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# A PROPOSAL FOR A NEW ADMINISTRATIVE-TERRITORIAL DIVISION OF THE REPUBLIC OF CROATIA

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## ABSTRACT

The article deals with a proposal of a new administrative-territorial division at regional self-government level in the Republic of Croatia. The main aim of the paper is to obtain optimal administrative -territorial division of the country which would provide optimal performance of public tasks and responsibilities at the regional level. The proposal is obtained through use of multivariate statistical methods, and it is based on a wide number of demographic, economic, and public functions indicators measured on 20 Croatian counties. The main grouping criterion is importance and representatives of identified public functions' dimensions. As a result of the analysis, seven new regions are created and they should replace the existing 20 counties. Each of the obtained regions contains counties with similar characteristics and similar capacity for public function completion.

A proposal for a new administrative territorial division of the Republic of Croatia



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## I. INTRODUCTION

According to the Act on the Territories of Counties, Towns and Municipalities in the Republic of Croatia (Official Gazette, No. 86/06,125/06, 46/10, 145/10) the entire territory of the Republic of Croatia is divided into 556 local government units (127 towns and 429 municipalities) and 21 counties (including Zagreb which is both town and county). Towns and municipalities comprise the level of local self-government, while counties represent the regional self-government level. The basic principles of local self-government in Croatia were established in the Constitution of the Republic of Croatia, which was adopted by the Parliament on December 22, 1990. The scope and organisation, as well as the functioning rules of those units were then defined by the Act on Local and Regional Self-Government adopted in April 2001 (Official Gazette, No 33/01; 60/01; 86/08; 125/08; 109/07) (hereinafter: the Act). County is a unit of regional self-government and it is determined as an expression of historic, economic and transport factors and represents a natural, self-government whole within the Republic of Croatia. As a rule, it comprises a number of towns and municipalities. In Croatia counties are responsible for the functions of regional character, they are engaged in operations relating to education, health care, economic development, traffic and road infrastructure, maintained of public roads, planning and development of a network of educational, scientific, social and cultural institutions, issuing of building and location permits and other activities regulated by special laws "Marković and Dunković (2009)". Main aim of regional self-government units is to provide their citizens the most satisfactory level of public services possible within their self-government competence. According to the European Commission's Report local government units and counties are addressed as not sufficiently developed for coping with assigned responsibilities "Ivan and Iov (2010)". The lack of implementation mechanisms and the lack of an efficient local and regional management were specified as key limitations. One of the reasons for inefficiency of regional (counties') management could be the existing administrative division of the country's territory into 21 counties. Namely, an inadequate administrative territorial organisation is very often stipulated as one of the factors which block decentralization process in Croatia. The present territorial definition of the twenty one counties (including the City of Zagreb) suffered a number of critics of functional and political nature. Initially, the process determining of the counties' territories was made without a previous analysis of the particularities and capacities each territory has in order to fulfil its obligations. During that process aforementioned legislative criteria were not addressed sufficiently, for example the boundaries of historical Croatian provinces (Dalmatia and Slavonia) were not taken into consideration "Ivanišević et al. (2001)". As a result current division does not take into consideration the natural and geographic factors, the existing economic structure, or some traditional divisions of Croatian territory, "UNDP (2003)". Problems of financing regional self government level in Croatia have been also considered by various Croatian authors "Marković and Matić (2006)"; "Jurlina-Alibegović and Slijepčević (2010)". All of them emphasised the fact that great number of local and regional units of self-government have insufficient income for executing their daily businesses, which makes such system of financing rather inefficient. Broder consequences are felt in uneven regional development in the Republic of Croatia.

## II. RESEARCH METHODOLOGY

The methodology used in this work includes factor and cluster analysis. Namely in the 1970s several statistical methods were developed in order to distinguish among socio-economic features within/between regions as in “Hagget (1968)”, “Berry and Rees (1969)”, “Slater (1975)”, “Robinson and Salih (1971)”. Adelman and Morris used factor analysis for formulating predictions about which countries would develop faster than others. Their predictions were based on factor scores, which represent levels of socio-economic development, “Adelman and Morris (1967)”. “Ding and Liou (2002)” investigated socioeconomic differences among small states and sub grouped them through the use of factor and cluster analysis. Each of obtained clusters contained small states with similar characteristics. Similar studies with different goals have been conducted for Portugal, “Soares et al. (2003)” and also for Croatia (“Rihtar, Rimac and Oliveira-Roca (1992)”, “Rašić Bakarić (2007)”, “Kurnoga-Živadinović (2007)”.

