European Sociological Review VOLUME 24 | NUMBER 1 | 2008 19–36 19
DOI:10.1093/esr/jcm031, available online at www.esr.oxfordjournals.org
Online publication 12 October 2007

Patterns of Regional Inequality in the Enlarged Europe

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Regional economic inequalities are increasing in most of the European Union (EU) member states, while between-nation inequalities in the enlarged Europe are declining in the last years. The economic differences between East and West Europe are gradually diminishing and the EU is becoming a relatively homogeneous economic, legal, and political field, which promotes social and economic cohesion in Europe (at a rate of approximately 2 per cent per year). Most of the regional economic inequalities are already inequalities within nations. The economic and income inequalities in the enlarged EU can be largely explained by different regional employment patterns, industrial structures and the region's location within the European space: central urban regions with a good research and traffic infrastructure, qualified employees, a high employment rate and knowledge-intensive services are the best predictors for high income levels. The slow convergence process in the enlarged EU may not increase popular support for the European integration process because the most important frame of reference is still the nation-state where regional inequalities are increasing.

Social Inequalities Between National and European Frames of References

Over the past several decades, transnational dynamics have had an increasing impact on the distribution of scarce social and economic resources and therefore on people's 'life chances' (i.e. overall opportunities to improve their quality of life). This is particularly true in the European Union (EU), which since its foundation has successfully facilitated and framed the economic integration of the European economy. However, in the last few years, a growing scepticism about the further Europeanization and globalization of the economy has been observed. For example, a recent survey reported that 47 per cent of Europeans considered the globalization and Europeanization of the economy as a threat to employment and companies in their country, and only 37 per cent saw it as an opportunity for companies in their country (Special Eurobarometer No. 251, 2006: 52). This scepticism regarding economic liberalization is a major reason for the current crisis in European integration and the EU. Indicators for this trend include the failed ratification of the European constitution (2005), public and private attempts to protect national industries and corporations (Gaz de France, Endesa, Pekao and BPH in Poland, etc.), growing opposition to liberalized service markets, and the reluctance towards further enlargements to the EU (Eurobarometer No. 255, 2006).

From a theoretical and empirical perspective, it is clear that growing feelings of insecurity and socio-demographic risk among European populations are not the direct consequence of economic inequalities in the EU (Blossfeld *et al.*, 2005). The discrepancy between objective living conditions and subjective well-being is well-known in inequality research (cf. Fahey, 2007). This research finding is true for both the Marxist tradition,

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as exemplified by Wright and his associates, and the Weberian tradition, as continued by John Goldthorpe and more recently Richard Breen (cf. Breen, 2004, 2006). European integration and the current discontent with the so called 'social dimension', however, raise a more specific question: is the national context still the most adequate framework for the analysis of social inequalities, as it is most typically used in international comparisons of social inequalities? Or is it increasingly necessary to enlarge the frame of reference by taking into account transnational contexts, with particular European dimensions of social inequalities?

There are arguments for both positions: on the one hand, in the 20th century, general labour market conditions, professional service regulations, industrial relations, and state welfare policies have been organized at the level of nation-states. Even if socio-demographic risk factors and increasing inequalities are the result of global networks of exchange and competition, they are still perceived, articulated and regulated mainly at a national level (Breen and Rottman, 1998). Nation-states are still the largest known level at which the norms of equality and solidarity are effectively anchored in groups. The target group for socio-political expectations and claims is found almost solely at the nation-state level (Beckert *et al.*, 2004).

On the other hand, recent methodological critiques of inequality research based on the framework of nation-states notes that social inequalities and social classes have been increasingly shaped at a supranational level (Beck and Grande, 2004). Europe is characterized by a functional division of labour well beyond national boundaries (Münch and Büttner, 2006). The process of European integration may also enlarge the reference groups with which people compare themselves (Delhey and Kohler, 2006). Thus, Europe may be characterized by 'a politically desired and controlled transition from independent patterns of inequalities to interdependent inequalities' (Mau, 2006: 116; own translation). Research showing the present dissatisfaction with the EU and its current institutional crisis may be an indicator for this transition to 'interdependent inequalities'. In such a transition, formerly heterogeneous living conditions are increasingly regarded as unequal distributions of resources and employment positions, which are considered a violation of the social standards of a community (Blau, 1977; Heidenreich, 2003).

If such a transformation from heterogeneity to inequality takes place in Europe, the convergence of standards of living and income becomes a crucial condition for the pursuit of the European integration process. This is especially true for regional inequalities that emerge in territorially based systems of governance and political control. Regional inequalities may give rise to the emergence of regionally based interests, identities and ideologies. These variables may threaten the social integration and the integrity of a political community via centre-periphery conflicts, which may jeopardize the governability of the national territory (Bartolini, 2005). This is the reason for the creation of national channels for the articulation and representation of individualized interests and for national attempts to reduce regional inequalities. Even if the EU cannot be compared with a nation-state and its possibilities for the 'bounded structuring' of conflicts via nation-building, mass democracy and redistributive social policies (cf. Ferrera, 2003), it has been confronted with similar challenges at least since the southern enlargements. This has given rise to the creation and expansion of the structural and cohesion funds. In spite of these attempts, the level of regional inequalities in the former EU member states has seemed to stagnate since the 1970s (Barro and Sala-i-Martin, 1992; Armstrong, 1995; Boldrin and Canova, 2001; Puga, 2002).

Therefore, a crucial question for the future of the EU is the question of how regional disparities in the EU have evolved over the last few years during the re-unification of Eastern and Western Europe. This reintegration began in 1989. Since 1991 it has been institutionally framed by the so called 'Europe agreements', which have established a free-trade area between the EU and ten post-socialist countries. In 1993, the European Council of Copenhagen provided a membership perspective 'as soon as an associated country is able to assume the obligations of membership by satisfying the economic and political conditions required'.

In this study, we will discuss how the regional inequalities in the enlarged Europe have evolved since the mid 1990s until the accession of eight post-socialist countries to the EU in May 2004. Thus, the focus will be mainly on the effects of the economic integration. Our general hypothesis is that regional inequalities within nations have tended to increase within Europe, while they have tended to decrease in Europe as a whole even before the official EU enlargement process. Such a convergence process might be interpreted as an indicator for the effectiveness of a European pattern of economic integration. The EU can contribute to the reduction of regional inequalities in Europe through the Europe-wide integration and regulation of markets, and the harmonization and coordination of national economic, employment, and social policies. This results in the

creation of a relatively homogeneous social, political, and economic field. However, an alternative argument may be that such a convergence process at the European level might be accompanied by increasing regional inequalities within the European nation-states. If such diametrically opposed trends on European and national levels can be observed, a growing disaffection with the Europeanization and globalization of the economy may be an indicator for the difficulties of such a simultaneous disembedding and re-embedding process, and for the outstanding role of the national frame of reference.

In the following section, we will discuss how the Europeanization of social inequalities can be analysed in the context of the current sociological and economic discussion on inequalities in a transnational framework. On this basis, three hypotheses can be derived. In the European regional inequalities section, we will analyse the development of national and European patterns of inequality using recent regional economic and income data for the enlarged European Union. Then, in 'the origins of regional economic and income differences section, we will discuss to what extent the observed patterns of inequality depend on the economic structure of the region, education of the population, labour market potential, and the region's location within the European space.

