MODIFIED HUMAN DEVELOPMENT INDEX AND ITS WEIGHTED ALTERNATIVE – THE CASE OF VISEGRAD FOUR PLUS AUSTRIA AND SLOVENIA

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ABSTRACT
The paper solves the problem of alternative access towards modified human development index (MHDI) of the Visegrad Four Group Plus NUTS 2 regions. Analytic hierarchy process (AHP) is one of multicriteria decision-making methods. It is based on pairwise comparison matrices and eigenvector method. AHP enables to derive unknown/undetermined priorities of factors. The basic aim of the contribution is due to the method of analytic hierarchy process to define the position of NUTS 2 regions in period of 2004-2013 years. The sense of applying the method will be setting the ranking of NUTS 2 regions reflecting their HDI for the year. AHP is used to derive unknown or undetermined weights of macroeconomic indicators influencing the MHDI.

KEY WORDS
Human development index, analytic hierarchy process, eigenvalue method, Visegrad Four Group Plus, NUTS 2.

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Introduction

The origin of competitiveness can be found in growing international mobility of production factors and their association with the flow of international trade when economies became connected not only internationally, but mainly inter-regionally. In the broadest sense of word, it is possible to understand competitiveness as a part of international labour division which comprehends effectiveness of integration of various conditions of particular regions for properties realized on higher than local market. On the contrary, if we turn our attention to a lower level, which is made by a local – regional market, we will find out that a lot of economic phenomena which are perceived at national level mirror a regional level, respectively a demonstration of regional competitiveness which affects all the economic entities.

Nowadays, demonstration of globalization in the sense of ability to react quickly on changing market conditions, reaches economy at national level and especially the regions. Therefore, it is necessary to concentrate on economic categories in

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economic research which are able to define, measure and interpret the changes effectively.

Competitiveness presumes a functioning market mechanism without which it loses its sense as an economic category. The thesis is valid for all the levels on which we can evaluate the competitiveness. Although competitiveness gradually penetrates practically all the areas of economic reality, its specification, from economic theory point of view, can be considered as relatively weak. In this sense, we usually talk about the so called capacity of regional competitiveness. At first, we will introduce each approach in the frame of possible competitiveness definitions.

Omitting historic economic approaches which laid the foundations for competitiveness development as economic category, it is possible to mark M. E. Porter as a basic pathfinder. Porter brought a brand-new view on competitiveness. Although at first, he devoted his effort to national competitiveness, where he assessed competition among nations (Porter 1990), he realized necessity to assess competitiveness in down-up direction, which means to start in regions (Porter 2003), following approaches inspired by Porter (Gardiner et al. 2004) striving to define competitiveness arranged into pyramid structure. From the structure, sources are derived influencing gross regional product through labour productivity and rate of unemployment. Viassone (2008: 49-64) emphasizes regional competitiveness from authors of economic policy point of view and simultaneously points out non-existence of self-contained theoretical view, which would catch depth and complexity of regional competitiveness. Next, Viturka (2007) concentrates on competitive potential of regions, which can be assessed through the quality of business environment. At the same time, he identified the key components of business environment into six groups: business, labour, regional, infrastructural, price and environmental.

For better understanding of competitiveness as an economic category it is necessary to fill certain comparison with microeconomic definition. We should bear in mind that in case of companies we perceive "competition" differently than in case of regions themselves. If companies compete among each other for their place in the market, the growth of their market share or sometimes for the existence itself, in case of regions it is different. It will not be failure of region to abandon market, but in cooperation with government representatives and local initiatives a region should try a "restart". Simultaneously, a region should search for new sources of comparative advantage and should concentrate on labour division and following specialization (Nevima 2014).

Competitiveness, seen as an economic category, faces a problem of adaptability which can be supported by innovative approaches and thus regional competitiveness is placed between microeconomy and macroeconomy – the so called mezzoeconomy. The term is not new as far as economy is concerned. It is related to Holland's publication (1987) who sees the main reason of regional distinct development in not functioning of neo-classical preconditions and mainly, in non-existence of perfect competition. According to him, the main task of regional policy ought to be the appreciation of regulatory role of a state, public sector, the role of departments and the regulation of investments (private as well as public) to less developed regions.

From the above mentioned, it is possible to continue with the creation of certain conclusion including regional competitiveness perception. Competitiveness of re-

gions is formed by active subjects within regions (such as human resources – this is a suitable base for human development index, companies, public administration authorities, infrastructure, cultural heritage, universities and number of community facilities) and also by external factors (state economic policy effects, potential investors, further development and interconnection occasions for regions).

