**MONITORING SUSTAINABILITY
FOR SLOVENIA'S REGION**

Renata Slabe-Erker, Janez Filiplič

WORKING PAPER No. 38, 2007

MONITORING SUSTAINABILITY

FOR SLOVENIA'S REGIONS[1]

Renata Slabe Erker [2]

Janez Filiplič [3]

WORKING PAPER No. 38, 2007

Editor of the WP series: Boris Majcen

Ljubljana, November 2007

[2] *Renata Slabe-Erker;* Institute for Economic Research, Kardeljeva ploščad 17, 1109 Ljubljana; e-mail: erkerr@ier.si.

[3] *Janez FIliplič;* Flikka d.o.o., Kamnik; janez.filiplic@flikkaboards.com.

Abstract

From the necessity to dispose of a tool for monitoring and evaluating sustainability at the regional level, the systems of regional sustainability indicators are formed. However, the indicators become useful only when accompanied of the corresponding analysis. The present paper brings the comparison of regional indicators and the comparison in time, which as a whole forms the analysis of sustainability. On the basis of this analysis the policy recommendations should be prepared in order to warn against poor conditions and negative developments, before they turn into irreversible phases or assume too large proportions and on the other hand to identify and monitor favourable conditions and developments, which create competitive strengths of the regions.

Key words: regional susitainability indicators, analysis of sustainability, regional competitiveness

1. Introduction

Frequently, sustainable development is declared as development, which satisfies needs of the present generation, not threatening satisfaction of the future generation's needs. The key contents have to be added to this intertemporal interpretation, which are again being of an integrative nature. Namely, equal treatment of the three development components is the main characteristic of sustainable development: economic (growth in quantitative and qualitative sense), social (well functioning of public institutions, social stability, equity and participation) and environmental (stable ecosystem, healthy environment, development of environment). Finally, spatial and regional sustainability have to be achieved, too.

From the necessity to dispose of a tool for monitoring and evaluating sustainability at the regional level, the systems of regional sustainability indicators are formed. However, the indicators become useful only when accompanied of the corresponding analysis. The present paper brings the comparison of regional indicators and the comparison in time, which as a whole indeed forms the analysis of sustainability[1]. On the basis of this analysis the policymaking recommendations, strived to the higher sustainability of every region, should be prepared. Anyway, the aim of forming the system of sustainable indicators and its use is to warn against poor conditions and negative developments in the regions, before they turn into irreversible phases or assume too large proportions. On the other hand the aim of the system of indicators is to identify and monitor favourable conditions and developments, which create competitive strengths of the regions. In accordance with these the following research hypothesis will be tasted in the paper: 1) Region's own resources are not fully used and can be directed into other more sustainable uses, 2) Preserved environment and rich biodiversity are among the most frequently identified strengths and opportunities in Slovenia's regions, 3) Social policy is not effectivelly integrated into sustainable development and it contributes only little to competitiveness of Slovenia's regions.

The DPSR framework (driving force indicators, pressure indicators, state indicators, response indicators) was first used by the UN commission for sustainable development for creating indicators of sustainable development. The DPSR analytical framework helps with

---

the comprehension of causative-consecutive relationships, in our case in the regions and among them, or in determination of functions of each individual indicator. Driving forces represent socio-economic factors, such as activities, education, R&D, which increase or reduce pressures/burdens of the regions and in this way influence the region's sustainability. State indicators give us the information like how well the region is preserved or developed, while responses refer to measures for conservation and sustainable use of regional sources (UNEP, 1997). A series of indicators analysed in further of the paper is based upon described logic of DPSR framework.

International organisations and many states all over the world proposed and developed various indicators of sustainability, with the aim to evaluate a particular viewpoint of sustainability, primarily at the national level. However, in fact only a few of these indicators are being used for taking economic decisions. When we were forming our system of sustainability indicators, the starting point was a framework prepared for German regions (OECD, 2002). The system of indicators for German regions is based upon attainability of four meta targets: solidarity and society, economic competitiveness and sustainable economy, social and spatial justice, and protection of natural resources. 'The first target "solidarity and society" describes a general atmosphere, in which sustainability can grow. Since this target has very low regional impact, no regional indicators are defined. The target of the second dimension is preservation of economic competitiveness by strengthening social and ecological efforts. Therefore, this dimension entirely retains economic objectives and objectives which expand the economic growth via quality aspects, such as reducing the use of natural resources in production of goods and services. Social justice aims at fair distribution of individual necessities and social stability of society. Strong polarisations are undesired in a sustainable society. Another social aspect is justice between generations and therefore enabling development opportunities for future generations, as well. Spatial justice implies balanced structures regarding economic competitiveness, adequate offer of jobs and education, as well as balanced population structure, suitable and balanced infrastructure and good environmental living conditions. The third target refers to a limitation in extraction of natural resources as well as the protection of natural resources. Individual sub-objectives can be derived from the three above mentioned targets. These incorporate 56 indicators, which are largely not available (28 of 73) (OECD, 2002); even worse is with the availability of regional data in Slovenia.

2. A system of Sustainability Indicators for Slovenia's Regions

A system of sustainability indicators for Slovenia's regions, which are analysed in this paper, is formed in accordance with the scheme presented in introduction. Namely, the first level of a system of indicators (meta-targets) was used fully and the second level (sub-objectives) was used mainly but not fully, due to unavailability of regional data. The choice of individual indicators was adapted to the specificity of Slovenian circumstances (according to needs and possibilities), policy relevance of the indicator and existence of primary regional data, with more or less regular periodical publishing nowadays, as well in the future. Additionally, the requirement was that indicators would have the following characteristics: statistical measurability, logicality or scientific defensibility and reliability. The structure of a system of sustainability indicators for regions is organised in a form of three meta-targets and nine sub-objectives. The target "solidarity and society" includes three sub-objectives: (i) maintaining and improving the economic strength and competitiveness with multifarious economic structure, (ii) maintaining and improving the knowledge and R&D and (iii) improving the efficiency of natural resources and the economy. The target "social and spatial justice" contains three sub-objectives: (i) satisfying individual needs, (ii) safeguarding social stability, (iii) equal access to jobs and society. The target "protection of natural resources" also contains three sub-objectives: (i) protection of biological diversity, (ii) reducing environment pollution to protect its natural absorptive capacity and (iii) reducing or optimizing the use of natural resources.

In our series of sustainability indicators for regions individual indicators are chosen with regard to: (1) the original OECD framework, (2) relevance for use in identification and evaluation of economic exploitation of endogenous regional sources, that is to utilize the existing potentials and at the same time the diversity of regions, in a sense of their economic, natural, cultural, spatial attributes and (3) data availability. The selection of indicators considers some insights, which are important for economic use of regional potentials: business and investment activity, greater diversity, specific Slovenian features, use and regenerativeness of natural sources, negative influences on environment, social cohesion, educational and S&T potential. At the beginning, it is necessary to warn that availability of data for creating a system of regional indicators is poor. Table 1 contains, besides the sustainability indicators, the proposals for improvements in the future, which would improve the sustainable contents of regional statistics.

Table 1: A system of sustainability indicators for Slovenia's regions

Sub-objectives	ECONOMIC COMPETETIVENSS AND SUSTAINABILE ECONOMY	DPSR	Additional proposals
maintaining and improving the economic strength and competitiveness and diversity of economic structure	GDP p.c. Investment intensity (investment expenditures/assets) Sectoral concentration	D D S	Employeees in SME's
maintaining and improving the knowledge and R&D	Employees in innovative enterprises Ratio of students to inhabitants, older than 15 years Enterprises with ISO 14000 per 100.000 inhabitants	D D R	Indicators of information society
improving the efficiency of natural resources and the economy	Agricultural land in the Slovenian agri-environmental programme Movement of railway goods transport	R D	Energy consumption per capita or per GVA
	SOCIAL AND SPATIAL JUSTICE		
satisfying individual needs	Unemployment rate Net migration rate Population ageing index	D D S	Average life expectancy
safeguarding social stability	Gross income tax base/GDP Ratio of permanently unemployed persons to total unemployed persons	S S	Poverty indicator
equal access to jobs and society	Unemployed youth (ratio of young unemployed people to total unemployed persons) Female unemployment (ratio of unemployed women to total unemployed persons)	S S	
	PROTECTION OF NATURAL RESOURCES		
protection of biological diversity	Protected areas (ratio of national, regional and landscape parks to total area) Ratio of wooded area to total region's area	R S	Threatened plant and animal species
reducing environment pollution to protect its natural absorptive capacity	Tourism intensity Municipal waste collected from households per inhabitant Share of dwellings equipped with sewage system Number of inhabitants per car Expenditure for environmental protection (% GDP)	P P S D R	Pesticides consumption (kg per hectare of agricultural land) Fertilizers consumption (kg per hectare of agricultural land) Air emissions Recycling rate (paper)
reducing or optimizing the use of natural resources	Ratio of roads and built-up area in the total area Density of population	S S	Water consumption per capita Percentage of renewable energy of the total energy production Degree of land fragmentation