Main part of the paper is focused on a design of proposals for a new administrative-territorial division of the Republic of Croatia at the regional self-government level which will provide optimal performance of public tasks and responsibilities at that level. The proposal is obtained through the use of multivariate statistical methods – factor and cluster analysis and is based on 16 indicators measured on 20 counties. Results of grouping the counties are bigger entities that will be capable to execute all assigned public tasks (provide public functions). The main grouping criterion is the relevance and the significance of different public tasks for each county which could be also described as county’s capacity for completion of given public functions combined with homogeneity in socio-economic structure. Beside homogeneity additional criteria have been respected (analytic or functional criteria, socio-economic criteria like polarity or complementarily). As a result of the analysis, seven new regions are created. Each of the obtained regions contains counties with similar characteristics and similar capacity for public function completion.

## III. INPUT VARIABLES

Input variables were chosen among the set of all socio-economic and public functions indicators available at the county level. Finally, when selecting data variables the following criteria were used: the data must be readily available from existing sources for all counties; the data should be an unbiased reflection of regional (county’s) conditions, the data variable should be timely and acceptable (the indicators must be accepted by those who will use and apply them and ultimately be judged on them). Hence, the data series that have been used in the analysis are ones that are available and meet the above criteria. Main disadvantage of the analysis lies in the fact that some of the selected variables do not refer to the same time period. For example data on total local budget revenues are referred to 2009, while data on GDP and economic structure are referred to 2008. The analysis was based on the last available data. The variables used in this paper consist of 16 indicators (public function indicators, socio-economic indicators). List of input variables is given in Table 1.

TABLE 1 - Description of input variables

X1	Total budget revenues of local and regional self-government units per capita (except grants from the state budget and except the share of income tax for decentralised functions, 2009
X2	Gross domestic product per capita, 2007
X3	Active legal entities as a share of total number of registered legal entities, 2008
X4	The share of primary sector in the total economy, 2007
X5	The share of secondary sector in the total economy, 2007
X6	The share of tertiary sector in the total economy, 2007
X7	The share of county and local roads in total roads, 2007
X8	Current expenditures for environmental protection per capita, 2007
X9	Kindergartens per 1000 children in the age 0 – 4 years, 2008
X10	Primary schools per capita, 2008
X11	Secondary schools per pupil, 2008
X12	Number of beds in clinics, teaching hospitals, clinical hospital centres, per capita, 2008
X13	Libraries per capita, 2008
X14	Associations per capita (sports, chess and hunting associations and bridge club; associations of cultural and artistic amateurism; technical culture association), 2008
X15	Social care homes for older and disabled per capita, 2008
X16	Average daily expenditure per prisoner (imprisonments, correctional institutions), 2008

SOURCE: Author

#### IV. IDENTIFICATION OF CRITERIA (USED) FOR DEFINITION AND FORMATION OF NEW ADMINISTRATIVE-TERRITORIAL UNITS

In the first part of the analysis factor analysis was used to identify a smaller number of dimensions that adequately summarise the information contained in the original set of variables. Since no prior hypothesis is made about the number and name of factors, explorative factor analysis is used. Justification for using the factor analysis implies determining whether input variables are significantly and sufficiently correlated. Only if manifest variables are correlated, can factors be identified as hypothetical components of a non-correlated variable, and sufficient for expressing manifest variables.

Table 1 in the Appendix shows the manifest variable correlation matrix. Correlation matrix indicates that each variable has at least one correlation coefficient with an absolute value higher than 0.3, which is the minimum value proposed by Kinnear and Gray (1994) as a criterion for inclusion of variables into analysis. Therefore, all eleven variables have been included into analysis. Marked in Table 1 (see Appendix) are those correlation coefficients that are significant with a significance level of 5 percent.

Since the results of factor analysis will be used as clustering variables (to which end factor scores must also be calculated), it is recommended to use the principal component analysis “Morrison, (1987)”. For selecting the number of factors the eigenvalue criterion was used according to which the amount of variation explained by each factor must be larger than 1. After obtaining first unrotated solution, it was desirable to perform factor rotation. Factor

rotation allows the variance to be redistributed from the factors that are first in order to those that come later. In addition, the theory recommends *varimax* rotation in cases when the obtained factors are used as the basis for calculating factor scores which serve as input variables for further analyses, in this case cluster analysis “Johnson and Wichern (1992)”. The factor loading matrix obtained through *varimax* rotation is shown in Table 2. For the solution to be accepted, it is necessary to examine the significance of obtained factors that represent dimensions of socio-economic development of the observed towns and municipalities. Four factors meet not only the eigenvalue criterion, but also the variance proportion criterion. In social sciences, the lowest limit of acceptability is 60 percent of variance accounted by obtained factors “Hair, Anderson and Tahtam, (1987)”. This solution accounts for 76.7 percent of total variance. Four factors were obtained through *varimax* rotation of the initial solution yielded by the principal component analysis.