This means that each region has its own competitive characteristics – they can be called elements which are unique and difficult to imitate. The elements are the source or barrier of competitiveness of a region. The core of the element could be an inner or outer competitive advantage. The competitive advantage becomes the driving force of overall regional competitiveness. Regions able to appreciate and further extend their potential become more competitive. The most important and crucial internal source of competitiveness are human resources. There is a reason to deal with human development index as phenomena of connection between region and competitiveness of region.

1. Human Development Index

One of the indicators covering a wide level of internal development of regions is Human Development Index (HDI), more precisely; it is its modified degree enabling observation of its level within the level NUTS 2.

HDI which has been used by the United Nations since 1990, clearly brings a different perspective on development issues and should be better able to emphasize the effect of other than just monetary (economic) factors on the economy of a country. The basis of the HDI index is greater explanatory power, which is to follow economic development or sustainable development in general. This index is able to explain better, how two or more countries with the same level of income per capita can end up with different human development outcomes.

The article examines the modified version of the index. NHDI – Modified Human Development Index is a modified version of a typical index HDI; nevertheless, NHDI enables a better identification of development in regions NUTS 2. However, the aim of the article is not to present new values of NHDI reflecting situation in regions, but to take into consideration the significant reflection of partial variables of the index in the overall order on regions of Visegrad Four Group Plus. The Visegrad Four Group Plus is represented by 8 Cohesion regions of the Czech Republic, 16 Voivodships in Poland, 7 Counties in Hungary, 4 Cohesion regions of Slovakia, 2 Cohesion Macroregions in Slovenia and 9 Federal States in Austria.

The variables which entered into the NHDI are presented in Table 1.

For purpose of the paper, we adopted the same principle of HDI creating for the national level – the health dimension, knowledge dimension and dimension of living standard. Components of each dimension, however, had to be modified because of the lack of data at the regional level (NUTS II level). Data were used from a regional database of Eurostat and the construction of the HDI of V4+ regions (NHDI) was as follows:

1. Health with value of life expectancy at birth that represents, according to Eurostat, the mean number of years that a new born child can expect to live if subjected throughout his life to the current mortality conditions (age specific probabilities of dying).

2. Knowledge, which has two components:

   a. Tertiary educated people at the age of 25-64, when the indicator is de-

fined as the percentage of the population aged 25-64 who have successfully completed tertiary studies (e.g. university, higher technical institution, etc.). This educational attainment refers to ISCED (International Standard Classification of Education) 1997 level 5-6 including the first stage of tertiary education (bachelor and master or equivalent) and second stage of tertiary education (doctoral or equivalent).

b. Lifelong learning in the form of the participation rate in education and training covers participation in formal and non-formal education and training. The reference period for the participation in education and training is at least four weeks. Participation rates in education and training for age group of 25-64 are presented. The data are calculated as annual averages of quarterly EU Labour Force Survey data (EU-LFS).

3. Standard of living measured through GDP per capita in PPS – Purchasing Power Standards (PPS) is a common currency eliminating the differences in price levels between countries and regions allowing meaningful volume comparisons of GDP between them.

The variables involved in NHDI reflect economic and social characteristics based on regions. Thus it is possible to infer the performances among the regions and diagnose regional disparities more effectively. It is the combination of social and economic characteristics which has a significant role in the overall form of NHDI since the biggest disadvantage of traditional indicators is the orientation on only one particular field. It is absolutely necessary to focus on the combination of wider range of characteristics in the following research. Thus, environmental field comes into consideration which reflects the principles of sustainable development better.

Table 1. Indicators of NHDI

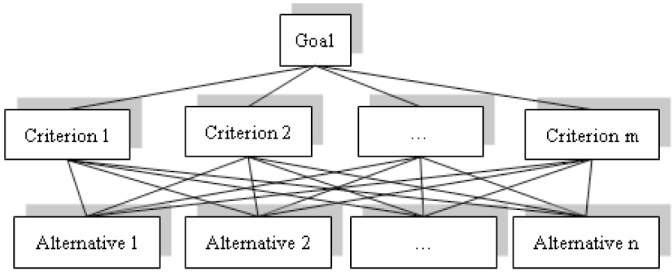
Dimension	Indicators	Index
health	Life expectancy at birth (years)	Life expectancy index
education	Tertiary education (% of population in 25-64 years)	Tertiary education index
	Lifelong education (% of population in 25-64 years)	Lifelong education index
standard of living	GDP per capita (in PPS)	GDP index

Source: Own elaboration.

