

Does Germany have an East-West Problem? Regional growth patterns in Germany since reunification.

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Abstract

This paper investigates the proposition that there is a persistent income gap between East and West Germany. Starting out from the insight that any country exhibits core-periphery patterns, it argues that there is no basis to expect largely peripheral East Germany to converge to income levels of metropolitan areas in West Germany. By testing convergence separately for core and periphery areas, this paper shows that there has been strong convergence between East and West Germany after reunification, especially among peripheral districts. This process has largely been overshadowed, however, by an increasing gap between metropolitan cores and peripheral areas throughout the whole of Germany. The paper concludes that the focus on the East-West opposition in the analysis of regional growth patterns in Germany is misguided.

1. Introduction

Almost two decades after Helmut Kohl's promise of 'blossoming landscapes' in East Germany, few would still subscribe to his optimistic early view. It has become widely accepted as a fact that the gap between old and new states in Germany has not been substantially decreased after reunification. East Germany still lags behind in terms of income and employment. An extensive literature has appeared backing this claim, showing not only that convergence has been disappointing overall, but that whatever convergence existed immediately after reunification has faded in the mid-1990s (e.g. Boltho, Carlin and Scaramozzino 1997; Büchel and Frick 2001; Eckey and Schumacher 2003; Frick and Goebel 2005; Funke and Strulik 1996; Hall and Ludwig 2006; Hughes Hallet and Ma 1993; Sinn 2000).

Given this context, the question in the title of this paper seems on first sight rather absurd. It is quite obvious that East Germany has been performing less well economically than the West, and that the gap shows no signs of disappearing any time soon. However, even when acknowledging these facts, it does not automatically follow that the East-West dichotomy is the opposition to focus on. It could very well be that the average relative underperformance of the new states is a symptom of other regional divisions in Germany. Inequalities between regions within a country are of all times and places. Any country has cities alongside rural areas; all boast cores as well as peripheries, performing differently economically. In fact, the proportion of overall inequality which can be attributed to interregional inequality is not exceptionally high in Germany when seen from an international perspective (Berthoud 2004). Moreover, Germany has long suffered from other regional differences, such as the one between South- and Northwest Germany (Frick and Goebel 2005; Friedrich, Häussermann and Siebel 1986; Geppert 1999; Lammers 2003). If it can be shown that the lack of convergence between East and West is merely a symptom of 'normal' core periphery patterns within a country, this would imply that nothing

special, specifically East German is going on. In that case, it could be argued that there is no East-West problem in Germany and that the current debate about German inequality is framed incorrectly.

This paper seeks to investigate this possibility by looking at convergence of core and peripheral areas separately. By doing so, we are able to discriminate between two potential mechanisms behind the lack of convergence in Germany. First, we might find a persistent gap between the economic performances of Eastern cores (peripheries) and Western cores (peripheries), in which case we can speak of a specific East-West problem. Alternatively, there might be convergence among cores (peripheries), so that the structural difference between East and West is a matter of an unequal distribution of cores and peripheries over the two regions. In this case, the real inequality is the one between cores and peripheries, which just happens to have an East-West regional element to it.

The set-up of the remainder of this paper is as follows. The first section discusses the theoretical relevance of the research question, by framing the two potential mechanisms in terms of an opposition between neoclassical growth theory and new economic geography. The second section discusses the data and the various classifications used for identifying cores and peripheries. The analysis and results are discussed in the third section, followed by a conclusion.

2. Convergence in a diverging country: theoretical arguments

Before moving to the discussion of the mechanisms underlying the observed lack of convergence in Germany, it is worthwhile to briefly pause and question why we would expect regions to converge in the first place. The theoretical argument for convergence in incomes is derived from neoclassical growth theory (Ramsey 1928; Solow 1956; Swan 1956; Cass 1965; Koopmans 1965). Fundamentally, the argument runs that capital is accumulated more quickly in those places where the returns to capital are highest. Since there are diminishing returns to capital (a crucial assumption characterising these models), the area with the highest returns is the area with the lowest proportion of capital. Other things equal, this means that capital accumulates fastest in the poorest countries where capital is scarce, thereby initiating a catching-up process.