Sociological and Economic Perspectives on European Inequalities

In the debate on the development of transnational patterns of inequality, sociologists and economists primarily concentrate on the dynamics of global inequalities. The development of international inequalities is based mostly on national average values. When the swift development of several Asian countries is calculated, this mainly results in a lessening of international dissimilarities (Firebaugh, 2003; Sala-i-Martin 2006; for an opposed position cf. Milanovic, 2003). The assumed reasons for this are very diverse—from the successful industrialization of less-developed countries (Kuznets, 1955) to the globalization of the economy (Alderson and Nielson, 2002), through the development of the population and labour market structures (Kenworthy, 2004). Additional works analyse the development of social inequalities in Europe (Barro and Sala-i-Martin, 1992; Puga, 2002; Heidenreich, 2003). In the following subsection, these debates will be reconstructed from the sociological and economic points of view, and the corresponding hypotheses for the analysis of regional inequalities in Europe developed.

The Sociological Debate on the Development of Within and Between-Nation Inequalities

On the global level, Firebaugh (2003) developed a two-part analysis and thesis. He splits the period since the beginning of the industrial revolution into two phases, the first of which is characterized by the reduction of within-nation income inequalities and an increase in the between-nation inequalities (1820–1970). In the second phase (1970–present), between-nation income inequalities stabilized, and even decreased since the 1990s, while within-state inequalities are again increasing in many countries.[1] Firebaugh and Goesling (2004) explained this global convergence by the economic advancement of China, India, and some smaller South Asian countries during the globalization of the economy. The debate on the Europeanization of social inequalities,[2] therefore, requires a clear distinction between inequalities within the nations and inequalities between them. In both dimensions, social inequalities can increase or decrease. Therefore, in a general perspective four different scenarios can be distinguished (cf. Table 1).

First, the development of within-nation inequalities in Europe can be discussed on the basis of the inverted U-turn hypothesis proposed by Kuznets (1955). This hypothesis refers to the development of social inequalities in the course of national industrialization processes and predicts low inequalities at the beginning of the industrialization process, an increase during the industrialization, and a decrease in developed industrial societies. This hypothesis inspired an extensive discussion of the relationship between growth and social inequalities. The original argument of Kuznets—higher income levels of advanced sectors of the economy explain increasing inequalities followed by decreasing inequalities—has been broadened by other factors in the works of contemporary researchers. Korzeniewicz and Moran (2005) refer in particular to the role of demographic transitions and labour-market institutions (e.g. education and wage-setting institutions).

In the second scenario, however, an increase in income inequalities has been observed in many countries since the 1980s—particularly in the US and Great Britain. Alderson and Nielson (2002) and Alderson *et al.* (2005) explained this 'great U-turn' by the globalization of the economy—particularly by

Table 1 Trends of between-nation and within-nation inequality in Europe; four scenarios

	Development of within-nation income inequalities in Europe	Development of between-nation income inequalities in Europe
Increasing inequalities	b) 'Unfreezing' of national cleavages and patterns of inequality due to the Europeanization of national spaces—a European version of the great U-turn thesis	c) Economic liberalisation, Europeanization and Globalization—Europe as an open space without boundaries results in a differentiation of economic performance and living conditions
Stable or decreasing inequalities	a) Economic modernization, systems of social welfare and more inclusive labour markets may explain reduced inequality	d) Economic integration and European regulation may result in the creation of a relatively homogeneous European space

the increased importance of trade between the developed and less-developed countries and the increase in foreign direct investment. In Europe, the population is also confronted with new opportunities and risks through the economic integration of the national economies: while young, well-trained employees tend to profit from Europeanization, poorly qualified, older employees in declining industries are confronted with rather negative consequences of the Europeanization processes (Münch, 1999). Therefore, processes of economic liberalization may explain increasingly diversified life-chances and risks for different national groups, thus eroding formerly nationally domesticated and regulated conflicts (Ferrera, 2003).

Empirically, the hypothesis of increasing within-nation income inequalities can be confirmed in Europe. On the basis of the Luxembourg income study, Smeeding (2002) observes that in the 1980s and 1990s there was an increase in income inequalities in most European countries (with the exception of Denmark and Slovenia). The inequality of the disposable income (DPI) increased especially in Belgium, Czech Republic, Sweden, Slovakia, and Great Britain. The unequal distribution of DPI can be explained only partly by the unequal distribution of gross earnings (Kenworthy and Pontusson, 2005: 449). On the contrary, in Belgium, Finland, France, and Ireland the inequality in gross earnings by those in full-time employment has actually decreased, while the inequality in DPI has increased (though partly in different time periods). Therefore, increasing inequalities are also the result of different employment regulations, which discourage the 'compensatory employment' of low-income households in some Continental European countries. Despite the compensatory role of national welfare states and employment regimes, an increase of within-nation inequalities in Europe, therefore, can be expected, since national patterns of social closure are undermined by liberalized goods, services, capital, and labour markets.

In the third scenario, the increase of the between-nation income inequalities in Europe is explored. Former national barriers to market entry have been increasingly undermined by the liberalization of goods, services, capital, and labour markets. This can lead to a stronger differentiation in the various national economies in Europe. As the inequalities arising from this can hardly be compensated for by between-nation transfers, this could lead to an increase in social inequalities. This could be justified by the argument of Bartolini (2005, Chapter 7) who refers to the fundamental openness of Europe and the limited capacity to generate European boundaries. Bartolini explains this analysis by the openness of the European internal market, the transnational and deterritorialized character of European law, the purely technical orientation of European monetary policies, and the continuous enlargement processes, which prevent territorial consolidation.

The fourth scenario challenges the assumption that the EU is not a completely open space. Even if the EU is not characterized by a clear-cut boundary, it is nonetheless a transnational space characterized by dense patterns of communication, cooperation, exchange, regulation, and a homogeneous legal foundation—the *community acquis*. In the tension between national spaces and a global society, the EU is neither a closed 'container' nor a completely open space, but a densely regulated, relatively homogeneous European field (Fligstein and Stone, 2002). The emergence of such a relatively closed field, which also structures the patterns of social inequality, can be explained in different ways. First, through its structural and regional policies, the EU pursues, to a limited extent, a policy of supranational redistribution.

Second, the Europe-wide legal harmonization of national social security regulations contributes to a modernization of the European labour market and social security structures (Leibfried, 2005). Third, soft forms of governance such as the open method of coordination, also contribute to the modernization of national social and employment regimes (Zeitlin and Pochet, 2005). Fourth, the European economies are strongly interconnected. For example, in 2005, 63.8 per cent of European imports came from other EU countries, and 66.7 per cent of European exports went to other EU member states. In 2004, only 24.6 per cent of the debt and equity securities of the Eurozone were held by external investors (IMF, 2006: 124). From 1999–2003, 68 per cent of the European foreign direct investment flows were directed to other EU countries (EU, 2005: Foreign Direct Investment Yearbook, p. 22). This strong regional integration is made possible by common rules and legal norms, i.e. the *community acquis* and its approximately 20,000 legal documents. Europe is a common legal space, and the predictability of legal decisions associated with it is an important pre-requisite for cross-border investments. In these ways the EU could contribute to the reduction of income inequalities in the EU. Therefore, the homogeneous regulation and integration of European goods, services, finance, and labour markets, and the supranational coordination and harmonization of national social and employment policies increase the likelihood that Europe can contribute to a reduction of the between-nation inequalities in Europe. At the same time, less prosperous states will likely profit over-proportionally from the integration of the European markets and the standardization of basic legal conditions and social policies.

