Catching-up, Regional Disparities and EU Cohesion Policy: The Case of Hungary

Jörg Lackenbauer

Central and Eastern European countries (CEECs) such as Hungary are not only relatively backward with respect to the 'old' EU Member States (EU-15), but they are also witnessing a worrying rise of regional inequalities within their boundaries. With the example of Hungary, we try to identify the factors behind catching-up with the EU-15 in some regions ('winner regions') and falling-behind in others ('loser regions'). By its very definition, EU cohesion policy has to consider both problems (national catching-up vs. the containment of regional disparities) very carefully in the enlarged EU. This is a complex issue, as regional policies often seem to face an equity-efficiency trade-off, as will bw shortly shown. On the basis of this analysis, we discuss how EU cohesion policy could contribute to attain higher national growth and, at the same time, contribute to the decrease in regional disparities. We use a theoretical approach that combines an endogenous growth framework with a new economic geography. The model we use shows that – in contrast to the traditionally used transport infrastructure policies – a policy that reduces the cost of innovation or increases the diffusion of innovation is able to reduce regional income inequality and agglomeration, and increase the national growth rate. The regional policies involved could be primary subsidies for research and technological development, investment in human capital or ICT infrastructure. In the final two sections of the paper, we discuss whether these regional policy prescriptions would fall on fertile soil in the light of Hungary's economic reality, and which could be promising EU cohesion policy schemes that would incorporate an innovation-oriented regional policy approach.

1 Introduction

Since 1 May 2004, the European Union has 25 Member States. The enlarged EU is heavily characterised by the great economic and social differences between the 'old' and the 'new' Member States. Moreover, the transition from centrally planned economies to market economies and the ongoing integration with the EU have led to a preoccupying rise of regional inequalities within the Central and Eastern European countries

Jörg Lackenbauer, MA, is a Research and Teaching Assistant and a Doctoral Candidate at the Economics Department, Otto-Friedrich University of Bamberg, Germany.

(ceecs) – these will be difficult to reduce, too. Both problems pose a major challenge to the Union – it is obvious that eu Eastern enlargement may not and cannot leave unchanged the Community's cohesion policy, as currently embodied mainly by the Structural Funds and the Cohesion Fund. Not only will there have to be a major reorientation of this policy towards new key priorities that are most growth- (and thus catching-up-) enhancing, but also a policy approach taking account of the strongly increased regional disparities within the new Member States. However, this issue has been neglected in the enlargement process, and the European Commission's proposals concerning the future priorities of its regional and structural policy operations do not point towards any major changes.

By its very definition, eu cohesion policy has to address both problems – national catching-up vs. the containment of regional disparities – very attentively in the enlarged eu. This is a complex issue, as regional policies often seem to face an equity-efficiency trade-off. How can eu cohesion policy contribute to attaining higher national growth (and therefore convergence towards the eu-15) and, at the same time – and central to the analysis in this paper – contribute to the decrease in regional disparities (something that traditional infrastructure policies have hardly been capable of)? Which are the regional policy prescriptions that a theoretical analysis yields? Are these prescriptions difficult to put into practice? And to what extent have they already been put into practice?

The remainder of this paper is organised as follows: In Section 2, we shed light on the economic disparities between the new Member States from Central and Eastern Europe and the eu-15. In Section 3, we analyse the growing regional disparities within the new Member States, with the example of Hungary, our case study throughout this paper. The equity-efficiency trade-off which regional policies often seem to face is looked at in Section 4. In Section 5, we analyse in detail a theoretical case for an innovation-oriented regional policy, and in Section 6 we question how these regional policy prescriptions perform in light of Hungary's economic reality. In Section 7 we ask what could be the contribution of current and future eu cohesion policy schemes. Section 8 provides a brief conclusion.

2 Economic Disparities Between the Accession Countries and the eu-15

The former communist countries have lost out on at least half a century of 'normal' economic development. The nature of their growth built seri-

ous structural distortions into their economies, which made them highly inefficient, compared to Western Europe. The planning mechanisms in place prior to 1990 inhibited total factor productivity (TFP) growth. By the eve of transition, inefficiencies and shortages were pervasive, labour and capital fundamentally misallocated, and the range and quality of goods and services produced left much to be desired (Dabrowski 2001, 2; Doyle et al. 2001, 4–5). As a result, the ten CEECs applying for EU membership after the end of the Soviet system[1] revealed (and still reveal) huge economic backlogs, especially in terms of GDP per capita: all of these post-socialist new EU Member States (with the exception of Slovenia) are much less prosperous than the 'old' EU members (the EU-15).

Although the new Member States have grown faster than the EU-15 since the mid-1990s (see Table 1 for their real annual growth rates), the gap in GDP per head remains pronounced: Slovenia and the Czech Republic were the only CEECs that had a GDP per head above 60 per cent of the EU-15 average in 2002. GDP per head was only around 40 per cent of that average in Poland, Estonia and Lithuania and just 35 per cent in Latvia. In Bulgaria and Romania, who are likely to join the EU in 2007, GDP per head amounted to only around 26–27 per cent of the EU-15 average (European Commission 2004, 10).

Due to the accession of the ten new Member States on 1 May 2004, the population of the EU has risen from 375 million people to 450 million people, i. e. by 20 per cent. However, the new Member States add much more to EU population (20 per cent) than to its GDP (just around 5 per cent in terms of Euros).[2] As a consequence, average GDP per head is significantly reduced: in the EU-25,[3] it is around 12.5 per cent lower than average GDP per head in the old EU-15. But even in spite of this, all of the new members from Central and Eastern Europe (with the exception of Slovenia) have a GDP per capita below 70 per cent of the EU-25 average. Countries like Latvia and Lithuania (not to mention Bulgaria and Romania) in 2002 had a GDP per capita of around 40 per cent of the EU-25 average, just above half the level in the EU's poorest old Member States, Greece and Portugal (77–78 per cent) (European Commission 2004, 11–12).

Table 1 shows that all the CEECs have a per capita GDP very far below the EU-25 average. With the exception of Slovenia, the GDP of all of these countries is even significantly below that of the least developed old Member States (Portugal and Greece). Hence, under the current rules, nearly all the regions in the CEECs would be eligible for funding from the EU's regional policy:[4] some 69 million of the 75 million people who

Table 1: GDP in the CEECs: annual growth rates and the level relative to the EU-25

	GDP real (compound) annual growth rates			GDP per capita in PPS, level*		
	1996–2000	2001	2002	1995	2000	2004
Bulgaria	−1.3%	4.0%	4.3%	30%	27%	32%
Czech Republic	0.9%	3.2%	2.0%	68%	61%	65%
Estonia	5.1%	5.0%	5.6%	33%	41%	48%
Hungary	4.0%	3.7%	3.3%	48%	54%	61%
Latvia	4.7%	7.9%	6.1%	28%	35%	43%
Lithuania	3.2%	5.9%	5.9%	33%	39%	48%
Poland	5.2%	1.0%	1.3%	38%	44%	47%
Romania	−1.6%	5.7%	4.9%	30%	25%	32%
Slovakia	4.6%	3.3%	4.4%	43%	48%	56%
Slovenia	3.9%	3.0%	3.0%	62%	73%	77%
EU-25				100%	100%	100%

* In percentage of EU-25.   Sources: European Commission 2001b, 16; European Commission 2003b, 48; Podkaminer et al. 2004, 38.

have become EU citizens on 1 May 2004 (92 per cent of the total) live in regions with GDP per head below 75 per cent of the EU-25 average in the new Member States (European Commission 2004, 12).

Obviously, due to the low GDP per head in the new Member States, income disparities across countries (and regions) in the EU have clearly widened. Whereas the gap between the average GDP per head in the EU-15 and the level in the least prosperous old Member States was just under 30 per cent (i. e. Greece and Portugal had income levels almost 30 per cent below the EU-15 average), the gap has doubled since enlargement: Latvia, the least prosperous new Member State, has a per capita GDP which is roughly 60 per cent below the new EU-25 average (European Commission 2004, 11). The upcoming expansion to Bulgaria and Romania will again increase the scale of disparities across the EU.

As Figure 1 shows, in the enlarged EU of 25 (or even 27) Member States, countries can be divided into three groups according to GDP per head in PPS terms: the first group consists of 12 of the old 15 Member States (EU-15), whose GDP per head is well above the EU-25 average (by 10 per cent or more). The second group consists of the 'cohesion countries' Spain, Portugal and Greece plus Cyprus, Malta, Slovenia and the Czech Republic. These countries' GDP per head is between 68 per cent and 94 per cent of the EU-25 average. The third group comprises eight countries, all
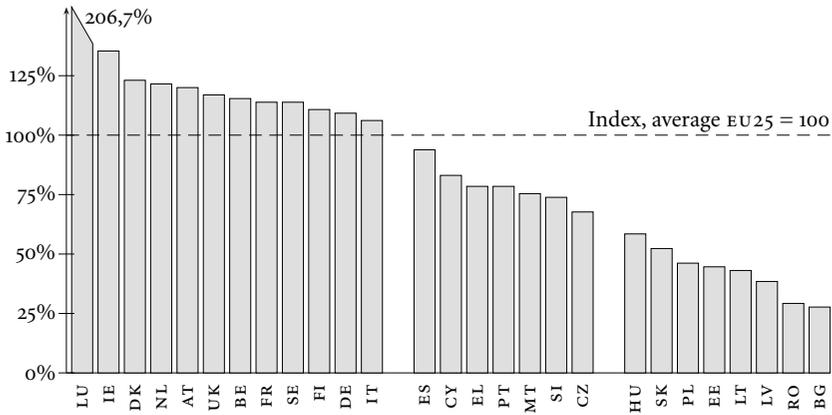
Figure 1: GDP per head (PPS), 2002, in three groups of countries
Source: European Commission 2004, 11.

of which are from Central and Eastern Europe, being either new Member States or accession candidates (Bulgaria and Romania). In this group, GDP per head is below 60 per cent of the average (European Commission 2004, 11–12).