The convergence thesis has been tested empirically ever since the late 1980s (Abreu, de Groot, and Florax 2005; Baumol 1986; Baumol and Wolff 1988; Barro and Sala-i-Martin 1991; DeLong 1988; Durlauf and Quah 1999; Islam 2003; Sala-i-Martin 1996a, 1996b; Temple 1999). This literature has converged to the view that convergence is a fact of life, although it occurs more slowly than one might perhaps expect on basis of the theory. A convergence rate of 2% has been more or less consistently found across countries and regions (Sala-i-Martin 1996a; Sala-i-Martin 1996b; Abreu, de Groot, and Florax 2005). If a convergence rate of about 2% is the 'normal' scenario, deviations from this trend in particular cases need to be explained by factors obstructing the normal functioning of convergent market processes. In the neoclassical perspective, sustained inequality between regions can only occur when there has been (a) an

asymmetric shock, followed by (b) market failures preventing full recovery from the shock. Such market failures can usually be blamed on state interference. If we apply this theory to Germany, it suggests that the persistent relative underperformance of East Germany is due to the shock of division, followed by market failures due to interventionist policies, such as the levelling of wages in East and West after reunification (Sinn and Westermann 2001; Streeck 1997). To bring about convergence one has to remove such distortions.

New economic geography, by contrast, suggests that enduring regional differences can exist without distortions caused by government intervention. It shows how the combination of transport costs and external economies of scale can result in persistent regional inequality (Baldwin et al 2003; Brakman, Garretsen and van Marrewijk 2001; Fujita, Krugman and Venables 1999; Krugman 1991). This combination makes it attractive for industries, labourers, and research institutions to be close to one another, in order to maximize externalities while minimizing transport costs. As skilled workforces and knowledge-intensive industries cluster together, peripheral areas emerge relatively depopulated, with a low industrial base, and harbouring only constant-scale industries. Companies are attracted to areas where other companies are already located, in order to benefit from labour pools, knowledge externalities, and market access. Investment and development is thus path-dependent. Left to the market, small differences between regions, once created, may be sustained or enhanced into persistent core-periphery patterns.

What does this perspective imply for Germany? After four decades of communist planning, the new states in the East are likely to harbour fewer, smaller and less knowledge-abundant cores than the West. For East Germany as a whole this means that upon reunification, industries and skilled labour have had incentives to locate themselves in the former FRG, because of the bigger market and the availability of positive externalities there. Differences between East and West at the moment of reunification will thus have been sustained and enhanced, as East Germany loses its knowledge industries and skilled labour to the metropolitan areas in the West. However, this overall process masks some important regional differences. First of all, the decline of East German industry and skilled labour pools affects only those sectors where external economies of scale play an important role. In other words, it applies only to the industries and labour that were clustered together in cores before reunification; these are likely to have moved to the bigger cores in the West. Those areas where constant-scale industries are dominant, by contrast, do not experience a pull to the West. Here, it is simply factor costs that dominate location decisions, so that the neoclassical story of convergence should hold; low wages in the East will stimulate capital accumulation there, whereas capital abundance in the West will stimulate migration from East to West. In other words, on basis of new economic geography, we would expect peripheral areas to converge, and core areas to diverge.

What is more, this divergence among cores is a process that is not likely to be a specifically East-West story. New economic geography analysis applies to a situation of

monopolistic competition. In such a situation, a certain number of suppliers emerges, operating at a certain scale and a certain cost price, all dependent on the size of the market. If, like in the case of Germany, we have two such economies which are initially closed-off from each other, they each develop a certain number of suppliers serving their respective (internal) markets. Upon reunification, companies from both countries are able to benefit from the larger market and to start producing on a larger scale. A process of competition ensues, until eventually the united economy settles on an equilibrium with a smaller number of producers than the two closed economies (the GDR and FRG) combined (Behrens and Murata 2006; Feenstra 2003, Chapter 4; Krugman 1979). Given the link between monopolistically competitive industries and geographical cores, this means that united Germany can be expected to sport a lower number of core-regions than the former East and West together. Somewhere, therefore, cores are likely to have turned into peripheries. The cores most likely to turn into peripheries are those at the smallest scale, enjoying less positive externalities. These lie disproportionately in the East, but by no means exclusively so. In other words, we expect the process of reunification to have initiated a process of divergence between smaller and bigger cores in the West as well. ‘Peripherisation’ is not an exclusively East German phenomenon.

