Educational structure and the structure of economic activities as one of the key factors explaining the differences in development in Slovenia

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Abstract

The differences in development in Slovenia are still significant. In order to minimize them and to ensure sustainable development, it is necessary, for good policy planning, to understand the key factors that cause these differences. Analyses presented in this paper are a part of a larger study of economic and development performance in Slovenia. We tried to extract the key factors, using the method of principal components analysis that reduce the number of indicators to 11 new independent variables, explaining 76.5% of total variability. On the basis of principal components, municipalities were further classified into four groups that reflect different economic and development performance. In this contribution we focused more on two important factors: educational structure of population and the structure of economic activities and the differences between urban and rural municipalities. Analyses show that better educational structure of area residents has influence on better economic power of the population, stimulate entrepreneurship, innovations, investment dynamics etc. For the economic performance of the area the structure of economic activities is important as well. Areas with higher share of active population employed in services performed better as areas where the share of agricultural or industrial employment is higher.

Key words: rural areas, economic and development performance, factors, municipalities, Slovenia.

1 Introduction

Many policies and programs have been prepared in order to reduce the development gap between areas in Slovenia and to ensure sustainable development. Polycentric regional development in the 1970s and some special programmes for rural development in the 1990s (e.g. CRPOV) which followed the trends of rural revival in Western Europe, were performed to moderate effect. These programmes have contributed to the maintenance of the settlements, economic revitalization and heritage conservation in rural areas. Despite numerous development policies, the differences in development within Slovenia are still evident between municipalities and statistical regions, between urban and rural areas and particularly between eastern and western parts of the country (SURS, 2011). In order to minimize these differences and to ensure sustainable development it is important to know and understand the key factors that cause these differences when preparing effective programmes and development policies.

Different studies (OECD, 2006; Terluin, 2001, Bryden et al., 2004; Agarwal et al., 2009; Potočnik Slavič, 2008; Klemenčič et al., 2008 Perpar, 2014) show that some rural areas are more successful and more developed as others. Often research questions are: Why some areas are more successful? Are the differences a result of factors like available natural resources, demographic characteristics, level of infrastructure development, structure of economic activities etc. or even a result of "less-tangible" factors like existing partnerships, development networks, social capital of the community etc.

2 Methods

We started our study by extracting key factors on the basis of 40 selected indicators (economic, demographic, social and environmental). The situations in the Slovenian municipalities were first analysed by each individual indicator and the results for the year 2008 were presented on the maps. Based on different typologies of Slovenian municipalities

(e. g. OECD urban-rural typology for local level used in this paper), we showed the differences between the defined areas' types. Using principal components analysis (PCA) we reduced the number of indicators to 11 new, mutually independent variables. Each principal component includes a group of interrelated indicators that explain certain factors. On the basis of principal components, municipalities were further classified into four groups by Ward's method of classification on Euclidean distance. These groups of municipalities reflect different economic and development performance.

3 Results

The comparison of the situation between urban and rural municipalities in this paper bases on the OECD urban-rural typology for local level. The OECD methodology classifies municipalities with a population density below 150 inhabitants per km² as rural. Based on SORS[1] data on the population of Slovenian municipalities in 2008 and OECD criterion we identified 39 urban (18.6 % of all) and 171 rural (81.4 % of all) municipalities (Figure 1).
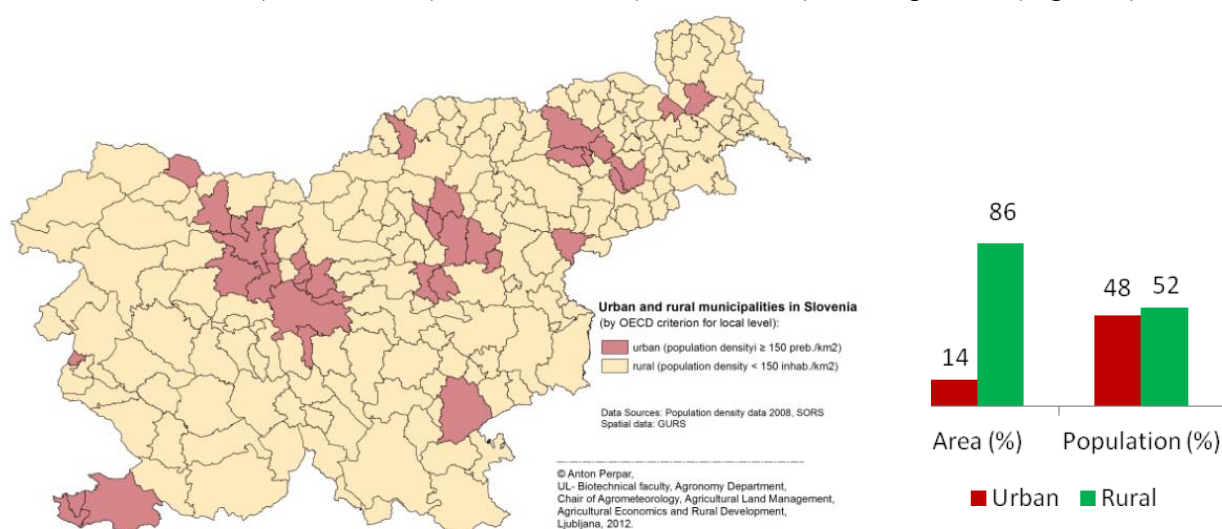

Figure 1. Urban and rural municipalities in Slovenia by OECD criterion.