Source: Slabe Erker R., Filiplič J.: Oblikovanje kazalcev samovzdržnosti regije ter ocena regij glede na te kazalce v medsebojni medregionalni in mednarodni primerjavi, 2005

3. Methodology

Sustainability indicators for regions are expressed mostly as dispersion indexes or as sustainability indexes. The first measure the value of the phenomenon either in extreme or in average and are referring to protection of natural resources, social and spatial justice or economic situation. While, the second are expressed as quotient between the current use and the current increment (renewal) and are mostly referring to the use of endogenous regional sources for improving economic competitiveness. Conservation indicates as well the conservation of structural diversity of various phenomena, such as tree composition in a forest, temporal and spatial dispersion of tourist supply by destinations, changes in a structure of soil use, and suchlike. These phenomena are described by dispersion indexes. While the optimal usage level or the level of protection of sources is measured by sustainability indexes. Therefore, sustainability indexes demonstrate the importance of sources in the process of welfare creation. For example, in optimum the use of natural resources would be so high that the sustainable contribution of used and preserved resources to the national welfare would be maximal. When the use of natural resources is too high in comparison with the increment, this points to undervaluation of natural resources as sources of the national welfare, and the opposite (Slabe-Erker, Hlad in Juvančič, 2003, str. 46). Similarly, it should hold true for economic, social and institutional capital, where sustainability indexes measure growth or exploitation of investment, developmental, technological and educational capacities, and with these the influence on economic competitiveness.

First, the static picture of regional sustainable development will be presented in the next chapter with positioning the regions by individual development components. For the purpose of comparison of sustainability contents – economic, social and environmental, the method of standardization was used, to be precise the conversion of indicator's values into a untitless scale, i.e. the standardized normal distribution, which has desirable characteristics, also in the case of aggregation. An average of regions is always zero, which enables the avoidance of introducing aggregation distortions arising from differences in the means of variables.

The equation for converting the value y_i into the adequate value z_i in the standardized normal distribution is:

$$z_i = \frac{y_i - M_y}{\sigma_y} \quad , \tag{1}$$

where y_i is the value of variable (indicator), M_y the arithmetic mean and σ_y the standard deviation.

In the standardized normal distribution the arithmetic mean is always 0 and the standard deviation $1 \lfloor Y : N(M_y, \sigma_y); Z : N(0,1) \rfloor$. Ranking of values from –2,5 to +2,5 implies, that 99,38% of the values of normally distributed variable are being founded in an interval from $M_y - 2,5\sigma_y$ to $M_y + 2,5\sigma_y$.

The results are interpreted so that the higher value in the standardized normal distribution implies higher sustainability of the region. Moreover, for variables of which higher value corresponds to lower sustainability, the numerator is inversed, which enables keeping the ordinal relation (Slabe-Erker, 2003).

Regarding the aggregation of indicators into the field index, the weight of individual indicators is equal and the arithmetic mean is used. Such a decision is based upon the WEF argumentation concerning the environmental sustainability methodology: a sensitivity analysis, which is a survey of environmental experts and members of the business community determining their views on the relative importance of the indicators composing the index, suggests that the weightening methodology would not change the rankings significantly (WEF, 2002). Therefore, equal weight of indicators was used in a baseline metric and indicators correspond broadly to the entire set of regional sustainability issues.

The fifth chapter contains the results of intertemporal comparison. A set of 21 indicators are included in this comparison, so that each sustainability component, economic, social and environmental, is represented by seven indicators. The major aim of intertemporal comparison is to identify areas of the greatest progress or decline in sustainability between 1998 and 2002 for individual regions[2]. Due to the lack of data or their newness, the

---

[2] A few indicators are not represented in polar diagrams below. The main reason for their omission is a large deviation of standardized value from the mean value for a number of regions. This fact deforms highly the comparative picture among other indicators. Hence, the following indicators are not represented in polar diagrams: (1) enterprises with ISO 14000 per 100.000 inhabitants, (2) tourism intensity (3) environmental expenditures.

indicators marked with asterisk are referring to other year than the majority of indicators[3]. Polar diagrams in this part of the paper are formed in a way to measure the relative achievements in individual fields on star-like axis by standardized values of individual indicator to its national value. In dynamic polar diagrams the movement to the rim indicates a progress and the movement to the centre a decline in regions sustainability, comparable to Slovenia as a whole (100).

It holds true for the majority of indicators that higher value corresponds to lower sustainability and therefore, larger positive deviation from the national figue is represented closer to the centre. In these cases the following equation is used for conversion of the value y_i for the region R into the adequate value z_i for the region R standardized on the national value y_i^{SLO} :

$$z_i^R = 100 + (\frac{y_i^{SLO} - y_i^R}{y_i^{SLO}}) \cdot 100 \qquad (2)$$

In cases, when higher value of indicator corresponds also to higher sustainability, a larger positive deviation from the national value represents a point closer to the diagram's rim. In these cases a simple cross calculus is used for conversion of the value y_i for the region R into the adequate value z_i for the region R standardized on national value y_i^{SLO} :

$$z_i^R = \frac{y_i^R}{y_i^{SLO}} \cdot 100 \qquad (3)$$

---

[3] Indicators, which are reffering to other years than the majority of indicators, are: employees in innovative enterprises (1998 and 2000), agricultural land in agri-environmental measures (2001, 2003), movement of railway goods transport (2000, 2002), ratio of wooded area to total region's area (1997, 2001), municipal waste collected from households per inhabitant (1998, 2003), number of inhabitants per car (1998, 2003) and lastly ratio of roads and built-up area to total area (1997 in 2001).

**4. Sustainability Position for Slovenia's Regions**

The results of the interregional comparison will be presented further in the text through positioning the regions by individual sustainability category, i.e. economy, society and environment. As expected, the Central Slovenia region is in rates best for economic sustainability due to its relatively high economic strength as measured by GDP per capita and investment intensity. It is followed by Obalno-kraška and Gorenjska. Achievements of the Obalno-kraška region are above national average figures in terms of maintaining and improving human knowledge. Particularly, it stands out as employees in innovative enterprises and enterprises with ISO 14000 per 100.000 inhabitants are concerned. Both of the cases point to the higher level of business sustainability as a result of development of the innovative, export oriented industrial branches. The Gorenjska region improves its use of natural resources in economy much more than the other regions, especially through agricultural land in the SAEP (Slovenian agri-environmental program). The stirred relief of the Gorenjska region is important. Notwithstanding the less favoured farming conditions, Gorenjska has a competitive strength in other agriculture functions, such as conservation of natural resources, biodiversity, traditional cultural landscape, customs and farming practices. The Zasavska, Pomurska and Spodnjeposavska regions are in the worst position with respect to reaching economic sustainability. Their poor results can be assigned primarily to low investment intensity, low level of business sustainability and poor educational structure of inhabitants, consecutively.

The Goriška, Notranjsko-kraška and Spodjeposavska regions have relatively higher social sustainability compared to the other regions. The Goriška region's social sustainability is above average figure, primarily due to the lowest unemployment rate and the lowest female unemployment among all regions. To social sustainability of the Notranjsko-kraška region contributes the most its high ratio of gross income tax base to GDP per capita, which implies increased employment. The next crucial indicator for the above average level of social sustainability of the Notrajnsko-kraška region is its greater openness of the society. The Spodjeposavska region achieves the above average level of social sustainability, mostly due to its relatively lower youth unemployment and as well greater openness of the society. The worst results for social sustainability achieve three regions, Zasavska, Podravska and Central Slovenia. Zasavska region has by far the poorest level of satisfaction for individual needs. It manifests itself in the high unemployment rate, emigration and the largest inequality in access to jobs and society, i.e. high ratio of young people and women to total unemployed persons. Likewise, the high rate of unemployment and women unemployment contributes the most to the low level of social sustainability of

the Podravska region. While Central Slovenia has the lowest ratio of gross income tax base to GDP p.c., which implies increased employment and therefore the lower rate of social sustainability.

