

Regional Disparities in Transition Economies - The Case of Slovenia

Peter Wostner*

June, 2002

ABSTRACT: This paper analyses the regional disparities within Slovenia in the 1990s, with the ambition of identifying the convergence and divergence producing forces. Taking other transition and EU countries as a benchmark, it is shown that the Slovenian regions' economic performance was to a great extent following the general rule: regional disparities have increased, and so has economic concentration. The analysis nevertheless points to some surprising findings: (1) the economic concentration has increased, but only marginally and was not as much focused towards the capital as expected - this can partly be explained by the path dependency effect, based on the extensive regional policy in the period between 1971 and 1990; (2) the institutional and administrative reform did not seem to have a regionally biased effect; (3) the industrial specialization of worse-off and non-central regions has turned out to be a strong convergence producing force; (4) the developed and central regions were, as expected, much better endowed with human capital, R&D and FDI's - exceptions to the rule indicate, however, that particularly the private R&D and FDI's represent an important 'window of opportunity' for faster growth - especially for intermediate regions; (5) finally, geography matters even in a small country like Slovenia.

A paper submitted to the European Regional Science Association Conference in Dortmund, Germany, between 27 and 31 August 2002.

Keywords: convergence, transition, regional growth factors, regional policy

* National Agency for Regional Development of the Republic of Slovenia, Kotnikova 28, 1000 Ljubljana, Slovenia; peter.wostner@gov.si

1. Introduction

The analysis of regional disparities, and regional economics in general, has received increasing attention over the last two decades (Blanchard, 1991). On one hand it was an academic response to 'omissions and deficiencies in the neoclassical' growth theory (Solow, 1994: 45), while on the other, there was a very practical dilemma of how to ensure economic and social cohesion in the EU, which was set as one of the primary aims with the ratification of the Single European Act in 1986. After the famous finding of the surprisingly stable 2% β convergence over different geographical disaggregations and time periods by Barro and Sala-i-Martin (Barro, 1991, Barro, Sala-i-Martin, 1991, 1992), a whole array of critiques and alternative empirical verifications and explanations have been advanced (Quah, 1993, 1996, 1997, Romer 1994, Cheshire, Carbonaro, 1996, de la Fuente, 1997, Magrini 1999, to name but a few). In spite of significant intellectual engagement, the results seem to be fairly inconclusive and sensitive to sample selection, econometric specification and even to the list of regressors included (Renelt and Levine, 1992). In their 1996 paper, Cheshire and Carbonaro argue convincingly that the convergence debate is methodologically flawed due to the measurement problems and impossibility of distinguishing between different possible explanations. Instead they propose a different approach, according to which, there are 'some forces producing convergence, and others producing divergence, and the actual outcome over time being determined by the net effect of those forces.' (ibid.: 108). The same approach was adopted in this paper.

The following section will introduce a number of growth factors proposed by the theory that are likely to influence the regional disparities. They could be classified into two broad groups. The first group consists of factors that are a direct consequence of the transition process, which has some intrinsic properties that distinguish the transition countries' from other developing as well as western countries' experience. All transition countries have experienced sharp falls in production to levels way beyond the aggregate equilibrium point, irrespective of whether there were any reforms implemented before the political turning point or not. Kornai, 1995, called this phenomenon a 'transformational recession'. Slovenia's downturn has been less radical than elsewhere, due to its fairly 'Westernised' economy and best starting position. This is not to say, though, that the shock has been symmetric across regions. Moreover, Slovenia was not only faced with the transition from socialist to market economy, but also with the transition from regional to national economy, which was accompanied with the collapse of its biggest export market

due to the war in the former Yugoslavia - in 1990, the other Yugoslav republics still accounted for 61% of Slovenia's export demand (Krizanic, 1997).

On the other hand, Slovenia has been increasingly integrated in the European economic space both through the liberalized trade policies as well as the accession process to the EU. This meant that the global spatial transformations had an increasing impact also on the regional economies within Slovenia. A huge body of literature has defined an approximate regional typology that groups regions according to their characteristics and growth prospects (Rodriguez-Pose, 1998a). The relevance of this classification on the case of a transition country will be verified. Furthermore, a special consideration should be given to the possible industry relocations, which are a very likely companion of a closer European integration (Midelfart-Knarvik et.al., 2000). In this respect a whole range of elements will be tested ranging from the second nature geography factors (market access effect, agglomeration economies and specialization/diversification) to regional factor endowments.

The experience of other transition countries in terms of regional disparities was thoroughly analysed by George Petrakos (1996, 2001), whose findings could be summarised as follows:

- a) Regional disparities within transition countries tended to increase.
- b) Geography matters - metropolitan and western regions close to the European development centre were the relative winners.

Equivalent results can be found in the EU, where disparities on the inter-national and inter-regional level are decreasing (due to favourable growth rates in the poorer countries), while intra-national disparities have increased (Dunford, 1993, Chrisholm, 1995, Martin, 1998, 1999, Rodriguez-Pose, 1998 and others). Similarly it has been shown (Overman et al., 2001, Midelfart-Knarvik et al., 2000, Brulhart, 1998, Venables, 2001 among others) that industry location can be attributed both to geography as well as factor endowments.

Has Slovenia followed the same regionally divergent trends? Were they caused by the same factors as in other transition and EU countries? There are two reasons why Slovenia could be, to a certain extent, a special case:

- a) Slovenia is a small country (20.256 km² and 2 million people) with fairly good internal infrastructural connectedness, which might reduce the importance of location.
- b) Slovenia conducted a complex regional policy in the period between 1971 and 1990, which resulted in the scattering of industry across its regions. This

could have important consequences for the development potential of the regions due to a path dependency effect.

After the introduction the null hypothesis based on the experience of the other transition and EU countries will be put forward. Additionally, a couple of Slovene particularities and other transition elements will be presented that also exercised their impact on the regional disparities. In the section 3, the actual trends in terms of convergence/divergence and economic concentration in the 1990s for the Slovene case will be established. Panel data analysis will help to identify the growth-promoting factors in the section 4. Cross-referencing them with the initial position of the regions will allow distinguishing between convergence and divergence promoting forces. Finally, the relevant policy implications will be put forward.

The analysis is based on the so-called statistical regions of Slovenia, which were defined for planning purposes already at the end of the 1960s and are based on the principle of functionality. They correspond to the NUTSIII level of the European territorial classificationⁱ

Table 1: Basic indicators of the regions

| Region | Area (km²) | Population 1995 | Pop. density 1995 (pop./km²) |
|-------------------|------------------------------|------------------------|--|
| Dolenjska | 1684 | 104,949 | 62.3 |
| Gorenjska | 2137 | 194,601 | 91.1 |
| Goriška | 2325 | 120,723 | 51.9 |
| Koroska | 1041 | 74,129 | 71.2 |
| Notranjsko-kraska | 1456 | 50,782 | 34.9 |
| Coastal | 1044 | 103,017 | 98.7 |
| Central | 3546 | 517,017 | 145.8 |
| Podravska | 2169 | 320,961 | 147.9 |
| Pomurska | 1338 | 126,896 | 94.9 |
| Savinjska | 2384 | 256,061 | 107.4 |
| Spodnje-posavska | 885 | 71,208 | 80.5 |
| Zasavska | 264 | 47,161 | 178.6 |
| Slovenia | 20273 | 1,987,505 | 98.0 |

Source: Statistical Office of the Republic of Slovenia (SORS hereafter), Statistical Yearbooks

2. The null hypothesis

Regional disparities have drawn increasing attention not just inside the EU or EU member states, but also in other developed and developing nations. Realising that Slovenia is a transition country approaching the EU club, there is not much doubt about which groups of countries should be set as the benchmark for the analysis: these shall be other transition countries of the Central and Eastern Europe on one hand and the EU on the other. Along the presentation of these countries' convergence/divergence experience, the underlying factors leading to established outcomes will also be presented. Since the explanation of developments in terms of regional disparities is still a matter of harsh theoretical debate, I have limited myself to the 'pro forma' built consensus of a number of researchers for the case of transition countries and on the theories of socio-economic restructuring and new economic geography for the European case.

The transition countries' experience

The fate of the Central and Eastern European countries in terms of regional disparities, was comprehensively analysed by George Petrakos (Petrakos, 1996, 2001), whose predictions can be broadly summarised by the following quote (Petrakos, 2001:362):

'Metropolitan areas, western regions, regions with a diversified production base and those located a short distance from the European development centre are expected to experience a positive net effect from internationalisation. However, declining monostructure, eastern and perimetric regions are more likely to experience an unfavourable net impact from openness that will further intensify their problems and make the task of restructuring even harder.'

Petrakos, 2001, also predicts and confirms, that the process of transition is associated with increasing regional disparities.

The theoretical argument to the above predictions can be summarized as follows:

a) Highly selective behaviour of the foreign capital with respect to location, which is strongly biased towards central locations (Petrakos, 2001).

b) More densely populated urban regions allow for the existence of the agglomeration economies (Sveikauskas, 1975, Segal, 1976, Moomaw, 1981, Ciccone and

Hall, 1996, Eberts W R and McMillen P D, 1999), which, especially combined with the metropolitan status, usually attract higher value added activities as well as more FDIs.

c) Petrakos predicts a positive net effect to diversified regions; the theory, however, is not conclusive, nor are the empirical verifications (at least not for the developed countries). It has been shown, that the specialized and the diversified cities coexist (Duranton, Puga, 2000) and that this is not the result of random effects (Ellison and Glaeser, 1997), nor is it the consequence of first nature geography factors (Henderson, 1997). On the positive side, diversified city-regions have the advantage of the potential urbanization economies (specially for industries with a common scientific base), they are more conducive to innovation and R&D activities (Feldman, Audretsch, 1999, Fujita, Ishii, 1998), they allow for more efficient learning process (Duranton, Puga, 2000), reduce the level of uncertainty for firms (Storper, 1997) and they tend to 'host' the production of less standardized and non-traditional productions (Henderson, 1997), which is usually characterized by greater value added. The downside of greater diversification, however, could be greater crowding effect, since more diversified cities tend to be bigger in size (admittedly, the link is not especially strong - Duranton, Puga, 2000). The specialized city-regions on the other hand, can take the advantage of localization economies, they have better ability to provide specialized environment and conditions for the development of particular industry (infrastructure, specialized suppliers, labour pooling), which makes them better equipped to build up a critical mass of capital and human resources needed for the efficient production. On the negative side though, Feldman and Audretsch, 1999, find that the own-industry specialization has a negative effect on the innovative output, specialized city-regions are exposed to greater risk due to the product life cycle or changes in the consumer demand and they tend to produce more standardized products (Henderson, 1997), which usually means being closer to perfect competition conditions and consequently 'squeezed-out' profit margins. Taking all factors into account, one could probably assume that in the transition countries the balance on average has tipped towards more diversified regions as predicted by Petrakos due to their better capacity to cope with sudden shocks and their greater flexibility.

d) Finally, the effect of proximity to the Western European development centres increases 'the possibility of attracting higher order economic functions' (Petrakos, 2001:362) and allows the bordering regions/countries to gain from 'significant opportunities from trans-frontier cooperation in the form of joint-ventures, subcontracting, free trade areas, scientific and technological cooperation, local and regional policy coordination as well as expansion of cross-border transportation and communication infrastructure' (Petrakos, 2001:361).