First we analyzed the situation in the municipalities by individual indicators, incorporating a cartographic presentations. The state of each individual indicators was also compared according to defined area types by OECD urban-rural typology (see box-plot on Figure 2 left).

Differences between urban and rural municipalities (verified by ANOVA) are the most statistically significant in indicators like population density, the share of active population in agricultural activities and the share of active population in services, the share of active population with higher or high education, the number of registered patents and investment dynamics, value added per capita and per employee, gross taxable income, the average monthly gross salary, the number of new start-up companies etc. As expected, rural areas are in the disadvantageous situation by all mentioned indicators but in more favourable situation from the environmental perspective.

The results of principal component analysis (PCA) confirmed the assumption of the large variability in the actual state of Slovenian municipalities. For an explanation of a significant

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[1] Statistical Office of the Republic of Slovenia (www.stat.si).

proportion of the variability, we still need more principal components. With the first five principal components we are able to explain around 57 %, and with eleven 76.5 % of the variability. Indicators with significant weight defining the principal components also indicate the key factors that cause variability between municipalities.

Table 1. Important indicators in principal components (PC) and factors that they are explaining.

PC	Important indicators in PC		Factor explained by indicator
PC 1	Gross taxable income	→	Socio-economic situation of population
	Share of active population - higher/high education	→	Educational structure
	Value added per employed	→	Productivity
	Share of active population in agricultural activities	→	Structure of economic activities
	Distance from Ljubljana	→	Remoteness of the area
	The amount of municipal waste collected per capita	→	Environmental situation
	No. of new established companies	→	Entrepreneurship
	Gross investments per capita	→	Investment dynamics
	Total population growth	→	Population growth
PC 2	Registered unemployment rate	→	Unemployment
	Economic size of agricultural holdings	→	Economic power of farms
	Coefficient of ageing dependence	→	Age structure of population
	Number of population per square kilometre	→	Population density
PC 3	Aging index	→	Age structure of population
	No. of registered associations per 1000 inhabitants	→	Engagement of civil society
PC 4	Share of active population in services	→	Structure of economic activities
	Average monthly gross salary	→	Economic power of population
PC5	Value added per employed	→	Productivity
	Business income per employed	→	Productivity
	Number of inhabitants per square kilometre	→	Population density

Table 1 shows the indicators that importantly determinate individual principal components. Key factors, that cause variability among the municipalities, are mostly economic. The first principal component (23.2% explained variance), includes factors such as productivity, entrepreneurship, investment dynamics, the structure of economic activity, as well as demographic factors such as changes in the number of population, educational structure and socio-economic status of the population. Important factors are also the remoteness (from Ljubljana and from regional centres) and the state of the environment. The second main principal component (explains further 11.3 % of the variability) as important factors shows unemployment, age structure, population density and economic size of farms. The first two principal components together are explaining 34.5% of the variability. Even in the subsequent principal components the above-mentioned factors are repeated, so we can conclude that they are a key factors of economic and development performance.

Based on the principal components, Slovenian municipalities were divided into four groups with similar characteristics, using cluster analysis. This gave us a new typological breakdown of municipalities, which could be called "typology of economic and development performance of Slovenian municipalities". Typology can be helpful for the designing and directing of policies and measures for regional and rural development.