3. Bringing in the data

On basis of the theory, we can identify two possible mechanisms behind the lack of convergence observed in Germany after reunification. First, if the problem is market distortions due to excessive regulation and market intervention (Sinn and Westermann 2001), then we should find an absence of convergence both among cores and among peripheries. Alternatively, if the new economic geography explanation holds, then we expect divergence among (initial) core areas throughout Germany as a whole, but not specifically between East and West. At the same time, we expect peripheries to converge.

In order to identify which of the two explanations is most convincing, we split the sample of German regions into core and peripheral areas and analyse them separately. The main data we use come from the *Volkwirtschaftliche Gesamtrechnungen der Länder, Ergebnisse der Revision 2005*, provided by the *Statistische Ämter der Länder*. This set provides information on GDP, sectoral employment and Gross Value Added, and population for all the 439 German *Kreisen* (districts) in 1992 and from 1994 to 2004. To this we added data from Eurostat about urbanization.

The main challenge in this project is identifying core and periphery areas. This requires some judgment calls on the part of the researcher, since these concepts do not form not clear-cut categories. Cores can be defined as urban agglomerations, with a strong industrial base, an advanced service sector, and a relatively highly educated population. There are various ways of classifying districts. A classic typology has been provided by Christaller (1933), who distinguished *Marktort*, *Amtsort*, *Kreisstadt*, *Bezirkstadt*, *Gaustadt*, *Provinzstadt*, and *Landstadt*.

Not all categories in Christaller's taxonomy are still relevant today, however. Hall (2005) argues that the five lower levels of Christaller's system are of limited significance in contemporary Europe. In any case, they tend to operate at sub-*Kreis* level and are therefore of limited use to this study. At the upper end, Hall argues that Christaller's taxonomy needs to be supplemented by at least two levels, *sub-global cities* and *global cities*. Thus, we get *provincial towns* (cities with a population 100.000-250.000¹), *regional towns* (population 250.000-1000000), *sub-global cities* (1.000.000-5.000.000) and *global cities* (>5.000.000). This typology forms the principal basis for our classification of districts into cores and peripheries. In order to test the robustness of our results, however, we have experimented with several other indicators for core-ness. We have applied the OECD classification of urban, semi-urban and rural districts, and classified districts on basis the share of various economic sectors. A classification based on economic sectors is attractive, because it corresponds most closely with the theoretical framework behind our endeavour. According to the new economic geography perspective, the relevant distinction between districts is on basis of the prominence of sectors exhibiting external economies of scale. Core districts, enjoying strong external economies of scale, are likely to diverge, whereas areas characterised by constant returns will converge. An identification of cores on basis of the share in GDP of those sectors most likely to portray positive externalities—financial services and non-construction industry—offers a good way to test this proposition.

One could argue that a single criterion for identifying cores and peripheries in both East and West Germany is not useful, given the differences between the two regions. Districts that served as cores in the former GDR might not show up as such on basis of criteria developed for Germany as a whole—Eastern core districts might still be smaller, enjoy lower incomes, and boost less industry than a Western peripheral one. For this reason, we also have developed a classification of cores on basis of districts' concentration of economic activity relative to that of the region as a whole. If a district's GDP per square kilometre is more than 20 times the regional (i.e. Eastern or Western) average, we classify it as a core district. To check robustness further, we have varied the cut-off point in order to see if this changes results.

A downside of all these classifications is that they are all applied at the district level, whereas one could argue that a core region covers various districts. A classification that is delineating core regions on a supra-district basis is the category of European Metropolitan Regions, of which united Germany has eleven². Alternatively, one could interpret core regions as

¹ To identify cities we use the administrative classification of 'kreisfreie Stadt'. A 'kreisfreie Stadt' is an administrative term denoting an urban district, i.e. a city that forms an administrative district in its own right. Typically, any city with a population above 100.000 becomes a *kreisfreie Stadt*, so that. The state of Baden-Württemberg uses the term 'Stadtkreis' instead 'kreisfreie Stadt', which denotes the same thing. Thus identified cities include all Stadtkreisen, kreisfreie Städte, and the Stadtverbandes Saarbrücken in Saarland (which does not have any kreisfreie Städte).