The CEECs have had sustained solid growth for several years (see Table 1) and are likely to continue to outperform the old Member States in terms of GDP growth (see e. g. Podkaminer et al. 2004, 38). Nevertheless, it will take the 'best performers' among them 10 to 20 years and others like Bulgaria, Romania and Poland even around 30 years from now to reach only 75% of the EU-15 average, as growth and catching-up scenarios which have been calculated e. g. by the World Bank (2000) and by the European Commission (2001b) have shown. This process is only slightly shortened when the EU-25 average is taken as a point of reference.

In its latest report on economic and social cohesion (European Commission 2004), the European Commission considers two catching-up scenarios. In the first scenario, growth in the accession countries is sustained at 1.5 per cent a year above the EU-15 average, i. e. above the growth rates in the old Member States: a growth rate of 4 per cent a year in the new Member States could be assumed, as opposed to a growth rate of 2.5 per cent a year in the EU-15. This seems to be quite a plausible assumption, as it corresponds to what could be observed in reality in the recent past: the average growth rate of GDP in the new Member States could be effectively maintained at 1.5 per cent a year above the EU-15 average between 1995 and 2002 (with GDP growth averaging just around 4 per cent
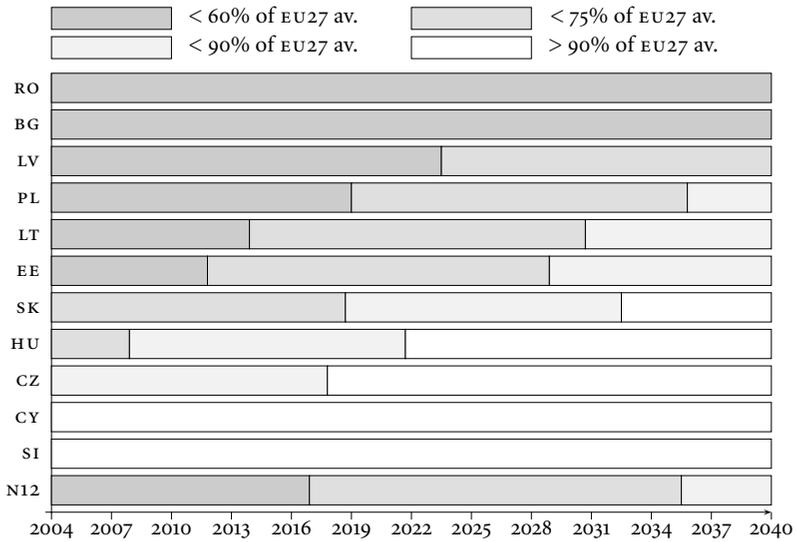
Figure 2: Simulation of GDP per head (PPS) in the accession countries,
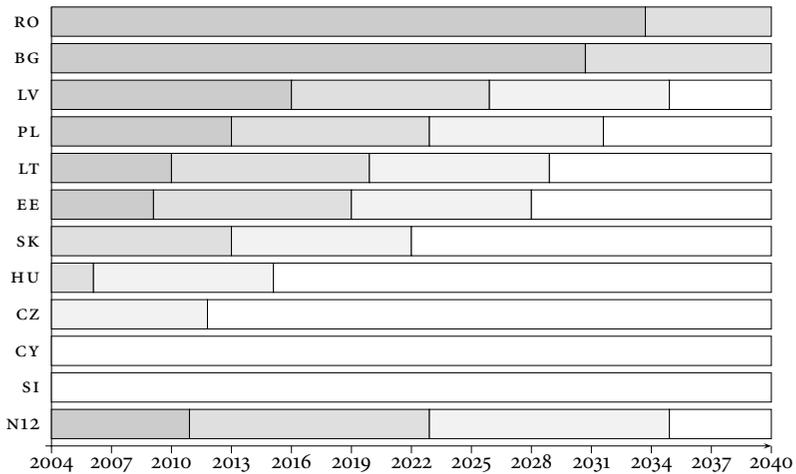2004–2040; relative growth assumption 1.5 per cent p. a.

Figure 3: Simulation of GDP per head (PPS) in the accession countries,
2004–2040; relative growth assumption 2.5 per cent p. a.

Note: N12 – new member states plus BG and RO; MA – no data.
Source: European Commission 2004, 17.

a year in the accession countries in that period, as opposed to an average
growth rate of 2.5 per cent in the EU-15 in the same time span). Given this
scenario, average GDP per head in the 12 countries (the ten new Member

States plus Bulgaria and Romania) would remain below 60 per cent of the EU-27 average until 2017, as Figure 2 shows. In 2017, it would exceed 75 per cent of the average only in Slovenia, Cyprus, the Czech Republic and Hungary. Slovakia would reach 75 per cent of the average in 2019, Estonia in 2029, Poland only in 2035 – 30 years from now – and Latvia only in 2041. Bulgaria and Romania would still have a GDP per capita below 75 per cent of the average even in 2050, and this even if the point of reference is the EU-27 average, which is considerably lower than the EU-25 average (not to mention the EU-15 average) (European Commission 2004, 9, 16–17).

In the second scenario the European Commission analyses, growth in the new Member States is sustained at 2.5 per cent a year above the EU-15 average (meaning that the annual growth rates in the CEECs reach 5 per cent if growth in the old Member States is 2.5 per cent). Intuitively, this seems to be a less likely scenario and a very demanding task, because since the outset of the transition process, only very few accession countries could permanently maintain their growth rate at 2.5 per cent above the EU-15 average growth rate. Obviously, with growth being sustained at a considerably higher rate than in the first scenario, convergence to EU average income levels would occur faster and in a shorter time span, as Figure 3 shows. Poland, for example, would reach 75 per cent of the EU-27 average GDP per capita in roughly 20 years from now, instead of 30 as in the first scenario (European Commission 2004, 16–17).

Both scenarios have one thing in common: they demonstrate that even if growth rates well above the EU-15 average can be sustained for many years, for most of the new Member States, catching-up even to just the threshold of 75 per cent of the enlarged EU's average GDP per capita will very likely be a long-term process. EU cohesion policy will thus have to respond to the greatest challenges since its inception, if the new Member States are to be supported in their catching-up process and the Treaty objectives of 'economic and social cohesion' achieved in an enlarged EU.

3   Growing Regional Disparities Within the New Member States: The Case of Hungary

In this section we will focus on Hungary as a 'case study'. Yet, regional disparities increased in all of the transition countries, and many regional patterns of Hungary are at the same time general regional patterns of the East-Central European transformation of the last 15 years. Hence, much of what can be said about Hungary, the dominant role of its capital city,

the problems of its Eastern regions etc. could be equally said about other new EU members such as Poland, Slovakia or the Czech Republic.

The transformation of the CEECs from centrally planned economies to market economies, as well as the increasing economic integration with the EU, have led to the creation of new spatial patterns of economic disparities in these countries. Under the socialist system of centrally planned economies, rapid industrialisation had been associated with urbanisation in less-developed regions and an effort to spread industrial/urban growth. As a consequence, a general tendency towards regional economic convergence could be observed during the 1948–1989 period. As market economic systems have been widely introduced and the transition has been largely completed, the uneven spatial impact of intense economic reforms and integration with Western Europe is becoming more and more evident – widening disparities between and within countries characterise the overall picture (Bachtler et al. 1999, 8).

Several studies (e. g. European Commission 2001a; European Commission 2004; Petrakos 2000) confirm that throughout the last decade the accession countries witnessed increasing regional disparities. In its latest report on economic and social cohesion, the European Commission (2004, 10) finds that economic growth in the CEECs has not been regionally balanced. In all the new EU Member States, 'it has been disproportionately concentrated in a few regions, particularly in capital cities and surrounding areas. As a result, regional disparities in GDP per head have widened significantly' (2004, 10).

Growing empirical evidence (e. g. Bachtler et al. 1999; European Commission 2001a; Petrakos 2000; Resmini 2002) points to one type of winner and to two types of losers among the accession countries' regions: in this admittedly simplified dichotomy, the metropolitan and urban areas (namely the capital city regions) belong to the former group, the rural and old (declining) industrial areas as well as those in the Eastern peripheries belong to the latter group (Bachtler et al. 1999, 8; Iara and Traistaru 2003, 5). The regions bordering the old EU members have developed very dynamically in Hungary and Slovakia (where the region bordering the EU is at the same time the capital city region), but much less so in other transition countries (Lammers 2003, 222–224). Hence, the development of this 'category' of regions has to be judged in a case-related manner. In Hungary, all these regional patterns of transformation into a market economy became evident quite soon after the transition process had set in.[5]

The capital city regions of the Czech Republic, Hungary, Slovakia, Estonia and Latvia play the most dominant core roles. In all of these countries, there is no centre that could rival the capital city. In the Czech Republic the disparity between Prague (which, in 2000, had already reached a level of 133 per cent of the average EU-25 GDP per capita, see European Commission, 2003a) and the remainder of the country is still increasing.

The new regional pattern that has emerged in Hungary as a consequence of the transition process can be briefly characterised as follows: economic growth became concentrated in a small number of metropolitan and Western areas of Hungary, whereas a large number of regions witnessed the erosion of their production capacity, and their potential to grow and transform seemed to vanish.