The Economic Debate on the Development of Regional Inequalities in Europe

In the neoclassical growth theory, which is attributed to Robert M. Solow, economic growth is explained as a consequence of the labour, capital, and technology use of an economy. In this regard, a key assumption is that capital is subject to diminishing marginal returns. This implies that *ceteris paribus*, if the invested capital grows faster than the labour force, then its marginal productivity will decline and investment profits will decline. If similar levels of technological progress can be assumed worldwide, then developed economies will tend to grow more slowly due to the effects of decreasing capital returns. In the long run, the growth rates of more and less developed countries converge at a so called steady-state, which is dependent on the amount of the investments and the population growth: 'the source of convergence in the neoclassical growth model is the assumed diminishing returns to capital'. (Barro and Sala-i-Martin, 1991: 109).

In this tradition, some researchers have analysed the convergence of regional growth rates across European regions. Barro and Sala-i-Martin (1991) analysed 73 EU-regions and estimated the within as well as the between-rate of convergence for the period 1950–1985 as approximately 2 per cent (beta-convergence). With the inclusion of country dummies and the employment shares of agriculture and industry the convergence rate does not differ over the four decades taken into consideration. Analyzing 85 EU regions, Armstrong (1995) identified a somewhat inferior rate of convergence for the 1980s and 1990s; economic inequalities decrease only by approximately 1 per cent per year. Also the so called sigma-convergence, i.e. the SD of the regional growth rates, clearly decreases. However, when Boldrin and Canova (2001: 226) analysed 185 regions for the time period 1980–1996, they found no beta-convergence and only a minimal sigma-convergence of the regional economic performance per inhabitant: 'national patterns become dominant and convergence coefficients become insignificant in per capita income data'. Since the beginning of the 1980s, the regional inequalities within the member states clearly increase while the regional dissimilarities between the states decrease (Duro, 2004).

In this perspective, the evolution of the labour force plays a decisive role for economic growth. Therefore, it can be expected that the level of regional economic performance and regional income depends to a considerable extent on the development of the population and the employment and unemployment rate (H1).

Secondly, the new growth theory (Romer, 1994) assumes that the rate of technological advancement is not exogenous—as is assumed in the neoclassical growth theory, but it is dependent on research, development, and educational investments. From this perspective, economic growth is dependent on the amount of investment in innovations, on the diffusion speed of these innovations, and on the effectiveness of the protection of innovations. Varying per-capita incomes and growth rates can therefore, be explained by different technological levels across countries and regions. A convergence is not inevitable: 'the failure of cross-countries convergence [motivated] models of growth that drop the two central assumptions of the neoclassical model: that technological change is exogenous and that the same technological opportunities are available in all countries of the world' (Romer, 1994: 4). Therefore, the previously described

mechanism of decreasing returns on capital can be avoided, especially in developed regions with higher levels of technical knowledge. The accumulation of knowledge and technological capabilities may cause spill-over effects. 'When individuals or firms accumulate new capital, they inadvertently contribute to the productivity of capital held by others' (Grossman and Helpman, 1994: 24). In incomplete markets, even an increase of returns on capital can therefore be expected.

In this theoretical tradition, even in the absence of large empirical analyses of regional inequalities in Europe, it can be expected that high investments in research, development, and education (e.g. knowledge-intensive industries and services) have a considerable impact on regional economic performance and thereby delay convergence processes (H2).

Third, the new economic geography (Krugman, 1991, 1998; Puga, 2002) explains locational decisions by different centrifugal and centripetal forces. Centripetal forces such as the proximity to customers and suppliers and the corresponding learning and innovation advantages lead to a concentration of economic activities at specific places. 'A large local market creates both 'backward linkages'—sites with good access to large markets are preferred locations for the production of goods subject to economies of scale—and 'forward linkages'—a large local market support of the local production of intermediate goods, lowering costs for downstream producers'. (Krugman, 1998: 8). European economic integration thus favours a concentration of economic activities since it lowers transaction costs. Centrifugal forces act contrary to these agglomeration effects, and can include immobile factors (land, labour), high transport costs, large agglomeration disadvantages (traffic jams, environmental damages) or higher labour costs in conurbations.

On the basis of the new economic geography, Midelfart-Knarvik *et al.* (2000) have shown that since the 1980s production structures in EU countries have become increasingly more heterogeneous, as different countries focus more heavily on various industries in the liberalized European markets. As a function of the capital, knowledge, and technological intensity of an industry, the spatial concentration of an industry depends on the availability of qualified manpower, researchers, and the spatial centrality of countries and regions. Knowledge-intensive industries and services are particularly more likely to concentrate in central regions, in which productivity and incomes are considerably higher. 'Cities shift from specializing by sector—with integrated headquarters and plants—to specializing mainly by function—with headquarters and business services clustered in larger cities, and plants clustered in smaller cities'. (Duranton and Puga, 2005: 343). Mass production industries are thus transferred from central into peripheral regions. Therefore, it can be expected that incomes in service-based, accessible regions are higher than in less accessible, peripheral regions and cities (H3).

In the next section, we will further examine the debate and evolution of within- and between-nation inequalities in Europe. Then, we will more closely analyse the three causal hypotheses and factors influencing regional economic and income levels that we developed in the preceding section.

The Evolution of Regional Inequalities in Europe

In the following section, we will analyse at first the development of regional inequalities in the enlarged EU. If the decrease of between-nation inequalities and the increase of within-nation inequalities in Europe, which we expect on the basis of the discussion in sociological debate section could be confirmed, this would be a strong indicator for the impact of European institutions, market regulations, and cohesion policies on the inequality patterns in the enlarged Europe. The EU would succeed, in part, by counterbalancing the disembedding processes reflected in increased national inequalities and re-establishing a new, transnational form of an 'embedded liberalism compromise' (Ruggie, 2003).

In this study, we use three different indicators for the regional income and welfare level: (i) GDP; (ii) market income (MI); and (iii) DPI in purchasing power parity (PPP) per inhabitant for the 254 NUTS2 regions and—where available—for the 1,214 European NUTS3 regions of the enlarged Union (EU25).[3] GDP is an indicator of the regional prosperity level. Market or primary income additionally takes into account the effect of commuters. DPI takes into account the effect of taxes, transfer payments, and income from property.