2. Analytic hierarchy process

Analytic hierarchy process belongs to multicriteria decision-making methods. It is applied in many branches in typical approach (Albayrak, Erensal 2004; Hsiao et al. 2011) as soon as in modified approach (Gungor et al. 2009; Ablhamid et al. 2013). The given problem is structured in a hierarchy of 3 (or more) levels. The goal of the problem represents the highest level, the second belongs to criteria, i. e. substantial factors influencing the decision (or evaluation), and alternatives to be assessed are on the last level of hierarchy (Figure 1). The criteria may be quantitative and qualitative, too. Quantitative criteria are of minimizing as well as maximizing character.

Figure 1. Hierarchy structure of the decision-makingproblem



Source: Own elaboration based on Saaty 1994: 95.

The pairwise comparison method is used to derive unknown or undetermined weights (priorities) of objects on each hierarchical level. All objects are compared to each other by couples. If there are numerical characteristics of object, these may be pair-compared. If the characteristics of objects are qualitative, the nine-point scale is applied to express the difference in preferences in couple of objects. Number one means equality, number nine represents extreme difference between objects. Odd values are basic, even ones are supplementary (Saaty 1994) (Table 2).

Values of the pairwise comparisons represent estimation of weight ratio of two compared elements of the same hierarchical level:

$$a_{ij} = \frac{w_i}{w_j}, \; i, j = 1,2,..., n, \qquad (1)$$

where a_{ij} is value of pairwise comparison between the i - th and j-th object, w_i is (still unknown/undetermined) weight of the i-th object, w_i is (still unknown/undetermined) weight of the j-th object. The i-th object is equal to itself, corresponding value is 1.

There is multiplicative reciprocity between pair-compared objects:

$$a_{ji} = \frac{1}{a_{ij}} \text{ or } \qquad (2)$$
$$a_{ij} \cdot a_{ji} = 1 \text{ for all } \; i, j = 1,2,...,n.$$

Values of pairwise comparisons are inserted in the pairwise comparison matrix A. Maximal eigenvalue $\lambda_{\max}$ and corresponding eigenvector w are to be calculated according to the characteristic equation:

$$\mathbf{Aw} = \lambda_{\max}\mathbf{w}. \qquad (3)$$

Some special attributes of this matrix ensure relatively simple calculation of its maximal eigenvalue $\lambda_{\max}$ and corresponding eigenvector w. When normalized, i.e. $\sum_{i=1}^{n} w_i = 1$, element w_i of vector w represents the relative importance of the i-th object.

The pairwise comparison matrix is *square*. All n objects of given hierarchical level are compared to each other and the nxn matrix is created. It is enough to execute $(n^2 - n)/2$ pairwise comparisons with respect to the multiplicative reciprocity.

Table 2. The nine-point scale and its definition

Intensity of importance	Definition
1	Equal importance
2	Weak
3	Moderate importance
4	Moderate plus
5	Strong importance
6	Strong plus

7	Very strong importance
8	Very, very strong
9	Extreme importance

Source: Saaty 1994: 73.

The matrix is *nonnegative*, too. If pairwise comparisons are expressed by the nine-point scale, the possible values are {1/9; 1/8; ...; 1/2; 1; 2; ...; 8; 9}, i.e. nonnegative naturally. If pairwise comparisons are expressed by real number ratio, the value may be negative. Sufficiently large positive number has to be added to all pair-compared entry values to get nonnegative matrix.

The pairwise comparison matrix is *irreducible*. That means that it is not possible to rearrange the columns and rows to get zero submatrix. This attribute is ensured when expressing pairwise comparisons by the nine-point scale. If the pairwise comparison value got by the real number ratio is zero, it is necessary to add sufficiently large positive number to all entry values.

The Perron-Frobenius theorem ensures existence of the maximal eigenvalue and corresponding eigenvector including positive components for square nonnegative irreducible matrix (Meyer 2000: 673). The Wieland theorem is applied to derive the eigenvector:

$$\lim_{k\to\infty}\frac{\mathbf{A}^k\mathbf{e}}{\left\|\mathbf{A}^k\right\|}=c\mathbf{w},\qquad \left\|\mathbf{A}^k\right\|\equiv\mathbf{e}^{\mathrm{T}}\mathbf{A}^k\mathbf{e}, \tag{4}$$

where A^k is the k-th power of matrix A, e is vector of ones, i.e. $\mathrm{e}^T = (1; 1;1;...;1)$ c is constant.

