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LOOKING FOR FURTHER DETERMINANTS OF REGIONAL DEVELOPMENT

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Abstract. Contemporary scientists try to determine new or so far not appreciated factors contributing to regional development in order to explain social and economic processes influencing regional disparities. A wide set of potential determinants is considered. One of them is creativity, examined on the level of individuals. There exist quite many supporters of the idea that creativity contributes generally to development, as well as to regional development. A relationship between theses phenomena can be proved statistically, as it was performed in the study with use of Spearman's correlation coefficient. Nevertheless it needs taking into account that creativity concerns wide range of activities, for example artists usually not associated as contributors of economic or regional development.
However, there still remains some area to speculations: to what extent development in some areas attracts creative people to them (so opposite relation to the fact that creative people are determinants of development)? Maybe from some critical point, a development level is a determinant of high density of creative people in some areas? An answer seems not to be easy and requires further research.

Key words: creativity, development determinant, culture, regional development

INTRODUCTION

Science, including economics, sociology, geography even history, etc., has proposed many proposals of factors which in the theory contribute to development, including also regional development. Theories of comparative advantage, industrialization cycles, cultural, religious, geographic explanations, Marxism, dependency, and world-systems theories have all been offered [Guy 1999]. Some of them come from ideologies, other from close studies of past experiences of nations or regions or from current studies on development.

For example David S. Landes in his book *The Wealth and Poverty of Nations* argues forcefully for geographic and cultural determinism as major factors in economic history.

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Taking into account, for the example, the demographics of infant mortality, epidemic diseases and the ownership and control of water resources he drew the conclusion that people who live in tropics simply cannot work as hard or efficiently as those in more temperate climates. It also places temperate Europe and North America in an advantageous position further benefited by the presence of appropriate natural resources [Guy 1999]. Further, Landes confessed that cultural factors are difficult to be accepted by economists as they lie outside the purview of the discipline. On the other hand they are often cited by historians or sociologists as explanations for exceptional economic performance in earlier periods [in this place he referred to Max Weber and *The Protestant Ethic*] or for Japanese achievements today [Landes 1990]. In the group of Polish researches, cultural issues as factors determining competitiveness of a region were indicated for example by Spychalski [Spychalski 2011], who placed a culture model at the top of a proposed pyramid of competitiveness of a region.

MATERIAL AND METHOD

As it can be seen on the example of the theory of Landes that there can exist really different approaches to determinants of regional development. The aim of the paper is a closer study on a concept of creativity (especially of individuals) as a key factor contributing to regional growth acknowledged by many scientists. The paper has been performed within studies in the project entitled Economic and social determinants of rural areas development of the Mazovia region in the suburban and external zone of Warsaw, No N N114 145240.

It was performed on the base of the literature review as well as statistic data from the Eurostat, including data a on human resources in science and technology (HRST)[1] and on regional gross domestic product (PPS per inhabitant) by NUTS 2 regions. There were also used Eurostat's data on number of persons employed in selected cultural occupations (writers and creative artists) as a share of total employment (%) and an indicator exports/imports of high-tech products as a percentage of total calculated as share of exports/imports of high-technology products from a country in total exports/imports from this country at the level of NUTS 1 (countries).

There was used Spearman's correlation coefficient calculated in SPSS (Statistical Package for the Social Sciences) in order to examine if there exists correlation between selected indicators. The indictor describing human resources in science and technology was also presented on the map by NUTS 2 regions in order to visualize differences between European regions.

[1]According to the methodology of the Eurostat, the second indicator represents human resources in science and technology as a share of the economically active population in the age group 15–74 and gives the percentage of the total labour force in the age group 15–74, that is classified as HRST, i.e. having either successfully completed an education at the third level or is employed in an occupation where such an education is normally required.

CREATIVITY AS A DETERMINANT OF DEVELOPMENT

Schumpeter, an author of the classical growth theory, describes in *Development* the general phenomenon of development as a discontinuity that appears because of the emergence of novel phenomena. Schumpeter further identifies the explanation of novelty as the greatest unmet scientific challenge. In this article he for the first and only time connects to his early ideas on economic development. The significance of Schumpeter's early conceptualization of economic development within the broad context of the economy as a whole is to exclude exogenous shocks as explanation for economic development. Novelty must therefore be explained by some factor endogenous to the economic system – Schumpeter attributed endogenous change to the creative acts associated with entrepreneurial activity [Becker et al 2005].