Iara and Traistaru (2003) find evidence for increasing regional manufacturing specialisation and increasing regional GDP differentials in Hungary. On the basis of taxable income, Nemes-Nagy (2000, 171–174) has examined the change in intranational (i. e. interregional) income dispersion at various levels of spatial aggregation for the end of the 1980s and roughly the first half of the 1990s (the 'transition decade'), i. e. the years 1988–1996. The spatial levels of the analysis are:

- seven planning-statistical regions (the proposed NUTS 2[6] units);
- 19 counties and the capital, Budapest (NUTS 3 units, actual regional authorities);
- 150 statistical microregions;
- 3,100 settlements, i. e. local authorities.

Table 2 shows that interregional income inequalities increased at all levels of aggregation in Hungary between 1988 and 1994. In 1995 and 1996, the figures show relative stability, albeit on a much higher level. Yet, neither in Hungary nor in other transition countries did the increase in interregional income inequalities come to a halt in 1995 – it continued during the second half of the 1990s. Samecki (2003, 2) e. g. finds that 'between 1995 and 2000 the diversity between the most prosperous and the least prosperous regions in the Member States of the EU-15 increased on average by only 2%, while the average increase in this diversity in the Visegrad group[7] amounted to 20%.' Table 3 shows the diversities measured as the ratio of GDP per capita at PPS between the richest and the poorest region in the Visegrad group countries as well as in some 'typical' old EU Member States.

Not only did regional disparities within the Visegrad countries sharply

Table 2: Regional inequalities in taxable income per capita at various levels of spatial aggregation: the case of Hungary

Years	Weighted standard deviation			
	Settlements	Microregions	Counties	Regions
1988	25.4%	22.2%	19.6%	17.3%
1989	27.6%	24.0%	21.2%	18.5%
1990	30.2%	26.1%	23.1%	19.9%
1991	30.8%	25.5%	21.2%	17.9%
1992	34.6%	29.8%	26.4%	22.1%
1993	35.6%	30.8%	27.1%	22.7%
1994	36.5%	31.5%	27.7%	23.5%
1995	35.9%	30.7%	26.7%	22.6%
1996	35.7%	30.5%	26.4%	22.3%

Source: Nemes-Nagy (2000, 174).

Table 3: Income disparities between the richest and the poorest region in the Visegrad group countries and in some old EU Member States

Country	Most prosperous region	Least prosperous region	A	B	C
1	2	3	4	5	6
Poland	Mazowieckie	Lubelskie	1.64	2.21	+35%
Hungary	Közep-Magyarország	Észak-Alföld	2.02	2.40	+19%
Czech Republic	Prague	Střední Morava	2.36	2.69	+14%
Slovakia	Bratislava	Vychodne Slovensko	2.51	2.76	+10%
Ireland	Border, Midland & Western	Southern & Eastern	1.44	1.51	+5%
Italy	Trentino-Alto Adige	Calabria	2.25	2.19	−3%
Germany	Hamburg	Dessau	2.88	2.83	−2%
Belgium	Brussels	Hainaut	3.00	3.07	+5%

A – ratio 2/3 in GDP/head (PPS), 1995; B – ratio 2/3 in GDP/head (PPS), 2000; C – change 4/5 (from 1995 to 2000). Sources: European Commission 2003a; Samecki 2003, 2.

increase, but they also reached a considerable level in absolute and relative terms (in spite of having been relatively low at the beginning of the 1990s due to the aforementioned reasons):as Table 3 shows, the ratios of GDP per capita at PPS between their richest and their poorest regions are already bigger than those of Italy (a country known for its huge interregional disparities) and even approach the very special case of Germany with its Western and Eastern parts. The European Commission (2004,

Table 4: Typology of Hungarian regions under transformation

		Position in the post-socialist transition and EU integration process	
		Good	Bad
Position in the socialist economy	Good	Positive continuity ('the leaders'), e. g. great urban agglomerations, mainly the capital city	Negative discontinuity, e. g. (old) heavy industry regions facing massive restructuring
	Bad	Positive discontinuity ('the newcomers'), e. g. Western regions, mainly those bordering old EU members like Austria	Negative continuity, e. g. the 'Eastern Wall', i. e. the Eastern peripheries with Ukraine or Romania as neighbours

Source: Gorzelak (2000, 135–139).

10) finds that 'in Hungary, the level of GDP per head in the regions with the most prosperous 20% of population is some 2.4 times the level in the least prosperous' – this is more than in any of the old EU Member States. More than before the transition process, Hungary is characterised by an East-West divide, but also by a core-periphery disparity caused by the economic dominance of Budapest (Bachtler et al. 1999, 72; Cséfalvay 1997, 64). Gorzelak (2000, 135) illustrates Hungary's new regional patterns (Table 4).

BUDAPEST AND THE WESTERN REGIONS
BORDERING AUSTRIA: 'THE WINNERS'

Budapest and the Western regions bordering Austria were able to benefit from the transition process and the relocation of manufacturing activity and investment: many new companies, massive inflows of FDI and relatively low unemployment rates can be found in these areas. Generally speaking, Budapest and Hungary's Western parts are characterised by good infrastructure links (e. g. the M1 motorway), a dynamically growing private sector activity and by a great number of international joint ventures which act as connections to international networks (Bachtler et al. 1999, 74; Horváth 2002, 131). Whereas Budapest has attracted basically tertiary activities (mainly financial services), the counties of Győr-Moson-Sopron and Vas have become centres of specialised industrial mass-production (Rechnitzer 2000, 14).

In the mid-1990s already, Budapest had more joint ventures than the remainder of Hungary combined and nearly two-thirds of all FDI flowing into Hungary went to Budapest (Bachtler et al. 1999, 10, 72). During the 1990s, the capital city could not only retain its advantage over the rest of the country, but has further increased it. The Budapest agglomer-

ation has thus strengthened its dominance (Horváth 2002, 131). In fact, the Budapest region shows an outstanding performance with respect to income growth, the employment level and structure. Hungary's capital city is the clear centre of the country's service sector activity, with over 70 per cent of Budapest's total employment being now in the tertiary sector. Moreover, Budapest accounts for more than 50 per cent of Hungary's employees in research and development (Bachtler et al. 1999, 71–72). All of this however includes mainly Budapest, geographically close counties such as Nógrád or Pest were not able to benefit from Budapest's dynamic development.

Having been neglected for political-military reasons during the heavy industrial stage of socialist industrialisation, the Austrian border regions could enter the transition and EU integration period with a less obsolete and more flexible economic structure. In these Western regions, large-scale investment from EU and Hungarian companies transformed the various counties (Győr-Moson-Sopron, Vas, Zala) into a zone of dynamic activity, even if, geographically speaking, they are a periphery.[8] The complete opening of borders served as a catalyst for changes in the spatial structure: cross border co-operation began to replace the state monopoly and centrally organised international relations, massive FDI inflows (especially greenfield investment) played a significant role in the radical transformation of the regional pattern (Nemes-Nagy 2000, 171–176; Nemes-Nagy 2001, 52–54). The most significant factors of economic growth were thus the external activating effects of the relatively close, economically powerful South German, Austrian and North Italian regions (Nemes-Nagy 2000, 179).

In the city of Győr, for example, situated exactly halfway between Vienna and Budapest along excellent rail and road links, Hungary's first greenfield industrial site, the local business park, was opened already in 1991. Its geography and its well-educated and motivated workers have been and still are Győr's main selling points. The city could attract big investors such as Audi, Philips and Amoco Fabrics. Even now that most of the multinational investors are already there and only very few more come, Győr still attracts investors, this time of another kind: often home-grown companies, smaller, more diverse, requiring highly-educated people, whereas the big manufacturers have upgraded their production lines and added research and development (R&D) units. Like Győr, Western Hungary in general is trying to 'move up the value chain' (Condon 2004, 2).

Rural, old (declining) industrial areas and Eastern and Southern peripheries have suffered from the closure of outdated, inefficient firms and from the deteriorating economic situation in the neighbouring regions of Ukraine, Romania and Ex-Yugoslavia (Bachtler et al. 1999, 5–14; Iara and Traistaru 2003, 2–4). Along Hungary's Eastern and Southern borders, networks of illegal businesses sprang up: many economic activities are illegal.

The Eastern periphery (e. g. the counties of Szabolcs-Szatmár-Bereg and Hajdú-Bihar) suffers from a regional crisis in the manufacturing and agricultural industries which had been producing for the Soviet market: three Eastern Hungarian industrial counties account for around 35 per cent of the country's total unqualified and unemployed workers. The employment power of the weak service sector is still far too low to absorb those who lost their jobs due to the systemic change. The Southern border counties like Bác-Kiskun have been negatively affected by the Balkan crisis. Hungary's Northern counties struggle with their obsolete heavy industrial base (Nemes-Nagy 2000, 171–176; Nemes-Nagy 2001, 52–54). In all those areas that had been dependent on heavy industry, the privatisation process started late (or didn't start at all) (Rechnitzer 2000, 15) and consisted essentially of investors picking out the (very few) big companies that were viable.

In general, Hungary's Southern, Northern and (North-) Eastern counties have comparatively poor infrastructure connections, small numbers of joint ventures and a very weak private sector (Bachtler et al. 1999, 74). Among other factors, it is the lack of favourable transport connections that makes regions like North-East Hungary and the Great Hungarian Plain far less competitive (Rechnitzer 2000, 18). Hungary's Southern, Northern and (North-) Eastern border regions are all peripheries, their economic sources and potential are still moderate and limited (Rechnitzer 2000, 39).