In Table 2, the amount and development of regional inequalities from 1995 to 2003 is described using the Gini-coefficient and the mean logarithmic deviation (MLD) for the GDP of the European NUTS3 regions. An important advantage of the MLD is its decomposability, i.e. it can be expressed by the sum of between-groups MLD and the weighted average of within-groups MLD. On the basis of this indicator, the regional differences have increased in 17 of the 21 EU countries, for which the corresponding data can be calculated. Only in Denmark and Italy a noticeable

Table 2 Disparities of the economic performance (GDP per capita) in the NUTS3-regions in the enlarged EU (1995 and 2003; EU 25)

	Gini (1995)	Rank	Gini (2003)	Rank	MLD (1995)	Rank	MLD (2003)	Rank	Changes (per cent) (1995–2003)
Poland	0.147	11	0.202	17	0.034	10	0.089	19	163
Latvia	0.182	17	0.275	21	0.056	15	0.135	21	140
Portugal	0.124	7	0.190	15	0.030	8	0.060	12	101
Ireland	0.117	5	0.150	9	0.022	5	0.038	8	77
Sweden	0.072	1	0.096	1	0.010	1	0.017	1	71
Hungary	0.196	19	0.245	20	0.066	19	0.109	20	65
Estonia	0.167	14	0.212	19	0.053	13	0.086	18	64
Czech Rep.	0.127	9	0.145	8	0.035	11	0.057	11	62
UK	0.158	12	0.184	13	0.055	14	0.078	16	42
Finland	0.108	3	0.124	5	0.019	2	0.026	5	38
Slovenia	0.119	6	0.135	7	0.024	6	0.033	7	38
France	0.164	13	0.166	11	0.056	16	0.075	15	33
Slovakia	0.181	16	0.188	14	0.062	17	0.082	17	31
Netherlands	0.110	4	0.121	3	0.019	3	0.024	4	27
Greece	0.092	2	0.099	2	0.020	4	0.023	2	16
Belgium	0.198	20	0.198	16	0.063	18	0.067	13	7
Germany	0.213	21	0.206	18	0.072	20	0.075	14	4
Spain	0.127	8	0.126	6	0.026	7	0.024	3	−5
Austria	0.171	15	0.165	10	0.047	12	0.043	9	−9
Denmark	0.135	10	0.122	4	0.032	9	0.026	6	−18
Italy	0.195	18	0.172	12	0.075	21	0.049	10	−35
EU25 total	0.239		0.225		0.107		0.090		−16
Within					0.052		0.060		+15
					48 %		67 %		
Between					0.055		0.030		−45
					52 %		33 %		

Notes: The above values refer to the gross national product per inhabitant (in purchasing power standards) for the 1,214 NUTS3-regions of the EU 25. The NUTS3-level is the third territorial level below the national level. The values are each weighted with the size of the population. Due to an insufficient number of cases the Gini-coefficient and the MLD for Luxembourg, Cyprus, Lithuania, and Malta cannot be calculated. The Gini-coefficient *ranges from a minimum value of zero, when all regions are equal, to a theoretical maximum of one. The MLD indicates the average deviation of the logarithm of the value-added from the MLD. The MLD reacts particularly sensitively to changes in the lower income bracket. If the distribution is completely even the MLD is zero. It has no upper limit.*
Source: Own calculations on the basis of Eurostat, REGIO-database, http://epp.eurostat.ec.europa.eu; as at 05 September 2006.

reduction in regional inequalities could be observed (Table 2, last column). The highest increases can be observed in the Central European countries and in Portugal, Sweden, Ireland, and Finland. The economic potential and development of the new Central European member states is mostly concentrated in its capital regions. The level of regional inequalities in most West European countries—in particular in the Scandinavian countries, Spain, Greece, and in the Netherlands—is still quite low. These countries are able to counteract the trend towards higher regional inequalities.

While the MLD reacts particularly sensitively towards changes in the lower income bracket, the Gini-coefficient is strongly influenced by regions with average economic performance. This can be illustrated taking the example of Germany and France: the more egalitarian territorial structure of Germany, on the basis of the MLD in comparison with the Gini-coefficient, indicates that the German institutions can successfully avoid the emergence of very poor regions. Exactly the opposite is true for France and its very poor overseas départements.

The regional inequalities within states in the enlarged Europe have increased by 15 per cent over the last eight years, while the between-nation inequalities in Europe have fallen by 45 per cent. Altogether there has been a reduction in the regional inequalities in the European space—around 16 per cent as indicated by the MLD. This is a clear sign of a sigma-convergence already in the time period after the membership proposal of the EU (1993) and before the

Table 3 The development and structure of regional economic and income inequalities in the enlarged EU (1995 and 2003; PPP per inhabitant; NUTS2-regions)

		GDP		MI		DPI	
		1995	2003	1995	2003	1995	2003
EU25	Within-nation inequalities	0.027	0.030	0.018	0.020	0.010	0.010
	Between-nation inequalities	0.055	0.037	0.065	0.053	0.056	0.045
	Total inequalities	0.082	0.067	0.083	0.073	0.066	0.055
	Between (in per cent of total)	67	56	78	73	85	81
NMS	Within-nation inequalities	0.022	0.035	0.013	0.023	0.007	0.013
	Between-nation inequalities	0.027	0.013	0.022	0.009	0.018	0.005
	Total inequalities	0.048	0.049	0.034	0.032	0.026	0.018
	Between (in per cent of total)	55	27	63	28	72	27
EU15	Within-nation inequalities	0.028	0.029	0.019	0.019	0.010	0.010
	Between-nation inequalities	0.009	0.006	0.014	0.008	0.011	0.008
	Total inequalities	0.037	0.034	0.034	0.027	0.021	0.017
	Between (in per cent of total)	24	16	42	30	51	44

Notes: Own calculations of the MLD on the basis of the GDP, the MI and the DPI (in PPP per inhabitant) of 254 (EU25), 41 (new member states) and 213 European regions (15 former EU member states).
Source: Eurostat, REGIO-database, http://epp.eurostat.ec.europa.eu; as at 05 September 2006.

fifth enlargement (2004). This reduction is all the more worthy of note, since the proportion of within-state regional inequalities has risen in the same period considerably. This indicates that the large differences between East and West Europe are already diminishing. The ratio of between-nation inequalities to total inequalities has decreased from 52 to 33 per cent.

In the next step, regional differences in economic capability, average MI and DPI will be analysed for the NUTS2-regions (Table 3). At this level, economic inequalities increase, especially in the new EU states, but also in the previous member states (from 0.027 to 0.030). However, regional income inequalities within the former member states increase much more slowly or not at all. This points to national factors stabilizing national inequalities—they are reduced by internal migration as well as by the national employment, tax, and social security systems.

As hypothesized in chapter 2, the between-nation economic and income inequalities are clearly reduced—especially in the Central European countries. Thus, the ratio of the between-state inequalities to total regional inequalities has declined from 67 to 56 per cent (economic inequalities), respectively, and from 85 to 81 per cent (inequalities of disposable income), respectively. The increase in within-state and the decrease in between-state inequalities already observed by Duro (2004) and Puga (2002) for the period 1982–1995 thus can also be confirmed for the period 1995–2003. However, regional inequalities in disposable and MI within European nation-states are considerably lower than the inequalities in economic capability. Measured by the MLD, the amount of regional inequalities clearly decreases. A sigma-convergence the sense of Barro and Sala-i-Martin (1992) can be assumed.

In the next step, we will analyse if the growth rates of poorer and richer regions are converging, i.e. whether a beta-convergence can be assumed (Table 4). We distinguish between an absolute (without country dummies) and a conditional beta-convergence, taking into account the existence of eventually different 'steady states' of the European countries.

For the purchase power adjusted values, a convergence rate similar to the convergence rate of 2 per cent calculated by Barro and Sala-i-Martin (1992) and Armstrong (1995) can also be calculated: 1.9 per cent for the enlarged EU and 1.5 per cent for the previous member states. Surprisingly, a convergence of 1.3 per cent between the new EU member states can also be observed. The convergence of regional economic performance also continues in the enlarged Union, especially due to the quick catch up process of the new member states. In most cases, however, there were no indications of a conditional convergence. In the new member states, even a divergence can be observed (obviously due to the dynamic development of the capital regions).

