual working hours equals 1,832 hours (in 2016); longer working hours were noted only in Turkey (and slightly longer also in Hungary, the USA and Greece) – see Ward et al. (2018, p. 51, Table 4.2).

Table 4. Spatial regression – summary of output of a Spatial Error Model

Variable	Coefficient	Std. Error	z-value	Probability
Constant	0.523731	0.042847	12.2233	0.00000
Monthly income	-0.002730	0.001960	-1.40359	0.16044
Age average (%)	-0.014313	0.005653	-2.53177	0.01135*
Education HS+ (%)	0.000381	0.000222	1.71849	0.08571*
Out-of-work population (%)	-0.001304	0.000273	-4.77623	0.00000*
ILD ecology	0.000560	0.000462	1.21309	0.22510
ILD local social welfare	-0.000415	0.000312	-1.32693	0.18453
Subsidies pc	1.2323e-005	1.1588e-05	1.06344	0.28758
Lambda	0.431769	0.0677941	6.36883	0.00000

Note. * – statistically significant. Dependent variable: individual well-being by U-index. Number of observations: 937. Mean dep var: 0.361195. Degrees of freedom: 929. R-squared: 0.12.

Source: author's calculation on the basis of data from the Local Data Bank of Statistics Poland and 2013 TUS.

6. Conclusions

Research on subjective community well-being interpreted either as a measure of well-being of individual residents in an aggregated form or as an indicator attributed to a community as a whole (as a unit), requires data from both the individual and community level, and both objective and subjective types of information in order to effectively explore the relationship in which it remains connected with such crucial factors as a community's level of development and community cohesion.

It is relatively easy to evaluate the effects of public policies and resources distributed for community development, especially when a normative criterion, such as the increase in community well-being, is available for this purpose. However, the lack of a 'transformative mechanism', operating directly towards the enhancement of the residents' well-being requires the identification of factors constituting the desired type of society or a *cohesive community*, as an agent of community-driven pro-well-being development.

Some of these factors and well-being tend to cluster geographically. Bringing space into the analysis gives insight into processes which actually take place on a larger scale than just an individual or one's own local community. Spatial dependency confirms the above, providing a spatio-temporal analytical framework especially suitable for this purpose, though in practice limited due to the lack of an adequate analytical database. To overcome this deficiency, a database of this type was constructed to enable the spatial analysis conducted in this paper. The input data were drawn from different kinds of sources, using gminas' (NUTS5/LAU2) territorial code as an integrator for the units (households or individuals) recognised in the relevant surveys or other research (report-type). These include surveys conducted

by Statistics Poland relating to the revitalisation of gminas or migration. However, since the data used in the analysis were not generated by design, the results of the study should be approached with some caution.

Nevertheless, despite the fact that the presented results of the empirical exploration obtained by different kinds of models cannot be considered robust, it was possible to draw several interesting conclusions from the analysis. This proves the validity of the adopted strategy of integrating data needed for the calculation of a model considered appropriate for a specific research problem. For instance, it was possible to study some classic problems, like the relation between income and well-being in a geographical context. Individual well-being increases along with the growing income of a household, however, community deprivation significantly reinforces the subjective well-being effect of individual income. Also, deprivation in several domains has proved to negatively affect the U-index (such as the risk connected with deprivation in the local social welfare).

Local deprivation ('community objective well-being') showed a clear tendency for spatial clustering (autocorrelation / Moran's I was pretty high). A similar tendency (but with lower intensity, i.e. smaller values of Moran's I) appears for the spatial association between subjective individual well-being and community well-being in general; however, such association is much stronger in the case of subjective well-being measured with the U-index and deprivation in selected domains, e.g. in the domain of local labour market and of local social assistance.

Using databases which draw input from official statistics while performing scientific research has its advantages and disadvantages. Despite this approach's indisputable limitations for the analysis, it enables addressing issues otherwise unsolvable (due to the cost and duration of data collection). Since data play a vital role in measuring well-being, following the requirements of modelling cross-level relationships (between the individual and the community), an internal, methodological communication chain needs to be established in the statistical research process. Several clarifications of the research situation – in terms of types of units and measures involved – were meant to facilitate the choice of data appropriate for models conceived to be capable of dealing with the studied issue, focusing on the nature of the relationship between community and individual well-being.

References

- Alkire, S. (2015). *The Capability Approach and Well-Being Measurement for Public Policy* (OPHI Working Paper No. 94). <https://www.ophi.org.uk/wp-content/uploads/OPHIWP094.pdf>.
- Allin, P., & Hand, D. J. (2017). New statistics for old? – measuring the wellbeing of the UK. *Journal of the Royal Statistical Society Statistics in Society. Series A*, 180(1), 3–43. <https://doi.org/10.1111/rssa.12188>.

- Anselin, L. (2003). Spatial Econometrics. In B. H. Baltagi (Ed.), *A Companion to Theoretical Econometrics* (pp. 310–330). Oxford: Blackwell Publishing. <https://doi.org/10.1002/9780470996249.ch15>.
- Browne, E. (2013). *Community-based social protection (GSDRC Helpdesk Research Report 1020)*. Birmingham: Governance and Social Development Resource Centre. <https://assets.publishing.service.gov.uk/media/57a08a01e5274a31e000038c/hdq1020.pdf>.
- Cantle, T. (2001). *Community Cohesion: A Report of the Independent Review Team*. London: Home Office. <https://dera.ioe.ac.uk/14146/1/communitycohesionreport.pdf>.
- Capello, R. (2009). Space, Growth and Development. In R. Capello & P. Nijkamp (Eds.), *Handbook of Regional Growth and Development Theories* (pp. 33–52). Cheltenham, UK, Northampton, MA: Edward Elgar.
- Chavis, D. M., Hogge, J. H., McMillan, D. W., & Wandersman, A. (1986). Sense of Community Through Brunswick's Lens: A First Look. *Journal of Community Psychology*, 14(1), 24–40. [https://doi.org/10.1002/1520-6629\(198601\)14:1<24::AID-JCOP2290140104>3.0.CO;2-P](https://doi.org/10.1002/1520-6629(198601)14:1<24::AID-JCOP2290140104>3.0.CO;2-P).
- Clark, A. E. (2018). Four Decades of the Economics of Happiness: Where Next?. *The Review of Income and Wealth*, 64(2), 245–269. <https://doi.org/10.1111/roiw.12369>.
- Coleman, J. S. (1990). *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.
- Davidson, W., & Cotter, P. (1991). The Relationship between Sense of Community and Subjective Well-Being: A First Look. *Journal of Community Psychology*, 19(3), 246–253. [http://dx.doi.org/10.1002/1520-6629\(199107\)19:3<246::AID-JCOP2290190308>3.0.CO;2-L](http://dx.doi.org/10.1002/1520-6629(199107)19:3<246::AID-JCOP2290190308>3.0.CO;2-L).
- Emery, M., & Flora, C. (2006). Spiraling-Up: Mapping Community Transformation with Community Capitals Framework. *Community Development*, 37(1), 19–35. <https://doi.org/10.1080/15575330609490152>.
- Fischer, M. M., & Getis, A. (Eds.). (2010). *Handbook of Applied Spatial Analysis*. Berlin, Heidelberg: Springer-Verlag. <https://doi.org/10.1007/978-3-642-03647-7>.
- Forrest, R., & Kearns, A. (2001). Social Cohesion, Social Capital and the Neighbourhood. *Urban Studies*, 38(12), 2125–2143. <https://doi.org/10.1080/00220980120087081>.
- Fortin, M.-J., & Dale, M. (2011). *Spatial Analysis. A Guide for Ecologists* (8th edition). Cambridge University Press.
- Gallup. (n.d.). *How Does the Gallup-Sharecare Well-Being Index Work? Measures Purpose, Social, Financial, Community, and Physical Well-Being Worldwide*. <https://www.gallup.com/175196/gallup-healthways-index-methodology.aspx>.
- Graham, C., Laffan, K., & Pinto, S. (2018). Well-being in metrics and policy. *Science*, 362(6412), 287–288. <https://doi.org/10.1126/science.aau5234>.
- Hillery, G. A. (1968). *Communal Organizations: A Study of Local Societies*. Chicago: University of Chicago Press.
- Hunter, A. (2008). Contemporary Conceptions of Community. In R. A. Cnaan & C. Milofsky (Eds.), *Handbook of Community Movements and Local Organizations* (pp. 20–33). New York: Springer. https://doi.org/10.1007/978-0-387-32933-8_2.
- Kahneman, D., & Krueger, A. B. (2006). Developments in the Measurement of Subjective Well-Being. *Journal of Economic Perspectives*, 20(1), 3–24. <https://doi.org/10.1257/089533006776526030>.

- Kee, Y. (2017). Multi-dimensional Model of Community Well-Being from a Public Service Delivery Perspective. In R. Phillips & C. Wong (Eds.), *Handbook of Community Well-Being research* (pp. 69–83). Dordrecht: Springer. https://doi.org/10.1007/978-94-024-0878-2_4.
- Kim, Y., & Ludwigs, K. (2017). Measuring Community Well-Being and Individual Well-Being for Public Policy: The Case of the Community Well-Being Atlas. In R. Phillips & C. Wang (Eds.), *Handbook of Community Well-Being Research* (pp. 423–433). Dordrecht: Springer. https://doi.org/10.1007/978-94-024-0878-2_22.
- Krueger, A. B., Kahneman, D., Schkade, D., Schwartz, N., & Stone, A. A. (2009). National Time Accounting: The Currency of Life. In A. B. Krueger (Ed.), *Measuring Subjective Well-Being of Nations: National Account of Time Use and Well-Being* (pp. 9–86). Chicago: University of Chicago Press. <https://www.nber.org/system/files/chapters/c5053/c5053.pdf>.
- LeSage, J. M., & Pace, R. K. (2010). Spatial Econometric Models. In M. M. Fischer & A. Getis (Eds.), *Handbook of Applied Spatial Analysis* (pp. 355–376). Berlin, Heidelberg: Springer-Verlag. <https://doi.org/10.1007/978-3-642-03647-7>.
- Luttmer, E. F. P. (2005). Neighbors as negatives: relative earnings and well-being. *Quarterly Journal of Economics*, 120(3), 963–1002. <https://doi.org/10.1093/qje/120.3.963>.
- Maggino, F. (2017). Quality of Life and Social Cohesion. Defining and Measuring Subjective Aspects. In W. Okrasa (Ed.), *Jakość życia i spójność przestrzenna: rozwój i dobrostan w kontekście lokalnym* (pp. 7–18). Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.
- Organisation for Economic Co-operation and Development. (2018). *Trust and its determinants: Evidence from the Trustlab experiment* (OECD Statistics Working Papers No. 2018/02). <https://doi.org/10.1787/869ef2ec-en>.
- Okrasa, W. (1999). *The Dynamics of Poverty and the Effectiveness of Poland's Safety Net (1993-96)*. (Policy Research Working Papers No. 2221). <https://doi.org/10.1596/1813-9450-2221>.
- Okrasa, W. (2017). Community Well-Being, Spatial Cohesion and Individual Well-Being – Towards a Multilevel Spatially Integrated Framework. In W. Okrasa (Ed.), *Jakość życia i spójność przestrzenna: rozwój i dobrostan w kontekście lokalnym* (pp. 19–48). Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.
- Okrasa, W., & Cierpiął-Wolan, M. (2014). Nierówności przestrzenne rozwoju lokalnego: wzory różnicowań dobrostanu na przykładzie województwa podkarpackiego i mazowieckiego. *OPTIMUM. Studia Ekonomiczne*, 69(3), 118–139. <https://doi.org/10.15290/ose.2014.03.69.08>.
- Okrasa, W., & Gudaszewski, G. (2017). Przestrzenne aspekty alokacji świadczeń dla rodzin: deprywacja lokalna a rozkład środków z Programu 500+. In J. Hryniewicz & A. Potrykowska (Eds.), *Sytuacja demograficzna województwa pomorskiego jako wyzwanie dla polityki społecznej i gospodarczej* (pp. 195–217). Warszawa: Rządowa Rada Ludnościowa. https://bip.stat.gov.pl/download/gfx/bip/pl/defaultstronaopisowa/806/1/1/sytuacja_demograficzna_woj_pomorskiego.pdf.
- Okrasa, W., Lapins, J., & Vremis, M. (2006). Measuring Community Deprivation for Geographic Targeting of Public Resources – case of Moldova. *Statistics in Transition*, 7(5), 1045–1065.
- Okrasa, W., & Rozkrut, D. (2018). *The Time Use Data-based Measures of the Wellbeing Effect of Community Development: An Evaluative Approach*. <https://imsva91-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fncfes.ed.gov%2fFCSM%2f2018%5fResearchPolicyConference.asp%23FridayAM&umid=14DB1F7F-C3C0-9B05-AC62-4FEA4FB5CDB6&auth=a72eda700c22cf55ef97c67caa753e88907e35cb-2c679555b809443d83e0a3cba0a2e5b02f0580ab>.

- Phillips, R., & Wong, C. (Eds.) (2017). *Handbook of Community Well-Being Research*. Dordrecht: Springer. <https://doi.org/10.1007/978-94-024-0878-2>.
- Post-disaster Community Infrastructure Rehabilitation and (Re)Construction Guidelines*. (2012). <https://www.sheltercluster.org/sites/default/files/docs/Post-Disaster%20Community%20Infrastructure%20Rehabilitation%20and%20Reconstruction%20Guidelines.pdf>.
- Rausand, M. (2011). *Risk Assessment: Theory, Methods, and Applications*. Hoboken: John Wiley & Sons.
- Roffey, S. (2013). Inclusive and exclusive belonging – the impact on individual and community well-being. *Educational & Child Psychology*, 30(1), 38–49.
- Steuer, N., & Marks, N. (2008). *Local well-being: Can we measure it?*. <https://youngfoundation.org/wp-content/uploads/2013/02/Local-Wellbeing-Can-we-Measure-it-September-2008.pdf>.
- Stofferahn, C. W. (2006). *Industrialized Farming and Its Relationship to Community Well-Being: An Update of a 2000 Report by Linda Lobao*. <https://www.ndrurallife.com/Industrialized%20Farming%20and%20Its%20Relationship%20to%20Community%20Well%20Being.pdf>.
- Subramanian, S. V. (2010). Multilevel Modeling. In M. M. Fischer & A. Getis (Eds.), *Handbook of Applied Spatial Analysis: Software Tools, Methods and Applications* (pp. 507–525). Berlin, Heidelberg: Springer-Verlag. https://doi.org/10.1007/978-3-642-03647-7_24.
- UK Parliament. (2003, September 11). *Memorandum by Camden Council (SOC 19)*. <https://publications.parliament.uk/pa/cm200203/cmselect/cmmodpm/1060-ii/1060we23.htm>.
- Urząd Statystyczny we Wrocławiu. (2019). *Zeszyt metodologiczny. Rewitalizacja w gminie*. Wrocław. <https://stat.gov.pl/obszary-tematyczne/inne-opracowania/inne-opracowania-zbiorcze/zeszyt-metodologiczny-rewitalizacja-w-gminie,39,1.html>.
- VanderWeele, T. J. (2019). Measures of Community Well-Being: a Template. *International Journal of Community Well-Being*, (2), 253–275. <https://doi.org/10.1007/s42413-019-00036-8>.
- van de Walle, D. (2009). *Benefit Incidence Analysis: the method, limitations and extensions*. Washington: World Bank.
- van de Walle, D., Ravallion, M., & Gautam, M. (1994). *How Well Does the Social Safety Net Work? The Incidence of Cash Benefits in Hungary, 1987-89* (LSMS Working Paper No 102).
- Ward, A., Zinni, M. B., & Marianna, P. (2018). *International productivity gaps: Are labour input measures comparable?* (SDD Working Paper No. 99). [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/DOC\(2018\)12&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/DOC(2018)12&docLanguage=En).
- Wiseman, J., & Brasher, K. (2008). Community Wellbeing in an Unwell World: Trends, Challenges, and Possibilities. *Journal of Public Health Policy*, 29(3), 353–366. <https://doi.org/10.1057/jphp.2008.16>.

The social economy and social services as factors contributing to social cohesion

1. Introduction

The article aims to indicate that the entities of the social economy and social economic situation of Poles is changing. The unemployment rate stood at 5.2% at the end of December 2019, with 866.4 thousand persons registered in labour offices (Główny Urząd Statystyczny [GUS], 2020). A visible fall in the poverty rate is also observed. In 2014, the extreme poverty indicator was at 7.4%, whereas in 2019 it fell to 4.2%. The indicator of relative poverty, i.e. the calculation which takes into account not only citizens' real and measurable needs but also their subjective perception of their well-being, is also decreasing. In 2014 it totalled 16.2%, while in 2019 it fell to 13.0% (GUS, 2020, p. 1).

The increase in salaries, fall in the unemployment rate and – in the case of families with children – the *Family 500+* social programme were the factors which contributed to the improvement of the material situation of households and to the falling rates of both extreme and relative poverty in 2017.

The improved material situation and growth in the economy was also reflected in the value of the GDP indicator. According to Statistics Poland, GDP stood at 5.1% in 2018 (GUS, 2019a). The value of the Human Development Index (HDI) in Poland reached 0.865 in the same period, which put Poland very high in the human development rating, i.e. in the 33rd position out of a total of 189 countries. In the years from 1990 to 2017, the value of the HDI in Poland increased by 21.5%, while the average life expectancy and the average length of studying rose by 7.0 and 2.6 years, respectively (Human Development Report Office, 2018).

Poland also occupied a high (30th) position out of 157 countries in the first Human Capital Index (HCI), compiled by the World Bank in 2018. The HCI operates on a 0–1 scale, according to which Poland obtained the value of 0.75. To compare,

^a Cardinal Stefan Wyszyński University in Warsaw, Institute of Sociological Sciences.
ORCID: <https://orcid.org/0000-0002-5742-7713>.

Singapore, the leader of the index, was assessed at 0.88. South Korea and Japan were placed second and third, respectively (Ministerstwo Rodziny, Pracy i Polityki Społecznej, 2018).

On the one hand, quality of life is determined by factors such as the condition of the natural environment, an inclusive labour market, the level of income, access to cultural assets, transport, health and education infrastructure, and the efficiency of public institutions. On the other hand, however, well-being is inextricably linked to the development of social capital, especially to the level of trust and the sense of belonging to some community.

2. Social cohesion

Social cohesion can be treated both as an objective of the state's social policy and as a process playing an important part in the shaping of this policy. It requires the involvement of the state, administration and local authorities, especially in combating poverty and social exclusion, aiming at a more just distribution of income, ensuring high-level social protection, and fostering equal opportunities. The idea itself roots from Émile Durkheim's work entitled *De la division du travail social* from 1893 (Durkheim, 2011) and from a more recent work by John Rawls, *A Theory of Justice*, written in 1971 (Rawls, 2009). One of the first papers analysing social cohesion was written by a British sociologist, Ray Pahl (1991).

It is worth stressing here that social cohesion does not only focus on preventing poverty and social exclusion, nor solely on supporting social integration initiatives. On the one hand, it involves the improvement of quality of life through encouraging the community spirit in local communities, and on the other hand, the establishment of institutions and mechanisms which would support local communities in undertaking preventive measures in the area of social policy. The objective of the above is to prevent social issues arising which would require the intervention of professional social services. Social cohesion also involves extending support and building the potential of families functioning in those communities, in order to enable them to fully realise their goals as autonomous entities functioning in a society. To sum up, social cohesion is the ability of a community to ensure well-being to all its members, while at the same time minimising internal discrepancies and avoiding polarisation (Greta & Tomczak-Woźniak, 2013).

Social cohesion was assigned to the European Union as one of its competences when the Single European Act (1987) was signed in 1986. In 2008, the Treaty of Lisbon (2007) specified the third dimension of the EU cohesion – territorial cohesion. This issue was defined in Art. 3 item 3 of the Treaty on European Union and it concerns supporting the economic, social and territorial cohesion and fostering solidarity among the member states, and in Art. 174 of the Treaty on the Functioning

of the European Union, where it is pointed out that ‘In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social and territorial cohesion.’ (Consolidated version of the Treaty on European Union and the Treaty on the Functioning of the European Union, 2016). In Poland’s currently-binding Strategy on Sustainable Development (*Strategia na rzecz odpowiedzialnego rozwoju...*, 2007), social cohesion has been presented as one of the two main areas of activity (together with territorially-sustainable development) in the framework of *Aim 2: Socially-sensitive and territorially-sustainable development*. Such strong emphasis on the issue of social cohesion in the main strategic assumptions to the country’s policy for the upcoming years demonstrates that the vital role of this area and the need to invest in its development have been recognised.

The concentration of measures designed to activate the unemployed in social and professional areas is of key importance for social policy serving to limit poverty and social exclusion to be effective. Another significant area of activity in the above-mentioned context is social integration which leads to the social inclusion of individuals and families, while at the same time guaranteeing that an appropriate level of social security is provided to the most vulnerable groups in a community. What is also crucial for social cohesion is to ensure a suitable selection of services for those who need various forms of temporary or permanent social aid. Here the roles of the social security sector and the social economy prove irreplaceable. The development of a network of aid for the needy has to take place along with deinstitutionalisation and involve the utilisation of the social potential of local communities, while maintaining and fostering the principle of solidarity.

3. The social economy and a solidarity-based economy

The term and ideas of ‘the social economy’ go back to the 19th century and have European roots, although there is no one, universal model of the social economy for the whole continent, which results from various regional contexts, different economic, historical, political, cultural, social or legal determinants, and discrepant country policies. More specifically, we can distinguish between two models of social policy in Europe, i.e. the Continental and the Anglo-Saxon models. In France, where the Continental model originated, the term ‘the social economy’ refers mainly to enterprises whose aim, apart from gaining profit, was to fulfil certain social objectives. In the 19th century the social economy stood in opposition to the classical political and competitive economy, the consequences of which, as many believed, were poverty and the exploitation of workers (Szopa, 2012). The origins of the social economy can undoubtedly be found in the cooperative activity. The first cooperative-based enterprises were established in England in the 19th century. Soon after that this model started to spread across most of Europe, including Poland. Rev. Stanislaw Staszic, who

established a farmers' cooperative 'for mutual help in misfortune' in Hrubieszów in 1816 (Pol. Hrubieszowskie Towarzystwo Rolnicze Wspólnego Ratowania się w Nieszczęściach), is regarded 'the father of the Polish cooperative movement'. He freed peasants from serfdom on lands he purchased near Hrubieszów, in today's Lubelskie voivodship, and gave them farms for perpetual usufruct with the right to inherit. He established a school, a hospital and a loan and assistance union on this land. The members of the cooperative were obliged to help one another in cases of random events such as fire, crop failure, hailstorm (Piechowski, 2008). The cooperative movement developed at a different pace in each of Poland's three partitions. Wielkopolska was the most active region in this respect, where several loan and savings as well as trade, raw materials and agricultural cooperatives were created. The first credit union, for entrepreneurs (Pol. Towarzystwo Pożyczkowe Przemysłowców), was set up in 1861 by Rev. Augustyn Szamarzewski. In the Austrian Partition, the Stefczyk credit unions, modelled on the Raiffeisen cooperative banks, were established after 1890. In the Russian Partition, however, the cooperative activity became subject to several restrictions, especially following the January Uprising. It was not until 1905 that the first cooperative institution, the Association of Christian Workers (Pol. Stowarzyszenie Robotników Chrześcijańskich), was established there. Its founder was Rev. Marceł Godlewski. Another significant figure of the Polish cooperative movement was Edward Abramowski, who founded the Cooperativist Association (Pol. Towarzystwo Kooperatystów) in 1908, and was a dedicated promotor of the idea of cooperativeness and its practical development. After World War I, several cooperative institutions were created in Poland, including those associating food producers, dairy producers, farmers as well as building and loan societies, etc., which were grouped in two large organisations: the Union of Cooperative Associations (Pol. Unia Związków Spółdzielczych) and the Republic of Poland's Union of the Associations of Agricultural Cooperatives (Pol. Zjednoczenie Związków Spółdzielni Rolniczych RP). Many of these entities encountered various problems resulting from the harsh post-war conditions and an economic crisis which hit Poland. Despite these difficulties, however, every fifth adult Polish citizen was a member of some kind of cooperative (Piechowski, 2007).

Following the end of World War II, the social economy in Poland was adjusted to adhere to the principles of a centrally-planned economy, i.e. it became subject to the process of nationalisation. This caused numerous characteristic features of this sector to obliterate, most notably in terms of its autonomy from public institutions. In the period of transformation, as Rymśza (2005) asserts,

the authors of the economic reforms in the 1990s were not interested in readopting the patterns of the social economy from the interwar period. The only success in the field of popularising traditional institutions of the social economy was the restoration of the cooperative savings and loans associations in the last decade. However, the network of these institutions developed somewhat independently of the mainstream economic transformations rather than as a result of state policies (p. 3).

In the context of the deepening problems of the 1990s, including a high unemployment rate, growing number of social aid beneficiaries, and partially by the same token, increasing number of people excluded from different spheres of social, cultural and economic life, the idea of the social economy returned to public debate. Among other factors, the above-mentioned issues caused the introduction of new laws, for example the one on social employment (Pol. Ustawa z dnia 13 czerwca 2003 r. o zatrudnieniu socjalnym), and on social cooperatives (Pol. Ustawa z dnia 27 kwietnia 2006 r. o spółdzielniach socjalnych). The financial support for the development of the social policy provided by EU structural funds is also worth mentioning here.

It should be stressed that defining the social economy and social entrepreneurship causes great difficulty. There are several approaches to this issue and several definitions of the social economy and social enterprises. Some of them encompass a wide range of meanings, while others have relatively narrow denotations. What is more, there are definitions which refer to the 'old social economy', and those pointing to the 'new social economy'. The former is centred around activities focusing solely on the members of a given cooperative or insurance fund, whereas the latter involves the entities reaching out to beneficiaries and groups of clients who are not directly their members. According to this approach, the Consortium for the social economy VOSEC defines the social economy as

initiatives and enterprises for which one of the main objectives includes creating social advantages and abiding by the following fundamental principles: the primacy of work over gains, a democratic process of decision-making, priority of providing services to local communities, improving the credibility of institutions and quality of services, and ensuring the stability and permanence of operations (Leś, 2005, pp. 37–38).

According to the *National Programme for the Social Economy Development until 2023. The Economy of Social Solidarity (Krajowy Program Rozwoju Ekonomii Społecznej do 2023 roku. Ekonomia Solidarności Społecznej* [KPRES], 2019, p. 10),

the social economy is the sphere of civic and social activity which serves, by means of either business activity or charitable work, the following purposes: the professional and social integration of those threatened with social marginalisation, creating jobs, providing public service, and fostering local growth.

In relation to the above, the social economy is an indispensable element in building social cohesion. The following principles are specific to entities of the social economy:

- prioritising social goals over economic gains;
- prioritising the provision of services for the members, workers, or the community over pure profit;
- autonomous management and a democratic decision-making process;
- conducting regular activity by means of economic tools and, as a consequence, exposure to economic risk (KPRES, 2019, pp. 9–10).

Sałustowicz (2007, p. 12) lists four key functions of the social economy:

1. Creating new jobs, especially addressed to those marginalised or threatened with marginalisation, offering services in the realm of professional training and enabling transfers to the 'first labour market' (seen from the perspective of the employment and labour market policy).
2. Creating and 'multiplying' social capital (seen from the perspective of the social integration/cohesion policy).
3. Compensating for the 'unreliability of the market and the social state', i.e. providing social services to individuals and groups or local communities, especially in areas where neither the private nor public sectors are able to satisfy the growing social needs (seen from the perspective of the social policy).
4. Including individuals and social groups in the political decision-making process, so it can be regarded as 'the school of democratisation'.

The European Commission defined the institutional boundaries of the social economy sector, enumerating the particular types of its initiatives:

- cooperatives;
- mutual societies;
- non-governmental organisations (associations and foundations) as far as their service-providing or production activity is concerned;
- social enterprises (Izdebski, 2010, pp. 308–309).

According to the definition provided in the KPRES (2019), the following groups of entities operate in the sphere of the social economy:

- social enterprises, which form the basis of the social economy;
- reintegration entities, which serve the purpose of social and professional reintegration of those threatened with social exclusion, including:
 - entities activating disabled persons (occupational therapy workshops, vocational activity centres);
 - social employment entities whose goal is to activate those socially-excluded (social integration centres and clubs).

These forms of entities are not social enterprises, but they can prepare their attendees to work in or run a social enterprise, or their operations can be viewed as a service provided to the local community by social enterprises;

- entities operating in the sphere of public service, which conduct economic activity and employ workers, but whose operations are not exposed to business risk. These are non-governmental organisations (NGOs) providing a payable or free of charge public service; they might become social enterprises provided they undertake economic activity in a certain scope, at the same time meeting their statutory obligations regarding profit distribution;
- rural housewives' associations;

- economic entities established for the purpose of fulfilling a social aim, or for which a certain social aim of common interest gives grounds for their commercial activity. These are entities which do not comprise all the characteristics of a social entity. They can be divided into four subgroups:
 - NGOs conducting business activity, whose profit is used towards fulfilling their statutory aims;
 - vocational activity centres;
 - cooperatives whose aim is providing employment;
 - the remaining cooperatives of a consumer or mutual character.

Regardless of how the core of the social economy is defined, what all these definitions always have in common is its local character and activity aimed to benefit the local community. Most operations conducted by the social economy entities are related to the functioning of a local community; they result from this community's needs and potential (in accordance with the principle of subsidiarity), and address social problems arising in a concrete place, thus contributing to social cohesion. At its core, the social economy involves creating and developing grassroots initiatives, at times using inspiration from the outside. The social economy is closely related to categories such as: locality, self-governance, self-organisation, civic society, social capital, local development and grassroots initiatives.

The social economy and economy based on the principle of solidarity do not yet significantly affect the national economy – according to estimations, in 2015 they accounted for about 1.2% of GDP and approximately 2.4% of the total employment. In 2017, there were 92.7 thousand associations and similar social organisations, foundations and economic and occupational self-government organisations in Poland, which was 3.5 thousand (3.9%) more than in 2015. The largest group among these were associations and similar social organisations (73.9 thousand, which constituted 79.7% of all the entities of the social economy), followed by foundations (14.2 thousand, i.e. 15.3%). Much smaller were the following groups: economic and occupational self-government organisations (2.8 thousand) and religious social entities (1.8 thousand). In 2017, out of 92.7 thousand active non-profit organisations, 81.1 thousand collaborated with other entities, of which the largest group were public institutions (80.4%). 87% of the collaborating entities declared no barriers in the process, which was 1% less than in 2015. The second largest group with which the studied entities collaborated were other organisations from the non-profit sector (51.8%). Commercial organisations, on the other hand, were mentioned least frequently in this context (32.5%) (GUS, 2019d).

According to Statistics Poland, in the period of 2008–2017, the number of active public benefit organisations (OPP) grew by almost a third, from 6.2 thousand to 9.2 thousand. At the end of 2017, there were 9.5 thousand public benefit organisations, of

which 9.2 thousand were actively operating. Public benefit organisations accounted for 10.1% of all the active non-profit organisations of the following kinds: associations and similar social organisations, foundations, religious social entities and economic self-government (GUS, 2019c).

1,209 units of social and professional reintegration conducted active operations in 2017, which was 22 units more (1.9%) than in 2016. In 2017, as in the previous years, these were mainly institutions whose aim was to activate the disabled. More specifically, there were 715 occupational therapy workshops and 109 vocational activity centres. Among institutions providing services for other groups of people threatened with social exclusion, there were 166 social integration centres and 219 social integration clubs actively operating in Poland in 2017. Between 2012 and 2017, the total number of social integration centres, vocational activity centres and occupational therapy workshops grew by 157 units, i.e. by 18.8%. Most of these entities jointly with social integration clubs were located in the following voivodships: Wielkopolskie (11.5% of all these institutions), Śląskie (10.2%), Małopolskie (9.7%) and Mazowieckie (8.7%). The number of units of social and professional reintegration in relation to the total number of the Polish population indicates that in 2017, on average there were three such units per every 100 thousand people. This indicator was the highest in Warmińsko-Mazurskie voivodship – approximately 6 such units per 100 thousand people. In 2017, almost 43.1 thousand people were beneficiaries of integration services offered by social integration centres, vocational activity centres or occupational therapy workshops. From 2016 to 2017, the number of beneficiaries grew by 4.9%, i.e. by 2 thousand people. From the point of view of the type of institution where social and professional integration took place, the beneficiaries of occupational therapy workshops were the most numerous group (62.9%), the attendants of social integration centres were the second largest (26.6%), whereas the disabled persons employed in the framework of vocational activity centres constituted the smallest group (10.5% – those with significant or moderate disability) (GUS, 2019b).

The social economy sector is additionally composed of the rural housewives' associations, which are described in the act of 9 November 2018 on rural housewives' associations (Pol. Ustawa z dnia 9 listopada 2018 r. o kołach gospodyń wiejskich). Their number is currently estimated at approximately 26 thousand.

A social enterprise is a specific kind of entity of social and solidarity-based economies. According to Pearce (2003), the term 'the social economy enterprise' is a general denotation of economic entities which have social aims, are not focused on generating or distributing capital, and have a democratic, transparent structure based on joint management. According to Hausner et al. (2008), social enterprises are the key element of the social economy. Their function includes not only producing specific

goods and services, but also activating social capital, generating innovativeness, and expanding the market by initiating the participation in it of those previously excluded. Despite the fact that social enterprises are a part of the market economy, they locate their mission and aims outside the market. Social entrepreneurship is based on social capital generated by a particular local community. Leś (2005), on the other hand, argues that social enterprises are often seen as a sub-group within the social economy sector which is market-oriented and at the same time is the response of the third sector to its problems with financing its activity. The aim of social enterprises is reaching an economic balance by means of a successful combination of the market and outside-the-market sources of financing as well as non-financial assets and charitable donations. Social enterprises are the embodiment of the entrepreneurship abilities of the third sector organisations, which, through their economic activity, combine classical solidarity with the entrepreneurship spirit. Moreover, they are an institutional response of the third sector organisations to problems relating to the financing of non-profit organisations that resulted from the transformation of the welfare state and the decrease in charitable donations.

According to Dees (2008), social entrepreneurs play the role of the ‘agents of change’ in the social sector through:

- their mission of creating and maintaining social values (as opposed to private values);
- discovering and the unrestricted use of new opportunities in order to fulfil this mission;
- engaging in the continuous process of innovation, adaptation and learning;
- fearless activity, not limited by the owned assets;
- caring for a high transparency of activity for beneficiaries and from the point of view of the achieved goals.

What distinguishes social enterprises from other entities functioning on the market is first and foremost the fact that through their activity, they create both social and economic values. In other words, they combine their social mission with an effective business activity.

According to the Ministry of Family, Labour and Social Policy, the number of social enterprises reached 838 in 2018. The employment in these entities at the end of August 2018 totalled 6,378 persons, of whom 22% were disabled. Data from Statistics Poland indicate that the total employment of disabled persons is less than 3%, i.e. 492.0 thousand persons out of the total number of the employed (16,565 thousand) are disabled. The above data show that the employment in social enterprises is different from any other kind of employment. Social cooperatives are

one of the most widespread forms of social entrepreneurship. According to the data from the National Court Register, there were 1,519 registered social cooperatives that were not in the process of liquidation as of 19 November 2018.

4. Social aid and integration

Social aid is the ‘tool’ of social cohesion which reacts the quickest to the changes in the social policy system. The structure of a modern social assistance system has to be sufficiently flexible to allow its effective adaptation to the dynamic social and economic changes. In recent years, what especially affected the sector of social assistance was the implementation of the *Family 500+* programme. Thanks to this programme, it was possible to focus activity on individuals and families that needed multi-dimensional support and more complex aid than just the mere supplementation of the necessary financial resources.

The child benefit introduced on 1 April 2016 in the framework of the *Family 500+* programme, and the changes in the labour market, such as a registered fall in the unemployment rate, an increase in the minimal wage, and the introduction of a minimal hourly rate, have all significantly affected the social assistance system and its beneficiaries. A good example of such influence is the limited extent of extreme and relative poverty observed in the period of 2016–2017. The introduction of the *Family 500+* programme contributed to the improvement of families’ material situation and living conditions, which in consequence, increased their work towards becoming independent of the social aid. This trend has been visible despite the fact that *Family 500+* is not taken into account in the calculations of the level of income authorising people to use social benefits.

The number of persons who were granted social benefits in the framework of own or commissioned tasks, regardless of their character, totalled approximately 1.4 million persons in 2017, which marks a 19% fall compared to 2015 (about 1.8 million persons). The number of families with children receiving social aid also decreased, by approximately 24% (from 504 thousand in 2015 to 384 thousand in 2017). This means that about 120 thousand fewer families with children than in 2015 were provided social assistance. The analysis of the types of families with many children demonstrated that the largest fall (by 30%) occurred in the group of families with 7 or more children.

As regards financial benefits granted in the framework of the social assistance system, significant changes were observed in the group of people receiving temporary benefits or designated benefits. In the case of temporary benefits, in the period of 2015–2017 the number of persons granted this kind of benefit decreased by approximately 23% (from about 472 thousand in 2015 to about 365 thousand in

2017). Designated benefit, on the other hand, is a kind of optional aid which can be granted in order to satisfy an indispensable living need, by covering a part or its total cost. Indispensable living needs include the purchase of food, medicines, fuel and satisfying other needs defined in the act on social assistance. The number of persons receiving this kind of aid in 2017 was lower than the same indicator in 2015 by 18% (a fall from 844 thousand in 2015 to approximately 691 thousand in 2017). The decrease in the number of people who received aid in the form of either temporary or designated benefit is important in this context, because it is assumed that people who withdraw from this kind of aid do so as a result of having been granted for example a child benefit, thanks to which they were able to start financing their indispensable living needs on their own.

As a consequence, the structure of beneficiaries of social assistance is changing. Taking into consideration general demographic trends connected with the ageing of the society, a further increase is expected in the share of elderly and single persons in the group of social assistance beneficiaries. These processes necessitate all the entities involved to change their perception of the aims of social assistance, including those relating to social cohesion. The development of multidimensional forms of long-term assistance and assistance complementing the range of available services for seniors and dependent persons becomes of key importance here.