The new regional patterns just described have been clearly a result of the transition from a centrally planned to a market economy, as well as a result of the beginning of intense economic integration with the EU. Now

that the transition process has been largely completed and Hungary has reached a degree of trade integration with the EU that even some old members haven't reached, we have to ask whether the evolved spatial pattern of economic activities in Hungary is a transitional or rather a permanent one.

It seems that the most dynamic Hungarian regions, i. e. Budapest and the Western counties have built by now the basis for utilising their increased indigenous potentials (the location advantage, the attraction and weight of the market, innovative capacities etc.), which enables them to benefit from sustainable endogenous regional development in the future. Hence, the lead of those regions over the rest of the country seems rather permanent. Yet, parallel to the development of the early 1990s, some multinational companies might close down their plants and move further to the East, in order to benefit from lower wages there (Nemes-Nagy 2000, 183). There are already first signs of FDI and economic activities moving Eastward. Some companies that previously located in Western Hungary are now moving to cheaper destinations (in 2002 and 2003, real wages in Western Hungary have risen by more than 20 per cent) such as Slovakia (Condon 2004, 2), but also to Eastern Hungary.

Besides such factors, the development of the lagging regions' neighbouring countries (Slovakia, Ukraine, Romania, Serbia) is of crucial importance for Hungary's less developed counties. Domestic regional policy schemes have not yet been able to improve the situation of these lagging regions (Nemes-Nagy 2000, 183–184). This is also due to the fact that so far, Hungarian regional policy has taken to a large extent a 'laissez faire' approach (Cséfalvay 1997, 108) and regional lobbies have not yet developed (Rechnitzer 2000, 65). As future EU cohesion policy interventions will be substantially directed to Hungary's disadvantaged counties, and as those interventions traditionally take on more of a redistributive approach (Cséfalvay 1997, 54–55), they might play a big part in trying to improve their situation. Yet, neither international resources nor central governmental funds alone will be able to make the lagging regions catch up. Ultimately, the disadvantaged regions, too, will have to be able to start a process of endogenous regional development, and local innovative power will be of particular importance (Nemes-Nagy 2000, 184).

4 Do Regional Policies Face an Equity-Efficiency Trade-off?

In Sections 2 and 3, we have shown that the enlarged EU is heavily characterised by the great economic and social differences between the old and

the new Member States. Moreover, the transition from centrally planned economies to market economies and the ongoing integration with the EU have led to a preoccupying rise in regional inequalities within the CEECs – these will be difficult to reduce, too. Both problems pose a major challenge to the Union. By its very definition, EU cohesion policy has to address both problems – national catching-up vs. the containment of regional disparities – very attentively in the enlarged EU.

Literature on European economic integration (e. g. European Commission 1997; 2000; Martin 2002; Lammers 2002; 2003) reveals that in Western Europe there has been a certain degree of convergence on the country level (i. e. between the GDP per capita of the Member States) over the past decades. Indeed, there is clear evidence of national convergence among the EU-15's Member States since the 1960s. This is particularly due to the catching-up process of the poorer Member States (European Commission 1997; 2000).

The results of studies are much more ambiguous at the regional level (Boldrin and Canova 2001). Even if there seems to be (weaker) convergence at the level of *all* the EU-15 regions, quite a few authors (e. g. Quah 1996a) argue that different groups or 'convergence clubs' are emerging, so that apparent regional convergence is simply generated by the richer and leading regions of the cohesion countries catching-up with the EU-average, effectively meaning that regional disparities within these countries increase.

Indeed, there is evidence that national convergence came along with increasing interregional disparities (within countries): whereas since the mid-eighties income inequalities among Member States have diminished by 25 per cent, regional inequalities within the Member States have gone up by 10 per cent. As a result, the majority of regional inequalities in Europe can be explained by inequalities within countries (Martin 2002, 2). Quah (1996b) finds that, among the cohesion countries (Greece, Portugal, Spain and Ireland), Portugal and Spain, who managed to converge toward the average EU GDP per capita, have also witnessed the most marked rise in regional divergence.

Especially between 1994 and 2001, the cohesion countries' convergence process was quite impressive on the country level. In this period, (national) growth was well above the EU average in Greece, Spain and Portugal. This was translated into significant growth in GDP per head compared to that in the rest of the EU, because their growth of population was only slightly higher than the average. From 1994 to 2001, growth of

GDP per head was over 3 per cent a year in Portugal and Spain, and just under 3 per cent in Greece. This compares to an EU average of just over 2 per cent a year. Hence, in this period GDP per head in these three cohesion countries together grew in real terms by nearly 1 percentage point a year above the EU average, and it increased to 79 per cent of that average in 2001 (in PPS) (European Commission 2004, 2–3).

However, the growth and convergence processes just described have been far from regionally balanced. Davies and Hallet (2002, 12) find a correlation between high growth rates and a rise in regional disparities, especially in the 1990s. Whereas Ireland and Spain have experienced higher growth rates and a widening of regional disparities, Greece before 1996 had a low growth rate (it even diverged with respect to the EU-average) but also witnessed low/falling regional dispersion (Davies and Hallet 2002, 12; Boldrin and Canova 2001, 246). The Spanish catching-up process (on the country level) was driven by the particularly rapid growth of its richest regions, especially Madrid and Cataluña, while other regions were relatively falling behind. Since around 1993 there has been a gradual rise in regional disparities within Spain. The high growth rates of Portugal in the 1990s have been accompanied by a rise in regional disparities during the second half of that decade (Davies and Hallet 2002, 13–15).

Summing up, there has been a certain degree of convergence on the country level in the EU-15 in the past decades, also due to the catching-up of the cohesion countries. Existing EU cohesion policy schemes such as the Structural Funds and the Cohesion Fund might have contributed to this convergence of national economies, but could not avoid the increase of regional inequalities within the (cohesion) countries.

In the new EU Member States in Central and Eastern Europe, a very similar development can be witnessed: there is a certain degree of convergence with respect to the average EU-15/-25 GDP per capita (see Table 1), but regional disparities within Poland, the Czech Republic, Hungary etc. have been and still are increasing. In the accession countries, growth of GDP averaged just over 4 per cent a year between 1994 and 2001 in all except Hungary (just below) and the Czech Republic (where growth was only just over 2 per cent a year). Over this period, growth of GDP per head in real terms in the new Member States was around 1.5 per cent a year above the EU-15 average (European Commission 2004, 9). This of course led to a certain catching-up in Central and Eastern Europe. Hungarian GDP per capita e. g. amounted to 48 per cent of the EU-25 average in 1995,
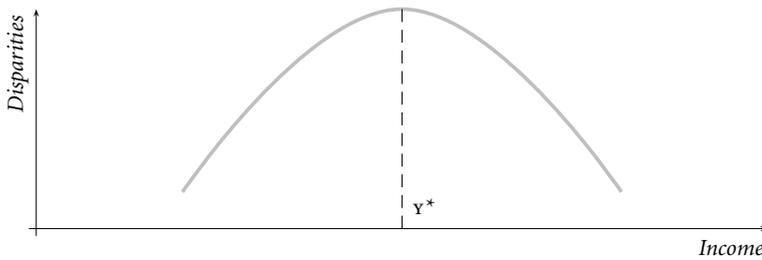
Figure 4: The Williamson hypothesis: the inverted U-curve
Sources: Williamson 1965, 9–10; Davies and Hallet 2002, 5.

to 54 per cent in 2000 and is at roughly 61 per cent in 2004 – at the same time, interregional income inequalities within Hungary increased at all levels of spatial aggregation in the 1990s, as we have shown in Section 3. However, not only in Hungary, but in all the transition countries, growth has been disproportionately concentrated in a few regions (especially in the main agglomerations such as the capital cities) and consequently regional disparities in GDP per head have widened significantly (European Commission 2004, 10).

In an early contribution, Williamson (1965) provided a formulation of the potential trade-off between national and regional development, predicting 'increasing divergence among geographic units *within* national borders and perpetuation of "pôles de croissance"' (Williamson 1965, 5) in catching-up countries, whereas later during the course of development, 'instead of divergence in interregional levels of development, convergence becomes the rule' (Williamson 1965, 9). According to the Williamson hypothesis, the relationship between national growth and regional inequalities takes the form of an inverted U-curve (Figure 4).

Williamson's main argument is that in the catching-up process of countries, interregional linkages, factor movements and public policies interact in favour of growth pole effects and the main agglomerations. Hence, more rapid growth in the growth pole areas (e. g. the capital city regions) leads to an increase of regional disparities. In later stages of development, however, regional disparities may decrease due to a higher aggregate level of income and spread effects: diseconomies of agglomeration (e. g. high labour costs or congestion effects) may emerge in the growth poles, and the lagging regions of the by now mature country might benefit from technological diffusion (Williamson 1965, 3–10; Davies and Hallet 2002, 4–5).

Most economists would probably classify the new EU Member States in Central and Eastern Europe under the heading 'catching-up countries': hence, in Williamson's scheme, they would belong to the group of countries experiencing increasing regional disparities, and they would find themselves to the left of the income level Y^* in Figure 4. This classification seems to be justified, because in the CEECs public investment is often focused on the main agglomerations, and the maximisation of national growth (i. e. national catching-up) is mostly given priority, at the expense of lagging, peripheral regions. In later stages, the priorities may be shifted and given to spatial equity.