The first factor has a high positive factor loading on variables: X1 (total budget revenues per capita), X2 (GDP per capita), X3 (active legal entities as a share of registered legal entities), X8 (current expenditures for environmental protections per capita) and X9 (kindergartens per 1000 children in the age 0 – 4 years). This means that it positively correlates to the respective characteristics of public tasks executed by counties. On the other hand, the first factor has a high negative factor loading on X4 (the share of primary sector in the total economy) and X6 (ageing index). This factor is therefore called “strong financial and economic capacity; high share of tertiary and low share of primary sector, higher quality of preschool education, environmental care”.

The second factor has a high positive loading on variables X10 (elementary schools per capita) X11 (secondary schools per pupil), X13 (libraries per capita) and X15 (social care homes for elderly and disabled persons per capita). This factor represents “higher capacities for performing public activities related to education, culture and social care”.

As the third factor has a high negative loading on variables X5 (the share of secondary sector in the total economy) and X7 (the share of county and local roads in total roads) it is called “underdeveloped transport infrastructure and low significance of manufacturing activities”.

The fourth factor has a high factor loading on variable X16 (average daily expenditure per prisoner) and negative on variable X14 (number of associations per capita). This factor is called “high importance of businesses related to public order and security and underdeveloped civil society”.

TABLE 2 - Varimax Rotated Factor Matrix

	Factor 1	Factor 2	Factor 3	Factor 4
X1	0.797233	0.285092	0.133249	0.435436
X2	0.892458	0.302483	0.001347	0.131624
X3	0.653493	0.016233	0.264776	-0.294419
X4	-0.634010	-0.050116	-0.183341	-0.598674
X5	0.050135	-0.078369	-0.884739	0.027628
X6	0.617247	0.084937	0.546097	0.404722
X7	-0.221977	-0.198463	-0.847408	-0.265702
X8	0.708368	-0.132721	-0.276870	0.226134
X9	0.815924	0.118592	0.067507	0.084213
X10	-0.339719	0.788570	0.006954	-0.289068
X11	0.207289	0.887973	0.002905	0.243280
X12	0.488565	-0.188903	0.359185	0.032077
X13	0.297379	0.822357	0.003695	0.072124
X14	-0.043354	0.380474	-0.432964	-0.743497
X15	0.045169	0.820318	0.235724	0.052180
X16	0.131105	0.248379	-0.017307	0.785249
Expl.				
Var	4.367999	3.261640	2.374185	2.266515
Prp.				
Total	0.273000	0.203853	0.148387	0.141657

Note: Marked are loadings greater then 0.60

SOURCE: Author

## V. DESIGNING OF A NEW ADMINISTRATIVE-TERRITORIAL DIVISION OF THE REPUBLIC OF CROATIA

In the second part of the analysis the counties are grouped in bigger territorial entities. Grouping is obtained through use of cluster analysis which is recognized as one of the most suitable method of classifying units into groups of similar characteristics. As input variables for cluster analysis factor scores were used. Since the factor analysis resulted in four factors, for each observed county four factor scores were calculated. The factor score indicates the extent to which each county has a high score on a group of characteristics that have a high loading on a relevant factor. This means that each county that has a high score on variables with high factor loading on one of the four obtained factors also has a high factor score on this factor.

For grouping counties into bigger units, non-hierarchical clustering method, the “k-means” method was used. The main argument in favour of this clustering method is that this method of grouping objects into clusters is more suitable when grouping units (objects) on which specific characteristics were measured, and not when grouping characteristics, i.e. variables “Johnson and Wichern, (1992)”. Decision on the number of clusters is based on the analysis of variance (ANOVA).

What is characteristic for this method is that the number of clusters is defined in advance and the significance of the obtained solution is tested. In ANOVA, the significance test examines between-group variability with within-group variability when testing the hypothesis that means differ between groups. At the theoretical significance level of 5 percent, the ANOVA results for the two, three, four and five proposed clusters are not significant. The solution that groups the observed regional self-government units into six clusters can be accepted. However, at the given significance level of 5 percent and empirical significance level of 0.006343 for factor one, 0.000056 for factor two, 0.005458 for factor three and 0.000502 for factor four, hypothesis H1 is accepted, i.e. we may say that the means between the six proposed clusters differ significantly (see Table 3 ANOVA results for six clusters). The results indicating grouping of counties into six different clusters are significant. The goal to be aimed for is that means that each cluster has on an individual dimension differ significantly. As this is confirmed by the significance test in ANOVA, the same can be verified by looking at the graph of means i.e. by factor analysis identified dimensions of socio-economic development and means of an individual cluster (see Figure 1).