The distinct character of social assistance is related to the fact that it is provided directly within the local community and in the place of residence of beneficiaries. The correct recognition of needs in this field, and planning appropriate action is the duty of the authorities at all levels. The distribution of social aid at the local level necessitates the multilateral collaboration of all the entities operating in a particular local community towards supporting the members of this community who need help. The above-mentioned arrangement of social assistance institutions allows a great flexibility of the system and thus makes it possible to react efficiently to any locally arising new social issues. Having recognised the importance of social assistance as one of the vehicles for social coherence, the Ministry of Family, Labour and Social Policy undertook additional measures to support local governments in fulfilling their specific tasks defined by the act on social assistance (Pol. Ustawa z dnia 12 marca 2004 r. o pomocy społecznej). Those additional programmes and initiatives carried out by the Ministry were aimed at:

- counteracting homelessness and the improvement of services offered to the homeless;
- re-introducing those socially excluded or threatened with social exclusion to social and professional life, and supporting their presence there;
- offering aid in the form of food and support the provision of meals to the least affluent inhabitants of Poland, especially children;

- building a network of social assistance within the local communities for those experiencing psychological problems;
- increasing the effectiveness of counteracting violence and limiting the scale of this phenomenon in Poland.

Among the activities aimed at counteracting homelessness, a programme entitled *Defeating homelessness. The programme of help for the homeless* (Pol. Pokonać bezdomność. Program pomocy osobom bezdomnym) was carried out, which supplemented the statutory duties of the local gmina-level self-governments with respect to counteracting homelessness. This programme was also designed to support the activity of authorised institutions and entities operating in the field of social assistance. A new programme *From exclusion to activation. The programme of assistance for the socially and professionally excluded for the years 2019–2020* (Pol. Od wykluczenia do aktywizacji. Program pomocy osobom wykluczonym społecznie i zawodowo na lata 2019–2020), on the other hand, was one of several initiatives promoting social inclusion and fostering social cohesion at the local level. The main objective of this programme involved the identification of the needs and initiating and strengthening the participation of those socially excluded in social and professional life. This aim was achieved by creating a new profile of reintegration services, expanded by issues connected with enhancing social values and increasing professional qualifications, which was applied by entities offering social employment. The programme was also designed to support local self-government units and NGOs in their utilisation of instruments of the ‘active form of aid’ to eliminate factors that cause social exclusion. The programme was carried out through the following four open tender procedures:

1. ‘A new profile of services in social interaction clubs’;
2. ‘Counteracting social exclusion by social and professional reintegration in the framework of an individual programme of social employment carried out in a centre of social integration’;
3. ‘Active young people – measures targeting young people threatened with social exclusion’;
4. ‘Country-wide Polish conference presenting and promoting activities performed in centres and clubs of social integration as good practices in the field of social and professional reintegration’.

Another kind of support that has been developed is the food aid. In line with the law of the Council of Ministers from 15 October 2018 (Pol. Uchwała nr 140 Rady Ministrów z dnia 15 października 2018 r. w sprawie ustanowienia wieloletniego rządowego programu ‘Posiłek w szkole i w domu’ na lata 2019–2023), in the years 2019–2023, all the voivodships are carrying out a multi-year governmental programme called *A meal at school and at home* (Pol. Posiłek w szkole i w domu), to which PLN 2.75 billion has been earmarked. It is estimated that 2,478 gminas and

nearly 1.2 million persons are the beneficiaries of the programme. It offers aid to the elderly, the disabled, people with low income and children and students who are brought up in families in a difficult financial situation. An important element of the programme is guaranteeing a hot meal cooked in a school canteen to children in schooling age.

In the years 2014–2020 the Food Aid Operational Programme was carried out in the framework of the Fund for the European Aid to the Most Deprived (FEAD). The main objective of the programme was extending food aid in the form of food parcels or meals to persons experiencing deepest forms of poverty. The programme involved the purchase and distribution of food among those who need it most, as well as accompanying activities aimed at social inclusion, offered by partnership organisations. This form of aid enabled individuals and families to finance their other needs with the money saved thanks to food aid.

Another important group of activities undertaken by the Ministry of Family, Labour and Social Policy are initiatives supporting the development of caring services, especially those which enable the elderly and dependent people remain within their local communities, in their place of residence. These initiatives include programmes such as: the *Care 75+* programme, the *Senior+* programme or intensive support for the network of local self-help homes.

From the point of view of the Ministry of Family, Labour and Social Policy it was important that caring services offered in the beneficiaries' place of residence were available in every gmina. The implemented activities are just one of the necessary elements of building social cohesion at the local level, but the effects are already visible. The data from the MPiPS-03 yearly reports indicate that since 2015, the number of persons receiving caring services and the number of gminas offering such services have been systematically growing. In 2015, there were 88,096 persons in 2,025 gminas who were beneficiaries of the caring services (not taking into account specialist services), whereas in 2017, these numbers increased to 100,696 and 2,119, respectively. The latter number also constitutes 85% of all Polish gminas (2,478). One-off research carried out by the Ministry twice, in 2017 and 2018, with the application of the Central Statistical Applications showed that the number of gminas which did not offer caring services decreased from 470 (in 2015), through 430 (in 2017) to 376 (in May 2018).

Every year, the number of local self-help homes is growing. In 2018, there were 800 such institutions in Poland, providing 30 thousand available places. It was assumed that at the end of 2018, there would be 819 local self-help homes in Poland. It is worth noticing that in the period of 2015–2018, their number grew by 40 units, i.e. 1,900 places. The further aim was to ensure that these institutions were in every poviats and so the years 2016–2017 saw a systematic increase in the number of poviats with such institutions. Earlier in 2018 it was expected that after completing the support programme only 32 poviats would have been left without a local self-help home.

5. Conclusions

The social economy and social assistance both play an important part in solving social problems in the field of social exclusion, creating space for the operations of several other entities for which profit is not a priority. Entities of the social economy are institutions and organisations which first and foremost have a social mission to fulfil, which want to achieve social goals, and, above all, which advance social cohesion to the greatest extent.

The entities of the social economy sector follow the idea of building social capital and social cohesion by engaging in activities such as the integration of local communities; they are also an important element of the policy aimed to increase employment and professional and social activation; they have the potential for offering public services that satisfy important needs which the members of a given community cannot fully satisfy on their own. An example of the state's support in the above-mentioned areas include the described herein programmes – those offering aid to families, the homeless, social integration clubs and social integration centres. They are the vehicle for local development, activating local resources, fostering competitiveness of the local economy by developing a network of collaboration. Thanks to the entities of the social economy, individuals and families threatened with poverty and social exclusion are granted a chance, given opportunities and resources allowing their full participation in the economic, social and cultural life, and obtaining decent living conditions.

Recognising the challenges connected with the appropriate planning and implementation of policies which contribute to the improvement of social cohesion, the undertaken activity should be aimed at making the presently-operating institutions and mechanisms more effective, and also introduce new solutions. This kind of activity should be carefully planned and coordinated, and be consistent with the current strategic framework and comprehensive social policy. At the same time, the character of local activity and the considerable creativity of grassroots initiatives should be strictly connected with social innovations. The important dimensions of the process of building social cohesion, i.e. the significance of the locality and grassroots initiatives, the role of innovations and their gradual inclusion in the mainstream policy, as well as an effective monitoring of activities by adopting appropriate indicators, are at the same time compliant with the main elements of a modern and effective system of social assistance.

References

- Consolidated version of the Treaty on European Union and the Treaty on the Functioning of the European Union. (2016). *Official Journal of the European Union*, C 202.
- Dees, J. G. (2008). Definicja przedsiębiorczości społecznej. In J. J. Wygnański (Ed.), *Przedsiębiorstwo społeczne. Antologia kluczowych tekstów* (pp. 245–252). Warszawa: Fundacja Inicjatyw Społeczno-Ekonomicznych.

- Durkheim, É. (2011). *O podziale pracy społecznej* (K. Wakar, Trans.). Warszawa: Wydawnictwo Naukowe PWN.
- Greta, M., & Tomczak-Woźniak, M. (2013). Problem spójności w nowej polityce regionalnej UE na lata 2014–2020. *Optimum. Studia Ekonomiczne*, 4(64), 3–12. <https://doi.org/10.15290/ose.2013.04.64.01>.
- Główny Urząd Statystyczny. (2019a). *Biuletyn statystyczny*, 63(3). Warszawa. <https://stat.gov.pl/obszary-tematyczne/inne-opracowania/informacje-o-sytuacji-spoeczno-gospodarczej/biuletyn-statystyczny-nr-32019,4,86.html>.
- Główny Urząd Statystyczny. (2019b). *Centra integracji społecznej, kluby integracji społecznej, zakłady aktywności zawodowej i warsztaty terapii zajęciowej w 2017 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/gospodarka-spoeczna-wolontariat/gospodarka-spoeczna-trzeci-sektor/centra-integracji-spoecznej-kluby-integracji-spoecznej-zaklady-aktywnosci-zawodowej-i-warsztaty-terapii-zajeciowej-w-2017-r-,6,6.html>.
- Główny Urząd Statystyczny. (2019c). *Organizacje pożytku publicznego i 1% w 2017 r./2018 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/gospodarka-spoeczna-wolontariat/gospodarka-spoeczna-trzeci-sektor/organizacje-pozytku-publicznego-i-1-w-2017-roku,4,4.html>.
- Główny Urząd Statystyczny. (2019d). *Współpraca organizacji non-profit z innymi podmiotami w 2017 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/gospodarka-spoeczna-wolontariat/gospodarka-spoeczna-trzeci-sektor/wspolpraca-organizacji-non-profit-z-innymi-podmiotami-w-2017-r-,9,3.html>.
- Główny Urząd Statystyczny. (2020). *Zasięg ubóstwa ekonomicznego w Polsce w 2019 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/warunki-zycia/ubostwo-pomoc-spoeczna/zasieg-ubostwa-ekonomicznego-w-polsce-w-2019-roku,14,7.html>.
- Hausner, J., Laurisz, N., & Mazur, S. (2008). Przedsiębiorstwo społeczne – konceptualizacja. In J. Hausner (Ed.), *Zarządzanie podmiotami ekonomii społecznej* (pp. 9–20). Kraków: Małopolska Szkoła Administracji Publicznej, Uniwersytet Ekonomiczny w Krakowie. https://msap.uek.krakow.pl/doki/publ/es_zarzadzanie.pdf.
- Human Development Report Office. (2018). *2018 Statistical Update: Human Development Indices and Indicators*. <http://hdr.undp.org/en/2018-update>.
- Izdebski, H. (2010). *Doktryny polityczno-prawne. Fundamenty współczesnych państw*. Warszawa: LexisNexis.
- Krajowy Program Rozwoju Ekonomii Społecznej do 2023 roku. *Ekonomia Solidarności Społecznej*. (2019). Załącznik do uchwały nr 11 Rady Ministrów z dnia 31 stycznia 2019 r. (MP 2019 poz. 214).
- Leś, E. (2005). Nowa ekonomia społeczna – wybrane koncepcje. *Trzeci Sektor*, (2), 36–64.
- Ministerstwo Rodziny, Pracy i Polityki Społecznej. (2018, October 12). *Polska liderem w walce z nierównościami społecznymi*. <https://archiwum.mriips.gov.pl/aktualnosci-wszystkie/art,5528,10323,polska-liderem-w-walce-z-nerownosciami-spoecznyimi.html>.
- Pahl, R. E. (1991). The search for social cohesion: from Durkheim to the European Commission. *European Journal of Sociology*, 32(2), 345–360. <https://doi.org/10.1017/S0003975600006305>.
- Pearce, J. (2003). *Social Enterprise in Anytown*. London: Calouste Gulbenkian Foundation.
- Piechowski, A. (2007). Rodowód przedsiębiorczości społecznej. In E. Leś & M. Ołdak (Eds.), *Przedsiębiorstwo społeczne w rozwoju lokalnym* (pp. 19–46). Warszawa: Collegium Civitas, Instytut

- Polityki Społecznej Uniwersytetu Warszawskiego. <https://silo.tips/download/przedsiębiorstwo-spoeczne-w-rozwoju-lokalnym>.
- Piechowski, A. (2008). Gospodarka społeczna i przedsiębiorstwo społeczne w Polsce. Tradycje i przykłady. In E. Leś (Ed.), *Gospodarka społeczna i przedsiębiorstwo społeczne. Wprowadzenie do problematyki* (pp. 13–36). Warszawa: Wydawnictwa Uniwersytetu Warszawskiego. https://www.ekonomiaspoleczna.gov.pl/download/files/pozytek/Polecamy/gospodarka_spoeczna.pdf.
- Rawls, J. (2009). *Teoria sprawiedliwości* (M. Panufnik, J. Pasek & A. Romaniuk, Trans.). Warszawa: Wydawnictwo Naukowe PWN.
- Rymsha, M. (2005). Stara i nowa ekonomia społeczna. Polska na tle doświadczeń europejskich. *Trzeci Sektor*, (2), 2–9.
- Sałustowicz, P. (2007). Pojęcie, koncepcje i funkcje ekonomii społecznej. *Ekonomia Społeczna*, (2), 4–17. <https://files2.ngo.pl/files/ekonomiaspoleczna.pl/public/teksty2007/aktualniejsze2007/080414EStesky2007Salustowicz.pdf>.
- Single European Act. (1987). *Official Journal of the European Communities*, L 169.
- Strategia na rzecz odpowiedzialnego rozwoju do roku 2020 (z perspektywą do 2030 r.)*. (2007). <https://www.gov.pl/web/fundusze-regiony/informacje-o-strategii-na-rzecz-odpowiedzialnego-rozwoju>.
- Szopa, B. (2012). Teorie ekonomiczne a ekonomia społeczna. In M. Frączek, J. Hausner & S. Mazur (Eds.), *Wokół ekonomii społecznej* (pp. 11–34). Kraków: Małopolska Szkoła Administracji Publicznej, Uniwersytet Ekonomiczny w Krakowie. http://msap.uek.krakow.pl/doki/publ/ES_Podrecznik_wes.pdf.
- Treaty of Lisbon. (2007). *Official Journal of the European Communities*, C 306.
- Uchwała nr 140 Rady Ministrów z dnia 15 października 2018 r. w sprawie ustanowienia wieloletniego rządowego programu 'Pośilek w szkole i w domu' na lata 2019–2023 (MP 2018 poz. 1007).
- Ustawa z dnia 12 marca 2004 r. o pomocy społecznej (Dz.U. 2004 nr 64 poz. 593).
- Ustawa z dnia 27 kwietnia 2006 r. o spółdzielniach socjalnych (Dz.U. 2006 nr 94 poz. 651).
- Ustawa z dnia 13 czerwca 2003 r. o zatrudnieniu socjalnym (Dz.U. 2003 nr 122 poz. 1143).
- Ustawa z dnia 9 listopada 2018 r. o kołach gospodyń wiejskich (Dz.U. 2018 poz. 2212).

Social well-being and the use of EU funds at a local level

1. Introduction

In 1998, the British deputy Prime Minister John Prescott announced a plan to create and regularly publish a 'happiness index', which was to measure standard of life. The index consists of 13 indicators relating to economic growth, investments in the social sphere, health, education and professional courses, employment, dwelling standard, climate changes, air pollution, transport, drinking water quality, the use of grounds, waste disposal and nature reserves (Begg et al., 2003, p. 44).

EU funding constitutes one of the instruments stimulating social and economic development at a regional and national level, thereby also improving the standard of living and social well-being. It is because the EU funds foster innovativeness, competitiveness and the effectiveness of the activity undertaken by a variety of entities, including local governments of different levels. The effective administration of EU funds is conducive to the optimal utilisation of regions' resources in the context of their sustainable economic growth and social development. The volume of such activity of particular local government units (LGUs) in Podkarpackie voivodship varies, as evidenced by the considerable variation in the number of projects implemented in particular poviats.

The main purpose of the article is to present how EU funds may be administered by powiat-level self-governments and how they contribute to the region's economic development, using the Ropczycko-Sędziszowski powiat as an example. Particular attention was devoted to projects implemented in the following areas: road infrastructure, healthcare, natural environment protection and education. The study presents the current effects of the projects in progress which directly or indirectly stimulate local development and improve the standard of living of the local community.

^a University of Rzeszów, Institute of Economics and Finance. ORCID: <https://orcid.org/0000-0002-0228-1761>.

^b University of Rzeszów, Institute of Economics and Finance. ORCID: <https://orcid.org/0000-0002-6815-6488>.

2. Local development issues

The perception of socio-economic development as an economic category allows the recognition of each country's position within the global economy, the specification of its capacity to expand, its inclination for international collaboration, the degree to which its potential is fulfilled, its growth dynamic, etc. The increasing interest in developmental processes is the result of changes in the conditions in which basic economic systems function. Decisions made in the sphere of socio-economic policy concern not only individual LGUs, but entire communities as well. In Poland, it is the government administration bodies and local and regional authorities, represented by the *gmina*, *powiat* and *voivodship* local government administration that are responsible for these decisions. Delegating the competences and resources necessary for the realisation of any specified aims and tasks to these authorities also means that they accept the responsibility for the management of these resources and the effectiveness of their utilisation, in the context of satisfying the socio-economic needs of a given area (Milewski, 2004, p. 117). LGUs are an integral part of the local economy. On the one hand, they form a subsystem of the country's public administration, and on the other – they are one of the forms a society can be organised into. According to Art. 3, par. 1 of the European Charter of Local Self-Government, 'local self-government denotes the right and the ability of local authorities, within the limits of the law, to regulate and manage a substantial share of public affairs under their own responsibility and in the interests of the local population' (Kornak & Rapacz, 2001, p. 35).

Local development is a category of socio-economic development. In the framework of a three-tier administrative division, which was introduced in Poland in 1999, 'local development denotes a process of changes which *gminas*, cities and *poviats* are subject to' (Szewczuk et al., 2011, p. 14). This definition includes creating jobs and providing the best possible living conditions in the local environment (Parysek, 1997, p. 46). Local development is a spatially determined concept which shows the process of positive changes of a quantitative, and, above all, qualitative nature (Ziółkowski, 2005, p. 88). These changes, resulting from the collaboration and mobilisation of different local actors, involve the creation of new functional qualities of a given territorial unit or the improvement of the existing ones and increasing its potential for economic growth, through the provision of external benefits for economic entities, advantages of the local ecosystem, and spatial order (Brol, 2006, p. 18).

The fundamental goal of development is to permanently satisfy people's needs and aspirations. A rational identification of these needs is a prerequisite for relevant and sustainable development (Janikowski, 2006, p. 52). The ability to foresee the future and forecast certain phenomena are important factors determining the efficiency of all entities. It is of great importance for and has a large influence on the widely-understood local development (Lasak, 2010, p. 109). Local government plays

a key role in the local development, which, as per the Gmina-level Local Government Act (Pol. Ustawa z dnia 8 marca 1990 r. o samorządzie gminnym), is obliged to satisfy any collective needs and to resolve any current problems of local communities. The introduction of numerous initiatives intended to stimulate local development is beneficial for the gmina as the local community and for each individual resident. If the idea of local development is to be implemented, it is important that every initiated business activity provides the entire community with specific benefits within the place where it operates, whether it be supplying the local budget, job creation, expanding the infrastructure, developing the local market, or the improvement of the state of the natural environment (Parysek, 1997, p. 213).

Activities undertaken towards local development, believed to be typical of local governments of particular gminas, are diverse. Nevertheless, the local authorities' activity designed to provide local communities with high living standards is an absolute must for the effective development of social well-being in a given area. Local authorities of every level should take any relevant action to ensure a sustainable development of the area, recognising the residents, entrepreneurs and the economy's best interests (Soliński, 2010, p. 107).

The concept of local development is inextricably connected with the idea of eco-development, i.e. planning with an increasing number of social and environmental elements (Żegleń, 2005, p. 182). Economic and spatial planning, for long treated as separate domains, have been recently linked together by a common element – natural environment protection. This necessity is referred to as eco-development (Markowski, 1999, p. 151), and, in broader terms, as sustainable development. Sustainable development involves managing natural resources in a way which allows the achievement of economic and social results while preserving biological diversity and cultural integrity. Numerous concepts of local development consider the improvement of the quality of the environment as a crucial aspect in the process of improving the quality of life of the residents of a given area, and, consequently, of the broadly understood social well-being.

3. Social well-being and quality of life

At present, an individual's well-being is measured through a variety of factors, including the level of real income and wealth (taking into account total expenditure, i.e. the consumption of goods and services), the sense of economic and social security (including job security, price stability, health care provision, social security), the level of knowledge and education, and lifestyle which determines quality of life. Additionally, several other elements related to social, political, civic and family functioning should be taken into consideration in this context (Aksman, 2010, pp. 138–140).

Social well-being is related to the concept of quality, which is a subjective and a relative category. Quality is a set of characteristics which fulfil the customer's expectations; therefore it must be subject to a continuous verification. It is a subjective category, as each customer evaluates the quality of a service according to their own criteria and expectations (called expected quality), and relative, as there is no common measurement of quality for all.

Sustainability indicators play an important role when issues related to the improvement of the quality of life of the members of the local community are considered. They are:

- HDI – *Human Development Index*;
- HFI – *Human Freedom Index*;
- ENGI – *Ecological Natural Goods Index*;
- EQI – *Environment Quality Index as a Development Standard*.

These indicators seem to be crucial when discussing issues related to social well-being in a broad sense (also referred to as quality of life). The notion of well-being is multi-faceted and various institutions have attempted to introduce their own measures of it, yet no universally-acknowledged one has been found so far. In order to be able to actively pursue a policy focused on well-being, it is necessary to establish relevant measures of quality of life first. Although improving quality of life should be the main task of the authorities, the question is how to balance between GDP and well-being so as to avoid the risk of neglecting economic growth resulting from an overly pro-social policy, which is eventually bound to decrease the citizens' quality of life. It is important to remember that when measuring well-being, both objective and subjective indicators can be adopted. A joint consideration of the objective indicators and people's opinions about their own situation provides valuable information on the relationship between the level of citizens' happiness and their income (Dołęgowski, 2016, pp. 78–81).

4. EU funds utilisation at a local level

One of the priorities of EU's cohesion policy is to support regional (including local) development, which is aimed at reducing developmental disparities among regions and which translates into an increase in the economic competitiveness and the improvement of the citizens' quality of life. EU funds are instruments, 'which – in the framework of a variety of programs – are to support the financing of the activities undertaken by public and private entities to reduce developmental disparities' (Czudec, 2017, p. 35). Financial capacity together with the proper management of finances affect not only the functioning of LGUs, but also the overall local development. The management-related changes taking place play an important part in the development of LGUs, which is reflected in the development of the local economy and in the improvement of the inhabitants' situation (Kozuch, 2006, p. 11). EU funds are

important financial instruments of the EU regional policy, which significantly affect local growth and development, and enhance the competitiveness of gminas and poviats (Kotoła, 2006, p. 162). Funds which come from the EU budget enable the financing of investments to take the form of financial engineering, involving the use of several different sources of financing (Wróblewska, 2010, p. 66). In response to the requirements of the EU policy aiming to provide ‘the best possible framework conditions supporting innovation, excellence and collaboration’, local and regional authorities carry out activities targeting several spheres, including:

- building infrastructure;
- conducting developmental work;
- establishing communication networks between the economy and science;
- supporting grassroots, local initiatives.

Poland is the largest beneficiary of the EU aid. In the years 2007–2013, the country received nearly EUR 85.6 billion in cohesion policy funds, of which EUR 67.3 billion came from the EU budget. The remaining amount consisted of the input of national public funds, at approximately EUR 11.9 billion, while EUR 6.4 billion were contributions from private entities. In the years 2014–2020, the EU allocated EUR 82.5 billion for Poland. Central and local authorities discussed and reached agreements with a variety of partners as regards the division and distribution of the funds.

5. The example of Ropczycko-Sędziszowski powiat

The activity of local governments in Poland focuses largely on local and regional development. As mentioned before, local development is a category of socio-economic development which involves the ‘comprehensive shaping, under the internal and external specific local conditions, of the optimal living environment for the local population, and the improvement of the organisation, functioning and the structure of a gmina’ (Musiałkowska & Wiśniewski, 2017, p. 89). It requires LGUs to make proper use of the existing resources (financial, labour, municipal property, natural environment and cultural heritage). If LGUs are to implement such activities, sources of their financing must be ensured. In this context, the funds obtained from the EU play a major role. This sub-chapter presents how EU funds, especially those obtained from the European Social Fund, are used by a selected LGU of Podkarpackie voivodship, operating at the local level, namely by the government of Ropczycko-Sędziszowski powiat.

It is worth noting that Poland performs relatively well in terms of the implementation of the cohesion policy and the administration of EU funds. In this respect the country ranks in the middle of EU member states (Baranowska-Skimina, 2012). The Ropczycko-Sędziszowski powiat has been selected for a more thorough analysis as it was one of the regions which ranked in the middle of the rating of poviats

in Podkarpackie voivodship which measures the level of the EU fund co-financing of projects completed in the territory of a given powiat by the end of 2017 in the framework of the partnership agreement for 2014–2020. This powiat also occupied a similar place in the rating evaluating the level of funds in the powiat budget for the financing and co-financing of EU programmes and projects *per capita* in the years 2014–2017 (Urząd Statystyczny w Rzeszowie, n.d.).

The resources obtained from the EU budget by the local government of Ropczycko-Śędziszowski powiat have been (and still are) used mainly to improve the residents' quality of life through municipal investments including road infrastructure, education, culture, healthcare and environmental protection. The activity undertaken by the powiat's LGU is consistent with the results of the research on the cohesion policy in Poland which demonstrate that EU funds are allocated mainly to the development of social infrastructure, i.e. the area of particular importance for satisfying the needs of individuals; in other words, for improving their quality of life (Czudec, 2017, p. 42; Janoś-Kresło, 2008, pp. 108–109; Misiak, 2011, pp. 3, 26–37).

The five-dimensional social infrastructure (education, health care, culture, tourism, sports and recreation) determines the conditions for the human capital development. Its condition and accessibility

directly affect human capital through the quality of healthcare, social welfare, culture and education services, and indirectly through its impact on the economic and social situation of the region that shapes this region's settlement and investment climate. It is because social infrastructure determines quality of life, the degree to which residents' needs are satisfied, and the level of education and professional qualifications of the inhabitants. Wide access to high-quality medical services, social assistance services and education at every level therefore contribute to sustainable regional development and the emergence of better-educated regional staff; furthermore, it adds to the investment attractiveness of the region (Misiak, 2011, p. 3).

The continuous improvement and modernisation of road infrastructure is of equal importance to the local development and to the process of improving the local community's quality of life.

The Ropczycko-Śędziszowski powiat, by defining the priority areas which, in the context of striving to reduce differences in development, require financial support from the EU, conforms to the above-mentioned scopes, since the EU funds of the financial perspective of 2007–2013 and 2014–2020 were used in the following areas:

1. road infrastructure;
2. environmental protection;
3. health care;
4. educational infrastructure;
5. social assistance;
6. culture.

Selected projects implemented in the Ropczycko-Śędziszowski powiat

Financial perspective	Title of the project	Aim of the project	Notes
2004–2006	<i>The modernisation of powiat road no. 1343R Gnojnica–Broniszów in Gnojnica and Broniszów</i>	To improve road safety and to reduce vehicle exploitation.	Completed scope: 4,700 m.
	<i>The modernisation of powiat road no. 1225 Niwiska–Kamionka–Śędziszów Małopolski in Borek Wielkopolski and Kamionka</i>	To improve road safety, to reduce travel time, to decrease the number of accidents and road collisions.	Completed scope: 5,250 m.
	<i>Reconstructing the powiat road system in Śędziszów Małopolski and Góra Ropczycka</i>	The scope of work encompassed the construction of the drainage system, the construction and modification of the existing sidewalks, and layering a new bituminous surface on all the above-mentioned parts.	As part of the project, the entire Wesola and Węglowskiego streets have been rebuilt, jointly with a part of the Śędziszów Małopolski–Zagorzyce–Wielopole powiat road. Completed scope: 2,580 m.
	<i>Reconstructing powiat road no. 1331R Ostrów–Borek Wielki–Boreczek</i>	To enhance road safety, to reduce vehicle exploitation, to reduce travel time, to enhance the comfort of travelling.	Completed scope: 2,600 m.
	<i>The removal and reclamation of illegal rubbish dumps in Ropczycko-Śędziszowski powiat</i>	To decrease the risk of groundwater contamination.	In the framework of the project, 105 illegal rubbish dumps were removed and reclaimed in the powiat.
	<i>The extension and modernisation of the powiat hospital building in Śędziszów Małopolski</i>	To improve the availability and quality of specialist and basic healthcare within the Ropczycko-Śędziszowski powiat.	The rooms of the Internal Diseases Ward were reconstructed, basements were renovated, central heating and air conditioning installations were modernised, and the elevation of the hospital building was constructed.
	<i>The Powiat Scholarship Programme as a Developmental Chance for Young People from Rural Areas</i>	To provide equal educational opportunities through the support extended to students in a difficult financial situation which previously hindered their learning opportunities.	The project provided financial support to 702 students of upper secondary schools ending in final exams (Pol. matura) from rural areas.

Selected projects implemented in the Ropczycko-Sędziszowski powiat (cont.)

Financial perspective	Title of the project	Aim of the project	Notes
2007–2013	<i>The modification of powiat road no. 1342R Sędziszów Małopolski–Zagorzyce–Wielopole Skrzyńskie</i>	To create a transport route crucial to the region's development.	The project involved the reconstruction of the road connecting the E-4 road (international Jędrzychowice–Korczoza road) with voivodship road no. 986 (Wiśniowa–Ropczyce–Tuszyna). Completed scope: 12,390 m
	<i>Increasing the attractiveness and quality of vocational education in the Ropczycko-Sędziszowski powiat through the adaptation and development of technical and learning facilities</i>	To adapt and equip the technical and learning aids in upper secondary schools in Ropczyce.	The project involved the renovation of 10 laboratories in two upper secondary schools and the purchase of equipment and teaching aids for the IT, landscape architecture, and the construction and mechatronics laboratories. Moreover, places for young people were redecorated and fully equipped, which included a modern canteen serving the Interschool Dormitory. In addition, a lift shaft for the disabled was built.
	<i>Improving the quality and increasing the availability of rehabilitation medical services within the Ropczycko-Sędziszowski powiat through the extension of the technical base of the Healthcare Complex in Ropczyce</i>	To increase the availability and quality of medical rehabilitation services (especially for children and teenagers), to reduce the waiting period for treatments, to introduce innovative solutions and a wide range of medical treatments.	In the framework of the project, an additional floor on top of the 'C' building of the Healthcare Complex in Ropczyce was constructed and the rooms assigned to the Therapeutic Rehabilitation Department were adapted to serve the needs of the department. Moreover, new equipment and modern medical devices enabling a comprehensive rehabilitation process were purchased.
	<i>Creating facilities for practical training in the field of modern technologies – Ropczycko-Sędziszowski powiat</i>	To create optimum conditions for the economic development and growth of the innovation potential in the region by developing modern facilities serving to provide practical training to students of vocational schools and employees of enterprises operating within the local and regional labour market.	As part of the project, all newly created and modernised laboratories (12 in total) located in the buildings of the Practical Training Centre and the School Complex in Ropczyce were fully equipped with modern and innovative teaching equipment.
	<i>Thermomodernisation of public buildings in Ropczycko-Sędziszowski Powiat</i>	To reduce the consumption of heat energy through the modernisation of the thermal insulation of 11 public buildings in Ropczycko-Sędziszowski powiat.	The programme focused on eleven public buildings in the Ropczycko-Sędziszowski powiat. The project involved thermal insulation of walls and ceilings, the replacement of window and door frames, and the modernisation of central heating systems.

Selected projects implemented in the Ropczycko-Śędziszowski poviát (cont.)

Financial perspective	Title of the project	Aim of the project	Notes
	<i>Improving the conditions for vocational education in Ropczycko-Śędziszowski poviát</i> (Measure 6.4 – educational facilities, Sub-measure 6.4.2 – vocational and continuing education, and PWSZ of the Regional Operational Programme of the Podkarpackie Voivodship for 2014–2020)	To modernise and supplement the equipment for the vocational education headquarters in the context of educating deficit professions, including the following: renewable energy devices and systems technician, logistics technician, electricity technician, and mechanics technician. Moreover: to raise the level and improve the quality and the range of educational services in times of increased competitiveness on the education market, and faced with the threat of an outflow of potential candidates to other educational centres located outside the Ropczycko-Śędziszowski poviát.	The project involves the reconstruction of the rooms and furnishing them with modern software and innovative equipment in four public buildings: the School Complex in Ropczyce, the Practical Training Centre in Ropczyce, the Agro-Technical School Complex in Ropczyce and the Technical School Complex in Śędziszów Małopolski.
2014–2020	<i>Creating technical conditions for the development of the family and foster care support system in Ropczycko-Śędziszowski Poviát</i> (Measure 6.2. Health and social welfare infrastructure, Sub-measure 6.2.2. Social assistance infrastructure of the Regional Operational Programme of Podkarpackie Voivodship 2014–2020)	To create a day-care for beneficiaries from areas larger than gminas, and developing domestic foster care. The building is intended for housing the following units: the Poviát Family Assistance Centre, the Poviát Disability Assessment Team, the Psychological and Pedagogical Clinic, the Poviát Crisis Intervention Centre, and the National Rental of Rehabilitation Equipment and Auxiliary Devices. Data from Statistics Poland and Eurostat demonstrate that Podkarpackie voivodship is struggling with a high poverty and social exclusion rate, which is greater than both the national and the EU averages. Therefore, the main objective of the project is to improve the availability and quality of services provided in the Ropczycko-Śędziszowski poviát in the sphere of the broadly-understood social assistance.	The project involved the reconstruction, modernisation and renovation of the premises in the building of the former boarding school of the Secondary School in Ropczyce, where a Foreign Languages Teacher Training Centre was located in recent years, and which was later transformed into the Poviát Child and Family Support Centre in Ropczyce as part of the project. Moreover: the construction of a lift shaft and the purchase of specialist equipment and supplies.
	<i>The preservation and development of cultural heritage through the renovation and conservation of the historic building of the former savings bank in Ropczyce, intended for cultural education purposes</i>	The scope of the project encompasses: the preservation and renovation of the exterior of the building and the reconstruction and comprehensive renovation of its interior; the reconstruction of the infrastructure located in the immediate vicinity of the building, e.g. paving the surface, including pedestrian routes, the construction of small architecture elements (benches, information boards, bicycle racks, etc.); external lighting of the building facade; monitoring of the building; purchase of equipment and furnishings.	–

Source: authors' work based on data provided by the Governor's Office of Ropczyce Poviát.

The compilation of selected projects presented above shows a selection of projects from the above-listed areas implemented in the poviat.

The project entitled *Professionals for the start* (Pol. *Zawodowcy na start*) is also noteworthy. It was implemented under the Regional Operational Programme of Podkarpackie Voivodship for 2014–2020 by the Podkarpackie Teacher Education Centre in Rzeszów, in partnership with two local government units: Ropczycko-Sędziszowski poviat and Strzyżowski poviat. The target group of the project were eight public vocational schools, of which four were from the Ropczycko-Sędziszowski poviat. The main objective of the project was to increase the chances of finding a job by the graduates of schools included in the programme, which was to be achieved by expanding the range of educational services provided by the schools, aiding teachers' professional development, student internships/apprenticeships and courses, and tightening the collaboration with the socio-economic environment (project value: PLN 3,823,045.51; out of which PLN 3,249,588.68 was EU funding). The project involved purchasing teaching aids for the school laboratories, so that they imitate actual working conditions (Podkarpackie Centrum Edukacji Nauczycieli w Rzeszowie, n.d.).

In addition to the activities outlined above, the local government of the Ropczycko-Sędziszowski poviat was also involved in a number of other projects (e.g. 'E-administration Infrastructure of an Information Society in the Ropczycko-Sędziszowski Poviat', 'Cross-border collaboration and development of the local democracy in borderland regions', and several projects whose aim was to help young unemployed people to find jobs (Barwińska-Małajowicz & Ślusarczyk, 2017, pp. 401–417; Powiatowy Urząd Pracy w Ropczycach, n.d.). These projects are not described in this paper due to its volume-related limitations. However, it should be emphasised that both the already-implemented and ongoing projects are aimed at reducing developmental differences and improving the residents' quality of life in numerous areas (road infrastructure, health care, environmental protection, education, etc.) (Barwińska-Małajowicz & Nowakowska-Hapel, 2017, pp. 369–382).

6. Conclusions

Local development necessitates carefully considered actions including their planning, implementation and evaluation in order to enhance the competitiveness of the local economy, while taking account of both area-specific conditions and the needs of local communities. It is in the interest of the local economy to support different forms of grassroots initiatives, as in the future they may become a source of income, cause economic growth of a given region, etc.

It should be emphasised that the EU funds are of great significance for the development and support of the country's local and regional economies, but the extent to which individual countries and regions use the funds depends on their own

policies (national, regional, local). In addition to meeting the formal criteria to becoming eligible beneficiaries of the funds, the country or region must present its development strategy and its own resources allocated for a specific purpose (Szpara & Żegleń, 2010, p. 176).

The policy of regional and local development (at the voivodship, powiat and gmina level) with regard to technical and social infrastructure or spatial development should not only determine the directions of action, but also indicate the ways of obtaining funds for the implementation of projects from various sources that would ensure the combination of public and private capital.

The example of the Ropczycko-Śędziszowski powiat's management of EU funds at the local level demonstrates that all the above-mentioned initiatives contributed to the increase in the competitiveness of the region and in the residents' satisfaction as well as to the improvement of their quality of life, thereby, indirectly, to the enhancement of social well-being. The local government's management of the EU funds and their influence on the economic growth of the powiat indicate that the authorities take decisive measures towards the powiat's overall economic growth. The completed projects in the area of road infrastructure, healthcare, environmental protection, education, and tourism had a positive (direct or indirect) effect on the local development.