It is very likely that, thanks to the strong mechanisms of convergence implied by deep economic integration, a certain degree of national convergence towards EU income levels will occur in the CEECs. However, further market integration in the context of EU Eastern enlargement will also foster divergence forces in the new EU Member States and hence lead to a further increase in regional disparities. Hence, the Community and the (old and new) Member States will have to elaborate a cohesion policy approach that is able to contribute to the catching-up process of the CEECs and, at the same time, to the containment of regional disparities within the new Member States. This task will have to go hand in hand with a reorientation of the contents of cohesion policy, and with a better management of the Funds. This is even more true in view of the fact that firstly the EU has firmly established the objective of 'economic and social cohesion' in its policies,[9] that secondly the huge widening of regional economic disparities brought about by the Eastern enlargement presents an unprecedented challenge for the EU's economic and social cohesion, and that thirdly existing cohesion policy schemes have at best contributed weakly to the convergence of national economies in Western Europe in the recent past, but could not avoid the increase of regional inequalities.[10]

Regional policies seem to face a trade-off between equity and efficiency, and policy makers seem to be confronted with the choice between the objective to foster national catching-up and thus national growth and efficiency or to decrease inequalities between the different regions inside countries and therefore enhance a balanced development and spatial equity. In the case of the acceding CEECs, this suggests that it will be difficult to attain through these policies the objective of higher national growth (and therefore convergence towards the EU-15) and at the same time the objective of a decrease in regional inequalities. Yet, the European Com-

mission aims to achieve both objectives with its current policies, and justifies its regional interventions not only on equity grounds (see above), but also on efficiency grounds – according to its First report on economic and social cohesion, 'the disequilibria indicate under-utilisation of human potential and an incapacity to take advantage of the economic opportunities that could be beneficial to the Union as a whole' (European Commission 1996). In its Third report on economic and social cohesion, the European Commission (2004, vii–viii) takes up the same argument, stating that 'the cost of not pursuing a vigorous cohesion policy to tackle disparities is, therefore, measured not only in terms of a loss of personal and social well-being but also in economic terms, in a loss of the potential real income and higher living standards.'

This efficiency argument is much less clear than the equity based motivation: It may demand more or less spatial concentration (and hence regional inequalities) – on the one hand, there are the economic gains produced by agglomeration processes, and on the other there can be over-agglomeration and congestion. According to the theories of new economic geography and endogenous growth, efficiency gains (in terms of economies of scale or localised technological spillovers) accrue from economic agglomerations – and hence from an economic geography often characterised by significant regional inequalities. The European Commission might be wrong in thinking that containing regional disparities will lead to a higher overall growth rate in the EU, hence to EU-wide efficiency gains. Indeed, the empirical evidence in Europe (convergence of countries, divergence within countries/between regions) and the transition process in the CEECs clearly tell another story: a trade-off between equity and spatial efficiency appears inevitable.

One of the central aims of this work is to derive whether on theoretical grounds (mainly on the basis of new economic geography and endogenous growth theory) there is an approach to regional policy able to foster the catching-up process of the CEECs and, at the same time, take account of the increased regional disparities within the new Member States. The respective model will be developed in Section 5. It will be shown that there is a cohesion policy approach able to reconcile the two objectives of reduced regional disparities and a higher national growth rate or, in other words, to solve the equity-efficiency trade-off that cohesion policy seems to face. However, only under certain conditions do these theoretical results have real-life economic policy implications, as we have to scrutinise whether their main underlying assumptions and their results

are compatible with the economic realities of Hungary – our 'case study country' – and its accession to the EU.

5 A Theoretical Case for an Innovation-Oriented Regional Policy

Martin (1999) shows that some regional policies, such as subsidies to poor regions or the reduction of transaction costs within the poor region, can have unfortunate consequences, including a reduction in the rate of growth, or the same effect coupled with an increase in income inequalities, or the relocation of firms to the richer regions. However, a policy that reduces the cost of innovation, or increases the diffusion of innovation, reduces regional income inequality and agglomeration, and also increases growth.

Based on Martin (1999), we use a two-region theoretical scheme – firms can locate either in the capital-rich region (in our case e. g. the capital city region of Budapest) or in the 'poorer' region (e. g. Borsod-Abaúj-Zemplen, which is situated at the North-Eastern periphery of Hungary and is one of the poorest Hungarian counties). The geographical concentration of firms in the rich region increases when transaction costs between the regions fall. The logic (which is common to the approaches of new economic geography, e. g. Krugman 1991) is that it is always more profitable to produce in the richer area, the larger market, in order to maximise the benefits of economies of scale. When transaction costs between the regions fall, businesses can then exploit these economies of scale while also selling on the 'small market' now less protected by high transaction costs. Moreover, when regional inequality in terms of income increases, regional inequality in terms of spatial distribution of firms (industrial agglomeration) likewise increases, since economies of scale encourage firms to locate where demand is strongest and thus income highest. Equilibrium geography is such that the profits of businesses are identical in both regions, which eliminates any incentive to relocate. This relationship, which can also be called the 'home market effect', can be written as follows (curve AA in Figure 5):

$$A = A(R), \qquad\qquad\qquad (1)$$

where $A(R)$ is a growing function of R and where A is an agglomeration index (e. g. the ratio of the number of firms in the rich region to the total number of firms). R is an index of inequality of regional incomes (e. g. the ratio of income in the rich region to income in the poor region, hence very similar to the ratio calculated in Table 3, see above).

Spatial concentration in turn has an impact on the rate of innovation and hence on the long-term growth of the overall economy, because the cost of innovation in the richer region falls as the agglomeration of economic activities increases (due to positive externalities arising from spatial concentration, the existence of localised technological spillovers etc.). In fact, geographical concentration of production activities increases opportunities to reduce the cost of innovation and consequently to increase its rate of growth, with beneficial effects for the territory as a whole. In endogenous growth models this is an equilibrium relationship, because when the cost of innovation falls this induces new entrepreneurs/researchers to enter the innovation market (which is seen as being competitive). This relationship between the long-term growth rate and the agglomeration index – which can also be called the 'spillovers effect' – is shown by the following equation (curve s s in Figure 5):

$$g = g(A), \qquad (2)$$

where $g(A)$ is an increasing function of A, the index of industrial agglomeration.

The rate of innovation itself has an impact on regional income inequalities: a high rate of innovation accelerates market entry by new businesses, which then compete with existing businesses and hence reduce their profits. One effect therefore is to reduce existing incomes. From this point of view, an increase in the rate of innovation reduces income disparities between regions by reducing the profits of monopolistic firms, which are more numerous in a rich region. This last equilibrium relationship ('competition effect') is encapsulated in the following relationship (curve RR in Figure 5):

$$R = R(g), \qquad (3)$$

where $R(g)$ is a negative function of the growth rate g.

Figure 5 sums up these different equilibrium relationships. The upper part shows the spatial equilibrium, where income inequalities and industrial agglomeration are determined. The curve AA shows that agglomeration tends to increase when income inequalities increase, because firms locate in markets with high purchasing power (Equation 1).

The curve RR shows that when industrial agglomeration increases competition intensifies, thereby tending to reduce the profits of monopolistic businesses and income inequality between regions (Eq. 2–3). The equilibrium level of agglomeration and the equilibrium level of income inequality is indicated by the intersection of the two curves AA and RR.
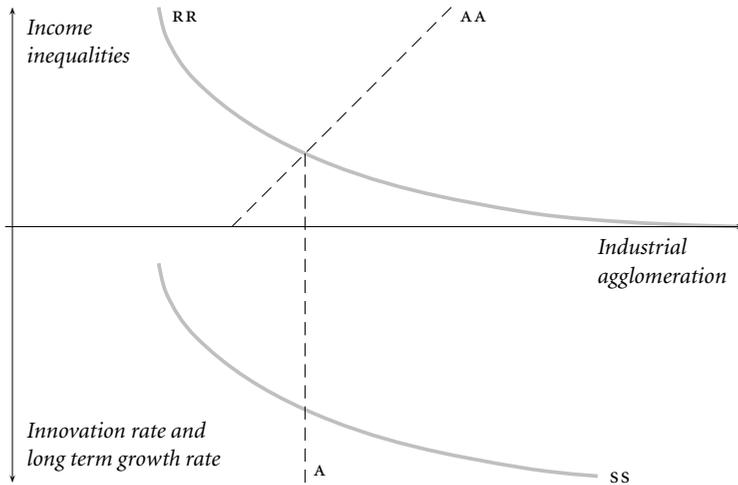
Figure 5: Relationship between innovation, regional income inequalities
and agglomeration. Source: Martin 1999, 14.

The lower part of the graph shows how spatial equilibrium in its turn
influences the rate of innovation. The equilibrium level of agglomeration
A is given by the spatial equilibrium. The curve ss shows the positive re-
lationship between innovation and agglomeration, due to the existence
of localised spillovers (Equation 2). The equilibrium rate of innovation
and the equilibrium level of income inequalities are indicated by the in-
tersection of the line A and the curve ss.

Martin (1999, 16–17) shows that a simple monetary transfer (e. g. a
subsidy) from the richer region, say Budapest, to the poorer region, e. g.
Borsod-Abaúj-Zemplen county, ultimately reduces agglomeration and
income inequalities between the two, but it also reduces the national
growth rate:

$$R(g)\downarrow \rightarrow A(R)\downarrow \rightarrow g(A)\downarrow .$$

This is hardly an efficient outcome, in the truest sense of the word.