In conclusion, the expected increase in within-nation regional inequalities can be demonstrated.

Table 4 Regional convergence (absolute and conditional beta-convergence) of the regional GDP per inhabitant in 254 European NUTS2-regions (1995–2003; values in euro and in ppp)

Values in euro	**(1) EU25**	**(2) EU15**	**(3) NMS10**	**(4) EU25**	**(5) EU15**	**(6) NMS**
Country dummies	No	No	No	Yes	Yes	Yes
Observations	254	213	41	254	213	41
R^2	0.41	0.32	0.14	0.79	0.73	0.76
Speed of convergence	0.026	0.045	0.026	0.008	0.012	−0.021
Half-life period	26.371	15.558	26.943	88.623	57.114	−33.351
Values in PPP	**(1) EU25**	**(2) EU15**	**(3) NMS10**	**(4) EU25**	**(5) EU15**	**(6) NMS**
Country dummies	No	No	No	Yes	Yes	Yes
Observations	254	213	41	254	213	41
R^2	0.28	0.10	0.05	0.72	0.71	0.58
Speed of convergence	0.019	0.015	0.013	−0.000	0.004	−0.023
Half-life period	36.3	45.4	55.3	–	196	–

Notes: The regression line $1/T \times log((y_{i,t_0+T})/ y_{i,t_0}) = B - ((1 - e^{-\beta T})/T) \times log(y_{i,t_0}) + u_{i,t_0 t_0+T}$ *(cf. Barro and Sala-i-Martin, 1992: 230) was estimated.* y_{i,t_0} *hereby indicates the average GDP per inhabitant of the ith region in euro or in PPP at the beginning of the period (1995), while* y_{i,t_0+T} *refer to the economic performance of the ith region at the end of the period (2003). In 1995 the regional GDP was weighted with the population.* β *is the 'annual rate of convergence'. A positive* β *means that poorer regions grow more quickly than richer. T indicates the duration of the time period, here eight years. The speed of convergence is* $-ln(1-\beta T)/T$*; the half-life period is calculated as* $-ln(2)/ln\ (1-\beta T)/T$.

In open, transnational spaces some regions can place themselves successfully as regional knots in global service, innovation, and production networks, while other regions in the same state fail in this respect. At the same time, peripheral regions can no longer profit to the same extent as in the post-war period from the legal, economic, and social homogenization of the national economy. Since the middle of the 1990s, in the central European countries in particular, a sharp increase in regional inequalities has been observed (perhaps a counter movement to the 'repressed inequalities' of the socialist period). The much lower and relatively stable inequalities of the market and DPI show the extraordinary impact of the national welfare and employment systems, which can still decouple the increasing economic inequalities from the income distribution. At the same time a reduction of the regional inequalities in Europe and a clear reduction in the between-nation inequalities can be observed. The economic differences between East and West Europe, though still considerable, are gradually diminishing. This indicates that the internal market and the institutional homogenization of the EU, through the common legislation (*acquis communautaire*), are accompanied by a convergence of economic capabilities. Europe is not any more the geographic designation for a sociologically meaningless region of the global society, but a relatively closed social field that is characterized by relatively homogeneous regulatory structures and political actors capable of making binding decisions. Thus, the European integration process contributes to a slow convergence of the economic and living conditions in Europe. However, the cohesion target will not be achieved primarily by redistribution policies, but through the inclusion of poorer regions into the European-wide division of labour.

The Origins of Regional Economic and Income Differences

In the next step, the causes and factors, which might be able to explain the previously described regional economic and income differences and convergence processes will be discussed in detail. Thus we can test the three hypotheses previously developed: what effects do population growth, employment and unemployment rates, investments in research, development and education, competences accumulated in the past, industrial structure of a region and its location, and accessibility have on regional economic performance and regional income levels?

The test of these hypotheses requires a specific research design, as regional inequalities cannot be analysed with a normal panel model because the situation in different regions of the same country is not independent of each other. The European regional data, therefore, has a nested or hierarchical structure, i.e. the regional inequality patterns in a specific country are also determined undoubtedly from the labour market, economic structure, and institutions and politics of this country. Therefore, a model has to be selected that takes into account the hierarchical structure of the data, which are available for at most i points in time, and which refer to k countries with j regions. This is the description of an unbalanced nested error component regression model (Baltagi *et al.*, 2001).[4]

In the following, the European regional data is first analysed at the NUTS2-level for the time period 1995–2003 without explanatory variables (Table 5). We begin with a two-level model for all regions of a country (column 1). In this case, it is not factored in that the GDP (or the market or disposable income) per inhabitant is measured in different regions at different times (Rabe-Hesketh and Skrondal, 2005: 219):

$$y_{ijk} = \beta_1 + \zeta_k^{(2)} + \varepsilon_{ijk} \qquad (1)$$

In this model y_{ijk} refers to the purchasing power adjusted average GDP (or in the fifth and sixth column also to regional market and disposable income) per inhabitant in the region j in the country k at the time i. β_1 (i.e 16,948 euro) indicates the mean value of the GDP for all regions and observation time points, $\zeta_k^{(2)}$ the difference between the mean value β_1 of the total sample and the value of the country k. ε_{ijk} is the measurement error in the region j in the country k at the time i. The values $\zeta_k^{(2)}$ and ε_{ijk} are assumed as independent of each other and identically distributed with the mean value 0 and the variances $\psi^{(2)}$ and θ.

The first column of Table 5 shows that the amount of the between-state variance ($4{,}726 \times 10^4$) amounts to 64 per cent of the total variance. This so called intra-class correlation shows how similar average regional incomes are in a country—measured against the similarity of regional incomes altogether. 36 per cent of the variance is, therefore, originated within the European states, i.e. they are to be either attributed to the year of observation or the peculiarities of the region.

In the next stage, the changes in similarity over the course of time were checked (cf. columns 2 and 3 for the years 1995 and 2003, the values for the other years are not portrayed here). Less surprising is that for the years 1995–2003, a rise in the (unweighted) average disposable regional income can be determined; the corresponding value of β_1 rises from 13,745 to 20,104 euro. The variance as a whole clearly increases (by 92 per cent). The European regions become more dissimilar. The intra-class correlation coefficient decreases from 0.59 to 0.55: 41–45 per cent of the differences in regional average incomes have causes within the nation-state. Also, the assumed increase in within-state inequalities can be observed here.

In the next step, this within-state heterogeneity of the regional inequalities is taken into account (column 4). The corresponding three level model can be described as follows (Rabe-Hesketh and Skrondal, 2005: 222):

$$y_{ijk} = \beta_1 + \zeta_{jk}^{(1)} + \zeta_k^{(2)} + \varepsilon_{ijk} \qquad (2)$$

This equation differs from the equation (1) only by $\zeta_{jk}^{(1)}$, the difference between the total mean value β_1 and the value of the coefficients of the region j in the country k. This variable is also assumed to be independent from $\zeta_k^{(2)}$ and ε_{ijk}, as independent and identically distributed with mean value 0 and variance $\psi^{(1)}$. Besides the previously calculated 'between-state' intra-class correlation $(\psi^{(2)}/(\psi^{(1)} + \psi^{(2)} + \theta)$ the 'intertemporal' intra-class correlation can be calculated in this three-level model, i.e. the similarity of the average incomes for the same country and the same region. This is calculated as sum of the variance between the states and the variance between the regions of the same country—divided by the total variance $[(\psi^{(1)} + \psi^{(2)})/(\psi^{(1)} + \psi^{(2)} + \theta)]$. The estimated intra-class correlation between the average disposable incomes in different regions of the same country amounts to 0.50; the intra-class correlation between the average GDP per habitant of the same regions of the same country amounts to 0.90. Therefore, to a considerable extent, the regional inequalities have within-state causes—and these causes change over the course of time. The regions are therefore a central level for the analysis of economic inequalities.

