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## **HUMAN CAPITAL VS. CREATIVE CAPITAL – A ROLE FOR REGIONAL DEVELOPMENT**

### *KAPITAŁ LUDZKI VS. KAPITAŁ KREATYWNY – ZNACZENIE DLA ROZWOJU REGIONÓW*

**Key words: human capital, creative capital, regional development**

*Słowa kluczowe: kapitał ludzki, kapitał kreatywny, rozwój regionalny*

**Abstract.** Scientists of different disciplines have been still looking for factors which contribute to regional development and which can explain differences in development levels between various areas. One of them, traditionally perceived as a determinant of local and regional development, is human capital. However, some of contemporary researchers focus their attention on creative capital as one of the crucial factors of development. The aim of the paper is to examine if there exists a relationship between creative capital and regional growth in Poland. A statistical analysis with use of Spearman's correlation coefficient proved that there was a significant correlation between creative capital and GDP *per capita* in the Polish regions in the period 2005-2009.

### **Introduction**

Human capital is traditionally perceived as a factor of growth or widely social and economic development; although taking into account development – it is much more complicated to measure and prove it through objective data. Nowadays, some scientists as well as policy makers stress importance of creative capital for development, as it took place for instance during the conference entitled Integrated approach to development – a key to smart, sustainable and inclusive Europe, held in Poznan on 24 November 2011. During this event, representatives of a political sphere of regional development<sup>1</sup> discussed the role of the Creative Class with the author of this term – Richard Florida. However, in order to maintain a logical order – a starting point of considerations on a role of human and creative capital for regional development should include basic definitions of concepts used for these deliberations.

### **Materials and methods**

The aim of the paper is to examine if there exists a relationship between creative capital and regional growth in the Polish regions. 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.

The study was performed on the base of the literature review as well as statistic data from the Local Data Bank of the Central Statistical Office of Poland, including data on:

- average paid employment by economical sectors and PKD 2007 (data presented in accordance with the Polish Classification of Activities – PKD 2007, compiled on the basis of Statistical Classification of Economic Activities in the European Community – NACE Rev. 2) – data accessible from 2005 to 2010<sup>2</sup>;
- regional gross domestic product (GDP) *per capita* (current prices) – data accessible from 1995 to 2009.

Accessibility of statistical data conditioned the researched period: from 2005 to 2009. There was used Spearman's correlation coefficient calculated in IBM SPSS Statistics 20 in order to examine if there exists correlation between selected indicators in the analyzed period. The proportion of employed in creative jobs (sections J, M, and R according to NACE Rev. 2) was also presented on the map by NUTS 2 regions in order to visualize differences between regions in Poland.

<sup>1</sup> For example the Polish Minister of Regional Development, European Commissioner responsible for Regional Policy, President of the Committee of the Regions, Chairwoman of the Regional Development Committee of the European Parliament, etc.

<sup>2</sup> Data for previous years are accessible according to NACE 2004; however it is not possible to distinguish employment in creative jobs on a level of sections in this classification.

## Human capital vs. creative capital

Human capital seems to be an older and more traditional approach to a role of human resources for regional development. Education has been widely considered in economics as a factor determining people's economic activity on the labour market [Drejerska 2010]. The first economic theory which especially stressed its role was the human capital theory. The concept of "human capital" was implemented by Theodore W. Schultz [Schultz 1960], who proposed to treat education as an investment in man and to treat its consequences as a form of capital, which increases national income; so we can draw it further that human capital contributes positively to growth of regional gross domestic product (GDP) as well. The detailed assumption of the theory of human capital was next developed by Becker [Becker 1962]. The role of human capital for regional growth and development in Polish conditions was raised by many scientists [Bański, Czapiewski 2009, Domański et al. 2010, Gorzelak 2003, Heffner 2009, Hryniewicz 2000, Klepacki, Kusto 2010].

On the other hand there is a quite new idea of creative capital as a driver of regional development. 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 [Drejerska 2012].