More often, EU cohesion policy comes in the form of funding allo-
cated to the financing of (transport) infrastructure i. e. with the objec-
tive to reduce transaction costs and to bring remote regions closer to the
Single Market. The analysis of the economic impact of large-scale infras-
tructure investment depends largely on the question whether the invest-
ment leads to reduced transaction costs within the poorer region or to re-
duced costs between the regions. If the result is a reduction of transaction

costs within the receiving region, increased effective local demand for lo-
cally produced goods will attract new companies into this lagging region,
say Borsod-Abaúj-Zemplen. Martin (1999, 17–19) shows that in this case,
Borsod-Abaúj-Zemplen would benefit from reduced industrial agglom-
eration (manufacturing processes being now more dispersed), but the
innovation rate and hence the national growth rate would be lower. In
addition to this, regional disparities would increase, as firms in Budapest,
now facing fewer competitors, would increase their profits:

$$A(R)\downarrow \rightarrow g(A)\downarrow \rightarrow R(g)\uparrow.$$

This example shows that industrial location disparities do not always
go hand in hand with regional income inequalities.

If, however, the infrastructure project contributes to reducing the
transaction costs between Budapest and Borsod-Abaúj-Zemplen, the op-
posite happens: Firms from Borsod-Abaúj-Zemplen are encouraged to
move to Budapest, where they can exploit economies of scale, while con-
tinuing to sell their products in Borsod-Abaúj-Zemplen, thanks to the re-
duced transaction costs between Budapest and Borsod-Abaúj-Zemplen.
With competition in Budapest increasing, monopolistic business profits
and hence income inequalities between Budapest and Borsod-Abaúj-
Zemplen are ultimately reduced.

$$A(R)\uparrow \rightarrow g(A)\uparrow \rightarrow R(g)\downarrow.$$

This agglomeration-increasing outcome can be found in numerous
authors' articles (the most prominent maybe being Krugman 1991). The
seemingly paradoxical result: improving access to the lagging region via
transport infrastructure investment comes at the expense of the receiving
region that is even more deprived of industrial activities. This theoretical
result finds an empirical confirmation in the unsuccessful Italian efforts
to foster economic growth in the Mezzogiorno (Martin 1999, 18; Faini
1983). Nearly half a century ago, Myrdal (1957) formulated the same result
in his theory of 'circular cumulative causation'.

In all the regional policy approaches looked at so far, there is an un-
fortunate consequence: a reduction in the rate of innovation and hence
in the country's rate of growth (direct transfer/subsidy to the poorer re-
gion), or the same negative effect together with an increase of regional
income disparities within the country (infrastructure projects within the
poorer region), or the relocation of companies to the richer region and
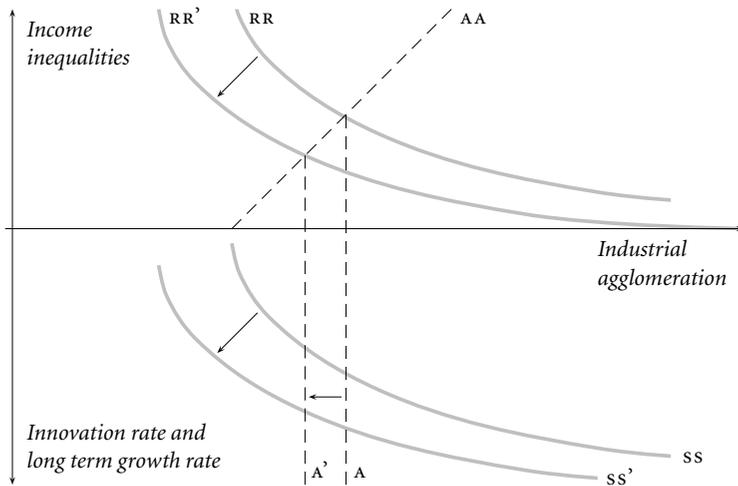hence an increase in agglomeration (infrastructure projects connecting

Figure 6: Effect of a reduction in the cost of innovation or of an increase
in the diffusion of innovation. Source: Martin 1999, 19.

the capital city region and the periphery). Thus, as indicated above, re-
gional policies evidently face a trade-off between equity and efficiency –
none of the briefly described approaches to regional/cohesion policy is
able to reconcile the abovementioned trade-off.

Now it can be shown that, in contrast to a general transfer policy or a
diminution of transaction costs between the richer and the poorer area
or within the poorer area, a policy aimed at reducing regulatory barriers
to innovation or the costs of innovation makes it possible simultaneously
to achieve objectives of reducing regional inequalities and increasing the
rate of growth. The regional policies involved could be R&D subsidies,
education infrastructure or making capital markets more conducive to
new start-ups.

In this case (Figure 6), it is the dynamic equilibrium (lower part of the
graph) that is first affected. A reduction in the cost of innovation tends
to increase the rate of growth: The curve ss (which shows the positive re-
lationship between innovation and agglomeration, due to the existence
of localised spillovers) shifts downwards (the rate of growth increases for
a given level of agglomeration). By boosting competition, this increases
the rate of innovation, reduces business profits and hence income in-
equalities between the two regions (again, we can think of Budapest as
the richer region and of Borsod-Abaúj-Zemplen as the poorer one). The
induced effect means that spatial equilibrium is also affected: The curve

RR (which shows that when industrial agglomeration increases competition intensifies, thereby tending to reduce the profits of monopolistic businesses and income inequality between the regions) shifts leftward, and industrial agglomeration in Budapest diminishes. In the final equilibrium state, agglomeration and regional income disparities have diminished while the national growth rate has risen; the equity-efficiency trade-off problem has been solved – there is hence a case for a cohesion policy that reduces the cost of innovation or increases the diffusion of innovation (Martin 1999, 18–19):

$$g(A)\uparrow \rightarrow R(g)\downarrow \rightarrow A(R)\downarrow.$$

Another policy can have the same effects: An infrastructure-improvement policy focusing on lowering the cost of conveying information rather than the cost of transporting goods fosters the effect of interregional spillovers and hence enables the rate of innovation to be stepped up, since the innovation sector benefits more from spillovers generated by geographically remote firms. Such a policy would have the objective of increasing the capacity of lagging regions to absorb new technologies and to increase the spatial diffusion of innovation. This could be done by financing infrastructure in information and communication technology (ICT) and education. The impact is then similar to that illustrated in Figure 6.

6 Regional Policy Prescriptions of Martin (1999) in Light of Hungary's Economic Reality

AN AGGLOMERATION-DRIVEN GROWTH PATTERN
AND NATIONAL CATCHING-UP AS MAIN GOAL

Suppose a regional policy is implemented in a certain country, following the 'prescriptions' of the model of Martin (1999), i. e. a regional policy reducing the cost of innovation or increasing the diffusion of innovation. As one of the desired outcomes, this policy leads to reduced interregional disparities and a more balanced spatial pattern of economic activities, hence less agglomeration. Yet, if the respective economy's growth patterns are characterised by a very high agglomeration-elasticity of growth g (i. e. a growth function that is very responsive to changes in the patterns of industrial concentration), the growth rate might increase only insignificantly or not at all (even if it does not decrease).

In fact, during the whole transition process, Hungarian growth has been and still is agglomeration-driven. The country's very high agglome-

ration-elasticity of growth is embodied by the absolutely dominant core role of Budapest as its capital city region and, to a lesser extent, its Western regions bordering Austria (see Section 3). As in the Czech Republic or in Slovakia, there is no centre that could rival the capital city. In the mid-1990s already, Budapest had more joint ventures than the remainder of Hungary combined and nearly two-thirds of all FDI flowing into Hungary went to Budapest, whereas the country's peripheries are characterised by high unemployment rates. As GDP growth, productivity growth and employment are mainly created in the Budapest agglomeration, it might be harmful to reduce agglomeration or do anything which doesn't have the best possible effects on the country's main growth pole and its catching-up process.

Carried to an extreme, a spatial equity-oriented regional innovation policy in Hungary might be tantamount to a renouncement of a higher overall growth rate, and hence an impediment to the catching-up process. This evidently would be an arguable – if not undesirable – outcome. In this case, a regional policy that reduces the transaction costs between the richer region and the poorer one (e. g. by improving roads or railways) might be preferable, as it implies reduced regional disparities, a higher growth rate and increased agglomeration, which is ultimately pushing up the overall (agglomeration-sensitive) growth rate.

In addition to this, the national catching-up process to EU-15 income levels seems to be the priority for Hungarian as well as EU policy makers, i. e. it seems to be more important than the immediate containment of regional disparities within the country. A higher overall per capita income level (even if very unevenly distributed across regions) might even be a conditio sine qua non to be able to fight regional disparities and possible over-agglomeration at later stages of the development process. In this case, any policy involving a renouncement of a higher overall growth rate might be undesirable.

THE FINANCIAL BURDEN OF THE POLICY

It is clear that we may not ask a too costly regional policy from Hungary, i. e. one that would overcharge the country financially. As a transition and EU accession country, it has to set aside many Government funds for reforms, environmental investment etc. In 2002, the Hungarian Government reached a record budget deficit of 9.4 per cent of GDP (!), and for 2003 and 2004 forecasts predict deficits of around 5 per cent – all far beyond the Maastricht criterion of 3 per cent that the country will

most likely have to stick to soon, if it wants to accede to Euroland. In this context, any financial burden is problematic. If, however, the financial burden of the policy were so high that – in the case of an innovation-supporting regional policy as described above – the endogenous effect on incomes and geography dominates the exogenous effect on the cost of innovation, the net effect on growth might be negative. Hence, the cost of such an innovation-oriented regional policy must not be too high (and yet it is relatively likely to be), if (apart from the reduction of agglomeration and regional inequalities) the desired impact on the national growth rate is to be positive. Thus, in the framework of its cohesion policy, the EU will have to continue to considerably co-finance its poorer countries' regional policy projects. Distinct calls for lower EU co-financing (in order to increase the receiving regions' 'sense of ownership') run contrary to the financial feasibility of a true regional innovation and education policy in Hungary.