Koroška, Spodjeposavska and Savinjska are leading regions as far as environmental sustainability is concerned. Koroška region proves the above average environmental sustainability figures, which is primarily the result of ahievements at reducing environmental pollution, i.e. the lower quantity of municipal wastes than the other regions and low tourism intensity, which means action reducing the load caused by tourist infrastructure on the environment. The Spodnjeposavska region also ranks within a group of the lowest quantity of collected municipal waste per inhabitant, and at the same time it earmarks the highest share of GDP for environmental protection. The same factors are crucial for the above average environmental sustainability figures of the Savinjska region. Among regions which came off losers in terms of environmental sustainability are Central Slovenia, Obalno-kraška and Podravska. The Central Slovenia region lags far behind the other regions in reducing or optimising its use of natural resources, since it has a high ratio of roads and built-up area to total area and high population density in urban settlements and settlements within urban area. In this region the number of inhabitants per car is exceedingly low, which is again extremely undesirable from the environmental sustainability viewpoint. The load caused by transport is beside the load from consumption crucial also for the poor ranking of the Obalno-kraška region on environmental sustainability. A propos environmental sustainability, the Podravska region demonstrates below average figures mainly due to failure reducing or optimising its use of natural resources (Slabe Erker, Filiplič, 2005).

Figure 1: The comparison of regions by different type of sustainability
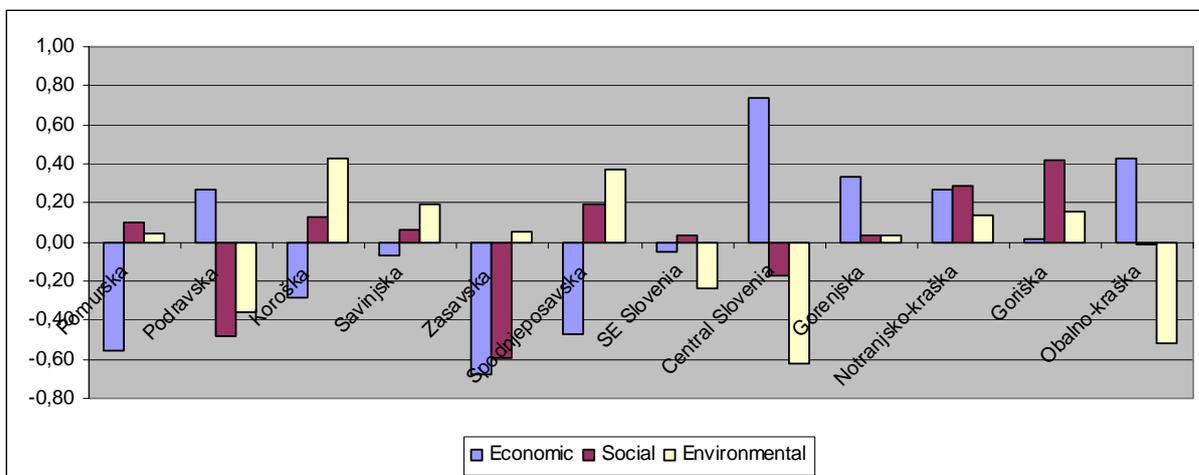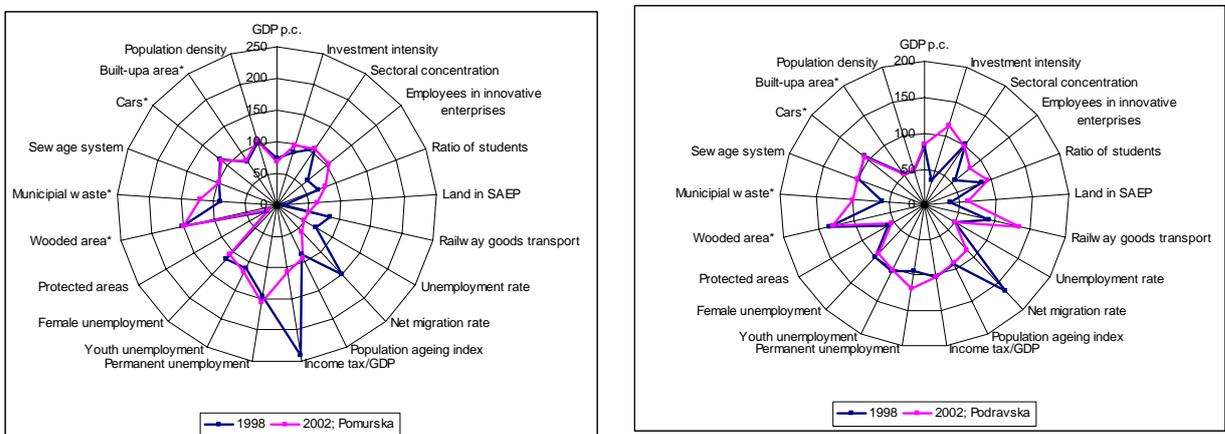

Source: own calculations

5. Developments in Regional Sustainability

The present chapter is aimed at the presentation of dynamic picture over the period 1998 to 2000 on regional sustainability achievements. The Pomurska region has been evidently progressing over the period 1998 to 2002, relatively in comparison with the other regions although just as far as economic competitiveness and sustainable economy are concerned. Notwithstanding the Pomurska region's economic sustainability is still severe, since all indicators are below or close to the national reference value. The Pomurska region improved its relative position in five out of seven indicatos. The region regressed insignificantly in terms of GDP per capita, despite the indicator's improvement, since it was lower than in the other regions (SURS, 2004b; SURS, 2003a). The railway goods transport with Hungary declined for one third, probably because of the orientation to West European markets and Balkan (SURS, 1998a-2004a). In general, the Pomurska region deterioated its social sustainability. The critical points are unemployment rate, emigrations and high population ageing index. People are emigrating to the other regions, residents are old and unemployment rate is higher than for Slovenia as a whole (Pečar, 2003; SURS 1999a-2004a; SURS –MZ). The relative position of Pomurska region deteriorated between 1998 and 2002 in terms of unemployment rate, migrations, ratio of gross income tax base to GDP, and female unemployment. These imply decreased employment, in spite of the efforts to increase the economic competitiveness. The region's environmental sustainability remains basically unchanged. Today the Pomurska region's environmental situation is not serious any more, since the creation of the Regional Park Goričko in 2003 entailed more than halving of municipal wastes per capita. At the moment, the only negative spot remains a high ratio of roads and built-up area to total area (SURS, 2000a-2004a; SURS, 2003b).

The Podravska region progressed evidently from 1998 to 2002 in terms of economic competitiveness, relatively to the other regions. Notwithstanding the economic sustainability is still poor, as the most of indicator's values are below the national value. For six out of seven indicators the Podravska region improved its relative position. It did the greatest improvement in terms of investment intensity, since the ratio of investment expenditures to assets in the observed period increased by 12 percentage points, which is the most among all regions (Pečar, 2000, 2002 and 2003). The region did slightly deterioate its sectoral concentration. It actually means that sectoral concentration intensified and this should lead to a less diverse economic structure (SURS, 2004b). In addition, the region's social sustainability is rather delicate. The majority of indicators are below or close to the national figures. In general, the region still deteriorated its position in

this field. The only bright spot is a decrease in the ratio of permanently unemployed persons to total unemployed persons (Pečar, 2003). In terms of unemployment rate, population ageing index and female unemployment the region's position is serious. People emigrating to the other regions, residents are old and unemployment rate is higher than for Slovenia as a whole. With respect to migrations and access to jobs of young people and women the Podravska region's relative position deteriorated. This means that, despite an increase in economic competitivenss, the social justice indicators have not improved at all. With respect to environmental sustainability the situation remains more or less unchanged. Three indicators are serious, i.e. protected areas, built-up area and population density (Vintar, 2003; MOPE, 2004 in SURS, 1999a-2004a).