With both MI and DPI (columns 5 and 6, respectively), the stated share of nation-state influential factors is considerably higher (64 and 70 per cent in comparison to the previously calculated 50 per cent). Therefore, income inequalities are determined not just by economic capability but also by internal migration and national redistribution policies

Now, we will examine, on which factors do average regional economic performance, MI and DPI in Europe depend. As described by the hypotheses 1–3, we will test if and to what extent regional economic and income levels depend on the development of

Table 5 The structure of regional inequalities (1995–2003; NUTS2-regions)

	Two-level variance-components model (GDP) (1)	Two-level variance-components model (GDP; 1995) (2)	Two-level variance-components model (GDP; 2003) (3)	Three-level variance-components model (nested effects; GDP) (4)	Three-level variance-components model (nested effects; MI) (5)	Three-level variance-components model (nested effects; DPI) (6)
Constant	16,948.3** (12.2)	13,744.7** (13.2)	20,104.0** (14.2)	17,068.7** (14.1)	10,963.6** (12.3)	9,510.6** (13.0)
$\psi^{(2)}$ (between-nation variance)/10^4	4,726	2,200	3,971	2,919	1,510	1,060
$\psi^{(1)}$ (between-region variance)/10^4				2,343	590	239
θ (residual variance)/10^4	2,707	1,555	3,249	603	276	209
Intra-class correlation between nations	0.64	0.59	0.55	0.50	0.64	0.70
Intra-class correlation within nations				0.90	0.88	0.86
Log-likelihood	−22,860	−2,491	−2,583	−21,569	−19,605.37	−19,237.22
No.	2,286	254	254	2,286	2,174	2,174
Akaike's information criteria	45,726	4,988	5,172	43,146	39,219	38,482
Bayesian information criteria	45,743	4,999	5,183	43,169	39,241	38,505

Notes: The above table reports maximum likelihood-estimates for two- and three-level models on the basis of average regional GDP, the MI and the DPI for 248 NUTS2-regions of the EU25. This model was calculated with the STATA9-procedure xtmixed (cf. StataCorp 2005). In the table are reported, on the one hand, the 'between-state' intra-class correlation $(\psi^{(2)}/(\psi^{(1)}+\psi^{(2)}+\theta))$*, i.e. the intra-class correlation for the same country, but different regions, on the other hand the 'within-state' intra-class correlation* $((\psi^{(1)}+\psi^{(2)})/(\psi^{(1)}+\psi^{(2)}+\theta))$*, that refers to the same country and the same region.*

*** $P<0.01$; in parentheses: t-values.*

population and labour markets, the technological capabilities of a region, the location and accessibility of a region and the existence of regional agglomerations. Methodically, this means that in the equation (2) the explanatory variables x_2, x_3, $x_4 \ldots$ (which are explained in the appendix), and the corresponding coefficients β_2, β_3, β_4 must be taken into account (Baltagi *et al.*, 2001):

$$y_{ijk} = \beta_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4, + \cdots + \zeta_{jk}^{(1)} + \zeta_k^{(2)} + \varepsilon_{ijk} \quad (3)$$

Table 6 reports the results of six panel regressions for regional economic performance, the MI and the DPI for the extended EU and seven of the new member states in each case. Hypothesis 1 can be tested on the basis of the first three variables in this table. Contrary to expectations, the population change in the EU is correlated positively with the regional economic and income situation (with exception of the new EU member states). The participation in employment has (as predicted) a positive influence on economic performance and in the previous EU member states also on regional income situation. The unemployment rate is, as expected, negatively correlated with the regional economic and income situation. The level of employment is, therefore, one of the most important explanatory factors for the regional economic performance and income situation (Kenworthy and Pontusson, 2005).

The next six variables test the influence of the regional industrial, educational, and innovation structures on the regional economic and income situation (Hypothesis 2). As expected, the ratio of industries with low technological capabilities in the former EU member states is negatively correlated with the regional economic performance and the average regional income. However, the new EU member states profit from the specialization of these industries; the share of low technology industries is positively correlated with the regional income. Contrary to expectations, however, in Western Europe a high share of high-technology industries is also connected to an inferior economic performance and income. This unexpected result could refer to the dislocation of industrial activities in low-wage regions. Knowledge-intensive service industries, however, have a positive influence on regional economic performance, but not on regional income. This possibly refers to the mobility of elites in professional services who are active in high-wage urban regions, but often reside in the outskirts of bigger cities. Less knowledge-intensive services, however, are positively correlated with the MI and the disposable income, but not with regional economic performance. This unexpected result might indicate that some services (e.g. tourism and personal services) are used in low-wage regions by employees from more prosperous regions.

In Western Europe, the number of employees with a successfully completed post-secondary (college) education is an important determinant of the regional income situation. This is not yet true in Central Europe. Apparently the Eastern European countries cannot already fully exploit the qualifications of their labour force. Many patents also have a positive impact on the regional economic and income situation. Contrary to expectations, high research and development expenditure does not have any positive influence on the regional economy; the corresponding variable was therefore not included in the model.[5]

Hypothesis 3 is tested on the basis of the next five variables. High incomes and a high regional economic performance are concentrated in the classical European agglomeration area, the former 'blue banana', which now has—enlarged by Paris—the shape of a pentagon, (London, Milan, Munich, Hamburg, and Paris). A significantly higher income is recorded in the regions in this area. As expected, income in condensed, urbanized areas with a good traffic infrastructure (i.e. with large number of highways) is clearly higher. Also the size of the market that can be accessed from a region has a positive influence.

The national redistribution policies—measured here by the level of social benefits and transfers, have a significantly negative influence on the level of regional economic performance and income. This is an indicator for the effectiveness of public redistribution to the benefit of mostly poorer regions and the persistent impact of national welfare states.

The lower values of the Bayes and Akaike information criteria AIC and BIC demonstrate that a significant improvement of the estimation has been achieved by the model.