Furthermore, proximity to wealthy regions gives those regions access to greater potential markets. There exists a significant amount of literature evaluating the existence of market access effect (Clark et al., 1969, Keeble et al., 1982, Hummels, 1995, Cheshire and Carbonaro, 1996, Redding and Venebles, 2000, among others).

Petrakos' observations have also been confirmed by a number of other authors from different transition countries: Raagmaa, 1996, for Estonia, Balaz, 1996, for The Slovak Republic, Lorentzen, 1999, for Hungary, Gorzelak, 2000, for Poland and so on.

The EU's experience

Similar outcomes over the last decade can be found in the EU, where disparities on the inter-national as well as inter-regional level have been decreasing (due to favourable growth rates in the poorer countries), while disparities within the EU member states have also increased (Dunford, 1993, Chrisholm, 1995, First Martin, 1998, 1999, Rodriguez-Pose, 1998 and others). Even though the general trends were consistent in both transition and EU member states, the underlying causes could be different. As already explained, I will limit myself to only two streams of theories, which are in a way complementary to the factors that were already presented in the previous section.

The first one is the literature on socio-economic restructuring, which stresses the so-called third nature geography factors (social factors, institutions and the importance of economic environment). The analysis of regional trends in Europe by Rodriguez-Pose, 1998, found empirical evidence for the propositions of a number of scholars (Sassen, 1991, Castells and Hall, 1994 among others) that growth and wealth will increasingly concentrate in the metropolises. Furthermore, new opportunities have been found to accrue especially to former intermediate regionsⁱⁱ, which are best suited to take the advantage of the flexibilisation of production due to their socio-economic characteristics (Priore and Sabel, 1984, Storper, 1997, Amin and Thrift, 1995 and many others). Finally, old industrial regions are predicted the grimmest destiny due to their inability to adapt to new circumstances, while there is no clear consensus on the effects of the post-fordist economy on peripheral regions. Apart from the socio-economic restructuring approach, another strand of literature, the new economic geography, puts more emphasis on factors like comparative advantage, access to markets, suppliers and ideas. Being aware of the possible oversimplifications due to the huge body of literature from this field (Overman et al., 2001,

Midelfart-Knarvik et al., 2000, Brulhart, 1998, Venables, 2001 among others), some additional findings could be summarized as follows:

- a) From the early 1980s onwards the countries of the EU have become increasingly specialized.
- b) Slow growing and unskilled labour intensive industries were initially spatially dispersed. Their relative contraction, however, has been accompanied by spatial concentration in peripheral regions.
- c) Scale intensive industries and industries, highly intensive in intermediate goods, seem to be highly localised in the (EU's) core. The effect of the former has decreased, while the importance of the forward linkages seems to have increased.
- d) 'Significant dispersion has occurred in a number of medium and high technology industries and in relatively high growth sectors, with activity typically spreading out from the central European countries' (Midelfart-Knarvik et al., 2000:1).

What is of crucial importance for our analysis is that the underlying forces that determine the industry location have been found to be both endowments (researchers, skilled/unskilled labour, capital, agriculture) as well as geography (market access, supply access, transport costs). Since 'industry relocation is a very likely companion of the ever-closer integration and falling distance costs' (Midelfart-Knarvik et al., 2000, 3), these factors will have to be controlled for as much as the data availability allows us to.

The Slovene case

The brief overview of the developments in other transition and EU countries goes only so far in explaining the regional trends within Slovenia. Namely, there are a couple of other elements and particularities to the Slovene case, that have not yet been mentioned but have had profound impact on regional disparities and could be termed as 'other transition elements'.

First, the economic development strategy of the former Yugoslavia was import substitution oriented, which necessitated high levels of protection from international competition (Majcen, 1999). This was based on a non-transparent system of tariff protection and special import regimes (quotas, licences, special import licences and condition-free imports). The process of foreign trade liberalization, however, had already begun in 1986. The nominal rates of protection had fallen only marginally until 1990 and were then halved until 1993. More relevant effective protection rates show however, that the main shock of

trade liberalization in manufacturing, energy and mining sectors had been almost totally experienced by 1993. Increasing international competition, combined with the hardening budget constraint, can be expected to have an asymmetric regional effect due to different competitive capacities of the regions, their different dependencies on state intervention, different extents of diversification and levels of integrated production. Their effect on the regional gross value added, analysed in the analytical part of the paper, will be controlled for using the following variables: the overall specialization of the region concerned as well as relative specialization by sectors (agriculture/industry/services); the proportion of obsolete industry sectors in total employment and the dependency on foreign, non-Yugoslav as well as Yugoslav markets. We would expect that the stronger presence of the firms in non-Yugoslav markets required their greater competitiveness. Furthermore, the established presence in the foreign markets should have made the reorientation of trade from the collapsed Yugoslav market somewhat easier due to the already established knowledge of these markets and established distribution networks. Regions heavily dependent on the Yugoslav market obviously suffered from disproportionate shock with the market collapse. Unfortunately, there is no data available on the regional dependence on the non-market transfers.

Second, the historical circumstances, combined with intensive regional policyⁱⁱⁱ, based on polycentric development, allowed and promoted the regionally scattered industry location. Firms retained financial and especially human capital in the regions, while at the same time mitigated the development of entrepreneurial culture and social capital. Ready access to information and know-how empowered these localities to respond to transition process and changed socio-economic environment with much more focus, leadership and flexibility. This could also be characterised as a typical example of the path dependency effect (for the theoretical analogy on the location of the cities see Fujita, Mori, 1996). In certain cases, of course, the creation or existence of firms could also have negatively influenced the development potential through the destruction of previously existing business / artisan / farm practices and consequent creation of dependency culture in the locality (mono-firm localities) or through social shocks of greater proportions due to swiftly changed 'market' circumstances. Nevertheless, in the analysis we would expect the positive effect to dominate - variables used to control for this effect will be the number of small and particularly medium and large sized enterprises per 1000 inhabitants, as well as (indirectly) the share of highly educated population, both in the beginning of the 1990s.

Third, largely undetermined property rights due to the social ownership model required privatisation^{iv} in order to allow for profit maximizing behaviour of the firms. The consequences of privatisation are undeniably very complex, however only a few of them were asymmetric across regions:

a) The privatisation model adopted in Slovenia was not particularly favourable to foreign owners, who therefore could not play a very significant role. Nevertheless 80% of the FDI stock by the end of 1998 was invested in Slovenia after 1991 (Rojec, 2000, UN, 1992) and it has been shown by Krizanic and Oplotnik, 1999, that there has been up to 3% more inflows of foreign direct investments due to the privatisation process. Existing industry location in this way indirectly accentuated the path dependency effect, which might explain, at least to a certain extent, a much less regionally concentrated pattern of FDIs than observed in other transition countries. The relation between the most attractive region and the national average in terms of FDI per capita in Poland, Romania and Bulgaria is in the range from 400 to 600% (Petraikos, 2001), while in Slovenia it is only around 150^v. Similar effect was observed by Cantwell and Iammarino, 2000:319, who argue that

'... insofar as inter-country competition for inward FDI in innovation is concerned, the best means of attracting foreign-owned research is an already strong local tradition in innovation in the sector in question.'

b) Defined ownership can hardly be disputed as efficiency enhancing. Nevertheless, in the short term, privatisation can also worsen the economic situation through higher unemployment (due to the previous over-employment), consequent fall in demand (Kornai, 1995) and possible adverse effects on the social capital in the region concerned. Regions could have been subject to different strategies as far as the beginning and pace of the restructuring process is concerned, which would have an asymmetric effect on the regional development indicators - in our case the unemployment rate will control for this effect.

Finally, at the beginning of the 1990s, Slovenia was also faced with the transition from regional to national economy, which has required enormous institutional and administrative changes. They have not only been about adapting the old institutions to the new circumstances, but also about building completely new institutions from scratch (Pleskovic, Sachs, 1994). Since data restrictions do not allow us to model this effect, I will make a comparable analysis of the data for the employment in political and administrative organisations in Slovenia for the years 1990 and 1993. As expected, the 'political employment' has indeed been heavily concentrated in the Central region. We cannot say, though, that there were any radical changes due to the independence and transition process. The proportion of absolute employment in the Central region between 1990 and 1993 has

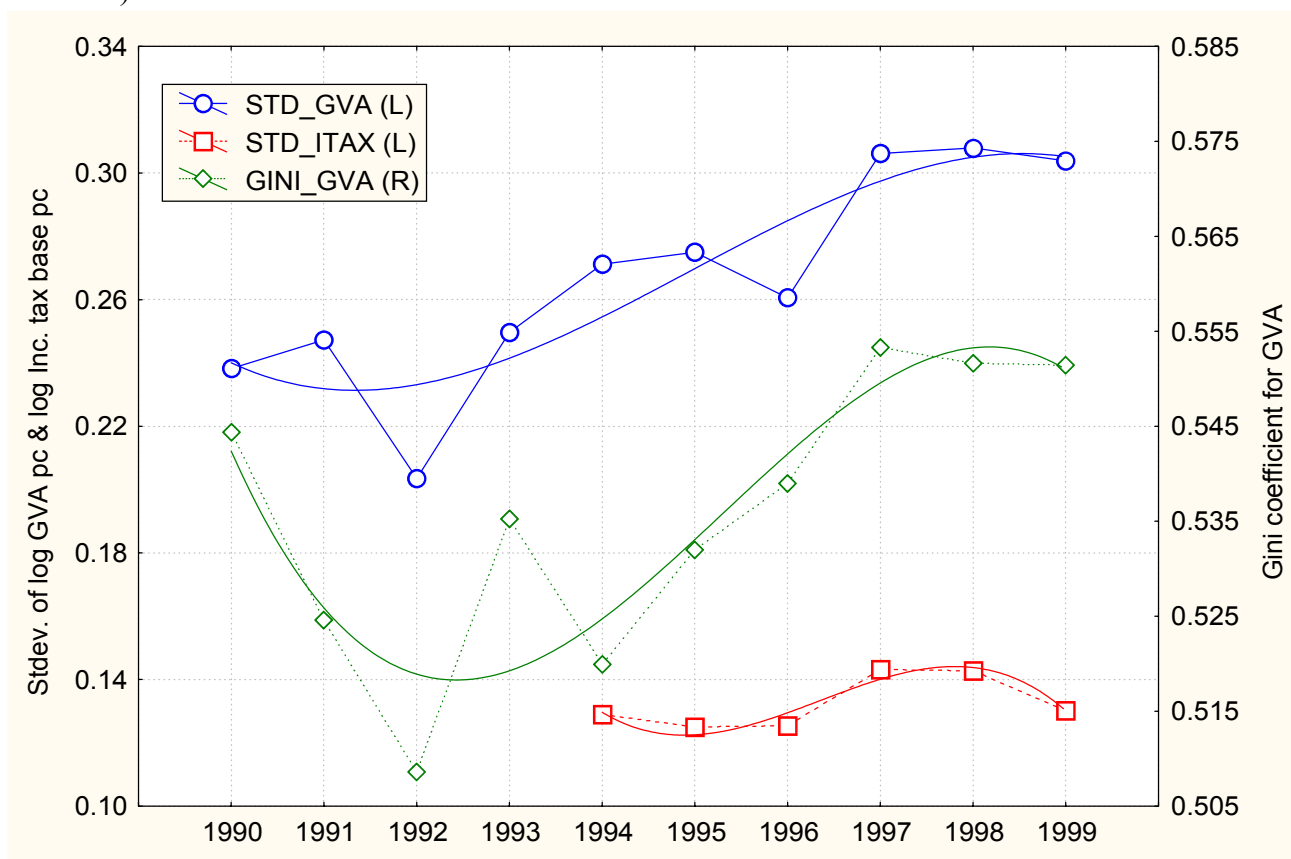
increased from 39% to 39.7%, which is quite a significant absolute employment increase due to the overall employment increase in this sector by over 10.000 employees. Nevertheless, the Gini coefficient for the employment share in this sector has even marginally fallen, whereas the Gini coefficient for the 'political employment' relative to population has indeed risen. Finally, the correlation of the political employment increase per 1000 inhabitants between 1990 - 1993 and the initial level of GVA per capita (-0.08; $p=0.80$) as well as their economic potential (-0.17; $p=0.60$) - for explanation look appendix 1 - reveals, that institutional and administrative reforms did not have any significant influence on regional disparities. Furthermore, the data shows, that worse performing regions in terms of GVA pc growth between 1990 -1996 experienced greater employment increases in this sector than better performing ones (correlation is -0.70; $p=0.01$).