TABLE 3 - Analysis of Variance, six clusters

	Between SS	df	Within SS	df	F	signif. p
F1	12.39584	5	6.604157	14	5.25553	0.006343
F2	15.78522	5	3.214785	14	13.74854	0.000056
F3	12.55007	5	6.449931	14	5.44815	0.005458
F4	14.53089	5	4.469112	14	9.10393	0.000502

SOURCE: Author

TABLE 4 - Identified regional entities – Variant 1

County	Cluster	Distance
County of Zagreb	2	0.66
County of Krapina-Zagorje	2	0.53
County of Sisak-Moslavina	2	0.26
County of Karlovac	2	0.24
County of Varazdin	2	0.77
County of Koprivnica-Krizevci	1	0.33
County of Bjelovar-Bilogora	1	0.58
County of Primorje-Gorski Kotar	6	0.45
County of Lika-Senj	4	0.00
County of Virovitica-Podravina	1	0.50
County of Požega-Slavonia	2	0.78
County of Brod-Posavina	5	0.56
County of Zadar	3	0.40

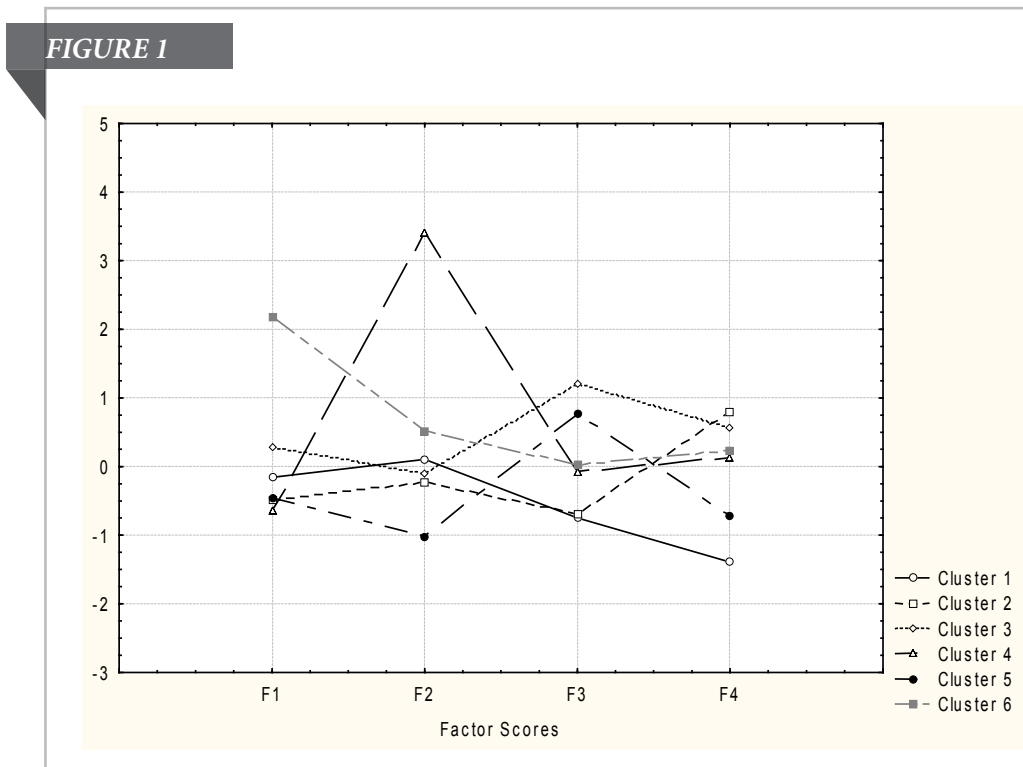


TABLE 4 - Identified regional entities – Variant 1 - continued

County of Osijek-Baranja	5	0.49
County of Sibenik-Knin	3	0.23
County of Vukovar-Sirmium	5	0.34
County of Split-Dalmatia	3	0.40
County of Istria	6	0.45
County of Dubrovnik-Neretva	3	0.69
County of Međimurje	1	0.72

SOURCE: Author

FACTOR SCORES VS. MEANS OF CLUSTERS



SOURCE: Author

The graph of means illustrates differences between obtained clusters. First region is characterised by strong negative relation to factor score 3 and factor score 4, while first two dimensions are not so significant. The most pronounced features in this cluster are low significance of activities related to public order and security, highly developed civil society, developed transport infrastructure, and grater predominance of secondary and primary sector in the economic structure. This region comprises from four counties: County of

Koprivnica-Križevci, County of Bjelovar-Bilogora, County of Međimurje and County of Virovitica-Podravina.

Second region has a strong positive relationship on the fourth factor score which represent developed functions related to public order and society activities and underdeveloped civil society (measured by associations' activities). Additionally, this spatial unit is characterised by pronounced negative relationship with third factor score, which indicates relatively better transport infrastructure roads and relatively higher predominance of secondary sector. As this region has also negative relationship to factor 1, is also characterised by relatively higher importance of primary sector in the economic structure. This region comprises from counties: County of Zagreb, County of Krapina-Zagorje, County of Sisak-Moslavina, County of Karlovac, County of Varaždin, County of Požega-Slavonia.