References

- Aksman, E. (2010). *Redystrybucja dochodów i jej wpływ na dobrobyt społeczny w Polsce w latach 1995–2007*. Warszawa: Wydawnictwa Uniwersytetu Warszawskiego.
- Baranowska-Skimina, A. (2012, October 19). *Wykorzystanie funduszy unijnych w Polsce*. <https://www.egospodarka.pl/86734,Wykorzystanie-funduszy-unijnych-w-Polsce,1,39,1.html>.
- Barwińska-Małajowicz, A., & Nowakowska-Hapel, A. (2017). Wsparcie rozwoju społeczno-gospodarczego Podkarpacia w świetle wykorzystania środków z funduszy europejskich na poziomie powiatu. In B. Stopczyński & M. Turniak (Eds.), *Przedsiębiorczość i zarządzanie. Strategia jednostki samorządu terytorialnego w realiach współczesnego otoczenia* (pp. 369–382). Łódź–Warszawa: Wydawnictwo Społecznej Akademii Nauk. http://piz.san.edu.pl/docs/PiZ_XVIII_z_2_cz_III.pdf.
- Barwińska-Małajowicz, A., & Ślusarczyk, B. (2017). Sposoby rozwiązywania problemów rynku pracy w kontekście wykorzystania funduszy europejskich na poziomie powiatu. In B. Stopczyński & M. Turniak (Eds.), *Przedsiębiorczość i zarządzanie. Strategia jednostki samorządu terytorialnego w realiach współczesnego otoczenia* (pp. 401–418). Łódź–Warszawa: Wydawnictwo Społecznej Akademii Nauk. http://piz.san.edu.pl/docs/PiZ_XVIII_z_2_cz_III.pdf.
- Begg, D., Fischer, S., & Dornbusch R. (2003). *Makroekonomia*. Warszawa: Polskie Wydawnictwo Ekonomiczne.
- Brol, R. (2006). Czynniki rozwoju regionalnego. In D. Strahl (Ed.), *Metody oceny rozwoju regionalnego* (pp. 16–21). Wrocław: Wydawnictwo Akademii Ekonomicznej.
- Czudec, A. (2017). Fundusze europejskie a rozwój gospodarczy w skali lokalnej. *Nierówności Społeczne a Wzrost Gospodarczy*, (1). <https://doi.org/10.15584/nsawg.2017.1.3>.

- Dołęgowski, T. (2016). *Międzynarodowa konkurencyjność gospodarki a solidarność, dobro wspólne i jakość życia*. Warszawa: Oficyna Wydawnicza SGH.
- Janikowski, R. (2006). *Zrównoważony rozwój lokalny. Teoria i praktyka*. Warszawa–Katowice: Polska Akademia Nauk, Komitet „Człowiek i środowisko” przy Prezydium PAN.
- Janoś-Kresło, M. (2008). *Usługi społeczne a zrównoważony rozwój regionów*. Warszawa: Szkoła Główna Handlowa.
- Kornak, A. S., & Rapacz, A. (2001). *Zarządzanie turystyką i jej podmiotami w miejscowości i regionie*. Wrocław: Wydawnictwo Akademii Ekonomicznej.
- Kotoła, A. (2006). Wpływ wykorzystania funduszy unijnych na wzrost konkurencyjności gmin. *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania Uniwersytetu Szczecińskiego*, (25), 161–177. http://wneiz.pl/nauka_wneiz/sip/sip25-2012/SiP-25-161.pdf.
- Kożuch, A. (2006). Istota i zakres zarządzania finansami lokalnymi. In A. Kożuch & K. Brzozowska (Eds.), *Współczesne problemy zarządzania finansami lokalnymi* (pp. 11–25). Kraków: Fundacja Współczesne Zarządzanie, Instytut Spraw Publicznych Uniwersytetu Jagiellońskiego.
- Lasak, G. (2010). Uzdrowiska a rozwój lokalny i regionalny – szanse i bariery na przykładzie uzdrowisk świętokrzyskich. In J. Hermaniuk & J. Krupa (Eds.), *Współczesne trendy funkcjonowania uzdrowisk – klastering* (pp. 105–124). Rzeszów: Instytut Gospodarki Wyższej Szkoły Informatyki i Zarządzania.
- Markowski, T. (1999). *Zarządzanie rozwojem miast*. Warszawa: Wydawnictwo Naukowe PWN.
- Milewski, D. (2004). Problemy regionalnego rozwoju społeczno-gospodarczego a turystyka. Wybrane aspekty. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Turystyki*, (4), 117–136.
- Misiak, M. (2011). *Wpływ funduszy strukturalnych UE na infrastrukturę społeczną*. Łódź: Uniwersytet Łódzki. http://www.kls.uni.lodz.pl/wp-content/uploads/wyniki/2k120125/3/wplyw_funduszy_strukturalnych_ue_na_infrastruktura_spoleczna.pdf.
- Musiakowska, I., & Wiśniewski, M. (2017). Fundusze europejskie w finansowaniu rozwoju regionalnego i lokalnego przez samorząd terytorialny w Polsce. *Studia BAS*, (1), 87–107.
- Parysek, J. J. (1997). *Podstawy gospodarki lokalnej*. Poznań: Wydawnictwo Naukowe Uniwersytetu Adama Mickiewicza.
- Podkarpackie Centrum Edukacji Nauczycieli w Rzeszowie. (n.d.). *Zawodowcy na start*. <http://zns.pcen.pl/o-projekcie>.
- Powiatowy Urząd Pracy w Ropczycach. (n.d.). *Realizowane projekty z funduszy europejskich*. Retrieved May 11, 2019, from <http://ropczyce.praca.gov.pl/realizowane-projekty-z-funduszy-europejskich>.
- Soliński, T. (2010). Innowacyjne zarządzanie rozwojem turystyki. In J. Krupa (Ed.), *Innowacyjność w turystyce* (pp. 98–114). Rzeszów: ProCarpathia.
- Szewczuk, A., Kogut-Jaworska, M., & Zioło, M. (2011). *Rozwój lokalny i regionalny. Teoria i praktyka*. Warszawa: Wydawnictwo C.H. Beck.
- Szpara, K., & Żegleń, P. (2010). Fundusze europejskie a rozwój turystyki w Polsce Wschodniej. In J. Hermaniuk & J. Krupa (Eds.), *Współczesne trendy funkcjonowania uzdrowisk – klastering* (pp. 163–178). Rzeszów: Instytut Gospodarki Wyższej Szkoły Informatyki i Zarządzania w Rzeszowie. http://wiki.leba.eu/_media/dokumenty/trendy_-_uzdrowiska.pdf.
- Urząd Statystyczny w Rzeszowie. (n.d.). *Statystyczne Vademecum Samorządowca 2020*. <https://rzeszow.stat.gov.pl/statystyczne-vademecum-samorzadowca>.

Ustawa z dnia 8 marca 1990 r. o samorządzie gminnym (Dz.U. 1990 nr 16 poz. 95).

Wróblewska, E. U. (2010). Inwestycje lokalne jako instrument rozwoju społeczno-gospodarczego, na przykładzie gminy Ryki. *Zeszyty Naukowe Polityki Europejskiej, Finanse i Marketing*, (4), 65–75. <https://pefim.sggw.pl/article/view/4489/4009>.

Ziółkowski, M. (2005). Zarządzanie strategiczne w polskim samorządzie terytorialnym. In A. Zalewski (Ed.), *Nowe zarządzanie publiczne w polskim samorządzie terytorialnym* (pp. 75–91). Warszawa: Szkoła Główna Handlowa.

Żegleń, P. (2005). *Partnerstwo Publiczno-Prywatne (PPP) a jakość usług turystycznych*. In K. Wajda (Ed.), *Czynniki determinujące jakość a doskonalenie systemu informacyjnego w branży turystycznej* (pp. 179–187). Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.

Impact of the human development level on net migration in Podkarpackie region

1. Introduction

In developed economies, which are open to the flow of goods, services, physical capital and people, quality of life becomes the basic category defining the level and dynamics of development in the economic and social dimensions. This is for several reasons. Firstly, the measures of economic development which are commonly used (e.g. Gross Domestic Product), have increasingly become subject to criticism, as they describe this phenomenon in an excessively one-sided way, emphasising mainly the quantitative aspect of changes in the economy, while disregarding other important issues, such as social inequalities or changes in the natural environment. Secondly, research carried out in developed economies shows that such 'narrowly' understood economic development (measured by the dynamics of gross domestic product) does not reflect the improvement of the quality of life of the citizens, because besides material needs, they have many others, which cannot be satisfied by the mere increase in the volume of production and consumption. Moreover, when people's basic consumer needs are fully satisfied, their other expectations assume a new meaning – they become identified with quality of life, and at the same time they cannot be provided by the market mechanism. This situation calls for an increasingly stronger role of the state, local governments and non-governmental institutions as well as informal groups, shaped by social relations, mainly at a local level. The role of the latter is gaining increasingly more importance. The activity of these local, informal groups takes various forms characteristic for civic society. To sum up, quality of life understood in the above way can be described as the process of moving from 'to have' to 'to be', which does not mean that people give up striving for material well-being, but that their expectations exceed material goods, assuming a wider dimension.

^a University of Rzeszów, Institute of Economics and Finance, Department of Quantitative Methods and Economic Informatics; Statistical Office in Rzeszów. ORCID: <https://orcid.org/0000-0003-2672-3234>.

This necessitates conducting systematic research on quality of life. Its results are important for the decision-making process regarding the strategic directions of economic and social development. This issue is of particular importance at the local and regional levels, because low quality of life and the lack of real prospects for its improvement most often result in migration to those local environments and regions where living conditions are better according to the migrating people. The consequence of the long-term migration process is the weakening of the economic development opportunities of depopulating regions, which in subsequent years results in the intensification of negative migration trends and deepening of interregional disparities. Due to the existing differences in the level of economic and social development between regions in the European Union, a substantial part of the EU budget is allocated to finance the cohesion policy, whose very priority is to reduce such disparities. One of the expected effects of cohesion-related policies is the improvement of the quality of life of the residents of areas taking advantage of the support. Polish regions are among the largest beneficiaries of the EU cohesion policy, and therefore it is justified to study changes in the quality of life of inhabitants of different regions in Poland in the context of the effectiveness and efficiency of the use of European funds.

The Podkarpackie region was selected for the purposes of this study because of several of its specific features, due to which results of similar research in other regions are likely not to be fully referable to the conditions in Podkarpackie (Okrasa & Cierpiął-Wolan, 2014). These are, in particular, a low level of economic development compared to other regions, the highest percentage of rural population in Poland, very little significance of the economically weak agriculture in the structure of the region's economy, with a high percentage of people working in agriculture, a large proportion of areas covered by various forms of nature conservation in the whole region, or quite a high natural growth or life expectancy, which is one of the highest in Poland. Another important reason for selecting Podkarpackie is the fact that quality of life was chosen by the local government as the region's leading smart specialisation. The analysis was carried out for the years 2015 and 2019. The situation in Podkarpackie was compared with other regions.

Taking into account the multifaceted and multidimensional nature of the issues concerning the quality of life of inhabitants, the assessment of social development in spatial breakdown is adopted as the main objective. Bearing in mind that the key issue affecting the peripheralisation of territorial units is the high negative migration balance, the following research hypothesis is formulated: there are significant differences between voivodships (NUTS 2) and powiats¹ in terms of human development indicators influencing the migration balance.

The Regional Human Development Index (RHDI), correlation matrix and the linear econometric model – the multiple regression model – were used as the main research methods.

¹ The second-level unit of local government and administration in Poland. The higher-level unit is the voivodship, and the lower-level unit is the gmina.

2. Objective and subjective measures of quality of life

Due to the fact that quality of life is a category with a wide range of meanings and is related to various spheres of human activity, there has been an increasing amount of studies of its individual aspects. An important research problem in this case is the selection of the most appropriate indicators measuring various spheres of life that all add up to the indication of quality of life. There is a risk here of applying an overly-developed system of detailed indicators, which may result in missing the essence of the problem. On the other hand, synthetic indicators used in many studies to measure the standard of living of the inhabitants, such as GDP *per capita*, global consumption *per capita*, or the level of wages or income of the agricultural population, which are useful in international or interregional comparisons, are of little use in detailed analysis and are comparatively inefficient in formulating the desired directions of changes (Piasny, 1993, p. 73).

Some authors make a distinction between standard of living and quality of life. Standard of living is determined by the conditions in which one exists, including the degree to which more important needs are satisfied. Quality of life, on the other hand, is understood as those elements of human life that are connected with a person's existence and with experiencing various emotional states, related to, for example, health, having family, friends, or the possibility of implementing professional and personal plans (Piasny, 1991, p. 9). With such a distinction, the standard of living is assessed on the basis of objective measures (quantitative and value-based), while quality of life is evaluated by means of subjective indicators. The former describe the actual conditions of living (e.g. the level and structure of income, expenses or consumption), and the latter the level of satisfaction with the extent to which various needs are met, so in other words, the subjective perception of the actual conditions by persons or social groups (Rutkowski, 1991, p. 33).

Subjective measures can be divided into those that express value assessments and those that relate to respondents' intentions. Value assessments most often characterise the degree of satisfaction (e.g. with work, home, the material situation) and self-assessment (e.g. with regard to preparation for work, income level, possibility to use services). Measures defining intentions, on the other hand, are used to study potential preferences and mainly relate to preferences in the sphere of consumption (e.g. what additional income is spent on).

Measures of the level and quality of life can also be divided into global and partial indicators. Global indicators involve a synthetic assessment of the degree of the satisfaction of needs, while partial indicators provide information about the level of satisfaction with a specific area of life or a specific group of needs (Piasny, 1993, p. 78).

In recent years, scientific studies on quality of life have used, apart from traditional measures, a growing amount of alternative indicators treated as supplementary to

traditional measures. As noted by Grzega (2015, pp. 83–86), these are most often measures based on non-value categories, and the idea of using them arose from the preference of intangible assets over the material ones. Biological and anthropometric measures are mentioned as examples of alternative measures. They use indicators of the biological standard of living of the population, which include inhabitants' height and weight, because these features are largely the result of people's individual choices related to spheres such as appropriate diet or physical and intellectual effort (they reflect the nutritional status of the population during childhood, adolescence and adult life). This approach is different from traditional measures focusing on monetary means (Komlos & Baur, 2004, pp. 57–74; Komlos & Snowdon, 2005, pp. 87–136; Kues, 2010, pp. 67–79).

The oldest and most commonly used biological measure is life expectancy at birth (Jakubowska, 2015). It reflects the entirety of the living conditions of a society and is primarily used to assess the health condition of a population, the effects of activities in the field of health and to assess the level of civilizational development of a society, especially over a long period of time. In aging populations, supplementary measures are also very important, illustrating, e.g. the 'loss of exercise capacity'.

One of the commonly used indicators of quality of life, especially in international comparisons, is the Human Development Index (HDI), which takes into account three dimensions:

- life expectancy;
- science and education (average number of years of schooling and expected number of years of schooling);
- standard of living measured by GDP *per capita*.

It is an indicator which takes into consideration health, social and economic aspects, i.e. not only traditional measures of quality of life, but also a biological indicator. Its weakness, however, is the disproportionate nature of its components, the lack of an ecological dimension, and its disregard for the dimension of civil liberties (Zalewska, 2012, p. 259).

As the HDI demonstrates certain shortcomings when measuring quality of life (Organisation for Economic Co-operation and Development, 2013), the use of the RHDI seems more recommendable (Egri et al., 2009).

As a result, recent studies increasingly often use more specific measures relating to poverty or equality. These indicators provide additional information that complements the results obtained on the basis of the HDI measure (Balcerzak & Pietrzak, 2015, p. 80).

A growing number of studies are raising the issue of the relationship between quality of life (and the measures that describe it) and the concept of sustainable

development. As noted by Kryk (2015, pp. 5–10), two approaches have been most often distinguished in the research on quality of life to date. One investigates quality of life in the sense of ‘to have’ and ‘to be’, and the other takes into account a ‘love’-type component. In the case of the predominance of the ‘to have’-type of research, welfare is measured by means of economic indicators, virtually reduced to a single dimension – money. However, as pointed out before, this approach turned out to be insufficient. It was noticed that an increase in the material well-being, even up to the level exceeding the relative point of satisfaction of needs, does not necessarily increase the overall well-being.²

On the other hand, if the quality of ‘to be’ prevails in research, then it is important from the point of view of sustainable development, as it focuses on human contact with nature and the preservation of the natural environment now, as well as in the future. In its most general sense, sustainable quality of life combines ‘having’ (having and objectively measuring what is quantifiable), and ‘being’ (feeling and improving the measurement of what is uncountable). Achieving sustainable quality of life requires, for example, sustainable consumption, which is correlated with the ecological behaviour of consumers. Sustainable consumption does not only involve the consumption of ecological goods, but also the economical and rational use of consumer goods and natural resources. A good example of this could be the reduction in the consumption of goods whose production or exploitation requires vast amounts of rare, non-renewable resources and which produces post-consumer waste in large quantities (Kryk, 2015, p. 9). The most desirable type of sustainable consumption aiming to protect the natural environment involves following the principles of social responsibility and the conscious limitation of the consumption of all goods by consumers.

The multidimensionality and multifaceted nature of issues related to the research on quality of life causes a relative difficulty in selecting relevant research criteria virtually for each study. Borys (2008, pp. 125–135) specified seven criteria that should be taken into account in the research on quality of life:

- criterion for the evaluation of quality of life;
- criterion for the scope and number of aspects of quality of life;
- criterion for the objectivity of the measurement of quality of life;
- criterion for the directness of the connection of research with the actual quality of life;
- criterion for the number of objects which the quality of life relates to;
- criterion for balancing aspects of quality of life;

² More information in Okrasa (2017, pp. 19–30) and Błachut et al. (2017, pp. 17–30).

- criterion for revealing the value system in the quality of life (axiological criterion).

Adopting all the above criteria in the research enables both a comprehensive assessment of quality of life by means of objective and subjective measures and a study of the relationship between quality of life and sustainable development. This approach treats quality of life as a priority goal of sustainable development and as a recognition and appreciation of wealth in a global quality dimension, appearing in human life along prosperity and well-being (Borys, 2005, p. 32).

3. Regional Human Development Index

The RHDI is an indicator that has been constructed on the basis of the methodology developed by the European Commission's Community Research Centre to measure the regional level of human development (Hardeman & Dijkstra, 2014, pp. 9–11). It is mainly based on the international methodology of the HDI introduced by the UN for national comparisons (United Nations Development Programme, 2019). The HDI is a synthetic measure of the socio-economic development of individual countries. The original HDI methodology recommends that the measurement of human development should focus on three essential elements of human life (Compilation): life expectancy (health), knowledge (education) and the standard allowing a dignified life (level of income – wealth) (Prados de la Escosura, 2015).

Compilation. Human development dimensions and indicators in the RHDI

Dimension	Health	Knowledge	Income
RHDI sub-indicators	Life expectancy (average life expectancy of a newborn)	NEET (percentage of the population aged 18–24 who are not in employment, education or training)	Disposable income (average monthly disposable income <i>per capita</i>)
	Infant mortality rate (infant deaths per 1,000 live births)	General tertiary education (persons aged 25–64 with a tertiary degree as the percentage of all persons in particular age groups)	Employment (share of employed persons aged 15 or over in the whole population aged 15 or over)
RHDI group indicators	Health Index	Knowledge Index	Wealth Index

RHDI – voivodship

Source: Hardeman & Dijkstra (2014).

The RHDI at the voivodship level is constructed by calculating the following formula:

$$RHDI_i = \sqrt[3]{HI_i \cdot EI_i \cdot WI_i}, \text{ dla } i = 1, 2, \dots, n, \quad (1)$$

where:

$RHDI_i$ – the value of the RHDI for voivodship i ,

HI_i – Health Index in the i -th voivodship,

EI_i – Knowledge Index in the i -th voivodship,

WI_i – Wealth Index in the i -th voivodship.

The RHDI takes values from 0 to 1. The RHDI values depend on the threshold values, i.e. those voivodships which had the highest and the lowest values of indicators for each variable during the analysed period.

Table 1. Values of individual RHDI and their components

Specification	2015	2019	Dynamics 2015 = 100
RHDI			
Poland	0.441	0.477	108.1
Eastern Poland	0.309	0.241	78.0
Lubelskie	0.429	0.261	60.8
Podkarpackie	0.141	0.174	122.8
Podlaskie	0.503	0.539	107.2
Świętokrzyskie	0.340	0.302	88.7
Warmińsko-Mazurskie	0.197	0.015	7.5
Health Index			
Poland	0.487	0.492	101.1
Eastern Poland	0.543	0.529	97.4
Lubelskie	0.578	0.337	58.4
Podkarpackie	0.658	0.714	108.6
Podlaskie	0.472	0.592	125.6
Świętokrzyskie	0.509	0.726	142.7
Warmińsko-Mazurskie	0.407	0.311	76.4
Knowledge Index			
Poland	0.515	0.540	104.9
Eastern Poland	0.327	0.343	105.0
Lubelskie	0.477	0.561	117.4
Podkarpackie	0.124	0.272	218.8
Podlaskie	0.709	0.614	86.6
Świętokrzyskie	0.295	0.232	78.7
Warmińsko-Mazurskie	0.119	0.000	0.1
Wealth Index			
Poland	0.462	0.501	108.5
Eastern Poland	0.207	0.138	66.6
Lubelskie	0.286	0.094	32.8
Podkarpackie	0.035	0.027	78.0
Podlaskie	0.381	0.431	113.2
Świętokrzyskie	0.263	0.163	62.0
Warmińsko-Mazurskie	0.157	0.105	66.7

Note. The values for Poland and Eastern Poland were calculated as a population weighted average.

Source: author's work based on data from the Local Data Bank of Statistics Poland.

In 2019 (Table 1), the RHDI for Podkarpackie voivodship stood at 0.157 and was lower than the national average (0.424), as well as the average for Eastern Poland (0.242). Among the voivodships in Eastern Poland, the most advanced human development was recorded in Podlaskie voivodship, whose RHDI value (0.539) was the only one to exceed the national average. Less advanced development was observed in Lubelskie and Świętokrzyskie voivodships. Finally, the lowest values of the RHDI were recorded in Podkarpackie and Warmińsko-Mazurskie voivodships. Analysing the dynamics of the development of the units under analysis in the years 2015 and 2019, it can be concluded that the highest growth was observed in Podkarpackie voivodship, whose dynamics was the only one to exceed both the average for the whole country and for Eastern Poland, as well as Podlaskie and Świętokrzyskie voivodships, whose dynamics exceeded the average for Eastern Poland. In the case of Podkarpackie voivodship, this was mainly due to the improvement of the voivodship's NEET index, which fell to 10.9% in 2019 from as much as 15.6% in 2015, and the percentage of people with tertiary education (growth from 25.3% in 2015 to 29.3% in 2019). The least advanced development was observed in Warmińsko-Mazurskie voivodship, where it was significantly below the national average, and below the average for Eastern Poland. This was mainly owing to the NEET index, the tertiary education index and the employment rate, whose values were the lowest among all voivodships in the country. Podkarpackie voivodship, which was in the penultimate place, had the lowest average monthly household disposable income in PLN and one of the lowest employment rates in the country. Among the positive features of the latter voivodship in the context of development was the high average life expectancy of newborns – 79.4 years, which in 2019 put Podkarpackie right at the top of the pan-Poland ranking. Such a high value of the life expectancy index and the fact that the voivodship's infant mortality rate was below the national average boosted Podkarpackie's Health Index, which reached 0.714 in 2019, and was the second highest score in Poland that year (following Małopolskie voivodship). However, other RHDI sub-indicators for Podkarpackie, i.e. the Knowledge and Wealth indexes, assumed the lowest values of all the voivodships of Eastern Poland and were significantly below the national average (Cierpiał-Wolan, 2017).

4. Relationship between the human development indicators and migration balance

The study of factors that make people move from one region to another has long been the subject of many demographic analyses. Previous studies on this issue show a tendency among people to make migration decisions on the basis of economic

factors characterising two regions. Following subsequent studies on quality of life, it was noted that the difference between economic characteristics of two regions may not be the only factor motivating people to move from one region to another. Moreover, such a difference between two regions may not be as important as previously believed. Additionally, the factors influencing short-term interregional migration could be significantly different from those influencing long-term decisions on interregional migration.

Based on data from Eurostat and the Local Data Bank of Statistics Poland, a model has been developed to investigate the relationship between interregional migration and factors of quality of life (Hsieh & Liu, 1983). The model takes into account the impact of interregional variations of different aspects of quality of life, including economic and social aspects. Data on permanent migration from 16 Polish voivodships were used to test the model.

The model takes the following form:

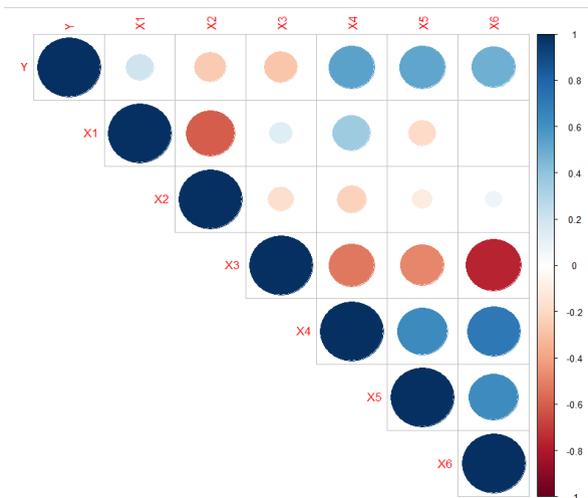
$$m_{ij} = a_0 + a_1(Q_{1i} - Q_{1j}) + a_2(Q_{2i} - Q_{2j}) + a_3(Q_{3i} - Q_{3j}) + \dots + a_n(Q_{ni} - Q_{nj}), \quad (2)$$

where m_{ij} is the balance of migration from the j -th voivodship to the i -th voivodship calculated per 1,000 population of the i -th voivodship, while Q_{ki}, Q_{kj} ($k = 1, \dots, n$) are the values of individual explanatory variables. The coefficients of the model were estimated by means of the least squares method.

Recognising the need for consistency with the previous analysis of the RHDI, the model was built using variables that were taken into account in the calculation of the index, and at the same time the theoretical direction of the impact of the variables on the migration balance was determined, with the stimulant being the variable whose growth has a positive effect on the migration balance, and the destimulant being the variable whose growth has a negative effect on the migration balance.

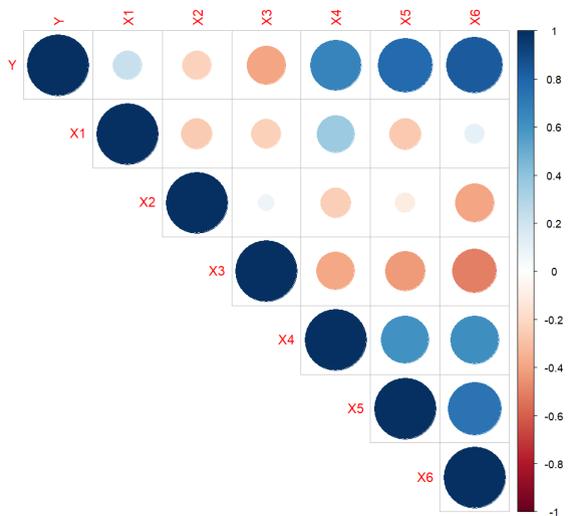
The theoretical influence of variables on migration balance is confirmed by the correlation analysis. The following correlation matrices (Figure 1 and 2) present the relations between the variables and the migration balance.

Figure 1. Correlation matrix 2015



Source: author's work in the R-Studio software based on data from the Local Data Bank of Statistics Poland.

Figure 2. Correlation matrix 2019



Source: author's work in the R-Studio software based on data from the Local Data Bank of Statistics Poland.

The directions of relations between the variables and the migration balance are as assumed, which is confirmed by the selection of variables for the model. Analysing the correlation charts, it can be concluded that in 2015 and 2019, the signs of correlation coefficients changed only in a few cases, but their strength changed fundamentally.

Table 2. Model estimation results for 2015

Indicators	Coefficient	p-value	Significance level
Intersection	-0.0267	0.0062	.
Life expectancy	0.0409	0.0187	**
Infant mortality	-0.0234	0.264	.
NEET	0.0058	0.1068	.
General tertiary education	0.0015	0.6924	.
Disposable income	0.0004	less than 0.001	***
Employment	0.0148	0.0018	***

Note. Significance level of variables: *** – 0.01, ** – 0.05.

Source: author's work based on data from the Local Data Bank of Statistics Poland.

In the model for 2015, 41% of the migration balance volatility was explained by the model.

Based on the results of this, it can be concluded that:

- At the significance level $\alpha = 0.01$, 2 out of 6 variables, i.e. *disposable income per person* and *employment*, are significant, and at the level $\alpha = 0.05$ just one, i.e. *life expectancy*;
- If the income increases by PLN 100 in a given voivodship, the migration balance per 1,000 population will increase by 0.61 persons, providing income stays unchanged in other voivodships;
- If the income increases by PLN 100 in Podkarpackie voivodship, the negative migration balance (-1.13 persons per 1,000 population) will 'shrink' by 0.61 persons per 1,000 population, and will be -0.52 persons per 1,000 population, providing income stays unchanged in other voivodships;
- The coefficients for explanatory variables have the same sign as in 2004.

The model for Podkarpacie (2015) is as follows (Table 2):

$$m_{9j} = -0,0267 + 0,0409(78,7 - Q_{1j}) - 0,0234(4,1 - Q_{2j}) + \\ + 0,0058(22,5 - Q_{3j}) + 0,0015(25,3 - Q_{4j}) + 0,0004(1033,66 - Q_{5j}) + \\ + 0,0148(57,4 - Q_{6j}). \quad (3)$$

Table 3. Model estimation results for 2019

Indicators	Coefficient	<i>p</i> -value	Significance level
Intersection	0.0570193	0.0166	**
Life expectancy	0.0693527	0.0257	**
Infant mortality	0.00423540	0.8916	.
NEET	0.0131628	0.1343	.
General tertiary education	0.00401940	0.4776	.
Disposable income	0.000583171	0.0110	**
Employment	0.0254868	0.0411	**

Note. Significance level of variables: ** – 0.05.

Source: author's work based on data from the Local Data Bank of Statistics Poland.

The determination factor is a natural measure of the quality of the fit of the model to empirical data. In the model for 2004, 44% of migration balance volatility was explained by the model.

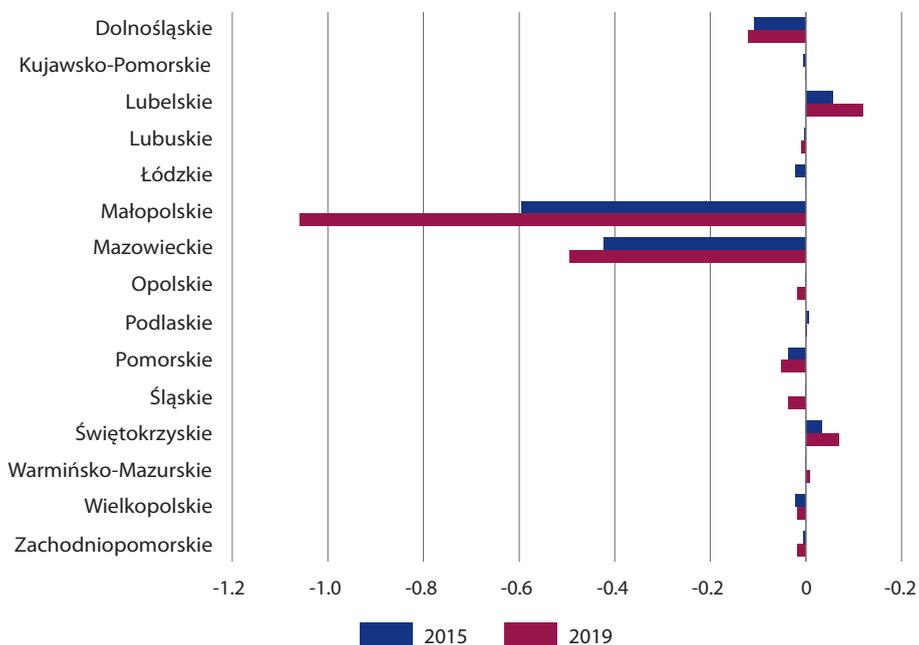
Based on the model for 2019, the following conclusions can be drawn:

- Important variables are: *life expectancy*, *disposable income per person* and *employment*;
- If the disposable income per person increases by 100 PLN in a given voivodship, the migration balance will increase by 0.058 persons per 1,000 population in this voivodship, providing income stays unchanged in other voivodships;
- If the income increases by 100 PLN in Podkarpackie voivodship, the negative migration balance (–1.6275 persons per 1,000 population) will ‘shrink’ by 0.058 persons per 1,000 population, and will amount to –1.569 persons per 1,000 population, providing income stays unchanged in other voivodships;
- The balance of migration is positively influenced by all variables.

In the case of Podkarpackie voivodship, the model takes the following form (Table 3):

$$\begin{aligned}
 m_{9j} = & -0,0570193 + 0,0693527(79,4 - Q_{1j}) + 0,00423540(4 - Q_{2j}) + \\
 & + 0,0131628(10,9 - Q_{3j}) + 0,00401940(29,3 - Q_{4j}) + \\
 & + 0,000583171(1433 - Q_{5j}) + 0,0254868(51,4 - Q_{6j}).
 \end{aligned}
 \tag{4}$$

Figure 3 compares the balance of inter-regional migration for Podkarpackie in 2015 and 2019.

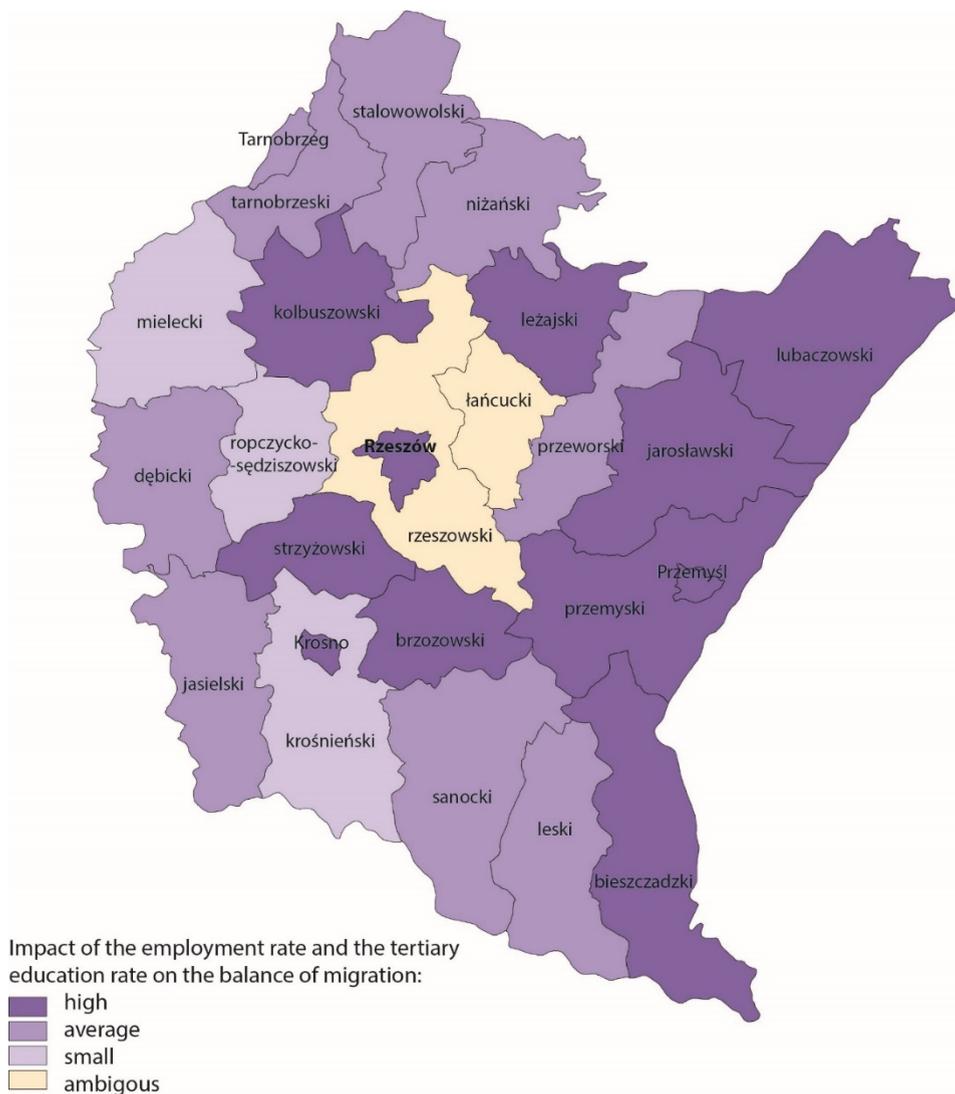
Figure 3. Balance of inter-regional migration between Podkarpackie and other voivodships

Source: author's work based on data from the Local Data Bank of Statistics Poland.

Here the question arises whether the deterioration of the migration balance was also associated with a relative deterioration of the HDIs. We use the word 'relative' in relation to 'deterioration' due to the fact that all the HDIs may increase in a voivodship, but the decision to migrate is influenced by changes in the HDIs in relation to other voivodships.

In order to verify the hypothesis about the existence of significant differences between poviats (second-level units in the administrative division of Poland) of Podkarpackie voivodship in terms of human development indicators affecting the migration balance, a model for each poviat of this voivodship was developed. It allowed examining the relationship between migration and human development factors. To test the models, data on migration between poviats for permanent residence in Podkarpackie voivodship in 2019 were used (Map 1).

Map 1. Impact of HDIs on the balance of migration by poviats of Podkarpackie voivodship



Source: author's work based on data from the Local Data Bank of Statistics Poland.

In the border area, i.e. in Lubaczowski, Jarosławski, Przemyski and Bieszczadzki poviats, it was observed that the percentage of employees and the number of people aged 25–64 with tertiary education have a much stronger impact on the migration balance than in other poviats (e.g. if the number of people with tertiary education in Przemyski poviat increases by one, the migration balance will increase on average by 11 people). An increase in the employment rate by 1 p.p. will result in an increase in the migration balance by 5 people on average. Similar results are also characteristic

of most of the poviats adjacent to Rzeszowski powiat, as well as of three out of four urban poviats. It is worth noting, however, that the poviats near the border with Slovakia experience a slightly weaker influence. For example, in the case of Sanocki powiat, an increase in the employment rate by 1 p.p. will cause an increase in the migration balance by 2 people on average and an increase in the employment rate by 4 people. The poviats where the impact is the lowest include: Krośnieński, Ropczycko-Sędziszowski and Mielecki. It should be noted that there were also poviats where the impact was ambiguous (Rzeszowski and Łańcucki).

The analysis of the results of the models at the voivodship level, describing the dependence of the migration balance on selected indicators of human development for the years 2015 and 2019, suggests that, apart from the economic factors, also other aspects of quality of life (related to health and the social and educational ones) have an impact on the migration movements of the population. However, on the basis of model studies at the powiat level, it can be concluded that there are significant differences between poviats in terms of the impact of human development indicators on their migration balance.