Figure 2: Developments in sustainability for the Pomurska and Podravska regions
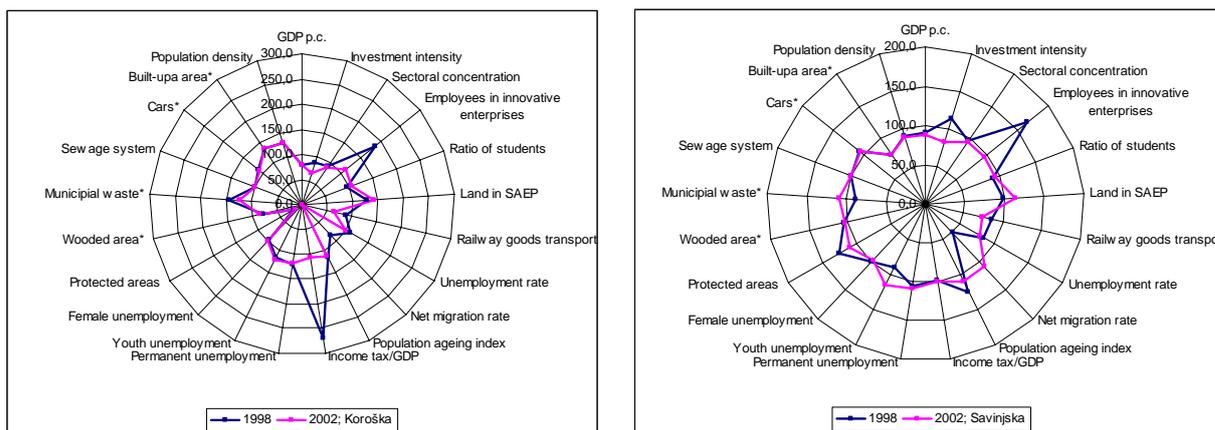

Source: own calculations

Over the observed period the Koroška region did not improve any type of its sustainability. In the field of economic competitivenss and sustainable economy the situation remains basically unchanged. The position is serious as far as the improvements of economic strength, competitiveness and diversity of economic structure are concerned. In terms of GDP per capita, ratio of students (SURS, 2000c-2004c; SURS, 1998a-2004a; Poročilo o razvoju, 2002) and agricultural land in SAEP measures (SURS, 2003a in AKTRP/MKGP, 2005) the Koroška region improved its relative place. In general it deteriorated its social sustainability. The region faces serious problems in terms of constant emigration flow (SURS, 1999a-2004a). The relative place of the region between 1998 and 2002 deteriorated throughout except in terms of equal access to jobs and society. Its environmental sustainability figures remain more or less unchanged and only the biodiversity indicator is serious.

Over the period 1998 to 2002 the Savinjska region lost relatively to the other regions in terms of economic competitiveness and sustainable economy. Employees in innovative enterprises and investment intensity decreased for 3.1 percentage points, each (UMAR, 2005; Pečar, 2000, 2002 and 2003). The region's economic sustainability is serious, as all indicators, except agricultural land in SAEP, are below the national figures. The region improved its relative place only in two out of seven indicators, i.e. agricultural land in SAEP and ratio of students. In general, the region slightly improved its social sustainability, particularly in terms of migration and youth unemployment. People are immigrating and youth unemployment has been reducing for 28.8% between 1998 and 2004 (SURS, 1999a-2004a; ZRSZ). However, the region is still in a severe position as far as unemployment rate and female unemployment are concerned (Pečar, 2003). The region is maintaining the state of its environmental sustainability. Savinjska's environmental state is serious according to its failure in reducing or optimising the use of natural resources (SURS, 2003; AKTRP/MKGP, internal data, 2005).

*Figure 3: Developments in sustainability for the Koroška and Savinjska regions*

Source: own calculations

The Zasavska region relatively regressed in terms of economic competitiveness and sustainable economy between 1998 and 2002, the most with respect to the four subsequent indicators. Though the Zasavska region actually extended its agricultural land in SAEP over the period 2001 to 2003 by 19.5%, the other regions with lower figures in the first year extended it even more (SURS, 2003a; AKTRP/MKGP). The movement of railway goods transport has fell to 56.1% of the 1997 level (SURS, 1998a, 2001a-2003a). Furthermore, the investment intensity fell by 1 percentage point (Pečar 2000, 2002 and 2003). GDP per capita increased in constant prices (1998), though not significantly and the increase for the other regions was larger (SURS, 2004b; SURS, 2003a). The region's economic sustainability is serious, as five out of seven indicators are below the national

figures. For none of these indicators the region improved its relative position. In the field of social sustainability the position is more or less unchanged. The largest relative change, and also the absolute one, is registered for migrations. After the year 2001 emmigrations evidentely increased and the net migration rate was -1.34‰ in the year 2002 (SURS, 1999a-2004a). The position of the region is extremely delicate regarding the majority of indicators, and unemployment rate as well emigrations are high. Though no significantly, the region's environmental sustainability deteriorated. Zasavska faces severe environmental conditions due to unsustainable use of natural resources (SURS 1999a-2004a).

Over the period 1998 to 2002 the Spodnjeposavska region relatively regressed in terms of economic competitiveness and sustainable economy, the most in terms of agricultural land in SAEP and employees in innovative enterprises. The region has the highest ratio of employees in innovative enterprises among all regions in the year 1998, i.e. 29.4%. But till the year 2000 this ratio has been decreasing for a quarter, while eight regions out of twelf in this period increased the number of employees in innovative enterprises (UMAR, 2005). With respect to economic sustainability the region's position is extremely delicate. All indicators are below or close to the national figures. Similarly, the region deteriorated its social sustainability, above all in terms of unemployment rate, migrations and permanent unemployment. The region otherwise decreased its unemployment rate by 1.5 percentage points, while for Slovenia in the same period the unemployment rate decreased by almost 3 percentage points. Although the Spodnjeposavska region had an above average increase in immigration, it relatively regressed in comparison with the other regions. The ratio of permanently unemployed persons to total unemployed persons decreased by 22% in the region, while for Slovenia this ratio decreased by a third (SURS, 1999a-2004a, Pečar, 2003). The position of the region is rather delicate regarding a few indicators, primarily in terms of unemployment rate. Likewise, the region's environmental sustainability deteriorated, though not significantly. In terms of the ratio of roads and built-up areas, as well as the ratio of protected area to total area the region faces serious problems (Vintar, 2003; MOPE/ARSO, 2004, SURS 2000a-2003a).

Figure 4: Developments in sustainability for the Zasavska and Spodneposavska regions
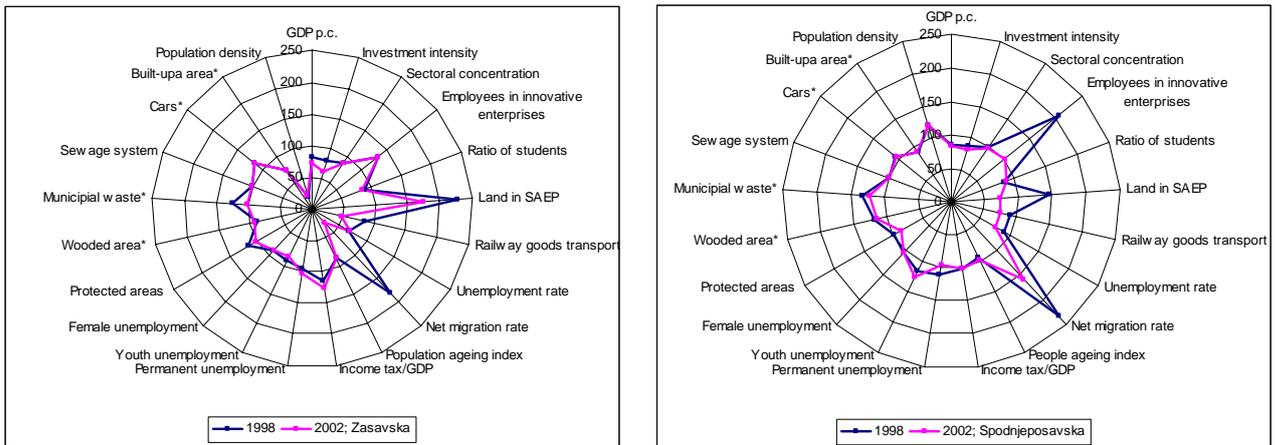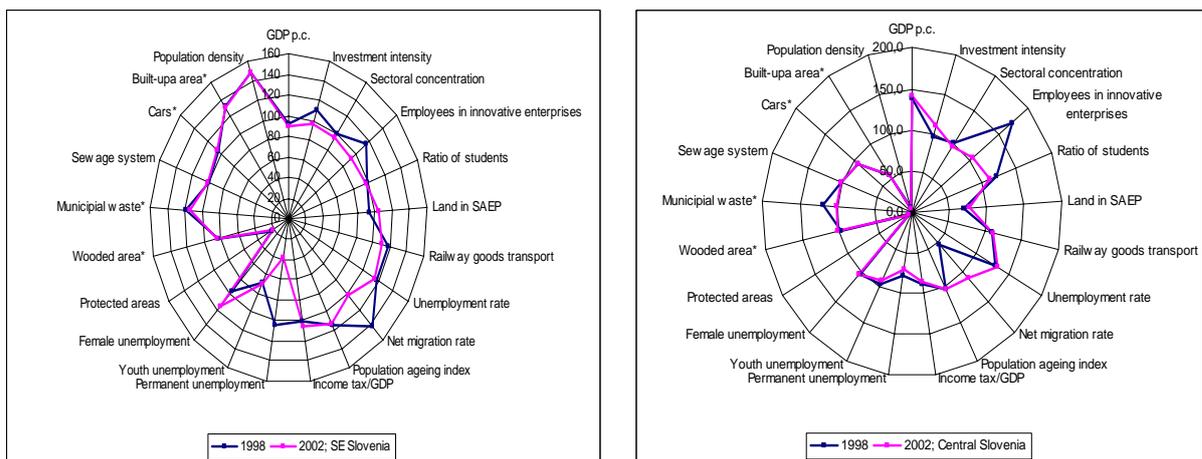