This region comprises four counties (County of Zadar, County of Šibenik-Knin, County of Split-Dalmatia and County of Dubrovnik-Neretva). The predominant feature of cluster 3 is the one presented by factor 3 and factor 4: low share of secondary activities in economic structure, underdeveloped transport infrastructure and relatively higher importance of activities related to public order and security. As this cluster also has a positive relationship to factor score 1, it has a relatively higher dominance of tertiary sector and GDP per capita that is slightly above national average.

Fourth region comprises only one County, County of Lika-Senj. The predominant feature in this County is the one presented by second factor: highly developed public functions related to education (elementary and secondary school) as well as culture and social care. On the other hand, negative relationship to first factor score indicates weak financial, fiscal and economic capacity, and also capacity for executing all other public tasks and responsibilities. The predominant economic activity in this cluster is agriculture, fishing and forestry.

Fifth region comprises three counties: County of Brod-Posavina, County of Vukovar-Sirmium and County of Osijek-Baranja. Unlike all the other clusters, this cluster has a negative relationship to second factor score, which indicates low potential for executing public tasks related to education, culture and social care. Also, there is a positive relationship to third factor scores, which indicates underdeveloped road infrastructure, relatively lower share of secondary sector. On the other hand, considering a negative relationship to first and fourth factor score, to this group of counties we can attribute the feature of dominance of primary sector in economic structure, weak financial and fiscal, insufficient developed economic activities and activities related to environmental care and protection.

Sixth region comprises two counties: County of Istria and County of Primorje-Gorski kotar. These are the most developed Counties in Croatia. The most pronounced features in this cluster are those presented by factor one (strong positive relationship) and then by factor 2 and 3. Regarding features presented by factor 3 this cluster doesn't differentiate significantly from the national average. The predominant feature of both of the counties is strong fiscal and financial capacity and economic development potential (measured by GDP per capita and by share of active legal entities), predominance of tertiary activities, developed functions related to educations (preschool, elementary school, secondary school) developed environmental

care, high standards in executing public functions related to culture and social care.

City of Zagreb as a local self-government unit and regional self-government unit represent seventh region. According to the values of the selected input variables City of Zagreb differs significantly from other counties. Considering that City of Zagreb presents separate regional unit.

Final proposal is made as modification of first proposals (result of factor and cluster analysis). Apart from statistical criteria and homogeneity criterion this proposal is based on other additional criteria (functionality criterion, historical and geographical criterion, criterion of classification of territory for the purpose of spatial planning)<sup>2</sup>. It is important not only to identify similarities/differences in particular territory, but also to identify functional linkage between the spatial entities. Regarding the fact that between City of Zagreb and the County of Zagreb exists exchange of goods and services, interdependence, in the final proposal of new territorial division the County of Zagreb and City of Zagreb constitute the same region (Zagreb Region). Next modification is made in second and fifth region. County of Požega-Slavonia is moved from second to fifth region. Namely, this County is traditionally, geographically and historically connected to other Slavonian counties (which constitute region of Slavonia (functionality criterion, historical criterion). Region constituted in that way is more suitable for implementation of regional development policy. Names of the new regions are determinate according to their geographic positions. First region is called Medimurje, Podravina and Western Slavonia, second region is called Central and Northwestern Croatia, third Dalmatia (Dalmacija), fourth Lika (Lika), fifth Slavonia (Slavonija), sixth Istria, Primorje and Gorski kotar (Istra, Primorje i Gorski kotar), and seventh region is called Zagreb region (Zagrebačka regija).

TABLE 6 - Final proposal of territorial division of Republic of Croatia

New territorial entities	Counties
Medimurje, Podravina and Western Slavonia:	Koprivnica-Križevci, Bjelovar-bilogora, Medimurje, Virivtica-Podravina
Northwestern Region:	Krapinsko-Zagorje, Varaždin, Karlovaci Sisak-Mošlavina
Dalmatia Region:	Zadar, Šibenik-Knin, Split-Dalmacija and Dubrovnik-Neretva
Lika Region:	Lika-Senj
Slavonia Region:	Osijek-Baranja, Brod-Posavina, Vukovar-Srijem and Požega-Slavonija
Istria, Primorje and Gorski kotar:	Istria, Primorje-Gorski kotar
Zagreb Region:	County of Zagreb, City of Zagreb

SOURCE: Author

<sup>2</sup> Functional regionalisation – is the delineation of a geographical area where spatial entities are grouped together because there is some functional linkage between the communities. If a town is dependent on surrounding area for its workforce then that area (municipalities, towns etc. communities that supply the workforce are linked to that particular town.