3. Divergence and economic agglomeration in the 1990s

The most widely used indicator in convergence analyses, the gross regional product (GRP hereafter), is in the case of Slovenia only available for the 1996-1999 period. In the absence of the better variable I have been therefore forced to use the 'unofficial' gross value added indicator, which is based on the income statements, collected by the Agency for Payment Transfers. The correlation between GVA pc and GRP pc for the available years is between 0.93 and 0.94, which enables us to treat the GVA indicator as an acceptable substitute.

I will start the analysis of the regional trends in the 1990s with the estimation of σ -convergence, as proposed by Barro and Sala-i-Martin, 1991. Using unweighed cross-sectional standard deviation of the log GVA pc (figure 1), we can undoubtedly say, that the regional dispersion of economic activity per capita has indeed increased. Interestingly this does not really hold for the first two years, which were still characterised by the sharply falling aggregate economic activity. With the revival of the economy, though, the regional differences started to increase. This effect, however, seemed to have run out of steam by the end of the period, in spite of the continuing aggregate growth.

Figure 1: Standard deviations of GVA per capita (STD_GVA - left scale) and Income tax base per capita (STD_ITAX - left scale) and Gini coefficients for GVA (GINI_GVA- right scale)



Source: Author's own calculations using Pecar, ZMAR, working papers, various years, ZMAR, 2000, SORS, Statistical Yearbooks, various years

Note: Fitted lines are of polynomial order 3.

It is worth noting that while the regional disparities in terms of economic activity have been increasing, we cannot say the same for personal income, measured with the personal income tax base per capita. While we can observe small fluctuations, the overall level of dispersion has not changed. This might reflect the high priority that was given to the social stability through different 'state insurance policies' (Mencinger, 2000).

Apart from the above mentioned regional disparities, one would expect the economic activity to increasingly concentrate as well - especially in the central, metropolitan region. The Gini coefficient for the regional share of aggregate GVA shows that concentration trend has been broadly following the disparities in GVA pc. The fall in the concentration until 1992, however, has been much steeper and has resulted in only marginally increased concentration by 1997 compared to 1990. After that year, the trend actually shows a falling

concentration. The trend at the end of the 1990s is quite surprising and could be the effect of some sectors not being included in the data - primarily banking and insurance, which were fairly decentralized, but have lately showed increasing signs of concentration. Nevertheless, the level of concentration does not seem to increase to the extent that we would have expected. Finally, has at least the focus of economic activity concentration been oriented towards the centre? Table 2 shows that the greatest absolute increase in the region's share of total Slovene GVA has indeed been in the Central region, in relative terms however, the central region has not been the one, which benefited the most. It is possible that this could be, to a certain extent, also a result of the decentralization of certain economic activities away from the Central region since two out of three regions that have increased their share by more than the Central region (relatively) are adjacent to it. Nevertheless, the performance of non-central regions, particularly Koroska region, show, that there were other factors at work as well.

Table 2: The shares of regional GVA, averaged through 1990-1992 and 1997-1999, and the change between the two periods; index

| Region | Avg. 90-92 | Avg. 97-99 | Abs. change | Rel. change |
|-------------------|--------------|--------------|-------------|--------------|
| Dolenjska | 5.15 | 5.74 | 0.59 | 111.4 |
| Gorenjska | 8.84 | 9.30 | 0.46 | 105.2 |
| Goriska | 5.78 | 6.26 | 0.48 | 108.2 |
| Koroska | 2.46 | 2.63 | 0.17 | 106.9 |
| Notranjsko-kraska | 1.86 | 1.52 | -0.34 | 81.6 |
| Coastal | 5.05 | 5.23 | 0.18 | 103.5 |
| Central | 36.90 | 39.05 | 2.15 | 105.8 |
| Podravska | 12.86 | 11.53 | -1.33 | 89.7 |
| Pomurska | 4.21 | 3.25 | -0.96 | 77.3 |
| Savinjska | 11.58 | 11.44 | -0.14 | 98.8 |
| Spodnjeposavska | 3.15 | 2.09 | -1.06 | 66.4 |
| Zasavska | 2.23 | 1.97 | -0.26 | 88.0 |

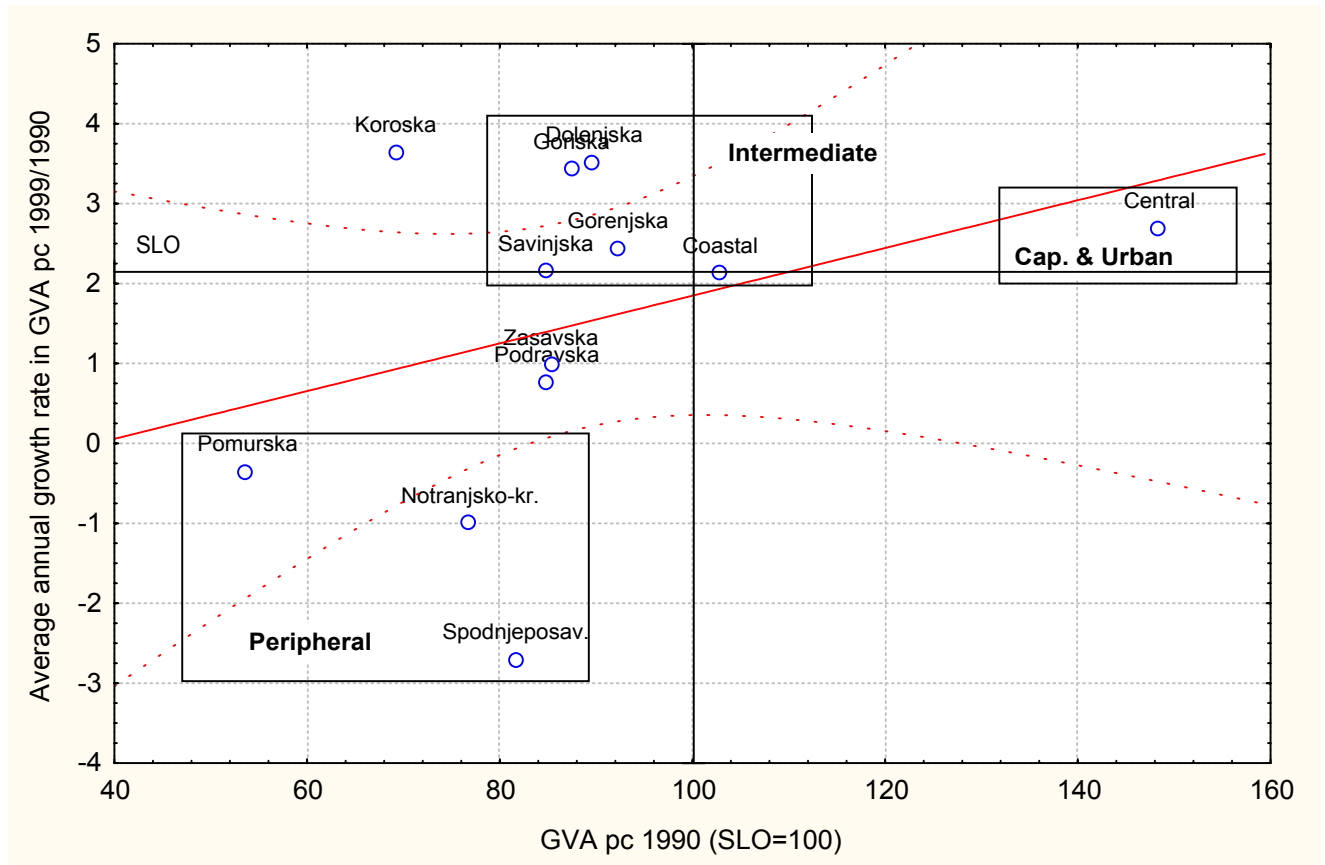
Source: Author's own calculations using Pecar, ZMAR, working papers, various years, ZMAR, 2000, SORS, Statistical Yearbooks, various years

This, somewhat unexpected result, brings us to the test of the most popular test of regional growth experiences - the β convergence estimator. The estimation of the convergence equation as proposed by Barro and Sala-i-Martin, 1991, (1)^{vi}:

$$\frac{1}{T} \ln \frac{y_{i,t}}{y_{i,t-T}} = \alpha - \ln y_{i,t-T} \frac{1 - \exp(-\beta T)}{T} + \varepsilon$$

, points to a totally insignificant ($p=0.52$) β estimator of -0.012 . According to the test, there is no empirical support for the hypothesis that the poorer regions in 1990 were growing faster than the richer ones over the 1990 - 1999 period.

Figure 2: The average annual growth rate in GVA pc 1990-1999 estimated with OLS and GVA pc in 1990 (SLO=100)



Source: Author's own calculations using Pecar, ZMAR, working papers, various years, ZMAR, 2000, SORS, Statistical Yearbooks, various years

Figure 2 also includes groupings of the regions according to the criteria proposed in the literature on recent spatial transformations (Rodriguez-Pose, 1998b). The criteria used had to be somewhat adapted due to data restrictions and the specificity of the Slovene situation (broad scale restructuring process, combined with the transition from industrial to service economy) - the criteria used with the explanation of the classification can be found in appendix 1.