Source: own calculations

From 1998 to 2002 Southeast Slovenia regressed in terms of economic competitiveness and sustainable economy, mainly due to low investment intensity and low employment rates in innovative enterprises. The region's investment intensity almost didn't change between 1998 and 2002, while in Slovenia as a whole this increased by nearly 2 percentage points (Pečar, 2000, 20002, 20003). While the ratio of employees in innovative enterprises increased in Southeast Slovenia by fifth, this increased in Slovenia as a whole by half (UMAR, 2005). The region's economic sustainability is rather severe, as the majority of indicators are below or close to the national figures. Likewise, the region regressed in the field of social sustainability, especially in terms of migrations and permanent unemployment. Notwithstanding the above average increase in immigration, which has still been increasing, the region relatively deteriorated, as this increased in the other regions even more (SURS, 1999a-2004a). In Southeast Slovenia the ratio of permanently unemployed persons to total unemployed persons increased over the observed period by 3 percentage points, yet it is currently decreasing much (Pečar, 2003). In terms of equal access to jobs and society the region faces serious problems, as youth unemployment and permanent unemployment are high. In the field of environmental sustainability the position remains basically unchanged, with the serious situation as far as biodiversity protection is concerned (Vintar, 2003, MOPE/ARSO, 2004; SURS, 2002a in 2003a).

In terms of economic competitiveness and sustainable economy from 1998 to 2002 the Central Slovenia region didn't change much. Only the ratio of employees in innovative enterprises relatively deteriorates. In the year 1998 the region demonstrated the above average ratio of employees in innovative enterprises (24,7%), which has decreased by 2 percentage points till the year 2000, while for Slovenia this ratio has increased by 50% in

the same period (UMAR, 2005). GDP per capita in the region is 40% higher than the national figure (SURS, 2004b; SURS, 2003a). A severe position of the region is due only to the lack of agricultural land. Likewise, in the field of social sustainability the region is maintaining its position, with the only noticeable improvement in terms of migrations. The emigration flow in the year 1998 (-1,78) changed into immigration flow in the year 2003 (2,69) (SURS, 1999a-2004a). The region has faces fairly severe conditions, above all due to safeguarding its social stability, i.e. permanent unemployment and unequality based on wage differentials. In the field of environmental sustainability the conditions are worsening, primarily due to slow decrease in municipial wastes (SURS 2000a-2004a; SURS, 2003b). With respect to almost all environmental indicators the position is extremely delicate.

Figure 5: *Developments in sustainability for the Southeast Slovenia and Central Slovenia regions*
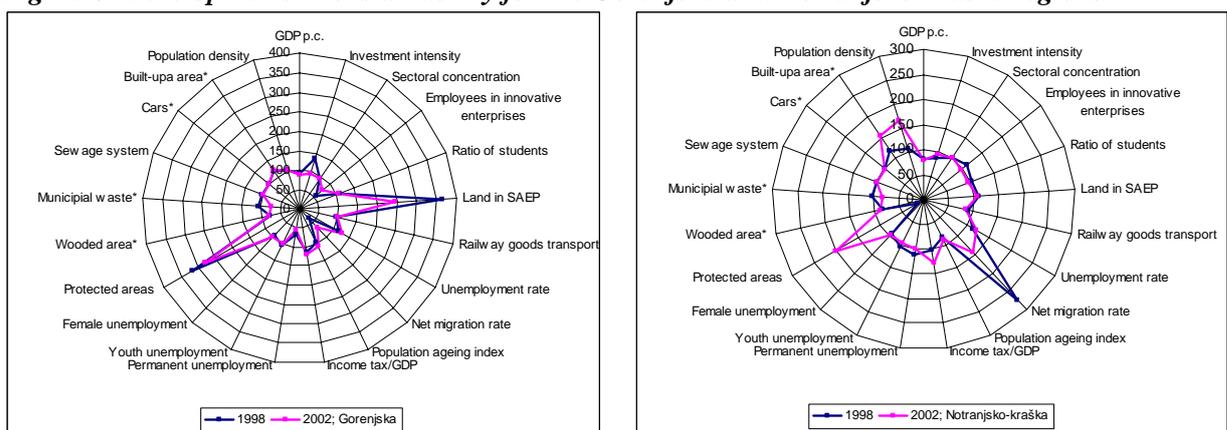

Source: own calculations

Over the period 1998 to 2002 the Gorenjska region regressed in terms of economic competitiveness and sustainable economy. To some extent the region lost its initial significant advantage of the ratio of agricultural land in the Slovenian agri-environmental programme (SAEP: 60%), despite an increase of 5%, as the increase for Slovenia as a whole was 56% (SURS, 2003a; AKTRP/MKGP, internal data). Also worthy of note is the fall in investment intensity (Pečar, 2000, 2002 and 2003). All indicators are very close to the average national figures, except agricultural land included in the SAEP. The region slightly improved its social sustainability, though not significantly, and situation for migrations and permanent unemployment is serious. People are emigrating and the ratio of permanently unemployed persons to total unemployed persons is above average (23.7%) (Pečar, 2003). The region is maintaining the state of its environmental sustainability.

Gorenjska's environmental state is serious according to most indicators, in particular due to its failure reducing environment pollution.

The Notranjsko-Kraška region regressed, though not significantly, in terms of economic competitiveness and sustainable economy between 1998 and 2002. All indicators are below or close to the national figures. However, the region did slightly improve its social sustainability. The relative improvement is the largest in terms of the ratio of gross income tax base to GDP per capita, which increased from 44.9% to 55.1%, which implies increased employment (SURS, 2004b; Pečar, 2001, SURS, 2003a). The region lost a great deal of its relative advantage in terms of migrations, notwithstanding an increase in immigration of 45% (SURS, 1999a-2004a). In terms of equal access to jobs and society as well as population ageing the region faces serious problems. However, the region improved its environmental sustainability figures. The Notranjsko-Kraška region's environmental situation is serious to some extent, primarily due to transport and consumption (waste), and abandoning of less favoured agriculture land and falling rural population. The creation of the Notranjska Regional Park 2002 entailed a vast expansion in the amount of protected land, i.e. from 1.1% to 16.7% of the region (Vintar, 2003 in MOPE/ARSO, 2004). The exceedingly low population density represents an important relative advantage for the region, namely the region had 34.9 inhabitants per square kilometre in 2002, while Slovenia as a while had 98.4 inhabitants per square kilometre. The second important advantage of the region is its below average ratio of roads and built-up area, i.e. 1.78% in the region and 3.78% in Slovenia (SURS, 1999a-2004a).