## CONCLUSION

Over the past 50 years Croatia experienced a series of territorial changes (at least 12), which reflected all the sensibility, instability, overtransparence, but also the adaptability of the system. Present territorial division of the country (especially at regional government level) is one of the main problems and obstacles in relation with actual implementation of the decentralisation process “Jurlina Alibegovića and Slijepčević, (2010)”. Main aim of regional self-government units should be providing their citizens the most satisfactory level of public services possible.

This paper allows consideration of more scientific approaches to classification of space into more homogeneous entities for the purpose of formulating regions. It presents the possibility of using two mathematical-statistical methods for singling out territorial entities of similar characteristics that will be more capable and efficient in performing assigned public tasks and functions. The proposal is based on following criteria: homogeneity in fiscal capacity and economic structure, functionality criterion, historical and geographical criterion, criterion of classification of territory for the purpose of spatial planning. Since, by using factor and cluster analysis methods, we have been able to single out the counties of similar characteristics, that should be more capable and efficient in performing assigned public tasks and functions, the principal aim of the paper has been obtained. A major constraint to implementing such analyses is the lack of statistics at sub national levels. Better statistical information would undoubtedly facilitate much better analyses.

## REFERENCES

- Act on Local and Regional Self-Government.** Official Gazette, No 33/01; 60/01; 86/08; 125/08; 109/07
- Act on the Territories of Counties, Towns and Municipalities in the Republic of Croatia.** Official Gazette, No. 86/06,125/06, 46/10, 145/10
- Adelman, Irma and Cynthia T. Morris.** 1967. Society, Politics and Economic Development: A Quantitative Approach. Baltimore: John Hopkins Press.
- Akai, Nobuo and Masyo Sakata.** 2002. Fiscal decentralization contributes to economic growth: evidence from state-level cross-sectional data for the United States. *Journal of Urban Economics*. 52: 93–108.
- Antić, Teodor.** 2002. Decentralization of Public Administration in the Republic of Croatia - Reform Process Management, Local Government and Public Service Reform Initiative. Budapest. Available at: <http://lgi.osi.hu/publications/2002/98/Dec-Reform-II-Ch3.pdf>
- BC Stats.** 2011. British Columbia Regional Socio-Economic Indicators. Available at: <http://www.bcstats.gov.bc.ca/DATA/sep/method.pdf>.
- Berry, B. J. L. and P. H. Rees.** 1969. The Factorial Ecology of Calcutta. *American Journal of Sociology*. 74: 445-491.
- Davoodi, Hamid and Heng-Fu Zou.** 1998. Fiscal decentralization and economic growth: a cross-country study. *Journal of Urban Economics*, 43: 244–257.
- Ding, G. Cherng and Fan-May Liou.** 2002. Subgrouping Small States Based on Socioeconomic Characteristics. *World Development*. 30 (7): 1289.-1306.
- European parliament.** 2003. EU Structural Policy Indicators for the Identification of Problem Regions. Available at: [http://www.europarl.europa.eu/workingpapers/regi/104/chap1\\_en.htm](http://www.europarl.europa.eu/workingpapers/regi/104/chap1_en.htm)
- GSDRC Research Paper.** 2009. Available at: <http://www.gsdr.org/docs/open/PO60.pdf>
- Haggett, Peter.** 1968. Trend Surface Mapping in the Inter-regional Comparison of Intra-Regional Structures. *Papers of Regional Science Association*, 20: 19-28.
- Hair, F. Joseph, Anderson E. Ralf and Roland L. Tahtam.** 1987. *Multivariate Data Analysis*. New York: Macmillan Publishing Company.
- Huther, Jeff and Anwar Shah.** 1998. Applying a Simple Measure of Good Governance to the Debate on Fiscal Decentralization. World Bank. Working Paper.
- Iimi, Atsushi.** 2005. Decentralization and economic growth revisited: an empirical note. *Journal of Urban Economics*, 57: 449–461.
- Ivan, A. Liviu and Anamaria C. Iov.** 2010. Administrative Reform and Regional Development in the Context of EU Accession, *Transylvanian Review of Administrative Sciences*, No. 31E/2010: 93-113.
- Ivanišević, Stjepan et al.** 2001, <http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan017042.pdf>
- Ivanišević, Stjepan et al.** 2001. Local Government in Croatia (Chapter 5 - Local Government in Central and Eastern Europe). United Nations Public Administration Network. Available at: <http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan017042.pdf>
- Johnson, A. Richard and Dean W. Wichern.** 1992. *Applied Multivariate Statistical Analysis*. Third edition. New York: Prentice Hall, Upper Saddle River.
- Jurlina Alibegović, Dubravka and Sunčana Slijepčević.** 2010. Decentralisation in Croatia:

Problems and Possible Solutions, Research Seminar (unpublished)

**Konjhodžić Halid** and **Meri Šuman Tolić**. 2009. Fiscal Decentralization in Croatia - Reform Process or Political Rhetoric. *Ekonomiska misao i praksa*, XVIII (2): 233-258.