What figure 2 is showing, more or less reflects our benchmark. Looking at the details, however, reveals some important irregularities that we will try to explain in the next section with the panel analysis. The most striking one is the strong performance of the

industrial regions, with Koroska region actually experiencing the fastest growth of them all. This is even more surprising when taking into account that Koroska also classifies as a peripheral region. Next, Dolenjska was the second fastest performing region even though it had a below-average economic potential indicator. Dolenjska is bordering the Central region, which makes the possibility of industrial decentralization as observed in Europe more likely (Cheshire, Carbonaro, 1996). On the other hand, so is Notranjska, the second slowest performing region. Somewhat surprising is also a very good performance of the Gorenjska region, having its obsolete industry index over 200 (SLO=100) and the average performance of the Coastal region, which should be among the fastest growing according to the selected indicators.

4. Regional growth factors and potential convergence

In the preceding sections a whole series of potential growth factors, with their theoretical arguments, have already been suggested, which allows us to proceed to empirical testing. Due to the small number of regions and short time series, the traditional cross-section or time series analysis would not be appropriate. Therefore the panel analysis, combining both dimensions of the data, offered the only way forward. Nevertheless, due to incomparable and/or incomplete time series of certain variables I was only able to perform the panel analysis for the 1990-1996 period.

Panel analysis

The first empirically tested growth equation can be presented as follows (2):

$$\ln GVA_{it} = \alpha_i + \beta_1 UNEM_{it} + \beta_2 SPIND_{it} + \beta_3 SPAGR_{it} + \beta_5 HERSCH_{it} + \beta_6 AIRDT_{it} + \lambda_t + \varepsilon_{it}$$

where $\ln GVA_{it}$ stands for the natural logarithm of regional GVA per capita, expressed in million SIT (1992 constant prices), $UNEM_{it}$ is the estimated regional unemployment rate, $SPIND_{it}$ and $SPAGR_{it}$ stand for relative specialization in industry and agriculture, respectively - they are calculated as the ratio between the share of industry (agriculture) employment in the region relative to the same share in Slovenia. $HERSCH_{it}$ is a measure of aggregate (and absolute) specialization expressed by the inversed Herschman-Henfiridahl index^{viii}, λ_t are the yearly dummies, while $AIRDT_{it}$ is the average inter-regional daily traffic, which is used as an instrumental variable for economic potential due to possible

endogeneity problems. It controls for (1) accessibility and centrality due to transit traffic, (2) for the movement of consumers - purchasing power, (3) movement of labour as production factor, (4) forward linkages - supply of intermediate goods and (5) backward linkages - supply of end products to other markets. Table 3 presents the Pearson's correlation coefficients among the last 4 variables, which are very instructive by themselves:

Table 3: The Pearson's correlation coefficients with their significance level

| | SPAGR | SPIND | SPSER | HERSCH | AIRDT |
|---------------|---------|---------|---------|---------|--------|
| SPAGR | 1 | | | | |
| | p= --- | | | | |
| SPIND | 0.0817 | 1 | | | |
| | p=.460 | p= --- | | | |
| SPSER* | -0.2247 | -0.9835 | 1 | | |
| | p=.040 | p=0.00 | p= --- | | |
| HERSCH | 0.6934 | 0.6284 | -0.7062 | 1 | |
| | p=.000 | p=.000 | p=.000 | p= --- | |
| AIRDT | -0.3061 | -0.6975 | 0.7286 | -0.5361 | 1 |
| | p=.005 | p=.000 | p=.000 | p=.000 | p= --- |

* SPSEER stands for relative services specialization.

Due to very high and significant mutual correlation it is not possible to model these variables directly. Note, that services seem to have very strong tendency to locate in the central regions and that these regions seem to be highly specialized. Non-central regions, on the other hand, show tendency of industrial and/or agricultural orientation, usually connected with greater degree of diversification. Following this reasoning, I decided to include the relative industry (SPIND) and relative agriculture (SPAGR) specialization as the basic variables of the model. The average inter-regional daily traffic (AIRDT) was subsequently included as a residual of the unexplained variance by SPIND and SPAGR, while the aggregate specialization variable (HERSCH) only captures the variation, that is not explained by SPIND, SPAGR and residual AIRDT variables.

This is a **fixed effects model**, which seems especially suited for our purposes, since the regions analysed 'cannot be viewed as a random draw from some underlying population' (Verbeek, 2000: 318). The advantage of this approach is also that it controls for all omitted individual time-invariant, as well as omitted period individual-invariant variables. The estimated coefficients of the equation are presented in table 4 on the next page.

Table 4: The determinants of the regional GVA pc; equation (2) - the fixed effects model; dependent variable lnGVAp_c

| Variable | Coefficient | Std. Error |
|-----------------------------------|-------------|-------------------|
| UNEM | 0.0030 | 0.0074 |
| HERSCH | 0.6443* | 0.3644 |
| SPIND | 0.0055* | 0.0031 |
| SPAGR | -0.0010 | 0.0007 |
| AIRDT | 7.80e-06*** | 2.76e-06 |
| R ² _{within} | 0.4132 | F(11,61) = 3.90 |
| R ² _{between} | 0.0397 | Prob > F = 0.0003 |
| R ² _{overall} | 0.0582 | |
| No. of obs. | 84 | |

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. F test (H_0 : all $U_i=0$): F(11,61)=10.83***

The *unemployment* variable (UNEM) turns out to be totally insignificant ($p=0.69$), which can be explained by fundamental distortions in the labour market with nonexistent open unemployment before 1990. With yearly dummies included and with Slovenia's unemployment rising from 4,7 to 14,4% in the period between 1990 to 1993, the above result points to symmetric regional economic transformation with no significant postponements of the restructuring processes. The unemployment variable in dynamic terms should therefore be considered purely as a transition variable. This is reconfirmed by the fact, that with the yearly dummies excluded, the unemployment variable becomes highly significant ($p=0.000$). In terms of the **specialization** variables, the model results show, that the relative industry specialization had strong positive and significant, while the agriculture specialization (SPAGR) had negative but insignificant influence on the GVA pc. The latter is not surprising due to negligible importance of agriculture in total GVA (according to our dataset the share of agriculture in total GVA is on average just over 2%). Taking into account that services seem to have strong tendency to locate in the central regions, the best development strategy for non-central regions seemed to have been the industry specialization. This was especially beneficial strategy for the regions with below average industry specialization, since residual variation of the aggregate specialization variable (HERSCH) shows, that increasing diversification had additional positive impact on the GVA pc. It is very probable, however, that it is primarily the growth promoting and high value added services, like business services, decision-making, information and financial services (Castells, 1989, Petit, 1996), that have the strongest concentration tendency. Since their effect on the GVA pc is by default among the greatest, the increased (aggregate)

specialization towards this services segment would be the best strategy, which unfortunately seems to be only available to the central region(s). Geography in this way seems to importantly predetermine the choice of regions' development strategy. Furthermore, with increasing 'congestion' of the high value added services, the lower value-added services might get crowded out to other regions, resulting in the negative GVA pc effect of increased services specialization of non-central regions. To verify this hypothesis empirically, we would unfortunately require more disaggregated data on the sectoral structure of the regions. Finally, the residually defined **average inter-regional daily traffic** ($AIRDT_{it}$) shows that on top of the sectoral specialization, the extent of interchange with the other regions was of paramount importance. Specifically, the dynamics of the model shows that forward / backward linkages and access to labour and consumers, combined with the regions' ability to attract, matters.

The fixed effects model does seem preferable from the methodological point of view, the extent of the explained variance, however is only partly satisfying. The significance of α_i s shows that there are important individual period-invariable factors, which determine GVA pc. To be able to identify what these factors are, new explanatory variables would have to be introduced in the model. The period-invariable variables, however, can only be estimated by the random effects model, which assumes that α_i s are random factors, independently and identically distributed over the regions. This, however, does not seem to be the appropriate assumption. Furthermore, the limited number of observations does not allow the proper random effects analysis. For these reasons additional variables, whose theoretical underpinnings were presented in section 2, will be introduced in a **pooled regression model**. Note though, that while in the fixed effects model the independent variables were explaining the dynamics of the dependent variable through time (within variation), the pooled regression model also captures the between variation. The new variables are as follows:

1. $OBS90_i$ - index of the share of obsolete industrial sectors in total employment in 1990, as defined by Gulic, Kukar, 1991; SLO=100;
2. $EXP90_i$ - index of the region's share in total turnover realised on foreign, non-Yugoslav markets in 1990; SLO=100;
3. $EXPYU_i$ - the dependency upon the demand from the other Yugoslav republics^{viii} in the period, when the conflict has escalated - 1991/1992;
4. $COMPS_i$ - the number of small enterprises per 1000 inhabitants in 1990;
5. $COMPMB_i$ - the number of medium and large sized enterprises per 1000 inhabitants in 1990;

6. EDUPOP_i -the share of highly educated population among all inhabitants aged over 15 years in 1991;
7. RDEMB_i the R&D personnel in the private sector per 1000 inhabitants averaged over 1995-1997 period;
8. RDEMP_i the R&D personnel in the public sector per 1000 inhabitants averaged over 1995-1997 period;
9. FDI_i - the number of employees per 1000 inhabitants working in the firms with more than 10% foreign ownership in 1998^{ix}
10. DENS_i the average population density per square kilometre in the 1990-1996 period^x.

Due to the multicollinearity problem, it was not possible to introduce these variables directly in the model. Instead, the principal components analysis on the standardized variables was used, in order to define multiple orthogonal factors, which capture almost 97% of the variance of the original variables. The factor loadings after varimax normalized rotation are presented in table 5:

Table 5: The factor loadings after varimax normalized rotation of the principal components analysis

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Factor 7 | Factor 8 |
|----------------------|---------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Abbr. for regression | F-PROD-ORIENT | F-PATHDEP | F-OPEN-NESS | F-RDEMB | F-AGGLOM | F-YUDEP | F-UNEM | F-RDEMP |
| UNEM | 0.10 | -0.14 | -0.08 | -0.07 | 0.16 | 0.09 | -0.96 | -0.01 |
| SPAGR | -0.18 | -0.54 | -0.35 | -0.42 | -0.56 | 0.09 | -0.05 | 0.12 |
| SPIND | -0.96 | 0.12 | -0.10 | 0.13 | -0.02 | 0.10 | 0.04 | -0.09 |
| SPSER | 0.96 | -0.03 | 0.15 | -0.06 | 0.09 | -0.11 | -0.07 | 0.08 |
| HERSCH | -0.66 | -0.46 | -0.28 | 0.02 | -0.42 | 0.19 | 0.08 | 0.08 |
| AIRDT | 0.75 | 0.03 | 0.01 | 0.44 | 0.02 | -0.05 | -0.12 | 0.40 |
| OBS90 | -0.57 | 0.63 | -0.21 | 0.14 | 0.29 | 0.20 | 0.01 | -0.14 |
| EXPYU | -0.26 | -0.17 | 0.05 | -0.10 | 0.03 | 0.91 | -0.08 | -0.03 |
| EXP90 | -0.03 | -0.11 | 0.61 | 0.23 | -0.49 | -0.49 | 0.11 | -0.15 |
| COMPS | 0.59 | 0.40 | 0.30 | 0.39 | 0.02 | 0.02 | 0.13 | 0.42 |
| COMPMB | 0.08 | 0.92 | 0.04 | 0.08 | 0.02 | -0.20 | 0.16 | 0.19 |
| EDUPOP | 0.81 | 0.30 | 0.12 | 0.25 | 0.11 | -0.13 | 0.04 | 0.35 |
| RDEMB | -0.03 | 0.12 | 0.19 | 0.94 | 0.02 | -0.12 | 0.08 | 0.13 |
| RDEMP | 0.49 | 0.11 | 0.01 | 0.16 | 0.22 | 0.01 | 0.01 | 0.82 |
| FDI | 0.36 | 0.08 | 0.88 | 0.19 | -0.04 | 0.12 | 0.07 | 0.09 |
| DENS | 0.09 | 0.07 | -0.15 | 0.02 | 0.94 | 0.07 | -0.19 | 0.18 |
| Expl. Var. | 4.67 | 2.10 | 1.59 | 1.65 | 1.79 | 1.28 | 1.06 | 1.30 |
| Prp.Totl | 0.29 | 0.13 | 0.10 | 0.10 | 0.11 | 0.08 | 0.07 | 0.08 |