5. Conclusions

Although the issue of quality of life of the population has been the subject of many studies, still no full answer has been provided to the question what influence economic, social or environmental factors have on the objective and subjective evaluation of quality of life. This is because the assessment of quality of life in a given environment (country, region, local community) is often the result of comparisons made with another environment, and this means that even a far-reaching improvement of living conditions can pass unnoticed by the inhabitants, because at the same time the quality of life of people living in another environment improved more. Additionally, the expectations of residents as to the improvement of quality of life are generally greater than the possibilities of satisfying them, because with the development of civilisation new needs appear, and their satisfaction requires ever-higher household incomes, or ever-greater effectiveness of the institutions in the public sector.

The social dimension is related to the scale of migration between regions. The analysis of the results of the study which uses models describing the dependence of the migration balance on selected measures of human development clearly shows that relationship – in addition to economic factors, social conditions have an impact on the migration process. It should be mentioned here that the hypothesis of the existence of significant differences in the impact of human development indicators on the migration balance in voivodships (NUTS 2) and poviats was also confirmed.

All this indicates the need to intensify activities leading to the improvement in the quality of life of the inhabitants of the Podkarpackie region, because the migration of

people from this region is one of the factors weakening its development opportunities in both the economic and social spheres.

The instrument for the improvement of living conditions in Podkarpacie is the 'Quality of life' intelligent specialisation, whose main assumptions involve stimulating such activities in the economy which protect the natural environment. Thus-defined intelligent specialisation is designed to support the development of the economy on the one hand, and to limit the scope of human interference in the natural environment on the other, as a result caring more for its resources. Such an approach is fully justified, because the economy of the Podkarpackie region requires dynamic development processes and increasing its competitiveness. At the same time, care should be taken that economic processes do not contribute to the deterioration of the natural environment, so that it remains a valuable asset of the region. Such an approach to the problem of quality of life is based on the assumption that entities of the private sector will organise their activity and transform their structures in such a way as to contribute to the restoration of the natural environment while strengthening their competitive position on the open market.

References

- Balcerzak, A. P., & Pietrzak, M. B. (2015). Wpływ efektywności instytucji na jakość życia w Unii Europejskiej. Badanie panelowe dla lat 2004–2010. *Przegląd Statystyczny. Statistical Review*, 57(1), 71–92. https://ps.stat.gov.pl/PS/2015/1/2015_62_1_071-092.pdf.
- Błachut, B., Cierpiał-Wolan, M., Czudec, A., & Ślusarz, G. (2017). Jakość życia w województwie podkarpackim w latach 2004–2015. Rzeszów: Urząd Statystyczny w Rzeszowie, Uniwersytet Rzeszowski. <https://rzeszow.stat.gov.pl/publikacje-i-foldery/warunki-zycia/jakosc-zycia-w-województwie-podkarpackim-w-latach-2004-2015,1,1.html>.
- Borys, T. (2005). Zrównoważony rozwój jako przedmiot pomiaru wskaźnikowego. In T. Borys (Ed.), *Wskaźniki zrównoważonego rozwoju*. Warszawa, Białystok: Wydawnictwo Ekonomia i Środowisko.
- Borys, T. (2008). Propozycja siedmiu typologii jakości życia. In T. Borys (Ed.), *Gospodarka a środowisko* (pp. 125–135). Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego.
- Cierpiał-Wolan, M. (2017). Well-Being Paradox in Transborder Areas – Case of the EU's External Border on the Territory of Poland. In W. Okrasa (Ed.), *Jakość życia i spójność przestrzenna: rozwój i dobrostan w kontekście lokalnym* (pp. 273–287). Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.
- Egri, Z., Töröcsik, V., & Tánczos, T. (2009). Regional HDI as a territorial and social differentiation index in Central Europe. In J. Káposzta (Ed.), *New elements and research in spatial economy* (pp. 168–181). Komárno: Research Institute of J. Selye University. <http://www.rgvi.gtk.szie.hu/sites/default/files/upload/page/11.pdf>.
- Grzeża, U. (2015). Tradycyjne i alternatywne mierniki poziomu życia ludności w ujęciu teoretycznym. In G. Wolska (Ed.), *Globalizacja. Liberalizacja. Etyka* (pp. 77–87). Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego. http://www.wzieu.pl/zn/851/ZN_851.pdf.

- Hardeman, S., & Dijkstra, L. (2014). *The EU Regional Human Development Index*. Luxembourg: Publications Office of the European Union. <https://doi.org/10.2760/26355>.
- Hsieh, C., & Liu, B. (1983). The Pursuance of Better Quality of Life: In the Long Run, Better Quality of Social Life Is the Most Important Factor in Migration. *The American Journal of Economics and Sociology*, 42(4), 431–440. <https://doi.org/10.1111/j.1536-7150.1983.tb01730.x>.
- Jakubowska, A. (2015). Wzrost oczekiwanej długości życia ludności obszarów wiejskich i jego społeczno-ekonomiczne konsekwencje – analiza regionalna. *Roczniki Naukowe SERiA*, 17(6), 104–109. <https://rnseria.com/resources/html/article/details?id=180472>.
- Komlos, J., & Baur, M. (2004). From the tallest to (one of) the fattest: the enigmatic fate of the American population in the 20th century. *Economics and Human Biology*, 2(1), 57–74. <https://doi.org/10.1016/j.ehb.2003.12.006>.
- Komlos, J., & Snowdon, B. (2005). Measures of Progress and Other Tall Stories: From Income to Anthropometrics. *World Economics Journal*, 6(2), 87–135.
- Kryk, B. (2015). Środowiskowe uwarunkowania jakości życia w województwie zachodniopomorskim na tle Polski. *Ekonomia i Środowisko. Economics and Environment*, 54(3), 170–181. <https://www.ekonomiaisrodowisko.pl/journal/issue/view/17/17>.
- Kues, A. B. (2010). Taller – Healthier – More Equal? The Biological Standard of Living in Switzerland in the Second Half of the 20th Century. *Economics and Human Biology*, 8(1), 67–79. <https://doi.org/10.1016/j.ehb.2009.09.002>.
- Okrasa, W. (2017). Community Well-Being, Spatial Cohesion and Individual Well-Being – Towards a Multilevel Spatially Integrated Framework. In W. Okrasa (Ed.), *Jakość życia i spójność przestrzenna: Rozwój i dobrostan w kontekście lokalnym* (pp. 19–48). Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.
- Okrasa, W., & Cierpiął-Wolan, M. (2014). Nierówności przestrzenne rozwoju lokalnego: wzory zróżnicowań dobrostanu na przykładzie województwa podkarpackiego i mazowieckiego. *Optimum. Studia Ekonomiczne*, (3), 118–138. <https://doi.org/10.15290/ose.2014.03.69.08>.
- Organisation for Economic Co-operation and Development. (2013). *How's life? 2013: Measuring well-being*. Paris: OECD Publishing. <https://doi.org/10.1787/23089679>.
- Piasny, J. (1991). Metodologiczne problemy badań warunków życiowych rodzin polskich. *Roczniki Socjologii Rodziny*, 3, 7–21.
- Piasny, J. (1993). Poziom i jakość życia ludności oraz źródła i mierniki ich określania. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, 55(2), 73–92.
- Prados de la Escosura, L. (2015). World Human Development: 1870–2007. *The Review of Income and Wealth*, 61(2), 220–247. <https://doi.org/10.1111/roiw.12104>.
- Rutkowski, J. (1991). Badanie jakości życia. In W. Jagodziński (Ed.), *Jakość życia i warunki bytu* (pp. 33–35). Warszawa: Główny Urząd Statystyczny.
- United Nations Development Programme. (2019). *Human Development Report 2019: Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century*. New York. <http://hdr.undp.org/sites/default/files/hdr2019.pdf>.
- Zalewska, M. (2012). Jakość życia – wybrane koncepcje. Analiza porównawcza wskaźników jakości życia w Polsce i krajach UE. *Problemy Zarządzania*, 10(2), 258–275. <https://doi.org/10.7172/1644-9584.37.16>.

A subjective assessment of the quality of life in Ukraine: a regional analysis

1. Introduction

The subject of quality of life in Ukraine has recently become popular not only among the scientific community, but also politicians, representatives of the government and local government administration, and the general public. Quality of life is an indicator of a country's level of development, its competitiveness on international markets and it also illustrates changes of social phenomena.

The study of 'quality of life' in Ukraine involves mainly an objective assessment, which can be measured by means of statistical indicators. However, not enough attention is devoted to a subjective evaluation of quality of life, which requires surveying individual impressions of each respondent. In our opinion, it is the subjective evaluation that should prevail in the overall assessment of quality of life.

2. Theoretical aspects of quality of life

High quality of life signifies that a country and its government are successful. The term 'quality of life' appeared for the first time in American dictionaries after World War II and it initially referred to material well-being only. The concept was further developed in the 1960s, following a speech delivered by the US president of that time, Lyndon B. Johnson, at the University of Michigan. President Johnson was talking then about the challenge for the next half-century, which was to improve the quality of life of Americans.

A more in-depth research conducted in Western Europe relating to particular components of quality of life comes from the end of the 20th century. Among the studies of western economists and sociologists of those times who took account of

^a Ivan Franko National University in Lviv, Faculty of Economics, Department of Statistics.
ORCID: <https://orcid.org/0000-0001-9579-3039>.

^b Ivan Franko National University in Lviv, Faculty of Economics, Department of Statistics.
ORCID: <https://orcid.org/0000-0002-0727-0842>.

the quality of life of particular individuals and the whole society, the works of A. Campbell (1976) are of particular value. He is, in fact, one of the first scientists to refer to the concept of subjective evaluation of quality of life.

In Poland, the works of e.g. Borys (2003), Kasprzyk (2013), or Rogala (2009) are devoted to the problems of assessment of quality of life.

3. Examining the quality of life in Ukraine

Quality of life in Ukraine has started being examined only recently, unlike quality of life in other European countries. The most comprehensive definition of 'quality of life' was presented in a monograph entitled *Iakist zhyttia naseleennia rehionu: analiz, prohnozuvannia, sotsialna polityka* (The quality of life of the region's inhabitants: analysis, forecast, social policy¹; Nykyforenko, 2012), in a collective monograph entitled *Vymiriuvannia yakosti zhyttia v Ukraini* (Measuring quality of life in Ukraine²; Libanova et al., 2013) and in the article *Statystychni vymiriuvannia yakosti zhyttia: mizhnarodnyi dosvid i praktyka vykorystannia v Ukraini* (Statistical measurement of quality of life: international experience and practice of use in Ukraine³; Kovtun, 2014). Contradictions which arise and will continue to arise in the future are related to the fact that the understanding of the term 'quality of life' depends on the assumed point of view (Nykyforenko, 2012, p. 6). The above works, however, in our opinion fail to differentiate between quality of life and standard of living (Lutchyn, 2016). Moreover, no specific determinant of objective and subjective quality assessment is provided.

In-depth research on quality of life, on the other hand, is conducted in other European countries, including Poland. A significant number of indicators of a subjective assessment of life quality in Poland has been obtained through a social cohesion survey carried out by Statistics Poland.

The aim of the subjective assessment of quality of life is to indicate the level of happiness and satisfaction of needs, and is measured by means of qualitative indicators (Borys, 2003, pp. 13–15).

The State Statistics Service of Ukraine (Derzhavna sluzhba statystyky Ukrainy, 2017a, 2017b) examines, in a limited scope, citizens' subjective assessment of life quality through a survey of the population's living conditions. The study involves a self-assessment of Ukrainian households, their income, health condition and the availability of selected services provided by the healthcare system.

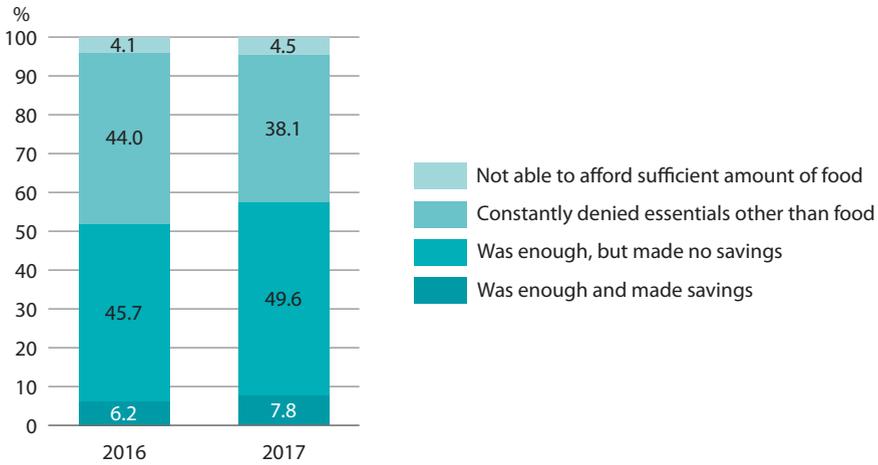
In 2016, 52% of Ukrainians (the same as in 2015), declared their income to be sufficient. Approximately 4% of the surveyed households admitted to having problems with satisfying their basic needs (0.8% less than in 2015).

¹ The editor's working translation.

² As above.

³ As above.

Figure 1. Households by self-assessment of the level of income in Ukraine

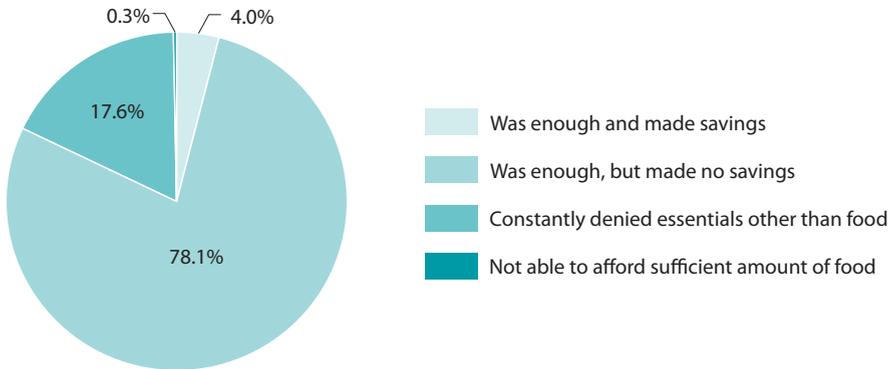


Source: State Statistics Service of Ukraine.

As shown in Figure 1, the share of households struggling to satisfy their basic needs increased in 2017 reaching 4.5%, likewise the share of households assessing their income as sufficient (57.4%). This demonstrates that 2017 saw a growth in the stratification of the Ukrainian population.

According to the survey respondents from the Lviv region (Figure 2), their income was higher than the average for Ukrainian households. In 2017, a substantial part of respondents from that region declared their income was sufficient (82.4%). Nearly 0.3% of the surveyed households in the region did not have enough money to purchase food.

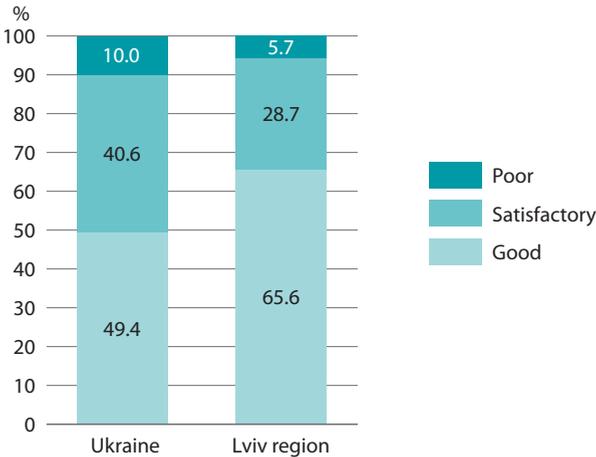
Figure 2. Households by self-assessment of the level of income in the Lviv region in 2017



Source: State Statistics Service of Ukraine.

As regards Ukrainians' self-assessment of their state of health, the majority of respondents (52%) declared their health was 'good'. Within this group, the largest percentage – 76–79% – were children up to the age of 14 (as declared by their parents) and young people aged 18–29. As far as the working age part of the population is concerned, 59% of men and 52% of women declared being in good health. Among the elderly, 11% of men and 7% of women described their health as good. Among the population of the Lviv region, 65.6% declared they were in good health, while 5.7% believed their health condition to be 'poor' in 2017 (Figure 3).

Figure 3. Self-assessment of the health condition of the Ukrainian population and the Lviv region in 2017



Source: State Statistics Service of Ukraine.

4. Prospects for the introduction of a subjective assessment of quality of life in Ukraine

A subjective assessment should also include information on the degree to which respondents are satisfied with such aspects of life as: marital status, relations with friends and acquaintances, amount and means of spending free time, living conditions, level of education and financial situation.

The authors conducted a pilot study examining households' subjective assessment of quality of life in the Lviv region in 2016–2017. The aim of the research was to obtain a more complete account of the subjective assessment of quality of life in terms of the above-mentioned aspects.

The study herein provides a comprehensive description of the quality of life in the Lviv region. The information was obtained through a questionnaire survey conducted

among the population of the region, involving a self-assessment of the individual components of quality of life. The subjective assessment represents an individual's perception of quality of life and is based on the personal feelings and values of each respondent.

In the process of developing the methodology of the representative survey of the quality of life of the population in the Lviv region, any applicable international principles and methodological guidelines were considered relating to the preparation of the sample to study the living conditions in households in Ukraine.

The study also takes into account the fact that the values of distinctive features characteristic of similar representative surveys of households (average monthly income and expenditure) depend to a large extent on the place of residence, i.e. whether it is a 'big city', 'small city' or 'rural area'. Thus, small towns include cities, urban-type settlements and urban territorial communities with a population of less than 100 thousand people, and large – with a population of more than 100 thousand people.

The sample size was determined in accordance with the accepted coefficient of variation of the estimation error of the main indicator, the average level of satisfaction with quality of life at 5% (CV = 5%) on a 5-point scale, and the results of previous pilot studies in order to determine the average level and dispersion of the examined main parameter. The sample size consisted of 380 households.

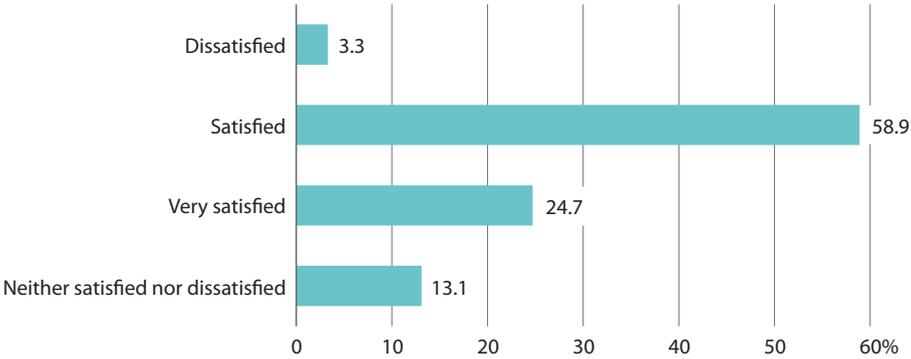
Taking into account similar questionnaire surveys conducted by Statistics Poland in Warsaw, in the original study a 5-point scale was applied with the following self-assessment options:

- very satisfied;
- satisfied;
- neither satisfied nor dissatisfied;
- dissatisfied;
- very dissatisfied.

According to the results of the pilot survey conducted in 2016 in the Lviv region, the average number of individuals living in a single household was 3.2 persons (3.02 as per the results of the 2016 survey of the State Statistics Service of Ukraine regarding the Lviv region).

The respondents were asked the following question: 'Are you satisfied with your life?', and 24.7% answered they were very satisfied, 58.9% claimed to be satisfied, 13.1% declared neither satisfied nor dissatisfied, while only 3.3% were dissatisfied. No one answered 'very dissatisfied' (Figure 4).

Figure 4. Degree of satisfaction with quality of life in general in the Lviv region in 2016

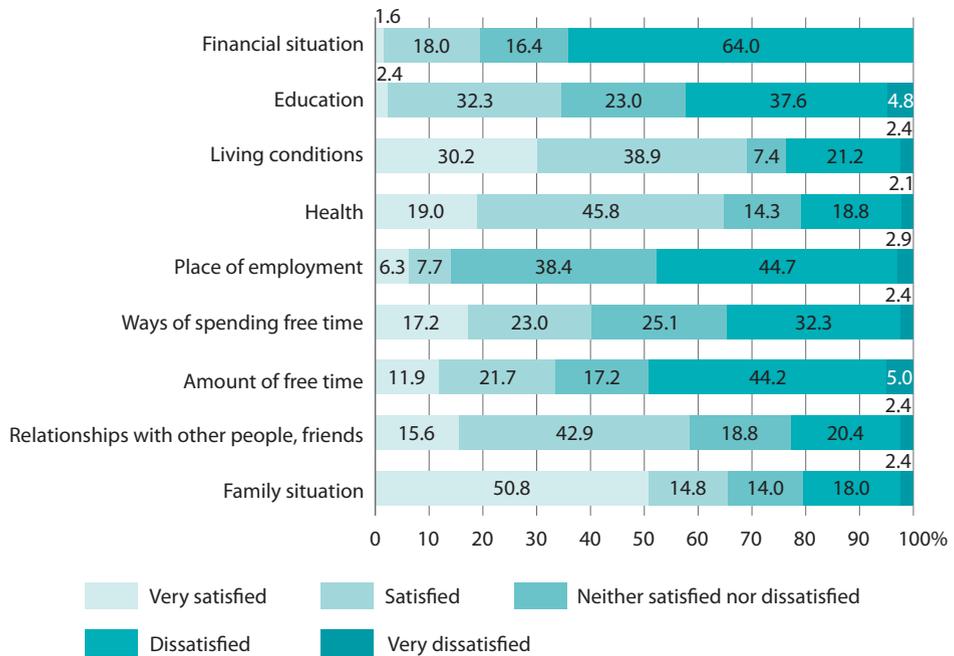


Source: authors' work based on pilot studies.

The results of the survey regarding households in the Lviv region demonstrated that 84.6% of respondents were in general satisfied with their quality of life. On a 5-point scale the average evaluation of satisfaction with life was in total 4.07% (Figure 4). The result proves that Ukraine (and the Lviv region in particular) is in adjusting mode, i.e. objectively bad circumstances are subjectively perceived as good ones, i.e. an individual is adjusting to the circumstances ('satisfied poor people') (Libanova et al., 2013).

The evaluation of the level of satisfaction considering selected aspects is also regarded important. Figure 5 presents the degree to which respondents are satisfied with such aspects of life as: family situation, relations with others, including friends, amount of free time, place of employment, health condition, living conditions, level of education, and financial situation.

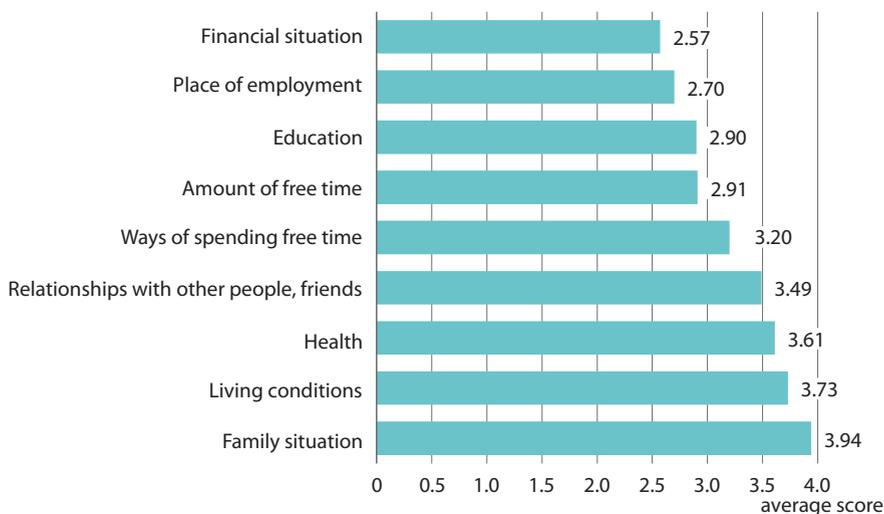
Figure 5. Degree of respondents' satisfaction with various aspects of life in the Lviv region in 2016



Source: authors' work based on pilot studies.

The results of the survey show that respondents are most satisfied with their health condition (87.51%), relations with others, friends (79.38%), family situation (76.26%) and living conditions (74.38%). Respondents are least content with the amount of free time they have (41.26%) and their financial situation (17.5%).

Figure 6. Evaluation of selected aspects of life quality in the Lviv region in 2016



Source: authors' work based on pilot studies.

On a 5-point scale, the aspect relating to the respondents' family situation received the highest score and was followed by living conditions in second place, while the financial situation and place of employment made two last positions.

5. The impact of life quality aspects on overall life satisfaction

The impact of various aspects of quality of life on overall life satisfaction was analysed on the basis of research results, by means of correlation coefficients (Table 1).

Table 1. Correlation coefficients for quality of life aspects

Aspects of quality of life	Coefficient	
	Pearson	Chuprov
Family situation	0.613	0.388
Living conditions	0.612	0.387
Ways of spending free time	0.593	0.368
Relations with other people, friends	0.531	0.234
Financial situation	0.520	0.305
Level of education	0.419	0.231
Amount of free time	0.354	0.189
Health condition	0.335	0.177

Source: authors' work based on pilot studies.

As the table above demonstrates, marital status and living conditions are regarded the most important factors determining quality of life. The verification of the

significance of the correlation is done by means of the χ^2 criterion. The critical values with freedom degrees $k = (5 - 1) (5 - 1)$ equal 7.962. The calculated values for particular aspects of quality of life are provided in Table 2.

Table 2. χ^2 indicators for the aspects of life quality

Aspects of life quality	χ^2
Family situation	10.187
Living conditions	9.720
Relations with other people, friends	10.999
Place of residence	10.181
Financial situation	10.004
Level of education	10.424
Ways of spending free time	11.390
Amount of free time	8.478

Source: authors' work based on pilot studies.

Due to the fact that for all of the aspects of quality of life the actual χ^2 value exceeds the critical value, significant connections may be identified. For comparison, the results of a similar survey conducted in Poland in 2016 are presented in Table 3.

Table 3. Satisfaction with particular aspects of life and satisfaction with life in general in Poland

Factor (satisfaction with particular aspects of life)	No. of freedom degrees	Wald Statistics	Limit value of significance
Current occupational situation	2	26.9	<0.0001***
School, studies	2	4.6	0.1001n.s.
Education	2	34.8	<0.0001***
Family situation	2	689.5	<0.0001***
Relations with other people, friends	2	89.6	<0.0001***
Financial situation	2	87.9	<0.0001***
Material living conditions (excluding income) ...	2	125.6	<0.0001***
Amount of free time	2	4.0	0.1373n.s.
Ways of spending free time	2	135.8	<0.0001***
Health	2	314.7	<0.0001***
Type of place of residence	2	402.3	<0.0001***

Note. *** – significant at 0.1% level. n.s. – not significant at 5%.

Source: Główny Urząd Statystyczny [GUS] (2015).

The results of the model fitting demonstrate that partial satisfactions relating to the respondents' family situation, place of residence and health condition primarily contributed to overall satisfaction. The means of spending free time also proved an important aspect adding to the feeling of general satisfaction, becoming the fourth

most important satisfaction component included in the analysis. It affected the level of satisfaction with life to a greater degree than such aspects as living conditions, relations with acquaintances and friends, or one's financial situation. In contrast, the effect of the amount of free time on overall satisfaction was found to be statistically insignificant (GUS, 2015). These results indicate a very close self-assessment of the quality of life in Ukraine and Poland.

6. Conclusions

The obtained results once again confirmed that the definition of a subjective evaluation based on an individual's subjective feeling of satisfaction with various aspects of life that is not always dependent upon one's material situation, is correct.

It should also be noted that richer countries sometimes show lower levels of satisfaction than the less affluent ones, which mainly results from the fact that the level of satisfaction is a multidimensional indicator, which, although related to the level of economic development of a country, is not a direct reflection of it.

In conclusion, a comprehensive subjective assessment of quality of life is an important element of research relating to this phenomenon. A comprehensive self-assessment of this kind should be included in the study concerning living conditions of Ukrainian households.

References

- Borys, T. (2003). Jakość życia jako integrujący rodzaj jakości. In J. Tomczyk-Tolkacz (Ed.), *Jakość życia w perspektywie nauk humanistycznych, ekonomicznych i ekologii* (pp. 7–19). Jelenia Góra: Akademia Ekonomiczna we Wrocławiu.
- Campbell, A. (1976). Subjective measures of well-being. *American Psychologist*, 31(2), 117–124. <https://doi.apa.org/doiLanding?doi=10.1037%2F0003-066X.31.2.117>.
- Derzhavna sluzhba statystyky Ukrainy. (2017a). *Samoosinka domohospodarstvamy Ukrainy rivnia svoikh dokhodiv*. <http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/sdrd2017.zip>.
- Derzhavna sluzhba statystyky Ukrainy. (2017b). *Samoosinka naseleenniam stanu zdorovia ta rivnia dostupnosti okremykh vydiv medychnoi dopomohy*. http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/Arh_snsz_u.htm.
- Główny Urząd Statystyczny. (2015). *Subiektywny dobrobyt w Polsce w 2015 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/warunki-zycia/dochody-wydatki-i-warunki-zycia-ludnosci/subiektywny-dobrobyt-w-polsce-w-2015-r-,20,1.html>.
- Kasprzyk, B. (2013). *Wybrane aspekty oceny dobrobytu ekonomicznego i jakości życia (ujęcie regionalne – Podkarpatie)*. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Kovtun, N. V. (2014). Statystychnye vymiriuvannia yakosti zhyttia: mizhnarodnyi dosvid i praktyka vykorystannia v Ukraini. *Bulletin of Taras Shevchenko National University of Kyiv: Economics*, (4), 48–53. <http://bulletin-econom.univ.kiev.ua/wp-content/uploads/2016/04/157.pdf>.

- Libanova, E. M., Gladun, O. M., & Lisogor, L. S. (2013). *Vymiriuvannia yakosti zhyttia v Ukraini*. https://www.idss.org.ua/monografii/UNDP_QoL_2013_ukr.pdf.
- Lutchyn, N. P. (2016). Yakist zhyttia v rehionakh Ukrainy: obiektyvne ta subiektyvne otsiniuvannia. *Scientific Economic Journal*, 6(117), 368–375.
- Nykyforenko, V. G. (Ed.). (2012). *Iakist zhyttia naselennia rehionu: analiz, prohnozuvannia, sotsialna polityka*. Odessa: National Economics University.
- Rogala, P. (2009). *Raport z realizacji pracy: Zaprojektowanie i przetestowanie systemu mierzenia jakości życia w gminach. Etap 2*. Jelenia Góra–Poznań: Uniwersytet Ekonomiczny we Wrocławiu, Wydział w Jeleniej Górze.

Factors affecting the quality of life of urban households in Poland, excluding households located in the capitals of voivodships

1. Introduction

Consumerism is perceived as one of the features defining the human being of the 21st century (Mróz, 2013, p. 51), leading to psychological consequences for an individual's identity, sense of self-worth, happiness, and psychological well-being (Zawadzka & Górnik-Durose, 2010, p. 8). It is also strictly connected with the category of quality of life, which varies with place (Słaby, 2011, p. 12). Therefore, in comparative studies, the concept of quality of life is very often used as one of the elements of social development assessment (Andersson, 2008; Savoia et al., 2006; Ståhl et al., 2003).

Poland's accession to the European Union created new opportunities for levelling the increasing disparities, both in the sphere of social development and quality of life. Nevertheless, there are still comparatively large social and economic differences among Polish regions. The assessment of the development level in the context of the structure of consumption in particular voivodships, excluding capital cities, proved that the objectively-evaluated satisfaction of needs is highly overestimated (Czech & Słaby, 2017). This situation is caused by the fact that the capitals of voivodships play the role of growth poles. Moreover, the majority of the best-paid professions are available in the largest urban agglomerations (Kozera et al., 2014), which affects the development level of particular regions of the country (Madrás & Mitura, 2014). Researchers focus on capitals of voivodships, for example in the context of spatial management (Hajduk, 2018) or quality of life in urban areas (Maggino, 2006). The above studies contributed to a comparatively highly insightful analysis of the living standards of urban households of particular voivodships, excluding those located in capital cities, (Czech, 2017b). In result, the aforementioned analyses used objective measures, which are strictly connected with measuring living standards.

^a Warsaw Management University, Institute of Management and Technical Science.
ORCID: <https://orcid.org/0000-0003-4854-1466>.

^b Warsaw Management University, Institute of Management and Technical Science.
ORCID: <https://orcid.org/0000-0002-9354-8571>.

It is necessary to make a reliable diagnosis of the main factors (determinants) influencing geographical disparities in the sphere of quality of life in particular urban areas with the use of subjective measures. This is due to the fact that economic decisions and consumption still depend on the regional situation and the subjective evaluation of the current and future situation of households (Kusińska, 2011, p. 128). Additionally, the quality of life of urban citizens has a substantial impact on urban policies, planning, and public activity (Dahmann, 1985).

The main goal of this study is to determine what influence the degree of the satisfaction of selected groups of needs of urban households located outside the voivodship capital cities has on the general subjective evaluation, which is the main determinant of quality of life. Additionally, the authors proposed a research hypothesis saying that a subjective assessment of the general household situation, being one of the main components of the process of measuring quality of life, is strongly determined by the geographical location of urban households. The paper is based on a literature review as well as on data obtained from the household budget survey carried out in 2016 by Statistics Poland.

2. Methodological aspects of the research on quality of life and the construction of diagnostic variables

The question concerning the definition of quality of life can be found as early as in ancient literature, starting from Aristotle (Nordenfelt, 1993, p. 4). The conducted literature review showed that the concept of quality of life is used for different purposes and contributes to different conclusions. This results from the lack of a standard definition of quality of life in the literature concerning this subject (Panek, 2015b, p. 8). Research on this matter is undertaken by representatives of different academic and professional domains, including physicians, psychologists, sociologists and politicians. The precursor of the concept of quality of life was Jeremy Bentham, who in 1791 proposed the assessment of the human life situation by comparing pains and pleasures (Bentham, 1982, p. 43). On the other hand, the term 'quality of life' is very often treated as a synonym of the term 'living standard' (Ostasiewicz, 2002, p. 9). Such a perception results from two different approaches to the concept of quality of life present in literature (Panek, 2016, pp. 14–18).

As Malina & Zeliaś (1997, p. 238) indicate, quality of life should reflect the relativity of the widely-understood non-material needs. According to the authors, this category measures the level of satisfaction an individual gains from different spheres of life or areas of activity. Consequently, quality of life is considered a multidimensional category, which is emotionally charged and, in many cases, takes the form of an ideological tool (Adamiec & Popiołek, 1993, p. 93).

According to one of the definitions of quality of life, it is a research category understood as the subjective perception of one's life within a certain system of values

and under specific social, economic and political conditions (Rogala, 2009, p. 7). The first attempt at distinguishing between the concepts of living standard and quality of life as separate research categories was undertaken by Słaby (Słaby, 1990, p. 25). The author defined living standard as the degree of satisfaction of material and cultural needs in the context of the existing infrastructure that makes it possible to satisfy those needs; and quality of life as subjective emotional states which are dependent on the degree of satisfaction of the existing needs, or on living under certain external conditions. The author's subsequent work was also focused on the notion of quality of life, as well as on the concept of dignity of life (Słaby, 2012, p. 11).

A similar approach to the definition of living standard and quality of life is presented by Owsński and Tarchalski (2008). These authors believe that one's living standard is determined by objective conditions of life, while life quality is influenced by subjective factors, such as aspirations or the level of one's satisfaction or perception (Owsński & Tarchalski, 2008, p. 62). Literature review proves that both Polish (Bąk & Szczecińska, 2015; Sompolska-Rzechuła, 2017) and foreign authors (Maggino, 2013; Xing & Chu, 2012) combine subjective and objective elements in their research on quality of life. The complexity and diversity of research approaches to this concept have been extensively presented in the literature, e.g. by Gierańczyk & Leszczyńska (2019). These authors emphasise the multidimensional character of the 'quality of life' category and the lack of one binding definition, which results in different ways of measuring it.

The previous considerations strongly suggest that regardless of how quality of life is defined, its assessment should include a subjective element. Quality of life is not directly observable, and its evaluation is usually carried out on the basis of the Likert scale. This is due to the fact that all factors determining inhabitants' quality of life should be assessed by people themselves rather than by officials or politicians (Ostasiewicz, 2006, p. 8).

According to Statistics Poland and the recommendations of both the Stiglitz' Report and the European Statistical System (Panek, 2015a), the multifaceted character of the 'quality of life' concept should be taken account of in the measurement process, and so should be the subjective quality of life, which is alternatively referred to as 'subjective well-being' (Szukielojć-Bieńkuńska et al., 2014, p. 24). Subjective indicators which are difficult to measure and which reflect human feelings in relation to their lives and satisfaction are used in the process of measuring quality of life (Gotowska, 2014, p. 38). Thus, subjective measurement is conducted by means of directly declared assessments and feedback from respondents relating to the level of satisfaction with different spheres of life (Sompolska-Rzechuła, 2013).

Literature relating to the analysed subject shows that the subjective assessment of quality of life remains in the centre of researchers' interest, especially with regard to urban areas (Low et al., 2018). Every aspect relating to quality of life is considered as

a multidimensional category and requires appropriate statistical tools, like logistic regression, whose implementation enables carrying out a relative impact analysis of several diagnostic features on one dichotomous variable. Its independent variables (factors) can be both qualitative and quantitative, and the possibility of interpreting the results of the estimation in a way resembling the classical regression analysis is an additional advantage here (Stanisz, 2007, p. 217). Logistic regression models are widely applied in medical sciences and have also been introduced to economics in the area of quality of life (Główny Urząd Statystyczny & Urząd Statystyczny w Łodzi, 2013, 2017).

Further research was carried out in relation to the marginalisation and social exclusion of indigenous rural natives, poverty measurement (Słaby, 2016, pp. 98–102), national wealth (Sączewska-Piotrowska, 2015), and the assessment of the quality of life of the emerging upper class (Kot & Słaby, 2013). Regional differences in the perception of quality of life have already been analysed according to its particular determinants in all Polish voivodships (Czech, 2017a; Czech & Słaby, 2018).