Joseph A. Schumpeter, an author of the classical growth theory, describes 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. 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 also 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. As a result, 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].

According to Richard Florida, creative people are contemporary the key resource contributing to economic growth. He proposed a model of "3 Ts" needed for growth [Florida 2004]:

- technology – measured by innovation and high-tech industry concentration;
- talent – but not "human capital" as usually measured (by number of people holding higher education credentials) but creative capital, which is talent measured functionally, by the number of people actually in creative occupations;
- tolerance – used for open and tolerant places attracting different kinds of people and generating new ideas.

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].

As it can be seen, the proposed model of "3 Ts" can be quite difficult to verification as a whole because lack of data for larger populations or different areas, especially in the case of the last factor – tolerance. However, there can be provided some partial attempt of its verification. For the purpose of this paper, there was selected the second aspect, creative capital, analyzed with use of some statistical indicators.

## Creative capital – a statistical approach

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]. It is quite difficult to directly implement this definition into verification of the Florida's theory in the Polish regions because of different character of available data. However, some sections of NACE rev. 2 (so in the Polish conditions – the Polish Classification of Activities – PKD 2007) can be more or less accepted as those representing creative occupations. As a result there were selected the following sections [NACE 2008]:

- information and communication (Section J), including for example: publishing activities; motion picture, video and television programme production, sound recording and music publishing activities;

- computer programming, consultancy and related activities; information service activities;
- professional, scientific and technical activities (Section M), including for example: scientific research and development, advertising and market research;
- arts, entertainment and recreation (Section R), including for example: creative, arts and entertainment activities, libraries, archives, museums and other cultural activities.

In order to verify if there is any relationship between a proportion of employed in creative occupations (sections J, M, and R) in the Polish regions and regional GDP *per capita* in the period 2005-2009, there was calculated Spearman's correlation coefficient (Tab. 1). There was used one-tailed test because of the prediction that these indicators are correlated [Field 2009].

This coefficient is a non-parametric statistic and was used because the Kolomogorov-Smirnov test and the Shapiro-Wilk test proved that the data violated parametric assumptions such as non-normally distributed data. Spearman's rho is an index ranges from 0 (no association) to  $\pm 1.00$  (perfect association) [Healey 2011]. Results presented in the table 1 (from 0.659 to 0.756) prove positive relationship between these two variables so they confirm that there exists a considerable correlation between the proportion of employed in creative occupations and regional growth expressed by GDP *per capita*.

In order to visualize differences between the Polish regions in the proportion of employed in creative occupations there was a plan to perform a map. However, division of 16 regions into classes was not obvious basing in a standard way on a mean or standard deviation. They had respectively the values: 0.05 and 0.02. That is why the first step was to prepare a histogram, which shows a frequency distribution (Fig. 1).

Plotting values of the proportion of employed in creative occupations on the horizontal axis and the frequency with which each values occurs in the population of the Polish regions on the vertical axis suggested division of regions into 4 groups and this approach is presented on the map (Fig. 2).

**Table 1. Spearman's correlation coefficient for the relation between the proportion of employed in creative occupations in the Polish regions and regional GDP *per capita* in the period 2005-2009**

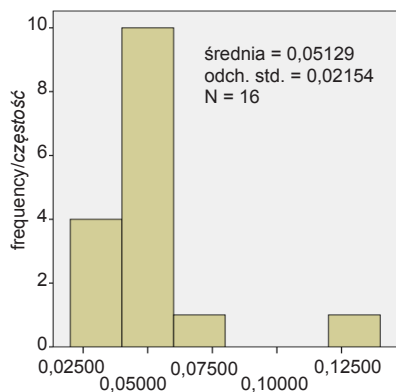
*Tabela 1. Współczynnik korelacji Spearmana dla zmiennych: odsetek zatrudnionych w zawodach kreatywnych i wartości PKB per capita w województwach w latach 2005-2009*

Specification/Wyszczególnienie	2005	2006	2007	2008	2009
Spearman's correlation coefficient/Współczynnik korelacji Spearmana	0.709**	0.659**	0.700**	0.756**	0.729**

\*\*Correlation is significant at the 0.01 level (1-tailed)/korelacja jest istotna statystycznie na poziomie 0,01 (jednostronnie).