² Metropolitan regions are voluntary cooperations between various districts, whose economic structures are assumed to be strongly intertwined. *Die Europäischen Metropolregionen in Deutschland verstehen sich als hochverdichtete Agglomerationsräume mit herausgehobener Bedeutung und Einbindung in das internationale Netz der Großstadregionen. Im Besonderen sind sie durch wirtschaftliche Stärke, leistungsfähige Infrastruktur, politische und wirtschaftliche Entscheidungsebenen, ein kleinmaschiges Netz an produktionsorientierten Dienstleistungsunternehmen und ein großes Bevölkerungspotenzial*

clusters of urbanized districts; urbanized and semi-urbanized districts geographically belonging together. Inspection of Figure (1) provides us with 14, maybe 15 such core regions, five of which lie in the former GDR. Problems with these categorizations are that they are rather subjective, one ends up with a low amount of core areas, and one has to stretch it a little to make sure they do not all lie in the former FRG. A better way to take supra-district relations into account is therefore to identify cores by looking not only at characteristics of the district itself, but also at the characteristics of the neighbouring districts. As an example of this, we develop a classification on basis of both the OECD urbanization classification for the district itself and the share of neighbouring districts that are urbanized. Finally, in addition to testing them one by one, we have also created an index of ‘core-ness’ combining the above criteria³.

Table 1 gives an overview of the distribution of cores and peripheral regions over East and West Germany. It shows that West Germany has a consistently higher ratio of cores than the former GDR. Some of the classifications arrive at broadly similar numbers and ratios of cores for both East and West, whereas others differ substantially. Table 2 shows that most of classifications are significantly correlated with each other, lending some support to the validity of each of the classifications.

Table 1 Distribution of Cores over East and West

	FRG	GDR	Ratio FRG/GDR
Total number of districts	327	112	2,9
<i>Cores according to:</i>			
Coreindex	108	30	3,6
GDP share of sectors with externalities above 0.5	167	2	83,5
Urban (OECD)	159	29	5,5
Landstadt and above	75	5	15,0

gekennzeichnet. Als Motoren der gesellschaftlichen, wirtschaftlichen, technischen, sozialen und kulturellen Entwicklung steigern sie die Leistungs- und Konkurrenzfähigkeit Deutschlands und Europas. The Metropolitan regions are: Rhein-Main, Hamburg, Bremen-Oldenburg, Berlin-Brandenburg, Hannover-Braunschweig-Göttingen, Rhein-Ruhr, Halle/Leipzig-Sachsendreieck, Frankfurt/Rhein-Main, Nürnberg, Rhein-Neckar, Stuttgart, München. See Appendix A for an overview of districts participating in the various metropolitan regions.

³ The core-index is based on the Christaller-Hall typology, the OECD classification of urbanization for the district itself, the percentage of neighbouring districts classified as urban by the OECD, income per square kilometre relative to that of the region, population density, the share of GDP provided by the primary sector, and the share of GDP provided by those sectors likely to portray external economies of scale.

City districts (Stadtkreis)	90	26	3,5
Part of Metropolitan area	120	23	5,2
GDP/km ² > 5 times regional level	74	26	2,8

Table 2 Correlations between classifications

		Urban (OECD)	Coreindex	GDP share of sectors with externalities above 0.5	GDP/km ² > 5 times regional level	Landstadt and above	City districts (Stadtkreis)	Part of Metropo litan area
Urban (OECD)	Pearson Correlation	1	,618(**)	,099(*)	,445(**)	,348(**)	,575(**)	,107(*)
	Sig. (2- tailed)		,000	,039	,000	,000	,000	,025
Coreindex	Pearson Correlation	,618(**)	1	,134(**)	,347(**)	,138(**)	,484(**)	,074
	Sig. (2- tailed)	,000		,005	,000	,004	,000	,123
GDP share of sectors with externalities above 0.5	Pearson Correlation	,099(*)	,134(**)	1	-,043	,065	-,085	,130(**)
	Sig. (2- tailed)	,039	,005		,373	,177	,077	,006
GDP/km ² > 5 times regional level	Pearson Correlation	,445(**)	,347(**)	-,043	1	,194(**)	,755(**)	,117(*)
	Sig. (2- tailed)	,000	,000	,373		,000	,000	,014
Landstadt and above	Pearson Correlation	,348(**)	,138(**)	,065	,194(**)	1	,119(*)	,087
	Sig. (2- tailed)	,000	,004	,177	,000		,013	,067
City districts (Stadtkreis)	Pearson Correlation	,575(**)	,484(**)	-,085	,755(**)	,119(*)	1	,146(**)
	Sig. (2- tailed)	,000	,000	,077	,000	,013		,002
Part of Metropolitan area	Pearson Correlation	,107(*)	,074	,130(**)	,117(*)	,087	,146(**)	1
	Sig. (2- tailed)	,025	,123	,006	,014	,067	,002	
	N	439	439	439	439	439	439	439

** Correlation is significant at the 0.01 level (2-tailed).

As might be expected, whereas correlations among categorizations are usually significant, the intercategory correlation is weaker or absent for those criteria arriving at distinctly different numbers of cores and peripheries (the externalities-criterion in particular). Although we include

them in the remainder of the analysis, these classifications are to be interpreted with some caution.