The basis for the analysis performed in this study of the influence of selected groups of needs on urban households' general situation (which is one of the determinants of quality of life), was the results of household budget surveys conducted by Statistics Poland. The assessment of the general situation was carried out by means of the five-step Likert scale, where the following values denoted the following categories: 1 – 'good', 2 – 'rather good', 3 – 'average (neither good nor bad)', 4 – 'rather bad', 5 – 'bad'. The subjective assessment of the degree of satisfaction with food and clothing, footwear needs, furnishing and durable goods were measured using the same scale with the same categories attached to the same values. The degree of satisfaction of the following needs was also measured on the same scale:

- healthcare, i.e. doctor's visits, purchase of medications, payment for treatments, etc.;
- making due payments on time, including fixed payments, rent, bills, etc.;
- culture, i.e. the purchase of books (excluding school textbooks), magazines, tickets to concerts, cinemas and theatres;
- education, workshops and courses, including the purchase of textbooks;
- tourism and leisure outside the place of residence, e.g. holidays.

The respondents were, however provided with one more option – number 6, which meant 'not applicable' or 'lack of need', marked in cases where no answer was given to the question regarding a particular household need. The above-listed factors, capable of influencing the quality of life of urban households, are connected both with tangible and intangible goods or services that additionally have a strong influence on the European Union member states' economies (Skąpska, 2015, 2016, p. 405).

A logistic regression model was constructed in order to evaluate the influence of the level of satisfaction of selected needs on the subjective perception of the general

situation of urban households. What is interesting here is that the model takes the cause-and-effect form with one explained variable and a set of explanatory variables. It was carried out with the use of the zero-one feature, also known as binary. The variable assumes the value '1' when the respondent describes the situation of a household as 'very good' or 'good', and the value '0' in the case of the remaining choices.

The described variables (the subjective assessment of the satisfaction of particular groups of needs) were classified as: 'good' and 'rather good', 'average (neither good nor bad)', 'rather bad', and 'bad'. The answer 'does not concern' or 'lack of such a need' were added to the category 'neither good nor bad'.

Such an approach allowed a significant reduction in the final set of diagnostic variables, as logistic regression requires qualitative variables which should be consistent with the zero-one system. This kind of transformation assumes that the feature having m variants is presented as $m - 1$ of zero-one variables. Thus, each of the eight groups of needs was represented by two artificial explanatory variables, which led to constructing the set of sixteen diagnostic variables. The procedure of the transformation of qualitative variables into artificial ones is referred to as coding. It requires, however, the determination of a reference '0' category. This category consists of respondents whose answer to specific questions about the satisfaction level of particular needs was 'rather bad' or 'bad'. It is worth mentioning here that the literature on the subject offers also other types of coding (parametrisation) (Książek, 2012, p. 47–50).

As a result of the coding transformation, the following set of independent potential variables was used:

- $X_1 = 1$ – the respondent assessed the level of satisfaction with the household's needs of food as 'good' and 'rather good'; $X_1 = 0$ – for the remaining answers;
- $X_2 = 1$ – the respondent assessed the level of satisfaction with the household's needs of food as 'average (neither good nor bad)'; $X_2 = 0$ – for the remaining answers;
- $X_3 = 1$ – the respondent assessed the level of satisfaction with the household's needs of clothing and footwear as 'good' and 'rather good'; $X_3 = 0$ – for the remaining answers;
- $X_4 = 1$ – the respondent assessed the level of satisfaction with the household's needs of clothing and footwear as 'average (neither good nor bad)'; $X_4 = 0$ – for the remaining answers;
- $X_5 = 1$ – the respondent assessed the level of satisfaction with the household's health needs as 'good' and 'rather good'; $X_5 = 0$ – for the remaining answers;

- $X_6 = 1$ – the respondent assessed the level of satisfaction with the household's health needs as 'average (neither good nor bad)'; $X_6 = 0$ – for the remaining answers;
- $X_7 = 1$ – the respondent assessed the level of satisfaction with the household's needs related to paying bills on time as 'good' and 'rather good'; $X_7 = 0$ – for the remaining answers;
- $X_8 = 1$ – the respondent assessed the level of satisfaction with the household's needs related to paying bills on time as 'average (neither good nor bad)'; $X_8 = 0$ – for the remaining answers;
- $X_9 = 1$ – the respondent assessed the level of satisfaction with the household's needs related to furniture and durable goods as 'good' and 'rather good'; $X_9 = 0$ – for the remaining answers;
- $X_{10} = 1$ – the respondent assessed the level of satisfaction with the household's needs related to furniture and durable goods as 'average (neither good nor bad)'; $X_{10} = 0$ – for the remaining answers;
- $X_{11} = 1$ – the respondent assessed the level of satisfaction with the household's cultural needs as 'good' and 'rather good'; $X_{11} = 0$ – for the remaining answers;
- $X_{12} = 1$ – the respondent assessed the level of satisfaction with the household's cultural needs as 'average (neither good nor bad)'; $X_{12} = 0$ – for the remaining answers;
- $X_{13} = 1$ – the respondent assessed the level of satisfaction of the household's needs of education, participating in workshops and courses as 'good' and 'rather good'; $X_{13} = 0$ – for the remaining answers;
- $X_{14} = 1$ – the respondent assessed the level of satisfaction with the household's needs of education, participating in workshops and courses as 'average (neither good nor bad)'; $X_{14} = 0$ – for the remaining answers;
- $X_{15} = 1$ – the respondent assessed the level of satisfaction of the household's needs in the area of tourism and leisure as 'good' and 'rather good'; $X_{15} = 0$ – for the remaining answers;
- $X_{16} = 1$ – the respondent assessed the level of satisfaction with the household's needs in the area of tourism and leisure as 'average (neither good nor bad)'; $X_{16} = 0$ – for the remaining answers.

It should be noted that all the potential diagnostic features were put under statistical investigation through a correlation analysis, which involves the implementation of several methods, one of which is the review of correlation matrices. For this purpose, contingency tables were used, serving as the basis for the construction of Yule's correlation coefficient (Stanisz, 2006, p. 325). Table 1 presents the results of this analysis that involved a selection of diagnostic features.

Table 1. Yule's correlation coefficients among independent variables

Research objects	Selected pairs of independent variables							
	X_1/X_2	X_3/X_4	X_5/X_6	X_7/X_8	X_9/X_{10}	X_{11}/X_{12}	X_{13}/X_{14}	X_{15}/X_{16}
Poland	-0.94	-0.85	-0.81	-0.90	-0.77	-0.60	-0.95	-0.48
Dolnośląskie voivodship	-0.93	-0.84	-0.83	-0.89	-0.79	-0.66	-0.96	-0.58
Kujawsko-Pomorskie voivodship	-0.91	-0.86	-0.78	-0.85	-0.78	-0.59	-0.94	-0.36
Lubelskie voivodship	-0.95	-0.84	-0.79	-0.90	-0.76	-0.56	-0.95	-0.37
Lubuskie voivodship	-0.95	-0.79	-0.75	-0.88	-0.68	-0.57	-0.97	-0.44
Łódzkie voivodship	-0.96	-0.88	-0.83	-0.95	-0.77	-0.51	-0.97	-0.41
Małopolskie voivodship	-0.94	-0.89	-0.85	-0.91	-0.82	-0.65	-0.96	-0.53
Mazowieckie voivodship	-0.94	-0.85	-0.80	-0.88	-0.75	-0.53	-0.93	-0.45
Opolskie voivodship	-0.94	-0.84	-0.83	-0.93	-0.81	-0.74	-0.97	-0.62
Podkarpackie voivodship	-0.94	-0.82	-0.79	-0.92	-0.73	-0.48	-0.94	-0.37
Podlaskie voivodship	-0.94	-0.81	-0.80	-0.91	-0.76	-0.68	-0.97	-0.55
Pomorskie voivodship	-0.94	-0.86	-0.82	-0.89	-0.73	-0.61	-0.96	-0.51
Śląskie voivodship	-0.93	-0.86	-0.81	-0.88	-0.82	-0.67	-0.97	-0.57
Świętokrzyskie voivodship	-0.95	-0.90	-0.85	-0.94	-0.82	-0.59	-0.98	-0.36
Warmińsko-Mazurskie voivodship ..	-0.94	-0.82	-0.78	-0.90	-0.71	-0.53	-0.95	-0.37
Wielkopolskie voivodship	-0.92	-0.83	-0.79	-0.90	-0.76	-0.59	-0.93	-0.48
Zachodniopomorskie voivodship	-0.97	-0.84	-0.81	-0.96	-0.74	-0.52	-0.94	-0.38

Source: authors' work.

The analysis of the data presented in the table above showed high absolute values of Yule's correlation coefficients within each group of needs. This phenomenon is observed both in all urban households in Poland and in their particular subpopulations, in this case voivodships. As a result, the following variables were not subject to further analysis: X_2 , X_4 , X_6 , X_8 , X_{10} , and X_{14} . In the case of these features, the respondents assessed satisfying needs as 'average' or the need did not occur.

To sum up, the set of the remaining (not eliminated) diagnostic features provided the basis for the estimation process of logistic regression models.

3. The logistic regression approach to analysing urban households' quality of life

Research on quality of life requires a multidimensional approach and an empirical diagnosis. Logistic regression can be considered as an appropriate mathematical model, which allows the determination of the influence of a set of diagnostic variables on a dichotomous dependent variable.

The logit transformation is based on probability $P = P(Y = 1)$. It is expressed by the following formula:

$$\ln \frac{P(A)}{1 - P(A)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k, \quad (1)$$

where 'good' and 'rather good' relate to the opinion about the general subjective situation of the household; it is denoted by A and represents $P(A)$, i.e. the probability of an event occurring.

The natural logarithm of the expression $\frac{P(A)}{1 - P(A)}$ is called a logit. It takes the form of a linear function of a set of the following explanatory variables: X_1, X_2, \dots, X_k . Thus, the chosen parameter β_i is interpreted as an increase in the logarithm of the probability ratio. It is caused by a unit increase of the chosen variable X_j , assuming a controlled stability of the other variables included in the constructed model.

The hypothesis assuming that the explanatory variable does not influence the probability of an event can be assessed with the following Wald formula:

$$W = \left(\frac{\hat{\beta}}{S(\hat{\beta}_j)} \right)^2, \quad (2)$$

where:

$\hat{\beta}_j$ – the value of the estimated parameter,

$S(\hat{\beta}_j)$ – an error in the parameter estimation.

The Wald statistics, when $H_0: \beta_j = 0$, is characterised by an X^2 distribution with one number of degrees of freedom. A high value of the Wald statistics weakens hypothesis H_0 . The critical level is calculated as $p = p(X_{(1)}^2 \geq W)$.

The main concern during the interpretation process of the results of the analysis regards the odds ratio. Three main cases in relation to the value of the odds ratio may occur. If the odds ratio remains below 1, it means that a factor described by explanatory variable H_j decreases the probability of the occurrence of the studied event. The odds ratio equalling 1 means that the probability of the occurrence of the studied event is the same in each group of needs. In the third case, where the odds ratio exceeds 1, the factor of the quality of life described by variable H_j increases the probability of the occurrence of the event (Stanisz, 2016, p. 196).

The evaluation of the factors of quality of life of urban households in particular voivodships was carried out using the logistic regression model for all urban households in Poland. The results of the calculations are presented in Table 2.

Table 2. Results of the estimation process of logistic regression for all urban households in Poland

Parameters of the logistic regression model	Independent variables									
	X_1	X_3	X_5	X_7	X_9	X_{11}	X_{12}	X_{13}	X_{15}	X_{16}
First stage										
Structural parameter $\hat{\beta}_i$	0.813	0.925	0.195	0.290	0.480	1.015	0.363	-0.100	1.530	0.561
Standard deviation $S(\hat{\beta}_i)$	0.107	0.083	0.067	0.105	0.059	0.093	0.086	0.053	0.079	0.071
Critical level of significance P	0.000	0.000	0.004	0.006	0.000	0.000	0.000	0.059	0.000	0.000
Wald statistics W	57.475	124.209	8.475	7.607	66.971	120.245	17.730	3.578	373.613	63.055
Odds ratio $e^{\hat{\beta}_i}$	2.255	2.523	1.216	1.337	1.616	2.758	1.437	0.905	4.619	1.752
Second stage										
Structural parameter $\hat{\beta}_i$	0.809	0.919	0.188	0.288	0.479	1.004	0.361	*	1.523	0.564
Standard deviation $S(\hat{\beta}_i) \dots S(\hat{\beta}_j)$	0.107	0.083	0.066	0.107	0.059	0.092	0.086	*	0.079	0.071
Critical level of significance P	0.000	0.000	0.005	0.007	0.000	0.000	0.000	*	0.000	0.000
Wald statistics W	56.93	123.24	8.02	7.20	66.60	118.38	17.64	*	371.47	63.77
Odds ratio $e^{\hat{\beta}_i}$	2.247	2.508	1.207	1.334	1.614	2.728	1.435	*	4.584	1.757

Note. * – statistically insignificant.

Source: authors' work.

It should be noted that the estimation was carried out in two stages. The first stage presents the entire potential set of diagnostic variables which were taken into account. Not all of the analysed variables were statistically significant – variable X_{13} is considered statistically insignificant and should be removed from the constructed model.

Subsequently, the second model of the logistic regression was estimated and the results of the calculations are also given in Table 2. In presenting the results, particular attention was devoted to the interpretation of the chance of occurrence – the odds ratio. What could be observed here is that regardless of how strongly the satisfaction of particular needs influences the subjective assessment of the general situation of urban households, the effect is positive.

The results of the analysis demonstrate that the satisfaction of tourism- and leisure-related needs is the most significant feature. It can be observed that with regard to the respondents who assessed the level of their satisfaction with this type of needs as ‘good’ and ‘rather good’, the odds ratio of feeling positive about the household’s situation is higher by 458% compared to the reference group. Furthermore, satisfying households’ cultural needs is second on the scale of importance, which is indicated by the value of the quotient of chances reaching 237%. The third group of significant needs is connected with clothing and footwear.

In conclusion, the analysis of quality of life carried out for all urban households in Poland has created a foundation for further geographical analysis of this phenomenon. As Poland is highly varied in terms of the inhabitants' assessment of their quality of life, performing separate analyses for each voivodships seemed essential. The results of the estimation process of logistic regression for particular voivodships are presented in Table 3.

Table 3. Odds ratios – the impact of diagnostic variables on the dependent variable – 0.05 level of significance

Voivodships	Independent variables								
	X_1	X_3	X_5	X_7	X_9	X_{11}	X_{12}	X_{15}	X_{16}
Dolnośląskie	*	4.391	*	4.072	*	2.309	*	2.447	*
Kujawsko-Pomorskie	15.162	*	*	*	2.822	*	*	5.549	*
Lubelskie	*	6.714	*	*	*	3.352	*	*	*
Lubuskie	*	*	*	9.220	*	9.220	*	12.461	5.132
Łódzkie	*	*	*	*	3.053	4.019	*	5.921	*
Małopolskie	*	3.262	*	*	2.181	*	*	2.640	*
Mazowieckie	2.136	2.829	*	*	1.797	1.884	*	5.496	2.360
Opolskie	*	*	*	*	3.408	*	*	15.602	5.559
Podkarpackie	*	3.237	3.343	*	2.569	*	*	6.750	*
Podlaskie	*	*	24.508	*	*	*	*	5.483	*
Pomorskie	3.864	2.588	*	*	2.095	5.461	2.373	3.841	2.068
Śląskie	2.651	2.101	*	*	1.880	3.398	1.816	4.994	1.781
Świętokrzyskie	*	*	*	*	*	10.595	*	4.041	*
Warmińsko-Mazurskie	*	6.751	*	*	*	2.148	*	9.769	*
Wielkopolskie	*	5.161	*	*	*	2.334	*	6.271	2.391
Zachodniopomorskie	*	10.691	*	*	2.928	*	*	7.884	*

Note. As in Table 2.

Source: authors' work.

The analysis of the data presented in the above table allows the indication of some trends connected with the assessment of quality of life in terms of the degree of satisfaction of particular groups of household needs.

It should be noted that the implemented diagnostic variables reflecting the level of satisfaction of needs in the area of education and health do not have a significant impact on the subjective perception of the general situation of urban households, and was regarded satisfactory in most voivodships.

A further interpretation of the results leads to the conclusion that the odds ratios are statistically insignificant for variables connected with tourism and leisure in particular voivodships. However, the odds ratio for Dolnośląskie voivodship indicates a higher chance (by 245% compared to the reference group) for the occurrence of respondents who assessed the level of their satisfaction of these needs as 'good' and 'rather good'.

To sum up, the performed analysis proved that many of the diagnostic variables which were used in the construction of the logistic regression model can be considered

statistically insignificant. In order to improve the constructed models of logistic regressions for particular voivodships, a new, acceptable level of significance was introduced. Consequently, new logistic regression models for particular voivodships were estimated, and the results are presented in Table 4.

Table 4. Odds ratios – the impact of diagnostic variables on the dependent variable – 0.1 level of significance

Voivodships	Independent variables									
	X_1	X_3	X_5	X_7	X_9	X_{11}	X_{12}	X_{13}	X_{15}	X_{16}
Dolnośląskie	*	3.806	*	3.701	1.538	2.110	*	*	2.271	*
Kujawsko-Pomorskie	11.177	*	2.115	*	2.248	*	*	*	5.332	*
Lubelskie	3.032	4.619	*	*	*	3.327	*	*	*	*
Lubuskie	*	*	*	9.313	*	11.846	3.088	*	9.435	3.493
Łódzkie	*	2.658	*	*	1.832	3.119	*	*	10.217	2.199
Małopolskie	*	2.603	1.762	*	1.983	2.159	*	0.699	1.852	*
Mazowieckie	2.136	2.829	*	*	1.797	1.884	*	*	5.496	2.360
Opolskie	4.043	2.745	*	*	2.479	*	*	0.595	10.270	3.891
Podkarpackie	3.064	2.438	2.962	*	2.366	*	*	*	6.909	*
Podlaskie	9.906	10.302	*	*	*	*	*	*	5.128	*
Pomorskie	3.864	2.588	*	*	2.095	5.461	2.373	*	3.841	2.068
Śląskie	2.463	1.932	1.343	*	1.820	3.247	1.789	*	4.928	1.791
Świętokrzyskie	*	*	*	*	*	4.772	*	*	32.799	14.046
Warmińsko-Mazurskie	*	6.751	*	*	*	2.148	*	*	9.769	*
Wielkopolskie	*	4.636	*	*	*	4.241	1.988	*	5.453	2.011
Zachodniopomorskie ...	*	10.691	*	*	2.928	*	*	*	7.884	*

Note. As in Table 2.

Source: authors' work.

The data presented in the above table allow several conclusions when identifying and observing the quality of life determinants of urban households. In general, the amount of statistically significant variables influencing the overall urban household situation increased. The need of paying bills on time is statistically insignificant in all of the analysed voivodships except Dolnośląskie and Lubuskie. Compared to other features, the health area is also statistically insignificant in most of the analysed voivodships.

4. Conclusions

The conducted research regarding urban households' subjective evaluation of the satisfaction of their needs as a measure of quality of life carried out by means of logistic regression led to several conclusions.

The modelling process involving the implementation of binominal logistic regression should be preceded by a correlation test. Special attention should be devoted to the correlation in the area of variables which were created with categories related to particular group of needs.

Regardless of how strong the influence of a particular group of needs is on the subjective assessment, the effect is positive, which means that the satisfaction of each of the distinguished groups of needs increases the overall subjective assessment (the main factor measuring quality of life and differentiating regions from one another).

On the one hand, coded variables connected to education, workshops and courses are not statistically significant in the case of urban areas both for the whole of Poland and for particular voivodships. On the other hand, the highest values of odds ratios are observed among respondents who assessed the fulfilment of their needs in the area of tourism and leisure as 'good' and 'very good' in all Polish urban households, excluding those located in the capitals of voivodships.

Furthermore, features connected with the fulfilment of needs relating to clothing and footwear, culture and equipping an apartment with durable goods, are considered the next most important determinants of quality of life.

It should also be noted that the variable describing the satisfaction of needs in the area of paying bills on time is statistically insignificant in most subpopulations, except for Dolnośląskie and Lubuskie voivodships.

An increase in the significance level of the estimated parameters of the logistic regression influences the number of explanatory variables in selected voivodships in the area of healthcare.

Different groups of needs are determined by the logit models of the general situation of urban households in particular regions.

To sum up, there is evidence supporting the proposed hypothesis which assumed that the subjective assessment of households' general situation constituting the main component of quality of life is strongly determined by the geographical diversity of urban households.

References

- Adamiec, M., & Popiołek, K. (1993). Jakość życia – między wolnością a mistyfikacją. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, 55(2), 93–102.
- Andersson, P. (2008). Happiness and health: Well-being among the self-employed. *The Journal of Socio-Economics*, 37(1), 213–236. <https://doi.org/10.1016/j.socec.2007.03.003>.
- Bąk, I., & Szczecińska, B. (2015). Jakość życia w ujęciu obiektywnym w województwach Polski. Analiza porównawcza. *Folia Pomeranae Universitatis Technologiae Stetinensis*, (3), 15–26. <http://www.wydawnictwoold.zut.edu.pl/files/magazines/2/57/730.pdf>.
- Bentham, J. (1982). *An Introduction to the Principles of Morals and Legislation*. London: Methuen.
- Czech, A. (2017a). Ocena jakości życia polskich gospodarstw domowych – ujęcie wojewódzkie. In E. Frątczak, T. Panek & T. Słaby (Eds.), *Paradygmaty badawcze jakości życia w ekonomii, zarządzaniu i psychologii* (pp. 49–64). Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego.
- Czech, A. (2017b). Poziom życia miejskich gospodarstw domowych w Polsce poza krajowymi ośrodkami rozwoju. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego*

- w *Katowicach*, (326), 30–40. https://www.ue.katowice.pl/fileadmin/user_upload/wydawnictwo/SE_Artyku%C5%82y_321_340/SE_326/03.pdf.
- Czech, A., & Słaby, T. (2017). Ocena poziomu życia gospodarstw domowych według województw – meandry analizy taksonomicznej. *Wiadomości Statystyczne*, 62(10), 19–37. <https://doi.org/10.5604/01.3001.0014.1054>.
- Czech, A., & Słaby, T. (2018). Ocena determinant jakości życia gospodarstw domowych województwa kujawsko-pomorskiego. In M. Geise, D. Piotrowski & J. Oczki (Eds.), *Zrównoważony rozwój województwa kujawsko-pomorskiego. Bariery i wyzwania* (pp. 49–64). Wrocław: Narodowy Bank Polski, Polskie Towarzystwo Statystyczne.
- Dahmann, D. C. (1985). Assessment of neighborhood quality in metropolitan America. *Urban Affairs Review*, 20(4), 511–535. <https://doi.org/10.1177/004208168502000407>.
- Gierańczyk, W., & Leszczyńska, M. (2019). Ujęcie szczęścia w wielowymiarowych badaniach jakości życia. *Wiadomości Statystyczne. The Polish Statistician*, 64(1), 52–67. <https://doi.org/10.5604/01.3001.0013.8542>.
- Główny Urząd Statystyczny & Urząd Statystyczny w Łodzi. (2013). *Jakość życia, kapitał społeczny, ubóstwo i wykluczenie społeczne w Polsce*. Warszawa. https://stat.gov.pl/download/cps/rde/xbr/gus/WZ_jakosc_zycia_2013.pdf.
- Główny Urząd Statystyczny & Urząd Statystyczny w Łodzi. (2017). *Jakość życia w Polsce w 2015 r. Wyniki Badania Spójności Społecznej*. Warszawa. https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5486/4/2/1/jakosc_zycia_w_polsce_w_2015_roku.pdf.
- Gotowska, M. (2014). Jakość życia, poziom jakości życia, równowaga bytu – dyskusja trwa. *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*, 37(2), 33–43.
- Hajduk, S. (2018). Instrumenty zarządzania przestrzennego w aspekcie zrównoważonego rozwoju – wielowymiarowa analiza porównawcza miast wojewódzkich. *Annual Set The Environment Protection / Rocznik Ochrona Środowiska*, 20(2), 1219–1233. https://ros.edu.pl/images/roczniki/2018/072_ROS_V20_R2018.pdf.
- Kot, M. S., & Słaby, T. (2013). Ocena jakości życia wschodzącej klasy wyższej w Polsce. *Śląski Przegląd Statystyczny / Silesian Statistical Review*, (11), 209–227.
- Kozera, A., Stanisławska, J., & Wysocki, F. (2014). Sytuacja finansowa gospodarstw domowych zamieszkujących obszary wiejskie w Polsce po wstąpieniu Polski do Unii Europejskiej. *Roczniki Naukowe Ekonomii Rolnictwa i Rozwoju Obszarów Wiejskich*, 101(2), 91–101. http://sj.wne.sggw.pl/pdf/RNR_2014_n2_s91.pdf.
- Książek, M. (2012). Analiza danych jakościowych. In E. Frątczak (Ed.), *Zaawansowane metody analiz statystycznych* (pp. 25–138). Warszawa: Oficyna Wydawnicza SGH.
- Kusińska, A. (Ed.). (2011). *Konsumpcja a rozwój społeczno-gospodarczy regionów w Polsce*. Warszawa: Polskie Wydawnictwo Ekonomiczne.
- Low, C. T., Stimson, R., Chen, S., Cerin, E., Pui-Yun Wong, P., & Lai, P. C. (2018). Personal and Neighbourhood Indicators of Quality of Urban Life: A Case Study of Hong Kong. *Social Indication Research*, 136(2), 751–773. <https://doi.org/10.1007/s11205-017-1579-3>.
- Madras, T., & Mitura, M. (2014). Dochody własne miast wojewódzkich w analizie ich kondycji finansowej. *Ekonomia i Zarządzanie*, 6(4), 123–134. <http://doi.org/10.12846/j.em.2014.04.09>.
- Maggino, F. (2006). Definition and analysis of subjective indicators of urban quality-of-life in an ‘atypical’ city. In W. Ostasiewicz (Ed.), *Towards quality of life improvement* (pp. 168–218). Wrocław: The Publishing House of the Wrocław University of Economics.

- Maggino, F. (2013). The construction on well-being indicators: from definitions to measures and to interpretation. *Śląski Przegląd Statystyczny / Silesian Statistical Review*, (11), 95–122.
- Malina, A., & Zeliaś, A. (1997). O budowie taksonomicznej miary jakości życia. *Taksonomia*, (4), 238–263.
- Mróz, B. (2013). *Konsument w globalnej gospodarce: Trzy perspektywy*. Warszawa: Oficyna Wydawnicza SGH.
- Nordenfelt, L. (1993). *Quality of life, health and happiness*. Avebury: Ashgate Publishing. <http://www.diva-portal.org/smash/get/diva2:17056/FULLTEXT01.pdf>.
- Ostasiewicz, W. (Ed.). (2002). *Metodologia pomiaru jakości życia*. Wrocław: Wydawnictwo Akademii Ekonomicznej im. Oscara Langego.
- Ostasiewicz, W. (Ed.). (2006). *Towards Quality of Life Improvement*. Wrocław: The Publishing House of the Wrocław University of Economics.
- Owsiński, J. W., & Tarchalski, T. (2008). Pomiar jakości życia. Uwagi na marginesie pewnego rankingu. *Współczesne Problemy Zarządzania*, (1), 59–96. https://www.wit.edu.pl/dokumenty/wydawnictwa_naukowe/zeszyty_naukowe_WITZ_01/owsinski-tarchalski.pdf.
- Panek, T. (2015a). Hierarchiczny model pomiaru jakości życia. *Wiadomości Statystyczne*, 60(6), 1–22.
- Panek, T. (2015b). *Jakość życia gospodarstw domowych w Polsce w układzie wojewódzkim* (ISiD Working Paper Nr 46). https://ssl-kolegia.sgh.waw.pl/pl/KAE/struktura/ISiD/publikacje/Documents/Working_Paper/ISID_WP_46_2015.pdf.
- Panek, T. (2016). *Jakość życia – od koncepcji do pomiaru*. Warszawa: Oficyna Wydawnicza SGH.
- Rogala, P. (2009). *Zaprojektowanie i przetestowanie systemu mierzenia jakości życia w gminach*. Jelenia Góra, Poznań: Uniwersytet Ekonomiczny we Wrocławiu, Wydział w Jeleniej Górze.
- Savoia, E., Fantini, M. P., Pandolfi, P. P., Dallolio, L., & Collina, N. (2006). Assessing the construct validity of the Italian version of the EQ-5D: preliminary results from a cross-sectional study in North Italy. *Health and Quality of Life Outcomes*, 4(47), 1–9. <https://doi.org/10.1186/1477-7525-4-47>.
- Sączewska-Piotrowska, A. (2015). Identyfikacja determinant bogactwa dochodowego z zastosowaniem modelu logitowego. *Zarządzanie i Finanse / Journal of Management and Finance*, 13(4/2), 241–259. http://zif.wzr.pl/pim/2015_4_2_15.pdf.
- Skąpska, E. (2015). Service sector as development engine of new countries in European Union. *Estudios en Ciencias Sociales y Administrativas de la Universidad de Celaya*, 5(1), 51–64.
- Skąpska, E. (2016). Services in Theory of Economic Order. Ordo perspective. In *Smart and Efficient Economy: Preparation for the Future Innovative Economy. 21th International Scientific Conference*. http://www.icem.lt/public/icem/ICEM_2016.pdf.
- Słaby, T. (1990). Poziom życia i jakość życia. *Wiadomości Statystyczne*, 35(6), 8–10.
- Słaby, T. (2011). Współbieżność kryzysu i dobrostanu Polaków w czasie kryzysu. In M. Bombol (Ed.), *Jak żyć w kryzysie? Zachowania polskich konsumentów* (pp. 11–42). Warszawa: Oficyna Wydawnicza SGH.
- Słaby, T. (2012). *Quality of life of the emerging upper class in Poland*. Warszawa: Oficyna Wydawnicza SGH.
- Słaby, T. (2016). *The quality and dignity of life as the symptoms of social exclusion of aboriginal rural population added 60+ in Poland*. Warszawa: Oficyna Wydawnicza SGH.

- Sompolska-Rzechuła, A. (2013). Pomiar i ocena jakości życia. *Wiadomości Statystyczne*, 58(8), 19–36.
- Sompolska-Rzechuła, A. (2017). Przestrzenne zróżnicowanie poziomu jakości życia w Polsce. *Wiadomości Statystyczne*, 62(6), 38–57. <https://doi.org/10.5604/01.3001.0014.0958>.
- Stanisz, A. (2006). *Przystępny kurs statystyki z zastosowaniem STATISTICA PL na przykładach z medycyny: vol. 1. Statystyki podstawowe*. Kraków: StatSoft Polska.
- Stanisz, A. (2007). *Przystępny kurs statystyki z zastosowaniem STATISTICA PL na przykładach z medycyny: vol. 2. Modele liniowe i nieliniowe*. Kraków: StatSoft Polska.
- Stanisz, A. (2016). *Modele regresji logistycznej: Zastosowanie w medycynie, naukach przyrodniczych i społecznych*. Kraków: StatSoft Polska.
- Ståhl, E., Jansson, S.-A., Jonsson, A.-C., Svensson, K., Lundbäck, B., & Andersson, F. (2003). Health-related quality of life, utility, and productivity outcomes instruments: ease of completion by subjects with COPD. *Health and Quality of Life Outcomes*, 1(18), 1–7. <https://doi.org/10.1186/1477-7525-1-18>.
- Szukielójc-Bieńkuńska, A., Włodarczyk, J., & Piasecki, T. (2014). Terytorialne zróżnicowanie wybranych aspektów jakości życia w Polsce. *Wiadomości Statystyczne*, 59(8), 23–39.
- Xing, Z., & Chu, L. (2012). Research on constructing composite index of objective well-being from China mainland. *Statistics in Transition new series*, 13(2), 419–438.
- Zawadzka, A. M., & Górnik-Durose, M. (Ed.). (2010). *Życie w konsumpcji, konsumpcja w życiu: Psychologiczne ścieżki współzależności*. Sopot: Gdańskie Wydawnictwo Psychologiczne.

Welfare Social Accounting Matrix (W-SAM) applied to household well-being

1. Introduction

The standard literature presents two types of analytical approaches in the social sciences and, in particular, economics: the Walras (quasi) equilibrium approach (Brown & Shannon, 1997) and the Marshall *ceteris paribus* approach. The latter is often applied by econometricians to analyse the parameter estimate impact from a given model through the weak *ceteris paribus* hypothesis. It is weak, as it unrealistically supposes that other types of causalities are neutral while one, isolated causal phenomenon keeps impacting the whole system. The Marshall approach, in contrast, supposes that all causal phenomena keep acting simultaneously with feedback, as interconnected elements of a whole system. The present study is based on the approach of the Marshall system. In the real world, we are surrounded by systems that are complex, like interactions between social phenomena being the result of communication and cooperation between a great number of individuals, the activity of billions of self-organised neurons in the brains of sentient beings, the structure and dynamics of financial markets, particles of matter, or the contours of mountain ridges. If we focus more on social systems, we will be able to notice the emergence of many studies in recent years attempting to unify the cross-science system theory, initially inspired by statistical thermodynamics, with systems described in different disciplines, including economics, finance and sociology.

Literature provides extensive information on social systems; for instance, Kron & Grund (2009) apply the theorem of self-organised criticality from the complexity theory to explain long-range social transformations, social network formation, political party formation, and development through sociological affinity. The authors show that modern society meets all the criteria of being a critical system: close couplings, permanent addition of energy and the ability to slowly disintegrate with plausible outbreaks. These same characteristics pertain to economic systems, as presented in

^a Cardinal Stefan Wyszyński University in Warsaw, Faculty of Social and Economic Sciences.
ORCID: <https://orcid.org/0000-0003-0574-1302>.

a recent monograph by Bwanakare (2018) or in a reference paper on the application of the entropy principle in economics presented by Jakimowicz (2020). The fact that all parts of the system are dynamically interconnected at different time/space scales implies that such a system may develop at different levels of complexity, generally characterised by a long-range correlation (long memory) between at least some of its interacting units (Amaral et al., 1998), scale-invariant and heavy tail distribution (e.g. Mandelbrot, 1967), well-described by non-additive statistics or the non-extensive entropy principle. Bwanakare (2014) proposed an econometric approach to handle this kind of complex economic problems. The rationale for this methodology is that rare real-world socioeconomic events may have a higher impact than more frequent events, when seen with respect to the normal distribution benchmark. As mentioned before, a long-range correlation and an observed time-invariant scale structure of high frequency series may still be conserved – in some classes of complex systems (or nonlinear models) – through the process of time (or space) aggregation of statistical data. The author showed that such a process is described more effectively by a power-law (PL)-related model belonging to the Tsallis non-additive statistics, as this law generalises the normal law which remains the converging case of a PL. The methodology extends the PL to the Kullback-Leibler Jaynes statistical theory of information. This formalism then allows for connecting an econometric constraining model to the PL-related system in a Bayesian context. This formalism will be presented in the subsequent part of this paper in connection with SAM balancing. Following the presentation of the theoretical background of the model, the next part of this study will concentrate on the SAM and the principal problems which arose during its construction.

2. A traditional social accounting matrix versus the Welfare Social Accounting Matrix (W-SAM)

A social accounting matrix (SAM) (e.g. Pyatt, 1991) represents transactions in the economic system. It fits into the macroeconomic framework where it takes into account the factors of production and institutions, households in particular, focusing on the living standards of various social groups (Pyatt & Round, 1985). An SAM is a special representation of the macro and meso-economic accounts of the socio-economic system. It consists of transactions and transfers between all economic entities in the system (Pyatt & Round, 1985) that occur during the accounting period, i.e. usually one year. The main characteristics of an SAM are threefold. Firstly, the accounts are represented by a square matrix where the entries and exits for everyone's accounts are displayed as corresponding rows and columns of the matrix. The transactions are shown in cells, so the matrix clearly displays connections between the agents. Secondly, it is complete, as it represents all the economic activities of the system (consumption, production, accumulation, and distribution), but not necessarily

in an equivalent manner. Thirdly, an SAM is flexible – although it is usually implemented as a standard framework, there is great flexibility in terms of the disintegration of different economic or regional aspects of the system. Thus, not only is the SAM of a square shape, but each corresponding line and column sums must be equal. Households constitute the main element of most SAMs, and household groups lie at the heart of this scheme. Only if the details on the distribution characteristics of the household sector are given does the framework really qualify as a ‘social’ accounting matrix. In addition, generally, an SAM provides many more specifics on circular revenue streams, including transactions between different institutions (e.g. different household groups) and between productive activities. An SAM can then be used as an organisational framework for database and policy information analysis. An SAM can be built from an I-O table by adding information explaining the relationship between production factors and the final demands. This will show the amount of income distributed to households and the government, as well as the amounts invested and transferred abroad.

Often policy-makers ensure that an increase in GDP leads to increased growth in all other sectors; nevertheless, strong economic growth observed over a short or medium period may not necessarily reflect the fact that an inclusive economic development, reaching all social aspects and classes within the country, is taking place. It would be desirable if public policy went hand in hand with social justice, so that the maximisation of the GDP increase leaves no social group at disadvantage. In order to achieve this goal, the government could subsidise the prices of certain basic products, such as those related to housing, health, ecology and balanced nutrition. It could also contribute to building the income capacity of vulnerable households through, for instance, a wise macroeconomic labour policy ensuring income for the unemployed population or those engaged in lower-paid activities. Likewise, besides public expenditure, the rest of the world (RoW) may directly impact welfare with feedback. This means that household sub-accounts may interact with one another in response to public policy or a result of the households’ decision to improve or worsen their well-being standards. For instance, chemical fertilisers from government transfers will probably lower the nutritional value of food. This is shown in Table 1, where accounts in rows represent income receipts (outcomes) and the columns show expenditure of a given account. As another example, basic health expenses incurred by a government in favour of households will impact not only the basic health aspect (receipt), but also a number of different components of social well-being shown in the first column, i.e. education (its quality improves along with the improvement in the health condition of all the education stakeholders), higher nutrition standards, income capacity (to a certain extent), and other welfare components not included in this table. In this study, it will be more important to consider the decisions taken by the households themselves through the expenses covered by the income generated by their own factors of production. The households may choose consumption based on the same pattern as displayed in Table 1 in order to optimise their utility function. This study

will thoroughly discuss these inter-household optimal choice decisions and their possible influence on well-being. It is worth noting that the entropy device applied to computing values in different cells of Table 1 produces a long-run impact, i.e. the computed impact is one accumulated over a long period of time. The model allows for the measurement of the same impact generated by the RoW capital (e.g. capital or remittance transfers). Since, by definition, a social accounting matrix constitutes a synthesis of information covering a single period, the analysis presented in this study is therefore limited to a short or medium period. Nevertheless, since the maximum (minimum) entropy principle formalism involves the selection among an infinity of possible system unit combinations, the one with the highest entropy (lowest entropy divergence), the solution then provided by this approach displays a kind of long-run equilibrium, supposedly constrained by given exogenous conditions.