THE SITUATION OF INNOVATION, R&D AND SCIENTIFIC EDUCATION IN HUNGARY

Hungary has – like the other CEECs – a developed educational system and a relatively solid base of science and technology (S&T). The education levels are comparatively high, especially concerning scientific and technical skills. The Hungarian skills and competence base offers good opportunities for competitive research, development and manufacturing clusters. In addition to this, it is higher education that facilitates technology transfer (e. g. Tondl and Vuksic 2003). Contrary to other CEECs, agriculture is not more important than in the EU-15 countries, and Hungary has a higher share of sophisticated engineering industries and a lower share of labour-intensive industries than other EU countries such as Portugal or Greece. Even if Hungary partly still lacks appropriate domestic strategies to continuously support technological change, innovation processes and related training measures, it has taken a more proactive approach to S&T policy and technology-related education in the second half of the 1990s and in recent years: the S&T Policy College of the Hungarian Government has presented a 'Science and Technology Policy 2000' programme, and very recently, the governmental programme 'A Chance for the Future' has placed the focus on computer skills, teleworking and the development of small and medium-sized enterprises (SME) – just to mention two examples. And yet, the overall picture is not that bright . . . .

The programmes just mentioned seem to be more than justified, be-

cause in Hungary – as in other accession countries – the former centrally planned, simple 'linear model' of innovation had been widely dissolved and made obsolete: the country's s&t system has suffered from a decline both in government support and in industrial research – during the 1990s, the s&t system lost more than half of its industrial researchers. In the first half of the 1990s, r&d expenditure per unit of gdp sharply decreased, and only slowly stabilised thereafter. Publicly funded scientific facilities and research institutes are still hardly integrated into private companies' innovation activities, which anyway are weak. High-tech production is still limited to very few specific regions and sectors, and has not spread to the country or industry as a whole. Even if there are many skilled workers, engineers and highly educated scientists in Hungary, their competencies have been partially made obsolete by the systemic change and economic restructuring (Meske and Weber 2001).

At the outset of the transition and accession process in Hungary, major hopes for knowledge spillovers, technology transfer and innovation were pinned on foreign direct investment (fdi). Multinational corporations were expected to be multipliers of modern production and management know-how in the country. These hopes cherished by many Hungarians have been broadly dashed: even if fdi might contribute to aggregate output growth (Tondl and Vuksic 2003) and overall labour productivity, there is much evidence that foreign owned companies in Hungary – due to their strong technical superiority – operate in virtually isolated 'cocoons'. There are hardly any technological spillovers, and fdi has not played the role of an innovation-stipulating means for domestic firms (Günther 2002). Foreign companies are hardly willing to 'give access' to innovations. By buying up domestic companies, they rather absorb knowledge than distribute it. Typically, products and technologies are imported by the foreign companies, and so are their production inputs – there is hardly any room for Hungarian r&d. The technological disparities between the Western multinationals and the Hungarian economy have not decreased. On the contrary, they seem to be deepening (Farkas 2000). Hence, the situation of innovation, r&d and technological knowledge in Hungary has hardly been improved by the massive inflows of fdi so far.

From what has been said, it seems that the use of indigenous capacities in investments, skills and science has to be broadly strengthened. If fdi doesn't play a multiplier role concerning technological innovation and knowledge spillovers, then those domestic capacities have to be enhanced

involving academia, research institutions, enterprises and regional au-
thorities, in order to develop the kinds of networks that have contributed
to the competitiveness of many EU-15 regions (Meske and Weber 2001).
Hungary has to take an 'endogenous' approach to regional policy (e. g.
Cappellin 2002), consisting of interregional innovation networking, in-
tense co-operation between the different counties, the improvement of
information and communication links for technology transfer, SME de-
velopment, vocational training for the labour force etc. But still, the
number of enterprises producing for local markets is low, and so is the
co-operation between the producers and between the counties (Rech-
nitzer 2000, 52).

Summing up, the approach advocated by Martin (1999), i. e. poli-
cies supporting e. g. innovation diffusion, R&D subsidies, the creation
of small high-tech sectors and human capital only partially fall on fertile
soil in Hungary, as the country's innovation, R&D and scientific edu-
cation system is still in a problematic situation – the environment for
high-tech production and technological innovation has to be improved,
before such a regional policy approach really can bear fruit.

A REGIONAL INNOVATION POLICY IN HUNGARY'S
PERIPHERIES?

What has just been said is even more true for Hungary's peripheries,
i. e. the North-Eastern, Eastern and most Southern regions of the coun-
try. In those regions, that had strongly depended on heavy industries
in the socialist period, the decline and disappearance of outdated en-
terprises has made the workforce's skills mismatch even worse. Three
Eastern Hungarian industrial counties account for around 35 per cent of
the country's total unqualified (and unemployed) workers. Even if there
were FDI in those regions, and even if the foreign companies were 'will-
ing' to give access to innovations, the lack of higher education would
make technology transfer highly difficult. In the counties of Pest, Nó-
grád and Szabolcs-Szatmár-Bereg there are significantly fewer education
places than on average in Hungary (Rechnitzer 2000, 48). Hence, in these
areas, extended funding for training measures and technology- as well
as computer-related education is strongly needed, and so are qualified
teachers and a better equipment of schools with modern computers, of
companies with modern machinery etc. Any form of technological de-
velopment can only be adopted if those who are supposed to adopt it can
be directly familiarised with it. However, in Hungary's peripheries, there

is a lack of even the most elementary information and communication infrastructure (and transport infrastructure, too).

Yet, the Government has begun to deal with the problems of the most lagging regions, also with respect to their technological backwardness. The aforementioned Government programme A Chance for the Future aims at improving the most disadvantaged regions' development, employment and innovation potential. In this context, especially support to the education infrastructure would be an important regional policy approach, as information and communication infrastructures or R&D subsidies could only be utilised if workers, engineers, scientists etc. were adequately qualified.

The nearly complete lack of FDI inevitably requires Hungary's lagging regions to take on an 'endogenous' approach to regional policy. Even if, as described above, the conditions for that have to be clearly improved, a regional innovation policy even in the country's periphery is not a hopeless venture. The Government has made some important steps, e. g. also by supporting many business incubators and innovation centres in backward regions with high unemployment (Gulácsi 1997). More regions (and nearly all the lagging ones) than in any other accession country have become active members of the Innovating Regions in Europe (IRE) Network, which aims at interregional networking on regional innovation policies, best-practice exchange etc. And yet, a true regional innovation policy and the creation of small high-tech sectors will only be successful if the transport infrastructure as well as the business opportunities are improved and the education and training systems renewed.

THE POLITICAL ECONOMY OF SHIFTING PRIORITIES: THE LAW OF INERTIA APPLIES

The huge sums spent in the framework of the EU's Structural and Cohesion Funds (roughly 240 billion EUR in the financial framework 2000–2006, which is a third of total EU spending) have traditionally aimed at financing public infrastructures, mainly transportation infrastructures. This approach has been partly justified by the considerable disparities in infrastructure in the EU and the objective to bring remote regions closer to the Single Market. In addition to this, there is a deeply entrenched belief in Brussels that the so-called Trans-European Networks (TENs), i. e. mainly roads and railways connecting different EU Member States, are one of the most important engines for growth. They are prioritised, as they are seen to create a 'pan-European value-added'. The 'growth initiative' of the Italian EU Presidency in the second half of 2003, which placed

the emphasis on investment in transport infrastructure, produces testimony of this belief.[11] Pinzler (2003) questions why these measures of all possible measures should foster growth – in fact, the EU doesn't provide any reasonable explanation.

This conviction is being exported to the new Member States: the so-called TINA[12] list is seen as the most important economic and regional policy priority in Central and Eastern Europe (e. g. Tartler 2003). In their National Development Plans for the first three years of EU membership (2004–2006), the accession countries hardly prioritise R&D, innovation policy and human resources development, but instead emphasize infrastructure projects. Poland e. g. only foresees 17 per cent of EU support for education and human capital, whereas 55 per cent (!) of the Funds are supposed to be set aside for (partially prestigious) infrastructure projects (Samecki 2003). The figures for Hungary are not very different – in its famous 'Széchenyi Plan', a National Development Plan presented in 2000, the Hungarian Government dedicated 120 billion HUF to motorway construction, more than for innovation policy, SME development and regional development policy together. So, after all, it doesn't look as if the prescriptions of the model of Martin (1999) and other theorists and empiricists really have a fair chance of being considered as viable alternative approaches for long-term growth, competitiveness and spatial equity. In the political economy of shifting priorities, the law of inertia undoubtedly applies – and to hope that this will soon change would be a rather illusory claim.

7 What can EU Policies Do? And What Are They Already Doing?

What are the lessons of the model discussed? What could be promising starting points to incorporate these new priorities into already existing EU cohesion policy schemes? For the new EU Member States and their regions, two sources of EU regional funding are particularly relevant: the Structural Funds' Objective 1 funding and the Cohesion Fund. All the regions that have a GDP per capita below 75 per cent of the EU average GDP per capita are eligible for Objective 1 funding, and all the countries whose GDP per capita is below 90 per cent of the EU average are eligible for support from the Cohesion Fund. As we have shown in Section 2, all the new Member States currently meet the conditions for support from the Cohesion Fund. Moreover, nearly all their regions (with very few exceptions) are eligible for Objective 1 support.