By the inclusion of the independent variables mentioned above and the time dummies, which were included in the model, but not shown in the Table 6, the total variance of the regional economic and income levels is reduced by 54, 29 and 33 per cent (cf. Table 5). On the basis of the correlation between the real and the estimated value (Pseudo-R), two-thirds to three-quarters of the regional variance can be explained by the inclusion of the labour market, economic, and location-specific variables. However, the between-nation variance of the regional economic performance still amounts to over two-thirds of the total variance. In the case of the disposable income, this share is

Table 6 Regional GDP, MI and DPI in 215 EU-regions in 21 countries (1995–2003). Multilevel mixed-effects linear regression

	GDP (EU21) (1)	GDP (7 NMS) (2)	MI (EU21) (3)	MI (7 NMS) (4)	DPI (EU21) (5)	DPI (7 NMS) (6)
Population change	8,006.4	8,550.8	−5,047.6	7,645.5^{+}	−3,033.2	6,429.4^{+}
	(1.6)	(1.0)	(−1.6)	(1.7)	(−1.1)	(1.9)
Participation rate	64.7**	46.5^{+}	23.9**	−1.2	18.3*	5.7
	(4.5)	(1.7)	(2.6)	(−0.1)	(2.4)	(0.5)
Unemployment rate	−60.7**	−74.3**	−61.1**	−28.7*	−71.3**	−4.1
	(−4.9)	(−3.0)	(−7.8)	(−2.2)	(−10.7)	(−0.4)
High and medium high technology manufacturing	−128.8**	130.2^{+}	−114.1**	99.3*	−77.1**	78.5*
	(−4.6)	(1.8)	(−6.6)	(2.5)	(−5.3)	(2.3)
Low and medium low technology	−42.5*	190.2**	−56.3**	114.9**	−39.8**	70.1*
	(−2.0)	(3.0)	(−4.4)	(3.3)	(−3.7)	(2.4)
Knowledge-intensive services	53.9**	239.6**	12.3	87.5**	12.6	53.2*
	(2.8)	(4.0)	(1.0)	(2.8)	(1.2)	(2.0)
Services with low knowledge requirements	−10.1	−11.1	21.2**	−27.0	32.5**	−37.1*
	(−0.9)	(−0.3)	(2.9)	(−1.5)	(5.2)	(−2.5)
Tertiary education	47.7**	18.3	46.8**	9.9	40.3**	4.2
	(5.3)	(1.1)	(8.3)	(1.1)	(8.4)	(0.6)
EPO-patent applications	2.7**	28.0^{+}	1.5**	6.9	0.7*	1.3
	(5.0)	(1.8)	(4.5)	(0.8)	(2.3)	(0.2)
Population density	3.4**	−1.1	0.3*	−1.0	0.1	−0.7
	(13.1)	(−0.8)	(2.5)	(−1.4)	(1.5)	(−1.1)
Settlement structure	−321.2^{+}	−847.4**	−213.8**	−526.5**	−123.6*	−395.0**
	(−1.9)	(−5.0)	(−2.7)	(−5.6)	(−2.0)	(−4.5)
Pentagon	1,307.2^{+}		1,618.9**		1,188.5**	
	(1.8)		(4.8)		(4.5)	
Daily market accessible by car in terms of GDP	0.0^{+}	0.0**	0.0^{+}	0.0**	0.0	0.0**
	(1.8)	(3.9)	(1.7)	(4.1)	(1.3)	(3.1)
Motorways	4,641.9**	8,4137.6**	−356.4	37,983.8**	458.3	30,235.8**
	(3.1)	(3.8)	(−0.4)	(3.2)	(0.6)	(3.0)
Social benefits and transfers	−15,286.7**	−4,246.4*	−18,417.3**	−3,714.0**	−6,329.6**	1,911.9*
	(−10.2)	(−2.3)	(−20.2)	(−3.8)	(−8.3)	(2.4)
$\psi^{(2)}$ (between-nation variance)	18,600,000**	3	15,700,000**	0	9,454,841**	1
$\psi^{(1)}$ (between-region variance)	8,201,221**	986,860**	1,774,661**	323,108**	10,79,556**	308,152**
θ (residual variance)	600,334**	355,534**	248,105**	91,315**	179,840**	52,367**
Intra-class correlation between nations	0.68	0.00	0.89	0.00	0.88	0.00
Intra-class correlation within nations	0.98	0.74	0.99	0.78	0.98	0.85
Wald-χ^2	12,832	935	15,388	681	15,670	697
Log-likelihood	−14,544	−1,298	−13,722	−1,192	−13,424	−1,154
No. (no. of regions)	1,736	161	1,736	161	1,736	161
	(215)	(29)	(215)	(29)	(215)	(29)
Akaike's information criteria	29,143	2,643	27,498	2,431	26,902	2,356
Bayesian information criteria	29,290	2,717	27,645	2,505	27,049	2,430
Pseudo-R^2	0.76	0.97	0.66	0.94	0.64	0.91

Notes: t-values in parentheses. The regional GDP, the MI and DPI per inhabitant (in PPP) were available for 215 NUTS2-regions in 21 member states of the EU (the 25 EU states without Cyprus, Luxembourg, Malta, and Slovenia). 'NMS7' are seven of the ten new member states which acceded in 2004 to the EU. The time dummies and the constant which were included in the models above are omitted in the table. $^{+}P<0.10$; $^{*}P<0.05$; $^{**}P<0.01$.

almost 90 per cent. The within-nation variance for the 21 EU countries decreases by 72, 89 and 90 per cent in comparison to the models portrayed in Table 5. The three Models 1, 3, and 5, therefore, explain a considerable part of the between- and within-state differences (Singer and Willet, 2003, Chapter 4).

In conclusion, the regional economic and income situation can be explained largely by the regional economic, labour market and settlement structures. Urban regions with a good research and traffic infrastructure, qualified employees, a high employment rate, and knowledge-intensive services are the best predictors for a high-income level. However, in Europe these pre-requisites are extraordinarily unequally distributed. The input for innovation (research and development expenditures and personnel) and the output of innovative processes (patents, knowledge-based industries, and services) in Europe are mostly concentrated in the Western and Northern EU countries. The specialized knowledge, research, and patent-intensive industries are a peculiar among few countries in the core regions of Europe. In these regions high research expenditure and intensive patent activities are accompanied by a strong, knowledge-based industry. This might imply that the shift to a knowledge economy strongly counteracts the convergence processes, which have been described in the previous section.

Conclusions

Heterogeneous economic and social living conditions in different regions are a crucial challenge in every territorially based governance system because this heterogeneity may be transformed into regional inequalities and thus threaten the social integration and the political integrity of a political community (Ferrera, 2003; Bartolini, 2005). Even if the EU cannot be compared with a nation-state, the rising dissatisfaction with the EU and its current crisis indicate that the EU may also be confronted increasingly with the transformation of heterogeneity into inequalities, and the corresponding claims and expectations. Therefore, the 'strengthening of economic and social cohesion' (article 2 of the treaty establishing the European community) becomes an increasingly important goal.

A precise understanding of the patterns and dynamics of social inequalities is, therefore, a pre-requisite for the evaluation of the chances to overcome the current stalemate in the European integration process. In this article, it has been shown that the within-state inequalities in the enlarged Europe have increased by 15 per cent over the last eight years at the level of the NUTS3-regions, while the between-nation inequalities in Europe have fallen by 45 per cent. Most of the regional economic inequalities in Europe are within-nations (67 per cent at the NUTS3-level, 84 per cent at the NUTS2-level). The inequalities in the enlarged EU are shrinking at an average of 1.9 per cent per year.