4. Results

Turning to the actual analysis, we find indeed that per capita income in the former GDR converges to Western levels up to the mid-1990s, after which the gap between the two regions does not significantly decrease any more (Figure 2).

This picture changes quite dramatically when we split the sample in two, distinguishing cores and peripheries following the various categorizations discussed above. In our analysis, we focus on β -convergence, as defined by Sala-i-Martin (1996b). Let $\gamma_{t,t+T} = \log(y_{t+T}/y_t)/T$ be the economy's annualised growth rate between t and $t+T$, where y_t denotes the economy's GDP per capita at time t . In order to determine β -convergence, we estimate the function

$$\gamma_{t,T} = \alpha + \beta \log(y_t) + \psi X_t + \varepsilon_t,$$

where X_t denotes a vector of variables that determine the steady state of an economy, including human capital and the age-make up of the population. Also, we control for variables that are known to influence growth in Germany, such as the size of the economy of other municipalities in the district, the size of the surrounding state's economy, and proximity to the former East-West border (Redding and Sturm 2005). If, controlled for all these variables we find that $\beta < 0$, we say that the economy exhibits β -convergence.

In line with our predictions, we find considerable convergence among peripheral regions, at rates ranging from 3% to 46%, depending on the categorization applied (see Table 2). The separate positive GDR-effect on growth usually becomes weaker or even changes sign when overall convergence becomes stronger. This indicates that the catching up by East German districts is a symptom of the more general trend of catching-up by poorer peripheries to richer peripheral districts.

Table 3 Differences between cores and peripheries

<i>with Berlin =West</i>						
<i>Weighted for population</i>	<i>GDR</i>	<i>T</i>	<i>s.e</i>	<i>Convergence</i>	<i>T</i>	<i>s.e.</i>
<i>All</i>	<i>,327***</i>	<i>80,324</i>	<i>,000</i>	<i>,067***</i>	<i>28,464</i>	<i>,000</i>
<i>Cores</i>						
Landstadt and above	,324***	63,268	,000	,245***	86,040	,000
Urban	,344***	71,774	,000	,302***	115,959	,000
Part of Metropolitan area	,470***	72,554	,000	,071***	21,452	,000
GDP share of Sectors with Externalities above 0.5	,166***	49,644	,000	,060***	18,240	,000
GDP/km ² > 5 times regional level	,293***	34,246	,000	,097***	17,412	,000
City districts (Stadtkreis)	,236***	29,702	,000	,112***	20,606	,000
Coreindex	,458***	89,399	,000	,320***	115,814	,000
<i>Peripheries</i>						
Landstadt and above	,012***	3,760	,000	-,232***	-74,141	,000
Rural	,178***	14,982	,000	-,294***	-51,199	,000
Rural and semi-urban	-,069***	-9,782	,000	-,456***	-141,721	,000
Not part of Metropolitan area	-,046***	-6,907	,000	-,027***	-7,286	,000
GDP share of Sectors with Externalities under 0.6	,567***	60,099	,000	-,184***	-51,709	,000
GDP/km ² < 5 times regional level	,137***	28,051	,000	-,113***	-41,895	,000
Rural districts (Landkreis)	,123***	23,141	,000	-,142***	-52,401	,000
Coreindex	-,131***	-17,259	,000	-,451***	-133,822	,000
Semi-urban	-,153***	-32,885	,000	-,496***	-129,754	,000

Breaking down the sample further into Eastern districts and Western districts reveals that convergence among peripheries is especially strong in Eastern Germany (with convergence rates

ranging from 16 to 53%), with weaker and slightly more ambiguous results for the West (Table 3). All in all, looking at peripheral regions the convergence thesis is not only supported, but convergence also seems to take place at a substantially higher rate than the allegedly ubiquitous 2% reported by Sala-i-Martin (1996b).