Figure 6: Developments in sustainability for the Gorenjska and Notranjsko-kraška regions
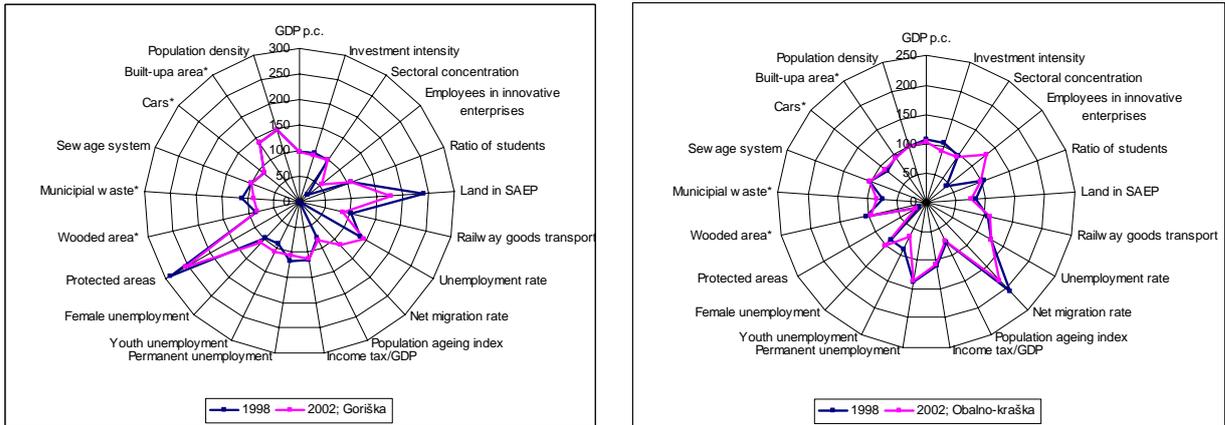

Source: own calculations

From 1998 to 2002 the Goriška region regressed in terms of economic competitiveness and sustainable economy. The only bright spot was employment in innovative enterprises, which increased threefold (UMAR, 2005). Its initial relative advantage in the proportion of agriculture land in the SAEP (40%) fell radically, despite an increase of 15%, as the proportion for Slovenia as a whole increased by 56% (SURS, 2003a; AKTRP/MKGP, internal data). All other indicators are below or close to the national average. The region has improved its social sustainability position. The relative improvement is largest in terms of the net migration rate, i.e. from -2.6‰ to +1.4‰ (SURS, 1999a-2004a). Only the population ageing indicator is serious (SURS-MZ). This could denote migration movements in the retired population. The region's environmental sustainability deteriorated, primarily due to insufficient efforts to reduce quantities of municipal waste. The Goriška region is in a rather serious environmental position, primarily due to the load caused by transport and consumption, and abandonment of less favoured agricultural land and a declining rural population (SURS 1999a-2004a).

In terms of economic competitiveness and the sustainable economy from 1998 to 2002, the Obalno-Kraška region has fallen back. The exception is an increase in employment in innovative enterprises by 3.5-times (UMAR, 2005), and an increase in railway goods transport of 3%, probably due to an increase in traffic via the Port of Koper (SURS, 1998a-2003a). The majority of indicators are below or close to the national figures. Likewise, with respect to social sustainability the region's relative position deteriorated, primarily due to the slow fall in youth unemployment, i.e. only from 29.4% to 28.6%, while in Slovenia as a whole this has fell from 26.3% to 21% (Employment Service of Slovenia). The second reason for the decline in social sustainability is lower immigration than in the other regions. The position is serious as far as the population ageing and youth unemployment indicators are concerned. The relatively high net migration rate (+3.5‰) can be interpreted as the immigration of primarily retired persons. In the field of environmental sustainability the position is more or less unchanged. The region has faces fairly severe conditions, above all due to its unsustainable use of natural resources, a decline in biodiversity and failure reducing environment pollution.

Figure 7: Developments in sustainability for the Goriška and Obalno-kraška regions

Source: own calculations

6. Conclusions

Several key findings emerge from the comparison of regions by different types of sustainability, i.e. economic, social and environmental, based on an appropriate set of field indicators. It would be useful to define the interregional sustainability position for the four regions as positive or negative. As expected, the Central Slovenia region is in rates best for economic sustainability, due to its relatively high economic strength as measured by GDP per capita and investment intensity, as well as due to the university city of Ljubljana. On the other hand, this region has by far the poorest results for environmental sustainability. In particular, it lags behind the other regions in reducing or optimising its use of natural resource and the transport load on the environment. The Zasavska region is in the worst position, in terms of economic sustainability and social sustainability, which is of course related to some extent. Zasavska is economically problematic because of the low investment intensity and high sectoral concentration, namely in mining and heavy industry. Recently, the number of innovative enterprises has been increasing, particularly in the production of electric machinery and apparatus as well as in information technology. This should lead to a more diverse economic structure and then to a higher level of economic sustainability. Zasavska also has by far the poorest level of satisfaction for individual needs, and inequality in access to jobs and society. The first is demonstrated by the high unemployment rate and emigration of residents and the second by high youth and female unemployment. Goriška is the most successful region concerning social sustainability, as it has the lowest unemployment rate and the lowest female unemployment. However, the Koroška region has the best results for environmental sustainability, particularly due to its effective reduction of environment pollution.

A dynamic analysis of regional sustainability indicates that the Spodnjeposavska region has regressed in all three fields of sustainability. The Zasavska and Goriška regions have regressed in two out of three sustainability areas (economic and environmental sustainability). The Obalno-Kraška region has regressed in two out of three sustainability areas as well, i.e. economic and social sustainability. The position of the Podravska and Zasavska regions is rather delicate regarding economic and social sustainability. For Gorenjska and Obalno-Kraška the situation for economic and environmental sustainability is severe.

Two of the most frequent problems for Slovenia's regions are the low rate of innovation and high unemployment, particularly among women and young people. Maintaining the level of welfare, which was once mainly supported by industrial activities, nowadays requires the region's own resources, such as human and social capital, financial capital, environmental capital, to be directed into other more sustainable uses. On the other hand, the environment and biodiversity are among the most frequently identified strengths or opportunities. Its commercialisation in the sense of increasing its market value, without increasing the physical load on natural resources, should be a priority for the regions. Regional development and regional development projects means action enabling the effective integration of environmental protection policy, sectoral policy and social policy. These confirm all three research hypothesis, which should be considered in policy making, aimed at the sustainability of each region.

Table 2: Relative Movements and Critical State for Individual Regions by Sustainability Category

SUSTAINABILITY CATEGORY	RELATIVE SERIOUSNESS OF THE STATE	RELATIVE MOVEMENTS 1998-2002
POMURSKA REGION		
Economic	!!!	☺
Social	!!	☹
Environmental	-	😐
PODRAVSKA REGION		
Economic	!!!	☺
Social	!!!	☹
Environmental	!!	😐
KOROŠKA REGION		
Economic	!!	😐
Social	!	☹
Environmental	!!	😐
SAVINJSKA REGION		
Economic	!!!	☹
Social	!	☺
Environmental	!!	😐
ZASAVSKA REGION		
Economic	!!!	☹
Social	!!!	😐
Environmental	!!	☹
SPODNJEPOSAVSKA REGION		
Economic	!!!	☹
Social	!!	☹
Environmental	!	☹
SE SLOVENIA		
Economic	!!!	☹
Social	!!	☹
Environmental	!!	😐
OSREDNJESLOVENSKA REGION		
Economic	!	😐
Social	!!	😐
Environmental	!!!	☹
GORENJSKA REGION		
Economic	!!!	☹
Social	!	☺
Environmental	!!!	😐
NOTRANJSKO-KRAŠKA REGION		
Economic	!!!	☹
Social	!!	☺
Environmental	!!	☺
GORIŠKA REGION		
Economic	!!!	☹
Social	!	☺
Environmental	!!	☹
OBALNO-KRAŠKA REGION		
Economic	!!!	☹
Social	!!	☹
Environmental	!!!	😐

Legend: ☺ = progress, ☹ = decline, 😐 = no change, !!! = very serious, !! = quite serious, ! = less serious

References:

AKTRP/MKGP – Agencija RS za kmetijske trge in razvoj podeželja/Ministrstvo za kmetijstvo, gozdarstvo in prehrano (2005), *internal data.*

Milbert, A. (2002), *A system of Sustainability Indicators for German Regions*, Paris: OECD.

MOPE/ARSO – Ministrstvo za okolje, prostor in energijo (2004), *Kazalci okolja 2003,* Ljubljana: MOPE/ARSO, 154.

Pečar, Janja and Farič, Metka (2000)," Regionalni vidiki razvoja Slovenije s poudarkom na finančnih rezultatih poslovanja gospodarskih družb v letu 1999", *Zvezki UMAR* 8 (9), 151.

Pečar, Janja (2001), "Regionalni vidiki razvoja Slovenije (in poslovanje gospodarskih družb v letu 2000)", *Delovni zvezki UMAR*, 6(10), 160.