Two conclusions can be drawn from these results: on the one hand, national forms of solidarity and redistribution are challenged in an increasingly open and liberalized economy. The considerable increase in regional inequalities in 17 of 21 EU states was interpreted as a consequence of economic liberalization 'unfreezing' the territorial dynamics, especially in the former socialist countries. The increased openness and Europeanization of national economies manifest themselves in an increasing economic heterogeneity within the nation-states. The considerably lower level of within-nation income inequalities reflects the continuing impact of national migration processes and redistributive policies. On the other hand, in an increasingly globally integrated society, the EU has created a relatively homogeneous political, social, and economic space, which allows for the reduction of regional inequalities in Europe. Such a relative closure of a European regulatory and economic field has been achieved first by supranational redistribution, second by the legal harmonization of the national social security regulations in Europe, third by the voluntary coordination of national social and employment policies, and last but not least by the creation of a common legal space for economic activities. The *acquis communautaire*, which guarantees relatively homogeneous legal and regulatory conditions for economic activities in Europe, is the major pillar of European cohesion policy.

In the next step, we analysed the factors, which shape the patterns of regional inequality in Europe. It could be demonstrated that regional labour market and economic structures (especially the regional level of employment and qualifications and the share of service employees) has a significant impact on the regional income level. As predicted by the new growth theory, the accumulated competences and abilities of a region play a crucial role for its economic performance. As predicted by the new economic geography, the settlement structures, the population density and the traffic infrastructure also determine the regional income level: it is highest in the classic European core region, the so called pentagon, as well as in service-based regions with a good traffic infrastructure. Contrary to expectations, the share of

employees in high-technology industries is correlated negatively with the regional economic performance, while the share of research and development expenditure has no significant impact on the economic and income situation—possibly a result of relocation processes.

Social inequalities can be analysed, therefore, less and less exclusively within the framework of nation-states. Both the causes of social inequalities as well as their regulation are shaped increasingly by the EU. This is not the result of a European welfare state similar to national ones. Nevertheless, in the tension between national redistributive policies and global economic challenges, a particular social dimension of the European integration process is emerging that is based less on redistribution but more on the supranational regulation of economic, social, regional, and employment policies and the integration of the national markets. This may explain the observed reduction of the regional (and also individual; cf. Härpfer and Schwarze, 2006) inequalities in Europe.

However, this transnational convergence does not solve the problem of the shrinking support for the European integration process. The dissatisfaction with Europe seems to be mostly a result of the increasing regional (and also individual; cf. Smeeding, 2002) inequalities at the national level. This refers to a fundamental dilemma of the EU: on the one hand, the Europeanization of the economy threatens the former guarantees of similar living conditions within the European nation-states. On the other hand, it contributes effectively to the reduction of between-nation inequality. However, this will not improve public support for European integration because the most important reference group is still the compatriots. Norms of solidarity refer primarily to a national community. The pursuit of the European integration process, therefore, may not be possible without new, transnational concepts of solidarity, equality, and justice.

Notes

1. Firebaugh (2003: 26) analysed the average income inequality from 1820 to 1992 in 33 homogeneous countries or groups of countries. He pointed out that the inequality reached its maximum within these (groups of) countries in 1910 and then—with the creation and expansion of national welfare states—receded quickly until the 1970s. This was accompanied by an accelerated increase in the inequalities between the states. The decrease since then can be explained above all by the above-average growth of China and South Asia. In Western Europe the weighted within-nation income inequalities rose from 1980 to 1995 (+7.7 to +10.4 per cent taking the Theil, respectively the MLD indices; cf. Firebaugh, 2003: 161), while the inequalities between the 16 Western European countries possibly decreased (Firebaugh and Goesling, 2004: 296).
2. 'Europeanization of social inequalities' refers to transnational processes caused by the European integration, which shape the distribution of scarce and desired goods and positions thus shaping the life chances, the social identities, the interests, and values of individuals and social groups (cf. Heidenreich, 2006).
3. The nomenclature of territorial units for statistics (NUTS) is a three-level hierarchical classification that provides a single uniform breakdown of territorial units for the production of regional statistics for the European Union.
4. It has been suggested by a referee to further investigate the time-series properties of our data, in particular the question of whether the variables are stationary. If the data are characterized by a stochastic trend, then the estimators are likely to produce spurious results. Although there is some force to this objection, the results presented are not expected to be biased considerably because 'problems of unit roots, spurious regressions and cointegration in panel data [...] are long-run concepts and typically lead to inferential problems if T tends to infinity' (Verbeek, 2000: 333). We refrain from applying time-series techniques since first differencing and/or including lagged variables would result in a serious loss of information in view of the fact that only nine longitudinal observations are available per unit. However, if better data with more time-series observations is accessible, an improvement of the estimations will be possible and should be considered as a task for future research.
5. The statistically insignificant impact of the R&D expenditures does not mean that R&D has no impact on regional welfare. It might be a result of the strong concentration of these expenditures: One quarter of the Europe-wide research and development investment (R&D) is transacted in only seven regions—namely in four German

regions (upper Bavaria, Stuttgart, Darmstadt, and Cologne), in Denmark, in the Ile-de-France (Paris), and in the Rhône-Alpes.

Acknowledgements

We are grateful to Johannes Schwarze and two anonymous reviewers for their methodological support and substantial suggestions that have led to major improvements in this article. The usual disclaimers apply. This article has been translated by Marc Rohr.

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Manuscript received: April 2006

Appendix Definitions of the variables used in Table 6

Variables	Definition	Expected effect
GDP per inhabitant (PPS)	GDP in PPP per inhabitant	
MI	Balance of primary income, PPP based on final consumption per inhabitant)	
DPI	DPI, PPP based on final consumption per inhabitant)	
Population change	Development of the population in the last year (per cent)	+
Participation rate	Labour force participation rates are the proportion of the working age population (between 15 and 64 years) which is either employed or actively seeking employment in per cent of the population	+
Unemployment rate	Unemployment rates (in per cent of total labour force)	–
High and medium high technology manufacturing	High and medium high technology manufacturing (chemicals and chemical products, machinery and equipment, transport equipment) (in per cent of total employment)	+
Low and medium low technology	Employment in other manufacturing industries (NACE 15–22, 23, 25–28 and 36–37)	–
Knowledge-intensive services	(Water and air transport, post, and telecommunications, financial intermediation, real estate, renting and business activities, education, recreational, cultural, and sporting activities) (in per cent of total employment).	+
Services with low knowledge requirements	Employment in other service sectors (in per cent of total employment)	–
Tertiary education	Employees with a successfully completed tertiary education (ISCED 5b, 5a, and 6; in per cent of labour force)	+
EPO-patent applications	Patent applications to the European Patent Office by priority year (per million inhabitants)	+
Population density	Average annual population (in thousands)	+
Settlement Structure	Settlement structure typology: (i) very densely populated with large centres, (ii) densely populated with large centres, (iii) densely populated with large centres, (iv) densely populated without large centres, (v) less densely populated with centres, (vi) less densely populated without centres, 1999, Source: ESPON project 3.1	–
Pentagon	The Pentagon is shaped by London, Paris, Munich, Milan, and Hamburg. Source: ESPON project 2.1.1.	+
Daily market accessible by car in terms of GDP	Daily market accessible by car in terms of GDP (MIO EUR/inhabitants * 1,000,000), 2000. Source: ESPON project 1.2.1	+
Motorways (in per cent of all roads)	Length of motorways (in per cent of length of road network	+
Social benefits and transfers (per cent of MI)	Social benefits and social transfers paid or in kind (in per cent of primary income)	+

Sources of the data: Eurostat: Regio-Database, if not mentioned otherwise.

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