Source: own study

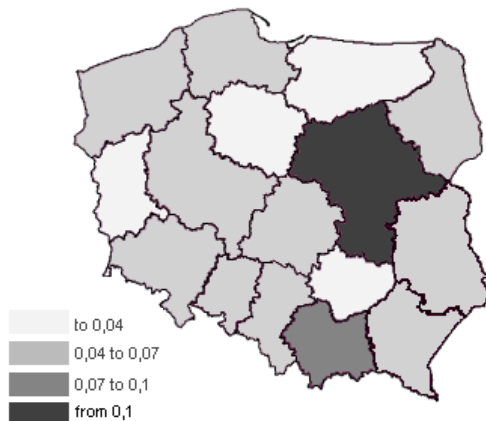
*Źródło: opracowanie własne*



**Figure 1. Histogram of the proportion of employed in creative occupations in Polish regions in 2009**  
*Rysunek 1. Histogram udziału zatrudnionych w zawodach kreatywnych w województwach w 2009*

Source: own study

*Źródło: opracowanie własne*



**Figure 2. Proportion of employed in creative occupations in average paid employment in Polish regions in 2009**  
*Rysunek 2. Udział zatrudnionych w zawodach kreatywnych w przeciętnym zatrudnieniu w województwach w 2009 r.*

Source: own study

*Źródło: opracowanie własne*

The map displays an outstanding position of Mazowieckie with a level of 12.3% of employed in creative occupations and also a good situation in Małopolskie, respectively with 7.3%. The lowest level of employed in creative occupations, less than 4% took place in Lubuskie, Warmińsko-Mazurskie, Kujawsko-Pomorskie, and Świętokrzyskie.

## Conclusions

The performed statistical analysis with use of Spearman's correlation coefficient proved the positive relationship between the proportion of employed in creative occupations and regional growth expressed by GDP *per capita* in the period 2005-2009. However, there should be stressed some important issues in this analysis which influenced a possibility of drawing general conclusions from the study. The first one is connected with the fact that data accessibility did not allowed for studies in a longer period; so potential development of data availability for longer periods should expand this analysis in the future. The second issue concerns data character – grouping of employees according sections of NACE rev. 2 does not fully reflect the Florida's definition of the creative class; so the selected sections (J, M, and R) can be perceived as some approximation of the original approach. The last, but of course not least, thing is the fact that GDP *per capita* is not an ideal measure of regional development – on the other hand it is one of the most popular and easy accessible one.

Taking the above mentioned assumptions into consideration, it can be stated that the displayed relationship of employment in creative occupations and GDP *per capita* can be perceived as a voice into discussion on determinants of regional development. With reasonable degree of economic certainty it can be concluded that the concept of the creative class can be used synergistically to the wide range of issues connected with human capital in economic research on regional development.

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### **Streszczenie**

*Przedstawiciele różnych dyscyplin naukowych ciągle poszukują czynników determinujących rozwój regionalny, które mogłyby wyjaśnić różnice w poziomie rozwoju różnych obszarów. Jednym z takich czynników rozważanych tradycyjnie w wielu koncepcjach teoretycznych oraz badaniach jest kapitał ludzki. Obecnie część badaczy skupia swoją uwagę na kapitale kreatywnym, jako jednym z ważniejszych czynników rozwoju regionalnego. Celem artykułu była próba zbadania relacji pomiędzy poziomem kapitału kreatywnego a poziomem rozwoju województw w Polsce. Analiza statystyczna przeprowadzona przy wykorzystaniu współczynnika korelacji Spearmana udowodniła istotny statystycznie związek pomiędzy poziomem kapitału kreatywnego a poziomem rozwoju wyrażonym wartością PKB per capita w latach 2005-2009.*

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