Areas with a higher proportion of active population employed in agriculture are economically weaker as also areas with lower share of active population with higher/high education. Figure 2 shows that the share of active population in agriculture grows with the decreasing share of active population with higher/high education.
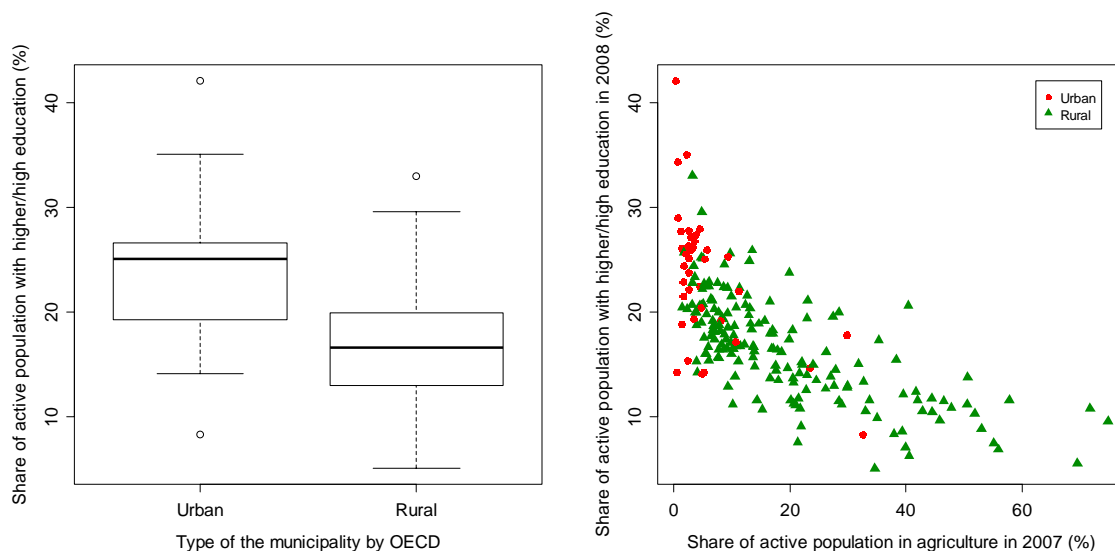
Figure 2. Some differences in employment characteristics between urban and rural municipalities in Slovenia (left) and scatter-plot of dependence between the share of active population with higher/high education and the share of agricultural employment (right).
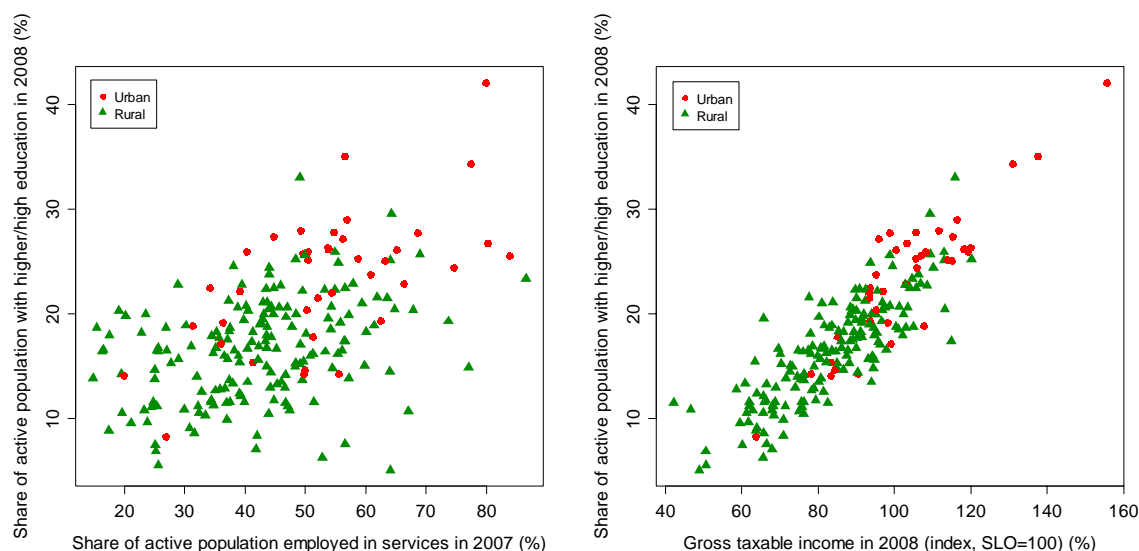

Figure 3. Scatter-plots of dependence between the share of active population with higher/high education and the share of employment in services (left) and dependence between the share of active population with higher/high education and gross taxable income (right).

Figure 3 shows that the increasing share of active population with higher/high education means also higher proportion of active population employed in the services and that reflects in greater economic power of the area (expressed in higher gross taxable income).

4 Discussion

Differences between urban and rural areas, as well as between rural areas, in Slovenia are still pretty large. Slovenian rural areas in general are highly heterogeneous, distinguished by various natural conditions and obstacles and diversified demographic, economic, and social structures. As a result of different factors some rural areas are more successful and more developed as others. Key factors that cause diversity are economic, as proved also by the

results of the method of principal components (PCA). For economic and development performance the structure of economic activities and their productivity is very important. Areas with a higher proportion of the active population employed in agriculture are economically weaker as also areas where employments in big industrial plants are predominant (nowadays mostly in troubles). Investments and innovations are very important as well. A key problem, not only in rural areas, is also unemployment, especially of young educated people, while areas with bad economic and development performance have often poor educational structure of inhabitants (also due to outflow of educated people because of the lack of suitable jobs), less entrepreneurial initiative (as a result of lower attractiveness, distance to important economic centres and underdeveloped infrastructure), unfavourable demographic situation (unfavourable age structure and/or negative overall population increase). Worse economic situation of the area is reflected in social problems and the quality of life and standard of living as well. Analyses show that better educational structure of the area has strong influence on better economic power of the population, stimulate entrepreneurship, innovations and investment dynamics etc. The latter make an area more attractive for living and for the business development. Finally, the research results show that the interpretation of the various economic and development performance of rural areas is complex because it is a mix of many factors, among which exist wide interdependencies (correlations) and interactions.

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