Some inconsistency may appear in pairwise comparisons. It means that the following *consistency condition* is not satisfied:

$$a_{ij} \,.\, a_{jk} = a_k \text{ for all } i, j, k = 1,2,..., n. \tag{5}$$

Inconsistency is measured by inconsistency index I_c. It is calculated for $n\times n$ matrix as follows:

$$I_c = \frac{\lambda_{\max} - n}{n-1} \tag{6}$$

The inconsistency index must not exceed the threshold of 10 %. In such a case, the matrix is considered to be *sufficiently consistent*. Otherwise the pairwise comparisons have to be reassessed (Gavalec et al. 2015).

It is not necessary to provide pairwise comparisons if the considered criterion is quantitative. It is sufficient to express relative importance of alternatives according to quantitative criterion by normalized values:

$$g_i = \begin{cases} \dfrac{h_i}{\sum_{i=1}^{n} h_i} \text{ for maximizing criterion,} \\ \dfrac{\frac{1}{h_i}}{\sum_{i=1}^{n}\frac{1}{h_i}} \text{ for minimizing criterion,} \end{cases} \tag{7}$$

where g_i is normalized value of the i-th alternative according to the given criterion, h_i is original value of the i-th alternative according to the given criterion.

Normalized values hold the condition:

$$\sum_{i=1}^{n} g_i = 1. \tag{8}$$

Normalized values of alternatives according to the given quantitative criterion correspond to weights derived by the eigenvalue method.

Weighted sum is calculated when weights of all criteria and weights of all alternatives

according to all criteria, are derived. The result is overall weights of alternatives with regard to the goal. This result gives final ranking of alternatives.

3. Application

Four economic indicators are used to derive modified human development index: gross domestic product per capita in PPS, tertiary educated people at age of 25-64 (in 1000), life expectancy (in years) and participation rate in education and training (at least 4 weeks) at the age of 25-64 (in 1000). Weights of economic indicators are equal in the traditional conception. This index is called *traditional modified human development index* (TNHDI) in this paper.

Influence of different indicator weights on modified human development index is researched in this paper. Analytic hierarchy process and its eigenvector method are applied to derive still unknown (unexpressed) priorities of economic indicators. This approach is used to rank Visegrad Four Group Plus NUTS 2 regions in years 2004-2013 according to values of the four above mentioned macroeconomic indicators. This new index is called *weighted modified human development index* (WNHDI) in this paper.

Calculations are made by Microsoft Excel.

The economy expert performed pairwise comparisons of importance of the four economic indicators according to their significance in the WNHDI. The pairwise comparison matrix is following:

	GDP	TEP	LE	PRET
GDP	1	3	2	4
TEP	1/3	1	1/2	3
LE	1/2	2	1	3
PRET	1/4	1/3	1/3	1

where GDP is gross domestic product, TEP are tertiary educated people, LE is life expectancy and PRET is participation rate in education and training.

For example, GDP is slightly more important than LE and PRET is moderately less important than TEP according to the economy expert.

The maximal eigenvalue $\lambda_{\max}$ of this matrix equals 4.087, corresponding (normalized) eigenvector is $\mathbf{w}^{\mathrm{T}} = (0.462; 0.178; 0.274; 0.086)$. Weight (priority) of GDP is 0.462, weight of TEP is 0.178, weight of LE is 0.274 and weight of PRET is 0.086. The inconsistency index is 2.92 % and it does not exceed the threshold of 10 %. This pairwise comparison matrix is sufficiently consistent.

Indicator values of Visegrad Four Group Plus NUTS 2 regions in years 2004-2013 are normalized according to (7), all criteria maximizing, their weights are derived and weighted sums of criteria and criterion values are calculated. Average rankings of regions, according to traditional and weighted approach, are demonstrated in Table 3.