**Kurnoga Živadinović, Nataša**. 2007. Multivarijatna klasifikacija županija Hrvatske” in Grgić, M. (Eds) *Proceedings of Faculty of Economics and Business: 1-15*. Zagreb: Faculty of Economics and Business – University of Zagreb.

**Lin, J. Justin and Zhiqiang Liu**. 2000. Fiscal decentralization and economic growth in China. *Economic Development and Cultural Change*. 49: 1–21.

**Local Government in Croatia**. Local Government in Central and Eastern Europe; Chapter 5, United Nations Public Administration Network.

**Loedwijk, Berlage and Dick Terweduwe**. 1988. The Classification of Countries by Cluster and by Factor Analysis. *World Development*. 16 (12): 1527-1545.

**Magaš, Damir**. 2003. Contemporary aspects of the geographical regionalization and administrative-territorial organization of Croatia. *Geoadria*, 8/1: 127-147.

**Marinović-Uzelac, Ante**. 2001. *Prostorno planiranje*. Zagreb: Dom i svijet.

**Marković, Branimir and Branko Matić**. 2006. Problems of financing local and regional self-government. MPRA Paper. Available at: [http://mpra.ub.uni-muenchen.de/10931/1/MPRA\\_paper\\_10931.pdf](http://mpra.ub.uni-muenchen.de/10931/1/MPRA_paper_10931.pdf)

**Marković, Branimir and Božica Dunković**. 2009. “Zaduživanje i financiranje lokalnog razvoja”. *Ekonomski vjesnik XXII*. 2: 354-363.

**Marković, Branimir and Branko Matić**. 2006. Problems of financing local and regional self-government. *GIS Applications and Development*. Hrvatski informatički zbor – Gis forum and University of Silesia, Poland, 185-192.

**Paul R. Kinnear and Colin D. Gray**. 1994. *SPSS for Windows Made Simple*, Lawrence Erlbaum Associates Publishers: Hove, UK.

**Robert J. Barro and Xavier Sala-i-Martin**. 1995. *Economic Growth*. New York: McGraw-Hill.

**Rašić Bakarić, Ivana**. 2007. Uncovering Regional Disparities – the Use of Factor and Cluster Analysis. *Croatian Economic Survey*, 9: 11-34.

**Rimac, Ivan, Rihtar, Stanko and Maria Oliveira-Roca**. 1992. Multivarijatna klasifikacija općina Hrvatske kao moguća metoda regionalizacije Hrvatske. *Društvena istraživanja* (1): 87-99.

**Robinson, Gillian and Kamal B. Salih**. 1971. The Spread of Development Around Kuala Lumpur: A Methodology for an Exploratory Test of Some Assumption of the Growth Pole Modules. *Regional Studies* 5: 203-214.

**Scott, Zoe**. 2009. Decentralisation, Local Development and Social Cohesion: An Analytical Review.

**Slater, David**. 1975. Underdevelopment and Spatial Inequality. *Progress in Planning*, 4: 101-65.

**Soares, O. Joao, Marques, Maria M. L. and Carlos M. F. Monteiro**. 2003. A multivariate methodology to uncover regional disparities: A contribution to improve European Union and governmental decisions. *European Journal of Operational Research*, 145: 121-135.