Robert Lucas took a role of creative individuals in economic growth into considerations. He premised that all knowledge resides in the head of some individual person, so that the knowledge of a firm, or economy, or any group of people is simply a list of the knowledge of its members. A main feature of the model will be the social or reciprocal character of intellectual activity: each person gains from the knowledge of the people around him; his ideas in turn stimulate others [Lucas 2009]. This approach can be as well applied to examination of regional differences/disparities in development.

According to Richard Florida, the most fundamental level building block of the creative economy is creative individuals. In *The Rise of the Creative Class* he illustrated that every single human being has creative potential, and discussed the economic value of such creative individuals for innovation in industry [Stolarick et al 2010]. From the regional perspective it is important that competition for talent occurs not only between nations but also between cities and regions, just as competition in many industries occurs at the business-unit, rather than the company, level [Florida 2004]. This direction of thinking about regional development was continued in some next works of a group of researchers, including Florida. Using regression analysis, they found a positive relationship between the density of creative workers and metropolitan patenting activity, suggesting that density is a key component of knowledge spillovers and a key component of innovation [Knudsen et al 2008].

Creativity of individuals as a factor connected with regional development was arisen also by Polish researchers. For example Dziemianowicz, Juchniewicz, Samulowski, Szmigiel [Dziemianowicz et al 2006] indicated creativity of inhabitants of particular region as an area of necessary support from regional authorities in order to enhance competitiveness and innovativeness of enterprises in a region. They indicated that individual's attitudes towards work and economic activity, entrepreneurship and creativity form a social and cultural sphere of a region; a sphere which influences openness to new challenges connected with globalisation and the age of knowledge-based economy. An analysis of other Polish region (Western Pomeranian) led to a conclusion that creativity of inhabitants (also firms and institutions) is an important factor influencing innovativeness of economic entities on rural areas there. In the context of this region, a low level of creativity and entrepreneurship was found as a social barrier of innovativeness which partly contributed to socio-economic marginalization of these areas and the whole region [Łącka 2008].

RELATIONSHIP BETWEEN CREATIVITY AND REGIONAL DEVELOPMENT

Figure 1 presents regional differences in Europe from the perspective of human resources in science and technology. It can be to some extent an illustration of potential of creativity on the regional level in Europe. It can be seen that the highest proportions of labour force involved in creative work are represented by regions in countries traditionally perceived as highly developed.

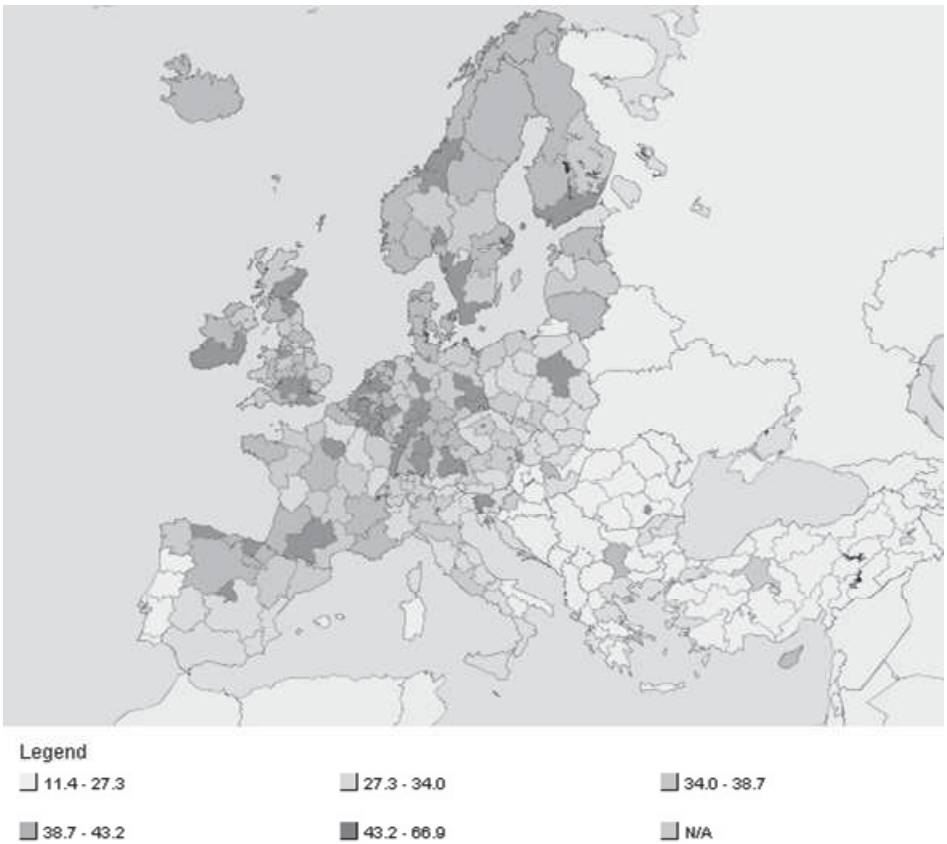

Fig. 1. Human resources in science and technology (HRST) in 2010 by NUTS 2 regions
Rys. 1. Zasoby ludzkie zaangażowane w naukę i technologię w 2010 roku wg regionów (NTS 2)
Source: Eurostat
Źródło: Eurostat