Table 1. Interconnected welfare social accounts

Input/ output	Households							Public sector	Rest of the World
	Basic health	Educa- tion	Housing	Ecology	Nutrition	Income capacity	Others		
Basic health	x	x	x	x	x	x	x	x	x
Education	x	x	x		x	x	x	x	x
Housing			x			x	x	x	x
Ecology		x	x	x	x	x	x	x	x
Nutrition	x	x		x	x	x	x	x	x
Income capacity	x				x	x	x	x	x
Others	x	x	x	x	x	x	x	x	x
Public sector				x			x		
Rest of the World				x			x	x	x

Source: author's work.

Table 2 is a traditional social accounting matrix which incorporates elements defining household social well-being from Table 1. Table 2 then integrates the whole economic activity related to the production and distribution of commodities and services generated by different accounts during a given period, usually within one year. The sub-accounts of the households' accounts define only the possible economic feedback inside these households, many elements of which, as mentioned before, may display some causal correlation. In this model, the estimation of the quantitative values of these interconnected sub-accounts is challenging. In fact, most countries' official statistics do not provide a statistical survey or a quantitative data collection allowing the assessment of the processes occurring within these sub-accounts. In this sub-matrix, as in the whole matrix, data in the cells are unknown or known with uncertainty. Such circumstances clearly indicate that we are dealing with an ill-behaved matrix, whose element estimation constitutes an inverse problem. In the next section, an approach to solving such problems is discussed.

Table 2. A prototype of a W-SAM

	Activities	Factors			Households								Other institutions			Capital Account		Rest of the World	Total Receipts
		Com-modities	Labour	Capital	Basic health	Educa-tion	Housing	Ecology	Nutrition	Income capacity	Others	Enter-prises	Social Sec. Inst.	Government	Domes-tic Banks	Private Invest-ment	Public Invest-ment		
Activities		Domes-tic Supply																Exports	Total Sales Revenue
Commodities	Inter-mediate Inputs													Government Consumption		Private Invest-ment	Public Invest-ment		Domestic Absorption
Labour	Wages																		Labour Income
Capital	Operat-ing Surplus + Depre-ciation																		Capital Income
Households	Basic health				X	X	X	X	X	X	X			Transfers to Households				Net transfers from the world	Household total receipts
	Education				X	X	X		X	X	X								
	Housing						X			X	X								
	Ecology					X	X	X	X	X	X								
	Nutrition				X	X		X	X	X	X								
	Income capacity				X				X	X	X								
	Others			Labour Income	X	X	X	X	X	X	X	Distrib-uted Profits (Net)	Social Security Expendi-ture		Distrib-uted Profits (Net)				
Enterprises				Capital Income									Transfers to Enterprises				Private For. Transfers	Corporate Income	

Table 2. A prototype of a W-SAM (cont.)

	Factors				Households								Other institutions				Capital Account		Rest of the World	Total Receipts
	Activities	Com-modities	Labour	Capital	Basic health	Educa-tion	Housing	Ecology	Nutrition	Income capacity	Others	Enter-prises	Social Sec. Inst.	Government	Domes-tic Banks	Private Invest-ment	Public Invest-ment			
Social Sec. Inst.			Soc. Security Premi-ums											Transfers to Social Sec. Inst.					Social Security Income	
Government	Net Indirect Taxes on Produc-tion	Sales Taxes (VAT) + Tariffs									Direct Tax + NonTax Rev. Wealth Taxes	Pub. Sector Factor Income + Corporate Taxes							Public Income	
Domestic Banks											Private savings			Interest Paym. on Dom. Debt				Foreign Resources	Banking Sector Funds	
Private Investment															Private Invest-ment				Private Invest-ment	
Public Investment														Public savings	(Pub I.-Pub S.)				Public Invest-ment	
Rest of the World		Imports												Foreign Interest Pay-ments on Ext. Pub. Debt	Foreign Interest Pay-ments on Ext. Priv. Debt				For. Exch. Earnings	
Total Expenditure	Produc-tion Costs	Aggre-gate Absorp-tion	Labour Costs	Capital Expendi-ture	Private HH Expenditure							Corpo-rate Expendi-ture	Social Security Expendi-ture	Public Expendi-ture	Banking Sector Use of Funds	Private Invest-ment	Public Invest-ment	For. Exch. Expenses		

Source: author's work.

3. Balancing a W-SAM through Non-Extensive Cross-Entropy Econometrics (NEE)

The principle of SAM accounting is double-entry bookkeeping (the row = revenue; the column = expenditure). In empirical research, balancing an SAM is challenging for most countries (Stone, 1984). As can be seen from the description of the 2005 Polish SAM presented below, the data sources used in this process are numerous, divergent and have often been supplemented with additional assumptions, making the resulting SAM unbalanced. The largest differences are usually found in relation to the household accounts, because of the applied assumptions necessary to distribute the various household incomes, transfers and expenditure.

As already stated in the introduced literature, there are several ways of balancing inconsistent social accounting or any other matrix. Besides the rules of economic closings, one of the techniques used most often to balance matrices is the RAS approach (e.g. Parikh, 1979; Stone, 1984). It is typically applied to update SAMs for which new row and column sums are known. The RAS technique produces a new transaction matrix that is consistent with the new row and column sums by interactively adjusting the row and column entries proportionally, until new totals are obtained. However, this approach has several drawbacks. Firstly, the RAS technique assumes that the initial SAM is consistent and free from measurement errors in the sums of the rows and columns. Secondly, the only information imposed on the RAS procedure are the sums of the rows and columns. When referring to social accounting matrices in general, the initial SAM will often be inconsistent and will usually contain measurement errors. Moreover, there will certainly be data entries which the analyst deems more reliable than others. For these reasons, another method has been adopted to balance the SAM, namely the (non-extensive) cross-entropy approach, which allows these factors to be taken into account. During the last two decades, the *Kullback-Leibler minimum entropy* (KLME) formalism (Kullback & Leibler, 1951) has achieved relative success in the social sciences, particularly when *inverse problems* require a solution. In this paper, the approach is extended to the non-ergodic Tsallis entropy system (Tsallis, 2009), represented by an initially unbalanced quadratic welfare social accounting matrix (W-SAM). Unlike many other fields, macroeconomics has neglected the link between phenomena and power-law (Bwanakare, 2018; Jakimowicz, 2020), characterising non-extensive complex systems within the class of Levy process laws. In the light of the recent literature, the amplitude and frequency of macroeconomic fluctuations are not considered to diverge substantially from many other extreme events, natural or

human-related, once they are explained on the same time (or space) scale. Following a few recent studies related to the application of non-extensive entropy to economics, this study extends the application of the theoretical model (Bwanakare, 2018; Tsallis, 2009) and proposes a new direction for applications in solving ill-posed inverse problems. In this study, a W-SAM is balanced to illustrate this new technique.

According to many studies (Bottazzi et al., 2007; Champernowne, 1953; Gabaix, 2008), a large array of economic laws take the form of PL, in particular macroeconomic scaling laws, distribution of income, wealth, size of cities and firms (Bottazzi et al., 2007) and distribution of financial variables, such as returns and trading volume. Nunes Amaral et al. (1998) studied the dynamics of a general system composed of interacting units, each with a complex internal structure comprising many subunits, growing in a multiplicative way over a period of 20 years. They found that the system followed a PL distribution. What is worth noting is the similarity between this system and the internal mechanism of national account tables like SAMs. Ikeda & Souma (2009) made an international comparison of labour productivity distribution for manufacturing and non-manufacturing firms. A power-law distribution with regard to firms and sector productivity was found in the data from the US and Japan. The testing of Gibrat's law of proportionate effect by Fujiwara et al. (2004) resulted in several findings, one of which was the fact that the upper-tail of the firm size distribution can be fitted with a power law (Pareto-Zipf law). In a recent monograph, Bwanakare (2018) proposed a theorem linking low-frequency time series macroeconomic phenomena – and thus input-output accounts – with a PL distribution. The above citations are, however, not exhaustive.

The central point is that a PL displays, besides its well-known scaling law, a set of interesting characteristics related to its aggregative properties, in that it is *conserved under addition, multiplication, polynomial transformation, minimum and maximum*. Basically, non-extensive (Tsallis) entropy is a thermodynamic concept which, unlike that of Boltzmann-Gibbs-Shannon, is characterised by a complex dependency between elements of non-ergodic systems and the independence from initial conditions, fitting power-law a PL distribution (Tsallis, 2009). As opposed to the Gaussian¹ family model, a non-ergodic system suggests that micro-states of the system do not display identical odds of appearing. From the microeconomic perspective,² this suggests that the behaviour of some

¹ Then, this law includes all discrete laws converging to normal law. This observation is important for a study dealing with low frequency time series.

² An SAM reflects a general macroeconomic equilibrium based on microeconomic behaviour of economic agents through an aggregative process.

economic agents happens more frequently than generally expected – than a heavy queue – and may rely on distant memory and complex correlations. While the Gaussian-related Shannon-Kullback-Leibler (SKL) entropy approach is well-suited in cases which exhibit limited perturbations, exponential-family phenomena, it remains less appropriate for a class of more complex PL-driven shocks, the ubiquity of which, as mentioned before, now seems evident in nature or social sciences. Testing PL multifractal properties requires high-frequency series. The higher the series' frequency, the more significant the test outputs relating to these properties. The distribution with an exponential tail might correspond to an intermediate stage between a distribution with the PL asymptotics and a very large time lag limit – a Gaussian (Kwapień & Drożdż, 2012). Nielsen and Nock (2012) cast exponential family form into PL-related Tsallis non-extensive entropy expression and shown conditions for a closed form. However, delimiting threshold values for law transition – which is a function of a frequency level – is difficult, since, as far as we know, neither a parametric nor non-parametric test has been devised yet.

Thus, applying the Gaussian law systematically could be misleading in the case of some aggregated series and in many cases could result in unstable solutions, for example, when a random error sufficiently diverges from the Gaussian model³ (i.e. with q -parameter equalling unity). The methodology applied below fits more types of series when applying the q -Tsallis entropy. In fact, the Gaussian law can be generalised by a class of a few types of higher-order entropy estimators (Tsallis, 2009), one of which is the Tsallis non-extensive entropy. It presents an additional valuable quality of concavity and then stability, along the existence interval characterising most real-world phenomena.

The described economic system is then deemed to be defined by different complex interactive subsystems, each represented by respective actors and characterised by an optimising behaviour. Households which tend to maximise a certain utility function remain the owner of factors of production and are the final consumer of produced commodities; firms maximise profits by an optimal renting of these factors from households for the production of goods and services. In this model, the government holds the main role of collecting and disbursing taxes. Furthermore, the analysed economy is small and open, and so is the price-taker from the rest of the world. The above optimal behaviour inside subsystems leads to a general market equilibrium in all respective sectorial markets.

³ For instance, data from statistical surveys might display systematic errors.

As mentioned before, an SAM table is a statistical device used to summarise all the above economic transactions by registering income and expenses in respective rows and columns in accordance with the double-entry bookkeeping principle. However, due to different and sometimes contradictory sources of collected statistical information, the SAM is not balanced, with respective column or row totals not matching. Such statistical data may contain systematic and stochastic errors (as partially coming from statistical surveys), thus they may lack some normal Gaussian properties.

Since an SAM-based model contains more unknown parameters to estimate than the number of determined equations, updating and balancing such a stochastically unbalanced matrix belongs to the category of *generalized inverse problems*. To learn more about the methodology applied to balancing an SAM using the entropy approach, see Bwanakare (2014, 2018).

4. Outputs and comments

Tables 3 and 4 (values are given in units of 100,000,000) show the initial, unbalanced, aggregated W-SAM of Poland (for 2005) and the balanced, final post-entropy econometrics W-SAM, respectively. In Table 3, for technical reasons explained in the previous sections, all the corresponding totals of rows and columns are not balanced. In the same table, the household account is presented as an aggregate, without reference to the well-being of the sub-accounts. The net value in the intersection cell of that account (row and column) equals zero; expenses (including savings) and receipts must balance since they have an opposite sign. In contrast, in Table 4, the entropy approach has balanced the matrix and filled in values in the sub-accounts of households. Thus, the detailed sub-account values of the households account may become valuable if one wants to learn about the natural factors generating well-being in Polish households. This is because the values of household accounts have been generated by an optimising entropic process, taking into account all the socio-macroeconomic information provided within the initial SAM of Table 3. In Table 4, some accounts and household sub-accounts are highlighted in grey. These are the accounts which impact household sub-accounts and subsequently their well-being. For instance, the household nutrition sub-account received the highest amount of PLN 1,120.00 from the income capacity sub-account, followed by the labour account which transferred an amount of PLN 1,057.81. The income capacity sub-account received the largest amount (PLN 1,445.56) from the capital account (the wealthiest

class of households receives returns from investments), followed by the labour account (the labour force remuneration, PLN 493.65), enterprise profits (PLN 478.00) towards the most affluent households and the government social transfers (PLN 414.61). All the accounts above, as well as many others in the matrix, exert a substantial impact on the household welfare in the example by ensuring household food capacity or income capacity. If we limit this consideration to household sub-account interactions, education proves the most influential sub-account, as all the remaining ones make transactions with it. The education sub-account is financed mainly through labour income (PLN 881.51), followed by the government's transfers at approximately PLN 660.00. As this study demonstrates, education contributes to enhancing well-being to the largest extent through its connection with the remaining components at the base of household happiness development in all real-life aspects. However, the most important outcome of the study remains the contribution of households themselves to self-sustaining their welfare through multiple aspects defined above as sub-accounts of the households account. In fact, Table 4 shows that about 36% of transactions impacting household welfare occur within the seven household sub-account interactions. This suggests that household behaviour policies may significantly impact their well-being.

In this context, two questions arise. The first concerns the strategy that public institutions or non-profit organisations should adopt to optimise the household utility function underpinned by these interconnected components of well-being. The second question, which might as well precede the first one, refers to the type of utility concerned. Since utility is a composite good defined by different well-being components like those presented in Table 1, the question is how to weigh them to achieve the highest level of well-being. We do not know if there is a single set of weights (or whether it is static) to ensure a wellness benchmark for a given nation. For example, in search of a targeted optimal well-being with a limited budget, how much will we need to reduce the level of pollution at the expense of the quality of education or, for example, the quantity and/or quality of household nutrition? Answers can come not only from the economic policy, but also from a sociological strategy, since social and cultural values may be involved in such processes as well. Fortunately, the result of Table 4 provided by entropy econometrics formalism can sufficiently reflect social values as it takes into account the structure of all interconnected transactions within the SAM. It may be said that in the present case such a structure should partially reflect the sociological values of the Polish society.

Table 3. Unbalanced, initial, aggregated W-SAM of Poland (for 2005) (PLN 100,000,000)

	Activities	Com- modities	Labour	Capital	Households	Enterprises	Government	Investments	Rest of the World	Total
Activities		19,448.87			69.36					19,518.23
Commodities	10,796.32				6,989.91		784.48	1,834.59	3,646.58	24,111.74
Labour	3,520.11									3,521.69
Capital	5,048.40									5,053.61
Households			3,503.16	2,573.64		464,61	2,711.41		375.28	9,628.10
Enterprises				2,126.84			42.46		77.89	2,247.19
Government	87.99	942.48		353.13	2,241.24		353.13		58.63	4,263.85
Investments					652.48	1,125.76	24.14		87.48	1,889.86
Rest of the World		3,709.90	18.53		196.31	271.56	39.99			4,245.85
Total	19,518.23	24,101.25	3,521.69	5,053.61	10,317.00	1,891.86	3,985.55	1,834.59	4,245.85	

Source: author's calculation based on Statistics Poland's data.

Table 4. Balanced, post-entropy econometrics W-SAM (PLN 100,000,000)

	Activities	Com- modities	Labour	Capital	Households							Enter- prises	Government	Private invest- ments	Rest of the World	Total
					Basic health	Education	Housing	Ecology	Nutrition	Income capacity	Others					
Activities		1,9432.32							10.09		57.18					19,499.60
Commodities	10,892.21				413.28	552.10	1,207.36	349.00	2,731.62	1,200.05	320.73		818.21	1,896.08	3654.35	24,034.99
Labour	3,543.13														1.55	3,544.68
Capital	4,977.47															4,977.47
Households	Basic health		352.60	52.75	65.45	188.85	130.77	35.18	100.27		15.00		337.47		37.60	1,315.94
	Education		881.51	369.26	248.10	34			100.80			659.66			93.62	2,692.96
	Housing		564.17	131.88		512.00					12.11	303.79			60.16	1,584.10
	Ecology		105.78	79.13		145.00	12.11				145.03	262.94			11.28	761.27
	Nutrition		1,057.81	290.14		467.23		301.60	100.27	1,12	543.50	303.19			112.79	4,296.53
	Income capacity		493.65	1,445.56	52.80	226.00						478.00	414.61		52.64	3,163.26
Others		70.52	263.76	281.19	198.00		11.71				78.77	347.91		7.52	1,259.38	
Enterprises				1,987.15								41.00			72.12	2,100.26
Government	86.79	925.35		357.83	255.13	63.78	233.87	63.78	1,253.48	128.46	127.56		364.76	58.18	3,918.97	
Investments									553.12			1,236.46	23.79	82.72	1,896.08	
Rest of the World		3,677.31	18.63						161.63	38.26		307.04	41.64		4,244.51	
Total	19,499.60	24,034.99	3,544.68	4,977.46	1,315.95	2,692.96	1,584.11	761.27	4,296.53	3,163.26	1,259.38	2,100.26	3,918.97	1,896.08	4,244.51	79,290.00

Source: author's calculation.

5. Conclusions

This article proposes an extension of an SAM to indicate the source of household well-being more effectively. The households account has been disaggregated into 7 sub-accounts which correspond with daily life challenges and define the human welfare. As a result, a sub-matrix of welfare components was created and incorporated into the traditional SAM. The aim of the study was to obtain an insight into the importance and structure of the source of well-being interactions defined by these sub-accounts. For space-related reasons, a mathematical formalism, describing such an extended SAM defined as an ill-behaved matrix, with more unknown parameters to estimate than the possible number of observed points, has not been provided. However, interested readers have been referred to a complete set of literature on the subject. An unbalanced SAM with no information related to interactions within household components was the starting point of the study, from which the author proceeded to producing a balanced W-SAM that provided important information, particularly that regarding the process generating well-being within household welfare components.

To the best of the author's knowledge, this is the first study in history to analyse the utility preference components of households within a macroeconomic framework as the SAM. Among different vectors forming the source of household well-being, education takes precedence as a result of its influence on other welfare sources. Future research should concentrate on impulse-response analysis to better understand short-run and long-run integrated multipliers from an isolated shock, which could be within endogenous household sources of well-being (households sub-accounts) or at the outside level, for instance the result of decisions made by public institutions.

References

- Bottazzi, G., Cefis, E., Dosi, G., & Secchi, A. (2007). Invariances and Diversities in the Patterns of Industrial Evolution: Some Evidence from Italian Manufacturing Industries. *Small Business Economics*, 29(1–2), 137–159. <https://doi.org/10.1007/s11187-006-0014-y>.
- Brown, D. J., & Shannon, C. (1997). *Uniqueness, Stability, and Comparative Statics in Rationalizable Walrasian Markets* (Economics Working Papers No 97–256). <https://escholarship.org/uc/item/2pm4n029>.
- Bwanakare, S. (2014). Econometric Balancing of a Social Accounting Matrix Under a Power-law Hypothesis. *Statistical Review*, 61(3), 263–282. <https://ps.stat.gov.pl/Article/2014/3/263-282>.
- Bwanakare, S. (2018). *Non-Extensive Entropy Econometrics for Low Frequency Series: National Accounts-Based Inverse Problems* (2nd edition). Warsaw: De Gruyter Open Poland. <https://doi.org/10.1515/9783110605914>.

- Champernowne, D. G. (1953). A Model of Income Distribution. *The Economic Journal*, 63(250), 318–351. <https://doi.org/10.2307/2227127>.
- Fujiwara, Y., Aoyama, H., Guilmi, C. D., Souma, W., & Gallegati, M. (2004). Gibrat and Pareto–Zipf revisited with European firms. *Physica A: Statistical Mechanics and its Applications*, 344(1–2), 112–116. <https://doi.org/10.1016/j.physa.2004.06.098>.
- Gabaix, X. (2008). *Power Laws in Economics and Finance* (NBER Working Paper No. 14299). <http://www.nber.org/papers/w14299>.
- Ikeda, Y., & Souma, W. (2009). International Comparison of Labor Productivity Distribution for Manufacturing and Non-Manufacturing Firms. *Progress of Theoretical Physics Supplement*, 179, 93–102. <https://doi.org/10.1143/PTPS.179.93>.
- Jakimowicz, A. (2020). The Role of Entropy in the Development of Economics. *Entropy*, 22(4), 1–25. <https://doi.org/10.3390/e22040452>.
- Kron, T., & Grund, T. (2009). Society as a Self-Organized Critical System. *Cybernetics & Human Knowing*, 16(1–2), 65–82.
- Kullback, S., & Leibler, R. A. (1951). On Information and Sufficiency. *The Annals of Mathematical Statistics*, 22(1), 79–86. <https://doi.org/10.1214/aoms/1177729694>.
- Kwapien, J., & Drożdż, S. (2012). Physical approach to complex systems. *Physics Reports*, 515(3–4), 115–226. <https://doi.org/10.1016/j.physrep.2012.01.007>.
- Mandelbrot, B. (1967). How Long Is the Coast of Britain? Statistical Self-Similarity and Fractional Dimension. *Science*, 156(3775), 636–638. <https://doi.org/10.1126/science.156.3775.636>.
- Nielsen, F., & Nock, R. (2012). A closed-form expression for the Sharma–Mittal entropy of exponential families. *Journal of Physics A: Mathematical and Theoretical*, 45(3), 1–9. <https://doi.org/10.1088/1751-8113/45/3/032003>.
- Nunes Amaral, L. A., Buldyrev, S. V., Havlin, S., Salinger, M. A., & Stanley, H. E. (1998). Power Law Scaling for a System of Interacting Units with Complex Internal Structure. *Physical Review Letters*, 80(7), 1385–1388. <https://doi.org/10.1103/PhysRevLett.80.1385>.
- Parikh, A. (1979). Forecasts of Input-Output Matrices Using the R.A.S. Method. *The Review of Economics and Statistics*, 61(3), 477–481. <https://doi.org/10.2307/1926084>.
- Pyatt, G. (1991). Fundamentals of Social Accounting. *Economic Systems Research*, 3(3), 315–341. <https://doi.org/10.1080/09535319100000024>.
- Pyatt, G., & Round, J. I. (Eds). (1985). *Social Accounting Matrices: A Basis for Planning*. Washington: The World Bank. <http://documents1.worldbank.org/curated/en/919371468765880931/pdf/multi-page.pdf>.
- Stone, R. (1984). Balancing the National Accounts: The Adjustment of Initial Estimates – A Neglected Stage in Measurement. In A. Ingham, A. M. Ulph (Eds.), *Demand, Equilibrium and Trade* (pp. 191–212). London: Palgrave Macmillan. https://doi.org/10.1007/978-1-349-06358-1_11.
- Tsallis, C. (2009). *Introduction to Nonextensive Statistical Mechanics: Approaching a Complex World*. New York: Springer. <https://doi.org/10.1007/978-0-387-85359-8>.

Social cohesion and human capital

1. Introduction

Elements of the human capital theory applied in policies leading to the development of strategic programmes, documents and substantial investments in Poland are intended to trigger social and economic changes. Investments in human capital carried out on such a large scale were often designed without taking into account the existing regional conditions. This article aims to present selected conclusions reached in the process of examining and verifying the application of the human capital theory in Poland – the regional diversification of the level of human capital in Poland in 2007–2016. The investments that were made in the regions over the years 2007–2016 were expected to have a real and positive impact on the quality of human capital in Poland. The implementation of the human capital theory through the cohesion policy was a quasi-experiment conducted on the society, which requires empirical verification involving an estimation of the regional differentiation of human capital.

The theory of human capital is implemented in Poland in the form of actual investments and political activity. The cohesion policy introduced in this country aims at stimulating social and economic developmental processes. It is assumed that the effect of the adopted investment measures will be an increase in the level of human capital and enhanced social cohesion and well-being at a national, regional and local level.

Ensuring that human capital is sufficiently productive for the challenges which new technologies and innovations bring about is a strategic assumption in contemporary economic development programmes. Economic success is increasingly dependent upon the improvement of the quality of human capital, in other words on well-educated people demonstrating creative and innovative skills. The quality of human capital, if properly understood, is of key importance to achieving success.

^a University of Warsaw, Institute of Applied Social Sciences. ORCID: <https://orcid.org/0000-0001-5789-3426>.

At the core of quality stands the human being, whose intelligent effort provides the opportunity to achieving success, but does not guarantee it (Skrzypek, 2006).

Whether an economy is competitive depends largely on the level of education and science in a given country. By investing in human capital, developing countries strive to increase the competitiveness of their economies. When implementing the assumptions underlying the human capital theory, investments primarily aim at increasing the level of education in a given society, for example by raising the number of people with higher education.¹ The quality of education is measured and monitored, which is essential to the intended outcome. It is assumed that education is 'tailored' to meet the needs of a competitive economy. Nevertheless, the economic situation of a developing country might prevent it from taking full advantage of the accumulated human capital. Completing higher education does not guarantee achieving success on the labour market. What is more, higher education might lose its value in the situation where increasing numbers of people become university graduates, and at the same time a large part of them perform work below their qualifications or fail to find an opportunity to utilise their university-acquired knowledge and skills.

The process of creating and developing human capital resources in Poland is carried out in various forms, which also involve the direct intervention of programmes and strategies consistent with the European cohesion policy. Purposeful investments in human capital have been, and still are, carried out in the whole of Poland.

2. Territorial cohesion and investing in human capital

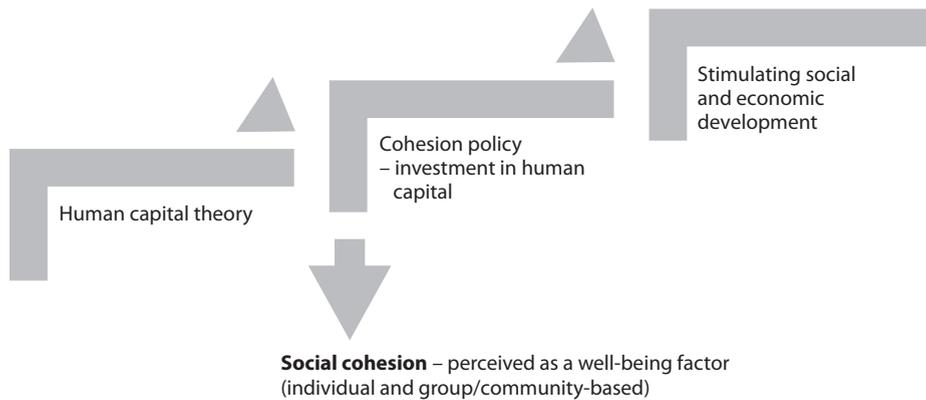
The concept of cohesion may be considered at three levels: economic, social and territorial. This variety of approaches results from a number of factors, including different ways cohesion is measured. It could be done by describing either economic inequalities, or social disproportions, or geographical conditions – each with a corresponding set of indicators (Weise et al., 2001). In practice, the concept of territorial cohesion is understood as a set of principles, one of which says that people should not be at disadvantage only because they live or work in a particular area (Molle, 2005). So, as we can see, it follows from the definition itself that any action should be taken to bridge the gaps between stronger and weaker regions and to support areas where economic activity is located, as it is a condition for sustainable development (Pierzchalska, 2004). In the EU documents, territorial cohesion is interpreted as

¹ Indicator adopted to improve the quality of education in the EU member states assumes that at least 40% of 30–34 year-olds complete higher education (European Commission, 2010).

a concept extending and reinforcing the importance of economic and social cohesion. It involves the promotion of sustainable development through the reduction of the existing disparities and the prevention of regional inequalities (European Commission, 2004). The EU particularly aims to reduce disproportions in the degree to which various regions are developed (based on Art. 174 and 178 of the Consolidated version of the Treaty on the Functioning of the European Union). Cohesion policy is at the same time the EU’s main investment policy.

Following its accession to the European Union in 2004, Poland became eligible for the European cohesion policy. The EU development policy, including the cohesion policy, is meant to stimulate social and economic developmental processes in the member states. As regards Poland, the effects of only two financial perspectives (2004–2006 and 2007–2013) can be discussed. The third perspective, for the years 2014–2020, is the continuation of the previous two. The scale of the intervention of the cohesion policy in Poland is relatively large, as it depends on the Gross National Income (GNI) *per capita* (according to the purchasing power parity).² In the years 2007–2013, the average ceiling of transfers dependent on GNI in Poland was equivalent to 3.2–3.3% of GNI.³ In 2004, the level of Poland’s social and economic development was low in comparison to other EU member states. In result, Poland qualified for the cohesion-oriented structural intervention (Szlachta, 2016). The consequences and the intervention logic are presented in the Figure.

Figure. Diagram of the implementation of human capital assumptions



Source: author’s work.

² The highest funding under European cohesion policy is granted to the poorest areas, where the gross GDP *per capita* in purchasing power parity is lower than 75% of the EU average.

³ This was in the framework of two structural funds and the Cohesion Fund. To compare, in the 2014–2020 perspective, the average ceiling of transfers dependent on GNI cannot exceed 2.35% of GNI.

The Human Capital Operational Programme (HC OP)⁴ was the largest investment in human capital as of 2018. It was implemented as part of the Lisbon Strategy, based on the National Strategic Reference Framework 2007–2013 (NSRF).⁵ This programme was one of the elements of the second horizontal objective, i.e. improving the quality of human capital and increasing social cohesion. This objective was pursued through the main goal of the HC OP, which assumed increasing the level of employment and social cohesion, and was sought by means of the implementation of the following strategic objectives: increasing the level of professional activity and the ability to provide work to the unemployed or those remaining professionally passive; reducing areas of social exclusion; improving employees' and enterprises' ability to successfully adapt to the changes in the economy; popularising education at every level with the simultaneous improvement of the quality of education-oriented services and strengthening their correlation with an economy based on knowledge; enhancing the potential of public administration in the realm of policy-drafting, high-quality services, and strengthening partnership mechanisms; improving territorial cohesion. The HC OP contributed to the implementation of the objectives outlined in NSRF, namely the fourth objective, offering support for enterprises and focusing on the improvement of employees' qualifications; the fifth objective, relating to counteracting marginalisation of regions (in terms of social development) and the sixth objective, dedicated to supporting rural areas (Ministerstwo Rozwoju, 2017, p. 5). Thus, the HC OP served the purpose of accelerating the social and economic development of Poland, increasing employment and enhancing social, economic and territorial cohesion with other EU countries.

As its name suggests, the Human Capital Operational Programme was meant to support the development of human capital in Poland through investing in all key components of that resource. An increase in the level of human capital was to be achieved by raising employment and the adaptation capacity of enterprises and their employees, improving workers' health, raising the society's level of education, reducing

⁴ HC OP was prepared by the Managing Authority (MA) and adopted by the European Commission in accordance with the procedure indicated in Art. 32, section 1–5 of the Council Regulation (EC) No. 1083/2006 of 11 July 2006. The regulation sets down the general provisions regarding the European Regional Development Fund, the European Social Fund (ESF) and the Cohesion Fund, and repeals Regulation (EC) No. 1260/1999. The implementation of the programme formally started following the issuance of the Commission Decision of 28 September 2007 on the adoption of the ESF operational programme in the framework of the EU assistance. The programme contributed to the achievement of the aim of convergence in Polish regions (CCI 2007 PL 051 PO 001).

⁵ NSRF was created on the basis of the EU guidelines defining the main objectives of the cohesion policy, and taking into account Poland's social and economic situation. The aim of the document was to support economic growth and employment, and it served as a reference in the preparation of operational programmes. The NSRF moreover took into account the provisions of the National Development Strategy for 2007–2015 1 (NDS) and the National Reform Programme for 2005–2008 (NRP), the latter of which responded to the guidelines outlined in the Lisbon Strategy. The document was approved by the Council of Ministers on 29 November 2006.

the reach of socially excluded areas, and supporting the establishment of administrative structures of the state. The HC OP was in 85% financed by the ESF, and national resources covered 15% of the costs. EUR 11,773,409,338 was allocated to its implementation, of which EUR 10,007,397,937 was contributed by the ESF (Ministerstwo Rozwoju, 2017, p. 6). The investment costs are presented and summarised in the Table. The HC OP was implemented by public institutions at various levels.⁶ Thus, the management of this programme was an important element of the ongoing work carried out by the public administration and self-governments.

Table. Summary of investments in the framework of the Human Capital Operational Programme 2007–2013 in Poland

Priorities	Basic amount	Additional amount
	in EUR	
Completed at the national level		
1: Employment and social inclusion	428,731,805	–
2: Development of human resources and adaptation capacity of enterprises, improvement of workers' health	719,335,423	–
3: High-quality education system	705,560,188	–
4: Tertiary education and science	987,560,240	–
5: Good governance	429,269,352	–
Completed at the regional level		
6: Labour market open for all	2,801,379,842	145,328,683
7: Promotion of social inclusion	1,636,450,985	43,046,343
8: Human resources in regional economy	1,620,995,433	43,866,470
9: Development of education and competences in regions	1,995,557,663	55,973,372
Technical support	448,568,407	12,007,069
Total basic and additional costs separately, in EUR	11,773,409,338	300,221,937
Total cost in EUR		12,073,631,275
excluding technical support		11,613,055,799
Total cost in PLN		52,710,769,348
excluding technical support		50,700,000,000

Note. EUR exchange rate – PLN 4.3657.

Source: author's work based on: *Szczegółowy opis priorytetów...* (2015).

⁶ The role of the MA was performed by the Department for European Social Fund Management at the Ministry of Regional Development (MRD). Intermediate Bodies at the central level: Ministry of Labour and Social Policy, ESF Implementation Department – Priorities 1–2; Ministry of National Education, Structural Funds Department – Priority 3; National Centre for Research and Development – Priorities 4. At the regional level: marshal offices or voivodship labour offices. Implementing Authorities (2nd level Intermediate Bodies – IP2): Human Resource Development Centre, Implementing Authority for European Programmes at the Ministry of Administration and Digitisation, Polish Agency for Enterprise Development, Ministry of Health – European Funds Department, Centre for Education Development (ORE), Ministry of Administration and Digitisation, Public Administration Department, Ministry of Labour and Social Policy, ESF Implementation Department, Chancellery of the Prime Minister, Office of the Director General. At the regional level, 15 2nd Level Intermediate Bodies operated. These are mostly voivodship labour offices.

The Lisbon Strategy has not been fully implemented and its effects are subject to criticism (compare Geodecki et al., 2012). Another long-term programme in the framework of the EU social and economic development policy is *Europe 2020: A strategy for smart, sustainable and inclusive growth* (European Commission, 2010), which replaced the Lisbon Strategy. The issue of economic, social and territorial cohesion remains a very important element of the *Europe 2020* strategy, thanks to which all the energy and potential could be utilised and directed towards achieving its priorities. The third priority of the *Europe 2020* strategy, i.e. inclusive growth, whose aim is to ensure social and territorial cohesion, is important in the context of addressing social and regional disparities. It is the continuation of the idea of convergence, i.e. helping to level the degree of economic development of all the EU member states.

Even though comparisons between individual EU countries are the most common way of evaluating cohesion policy, monitoring regional inequalities within a country is of similar importance. This is because the measures adopted to foster balanced development of member states may affect individual regions of a country to a different degree. The projected impact of activity that improves particular indicators on the national scale and thus brings Poland closer to achieving the EU average may, however, have both positive and negative effects on the territorial cohesion of a country. It is therefore vital to analyse the planned strategic solutions in a regional context.

The key to a responsible creating of regional development programmes involves examining the level of regional diversity in terms of the most important components of social and economic development. Human capital, being nowadays undoubtedly one of the essential conditions of economic success, should undergo a territorial differentiation analysis. The analysis enabling the assessment of territorial cohesion allows the determination of a region's position in relation to other areas. Economic importance, level of prosperity, quantity and quality of resources, including human capital of each region in comparison to the others and their contribution to the functioning of the territory as a whole may all constitute the basis for a relative assessment. However, it should be emphasised that achieving cohesion is not a purpose in itself. For obvious reasons, the complete elimination of inequalities is not a realistic objective, but greater economic, social and territorial cohesion is a factor affecting the economic development of a country and its regions.

3. Spatial dimension of human capital

The concept of human capital has an interdisciplinary character, but it was the economic sciences that first formulated it. A researcher who is mostly responsible for the shaping of the contemporary understanding of the concept is Gary Stanley Becker.

His basic assumption was that each individual creates their own personal capital as a result of devoting part of their time to education and to the improvement of their professional qualifications (Becker, 1990). The growth of this capital is the difference between the rate of its production and the rate of its consumption (Becker, 1990). What distinguishes Becker's theory from others is the embedment of human capital in a socio-cultural context. According to the researcher, the human capital of an individual consists not only of acquired skills and knowledge, but also of inherited elements resulting from the socio-economic status of the individual's family and the environment they were brought up in (Becker, 1990). Becker (1994) believed that the factors determining the level of human capital in a society include expenditure on health care, scientific research, vocational training of adults and the facilitation of employment-related migrations thanks to which individuals are able to get employment that would fully utilise their qualifications.

Owing to Becker's work, the interests of economics expanded to include all aspects of human life as belonging to the sphere of economic analysis. To Becker, the human being became the centre of economic analyses and interests; he introduced human characteristics, behaviours and interactions to the field of economic analysis.⁷ Including the human element in economic analyses had a considerable influence on the development of economics.⁸ Economic and social development entails the emergence of new, complex problems, including globalisation, European integration and other civilisation-related processes. Moreover, new interpretations of the causes of economic crises appear, which are increasingly often found outside the market mechanisms and economic policies. Social phenomena such as income inequality, mechanisms of social stratification, imperfections of public institutions and social policy are increasingly often indicated as sources of economic crises. Just as the implementation of the human capital theory, other economy-oriented theoretical interpretations of social phenomena will make their way to the process of formulating actual measures to be implemented in the social and economic life. Therefore, it is recommendable to analyse these problems also from a sociological perspective. In turn, such issues as human capital should be examined both as factors determining economic development and as social phenomena depending on the characteristics of a given population.