Pečar, Janja (2003), "Izbrani socio-ekonomski kazalniki po regijah", *Delovni zvezki UMAR* 5(12), 199.

Pečar, Janja (2002), "Regionalni vidiki razvoja Slovenije (in poslovanje gospodarskih družb v letu 2001)", *Delovni zvezki UMAR*, 7(11), 159.

Slabe Erker, Renata (2003), *Ocenjevanje okoljske trajnosti za učvrstitev konkurenčnosti – grožnje in priložnost,* Ljubljana: IER, 94.

Slabe Erker Renata, Hlad Branka and Juvančič Luka (2003), *Biotska raznovrstnost kot vir ekonomskega razvoja,* Ljubljana: IER, 111.

Slabe Erker Renata, Filiplič Janez (2005), *Oblikovanje kazalcev samovzdržnosti regije ter ocena regij glede na te kazalce v medsebojni medregionalni in mednarodni primerjavi*, Ljubljana: IER, working material, 92.

SURS-MZ - Statistični urad Republike Slovenije, Ministrstvo za notranje zadeve - *Centralni register prebivalstva.*

SURS – Statistični urad RS (2000c), "Študentje v republiki Sloveniji", *Rezultati raziskovanj* no. 744.

SURS – Statistični urad RS (2001c), "Študentje v republiki Sloveniji", *Rezultati raziskovanj* no. 759.

SURS – Statistični urad RS (2002c), "Študentje v republiki Sloveniji", *Rezultati raziskovanj* no. 786.

SURS – Statistični urad RS (2003c), "Študentje v republiki Sloveniji", *Rezultati raziskovanj* no. 799.

SURS – Statistični urad RS (2004c), "Študentje v republiki Sloveniji", *Rezultati raziskovanj* no. 808.

SURS – Statistični urad RS (2004b), "Nacionalni računi", *Statistične informacije* 377 (5), 11.

SURS – Statistični urad RS (2003b), "Okolje. Javni odvoz in odlagališča odpadkov", *Statistične informacije no*. 45, 7.

SURS – Statistični urad RS (1998a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (1999a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (2000a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (2001a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (2002a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (2003a), *Statistični letopis RS*, Ljubljana: SURS.

SURS – Statistični urad RS (2004a), *Statistični letopis R*S, Ljubljana: SURS.

UMAR – Urad za makroekonomske analize in razvoj (2002), "Poročilo o razvoju", *Zbirka Analize, raziskave in razvoj,* 189.

UMAR (2005), *internal data.*

UNEP – United Nations Environment Programme (1997), *Recommendations for a core set of indicators of biological diversity,* Montreal: UNEP/CBD.

Vintar, K. (2003), Okoljevarstveni vidiki sonaravnega regionalnega razvoja Slovenije. *Magistrsko delo*. Ljubljana: Filozofska fakulteta, oddelek za geografijo.

WEF – World Economic Forum (2002), *Environmental Performance Measurement. The Global Report 2001-2002.*

PUBLISHED PAPERS IN THE SERIES

1. Lado Rupnik: **THE NEW TAX SYSTEM IN SLOVENIA**, IER, Ljubljana, 1993, 16 p.
2. Franc Kuzmin: **SOME DILEMMAS IN THE THEORY OF COST-PUSH INFLATION – SLOVENIAN CASE**, IER, Ljubljana, 1993, 17 p.
3. Miroslav Glas: **SLOVENE SMALL BUSINESS**, IER, Ljubljana, 1993, 26 p.
4. Tine Stanovnik: **SOCIAL SECURITY IN SLOVENIA**, IER, Ljubljana, 1993, 14 p.
5. Peter Stanovnik, Ivo Banič: **THE ROLE OF FDIs IN SLOVENIA'S ECONOMIC DEVELOPMENT**, IER, Ljubljana, 1993, 13 p.
6. Vladimir Lavrač: **THE ADJUSTMENT OF THE SLOVENIAN MONETARY SYSTEM TO THE EUROPEAN MONETARY INTEGRATION PROCESS**, IER, Ljubljana, 1993, 14 p.
7. Andrej Kumar: **EUROPEAN INTEGRATION – REALITY OR A DREAM?**, IER, Ljubljana, 1994, 20 p.
8. Frančiška Logar, Danica Zorko: **UPSWING OF TOURISM IN SLOVENIA**, IER, Ljubljana, 1994, 23 p.
9. Milena Bevc: **EDUCATIONAL CAPITAL IN SLOVENIA IN THE EARLY 90s**, IER, Ljubljana, 1994, 28 p.
10. Franc Kuzmin: **THE MAIN CHARACTERISTICS OF SLOVENE LABOUR MARKET DURING TRANSITION PERIOD – THE PROBLEM OF UNEMPLOYMENT**, IER, Ljubljana, 1994, 9 p.
11. Emil Erjavec, Miroslav Rednak, Jernej Turk: **THE MAIN ISSUES INVOLVED IN THE ECONOMIC TRANSITION OF SLOVENE AGRICULTURE**, IER, Ljubljana, 1994, 16 p.
12. Stanka Kukar: **THE HIDDEN ECONOMY AND THE LABOUR MARKET IN SLOVENIA IN THE PERIOD OF TRANSITION**, IER, Ljubljana, 1994, 16 p.
13. Milan Lapornik, Peter Stanovnik: **INDUSTRIAL AND ENTERPRISE RESTRUCTURING IN SLOVENIA**, IER, Ljubljana, 1995, 24 p.
14. Vladimir Lavrač: **COMMON CAPITAL MARKET OF CEFTA COUNTRIES – A POSSIBLE WAY OF DEEPENING CEFTA**, IER, Ljubljana, 1997, 15 p.
15. Valentina Prevolnik: **HEALTH CARE REFORM IN SLOVENIA**, IER, Ljubljana, 1997, 17 p.
16. Tine Stanovnik: **THE TAX SYSTEM AND TAX REFORM IN SLOVENIA**, IER, Ljubljana, 1997, 16 p.

WORKING PAPERS

1. Vladimir Lavrač: **EXCHANGE RATE OF THE SLOVENIAN TOLAR IN THE CONTEXT OF SLOVENIA'S INCLUSION IN THE EU AND IN THE EMU**, IER, Ljubljana, 1999, 18 p.
2. Tine Stanovnik, Nada Stropnik: **ECONOMIC WELL-BEING OF THE ELDERLY AND PENSION REFORM IN SLOVENIA**, IER, Ljubljana, 1999, 34 p.
3. Marjan Simončič, Franc Kuzmin: **MACROECONOMIC EFFECTS OF THE PENSION REFORM IN SLOVENIA**, IER, Ljubljana, 1999, 26 p.
4. Jože Pavlič Damijan: **EFFICIENCY OF FREE TRADE AGREEMENTS: DID THE REDUCTION OF TRADE BARRIERS HAVE ANY EFFECT ON INCREASING TRADE BETWEEN SLOVENIA AND THE CEFTA COUNTRIES?**, IER, Ljubljana, 1999, 18 p.
5. Boris Majcen: **SECTOR PERFORMANCE IN THE SLOVENE ECONOMY: WINNERS AND LOSERS OF EU INTEGRATION**, IER, Ljubljana, 2000, 37 p. + appendix
6. Peter Stanovnik, Art Kovačič: **SOME QUESTIONS OF THE INTERNATIONAL COMPETITIVENESS OF NATIONAL ECONOMIES WITH EMPHASIS ON SLOVENIA**, IER, Ljubljana, 2000, 24 p.
7. Janez Bešter: **TAKEOVER THEORIES AND PREDICTION MODELS – THE CASE OF SLOVENIAN PRIVATISED COMPANIES**, IER, Ljubljana, 2000, 16 p.
8. Jeffrey David Turk, Hedvika Usenik: **BUYER SUPPLIER RELATIONSHIPS IN THE ENGINEERING INDUSTRIES IN SLOVENIA AND COMPARISONS WITH HUNGARY**, IER, Ljubljana, 2000, 22 p.
9. Jože Pavlič Damijan, Boris Majcen: **TRADE REORIENTATION, FIRM PERFORMANCE AND RESTRUCTURING OF SLOVENIAN MANUFACTURING SECTOR**, IER, Ljubljana, 2001, 16 p.
10. Jože Pavlič Damijan, Boris Majcen, Matija Rojec, Mark Knell: **THE ROLE OF FDI, R&D ACCUMULATION AND TRADE IN TRANSFERRING TECHNOLOGY TO TRANSITION COUNTRIES: EVIDENCE FROM FIRM PANEL DATA FOR EIGHT TRANSITION COUNTRIES**, IER, Ljubljana, 2001, 26 p.
11. Matija Rojec, Jože Pavlič Damijan, Boris Majcen: **EXPORT PROPENSITY OF ESTONIAN AND SLOVENIAN MANUFACTURING FIRMS: DOES FOREIGN OWNERSHIP MATTER?**, IER, Ljubljana 2001, 22 p.
12. Nevenka Hrovatin, Sonja Uršič: **THE DETERMINANTS OF FIRM PERFORMANCE AFTER OWNERSHIP TRANSFORMATION IN SLOVENIA**, IER, Ljubljana, 2001, 21 p.
13. Vladimir Lavrač, Tina Žumer: **EXCHANGE RATE ARRANGEMENTS OF ACCESSION COUNTRIES IN THEIR RUN-UP TO EMU: NOMINAL CONVERGENCE, REAL CONVERGENCE AND OPTIMUM CURRENCY AREA CRITERIA**, IER, Ljubljana, 2002, 35 p.
14. Vladimir Lavrač: **MONETARY, FISCAL AND EXCHANGE RATE POLICIES FROM THE VIEWPOINT OF THE ENLARGEMENT OF THE EUROZONE: SURVEY OF THE LITERATURE**, IER, Ljubljana, 2002, 21 p.
15. Jože Pavlič Damijan, Črt Kostevc: **THE EMERGING ECONOMIC GEOGRAPHY IN SLOVENIA**, IER, Ljubljana 2002, 30 p.
16. Boris Majcen: **THE EFFECTS OF FOREIGN TRADE LIBERALIZATION AND FINANCIAL FLOWS BETWEEN SLOVENIA AND EU AFTER THE ACCESSION**, IER, Ljubljana 2002, 33 p.
17. Jože Pavlič Damijan, Mark Knell, Boris Majcen, Matija Rojec: **TECHNOLOGY TRANSFER THROUGH FDI IN TOP-10 TRANSITION COUNTRIES: HOW IMPORTANT ARE DIRECT EFFECTS, HORIZONTAL AND VERTICAL SPILLOVERS?**, IER, Ljubljana, 2003, 23 p + appendix