The pooled regression model then looks like (3):

$$\ln GVA_{it} = \alpha + \beta_1 \text{F-PROD-ORIENT}_{it} + \beta_2 \text{F-PATHDEP}_{it} + \beta_3 \text{F-OPENNESS}_{it} + \beta_4 \text{F-RDEMB}_{it} + \beta_5 \text{F-AGGLOM}_{it} + \beta_6 \text{F-YUDEP}_{it} + \beta_7 \text{F-UNEM}_{it} + \beta_8 \text{F-RDEMP}_{it} + \beta_9 \text{TRANS93}_t + \varepsilon_{it}$$

,where TRANS93_t stands for a transition dummy variable (1990-1993 = 1, 0 otherwise).

As can be seen from the table 6 on the next page, the overall fit of the model explains over 80% of the variance in the GVA pc. The strongest impact on the GVA pc comes from **factor 1 - F-PROD-ORIENT** ($\beta_1=0.110$), whose variance seems to capture the general regional production orientation - specialized in services with small business enterprise culture and high human capital requirements vs. more industrial production type. The regions with higher degree of relative services **specialization** (SPSER) had higher, while the regions specialized in industry - SPIND - (as well as agriculture for that matter - factors 2 and 5) had lower GVA pc. Furthermore, it is not just services but the more specialized regions in the aggregate terms (HERSCH) that have fared better, which is also correlated and positively connected with the **average inter-regional daily traffic (AIRDT)**. AIRDT in the pooled regression model primarily captures the centrality and accessibility effect due to small proportion of trucks in total traffic (app. 10%). These results are compatible with the hypothesis from the fixed effect regression, that there is a trade-off in terms of production strategies of the regions, which among others, is also determined by the Slovenia's geography. The increased specialization in high value added services is obviously a good choice, which however, might not be available to every region. There seems to be a trade-off in terms of production strategies of the regions, which among others, is also determined by the Slovenia's geography. Due to positive dynamic industry specialization effect, the best strategy for non-central regions might nevertheless be industrial specialization. The strong positive influence of the **share of highly educated population (EDUPOP)** and its concentration in the central region comes as no surprise. The role of human capital in economic growth has been especially stressed by the endogenous growth theorists (Lucas, 1988, Romer, 1989, Grossman, Helpman, 1991, Mankiw, Romer, Weil, 1992 and others), while the new economic geography literature has identified the endowment with skilled labour as an important dispersion force (Midelfart-Knarvik et al., 2000).

Table 6: The determinants of the regional GVA pc; equation (3) - pooled regression model; dependent variable lnGVAp_c

| Factor | Variable | Coefficient | Std. Error |
|---------------------------|---------------|-------------|-----------------|
| | α | -0.8163*** | 0.0205 |
| Factor 1 | F-PROD-ORIENT | 0.1101*** | 0.0119 |
| Factor 2 | F-PATHDEP | 0.0631*** | 0.0120 |
| Factor 3 | F-OPENNESS | 0.0900*** | 0.0190 |
| Factor 4 | F-RDEMB | 0.1031*** | 0.0120 |
| Factor 5 | F-AGGLOM | 0.0742*** | 0.0120 |
| Factor 6 | F-YUDEP | -0.0041 | 0.0120 |
| Factor 7 | F-UNEM | 0.0683*** | 0.0144 |
| Factor 8 | F-RDEMP | 0.0690*** | 0.0119 |
| | Trans93 | -0.0981*** | 0.0293 |
| R² | | 0.8246 | |
| adj. R² | | 0.8033 | |
| Prob > F | | 0.0000 | F(9,74) = 38.66 |
| No. of obs. | | 84 | |

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.

Similarly, the **R&D personnel** in the public sector per 1000 inhabitants (RDEMP), captured in factors 1 and 8 (F-RDEMP; $\beta_8=0.049$) also turned out to be significant. As in the matter of fact, it was both public and especially private R&D employment that had strong positive effect on GVA pc. It is the latter, whose influence is captured in **factor 4**, F-RDEMB, that had the second strongest impact on GVA ($\beta_6=0.103$). A number of authors have stressed the importance of R&D investments for growth (for example Romer, 1986), which increase the productivity directly and through the knowledge spillovers (the increase in the public stock of knowledge due to incomplete property rights). Furthermore, it has been shown by Jaffe, Trajtenberg, Henderson, 1993, that knowledge spillovers tend to be highly localized, which should even accentuate the importance of R&D for regional GVA pc. Along the similar lines, the research by Midelfart-Knarvik et al., 2000, also identifies the endowment with researchers as an important location determinant of the firms. Our model is compatible with these results. Without going into the question of causality, we can point to the strong and significant correlation of R&D employment with the **number of small** (F-PROD-ORIENT) as well as **medium and large sized enterprises** (**factor 2**; F-PATHDEP) per 1000 inhabitants, who also both had strong positive influence on GVA pc. This confirms our expectations on path dependency effect from section 2, that the positive impact from regionally scattered industry location (due to endowment with financial &

human capital, entrepreneurial culture, information & know-how) has indeed prevailed over potential negative effects. On the other hand, the negative effects could have been detected through the negative influence of **the share of obsolete industrial sectors** in total employment (OBS90) on GVA pc (F-PROD-ORIENT) due to significant correlation with the number of medium and large sized companies. This is also why the results for OBS90 are somewhat mixed, since in factor 2 they tend to show a positive influence on GVA pc.

Factor 3, F-OPENNESS ($\beta=0.090$) had the third strongest and significant impact on GVAp_c. It predominantly captures the variation of the number of employees per 1000 inhabitants, working in the firms with more than 10% foreign ownership (FDI), and the proportion of turnover, realised on foreign, non-Yugoslav markets in 1990 (EXP90). It comes as no surprise that *foreign direct investments* have played a positive role in the economic performance of the regions. Their positive effect on the GVA pc and superior performance to domestic firms in terms of profitability, productivity, export orientation, greater turnover and investment levels has already been empirically evaluated by other scholars (Smith et al., 1997, Rojec, 2000, Damjan et al., 2001 among others). I decided to use a somewhat unusual measure of FDIs - the number of employees per 1000 inhabitants working in all the firms with more than 10% foreign ownership in 1998. As defined in the model, this is obviously not a flow variable but rather a measure of cumulative foreign employment impact in the region concerned. In this way I could capture not just the proportions of direct financial effect of the investment (they would otherwise be measured by the invested capital) but also the extent of their employment effect, mitigated social shocks of restructuring, favourable effect on the preservation of social capital in the region and finally, it also acts as a dummy for the spin-off potential and learning effect of the employees, which is of course also dependent upon their number. The FDI_i variable is therefore supposed to measure the direct as well as part of the indirect effects of FDIs. According to our estimates, the FDIs have a strong positive influence on the regional GVA pc. The impact of **exports to non-Yugoslav markets** in 1990 (EXP90) confirms our expectation that the stronger presence of the firms in non-Yugoslav markets required their greater competitiveness and gave them a head-start with further market penetration, due to the established knowledge and distribution networks in these markets. It should be noted though, that services oriented regions, which have high GVA pc are not export oriented - this effect reflects itself in factor 5, where EXP90 shows negative impact on GVAp_c. Complementary measure of the **dependency upon the demand from the other Yugoslav republics** during the conflict escalation 1991/1992 (EXPYU), the latter captured in **factor 6, F-YUDEP**, however, points to negative but highly insignificant influence. This could be attributed to the fact that in terms of export market structure, Slovenia managed to reorient

its trade from Yugoslav to EU market very quickly. In 1986, Yugoslavia represented 65% of export demand, while the EU represented only 15%. By 1994 the proportions were almost exactly the opposite, with exports to ex-Yugoslavia falling by approximately \$3.5 billion and with exports to EU increasing by \$3 billion (Krizanic, 1997). This seems to indicate, that even the products that were sold in ex-Yugoslavia were technologically advanced to the extent that allowed them to penetrate the Western markets without the radical changes, albeit at the lower prices. In the absence of the methodologically consistent time series data for export market structure, the effects of the Yugoslav market collapse were probably averaged out.

The number of companies per 1000 inhabitants, together with the significant influence of the average **population density per square kilometre** in the 1990-1996 period (DENS) exemplified in **factor 5**, F-AGGLOM ($\beta=0.074$), tends to confirm the importance of agglomeration economies, as expected on the basis of the experience of the other transition and EU countries. According to the selected variables, it is the labour market pooling on one side, as well as forward / backward linkages arguments on the other, that explain the agglomeration economies phenomenon. The **unemployment** variable (UNEM), primarily captured in **factor 7**, F-UNEM ($\beta_5=0.068$ - negative correlation) confirms the originally expected connection between GVApc and unemployment. The difference between fixed effects and pooled regression model results can be explained by the fact, that in the dynamic terms the UNEM variable is primarily capturing the symmetric transition effect, while the pooled regression is also taking into account the between variation, which was not dominated by this same effect.

Finally, the **dummy variable for transition period** (TRANS93; $\beta_9=-0.098$) puts empirical verification on Kornai's notion of transformational recession. As he puts it: 'when the post-socialist economy transfers from ... a sellers' market, to the ... buyers' market, it *tips over too far*, instead of arriving at an ideal state of equilibrium' (Kornai, 1995: 174), where aggregate supply equals aggregate demand. Slovenia was no exception.

Identification of convergence / divergence producing factors

Having identified the regional growth factors that explain over 80% of the variation in GVA pc, the last question left unanswered is, which of the above could be considered as disparities promoting and which ones as disparities reducing factors. Inferring from the divergent growth pattern of the regions, one would of course expect the disparities

promoting factors to dominate. Knowing the direction of influence for each factor, what we have to do is to correlate the dynamic performance between 1990 - 1996 of each factor (or its absolute level) with the regions' GVA pc and economic potential from the beginning of the analysed period - results can be found in tables 7 (a), (b), (c).