Ryszard Domański's work may, therefore, be seen as the further development of the notion of human capital. Domański (1993) argues that this concept means 'the

⁷ In 1992, Becker received the Nobel Prize for extending the field of microeconomic analysis into a wide spectrum of issues related to human behaviour and interactions.

⁸ Many of the following Nobel Prizes earned at the turn of the 20th and 21st century in the field of economics related to social issues; these include the work by Amartya Sen (1998 Award), Joseph E. Stiglitz (2001 Award), Paul Robin Krugman (2008 Award), Peter Diamond, Dale T. Mortensen and Christopher A. Pissarides (2010 Award).

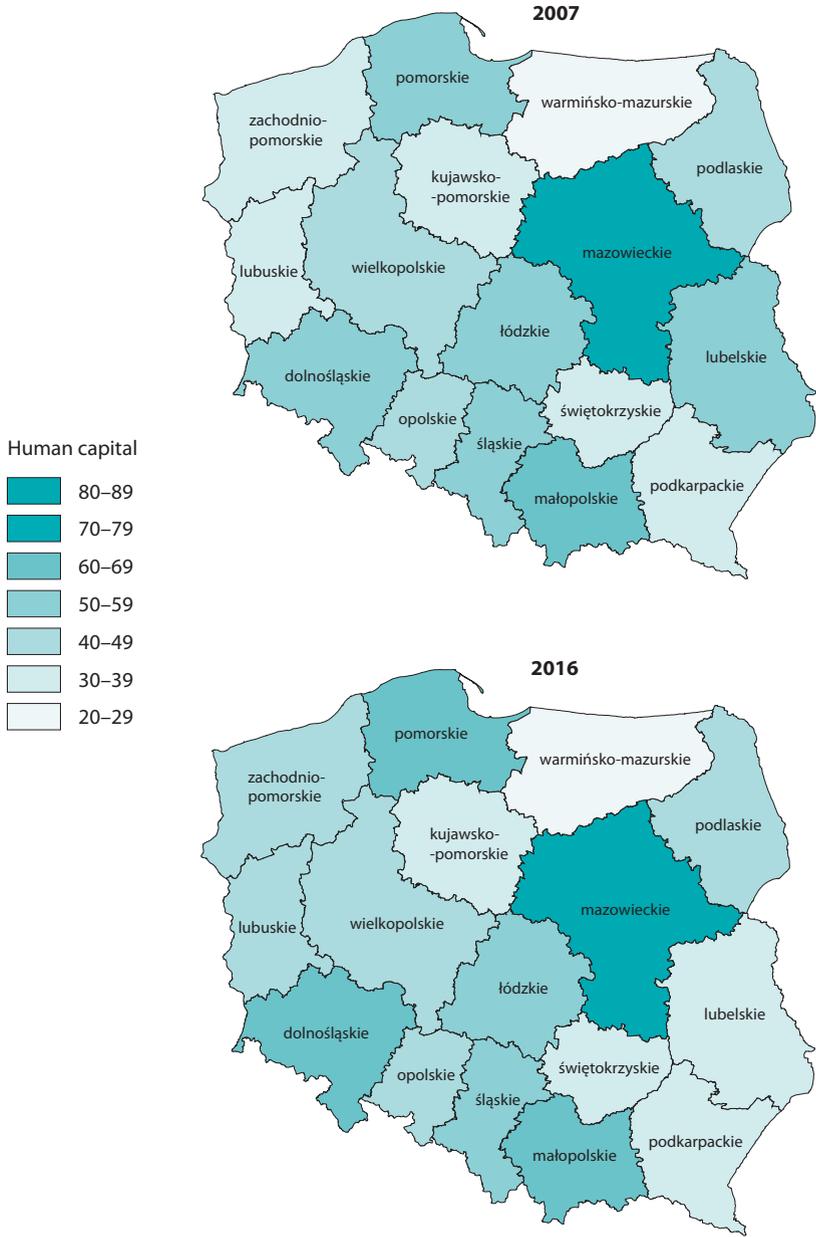
society's resources of knowledge, skills, health and its vital energy. A given population is endowed with a certain set of such resources through its genetic features, which, however could be enhanced by a special kind of investment, called investment in the human being: in people, human capital and human life' (p. 19). In Domański's definition, the emphasis is shifted from the individual to the population. Therefore, human capital understood as the resources of a given community can be put into territorial frames. This interpretation allows the assessment of the geographical variation of human capital, which, in turn, enables the evaluation of the effectiveness of the activities and investments carried out in particular regions, given that, at the same time, interregional comparisons can be performed.

The year 2007 marked the beginning of intensified investment in human capital in Poland.⁹ Nine years later, in 2016, it was still not possible to distinguish, by means of a synthetic indicator, any clear and unambiguously positive influence of these investments on the quality of human capital (Map).¹⁰ The differences between particular voivodships were substantial and displayed a tendency to grow and become increasingly permanent. The indicator showed relatively low values for the majority of voivodships (lighter colour on the scale). Mazowieckie voivodship is the undisputed leader, followed by Małopolskie, Dolnośląskie and Pomorskie voivodships. There is a huge gap between the above-mentioned voivodships and the remaining ones, which clearly shows the differences in terms of the quality of human capital between particular regions. The fact that the impact of investments on human capital and territorial cohesion is debatable makes it an issue worthy of further analysis. The limited results of intensive investment in human capital might result from the presence of obstacles restricting the use of human capital resources, from the depreciation of the generated capital, or from demographic factors and those relating to economic conditions. For any measures aiming to enhance the quality of human capital resources to be effective, it is vital to examine the reasons for which there are still considerable differences in the quantity and quality of human capital between regions, and to measure the influence this phenomenon has on social and economic development.

⁹ Beginning of the 2007–2013 perspective, the Lisbon Strategy.

¹⁰ The author's research based on the analysis of statistical data provided by Statistics Poland, which led to the development of a synthetic indicator of human capital showing the dynamics of changes observed in the studied period and allowing interregional comparisons. The variables were determined by means of substantive evaluation criteria and a selection of indicators which fulfilled the lack of an excessive correlation criterion. The synthetic indicator was determined using the model-free method.

Map. Value of human capital indicator in particular voivodships



Source: author's calculations based on data provided by Statistics Poland – Local Data Bank and Knowledge Database.

4. Conclusions

The analysis of the EU cohesion policy suggests that it is based on faulty assumptions. An identical policy implemented in all countries, also in those where the level of economic and social development and the volume of resources vary significantly across regions, will fail to produce the expected outcome. In consequence, an intra-country divergence is observed, reflected by growing regional disparities. The results of the convergence measures are noticeable at a higher level, i.e. at the level of the EU,¹¹ where their effectiveness is measured by the achieved reduction of differences between member states as regards specific parameters, in relation to the EU28 average; but at the same time, regional disparities within particular countries may be still deepening (Jarosz & Kozak, 2015). It must be noted, however, that regional inequalities and regional variability are not the same phenomena. Inequalities involve a socially unacceptable distribution of tangible and intangible goods. The EU cohesion policy aimed at narrowing developmental gaps, but it was based on the polarisation-diffusion model (that replaced the compensation model), which assumes that by supporting the polarised areas in increasing their competitiveness, the developmental effects of the said process will spread throughout the surrounding, including the peripheral, areas (Churski, 2014). The polarisation-diffusion model tends to favour regions with strong urban centres, especially metropolitan cities.¹² The growing divergences observed within a country might indicate the adopted model is either ineffective or inappropriately used.

Creating human capital resources is not the same as the development and maintenance of their high level. The accumulation of knowledge and improvement of the quality of human capital might not yield the expected results if at the same time no protective measures are taken against the negative impact of factors limiting an optimal use of the already-generated capital. Effective investment leading to the production and consolidation of a high level of human capital is possible in favourable social and economic conditions. The most notable obstacles include specific barriers against the full use of the human capital, its depreciation, and an unfavourable economic situation, as well as social and demographic conditions in given regions. The geographical analysis of the varied levels of human capital signals the need for further analysis of the reasons for the described situation. Questions as to what assumptions should constitute the basis for effective investments in human capital and what factors are likely to cause effective social and economic development of a country and its regions still remain to be answered.

¹¹ For example reducing the GDP gap between member states and the EU28 average.

¹² Which the research results presented in the Map in the form of a synthetic indicator of human capital in individual voivodships.

References

- Becker, G. S. (1990). *Ekonomiczna teoria zachowań ludzkich* (H. Hagemeyer & K. Hagemeyer, Trans.). Warszawa: Państwowe Wydawnictwo Naukowe.
- Becker, G. S. (1994). *Human Capital. A Theoretical and Empirical Analysis with Special Reference to Education*. Chicago: University of Chicago Press.
- Churski, M. (2014). Model polaryzacyjno-dyfuzyjny w przemianach polityki spójności – konsekwencje dla ukierunkowania polityki rozwoju. *Rozwój Regionalny i Polityka Regionalna*, (25), 13–27. <https://doi.org/10.14746/rrpr.2014.25.02>.
- Consolidated version of the Treaty on the Functioning of the European Union. (2012). *Official Journal of the European Union*, C 326.
- Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999. *Official Journal of the European Union*, L 210.
- Domański, S. R. (1993). *Kapitał ludzki i wzrost gospodarczy*. Warszawa: Wydawnictwo Naukowe PWN.
- European Commission. (2004). *A new partnership for cohesion. Convergence, competitiveness, cooperation*. Luxembourg: Office of Official Publications of the European Communities. <https://op.europa.eu/en/publication-detail/-/publication/4d47a6ba-9800-4d09-b2f1-b4557bbf1354>.
- European Commission. (2010). *Europe 2020. A strategy for smart, sustainable and inclusive growth*. Brussels. <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52010DC2020>.
- Geodecki, T., Gorzelak, G., Górnica, J., Hausner, J., Mazur, S., Szlachta, J., & Zaleski, J. (2012). *Kurs na innowacje. Jak wyprowadzić Polskę z rozwojowego dryfu?*. Kraków: Fundacja Gospodarki i Administracji Publicznej. <https://www.nck.pl/badania/raporty/kurs-na-innowacje-jak-wyprowadzic-polske-z-rozwojowego-dryftu->
- Jarosz, M., & Kozak, M. W. (2015). *Eksplzja nierówności?*. Warszawa: Instytut Studiów Politycznych PAN, Oficyna Naukowa.
- Ministerstwo Rozwoju. (2017). *Sprawozdanie końcowe z wdrażania Programu Operacyjnego Kapitał Ludzki 2007–2013*. Warszawa. https://www.power.gov.pl/media/92073/Sprawozdanie_POKL_koncowe_po_KM_POKL.pdf.
- Molle, W. (2005). *EU Cohesion Policies; Adequate Constitutional Foundations and Regulatory and Financial Constructions, Need for Further Optimization* (Working Paper n. 2006-08). http://wp.demm.unimi.it/files/wp/2006/DEMM-2006_008wp.pdf.
- Pierzchalska, M. (2004). Znaczenie spójności społeczno-gospodarczej dla rozwoju regionalnego. In K. Głębicka (Ed.), *Spójność społeczno-ekonomiczna – implikacje regionalne* (pp. 11–26). Radom: Wyższa Szkoła Biznesu im. bp. Jana Chrapka.
- Skrzypiek, E. (2006). Ranga jakości w społeczeństwie wiedzy. *Problemy Jakości. Problems of Quality*, (9), 4–8.
- Szczegółowy opis priorytetów Programu Operacyjnego Kapitał Ludzki. (2015). <http://www.kapitalludzki.gov.pl/dokumenty/dokumenty-programowe/szczegolowy-opis-priorytetow>.
- Szlachta, J. (2016). Polityka rozwojowa w kontekście polityki spójności – przypadek Polski. In J. Staciewicz (Ed.), *Polityka gospodarcza w warunkach przemian rozwojowych* (pp. 131–150). Warszawa: Szkoła Główna Handlowa – Oficyna Wydawnicza.
- Weise, Ch., Bachtler, J., Dawnes, R., McMaster, I., & Toepel, K. (2001). *The Impact of EU Enlargement on Cohesion*. Berlin and Glasgow: German Institute for Economic Research, European Policies Research Centre. https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/enlarge.pdf.

The welfare of local communities. Rzeszów as a smart city – case study

1. Introduction

The city as an urban entity is characterised by multidimensionality. The complexity of the research matter involves an infinity of interactions between the elements entering its area. The purpose of the study is to describe ventures undertaken by the local authorities of Rzeszów and its citizens who actively participate in civic initiatives. This city is unique due to its location, history, economic development, and the fact that it has become a centre for modern migration. For these reasons, Rzeszów is an interesting area for research, particularly in terms of the factors responsible for the proper functioning and development of the agglomeration. The study describes the changes Rzeszów underwent in the years 2002–2019, aiming at the improvement of the city's image and its citizens' well-being. The activities stimulating these changes have been subject to various comparative analyses presented herein. The study focuses not only on the growth of the urban population, which is a derivative of the increase in the quality of residents' lives, but, above all, on the activities conducive to the implementation of the smart city concept.

The city as a space, an urban object or a place where people function is the subject of scientific deliberations within numerous disciplines. Moreover, due to its complexity, providing an unambiguous definition of the term 'city' is impossible. According to the Polish law, a city is 'a settlement unit with a predominance of dense development and non-agricultural functions, holding urban rights, or the status of a city granted in accordance with the provisions of law' (Ustawa z dnia 29 sierpnia 2003 r. o urzędowych nazwach miejscowości i obiektów fizjograficznych, Eng. *Act from 29 August 2003 on administrative names of urban and rural settlements and*

^a Cardinal Stefan Wyszyński University in Warsaw, Institute of Economics and Finance.
ORCID: <https://orcid.org/0000-0003-2817-9578>.

physiographic objects). For the purpose of this paper, everything which happens in and around the city is considered a specific social and economic system.

As mentioned before, Rzeszów proves an excellent object for research, especially with respect to the integrated factors responsible for the proper functioning and development of the city. Residents of Rzeszów, as any residents of urban areas, have both rights and obligations related to the activity of the city and its entities. In order for a settlement to be called a city, it has to fulfil a variety of criteria, i.e. those easily counted and verified, e.g. the density of the population or its employment structure, and those non-quantifiable, e.g. access to a specific type of infrastructure. An equally important element is the administrative status of a given location, including its precise powers and functions. Some cities develop much faster than others, sometimes at the expense of other settlements, but these processes are always accompanied by both social and cultural changes, illustrating how urban space responds to the needs and expectations of its inhabitants.

A city's image in the eyes of its residents and visitors is shaped by the success of the society that decided to live and work there. Urban populations are at present changing at a fast rate, and both their decline and growth pose a challenge to cities' authorities. Improving several aspects of the residents' quality of life is particularly important from the societal point of view. Communication facilities, friendly offices and their e-versions, as well as the increasing level of safety and cleanliness of the environment are challenges which city managers have to respond to. What is characteristic for the aforementioned issues is the fact that they are long-term projects, and when implemented consistently, they favour the development of the city and the improvement of the standard of living of the inhabitants. The article presents the results of research related to the implementation of the concept of smart city in Rzeszów in the years 2002–2019. The city itself can serve as an excellent illustration of initiatives carried out by local authorities in the framework of long-term projects. Rzeszów's authorities focused on adapting and transforming their activities so that they meet the expectations of the residents. The authorities' work involving the undertaking and development of new initiatives as well as changes in the administrative division of the city deserve particular attention here, as they were aimed at attracting new investors effectively and stimulating the city's development. The city as a social organism influences the behaviour of people and creates conditions for the development of the community, but, on the other hand, it determines the level of social stratification, thus contributing to the formation of pathologies (Szymańska, 2008, p. 10). In terms of the functionality, the city should be seen as a settlement unit with an urban function and as a place for the exchange of goods and services. Compared to rural areas, it is of a multifunctional character, not related to agricultural activity (Szymańska, 2009, p. 176).

2. The concept of the city – development policy

This study focuses not only on the increase of the urban population, which is the result of the improvement of the quality of life of the inhabitants, but, above all, on activities conducive to the implementation of the smart city idea, which involves long-term investments. The smart city concept is a response of city managers to the development needs of modern urban areas. The description of smart activities carried out in cities is based on six factors (areas), according to which a ranking of smart cities was created. The author decided to choose a ranking by the Vienna University of Technology, which is a scientific study that takes Polish cities into account, and can serve as a reference scale for the attainable results in comparison to several hundred cities in Europe. Rzeszów ranked the highest among all Polish cities in terms of meeting the outlined criteria, including the assessment of the level to which the smart city concept is implemented, as well as its impact on the city's development. The paper presents the *Implementation of the idea of Smart City in Rzeszów* project, whose agenda included the introduction of an innovative information and communication technologies (ICT) system (partially financed by the European Union) in the city, enabling the provision of administrative services via internet applications, the development of the public transport system, as well as a system identifying vehicles and their locations, which enhanced the quality of services provided by public transport. The implementation of this and other projects in the framework of the smart city concept enabled Rzeszów to win the title of the Capital of Innovation, as the investments of the municipal authorities have been appreciated by both Polish and international organisations. Rzeszów manages to effectively multiply resources, thanks to which it is able to provide attractive living conditions for its inhabitants, to foster culture, and to create principles and models of social life, as those described by Karwińska & Brzosko-Sermak (2014, p. 16). The study seeks to answer three questions. The first concerns whether Rzeszów meets the smart city criteria in the area of infrastructure investments, the second investigates if companies operating in Rzeszów are involved in building a smart society, and the third attempts to establish whether managers of Rzeszów incorporate smart city concepts in their investment plans. More specifically, the first question focuses on the analysis of the city authorities' activity with respect to the modernisation of the transport system and the enhancement of its functionality. The next one relates to the cooperation of business entities with local authorities and universities. The last question focuses on the introduction of e-services and investments in the sphere of renewable energy and revitalisation of green areas, and analyses whether they produced the expected sociological and economic effects.

3. Urban investments – the smart city strategy

The above-mentioned research questions were complemented by the analysis of whether the smart city concept can effectively counteract the negative aspects of the urbanisation process. A review of the available scientific literature unfortunately proved that there are not many studies examining this concept, and even fewer documenting the achievements of the Rzeszów authorities in implementing smart city projects. Therefore, the majority of the content herein comes from magazines and internet publications, including those available on the Rzeszów City Hall's website, as well as other studies which present a holistic approach to urban planning and therefore include the solutions applied within the smart city concept. The uniqueness of Rzeszów manifests itself in its multifacetedness, especially in terms of the spatial concentration and association of people, its historical shaping and changes in the social structure and the social system which illustrate the relations of the individual with the society and the administrative system. Here we can make an attempt at formulating an unambiguous definition of the city. If we assume that a city is an open system which has a characteristic demographic structure, performs various functions, its area is appropriately developed (in a way typical for urban 'spaces'), is granted specific urban rights, then such a 'space' is a city. The above definition encompasses all the demographic, administrative, sociological and economic aspects associated with cities (Sikora-Fernandez, 2011, p. 437). The city authorities take relevant action in an attempt to improve the quality and conditions of the residents' life, to preserve the natural environment, to make residents more conscious, and to introduce innovative solutions to numerous spheres of activity and life in the city. These concern mainly public transport, construction, the arrangement of green areas, and urban investments (Szymańska, 2009, p. 188).

The urban population creates its public 'space'. The greater the residents' involvement in adapting their urban 'space', the higher the satisfaction of their expectations relating to their living environment. Investments made by city authorities and the introduction of numerous amenities into the urban 'space' not only result in the improvement in quality of life, but first and foremost, in the increased awareness of the city's inhabitants. However, intense urbanisation sometimes entails problems which city authorities have to face. These are connected with inconveniences (even temporary ones) the inhabitants are exposed to, and they also involve a constant adjustment of their area of living to new social, economic and spatial conditions. The concept of smart city is believed to effectively eliminate the unfavourable aspects of city life. The idea involves the improvement of the management of the city jointly with its infrastructure, which are meant to serve the needs of the residents.

4. Definition of smart city – an integrated city concept

The smart city concept lacks one explicit definition, as smart urban solutions can refer to both the way the city is managed and to the solutions to social and environmental problems. The problem with the definition of a smart city is that it combines different aspects of urban development. In Europe, it is mainly associated with activities aimed at reducing greenhouse gas emissions or with the efficient use of renewable energy in fulfilling the needs of a city. The development of the city within the concept of a smart city involves its management with the use of tools based on innovative technologies, in accordance with the principles of ecology and the optimal use of natural resources. ICTs enhance the functionality of the urban area and allow the needs of people living in urban areas to be addressed effectively. ‘Smart’ in the studied context is the ability to identify and solve problems, and to perceive dependencies; it requires flexibility in adapting urban space to changes, and continuous learning in order to plan actions and anticipate their consequences more efficiently (Stawasz & Sikora-Fernandez, 2015, p. 17). The smart city concept was analysed by Boyd Cohen, who stated that thriving cities are intelligent cities, indicating at the same time the lack of clear criteria and transparency in considering a city as *smart* (Szymańska, 2015, p. 67). According to Cohen, a smart city should be defined as an integrated being, emphasising the effectiveness of its functioning; it is a city that enhances the quality of life of its inhabitants and stimulates the local economy. The author also asserts that *smart* actions, based on a large-scale application of ICTs, is an insufficient description of this notion. He is the author of a conceptual model, showing the following elements a developing city should encompass in order to be labelled as smart (Szymańska, 2015, pp. 68–69):

- *Smart governance* – transparent management of the city and public participation, provision of high-quality services and implementation of development strategies. The system is based on the collaboration between authorities, residents and local economic entities. It applies modern technologies in communication and management;
- *Smart economy* – measurable entrepreneurship, innovation and productivity. The city should show flexibility both in terms of the labour market and the profile of its activities;
- *Smart environment* – rational management of natural resources. Care for the environment includes minimising pollutant emissions, optimising energy consumption, introducing sustainable land-use planning, and management based on the principles of sustainable development;
- *Smart people* – a society learning and initiating change, using ICTs prepared to improve the functionality of the city and optimise living conditions. A society with a high level of qualifications, openness and diversity;

- *Smart living* – measured by the existing cultural facilities and living conditions of residents, providing integrated access to public services, including health, safety and cultural life;
- *Smart mobility* (intelligent mobility/transport and communication system) – communication and information infrastructure available locally and off-site. It assumes an active development of a sustainable, modern and safe transport system and the introduction of integrated traffic management systems.

The smart city concepts, widely understood, are in some part the same solutions that lie at the core of intelligent cities, e.g. eco-cities, green cities, or innovative cities (Szymańska, 2015, p. 71). They are also linked to historical concepts of urban growth and development, as described in the theories of urban competitiveness, social capital, politics and public governance. Hence, the concept of a smart city goes beyond the use of innovative technologies in meeting energy needs and the reduction of greenhouse gas emissions, focusing on community life and a citizen-friendly functioning of public administration (Stawasz & Sikora-Fernandez, 2015, p. 20). Therefore, the definition of a smart city, besides intelligent transport systems, also needs a creative and eager society who participate in the formation of a city with a smart economy and preserves its environment and creates appropriate social and economic conditions through proper management. This can be done only using transparent and efficient communication systems based on the collaboration of authorities, residents and business entities.

Smart cities are not necessarily those built on a ‘raw root’ basis, but most importantly, they are existing cities that are transforming and developing according to the smart city concept. A smart city is therefore a place where renewable energy sources are used efficiently, noise and air pollution are effectively reduced, waste and water resources are managed sustainably, and where transport systems are adapted to the city. Smart cities are green cities, using green transport and digital technologies in public transport, devoted to improving the quality of the environment through the creation of green spaces. Intelligent management encourages the society to participate consciously and actively in public life, clearly communicating its needs and expectations. In consequence, a smart city stands a greater chance of raising the quality and comfort of life of its inhabitants. Its concept, which is in some way a response to the problems resulting from urbanisation, requires permanent development. Consistent collaboration of the city authorities, their inhabitants, scientists, non-governmental organisations (NGOs) and business entities is likely to minimise the problems resulting from the rapid growth of city populations. It can also be a determinant of global solutions. Unfortunately, in Poland there is not much data on smart system implementation. This situation has started to change, though. The first symptom of this change is the increased amount of data on the implementation of comprehensive transport systems, which significantly improve passenger comfort,

punctuality and the adaptation of public transport timetables to the needs of residents (Korolko, 2015, pp. 101–102). Increasingly more information about smart city implementations is being published worldwide; these include rankings focusing on the most sensitive areas determining the effectiveness of the introduced changes. These rankings assess the comprehensiveness and effectiveness of the implemented solutions, analysing such areas as: the use of advanced IT, the applied technology, transport, security, or even telecommunication-related resolutions. An example of such research (and rankings) can be found in Stawasz and Sikora-Fernandez (2015, pp. 55–68):

- IDC: Smart Cities Index – developed by the IDC Energy Insights in cooperation with the International Data Corporation; it analyses the most characteristic, basic areas. They are called ‘urban intelligence dimensions’, examining the projects carried out and strategies implemented in the areas of management, housing, mobility, services and energy savings, i.e. 93 indicators in 23 areas;
- Forbes: World’s Smartest Cities – an analysis prepared by Joel Kotkin; it focuses not only on sustainable development, but also on the promotion of vertical mobility and the pursuit of economic progress. A city meeting the criteria of the smart city is one of a compact structure, performing more effectively compared to other cities;
- European Smart Cities – a study carried out by the Centre of Regional Science at the Vienna University of Technology in cooperation with the Delft University of Technology, examining medium-sized cities in six main areas: smart economy, smart governance, smart environment, smart people, smart living, and smart mobility.

5. Rzeszów smart city, effects of actions

Rzeszów is the leader of the European Smart Cities ranking. Cities surveyed in its framework were metropolises, large cities and also those of medium size, with sufficient financial and human resources to implement the smart city idea. The three editions of the Vienna University of Technology (TUWIEN) research carried out for 2007, 2013 and 2014 focused on the evaluation of medium-sized cities. The study covered urban areas meeting several criteria, including the following:

- the city population was between 100,000 and 500,000 (medium-sized city);
- there was at least one university within the city (in order to exclude cities without scientific background);
- there were no more than 1.5 million people living in the area around the city (in order to exclude localities influenced by larger cities).

Rzeszów met the above criteria. The ranking recognised Rzeszów as the most important aviation and IT centre, offering the largest shopping malls in the region; it was also appreciated for its urban investments and development activities, which will most probably secure Rzeszów the role of the metropolitan centre of south-eastern Poland (PwC, 2015). Rzeszów, as the slogan of the city suggests – the capital of innovation (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. e; Rzeszów – stolica innowacji, n.d.) – is the indisputable leader in the implementation of modern solutions in the area of technology, infrastructure, education, and social and economic life. Being recognised as a smart city in these six areas, i.e. smart economy, smart people, smart governance, smart mobility, smart environment, and smart living, allows an in-depth analysis of the tasks performed by the authorities in terms of their nature and the impact they have on particular factors shaping the idea of a smart city.

5.1. Smart economy

In 2018, almost 26,500 enterprises were registered in Rzeszów (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. d). Most of the employed found jobs in industry – as many as 35.2%, 11.9% in building construction, and 24.6% in trade or repair of motor vehicles. A very low unemployment rate of only 5.7% placed Rzeszów among the most attractive cities in terms of employment. The applied methods of reducing unemployment and the efficient vocational activation of the inhabitants were implemented on the basis of the *Idea – Self-employment* project, co-financed by the European Union, the aim of which was the development of entrepreneurship by supporting the self-employed.¹ Moreover, due to the presence of such companies as Assecco, Borg Warner Poland, G2A.com, ML-System, MTU Aero Engines Polska, or Pratt&Whitney Rzeszów on the Rzeszów economic scene, the city has become a business-friendly place. The Podkarpackie Science and Technology Park *Aeropolis* project has been providing support for entrepreneurs, secured by large companies, since 2006 (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. f). Such undertakings enable successful economic development of the region and the promotion of modern entrepreneurship. The solutions adopted through the Technology Incubator, included in the *Aeropolis* programme, constitute a part of the operating *Academic Pre-incubator* project, whose aim is to promote activities related to increasing the competitiveness of the economy and the implementation of modern technological solutions (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. f). There is also the

¹ *Idea – self-employment* under Priority Axis VII Regional Labor Market, Measure 7.3 Support for entrepreneurship development of the Regional Operational Program of the Podkarpackie Voivodeship for 2014–2020; the following was offered in the framework of the project: non-returnable PLN 24,000 for setting up an own business, financial bridge support in the amount of PLN 21,000, free training and consulting support before starting a business, assistance after starting a business, reimbursement of travel expenses for training, reimbursement of childcare costs.

Rzeszów-Dworzysko Special Economic Zone, whose mission is to foster the development of an economic centre based on industry and modern technologies. The zone attracts investors willing to operate in the field of aviation, providing an opportunity for the cooperation of this sector with universities and colleges, which offer support in terms of research and development (R&D). There are numerous business clusters operating in Rzeszów whose aim is to use their competences and research and development potential to elaborate and implement innovative solutions. The training of specialists and the collaboration between universities and business is the basic activity performed by the clusters, which provides the opportunity to accelerate the social and economic development of Rzeszów and increase the awareness of the local community in the field of environmental protection (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. a).

5.2. Smart people

The smart people indicator shows the involvement of universities in building human capital in urban areas. There are four higher education institutions in Rzeszów. The largest is the Rzeszów University of Technology, whose graduates become specialists in various fields, including such unique ones as piloting. The city is also the site of several R&D centres which conduct advanced research and develop technologies within its commercial activity for the needs of regional clients representing mainly the IT, aviation and automotive sectors. The second largest higher education institution in the city is the University of Rzeszów, which offers innovative fields of study in its Centre for Innovation and Transfer of Technical and Natural Knowledge and its Centre for Microelectronics and Nanotechnology. The third school, WSPiA Rzeszow Higher School, is equipped with the most modern forensic laboratory in Poland. Finally, the University of Information Technology and Management is the second in Europe and the only university in Poland offering courses in English, including studies in the field of airport traffic management (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. f).

5.3. Smart governance

Intelligent management is another key area in the process of implementing the smart city idea, which relates to the transparency of the activity of the city authorities. It moreover involves the collaboration of residents in creating local plans which have a significant impact on the Rzeszów Civic Budget. Since 2014, Rzeszów citizens have been taking part in the decision-making process regarding the city budget. In result, the residents have had the opportunity to submit ideas for investments as well as to vote for projects put forward by other entities (Rzeszowski Budżet Obywatelski, n.d.). *A Modern Official-Competent Official* is a project completed in 2013, which also

served a similar purpose. It was a training programme for local government employees of the Rzeszów City Hall, within the framework of which they were trained in the field of the public procurement law, internal audit, electronic document circulation, and project management.² According to the inhabitants, the quality of services provided by the employees of the Rzeszów City Hall improved significantly following the training. Decisions were issued faster, the scope of knowledge, also in terms of the application of legal regulations among the employees of the City Hall increased, and the level of customer satisfaction became monitored. The purchase of specialised software, greater control over the timeliness and correctness of the issued decisions, and the employees' newly-acquired qualifications additionally prove that the project's goals have been achieved to a satisfactory degree. In the framework of the *Implementation of the Smart City in Rzeszów* project, carried out in December 2018, the city provided residents with a comprehensive set of e-services meant to improve both communication with offices as well as to increase the transparency and quality of customer services. The city also implemented the Podkarpackie Spatial Information System (PSIS) project. Its aim was to increase the competitiveness of the region through the creation of an open digital platform, designed as a spatial information base. Publications and e-services related to the PSIS are meant to be universally available and addressed to all citizens. The implementation of online services is expected to facilitate the communication between the customers and the City Hall and to simplify the necessary procedures. The employed system aims at improving the services delivered to residents and entrepreneurs interested in using the data contained therein, ultimately increasing the competitiveness of the region (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. b).

5.4. Smart mobility

Activities in this area include investments in public transport – both urban and sub-urban. The support provided by the European Union in the form of funds coming from the Community budget enabled Rzeszów to join projects aimed at improving the quality of urban transport. In accordance with the Smart Mobility guidelines, a project called *Development of the intelligent road transport system in the city of Rzeszów* was carried out in the years 2010–2015. *The Dynamic Passenger Information*

² Priority axis II: Digital Podkarpackie, Measure 2.1: Increasing the efficiency and availability of e-services; managing authority: Podkarpackie Voivodship Board; beneficiary: municipality of the City of Rzeszów; total project value: PLN 6,093,714.23, co-financing amount from the EU: PLN 5,066,547.39, implementation date: August 2016 – December 2018. The main goal of the project was the development of the information society in the Municipality of the City of Rzeszów, by providing residents and economic entities with modern e-services of local administration. The subject of the project was the introduction and commissioning of a modern ICT and administrative system in the Municipality of the City of Rzeszów enabling the provision of services. The material scope of the project included: the modernisation of hardware resources, installation and the launch of domain software, and the delivery, installation and implementation of common modules and their integration with domain systems.

System was also modernised – within its framework passenger information boards and e-kiosks were introduced, along with the e-Ticket system. Such undertakings increased the attractiveness of the public transport services, which led to the growth of the popularity of public transport. As a part of the *Dynamic Vehicle Weighing System*, the effectiveness of truck traffic supervision was increased and the conditions and safety of road traffic within the city improved, which led to the enhancement of the air quality in the city. Another interesting project, *Improving the functioning of public transport in the centre of Rzeszów by reducing transit traffic and introducing a paid parking zone*, was implemented in the years 2011–2015. Its aim was to improve the functioning of public transport. Transit traffic was directed to the city's ring road and a system of paid parking was implemented in the city. Since 2014, several transport projects have been completed in Rzeszów, including the *Development of the public transport system in Rzeszów* that created a unique 'Rzeszów Intelligent Transport System'. This system is the result of the development of such initiatives as e.g. the *Public Transport Management System* programme which enables the identification of vehicle locations, the monitoring of the number of transport passengers, as well as monitoring the service standards. Another undertaking is the *Passenger Information System (e-Info)*, which integrates extended systems, including the Teleinformatic Platform. *Expansion of the public transport system in Rzeszów*, planned to be carried out between 2015 and 2022, includes the introduction of a hybrid bus fleet, the reconstruction of bus bays, building bicycle paths, and the extension of the Parking Zone Service System. The third project, having the same purpose as the two above, is the *Integration of various forms of public transport in Rzeszów*, which is planned to be finalised in 2021, and its aim is to link public transport with individual transport, improve the mobility of people with disabilities, and to increase the energy efficiency of urban transport.

5.5. Smart environment

Particular care for the natural environment is demonstrated through the activities undertaken by local authorities in connection to the rational use of natural resources with the simultaneous attempts at minimising pollution and the optimisation of energy consumption, all of which affect the quality of life of the inhabitants. Rzeszów has over 1,000 ha of green areas, including city parks, on the revitalisation of which the city has spent in the recent years over PLN 10 million (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. g). Since 2008, the quality of water provided by the city network has been fit for consumption without the need of prior boiling. In 2017, the *Rzeszów Acoustic Map* was updated, which serves the purpose of better land-use

planning, which, in turn, allows the identification of noisy areas and take actions aimed at reducing noise factors (Bohatkiewicz et al., 2017). The *Redevelopment of the Rzeszów district heating network* was a project completed in 2015, in the framework of which effective energy infrastructure was constructed in order to reduce greenhouse gas emissions in the urban area; the project was additionally supported by another programme called *Comprehensive energy efficiency improvement through thermal upgrading of municipal residential buildings in Rzeszów*. In consequence, the energy efficiency of buildings has been boosted, the heating-related costs have been reduced through rational energy consumption, and, in turn, the emissions of harmful gases has decreased. The next project called *Reorganisation of the water and sewage management in the city of Rzeszów by constructing a rainwater drainage system*, involves the reconstruction of the rainwater drainage system and the expansion of retention reservoirs. Last but not least, the *Increasing the share of energy from renewable sources in the ROF* (Rzeszów Functional Area – RFA) project, launched in 2017, is designed to increase the amount of energy generated from renewable sources (photovoltaic installations) located within the RFA.

5.6. Smart living

Quality of life tends to be reflected in the number of the available cultural facilities, the level of living conditions and the sense of security of the inhabitants, all improved through the activity aimed at supporting the local tourism and access to public services. There are nine public and private theatres in the city, which organise various festivals and exhibitions, engaging the local community. As part of the *Visit Rzeszów* project, in 2015 a bus service was introduced to offer free-of-charge rides around the city, available to both the local community and tourists (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. f). Rzeszów is perceived as an attractive tourist destination, visited by over 58,000 tourists in 2018. The city offers a wide range of cultural activities, several of which are part of the *Cultural Heritage Preservation Programme*. In the framework of the programme, in 2018 the city received financial support for cultural institutions in the RFA, enabling the range of its culture-connected services to be adapted to the needs and expectations of the inhabitants. The *Rzeszow Cellars – an interactive cultural institution* is another interesting project, which is meant not only to increase the attractiveness of the city's tourist offer, but also to develop tourist traffic and raise cultural awareness of the local community (Serwis informacyjny Urzędu Miasta Rzeszowa, n.d. c).

6. Conclusions

Urban development planning should be done in a way which fulfils the needs of the society to the greatest possible extent. Urban authorities have a variety of tools at their disposal to implement projects aiming to improve the quality of life of the citizens. Quality of life of local communities is determined by the level of the ensured safety, a user-friendly transport system, official services showing a high level of understanding the needs of the applicants, and finally, by the comfort of life. In order for the ongoing process of urbanisation to be successful, it must be based on the collaboration of the city authorities and the residents, which is the only method leading to the satisfaction of the residents' desires and expectations (involving the improvement of the quality of life and the condition of the natural environment). It is the smart city idea that guides the the Rzeszów authorities in their effort to improve the quality of life of the city's residents by means of the available technological and related solutions. The smart city concept also involves investments in areas which significantly improve the competitiveness of the spheres the city authorities are responsible for, thus influencing the implementation of all smart city elements, especially the smart economy. The city's openness to collaboration with the residents in the form of joint management (e.g. of the civic budget) has been recognised by international rankings, many of which placed Rzeszów in the top position among Polish cities. Rzeszów has been successful in the implementation of the smart city concept, not only in terms of the applied technological and organisational enhancements which increase the welfare of local communities, but, most importantly, in terms of developing a civil society.