18. Jože Pavlič Damijan, Črt Kostevc: **THE IMPACT OF EUROPEAN INTEGRATION ON ADJUSTMENT PATTERN OF REGIONAL WAGES IN TRANSITION COUNTRIES: TESTING COMPETITIVE ECONOMIC GEOGRAPHY MODELS**, IER, Ljubljana, 2003, 27 p.

19. Vladimir Lavrač: **ERM 2 STRATEGY FOR ACCESSION COUNTRIES,** IER, Ljubljana, 2003, 21 p.

20. Renata Slabe Erker: **ENVIRONMENTAL SUSTAINABILITY IN SLOVENIA,** IER, Ljubljana, 2003, 25 p.

21. Tine Stanovnik, Miroslav Verbič: **PERCEPTION OF INCOME SATISFACTION AND SATISFACTION WITH THE QUALITY OF LIVING; AN ANALYSIS OF SLOVENIAN HOUSEHOLDS,** IER, Ljubljana, 2003, 18 p.

22. Vladimir Lavrač: **FULFILLMENT OF MAASTRICHT CONVERGENCE CRITERIA FOR SLOVENIA AND OTHER ACCEDING COUNTRIES**. IER, Ljubljana, 2004, 15 p.

23. Janez Bešter: **ANATOMY OF A POST-MERGER INTEGRATION: THE CASE OF SLOVENIA.** IER, Ljubljana, 2004, 21 p.

24. Miroslav Verbič: **ECONOMETRIC ESTIMATION OF PARAMETERS OF PRESERVATION OF PERISHABLE GOODS IN COLD LOGISTIC CHAINS.** IER, Ljubljana, 2004, 33 p.

25. Egbert L. W. Jongen: **AN ANALYSIS OF PAST AND FUTURE GDP GROWTH IN SLOVENIA.** IER, Ljubljana, 2004, 42 p.

26. Egbert L. W. Jongen: **FUTURE GDP GROWTH IN SLOVENIA: LOOKING FOR ROOM FOR IMPROVEMENT.** IER, Ljubljana, 2004, 37 p.

27. Peter Stanovnik, Marko Kos: **TECHNOLOGY FORESIGHT IN SLOVENIA.** IER, Ljubljana, 2005, 22 p.

28. Art Kovačič: **COMPETITIVENESS AS A SOURCE OF DEVELOPMENT.** IER, Ljubljana, 2005, 25 p.

29. Miroslav Verbič, Boris Majcen, Renger van Nieuwkoop: **SUSTAINABILITY OF THE SLOVENIAN PENSION SYSTEM: An ayalysis with an overlapping-generations General Equilibrium Model.** IER, Ljubljana, 2005. 24 p.

30. Miroslav Verbič: **AN ANALYSIS OF THE SLOVENIAN ECONOMY WITH A QUARTERLY ECONOMETRIC MODEL.** IER, Ljubljana, 2006. 26 p.

31. Vladimir Lavrač, Boris Majcen: **ECONOMIC ISSUES OF SLOVENIA'S ACCESSION TO THE EU.** IER, Ljubljana, 2006. 37 p.

32. Miroslav Verbič, Renata Slabe Erker: **ECONOMIC VALUATION OF ENVIRONMENTAL VALUES OF THE LANDSCAPE DEVELOPMENT AND PROTECTION AREA OF VOLČJI POTOK**. IER, Ljubljana, 2007. 28.p.

33. Boris Majcen, Miroslav Verbič. **MODELLING THE PENSION SYSTEM IN AN OVERLAPING-GENERATIONS GENERAL EQUILIBRIUM FRAMEWORK.** IER, Ljubljana, 2007. 37 p.

34. *Boris Majcen, Miroslav Verbič (corresponding author), Ali Bayar and Mitja Čok.* **THE INCOME TAX REFORM IN SLOVENIA: SHOULD THE FLAT TAX HAVE PREVAILED?** IER, Ljubljana, 2007. 29 p.

35. Miroslav Verbič. **VARYING THE PARAMETERS OF THE SLOVENIAN PENSION SYSTEM: AN ANALYSIS WITH AN OVERLAPPING-GENERATIONS GENERAL EQUILIBRIUM MODEL.** IER, Ljubljana, 2007. 28 p.

36. Miroslav Verbič, **SUPPLEMENTARY PENSION INSURANCE IN SLOVENIA: AN ANALYSIS WITH AN OVERLAPPING-GENERATIONS GENERAL EQUILIBRIUM MODEL.** IER, Ljubljana, 2007. 32 p.

37. Matjaž Črnigoj: **RISK AVERSE INSIDERS WITH SPECIFIC OBJECTIVE FUNCTION AND CAPITAL STRUCTURE.** IER, Ljubljana, 207. 13 p.

OCCASIONAL PAPERS

1. Helen O'Neill: **IRELAND'S ECONOMIC TRANSITION: THE ROLE OF EU REGIONAL FUNDS – AND OTHER FACTORS**, IER, Ljubljana, 2000, 16 p.
2. Sanja Maleković: **CROATIAN EXPERIENCE IN REGIONAL POLICY**, IER, Ljubljana 2000, 13 p.
3. Peter Backé, Cezary Wójcik: **ALTERNATIVE OPTIONS FOR THE MONETARY INTEGRATION OF CENTRAL AND EASTERN EUROPEAN EU ACCESSION COUNTRIES**, IER, Ljubljana, 2002, 17 p.
4. Andreas Freytag: **CENTAL BANK INDEPENDENCE IN CENTRAL AND EASTERN EUROPE ON THE EVE OF EU-ENLARGEMENT,** IER, Ljubljana, 2003, 29 p.
5. Jasmina Osmanković: **REGIONALIZATION AND REGIONAL DEVELOPMENT IN BOSNIA AND HERZEGOVINA IN THE POST-WAR PERIOD**, IER, Ljubljana, 2004, 16 p.
6. Carlos Vieira, Isabel Vieira, Sofia Costa: **MONETARY AND FISCAL POLICIES IN EMU: SOME RELEVANT ISSUES,** IER, Ljubljana, 2004, 36 p.
7. Bojan Radej. **THE FOUR CAPITAL MODEL, MATRIX AND ACCOUNTS.** IER, Ljubljana, 2007. 25 p.