Tables 7 (a), (b), (c): Correlation between the growth factors from the model and GVA pc and economic potential variables from 1990

| | Avr. gr. UNEM | Avr. gr. SPIND | Avr. gr. SPSER | Avr. gr. SPAGR | Avr. gr. HERSCH | Avr. gr. AIRDT |
|---------------------|------------------|-------------------|-------------------|-------------------|--------------------|-------------------|
| GVA pc 1990 | -0.10 | -0.51 | -0.37 | -0.10 | -0.67 | -0.16 |
| | p=.759 | p=.088 | p=.237 | p=.765 | p=.017 | p=.613 |
| Ec.pot. 1990 | -0.13 | -0.44 | -0.45 | -0.09 | -0.65 | 0.26 |
| | p=.681 | p=.153 | p=.140 | p=.791 | p=.021 | p=.408 |

| | Avg. level UNEM | Avg. level SPIND | Avg. level SPSER | Avg. level SPAGR | Avg. level HERSCH | Avg. level AIRDT | RDEMPB | RDEMP |
|---------------------|--------------------|---------------------|---------------------|---------------------|----------------------|---------------------|--------|--------|
| GVA pc 1990 | -0.07 | 0.04 | 0.67 | -0.59 | -0.69 | 0.88 | 0.44 | 0.85 |
| | p=.838 | p=.895 | p=.017 | p=.043 | p=.013 | p=.000 | p=.155 | p=.001 |
| Ec.pot. 1990 | -0.05 | 0.10 | 0.66 | -0.56 | -0.51 | 0.80 | 0.50 | 0.75 |
| | p=.888 | p=.765 | p=.020 | p=.059 | p=.088 | p=.002 | p=.095 | p=.005 |

| | EDUPOP | COMPS | COMP- MB | FDI | DENS- AVG | OBS90 | EXPYU | EXP90 | EDUPOP |
|---------------------|--------|--------|-------------|--------|--------------|--------|--------|--------|--------|
| GVA pc 1990 | 0.90 | 0.87 | 0.43 | 0.57 | 0.35 | -0.23 | -0.18 | 0.03 | 0.90 |
| | p=.000 | p=.000 | p=.162 | p=.054 | p=.262 | p=.472 | p=.578 | p=.935 | p=.000 |
| Ec.pot. 1990 | 0.91 | 0.93 | 0.37 | 0.50 | 0.27 | -0.15 | -0.34 | -0.06 | 0.91 |
| | p=.000 | p=.000 | p=.235 | p=.096 | p=.403 | p=.644 | p=.277 | p=.846 | p=.000 |

The results from tables 7 reveal that the only disparities reducing factors in the analysed period turned out to be the **specialization in industry** (SPIND) and the **aggregate diversification** (HERSCH), whose average growth tended to be higher in the worse-off and the more peripheral regions. On the other hand, there is a number of factors that have been significantly biased towards the more developed and core regions. Among the most obvious disparities enhancing factors were the **share of highly educated population** (EDUPOP), the **number of small enterprises** (COMPS), the **proxi for centrality** (abs. level AIRDT) and the **R&D personnel in the public sector** (RDEMP). Somewhat less straightforward, but still with a clear central orientation were the **FDIs**, the **R&D personnel in the private sector** (RDEMB) and the **number of medium and large sized enterprises** (COMPMB). It

is of particular interest and importance that FDIs and R&D in the private sector were not as concentrated as one might expect. As we shall see in the next paragraph, some regions actually managed to significantly outperform the central region, indicating an important 'window of opportunity', especially for intermediate regions. Location of the medium and large sized companies, which was easier influenced by policy considerations, reconfirms that regional (and other) policies before 1990 had been successful at least in this respect - the path dependency effect alleviated the concentration of economic activity also in the transition period. The share of the **obsolete industry employment** tended to be somewhat greater in the more peripheral regions. The other variables did not have any significant regional bias.

The above results, obtained from the aggregate analysis of the regions are very informative. Nevertheless, at the end it is the dynamics and mix of these factors in a particular region that determine the GVA pc. For this reason, an analysis of each regions' performance was made, which will give us some further insight. First, the greatest surprise came from the two '*Industrial regions*', which should be among the hardest hit by the transformation processes, but were actually the fastest growing group. This is especially surprising for Koroska region, which also had the third lowest economic potential indicator. According to our findings, this outcome could be explained by intensive industry specialization combined with increasing diversification, Koroska region's strong engagement in the non-Yugoslav markets and the fact that in spite of the highest obsolete industry index, they managed to keep unemployment in check. The latter might have been a result of heavy government intervention and/or the postponed restructuring process, as already suggested at the beginning of this paper. The data on the government intervention by region is unfortunately non-existent, making its influence impossible to verify. Nevertheless, the government intervention was at least partly controlled for by the use of the two-way error component fixed effects regression model. This reduces the possibility that the favourable effect of industry specialization could be due to the government intervention. Moreover, the positive industry specialization index is robust even if we exclude the two industrial regions from the regression.

The second, somewhat surprising, case was a very good performance of the *Dolenjska* region (second fastest growing region 1990-1996), with a lower than Slovene average GVA pc and economic potential indicators in 1990 and joint border with Croatia, furthest away from the EU market. According to our results, the observed performance is mainly due to the **FDIs and R&D employment in the private sector** (correlation among these two variables is 0.336 at $\alpha=0.01$), which were among the highest among all regions.

This region was already from the beginning of the period relatively specialized in industry, albeit with the low share of obsolete industries, and has made the greatest part of revenues on the non-Yugoslav markets, even though according to the geography one would expect otherwise. The case of Dolenjska region is instructive, because it shows that FDIs were not strictly selective on the basis of centrality or proximity to the EU border - the Central region actually has only the fourth greatest FDI indicator. The trends in the future will show whether this was only a temporary 'anomaly' due to the privatisation process and path dependency effect as suggested in section 2.

Third, in spite of having the obsolete industry index in excess of 200 and high dependence on the Yugoslav market, **Gorenjska** region managed to keep an enviable growth performance. The answer seems to lie in the increasing industry specialization (the greatest change) combined with a well-educated population. Furthermore, Gorenjska region developed an industry with great development potential (highest private R&D employment indicator), without significant involvement of foreign capital - at least not according to the selected FDI indicator, which shows below average involvement of foreign investors.

On the other hand, the average performance of the **Coastal** region could be considered as being below expectations according to our benchmark. The Coastal region has among the highest FDI and EDUPOP indicators and is a port region, which have, in other transition countries, fared better than average (Petračkos, 2001). Looking at the data more in detail reveals, that the Coastal region underwent its restructuring transformation among the first and very radically. Its GVA pc has fallen by 20% between 1990 and 1993 and had the second highest unemployment in 1993. During this period, the industry specialization has fallen steeply, while the aggregate specialization has increased (the region is predominantly services oriented). After 1993, however, the industry specialization started to rise again and so has the aggregate diversification. As predicted by the models, both changes are expected to increase the GVA pc and the Coastal region has indeed outperformed the Slovene average between 1992 and 1996 by over 30%. It should be noted, though, that the shock therapy approach was made much easier by the smallest obsolete industry indicator and region's strong involvement in the non-Yugoslav markets already in 1990.

Finally, the special case of **Podravska region**, with its prolonged recession until 1994 and a strong negative average annual growth between 1990-1996. Even though the Podravska region's obsolete industry index was below average and even though this region managed to attract a non-negligible extent of FDIs, it could not prevent its unemployment to

rise steeply throughout the period. Apart from unemployment Podravska region was permanently reducing its industry and increasing its service specialization, which has considerably increased its level of specialization. As the second biggest region with the second biggest (university) town in Slovenia (Maribor), it has not managed to situate itself as the center of high value-added services and as the generator of the new economic activity and entrepreneurial milieu, which is characterised by very low number of small enterprises and private R&D employment per 1000 inhabitants. The greatest advantage according to our analysis for Podravska region seems to represent its high population density and the fact that this is the country's second public research region (according to RDEMP).

Policy Implications

According to the Act on the Promotion of Balanced Regional Development of 1999 (Official Gazette of RS No. 60/1999), as well as political declarations of both position and opposition parties, a more balanced regional development is among the top Slovenian priorities. The Law is introducing a new concept of government (co-)financing based on regional development programmes, which promises better focusing of resources to the measures with the greatest impact. This analysis suggests that the future government support for regional development should take into account the following:

1.) The worse-off and peripheral regions should be supported in their already increasing industrial specialization. In this manner, the government would actually pursue both efficiency, as well as equity objective at the same time. This would require (1) an increase in the entrepreneurial part of the incentives, since current support is predominantly infrastructure oriented and (2) the adaptation of the infrastructure investments to take a more explicit account of industry.

2.) The FDI support in the framework of regional policy is almost non-existent. According to our analysis, FDIs have a favourable effect on GVA pc, but unfortunately tend to concentrate in the more developed regions. Nevertheless, the case of the Dolenjska region shows that this might not necessarily be the case.

3.) The investments in human capital should be very high on the priority list since, according to our analysis, the proportion of highly educated population actually has among the strongest influences on the GVA pc. Unsurprisingly, the 'human capital stock' is strongly biased towards better-off regions.

4.) Finally, there is the issue of the R&D geography, which needs some qualifications beyond the obvious model results. It has been shown by a number of authors that the geographical concentration of R&D activity may have cumulative growth effects due to

localized knowledge spill-overs (Jaffe, Trajtenberg, Henderson, 1993, Audretsch, 1998, Romer, 1986), strong threshold effects (Scherer 1982; Dosi 1988) and the development of the appropriate milieu in the local economic tissue (Storper, 1997). Having very limited public resources in mind, one should be cautious about advising a more dispersed approach to public R&D investment. Cases of Gorenjska and Dolenjska regions show, however, that the private R&D activity might be of somewhat different character and can be very profitable also in non-central regions. One possible explanation of less concentrated private R&D employment, could be the falling costs of trading information due to increasing integration (continuing investment in inter-regional infrastructural connectedness), as shown in a theoretical setting by Baldwin, Forslid, 1999. Relatively dispersed private R&D employment might show that the private R&D is more reactive to the extended reach of the knowledge spill-overs and better equipped to benefit from them even at longer distance. The private R&D activity therefore seems to be a relatively more appropriate public policy target as an dispersion force.

5. Conclusion

In this paper, an ambitious agenda of identifying the convergence / divergence producing factors along the lines proposed by Cheshire and Carbonaro, 1996, was set. The regional disparities in the 1990s have been under the influence of two groups of factors: (1) the transition from socialist to market economy and the transition from regional to national economy and (2) the global spatial transformation processes spurred by the internationalisation of the economy and accession process to the EU. In order to be able to take the experience of other transition and Western countries as a benchmark, an evaluation of the consequences of the institutional reform due to the gaining of independence on regional disparities (in terms of employment) had to be initially evaluated. Surprisingly, the institutional reform has not shown any significant regional bias - if anything, there was a small bias in favour of the worse-off regions.