**UNDP**. 2002. *Human Development Report*. Zagreb: Croatia.

**Wertheimer-Baletić, Alica**. 1999. *Stanovništvo i razvoj*. Zagreb: Mate.

## APPENDIX

TABLE 7 - Correlation matrix, input variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
X1	1.00	<b>0.88</b>	0.37	<b>-0.77</b>	-0.12	<b>0.78</b>	<b>-0.45</b>	<b>0.58</b>	<b>0.72</b>	-0.13	<b>0.50</b>	<b>0.41</b>	<b>0.52</b>	-0.31	0.26	<b>0.50</b>
X2	<b>0.88</b>	1.00	<b>0.54</b>	<b>-0.63</b>	-0.02	<b>0.65</b>	-0.27	<b>0.64</b>	<b>0.75</b>	-0.02	0.44	0.32	<b>0.51</b>	-0.05	0.25	0.31
X3	0.37	<b>0.54</b>	1.00	-0.29	-0.18	0.43	-0.24	0.26	0.43	-0.18	0.16	0.20	0.01	0.05	0.19	0.03
X4	<b>-0.77</b>	<b>-0.63</b>	-0.29	1.00	-0.01	<b>-0.82</b>	<b>0.49</b>	-0.38	<b>-0.61</b>	0.33	-0.34	-0.32	-0.28	<b>0.54</b>	-0.12	-0.42
X5	-0.12	-0.02	-0.18	-0.01	1.00	<b>-0.49</b>	<b>0.66</b>	0.22	-0.07	-0.08	-0.07	-0.17	-0.01	0.26	-0.20	-0.10
X6	<b>0.78</b>	<b>0.65</b>	0.43	<b>-0.82</b>	<b>-0.49</b>	1.00	<b>-0.65</b>	0.25	<b>0.61</b>	-0.24	0.30	0.34	0.29	<b>-0.48</b>	0.14	0.40
X7	<b>-0.45</b>	-0.27	-0.24	<b>0.49</b>	<b>0.66</b>	<b>-0.65</b>	1.00	-0.06	-0.22	0.01	-0.26	-0.44	-0.33	<b>0.55</b>	<b>-0.45</b>	-0.16
X8	<b>0.58</b>	<b>0.64</b>	0.26	-0.38	0.22	0.25	-0.06	1.00	0.39	-0.43	0.06	0.35	0.21	-0.18	-0.06	0.22
X9	<b>0.72</b>	<b>0.75</b>	0.43	<b>-0.61</b>	-0.07	<b>0.61</b>	-0.22	0.39	1.00	-0.24	0.30	0.32	0.24	-0.03	0.19	0.22
X10	-0.13	-0.02	-0.18	0.33	-0.08	-0.24	0.01	-0.43	-0.24	1.00	<b>0.53</b>	-0.25	<b>0.52</b>	<b>0.47</b>	<b>0.50</b>	-0.12
X11	<b>0.50</b>	<b>0.44</b>	0.16	-0.34	-0.07	0.30	-0.26	0.06	0.30	<b>0.53</b>	1.00	-0.06	<b>0.76</b>	0.16	<b>0.72</b>	<b>0.47</b>
X12	0.41	0.32	0.20	-0.32	-0.17	0.34	-0.44	0.35	0.32	-0.25	-0.06	1.00	0.14	-0.28	-0.07	0.05
X13	<b>0.52</b>	<b>0.51</b>	0.01	-0.28	-0.01	0.29	-0.33	0.21	0.24	<b>0.52</b>	<b>0.76</b>	0.14	1.00	0.24	<b>0.62</b>	0.16
X14	-0.31	-0.05	0.05	<b>0.54</b>	0.26	<b>-0.48</b>	<b>0.55</b>	-0.18	-0.03	<b>0.47</b>	0.16	-0.28	0.24	1.00	0.14	-0.40
X15	0.26	0.25	0.19	-0.12	-0.20	0.14	<b>-0.45</b>	-0.06	0.19	<b>0.50</b>	<b>0.72</b>	-0.07	<b>0.62</b>	0.14	1.00	0.28
X16	<b>0.50</b>	0.31	0.03	-0.42	-0.10	0.40	-0.16	0.22	0.22	-0.12	<b>0.47</b>	0.05	0.16	-0.40	0.28	1.00

SOURCE: author's calculation

Note: Marked correlations are significant at  $p < 0.05000$   $N=20$  (Case wise deletion of missing data)

## PRIJEDLOG NOVE ADMINISTRATIVNO-TERITORIJALNE PODJELE REPUBLIKE HRVATSKE

### SAŽETAK

*U radu je prikazan prijedlog novog teritorijalnog ustroja jedinica regionalne samouprave Republike Hrvatske dobiven primjenom odabranih metoda multivarijatne analize na većem broju demografskih, ekonomskih i društvenih pokazatelja. Osnovni cilj rada je grupirati županije u veće prostorne cjeline, koje bi bile učinkovitije u obavljanju javnih poslova iz svog djelokruga. Prilikom formuliranja prijedloga teritorijalnog ustroja jedinica regionalne prvenstveno se vodi računa da je osnovna razvojna zadaća formirane jedinice koordinacija razvoja na svom području i kvalitetno i učinkovito obavljanje javnih funkcija. Stoga je kao osnovni kriterij za objedinjavanje županija korištena homogenost u obilježjima društvenog i gospodarskog razvoja i kapacitetima za obavljanje javnih funkcija korištena. Pored toga uvažavani su i dodatni kriteriji za klasifikaciju prostora preuzeti iz stručne literature (kriterij funkcionalnosti, geografski i povijesni kriteriji, kriterij klasifikacije prostora za svrhe planiranja).*

**Ključne riječi:** *administrativno-teritorijalni ustroj, homogenost, učinkovito obavljanje javnih funkcija, multivarijatna analiza*