Table 4 Differences between East and West

<i>with Berlin =West</i>						
<i>Weighted for population</i>	<i>Convergence in East</i>	<i>T</i>	<i>s.e</i>	<i>Convergence in West</i>	<i>T</i>	<i>s.e.</i>
<i>All</i>	-,332***	-73,778	,000	,118***	57,431	,000
<i>Cores</i>						
Landstadt and above	,406***	81,032	,001	,223***	80,262	,000
Urban	,272***	26,475	,001	,264***	106,491	,000
Part of Metropolitan area	-,474***	-52,290	,001	,056***	17,118	,000
GDP share of Sectors with Externalities above 0.5	-1,297***	-121,487	,001	,090***	27,779	,000
GDP/km ² > 5 times regional level	,092***	12,374	,001	,153***	34,186	,000
City districts (Stadtkreis)	,137***	15,760	,001	,132***	29,803	,000
Coreindex	,118***	16,495	,001	,312***	120,597	,000
<i>Peripheries</i>						
Provinzstadt and smaller	-,365***	-90,933	,001	-,093***	-32,226	,000
Rural	-,164***	-21,740	,002	-,165***	-40,721	,000
Rural and semi-urban	-,505***	-122,079	,001	-,262***	-110,774	,000
Not part of Metropolitan area	-,274***	-57,276	,001	,120***	40,812	,000
GDP share of Sectors with Externalities under 0.5	-,370***	-77,909	,000	-,113***	-38,403	,000
GDP/km ² < 5 times regional level	-,495***	-111,487	,001	,000(f)	-,135	
Rural districts (Landkreis)	-,468***	-102,974	,001	-,012***	-5,602	,000
Coreindex	-,533***	-118,880	,001	-,256***	-102,201	,000
Semi-urban	-,533***	-105,349	,001	-,285***	-99,898	,000

Looking at core districts, the case for splitting the sample is supported as well, as the story is radically different from the one in peripheries. Instead of convergence, we find strong indications for divergence between core districts, at a rate of between 7-32%. This divergence does not seem to hold for the development of the East versus the West, however: a separate, strongly positive GDR-effect can be observed. This suggests that, for cores, divergence within regions coincides with convergence between regions. To check this interpretation, we have investigated convergence for cores in each region separately. For cores in West Germany, divergence rates can be found of 5 to 31%. Within East Germany, no robust results obtain, although most of the classifications point at divergence as well. Some of the criteria indicate convergence, though, making a clear-cut conclusion about convergence among East German cores impossible. In any case, divergence seems weaker among Eastern core municipalities. This suggests that due to their numerical dominance, Western core's divergence is the main factor behind the overall divergence we found among cores in general. Such overall divergence among cores is in line with our expectations. However, against this general trend, Eastern cores are catching up with Western ones.

Table (4) summarizes the results. It clearly shows that splitting up the sample into core and periphery areas gives us significantly more refined insights about convergence. Neoclassical convergence simply appears to be absent after 1996 if we do not make a core-periphery distinction. If we do make such a distinction, however, convergence turns out to be actually occurring at rather high rates among peripheral regions and within East Germany, with divergence affecting core districts especially in the West. The overall lack of regional convergence in Germany thus seems to be primarily driven by what happens among (especially West German) core agglomerations rather than by a specific East-West problem.

Table 5 Results

Period 1996-2004	<i>Cores and Peripheries</i>	<i>Peripheries</i>	<i>Cores</i>
<i>East</i>	Convergence: 33%	Convergence: 16% to 53%	Ambiguous
<i>West</i>	Divergence: 12%	Ambiguous	Divergence: 9% to 31%
<i>Germany</i>	Divergence: 7% GDR-effect: 33%	Convergence: 3% to 46% GDR-effect: Ambiguous	Divergence: 7 to 32% GDR-effect: 10% to 47%

These findings support the new economic geography story. Reunification of Germany has created a common market. In a market situation of monopolistic competition, a unified market allows fewer suppliers than two separate markets combined. Since in economic geography suppliers

reaping external economies of scale and clusters are linked, this implies that reunification will have caused an overall drop in the number of cores alongside a general rise in income. The cores most likely to lose in this intensified competition are the ‘less core-like’, poorer districts. As a result, we find that the shake-out of cores as a result of reunification translates in divergence among core districts and an intensification of core-periphery patterns in Germany. At the same time, we find convergence among those municipalities where external economies are not likely to play a role—peripheries.