Table 3. Average ranking of regions by traditional and weighted approach to the modified human development index

Czech Republic	**Average TNHDI**	**Average WNHDI**
CZ01	4.7	**2.8**
CZ02	25.7	22.1
CZ03	26.6	23.3
CZ04	33.7	32.4
CZ05	20.6	22.6
CZ06	16.8	18.9
CZ07	26.4	28.2
CZ08	28.4	27.0
Hungary		
HU10	4.1	4.4
HU21	40.1	37.3
HU22	40.8	34.2
HU23	**45.6**	**45.2**
HU31	**44.8**	**45.3**
HU32	37.7	**42.5**
HU33	41.2	42.3
Poland		

PL11	12.8	17.8
PL12	**1.0**	**1.2**
PL21	8.6	15.8
PL22	**3.2**	6.4
PL31	16.6	25.3
PL32	26.7	32.7
PL33	32.6	36.0
PL34	36.9	40.8
PL41	9.9	15.6
PL42	26.4	30.9
PL43	38.8	39.1
PL51	8.1	14.4
PL52	**42.2**	42.4
PL61	24.4	30.4
PL62	35.0	39.4
PL63	17.5	21.2
Austria		
AT11	40.9	27.6
AT12	7.7	10.0
AT13	**2.0**	**2.0**
AT21	26.0	16.8
AT22	12.3	11.2
AT31	6.6	6.4
AT32	19.3	7.9
AT33	18.2	9.7
AT34	24.2	12.9
Slovakia		
SK01	14.8	5.0
SK02	29.3	27.0
SK03	33.8	34.6
SK04	40.1	39.6
Slovenia		
SI01	16.9	21.0
SI02	11.0	11.4

Source: Own calculation and elaboration.

Three best and worst average positions are highlighted. The best average place belongs to region PL12 with regard to both traditional and weighted conceptions. What is more, this region is always first in traditional approach (Appendix). Region AT13 holds the second best average position according to both approaches. Region CZ01 is the third best one in the weighted conception and PL22 in the traditional approach.

On the contrary, HU23 has the worst emplacement according to the traditional approach and HU31 holds the worst position with regard to WNHDI. This region is the second worst in the traditional conception, too. Region HU23 occupies the second worst position according to the weighted approach. PL52 holds the third worst average position in the traditional conception and HU32 holds it according to the weighted approach.

Regions HU23 and HU31 belong to the worst triple in both cases (i.e. traditional and weighted, too). Regions PL12 and AT11 occur in the best triple according to TNHDI and WNHDI.

Conclusions

Positions of the Visegrad Four Group Plus NUTS 2 regions in period of 2004-2013 years were defined using the analytic hierarchy process. Priorities of four indicators of modified human development index were derived according to pairwise comparison matrix – maximal eigenvalue and corresponding eigenvector were calculated. Ranking of NUTS 2 regions was determined. We can see differences in average places derived by traditional and weighted approaches. This contrast is caused by different priorities (weights) of macroeconomic indicators, of course.

If the region gets high score in highly valued indicator, its total score is rising faster than if it gets high score in less valued factor. If one region gets high score in highly valued factor and the other one is evaluated only little points in the same factor, the gap between them becomes wider. This is the reason of changes in region ranking derived by traditional and weighted procedure. Future research focuses on other possible ways of pairwise comparisons expression and their use in construction of modified human development index.

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Appendix

Ranking of Visegrad Four Group Plus NUTS 2 regions in years 2004-2013 derived by traditional (T) and weighted (W) approach to the modified human development index

	2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		average	
	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W
Czech Republic																						
CZ01	5	3	5	3	5	3	5	2	5	3	5	3	4	3	4	2	4	3	5	3	4.7	2.8
CZ02	30	22	32	24	30	23	30	21	22	21	26	22	25	23	20	21	20	22	22	22	25.7	22.1
CZ03	26	21	29	23	29	22	29	24	26	24	28	24	29	25	24	24	23	23	23	23	26.6	23.3
CZ04	36	33	38	32	35	31	35	31	33	33	34	33	33	34	30	31	31	33	32	33	33.7	32.4
CZ05	25	25	24	21	23	21	24	23	21	23	22	25	21	24	16	22	16	21	14	21	20.6	22.6
CZ06	19	20	17	19	18	20	19	19	15	19	19	19	20	20	15	19	13	17	13	17	16.8	18.9
CZ07	28	28	28	28	26	27	27	28	23	27	31	31	23	27	25	28	25	28	28	30	26.4	28.2
CZ08	31	29	30	27	31	28	31	27	31	28	29	27	30	28	23	25	24	25	24	26	28.4	27.0
Hungary																						
HU10	3	4	4	4	4	4	4	4	3	4	4	4	5	5	5	5	5	5	4	5	4.1	4.4
HU21	34	34	36	34	37	34	40	36	40	37	44	40	43	41	43	40	42	38	42	39	40.1	37.3
HU22	37	30	40	33	41	32	42	34	44	35	43	36	42	36	39	34	39	36	41	36	40.8	34.2
HU23	46	44	45	46	46	46	46	46	46	45	46	45	46	45	45	45	45	45	45	45	45.6	45.2
HU31	43	43	43	44	44	45	45	45	45	46	45	46	45	46	46	46	46	46	46	46	44.8	45.3
HU32	38	40	35	41	34	39	37	44	37	44	38	44	40	43	42	44	38	43	38	43	37.7	42.5
HU33	40	39	39	39	38	41	39	43	39	43	42	43	44	44	44	43	44	44	43	44	41.2	42.3
Poland																						
PL11	12	19	12	18	13	18	14	18	12	18	10	16	12	17	13	17	15	18	15	19	12.8	17.8
PL12	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	1.2
PL21	11	17	10	17	9	16	9	16	9	15	9	15	10	16	7	16	6	16	6	14	8.6	15.8
PL22	4	6	3	7	3	7	3	7	4	7	3	6	3	6	3	6	3	6	3	6	3.2	6.4
PL31	15	26	16	26	19	29	15	25	17	26	15	23	14	22	19	26	18	26	18	24	16.6	25.3
PL32	27	36	27	36	28	35	25	32	29	32	21	30	24	32	29	32	28	31	29	31	26.7	32.7
PL33	33	37	33	38	36	37	32	37	32	36	30	34	31	35	33	36	33	35	33	35	32.6	36.0