Spearman's correlation coefficient between the indicator describing a level of creative human capital and regional gross domestic product (expressed in PPS per inhabitant) was calculated in order to verify this relation (Table 1). Data characterized the year 2008 because of the latest accessible data in the case of GDP. There was used one-tailed test because of the prediction that these indicators are correlated [Field 2009].

Table 1. Spearman's rho for relationship between human resources in science and technology and regional gross domestic product (PPS per inhabitant)
Tabela 1. Współczynnik korelacji Spearmana dla relacji pomiędzy zasobami ludzkimi zaangażowanymi w naukę i technologię a regionalnym produktem krajowym brutto (w PPS na mieszkańca)

		Human resources in science and technology (HRST)	Regional gross domestic product (PPS per inhabitant)
Human resources in science and technology (HRST)	Correlation coefficient	1.000	.756**
	Sig. (1-tailed)	.	.000
	N	312	297
Regional gross domestic product (PPS per inhabitant)	Correlation coefficient	.756**	1.000
	Sig. (1-tailed)	.000	.
	N	297	297

** correlation is significant at the level 0.01 (1-tailed)
Source: own calculation using SPSS on the base of Eurostat data
Źródło: obliczenia własne z wykorzystaniem pakietu SPSS na podstawie danych Eurostatu

Spearman's rho is an index ranges from 0 (no association) to ±1.00 (perfect association) [Healey 2011]. A Spearman's rho of 0.756 indicates a strong, positive relationship between these two variables.

The author's above conclusion is confirmed by the results of works within the ESPON (European Observation Network, Territorial Development and Cohesion). One of the latest ESPON reports concludes that creative people matter. Regions with high concentrations of creative and cultural industries have Europe's highest prosperity levels. Evidence suggests that jobs and growth follow these creative people as much as creative people follow jobs and growth, and attractive places. As such, creative people are important assets for economic and territorial development. They can support innovation, and their presence can counterbalance migratory flows of the active population to more economic successful regions in Europe. There were formulated 11 messages of the key role for policy development. The most important from the perspective of this study are [ESPON 2011]:

- Economically successful regions tend to have high levels of creative workers among their active population. There is a strong association between GDP per capita and levels of creative occupations. Regions in the most favourable situation are mainly located in Sweden, Finland, Iceland and Central Europe.
- Regional hotspots/concentrations of the creative workforce are mainly the capital and metropolitan regions located in Central and Northern Europe. Capital city regions tend to have a higher share of creative workers than other regions within the same country.
- The creative workforce is a powerful driver in some cities in Europe of inclusive and sustainable growth but public policies encouraging the development of the sector seem an important element at this scale. Within urban agglomerations, the creative workforce appears to concentrate in areas that are attractive in terms of accessibility and urban amenities.

- The fact that some less economically strong regions are experiencing simultaneous growth in GDP and employment in the creative workforce, indicates that creative occupations can contribute to better territorial balance and cohesion. Tailor-made strategies at regional and local level should therefore address the creative workforce as an asset and a development opportunity.

CULTURAL SENSE OF CREATIVITY

The above analysis focused on creativity which can be in the most easily way interpreted from the economic point of view; so creativity of employees or entrepreneurs directly contributes to growth measurable with traditional economic indicators. However, Florida as well as other researches working on his theory indicate that the creative class comprises not only professionals such as doctors, lawyers, scientists, engineers, university professors, but also bohemians made up of artists, musicians, and sculptors; they produce ideas, information, and technology and it is these outputs that are increasingly important for the growth of cities and regions [Batabyal, Nijkamp 2008]. In one of his works, Florida thoroughly examined relationships between this bohemian group, human capital and high-technology. He assumes that the presence and concentration of bohemians in an area signals an environment or milieux that attracts other types of talented or high human capital individuals; as a consequence, the presence of such human capital concentrations in a region attracts and generates innovative technology-based industries [Florida 2002]. This publication includes even a proposal of the bohemian index calculated as the percentage of bohemians in a region compared to the national population of bohemians divided by the percent of population in a region compared to the total national population. Operating this approach he classified following groups as the bohemian: authors, designers, musicians and composers, actors and directors, craft-artists, painters, sculptures, artist printmakers, photographers, dancers, artists, performers, and related workers. An included analysis performed for the regions of the United States with use of a correlation matrix proved quite strong relationship between the bohemia index and high technology industry (0.65 at the 0.01 significance level)[2].