In 2000–2006 – as in previous periods – both the Structural Funds'

Objective 1 and the Cohesion Fund are setting the major focus on infrastructure measures, namely transport infrastructure. Between 2000 and 2006, 137.8 billion Euros are spent under the heading of Objective 1 – clearly more than half of the overall EU cohesion policy budget, which amounts to roughly 240 billion Euros in the same period. 24.4 per cent of these 137.8 billion Euros of Objective 1 funding are spent on infrastructure (especially transport infrastructure), whereas only 5.9 per cent are spent on research, technological development and innovation. The Cohesion Fund doesn't dedicate any money at all to research and innovation: it is equally split between infrastructure and environmental investments (European Commission 2003c, 21). This clearly violates the regional policy prescriptions which we derived in Section 5, and which would be able to overcome the equity-efficiency trade-off that regional policies often seem to face.

However, the projects supporting research, technological development and innovation in the framework of Objective 1 funding could be promising starting points to incorporate the new priorities derived in Section 5 into already existing EU cohesion policy schemes. The European Regional Development Fund (ERDF) innovative actions contribute to the implementation of regional innovation strategies (RIS/RIS+) throughout the EU. The three strategic themes of the innovative actions co-funded by the ERDF are:

- regional economies based on knowledge and technological innovation;
- e-EuropeRegio: the information society at the service of regional development;
- regional identity and sustainable development (European Commission 2002).

Moreover, the European Social Fund is an important pillar of EU cohesion policy: it contributes to human resource development, modernises the education systems and provides funding for vocational schooling, taking account of the emergence of the knowledge-based economy.

Yet, these important and promising programmes are not sufficiently emphasized and funded. The budget of the ERDF innovative actions e. g. amounts to only 0.4 per cent of the ERDF budget, which corresponds to approximately 400 million Euros over the entire period 2000–2006 – compared to 34 billion Euros spent on infrastructure projects under Objective 1 funding alone (European Commission 2002; European Com-

mission 2003c, 21). Too much money is still invested in financing highways and prestigious infrastructure projects (with temporarily positive Keynesian effects). It is clear that investment in physical infrastructure will remain of utmost importance in the CEECs for years to come – yet, on its own it can not enable lagging regions or countries to catch up, and, as the model above has shown, it might have very unfortunate consequences. Cohesion policy in the accession countries will have to take a more complex approach: human skills have to be adapted, R&D and innovation as well as the knowledge-based economy have to receive more attention, and employment opportunities in the services sector must be created.

The Irish growth miracle's determinants confirm the essential contributions that FDI, 'knowledge/technology sourcing', investment in human capital and ICT can make to foster productivity growth (maybe the most essential and prevalent objective for the CEECs), catching-up as well as regional and social cohesion. Not by chance, Ireland was among the countries that allocated the biggest proportion of Structural Funds to human resources development, high-tech oriented education and vocational schooling – 36 per cent.

Unfortunately for the first three years of EU membership (2004–2006), in many accession countries' National Development Plans it doesn't seem that the priorities of R&D, innovation policy and human resources development are being properly addressed. As shown above, Poland e. g. only foresees 17 per cent of EU support for education and human capital, whereas 55 per cent (!) of the Funds are supposed to be set aside for infrastructure projects. Expenditure on education as a share of GDP is more than 30 per cent lower in the CEECs than in the EU-15. Expenditure on R&D as a share of GDP is 5 to 6 times higher in the EU than in the Visegrad group (Samecki 2003, 4–6). If the EU-25 is to take seriously the Lisbon agenda of economic modernisation and competitiveness (e. g. European Commission 2003b), these data could soon become a big problem. Hence, there is broad room for reflection and improvement in the run-up to the next generation of EU cohesion policy and national regional policies as well as the next EU budgetary framework (2007–2013).

Finally, we should briefly ask the question why, after all, the location of economic activities has become such an important policy issue in the EU, but not in the United States. Or, in other words, why is it that regional income disparities are much more important in the EU than in the US?

The most important reason for this is the marked mobility of economic agents in the us, whereas in Europe workers are hardly mobile, not only among countries, but also among the regions within a country. Whereas the workers in the United States follow the companies (and thus contribute to the adjustment of regional inequalities), the 'European model' is to move activities to where the people are rather than to move people to where the companies (and hence the jobs) are located.

Since European economic agents do not follow mobile capital from regions in decline to regions experiencing growth, the problem of regional disparities is so acute. Hence, housing and tax policies that facilitate the mobility of workers should be strengthened and fully regarded as regional policies. In transition countries such as Hungary, the State has completely withdrawn from the construction of state rentals and condominiums, and the end of the rent controls has made rented flats too expensive. New housing construction has dramatically declined and the housing shortage inherited from the old regime has become pervasive. The privatisation of State rentals and gradually increasing rents have aggravated this general housing shortage. Problems of over-occupancy, rent arrears, evictions and homelessness have multiplied during the transition process (Sailer 2001, 329–330). As a result, workers' mobility has nearly come to a standstill, which is one of the most important reasons for growing regional unemployment and income disparities. Whereas, e. g. in Hungary's Western counties, employers already lament a lack of workers, in the Eastern parts of the country unemployment reaches more than 20 per cent (Rosenkranz 2002) – and yet the workers don't move.

Given the inertia of what has been called the 'European model' above, it seems to be an illusory claim to voice our support for a mobility and housing policy on equal footing. It has to be clear, however, that the specialisation of regions in certain industries suggests that low-intersectoral mobility of workers increases the welfare cost of spatial concentration. Policies involved to increase intersectoral mobility could be adequate housing schemes and policies as well as education and training policies, i. e. policies that have also been recommended above (Martin 1999, 20; Martin 2002).

8 Conclusions

This paper has highlighted the two big challenges eu cohesion policy has to face in an enlarged Europe. On the one hand, due to the legacy of the socialist era, there is a general economic and social backwardness in Cen-

tral and Eastern Europe with respect to the old EU Member States (with very few exceptions). Hence, EU cohesion policy will have to contribute to the catching-up of the new Member States' economies if the Treaty objectives of economic and social cohesion are to be respected. On the other hand, the transition from centrally planned economies to market economies and the ongoing integration with the EU have led to a pre-occupying rise of regional inequalities within the CEECs. In this respect, Hungary is a 'typical' example. By its very definition, EU cohesion policy has also to address this problem very attentively.

Yet, in many ways, regional policies seem to face a trade-off between equity and efficiency. In the case of the acceding CEECs, this suggests that it will be difficult to attain through these policies the objective of higher national growth (and therefore convergence towards the EU-15) and at the same time the objective of a decrease in regional inequalities. The theoretical approach discussed in this paper shows that some regional policies can have unfortunate consequences, including a reduction in the rate of growth, or the same effect coupled with an increase in income inequalities, or the relocation of firms to the richer regions. However, a policy that reduces the cost of innovation, or increases the diffusion of innovation thereby reduces regional income inequality and agglomeration, and increases the national growth rate. The regional policies involved could be R&D subsidies, investment in education and ICT infrastructure or making capital markets more conducive to new start-ups.

Some promising EU programmes already exist in this direction. However, they are clearly neither sufficiently funded nor recognized by the CEECs as a key priority for productivity growth and competitiveness. In order to take adequate account of what can be most generally called 'globalisation', EU cohesion policy's focus on large-scale, direct business support and infrastructure projects ought to give way to 'softer' policy approaches, i. e. SME development, the creation of employment opportunities or the fostering of innovation. Adequate housing policies and approaches increasing workers' mobility would also be most appropriate.

Notes

1. Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.
2. Bulgaria and Romania will add a further 8 per cent to EU population, but under 1 per cent to GDP (!) (European Commission 2004, 10).

3. EU-25 includes the eight accession countries from Central and Eastern Europe plus Cyprus and Malta (i. e. all the countries that acceded on 1 May 2004).

4. Currently, regions whose per capita GDP is less than 75% of the EU average are eligible for 'Objective 1' structural funding. Countries whose per capita GDP is less than 90% of the EU average are eligible for support from the EU Cohesion Fund.

5. Clearly, Hungary's new spatial patterns follow the organic, historically born pre-socialist spatial structure, in which the division line was the Danube River: in the regions West of the Danube, more industrialised areas following (Western) European trends had evolved before World War II, whereas in Eastern Hungary agriculture had always been the dominant factor in shaping the economic structure. Whereas the Western Hungarian regions could build on their historical, market-oriented development in the 1990s, Eastern Hungary's heritage of a large socialist monocultural company system transformed that part of the country into a crisis zone (Hrubi 2002, 62–63).

6. NUTS stands for Nomenclature des unités territoriales statistiques. This nomenclature of territorial units was drawn up to be a single, cohesive system of territorial groupings for the compilation of EU regional statistics. The NUTS nomenclature subdivides the EU economic territory into regions at three different NUTS levels.

7. The Visegrad group consists of Poland, Hungary, the Czech Republic and Slovakia.

8. In economic terms, Hungary's Western 'periphery' can't be considered a periphery – together with Budapest, it should rather be considered the most dynamic part of the country.

9. Article 158 of the Treaty establishing the European Community states that 'in order to promote its overall harmonious development, the Community shall develop and pursue its actions leading to the strengthening of its economic and social cohesion. In particular, the Community shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas.'

10. Overall many authors (e. g. Boldrin and Canova 2001; Boldrin and Canova 2003; Arevalo 2002; Ederveen et al. 2002) criticise the lack of effectiveness of current EU regional and structural policy schemes.

11. More generally, the 18 priority transport infrastructure projects that have been suggested by the 'High Level Group on the Trans-European Network' chaired by former EU Commissioner Karel van Miert, amount to an investment volume of 235 billion EUR (!). And yet, they're a done deal: the European Transport Ministers have voted positively on the list.

12. TINA stands for Transport Infrastructure Needs Assessment (papers initiated by the European institutions).

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