PL34	39	45	41	43	40	43	36	41	36	41	35	38	35	39	36	38	35	39	36	41	36.9	40.8
PL41	9	16	11	16	11	17	11	17	11	17	13	17	8	15	8	15	9	14	8	12	9.9	15.6
PL42	24	31	25	31	24	30	21	30	25	30	23	29	27	31	32	33	32	32	31	32	26.4	30.9
PL43	35	38	37	37	39	38	38	38	42	42	41	41	37	38	38	39	41	40	40	40	38.8	39.1
PL51	7	15	8	14	7	14	6	14	8	14	8	14	7	14	10	14	10	15	10	16	8.1	14.4
PL52	45	46	46	45	45	44	44	42	38	40	37	39	39	42	41	42	43	42	44	42	42.2	42.4
PL61	21	27	21	30	25	33	26	33	28	31	24	32	22	30	26	30	26	30	25	28	24.4	30.4
PL62	41	41	34	40	33	40	34	40	34	39	32	37	34	37	37	41	36	41	35	38	35.0	39.4
PL63	20	24	20	22	20	24	20	22	20	22	17	21	16	19	17	20	14	20	11	18	17.5	21.2
Austria																						
AT11	42	23	42	25	42	26	41	29	43	29	39	28	41	29	40	29	40	29	39	29	40.9	27.6
AT12	6	8	6	9	8	11	8	11	7	10	7	9	9	9	9	11	8	11	9	11	7.7	10.0
AT13	2	1	2	1	2	2	2	3	2	2	2	2	2	2	2	3	2	2	2	2	2.0	2.0
AT21	23	14	23	15	22	15	23	15	27	16	27	18	28	18	31	18	29	19	27	20	26.0	16.8
AT22	13	11	13	12	12	12	12	12	13	12	12	11	13	12	12	10	11	10	12	10	12.3	11.2
AT31	8	5	7	6	6	6	7	6	6	6	6	7	6	7	6	7	7	7	7	7	6.6	6.4
AT32	18	7	19	8	17	8	18	8	19	8	20	8	18	8	22	8	22	8	20	8	19.3	7.9
AT33	17	10	18	10	16	9	17	10	18	11	18	10	19	10	21	9	19	9	19	9	18.2	9.7
AT34	22	13	22	13	21	13	22	13	24	13	25	13	26	13	27	13	27	12	26	13	24.2	12.9
Slovakia																						
SK01	16	9	14	5	14	5	13	5	14	5	14	5	15	4	14	4	17	4	17	4	14.8	5.0
SK02	29	32	26	29	27	25	28	26	30	25	33	26	32	26	28	27	30	27	30	27	29.3	27.0
SK03	32	35	31	35	32	36	33	35	35	34	36	35	36	33	35	35	34	34	34	34	33.8	34.6
SK04	44	42	44	42	43	42	43	39	41	38	40	42	38	40	34	37	37	37	37	37	40.1	39.6
Slovenia																						
SI01	14	18	15	20	15	19	16	20	16	20	16	20	17	21	18	23	21	24	21	25	16.9	21.0
SI02	10	12	9	11	10	10	10	9	10	9	11	12	11	11	11	12	12	13	16	15	11.0	11.4

Source: Own calculation and elaboration.