References

- Bohatkiewicz, J., Biernacki, S., & Hałucha, M. (2017). *Mapa akustyczna miasta Rzeszowa*. Kraków: EKKOM. http://mapaakustyczna.erzeszow.pl/static/MA_Rzeszow_opis.pdf.
- Karwińska, A., & Brzosko-Sermak, A. (2014). *Dobrze funkcjonujące miasto. Koncepcje, cechy, perspektywy rozwoju*. Kraków: Wydawnictwo Uniwersytetu Ekonomicznego.
- Korolko, M. (2015). Inteligentne miasta jako przestrzeń otwartych innowacji. In D. Szymańska & M. Korolko (Eds.), *Inteligentne miasta – idea, koncepcje i wdrożenia* (pp. 87–111). Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
- PwC. (2015). *Rzeszów. Raport o polskich metropoliach*. <https://www.pwc.pl/pl/pdf/miasta/raport-o-metropoliach-rzeszow-2015.pdf>.
- Rzeszowski Budżet Obywatelski. (n.d.). *Uchwała nr LXXIV/1337/2014 rady miasta Rzeszowa*. Retrieved February 14, 2019, from <http://rbo.rzeszow.pl/uchwala-nr-lxxiv13372014-rady-miasta-rzeszowa/>.
- Rzeszów – stolica innowacji. (n.d.). <https://pl-pl.facebook.com/Rzeszow.stolica.innowacji/>.

- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. a). *Podkarpacki klaster energii odnawialnej*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/innowacje-w-rzeszowie/klaster/podkarpacki-klaster-energii-odnawialnej>.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. b). *Podkarpacki system informacji przestrzennej – PSIP*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/miasto-rzeszow/realizowane-projekty/projekty-w-trakcie-realizacji/projekty-dofinansowane-ze-srodkow-unii-europejskiej/podkarpacki-system-informacji-przestrzennej-psip>.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. c). *Rzeszowskie piwnice – interaktywna instytucja kultury*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/miasto-rzeszow/realizowane-projekty/projekty-w-trakcie-realizacji/projekty-dofinansowane-ze-srodkow-unii-europejskiej/rzeszowskie-piwnice-interaktywna-instytucja-kultury>.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. d). *Rzeszów w liczbach*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/miasto-rzeszow/dane-statystyczne/rzeszow-w-liczbach>.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. e). *Serwis informacyjny Urzędu Miasta Rzeszowa*. Retrieved February 14, 2019, from www.rzeszow.pl.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. f). *Wizytówka miasta*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/turystyka/wizytowka-miasta>.
- Serwis informacyjny Urzędu Miasta Rzeszowa. (n.d. g). *Zielone miasto Rzeszów*. Retrieved February 14, 2019, from <http://www.rzeszow.pl/miasto-rzeszow/zielone-miasto-rzeszow>.
- Sikora-Fernandez, D. (2011). Budownictwo socjalne na tle zrównoważonego rozwoju miast. *Acta Universitatis Lodzianis. Folia Oeconomica*, 261, 433–443.
- Stawasz, D., & Sikora-Fernandez, D. (Eds.). (2015). *Zarządzanie w polskich miastach zgodnie z koncepcją Smart City*. Warszawa: Wydawnictwo Placet.
- Szymańska, D. (2008). *Urbanizacja na świecie*. Warszawa: Wydawnictwo Naukowe PWN.
- Szymańska, D. (2009). *Geografia osadnictwa*. Warszawa: Wydawnictwo Naukowe PWN.
- Szymańska, D. (2015). Inteligentne miasta – idea, koncepcje i wdrożenia. In D. Szymańska & M. Korolko (Eds.), *Inteligentne miasta – idea, koncepcje i wdrożenia* (pp. 65–86). Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
- Ustawa z dnia 29 sierpnia 2003 r. o urzędowych nazwach miejscowości i obiektów fizjograficznych (Dz.U. 2003 nr 166 poz. 1612).

The importance of non-profit organisations for the local innovative development

1. Introduction

At the current stage of the social and economic development of the Western civilisation, the importance of local communities is growing. This is the level where the residents' needs seem to be satisfied most effectively, accurately and efficiently. Therefore, it can be said that the quality of life of the members of a given community is mostly influenced at the local level.

The need to seek innovative solutions to social problems, particularly at the level of smaller communities that may be defined in spatial categories – primarily local communities – is a reaction of local leaders to diagnosed deficiencies in their environments. These deficiencies on the one hand relate to the increasing yet unfulfilled aspirations, and on the other hand to the ineffective system of distribution of public and private funds. An observable response to the dilemmas associated with current developmental issues is the revival of innovative and effective developmental initiatives executed at a local level. There is a popular belief, expressed for example by Leśniak-Moczuk (2008), that

the reason behind the revival of localism is the crisis of the state as the decision-maker for the whole territory within its boundaries. Hence the need for globalisation to deal with macro-scale matters, and localism to resolve micro-scale economic and social issues (p. 129).

Local initiatives are an innovative alternative to inefficient socio-economic systems. Through them, new solutions are sought in the field of development management; more specifically, solutions which would supplement or even replace the current ineffective system of management of socio-economic development (based on the top-down formula).

^a Cardinal Stefan Wyszyński University in Warsaw, Faculty of Social and Economic Sciences.

Initiatives of this kind result from needs that have been accurately recognised, have a local character, and their success depends primarily on non-economic factors, e.g. social capital. The revival of localism follows the emergence of a social order which is mostly focused on the development of social capital, and is therefore characterised by local leaders' search for solutions to social problems which systemic methods fail to resolve.

Third sector organisations function in this context well and with growing efficiency. Nevertheless, as Piechowski (2008) argues,

combining individuals' efforts in order to form a joint self-defence and self-help against various threats is a phenomenon nearly as old as humanity itself, or – as theoreticians of the past indicate – even older, having occurred also in nature, among plants and animals. It was observed among 'primitive' people, particularly in almost all agricultural communities, and later in urban ones. It involved a joint performance of certain activities connected with cyclically or occasionally occurring needs; small and formalised or less formalised associations, communities, 'economic companies', 'pre-cooperative forms of collaboration' were formed spontaneously, within an immediate-neighbourhood range, undertaking activities difficult or impossible for an individual to execute (p. 13).

2. Third sector organisations in Poland

Nowadays, non-governmental organisations hold a strong position within the structures of socio-economic institutions and, what is more, they are becoming increasingly important.

The essence of development achieved through the resources and activity of civic organisations involves adopting a development model based on non-economic factors – mainly trust, involvement, mutual service provision and volunteer work.

A well-organised local community creates an environment promoting the development of innovative, effective and efficient solutions improving the quality of life of its members. By the same token, the continuous implementation of new, grassroots initiatives aimed at satisfying the needs of the members of the community builds a sense of identity and fosters creativity, openness and trust.

Increasingly often studies relating to phenomena of this type refer to an entrepreneurial society or social entrepreneurship.

Social entrepreneurship is used in this study in the meaning of a local society's ability to self-organise, which includes the initiation and continuation of joint actions with the purpose of satisfying its needs.

The above-described understanding of social entrepreneurship emphasises:

- a grassroots, voluntary, social and civic nature of initiatives classified as social enterprises;
- the local nature of social entrepreneurship in terms of its stakeholders and the scale of objectives pursued;
- aims and values shared by the members of a given community.

Third sector organisations are natural actors and agents of developmental processes consistent with the paradigm/trend of social entrepreneurship.

The third sector comprises non-governmental organisations, also known as non-profit organisations, community organisations, as well as voluntary and civic organisations. It is a civic sector most commonly linked with foundations and associations, but it is in fact much broader than that. As mentioned above, it encompasses a variety of organisations and forms of collaboration, whose activity is regulated by several legal acts in Poland. Apart from associations (ordinary and registered) and foundations, the following are non-governmental organisations:

- non-profit companies (operating for different purposes than generating profit);
- social cooperatives;
- associations of local government units;
- sports clubs and student sports clubs;
- trade unions;
- professional associations;
- employer federations and confederations;
- political parties;
- chambers of commerce and crafts;
- church organisations;
- farmers' unions, farmers' associations, associations of rural women;
- ephemeral/occasional groups and communities, such as social committees, housing estate clubs or support groups (Główny Urząd Statystyczny [GUS], 2017a).

The Polish sector of non-governmental organisations is still developing; between 2010 and 2016, the number of such organisations that were active increased from 80,100 to 91,900, so by 15% (GUS, 2017b). According to Statistics Poland (GUS, 2017b, pp. 1–2), the following non-governmental organisations operated in Poland in 2016:

- 91,800 associations with a legal personality and similar social organisations, foundations, religious community entities and economic and professional associations (including 9,100 entities with the status of a public benefit institution), of which:
 - 73,400 were associations and similar social organisations;
 - 13,600 were foundations;
 - 2,900 were economic and professional associations;
 - 1,900 were religious community entities.
- 66,700 unregistered, informal organisations, of which:
 - 7,400 were ordinary associations;
 - 59,300 were Catholic Church parish organisations.

Another element of the Polish non-governmental sector significant in terms of the number of its units (estimated at approximately 26,000), is associations of rural women (*Krajowy Program Rozwoju Ekonomii Społecznej...*, 2019, p. 14). They can conduct business activity and the profit generated as a result is assigned to fulfilling their statutory aims, which can either be classified as social services for public benefit, or as connected with local development.

The analysis of the sectoral structure of registered associations indicates that nearly half of all associations and similar community organisations are typical associations and social organisations (36,100), while the other part are organisations with a strictly-defined activity profile, including:

- sports associations (19,900);
- volunteer firefighters (14,900);
- hunting clubs (2,400) (GUS, 2017b).

Between 2014 and 2016, the total number of actively operating registered associations and similar social organisations, foundations, religious community entities and economic and professional associations increased by 5% (from 87,500 to 91,800). This growth was mainly fuelled by a dynamic increase in the number of foundations – in 2014–2016 their number rose by 27% (from 10,700 to 13,600) (GUS, 2017b, p. 2).

As far as foundations are considered, it is worth noting that nearly 25% of all of them were located in Warsaw alone, and approximately 30% in Mazowieckie voivodeship.

The territorial distribution of the studied non-governmental organisations is as follows:

- 14,200, i.e. 16% of all organisations were located in Mazowieckie voivodship and 8% in Warsaw alone;
- 9,200, i.e. 10% of all organisations were located in Wielkopolskie voivodship;
- 8,800, i.e. 10% of all organisations were located in Małopolskie voivodship;
- The smallest percentage of actively operating non-governmental organisations was reported in the smallest voivodships: Opolskie, Lubuskie, Podlaskie and Świętokrzyskie – 3% each (GUS, 2017b).

The analysis of non-governmental organisations in terms of the sector and area of operations demonstrates that within the framework of their statutory activity, the organisations most often related to:

- sports, tourism, recreation, hobbies (29%);
- rescue services (17%);
- culture and art (12%);
- education and upbringing, scientific research (10%);
- social and humanitarian aid (7%);
- profession- and labour-related issues, community development, and healthcare (4% each) (GUS, 2017b, p. 3).

It is also worth noting that

9% of the studied non-profit organisations engaged in business activity. These were most often business and professional associations (33%) or foundations (21%). The economic activity of non-profit organisations in the majority of cases involved obtaining funds from real estate management, including rental (18%), professional, scientific and technical activities (16%), together with advertising and management-related consulting activities, and educational activity (16%) (GUS, 2017b, p. 5).

In practice, this means that probably from among less than 10% of non-governmental organisations engaged in business activity nearly one-fifth operate in the real estate development sector, one-sixth specialise in scientific and expertise activities providing consulting services, and another sixth operate in education, offering workshops and courses. This, in turn, might mean that half of the non-governmental organisations' business activities are conducted in typically commercial sectors, taking advantage of their non-governmental organisation status to gain fiscal benefits. These activities are not necessarily directly related to offering support to their own members or local communities.

According to Statistics Poland, active registered organisations had associated a total number of 9.1 million individuals as members by the end of 2016. This figure, however, is the number of members declared by the studied organisations, so in practice it is possible that one person could be a member of several organisations at the same time, which is likely to affect the overall picture of the third sector activity of the society (GUS, 2017b).

In addition, as we can read in a Statistics Poland's report,

a total of 162,000 people were contractually employed [in registered non-governmental organisations], out of whom nearly 140,000 declared this work to be their main employment (in 2014 it was 150,000 and 128,000, respectively). Throughout the entire 2016, the yearly average of full-time jobs performed for associations and similar social organisations, foundations, community religious entities, and economic and professional associations was 138,000. The share of employment in the studied organisations accounted for 1.1% of the average number of employees in the national economy as of the end of December 2016 (0.9% in 2014) (GUS, 2017b, p. 6).

The cited report also emphasises the fact that employment in non-governmental organisations is highly feminised – women accounted for 74% of the total number of persons employed in these organisations in 2016.

If the non-governmental sector is included in the analysis of the social economy, the following should be taken account of:

- in addition to nearly 92,000 registered non-governmental organisations, almost 70,000 non-registered organisations, about which public statistics do not collect data, operate in the sphere of social activity;

- nearly half of the non-governmental organisations are active in areas related to the organisation of free time, sports activities, hobbies;
- only 5% of the registered non-governmental organisations run business activity which involves providing services of a social nature and for the benefit of local communities.

It is also advisable to take into consideration the cooperative movement when analysing the third sector. The Cooperative Law Act (Pol. Ustawa z dnia 16 września 1982 r. – Prawo spółdzielcze) defines a cooperative as a voluntary association of an unlimited number of members and of a changeable membership and a changeable members' fund, which operates business activity that serves the interest of its members. The definition above reflects the associative nature of cooperatives, the voluntary participation, the freedom to join in and conducting business activity in the interest of its members. Cooperatives' activities stem from values of self-help, self-responsibility, democracy, equality, justice and solidarity. The cooperative principles by means of which these entities put their values into practice include:

- the principle of voluntary and open membership;
- the principle of democratic check exercised by the members;
- the principle of economic participation of members;
- the principle of autonomy and independence;
- the principle of education, training and information;
- the principle of collaboration between cooperatives;
- the principle of care for the local community (Piechowski, 2008, p. 35).

Cooperatives are grassroots economic initiatives, designed to support the economic activity of their members. The roots of the cooperative movement date back to the mid-19th century, so it has already been in existence for over 150 years. The cooperative idea emerged in the form of a self-defence and self-help movement supporting poorer and middle-income social groups against the negative effects of the developing capitalism. The social dimension of the cooperative activity, regardless of the sector of operations, focused on including people in a difficult material situation, those subject to marginalisation, and small producers, especially in areas where a group of people collaborating to achieve a common goal stood a better chance of succeeding than individuals. The cooperative movement has always been based on the principle of members' participation in managing the enterprise (one member – one vote) and the principle of social solidarity.

In Poland, the cooperative movement developed rapidly in the first years of the 20th century; fuelled ideologically by philosophers and sociologists of that time it took the form of a variety of organisations operating for the benefit of local development (e.g. model cooperative villages), farmers (dairy cooperatives), or merchants. Cooperatives also managed to survive World War I, before weakening during the

years of World War II and the communist Polish People's Republic era. Cooperatives underwent restructuring also during the transformation period; due to their economic character they have been forced to adjust their structures and organisational models to the contemporary market and social conditions (Krysiak, 2006). Krysiak (2006) asserts that

the number of cooperatives has been changing since the beginning of the political transformation period. In 1989, there were 16,700 cooperatives, in 2000 – 19,000, and in 2003 – 18,500. Statistics Poland reports 18,488 cooperatives in Poland in mid-2004. A certain number of cooperatives had to discontinue their activity, but at the same time some new ones were established, and larger cooperatives were divided into smaller and more efficient in economic terms units. In the 1990s, 5,000–6,000 cooperatives operating in all industries were liquidated in the country (p. 1).

In 2017, according to Statistics Poland, the Polish cooperative sector consisted of over 17,500 cooperatives registered in the REGON system. Table 1 below shows the total number of cooperatives in Poland and its dynamics by voivodships.

Table 1. Total number of cooperatives in Poland

Voivodships	2012	2015	2017
Dolnośląskie	1,373	1,374	1,371
Kujawsko-Pomorskie	961	970	956
Lubelskie	1,146	1,170	1,162
Lubuskie	470	486	524
Łódzkie	958	981	1,033
Małopolskie	1,119	1,137	1,124
Mazowieckie	3,110	3,117	3,131
Opolskie	480	492	502
Podkarpackie	772	800	784
Podlaskie	474	499	492
Pomorskie	1,039	1,057	1,029
Śląskie	1,142	1,151	1,185
Świętokrzyskie	481	502	491
Warmińsko-Mazurskie	702	745	741
Wielkopolskie	1,828	1,975	2,082
Zachodniopomorskie	1,100	1,104	1,086
Poland	17,155	17,561	17,694

Source: Local Data Bank of Statistics Poland.

According to the data provided by the Local Data Bank of Statistics Poland, the number of cooperatives in the years 2012–2017 was slowly rising, from 17,100 in 2012 to 17,700 in 2017. In 2017, most cooperatives operated in Mazowieckie (3,100) and Wielkopolskie (2,080) voivodships, while the fewest were located in Podlaskie and Świętokrzyskie voivodships, where their number did not exceed 500.

The supreme authority for cooperatives in Poland is the National Cooperative Council (Pol. Krajowa Rada Spółdzielcza – KRS), which operates under the

Cooperative Law Act. The National Cooperative Council brings together cooperatives from the following fields:

- ‘Samopomoc Chłopska’ farmers’ self-help communal cooperatives;
- agricultural production cooperatives;
- horticulture and apiculture cooperatives;
- farmers’ association cooperative;
- dairy cooperatives;
- ‘SPOŁEM’ consumer cooperatives;
- housing cooperatives;
- ‘Cepelia’ cooperative (centre of the folk and artistic industry);
- cooperative banks;
- SKOK (cooperative savings and loan funds);
- craftsmen cooperatives;
- social cooperatives;
- student cooperatives;
- labour cooperatives;
- cooperatives of the disabled and the blind;
- cooperative agricultural producers groups (Krajowa Rada Spółdzielcza, n.d.).

Social cooperatives are a specific type of cooperatives, whose operations are regulated by the Act on Social Cooperatives (Pol. Ustawa z dnia 22 kwietnia 2006 r. o spółdzielniach socjalnych). This act provides a set and the specification of exemptions from the Cooperative Law Act granted to social cooperatives; in matters not regulated by the latter act, the provisions of the Cooperative Law Act of 16 September 1982 apply.

Social cooperatives are a relatively new form of cooperatives in Poland, and, as mentioned above, the Act on Social Cooperatives, quite extensively amended in 2017, establishes a legal framework for their operations. The rules for the formation, operation, merger and liquidation of social cooperatives are outlined in the act, as is the main purpose of social cooperatives, which is to support people at risk of social exclusion in their return to the labour market, and the occupational activation of the unemployed. According to Art. 2, par. 2 of the act, a social cooperative operates for the benefit of:

- social reintegration of its members, involving activities aimed at restoring and maintaining the ability to participate in the life of the local community and to perform social roles in the place of work, residence or stay;
- professional reintegration of its members, involving activities aimed at regaining and maintaining one’s capability to work independently on the labour market.

At the same time, the act states that the above-mentioned tasks cannot be performed as part of the economic activity of social cooperatives, and that the generated

profit is to be allocated to: the resource fund (no less than 40%), purposes related to social and professional reintegration of its members, to the educational and cultural activity of the cooperative (no less than 40%), and to other activities the cooperatives engage in. In the case of the remaining cooperatives, the profit may be divided among its members.

Mainly two institutions provide a statistical description of the activity of social cooperatives: Statistics Poland and the Polish General Revisory Union for Social Cooperatives (Pol. Ogólnopolski Związek Rewizyjny Spółdzielni Socjalnych – OZRSS). According to the results of a study commissioned by OZRSS,

1,269 social cooperatives were listed in the REGON (Business Statistical Number) register at the end of 2014, i.e. nearly 20 times as many as at the end of 2006. This means that in the analysed period, the average annual growth rate of the number of social cooperatives reached 45% (Izdebski et al., 2015, p. 16).

It should, however, be noted that the REGON data do not always accurately describe a phenomenon or research area due to delays in updating its data, e.g. it shows already inactive cooperatives which have not been de-registered, or it does not show activities undertaken on an ad hoc basis, spontaneously, as one-off, ephemeral undertakings, the latter of which cannot be ruled out in the case of the non-governmental sector.

On the other hand, the study conducted by Statistics Poland says that

the REGON register as of 31st December 2017 reported 1,600 social cooperatives registered in Poland, while a year earlier, on 31st December 2016, it was 1,400. From 2006, the number of registered entities was on the rise – the last three years (2013–2016) saw an increase by a fifth (GUS, 2018, p. 1).

The quoted report also indicates, on the other hand, that only 900 out of 1,400 were actively operating cooperatives. Bearing in mind that the REGON data collecting system is imperfect, it nevertheless seems reasonable to analyse the process of establishing new cooperatives. It is because new cooperatives are those which get registered, so it may be presumed that there are organised and determined communities behind them. According to data from Statistics Poland, 2014 was a special year in terms of the registration of social cooperatives, since about 400 new ones were formed, while in 2015–2016 this number went down to approximately 100 entities, and went up again in 2017, to nearly 200. At the same time, the analysis of the territorial distribution of social cooperatives indicates that 15% of the active entities of this type operated in Wielkopolskie voivodship, making it the leader in this field, followed by Śląskie (11%), Mazowieckie (9%), Podkarpackie (8%), Warmińsko-Mazurskie (7%), and Łódzkie, Małopolskie and Dolnośląskie (6% each). The lowest

number of active cooperatives was registered in Świętokrzyskie and Opolskie voivodships (3% each) (GUS, 2018, p. 2).

According to the REGON registry data, the area of activity of social cooperatives was highly diverse and comprised 19 out of 21 sections of the Polish Classification of Business Activities (Pol. Polska Klasyfikacja Działalności – PKD), with the services sector largely dominating. According to the register data:

- nearly 1/5 of social cooperatives conducted activity in the catering business and the accommodation sector (19%);
- a large part of cooperatives registered activities in the field of administrative and support services (18%);
- industrial processing was performed by 13% of cooperatives;
- healthcare and social assistance services were offered by 12% of cooperatives.

Activity in the remaining sections of PKD, including construction, wholesale and retail trade, education, professional, scientific and technical activities, cultural and entertainment activities, information and communication, agriculture, forestry, hunting and fishing, and transport and storage was conducted by no more than 10% of social cooperatives (GUS, 2018, p. 3). It nevertheless proves that cooperatives are widely specialised and present in a variety of sectors of the economy.

Presenting the postulate advocated by e.g. Muhammad Yunus that entities of the social economy should be financially independent and conduct their activities so as not to become dependent on subsidies or other external sources of funding, it should be emphasised that Polish social cooperatives are at an early stage of functioning and not all of them have succeeded financially. Statistics Poland reports that

nearly 4 out of 10 (39%) social cooperatives achieved a balanced financial result as of the end of 2016, i.e. their recorded revenues covered their incurred costs. However, a similar percentage of entities (37%) declared that the generated revenues were lower than the costs of their activity. Finally, a positive financial result, where the revenues exceeded the costs, was achieved by 24% of social cooperatives (GUS, 2018, p. 5).

Business-running organisations and cooperatives will become the main agents of development induced by social innovation, understood as bottom-up solutions introduced to satisfy the needs and improve the quality of life of local communities.

Nowadays it is the non-governmental organisations and social cooperatives that increasingly often assume the role of the providers of basic services to local communities, particularly services aimed at satisfying ‘higher’ needs such as culture and art, protection of national heritage, free time activities and recreation, as well as integration, participation and sense of community.

Third sector organisations are also becoming increasingly effective in providing work for the unemployed, and in reintegrating the excluded, e.g. by establishing social enterprises.

Third sector organisations have become an essential part of the social economy sector. It is their activity, fulfilling the defining criteria of the social economy, that is the essence of the contemporary developmental processes at the local community level. Social economy serves the following purposes: professional and social integration of people threatened with social marginalisation, creation of jobs, provision of social services for the public benefit, and local development.

A solution which reinforced the role and importance of self-organising local communities within the third sector was the introduction of reforms in the functioning and financing of non-governmental organisations. These changes also resulted from the reform of the administrative system which introduced a three-tier division of the local government. In consequence, numerous tasks were assigned to *gmina*, i.e. the elementary unit of the local government. *Gminas* were provided with financial resources and granted the right to commission assignments to other entities, including non-governmental organisations.

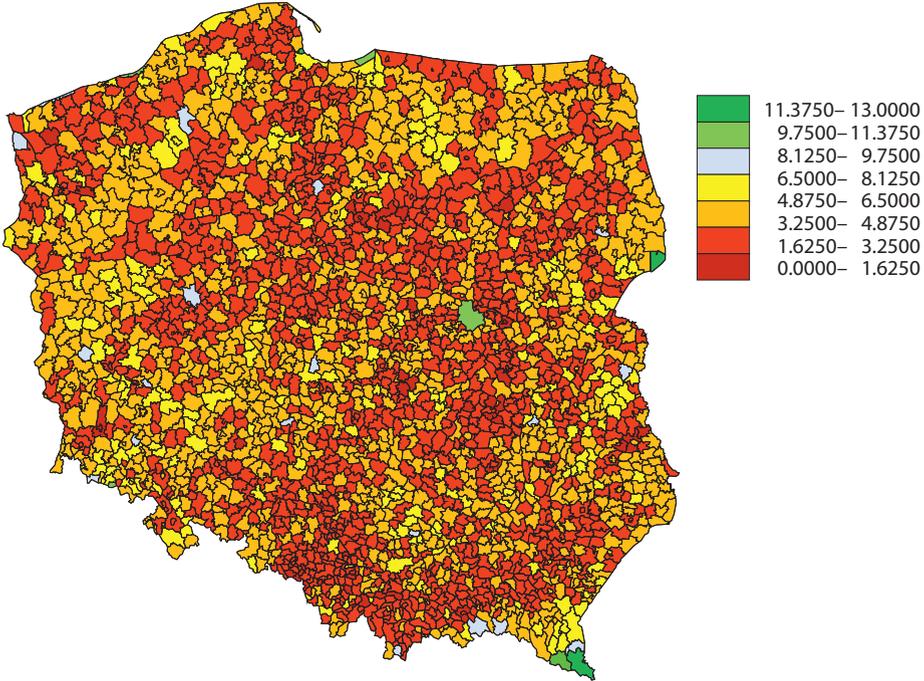
An equally important step was establishing a support system for the social economy and providing its entities with a permanent source of external financing in the form of grants or preferential loans.

3. Research and results

The author used data obtained from Statistics Poland to describe the geographical variation of third sector organisations, and more specifically:

- indicator: foundations, associations and social organisations per 1,000 inhabitants;
- an original index of social activity/innovation taking into account 12 indicators:
 1. Gross enrolment ratio;
 2. Population change per 1,000 inhabitants;
 3. Internal migration balance;
 4. Public libraries readership per 1,000 inhabitants;
 5. Events per 1,000 inhabitants;
 6. Artistic groups per 1,000 inhabitants;
 7. Individuals conducting business activity by 2007 PKD sections per 1,000 inhabitants according to sections J, K, L, M, P, Q, R, S, T, U;
 8. Entities in the private sector by legal form; cooperatives per 1,000 inhabitants;
 9. Share of newly registered entities of the creative sector in the total number of newly registered entities;
 10. Foundations, associations and social organisations per 1,000 inhabitants;
 11. Income *per capita* own income;
 12. Children in pre-school education establishments per 1,000 children aged 3–5.

Map 1. Foundations, associations and social organisations per 1,000 inhabitants in 2017



Source: author's work based on the OpenStreetMap and Contevo software.

The analysis of the 'Foundations, associations and social organisation per 1,000 inhabitants' indicator yields a relatively even distribution of non-governmental organisations in Poland. Map 1 above presents a general picture of the distribution.

The indicator assumes values from 1.05 to 12.58. A particularly large number of third sector organisations per 1,000 inhabitants can be observed in tourism-oriented gminas with a positive migration balance. What is especially significant is the fact that the top 20 gminas with the highest values of the indicator comprise both urban and rural gminas (Table 2), with no clear dominance of any of the aforementioned types. However, rural gminas dominate among gminas with a low value of the indicator.

Table 2. Gminas with the highest values of the 'Foundations, associations and social organisations per 1,000 inhabitants' indicator – top 20 positions

Code	Gminas	Foundations, associations and social organisations per 1,000 inhabitants
1821022	Cisna (2)	12.58
2264011	Sopot (1)	10.68
1801052	Lutowiska (2)	10.59
2005022	Białowieża (2)	10.21
1405021	Podkowa Leśna (1)	9.29
2210011	Krynica Morska (1)	9.22
0206011	Karpacz (1)	8.92
3209053	Mielno (3)	8.69
1465011	M.st.Warszawa since 2002 (1)	8.28
0206041	Szklarska Poręba (1)	7.78
3207013	Dziwnów (3)	7.74
0601152	Sosnówka (2)	7.74
2208021	Łeba (1)	7.58
0614043	Kazimierz Dolny (3)	7.53
0209032	Krotoszyce (2)	7.53
1801032	Czarna (2)	7.44
1805062	Krempna (2)	7.42
3215033	Biały Bór (3)	7.35
1205102	Uście Gorlickie (2)	7.31
3211033	Nowe Warpno (3)	7.30

Note. The type of gmina is described in brackets: 1 – urban, 2 – rural, 3 – urban-rural.

Source: Local Data Bank of Statistics Poland.

Table 3. Gimnas with the lowest values of the 'Foundations, associations and social organisations per 1,000 inhabitants' indicator – last 20 positions

Code	Gminas	Foundations, associations and social organisations per 1,000 inhabitants
1402033	Głinojeck (3)	1.38
0603032	Chełm (2)	1.37
2415011	Pszów (1)	1.35
1215032	Budzów (2)	1.34
0412042	Rypin (2)	1.33
2205042	Sierakowice (2)	1.33
0603092	Ruda-Huta (2)	1.32
2415052	Godów (2)	1.32
1016062	Lubochnia (2)	1.26
2408011	Łaziska Górne (1)	1.25
1428042	Młodzieszyn (2)	1.25
1437022	Kuczbork-Osada (2)	1.24
1425132	Zakrzew (2)	1.24
0202041	Piława Górna (1)	1.23
2403052	Chybie (2)	1.23
1016112	Żelechlinek (2)	1.20
1416092	Szulborze Wielkie (2)	1.19
1425022	Gózd (2)	1.14
1213052	Osiek (2)	1.09
2415092	Mszana (2)	1.05

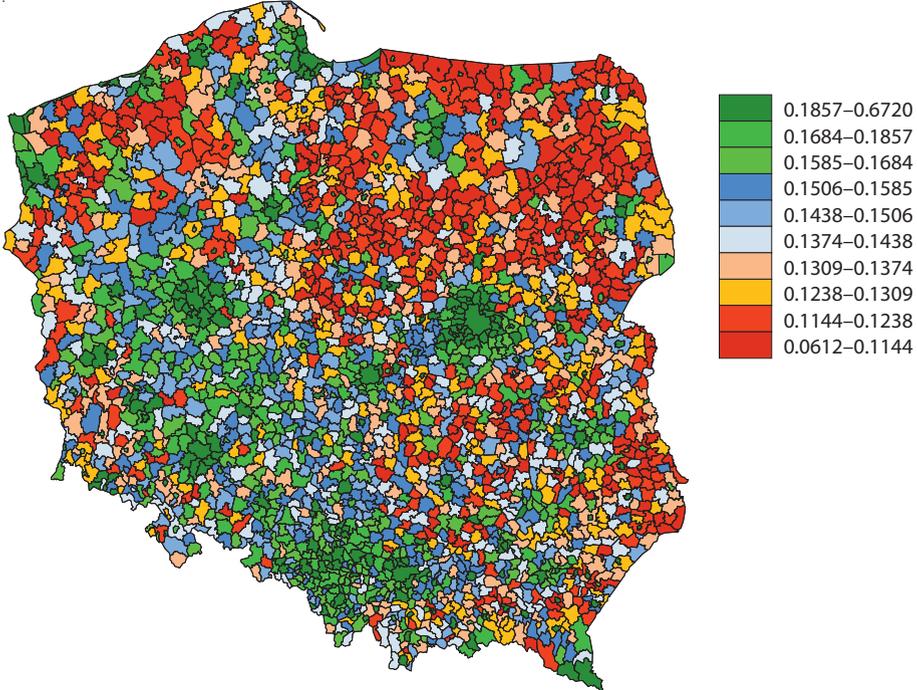
Notes. As in Table 2.

Source: Local Data Bank of Statistics Poland.

Table 3 lists 20 gminas with the lowest level of the indicator. These are mostly rural gminas, probably of a low potential in the area of human and social capital.

For the purposes of this study, an original synthetic measure was constructed, consisting of indicators selected arbitrarily, relating to areas where the members of the local community engage in pro-social activities. The analysis reveals an interesting geographical distribution of social activity.

Map 2. Author's index of social activity



Source: author's work based on OpenStreetMap and Contevo software.

The use of a composite index consisting of 12 socio-economic activity indicators gives a different picture of the country's division than the one commonly held by regionalists, sociologists and historians. Instead of a vertical division into eastern and western Poland, a horizontal division can be observed – into northern and southern Poland. In light of the analysis performed with the application of a selected group of indicators, gminas with numerous post state-owned farms located in the central part of Pomerania (Łobeski, Świdwiński, Szczecinecki, Bytowski powiats) and the majority of gminas in Warmińsko-Mazurskie voivodship, apart from the gminas on the Elbląg – Olsztyn belt, and gminas situated in the vicinity of the Great Mazurian Lakes Trail, display a distinctively low level of resources related to human resources, to the ethos of cooperation within network connections, and to the organisational culture fostering the development of civic or cooperative initiatives.

On the other hand, the high score achieved by gminas from the Wielkopolskie, Dolnośląskie, Śląskie and Małopolskie voivodships confirms the traditional in this part of the country arrangement of social and economic relations according to the principles of self-government and subsidiarity – with priority given to grassroots initiatives over public intervention managed from the central level. A high level of social capital is also observed in Warsaw and its adjacent gminas, owing to the economic, social and cultural functions performed by the capital.

A surprisingly high result achieved by the Bieszczady gminas (Leski and Bieszczadzki powiats) results from the settlement of new residents in recent years, growing tourist traffic and the co-occurrence of the accompanying economic functions.

4. Conclusions

Non-governmental organisations perform primarily functions related to satisfying the needs, interests and aspirations of the associated individuals and the needs of a community. Endogenously triggered activity is seen as an effective and efficient tool for reducing social inequalities. Systemic reforms introduced in the recent years strengthened the institutional potential of third sector organisations in performing their tasks. On the other hand, free access to information and good practice databases as well as migration of people makes it possible for the idea of associations and social activity to spread. Both of these dimensions strengthen the importance of non-governmental organisations within the democratic system. However, social and economic development is a long-term process and the assessment of the role of social organisations in its course should be made taking into account the broadest possible context and the appropriate time range. On the other hand the appreciation of the role of local communities, including their innovativeness and entrepreneurship, is an important element of modern social and development policy. Undoubtedly, at the present stage of the development of the societies of Western civilisation, the activity of non-governmental organisations will shape the image of the functioning of local communities and will determine the quality of life of members of local communities.

References

- Główny Urząd Statystyczny. (2017a). *Podstawowe dane o sektorze non-profit w 2014 roku*. Warszawa. <https://stat.gov.pl/obszary-tematyczne/gospodarka-spoleczna-wolontariat/gospodarka-spoleczna-trzeci-sektor/podstawowe-dane-o-sektorze-non-profit-w-2014-roku,2,5.html>.
- Główny Urząd Statystyczny. (2017b). *Działalność stowarzyszeń i podobnych organizacji społecznych, fundacji, społecznych podmiotów wyznaniowych oraz samorządu gospodarczego i zawodowego w 2016 r. – wyniki wstępne*. Warszawa. <https://stat.gov.pl/obszary-tematyczne>

/gospodarka-spoeczna-wolontariat/gospodarka-spoeczna-trzeci-sektor/dzialalnosc-stowarzyszen-i-podobnych-organizacji-spoecznych-fundacji-spoecznych-podmiotow-wyznaniowych-oraz-samorzadu-gospodarczego-i-zawodowego-w-2016-r-wyniki-wstepne,3,7.html.

Główny Urząd Statystyczny. (2018). *Spółdzielnie socjalne w 2016 r.* Warszawa. <https://stat.gov.pl/obszary-tematyczne/gospodarka-spoeczna-wolontariat/gospodarka-spoeczna-trzeci-sektor/spoldzielnie-socjalne-w-2016-r-,15,1.html>.

Izdębski, A., Mering, T., Ołdak, M., & Szarfenberg, R. (2015). *Monitoring spółdzielni socjalnych 2014. Raport z badań.* Warszawa: Instytut Polityki Społecznej Uniwersytetu Warszawskiego.

Krajowa Rada Spółdzielcza. (n.d.). Retrieved March 28, 2018, from <https://www.krs.org.pl/index.php/ruch-spodzielczy-sp-1235027511/brane-spodzielcze>.

Krajowy Program Rozwoju Ekonomii Społecznej do 2023 roku. Ekonomia Solidarności Społecznej. (2019). Załącznik do uchwały nr 11 Rady Ministrów z dnia 11 stycznia 2019 r. (MP 2019 poz. 214).

Leśniak-Moczuk, K. (2008). Lokalizm w perspektywie globalizacji. *Nierówności Społeczne a Wzrost Gospodarczy*, (8), 129–136.

Piechowski, A. (2008). Gospodarka społeczna i przedsiębiorstwo społeczne w Polsce. Tradycje i przykłady. In E. Leś (Ed.), *Gospodarka społeczna i przedsiębiorstwo społeczne. Wprowadzenie do problematyki* (pp. 13–36). Warszawa: Wydawnictwa Uniwersytetu Warszawskiego. https://www.ekonomiaspoeczna.gov.pl/download/files/pozytek/Polecamy/gospodarka_spoeczna.pdf.

Ustawa z dnia 22 kwietnia 2006 r. o spółdzielniach socjalnych (Dz.U. 2006 nr 94 poz. 651).

Ustawa z dnia 16 września 1982 r. – Prawo spółdzielcze (Dz.U. 1982 nr 30 poz. 210).

Information about the series

Statistical Research Papers is a series of scientific monographs published by Statistics Poland, presenting works from the field of statistics and related sciences which have significantly contributed to the development of the world's science, written in English.

Statistics Poland is a publisher ranked on the list of publishers issuing peer-reviewed scientific monographs, compiled by the Minister of Science and Higher Education of the Republic of Poland.

More information is available at Statistics Poland Research Portal:

research.stat.gov.pl

The portal also presents information on scientific journals published by Statistics Poland, as well as information about selected upcoming international events which will be attended by the representatives of the Polish official statistics.