Further insight in the validity of this ‘peripherisation’ thesis can be obtained by varying the cut-off point for categorising districts as cores or peripheries. If the process we are observing is one of smaller cores becoming peripheries, then raising the mark for cores should mean that the observed divergence among cores disappears. After all, by raising the cut-off point high enough, we leave only sustained cores in the core category, lumping old peripheries and demoted small cores together into the club of new peripheries. Indeed, we find that raising the income density criterion from 5 times the regional average to 15 times leaves us with two convergence clubs; both cores and new peripheries converge among themselves, while the gap between them increases.

5. Conclusion: Convergence under worsening conditions

Conventional wisdom has it that the gap between East and West Germany has not shrunk after reunification. In this paper, we argue that this observation is dependent on the way the analysis is framed. If one starts out comparing the East as a whole with the West as a whole, one will find differences between the East as a whole and the West as whole. This result is simply due to the fact that all possible differences within the sample will show up as an East-West contrast. A perspective open to other potential fault lines provides different results.

Indeed, when adding a relatively simple classification into core and peripheral areas, we find that the East turns out to be catching up with Western levels of income quite rapidly. Peripheral areas are converging across Germany as a whole and especially between East and West. The same is true for small cores. However, the growing gap between large cores and small cores/peripheries in entire Germany makes that the East as a whole—boasting no big cores—continues to lag behind the West.

This is hardly the specific East-West problem suggested by much of the literature (e.g. Sinn 2001; Sinn and Westermann 2002). Eastern districts have certainly been catching up with those Western districts that are comparable. At the same time, (Western) peripheries and small towns have fallen further behind large cores. This increasing gap between metropolitan regions and the rest of the country is the really relevant story in Germany today. The persistent gap between the East and West as a whole is simply a symptom of that phenomenon. Whereas there is definitely a process of conditional convergence going on between East and West Germany, the conditions for small towns and rural areas are getting worse.

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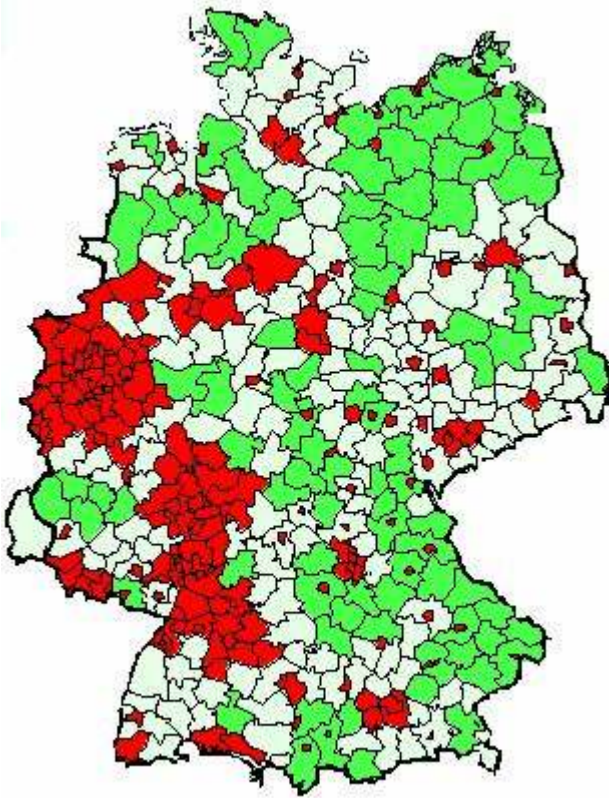
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Figure 1. District classification on basis of degree of urbanization



Core regions on basis of clusters of urbanized districts:

1. Rhine-Ruhr
2. Rhine-Main 1: Stuttgart-Karlsruhe area
3. Rhine Main 2: Frankfurt am Main area
4. Chemnitz-Zwickau
5. Saarland
6. Munchen
7. Dresden
8. Berlin-Brandenburg
9. Hamburg
10. Hannover-Bielefeld
11. Braunschweig-Gottingen-Wolfsburg
12. Nürnberg-Erlangen-Furth
13. Leipzig-Halle
14. Erfurt-Weimar-Jena
15. Bremen

Figure 1 Income per capita development in East and West

Mean BIP per capita