A comparative analysis has shown that the case of Slovenia has been to a large extent no exception to the general rule: the regional disparities have been increasing through the greater part of 1990s, and so has the economic concentration. However, the concentration increase was only marginal, if we compare the beginning and the end of the 1990-1999 period, due to a sharp fall in the concentration in the first three years. Even though Slovenia is a small and infrastructurally well connected country, geography does have a role. There seem to be limitations to the development strategy options available to the

non-central regions, since services, in particular the high value added services like business services, decision-making, information and financial services, seem to have strong tendency to locate in central regions. Furthermore, the population density also confirms the presence of agglomeration economies as expected on the basis of our benchmark. On the other hand, all transition variables had the expected and significant effects on the regional performance: the transition dummy has confirmed Kornai's notion of the transformational recession, while the obsolete industry indicator has shown that the transition burden tended to be disproportionately laid upon the worse-off regions.

Human capital, R&D employment and FDIs were, according to expectations, the most important divergence producing factors. Exceptions to the rule seem to indicate however, that with the targeted support of the regional policy, these factors could bring about greater benefits to the worse-off regions as well - especially to the intermediate regions. The more peripheral and worse-off regions, though, seem to be offered greater prospects through the industrial specialization strategy, which together with aggregate diversification represented the only convergence producing force during this period. The analysis has also confirmed the path dependency effect, which was on one side seen through the positive growth effect of the number of small enterprises in 1990 (entrepreneurial culture) and export orientation to non-Yugoslav markets, while the results of regional policy could be observed through relatively more scattered location of medium and large sized companies across regions.

The presented research offers a preliminary insight to the causes of increasing divergence; nevertheless, three main shortcomings should not be overlooked. First, the panel analysis was performed on the 1990-1996 period, which was characterized by profound restructuring processes. Even though we have controlled for the transition effect, the extended time frame of the analysis would greatly increase the reliability of our findings. Second, the data on sectoral structure of the regional economies could cause the aggregation bias in our results. Finally, the data on the incidence of the government intervention would have to be supplemented by anecdotal evidence. Further research would also be desirable in reference to the changing functional borders of the regions. In spite of these shortcomings, the author hopes that this paper will contribute to the lively debate on the causes of regional divergence in Slovenia, as well as give the incentive for further research.

Acknowledgments

I would like to express my gratitude to Anres Rodriguez Pose, Ian Gordon and Gilles Duranton from the London School of Economics and Political Science who helped me brush the ideas in the early stages of this paper preparation. Technical suggestions were also greatly appreciated from Velimir Bole, Igor Masten, Sonja Munoz, Vincente Cunat and Maria Guadalupe. Finally, I would like to thank my girlfriend Sonja for the permanent support and useful comments.

References

1. Amin A, Thrift N, 1995, 'Institutional issues for the European regions: from markets and plans to socio-economics and powers of association', *Economy and Society*, 24(1) 41-66
2. Audretsch B D, 1998, 'Agglomeration and the location of innovative activity', *Oxford Review of Economic Policy*, 14 (2) 18-29
3. Balaz V, 1996, 'The wild East?' Capital markets in the V4 countries', *European Urban and Regional Studies*, 3(3) 251-266
4. Baldwin E R, Forslid R, 2000, 'The Core-Periphery Model and Endogenous Growth: Stabilizing and Destabilizing Integration', *Economica*, 67 307-324
5. Barro R J, 1991, 'Economic Growth in a cross-section of countries', *Quarterly Journal of Economics*, 106(2) 407-443
6. Barro R J, Sala-i-Martin X, 1991, 'Convergence across states and regions', *Brookings Papers on Economic Activity*, 1 107-182
7. Barro R J, Sala-i-Martin, 1992, 'Convergence', *Journal of Political Economy*, 100(2) 223-251
8. Blanchard O, 1991, 'Convergence across stages and regions' *Brookings Papers on Economic Activity* 1 107-182
9. Brulhart M, 1998, 'Trading Places: Industrial Specialization in the European Union', *Journal of Common Market Studies*, 36(3) 319-346
10. Cantwell J, Iammarino S, 2000, 'Multinational Corporations and the Location of Technological Innovation in the UK regions', *Regional Studies*, 34.4 317-332
11. Castells M, 1989, 'The Informational city'. Oxford: Basil Blackwell
12. Castells M, Hall P, 1994, 'Technopoles of the World: The Making of Twenty-First-Century Industrial Complexes'. London: Routledge
13. Cheshire P C, 1999, 'Economic Indicators for European Cities and Regions: Why Boundaries matter', in *The quality of Life in the Cities and Regions of the European Union, Indicators*, Statistical Office of the European Commission, Luxembourg: Office for Official Publications of the European, 109-21
14. Chrisholm M, 1995, 'Britain on the Edge of Europe', London: Routledge
15. Ciccone A, Hall R, 1996, 'Productivity and the Density of Economic Activity', *American Economic Review*, 86(1) 54-70
16. Clark C, Wilson F, Bradley J, 1969, 'Industrial Location and Economic Potential in Western Europe', *Regional Studies*, 3 197-212
17. Damjan P J et al., 2001, 'The Role of FDI, R&D Accumulation and Trade in Transferring Technology to transition countries. Evidence from firm panel data for eight transition countries', *Institute for Economic Research, Working Paper No. 10*
18. Dosi G, 1988, 'Sources, procedures and microeconomic effects of innovation', *Journal of Economic Literature*, 26 1120-71
19. Dunford M, 1993, 'Regional Disparities in the European Community: the evidence from the REGIO databank', *Regional Studies*, 27(8) 727-743
20. Duranton G, Puga D, 2000, 'Diversity and Specialisation in Cities: Why, where and when does it matter?', *Urban Studies*, 37(3) 533-555
21. Eberts R W, McMillen P D, 1999, 'Agglomeration Economies and Urban Public Infrastructure', in Mills E S, Cheshire P, 'Handbook of Regional and Urban Economics', Elsevier Science
22. Ellison G, Glaeser L E, 1997, 'Geographic concentration in US manufacturing industries: A dartboard approach', *Journal of Political Economy*, 105(5) 889-927
23. Feldman P M, Audretsch B D, 1999, 'Innovation in cities: Science-based diversity, specialization and localized competition', *European Economic Review*, 43(2) 409-429
24. Fuente de la A, 1997, 'The empirics of growth and convergence: A selective review', *Journal of Economic Dynamics and Control*, 21 23-73

25. Fujita M, Ishii R, 1998, 'Global location behaviour and organizational dynamics of Japanese electronics firms and their impact on regional economies' in Chandler D A, Hagström P, Sölvell Ö (eds), *The Dynamic Firm: The Role of Technology, Strategy, Organization and Regions*. Oxford: Oxford University Press, 343-383
26. Fujita M, Mori T, 1996, 'The Role of ports in the making of the major cities: Self-agglomeration and hub-effect', *Journal of Development Economics*, 49 93-120
27. Gorzelak G, 2000, 'The dilemmas of regional policy in the transition countries and the territorial organisation of the State' in Petrakos G, Maier G, Gorzelak G (Eds) *'Integration and Transition in Europe: The Economic Geography of Interaction'*, London, Routledge
28. Grossman M G, Helpman E, 1991, *'Innovation and Growth in the Global Economy'*. Cambridge: MIT Press
29. Gulic A, Kukar S, 1992, 'Regionalni razvoj in regionalizacija Slovenije; 2 faza'. Urbanisticni institut RS and Institut za ekonomska raziskovanja
30. Henderson J V, 1997, 'Externalities and industrial development', *Journal of Urban Economics*, 42(3) 449-470
31. Hummels D, 1995, 'Global Income Patterns: Does Geography Play a Role?', Chapter 2 of Phd Thesis, University of Michigan
32. Jaffe B A, Trajtenberg M, Henderson R, 1993, 'Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations', *Quarterly Journal of Economics*, 108(3) 577-598
33. Keeble D, Owens P, Thompson C, 1982, 'Regional Accessibility and Economic Potential in the European Community', *Regional Studies*, 16 419-32
34. Kornai J, 1995, *'Highways and Byways; Studies on Reform and Post-Communist Transition'*. Cambridge: The MIT Press
35. Krizanic F, 1997, 'Cenovna in dohodkovna elastičnost slovenske trgovine z državami Evropske Unije', *Gospodarska gibanja*, st. 287
36. Krizanic F, 1998, 'Kako bo učinkovala liberalizacija slovenske trgovine z Evropsko Unijo', *Gospodarska gibanja*, st. 290
37. Krizanic F, Oplotnik Z, 1999, 'Ekonometrična ocena vpliva zaključka procesa lastninskega preoblikovanja podjetij na investitorje in dinamično prilivov tujega kapitala v Slovenijo', *Gospodarska gibanja*, st. 309
38. Kukar S, 1997, 'Regionalna politika v Evropski uniji in Sloveniji', *ZMAR, IB revija*, XXXI(9-10-11) 57-67
39. Levine R, Renelt D, 1992, 'A Sensitivity Analysis of Cross-Country Growth Regressions', *The American Economic Review*, 82(4) 942-963
40. Lorenzen A, 1999, 'Regional development and institutions in Hungary: past, present and future development', *European Planning Studies*, 4(3) 259-277
41. Lucas E R Jr., 1988, 'On the Mechanics of Economic Development', *Journal of Monetary Economics*, 22(1) 3-42
42. Magrini S, 1999, 'The Evolution of the Income Disparities among the Regions of the European Union', *Regional Science and Urban Economics*, 29 257-281
43. Majcen B, 1991, 'Učinki prilagajanja trgovinski uniji EGS na gospodarstvo Republike Slovenije (Temeljna izhodišča)'. Ljubljana: IER
44. Majcen B, 1999, 'Measurement of Costs and Benefits of Accession to the EU for Selected CEECs: Country Report: Slovenia', *The Vienna Institute for Comparative Economic Studies, Research Reports*, No. 256
45. Mankiw N, Romer D, Weil N D, 1992, 'A Contribution to the Empirics of Economic Growth', *Quarterly Journal of Economics*, 107(2) 407-438
46. Martin P, 1998, 'Can regional policies Affect Growth and Geography in Europe?', *The World Economy*, 21(6) 757-774
47. Martin P, 1999, 'Are European Regional Policies Delivering?', CERAS-ENPC, Paris and CEPR, mimeo