It is difficult to verify this relationship for European regions because of lack of appropriate data on the regional level. An attempt of it was performed basing on such indicators as the number of persons employed in selected cultural occupations (writers and creative artists) as a share of total employment (%) and the indicator exports/imports of high-tech products as a percentage of total (calculated as share of exports/imports of high-technology products from a country in total exports/imports from this country). Moreover, this analysis was possible to conduct only on a level of a country because of data accessibility.

[2]The measure of high-tech industry concentration is based on Milken Institute's *tech-pole index*. The tech-pole index is a composite measure based on the percent of national high-tech real output multiplied by the high-tech real output location quotient for each largest metropolitan regions (MSA) [Florida 2002].

Table 2. Spearman's rho for relationship between the proportion of employed as writers and creative artists and the indicator exports/imports of high-tech products
Tabela 2. Współczynnik korelacji Spearmana dla relacji pomiędzy odsetkiem pracujących pisarzy i artystów oraz wskaźnikiem eksportu produktów wysokiej technologii

		Proportion of employed as writers and creative (2009)	Indicator exports/imports of high-tech products (2006*)
Proportion of employed as writers and creative (2009)	Correlation coefficient	1.000	.406**
	Sig. (1-tailed)	.	.014
	N	29	29
Indicator exports/imports of high-tech products (2006*)	Correlation coefficient	.406**	1.000
	Sig. (1-tailed)	.014	.
	N	29	30

* the most recent accessible data
** correlation is significant at the level 0.05 (1-tailed)
Source: own calculation using SPSS on the base of Eurostat data
Źródło: obliczenia własne z wykorzystaniem pakietu SPSS na podstawie danych Eurostatu

The calculated value of Spearman's rho (Table 2) indicates medium relationship between the proportion of employed as writers and creative artists and the indicator exports/imports of high-tech products, although confirms that it is statistically significant. However taking into account, that density of creative class is much diversified within countries, this result (calculated on the level of countries) should be treated as an introduction to further research in this area. It displays that this relationship is important and requires development on the regional level.

CONCLUSIONS

Dynamically changing social and economic environment induces to looking for new determinants of development. The term "new" can mean completely new ones or those which have been not appreciated so far. Creativity seems to be quite popular and significant factor of contemporary research. However, it needs stressing that it ought to be perceived widely, not only from conventional point of view close to human capital theory; so for instance, some strictly artistic professions should be taken into account – professions which are not usually associated with economic development.

Nevertheless, in view of presented theoretical and empirical contributions a question arises: to what extent creative workforce is a determinant of development (or growth) and from which point development or growth start attracting innovative individuals (so

the opposite relation occurs)? Maybe from some critical point, a development level is a determinant of high density of creative people in some areas? An answer seems not to be easy and requires further research.

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W POSZUKIWANIU KOLEJNYCH CZYNNIKÓW ROZWOJU REGIONALNEGO

Streszczenie. Współcześnie zarówno teoretycy, jak i praktycy rozwoju regionalnego poszukują nowych lub dotychczas niedocenianych czynników w celu wyjaśnienia społeczno-ekonomicznych procesów wpływających na formowanie regionalnych nierówności. Rozważane jest szerokie spektrum czynników, wśród nich kreatywność rozpatrywana na poziomie pojedynczych jednostek. W celu zbadania zależności pomiędzy kreatywnością a poziomem rozwoju regionalnego wykorzystano współczynnik korelacji Spearmana, który potwierdził ich silny związek. W rozpatrywaniu kreatywności należy jednak wziąć pod uwagę znaczenie takich grup zawodowych jak artyści, zwykle niekojarzeni z oddziaływaniem na rozwój ekonomiczny czy regionalny.

Wydaje się jednak, że nadal pozostaje pewne pole do rozważań: na ile rozwój pewnych obszarów przyciąga do nich kreatywnych mieszkańców (a więc zachodzi odwrotna zależność do faktu, że kreatywność mieszkańców wpływa na poziom rozwoju)? Może od pewnego krytycznego momentu to poziom rozwoju jest czynnikiem determinującym wysoką gęstość kreatywnych mieszkańców na jednostkę powierzchni? Odpowiedź nie wydaje się łatwa i wymaga dalszych badań w tym zakresie.

Słowa kluczowe: kreatywność, czynnik rozwoju, kultura, rozwój regionalny

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