48. Mencinger J, 2000, 'Deset let pozneje; Tranzicija - uspeh, polom ali nekaj vmes', *Gospodarska gibanja*, st. 317
49. Midelfart-Knarvik K H, Overman H G, Redding S J, Venables A J, 2000, 'The Location of European Industry', Report prepared for the DG for Economic and Financial Affairs, EC, mimeo
50. Moomaw R, 1981, 'Productivity and City Size: A Critique of the Evidence', *Quarterly Journal of Economics*, 96(4) 675-688
51. Overman G H, Redding S, Venables J A, 2001, 'The Economic Geography of Trade, Production, and Income: A Survey of Empirics', LSE and CEPR, mimeo
52. Pecar J, 1994, 'Regionalni vidiki razvoja Slovenije v obdobju 1990-1994', ZMAR, Delovni zvezek, st. 7, letnik III
53. Petit P, 1986, 'Slow growth and the service economy'. London: Pinter
54. Petrakos G, 1996, 'The regional dimension of transition in Eastern and Central European countries: an assessment', *Eastern European Economics*, 34(5) 5-38
55. Petrakos G, 2001, 'Patterns of Regional Inequality in Transition Economies', *European Planning Studies*, 9(3) 359-383
56. Petrakos G, Maier G, Gorzelak G (Eds), 2000, 'Integration and Transition in Europe: The Economic Geography of Interaction'. London: Routledge
57. Pleskovic B, Sachs D S, 1994, 'Political Independence and Economic Reform in Slovenia' in Blanchard J O, Froot A K, Sachs D J (eds.), 'The Transition in Eastern Europe; Country Studies'. Chicago: The University of Chicago Press
58. Priore J M, Sabel F C, 1994, 'The Second Industrial Divide; Possibilities for Prosperity'. New York: Basic Books Publishers
59. Puga D, Venables J A, 1997, 'Preferential trading arrangements and industrial location', *Journal of International Economics*, 43 347-368
60. Quah D, 1993, 'Galton's Fallacy and Tests of the Convergence Hypothesis', *The Scandinavian Journal of Economics*, 95(4) 427-443
61. Quah D, 1996, 'Empirics for economic growth and convergence', *European Economic Review*, 40 1353-1375
62. Quah D, 1997, 'Regional Cohesion from Local Isolated actions: I Historical Outcomes', London School of Economics and Political Science, Centre for Economic Performance
63. Raagmaa G, 1996, 'Shifts in regional development in Estonia during the transition', *European Planning Studies*, 4(6) 683-703
64. Redding S, Venables A J, 2000, 'Economic Geography and International Inequality', CEPR Discussion Paper, 2568
65. Rodriguez-Pose A, 1994, 'Socioeconomic Restructuring and Regional Change: Rethinking Growth in the European Community', *Economic Geography*, 79(4) 325-343
66. Rodriguez-Pose A, 1998a, 'The Dynamics of Regional Growth in Europe; Social and Political Factors'. Oxford: Clarendon Press
67. Rodriguez-Pose A, 1998b, 'Social Conditions and Economic Performance: The Bond Between Social Structure and Regional Growth in Western Europe', *International Journal of Urban and Regional Research*, 22 443-459
68. Rojec M, 2000, 'Foreign Direct Investment in Slovenia. Trends, Developments and Policy in 1997-1999'. ZMAR Working Paper, no. 1/ vol. IX
69. Romer P, 1986, 'Increasing Returns and Long-Run Growth', *Journal of Political Economy*, 94(5) 1002-1037
70. Romer P, 1989, 'Human Capital and Growth: Theory and Evidence', Working Paper 3174. Cambridge, Mass.: National Bureau of Economic Research
71. Sassen S, 1991, 'The Global City: New York, London, Tokyo'. Princeton, NJ: Princeton University Press
72. Scherer F M, 1982, 'Inter-industry technology flows in the United States', *Research Policy*, 11 227-45.

73. Segal D, 1976, 'Are There Returns to Scale in City Size?', *Review of Economics and Statistics*, 58(3) 339-350
74. Smith C S, Cin BC, Vodopivec M, 1997, 'Privatisation Incidence, Ownership Forms, and Firm Performance: Evidence from Slovenia', *Journal of Comparative Economics*, 25 158-179
75. Storper M, 1997, 'The Regional World'. London: Guilford
76. Sveikauskas L, 1975, 'The Productivity of Cities', *Quarterly Journal of Economics*, 89(3) 393-413
77. UN, 1992, 'World Investment Directory 1992. Foreign Direct Investment, Legal Framework and Corporate Data. Volume II'. United Nation: New York
78. Venables J A, 2001, 'Geography and International Inequalities: the impact of new technologies', Paper prepared for World Bank Annual Bank Conference on Development Economics, Washington, May 2001
79. Verbeek M, 2000, 'A Guide to Modern Econometrics'. Chichester: John Wiley & Sons
80. Verlic Christensen B, 1997, 'Mobilnost prebivalcev Slovenije med leti 1974 in 1994', *ZMAR, IB revija*, XXXI(5-6)
81. Vriser I, 1999, 'Regionalni razvoj slovenskih pokrajin in obcin', *ZMAR, IB revija*, XXXIII(2-3)

Appendix 1

Table 8: The criteria used for the classification of the regions according to the literature on spatial restructuring - all the data refer to the year 1990; SLO=100

| Region | Capital and Urban | | Industrial | | Peripheral | |
|-----------------|-------------------|--------------------|------------|---------------|------------|----------------------------|
| | Spec. ser. | Population density | Spec. ind. | Obsolete sec. | Spec. agr. | Ec. potential ^a |
| Dolenjska | 76.8 | 63.3 | 125.5 | 24.2 | 109.7 | -0.53 |
| Gorenjska | 87.7 | 92.1 | 115.5 | 203.5 | 65.7 | 0.78 |
| Goriška | 88.1 | 52.8 | 113.9 | 125.3 | 88.3 | 1.03 |
| Koroska | 67.2 | 72.5 | 133.0 | 253.9 | 170.5 | -0.84 |
| Notranjska | 85.0 | 35.2 | 108.7 | 32.5 | 253.7 | -0.77 |
| Coastal | 139.4 | 99.0 | 56.8 | 9.8 | 83.5 | 0.42 |
| Central | 123.3 | 147.3 | 76.1 | 53.3 | 59.3 | 2.31 |
| Podravska | 98.5 | 153.4 | 99.9 | 84.6 | 134.4 | 0.19 |
| Pomurska | 79.6 | 99.6 | 115.6 | 55.5 | 236.1 | -0.93 |
| Savinjska | 88.0 | 109.9 | 114.2 | 133.6 | 83.8 | -0.08 |
| Spodnjeposavska | 77.6 | 81.9 | 121.0 | 105.0 | 177.2 | -0.98 |
| Zasavska | 71.1 | 184.1 | 136.5 | 262.0 | 19.9 | -0.59 |

Sources: SORS, Statistical Yearbook 1997, Gulic, Kukar, 1991, own calculations using Pecar, ZMAR, working papers, 1997, Statistical Yearbooks of Austria, Hungary and Croatia and Eurostat, Statistics in Focus, 1994

^a For the definition and measurement units for the economic potential indicator see the explanation under the peripheral regions - point c).

The criteria used for the classification of the regions according to the literature on spatial restructuring in line with Rodriguez-Pose, 1998b, are as follows:

a) **Capital & Urban regions:** the regions employing more than 65% of the active population and realizing more than 65% of GVA in services. Because of the specific situation in Slovenia (the broad scale restructuring process combined with the transition from the industrial to a service economy) I have rather used *relative specialization in services*, which is calculated as a ratio between the share of service employment in the region relative to the same share in Slovenia. According to this criteria, the capital and urban regions were the ones that had strongly above-average relative specialization in services, provided that they had a population density indicator at least 10 index points above the Slovene average. Regions included: The Central region.

b) **Industrial regions**: in the European context they are classified as industrial declining regions and are defined as 'regions with more than 40% of the total active population employed in industry and at least 40% of total industrial employment in coal, iron, steel, electrical and other sub-sectors strongly affected by restructuring process' (ibid., 1998b: 447). Accordingly, *relative industry specialization* indicator that exceeded 30 index points above Slovene average was taken as a benchmark, combined with the *share of obsolete industrial sectors* as defined by Gulic, Kukar, 1991. Regions included: Koroska and Zasavska region. Note however, that the Gorenjska region scores very high in the share of obsolete industry sectors, which shows that there are elements of potential industrial decline present as well - this would be much more obvious on the sub-regional level.

c.) **Peripheral regions**: 'were defined both by their distance from the European core, as well as by their relative specialization in agriculture: more than 20% of the total population employed in the sector' (ibid., 1998b: 447). *Economic potential* indicator was calculated as a standardised sum of GVA of the analysed region and the average GVA/GRP of its adjacent regions (half the weight), including the regions on the other side of the national border (third of the weight). Exceptions to the rule were applied when infrastructural interconnectedness was worse than on average^{xi}. This approach is satisfying because of Slovenia's small size and our interest in inter-regional disparities. The second indicator used was *relative specialization in agriculture* (index above 150). Regions included: Pomurska, Spodnjeposavska and Notranjsko-kraska region. According to the indicators used, Koroska could also be classified as peripheral by both indicators (otherwise classified as an industrial region, which is in line with the classification of other scholars - for example Gulic, Kukar, 1991).

d) **Intermediate regions**: are those that do not show any significant deviations from the average in any of the above indicators. Regions included: Coastal, Goriska, Gorenjska, Savinjska and Dolenjska region. Somewhat particular though, is the case of **Podravska** region with above average agricultural specialization index and a strong industrial base, which had been experiencing a strong decline already during 1980s. At the same time the region had the second highest population density (Maribor is the second largest Slovene city) and was performing some higher order functions. Because the region was showing elements of peripherality (agricultural spec.) as well as a region in industrial decline and simultaneously had the third highest service specialization indicator, I rather decided to leave it **unclassified**.

Endnotes

ⁱ In the year 2000 Statistical Office of the Republic of Slovenia changed the border between Central and Dolenjska region, whose name was changed to South-eastern Slovenia (OJ of RS No. 28/2000).

ⁱⁱ These are the regions that are 'specialized neither in advanced service activities nor in manufacturing nor in agriculture, and (which) tend to be geographically located between the core and old industrial areas, and peripheral areas' (Rodriguez-Pose, 1998a:78).

ⁱⁱⁱ Regional policy was implemented as a coordinated quasi-contract based effort of a whole range of partner-institutions, ranging from central and local governments, trade unions, Chamber of Commerce, banks and other so called 'self-management interest groups' in charge of road infrastructure, agriculture, education, culture, research, health. There is no comprehensive database on the yearly public resources devoted to regional policy, nevertheless, the amounts were substantial - according to one estimate for 1972 (Vrizer, 1999: 50), regional development support reached 5.8% of GDP.

^{iv} Strictly speaking the privatisation should rather be termed as the abolishment of the social ownership, since social property either passed into private or government hands.

^v The comparisons ignore different labour intensities of investments since the FDI's for Slovenia are measured in number of employees working in firms with foreign ownership.

^{vi} The 'shock variables' that were originally included as the controlling variables and form part of the residual were not taken into account. Y stands for output per capita and T is the length of the observation interval.

^{vii} The inversed Herschman-Henfiridahl index is calculated as $1/\sum_j s_{ij}^2$, where s refers to the proportion of employment in region i in sector j.

^{viii} The data on the share of turnover realised on foreign markets allows the estimation of the regional dependency on Yugoslav markets, since these markets were not counted as foreign before 1992. The EXPYU variable is expressed as the relative regional change in export turnover relative to aggregate change between 1991/1992 - SLO=100.

^{ix} Due to limited data availability I had to assume that number of the independent variables are time invariant, which is admittedly a strong assumption and accentuates the endogeneity problem. The data on FDIs was obtained from Trade and Investment Promotion Office of the Republic of Slovenia.

^x Population density was not defined as panel variable because the inter-regional mobility of the population was very low - it is lower than in the EU and much lower than in the North America (Verlic Christensen, 1997).

^{xi} Exceptions: Gorenjska-Goriska: third of the weight and Gorenjska-Friuli-Venezia-Gulia: fourth of the weight