Diverging cohesion? Globalisation, state capacity and regional inequalities within and across European countries

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Abstract
Why do increases in globalisation in the face of European expansion lead to sharp levels of regional divergences in wealth in some countries but not in others? The central crux of this paper is that convergence/divergence trends in European states are conditioned by 'state capacity'. State capacity – which we define here as a combination of impartial bureaucratic practices, corruption and the rule of law – limits, and in some cases reverses the tendency towards greater divergence linked to trade. Countries with high levels of state capacity – that is, those that have greater government effectiveness, stronger rule of law and lower corruption – experience lower levels of divergence, as they have the mechanisms to counterbalance the strong centripetal forces linked to openness. This claim is tested on countries that have experienced relatively high levels of increases in levels of economic and political globalisation – European Union (EU) member states – using aggregated regional-level data from 1995 to 2008. Strong and robust empirical evidence is found for this claim.

Does EU enlargement lead to uneven regional development within member states? Scholarly interest in regional inequalities – often framed as 'divergence'/'convergence' in the context of the EU – is at the nexus of research in numerous social science disciplines. Within the context of Europe, this phenomenon is one of crucial importance for policymakers and EU researchers, as convergence among EU countries and regions is one of the key policy goals of the European Commission (EC). The policy for regional convergence is clearly stated and the tools to make this happen – 'cohesion funds' – constitute about one-third of all EU expenditure, and roughly 1% of each EU member's GDP on average.[1]

Broadly speaking, the literature on regional divergence within countries goes back several decades across many disciplines. Building on the predictions from Williamson (1965), who argued that regional inequalities within a country follow an inverted 'U'-shaped pattern as a function of development, a wave of recent empirical literature from 'New Economic Geography' theory (henceforth

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'NEG', Krugman, 1991)[2] suggests that increases in globalisation tend to put pressures on states, which exacerbate differences among regions within countries. In this case, NEG, along with theories of endogenous growth (Barro, 1991; Romer, 1994), points out that some regions tend to benefit from increases in openness (often urban or capital regions) while others (often in the periphery) do not. With EU enlargement constituting a rapid increase in globalisation for member states, this topic clearly has salient implications for all EU members, as well as future EU enlargement in general.

This study investigates recent patterns of regional inequalities within EU-27 countries. For a host of reasons, many studies have argued that an enlargement of the EU leads all but inevitably to greater regional inequalities within countries, in particular within the new members (Dunford, 1994; Dunford and Smith, 2000; Heidenreich, 2003; Heidenreich and Wunder, 2008; Puga, 1999, 2002). Our argument and empirical findings add an extra degree of nuance to such claims, putting forth two modest but key contributions to this broad and multidisciplinary literature. First, the study explains variations in divergence within countries over time with a novel interaction term that builds on salient contributions from NEG, endogenous growth and Europeanisation literature. Our starting point, as with many past studies on EU regional convergence, posits that the increase in openness puts significant pressure on peripheral regions and thus is likely to increase regional divergence. In the case of Europe, the recent large expansion of the EU constitutes a significant increase in openness for both new and old members. We argue theoretically and show empirically, however, that regional divergences – in particular among new members – are not uniform or entirely inevitable. For example, we find that some countries have experienced rapid within-country divergence (Romania, Bulgaria, Lithuania), others only rather modest divergence (Estonia, Slovenia), while others display no changes at all (Austria, Finland, Sweden).

In explaining how EU states converge on a variety of issues, a 'Europeanisation' literature has emerged that studies how the external effects of EU membership/globalisation are mediated by domestic factors (for example, see Burzel, 1999; Dyson, 2002; Grabbe, 2001; Radaelli, 2005). In a similar way to such studies, this analysis highlights a novel interaction effect: the extent to which increased globalisation leads to greater regional divergence within a country is conditioned by its level of *state capacity*. State capacity is measured empirically as the *level of corruption, rule of law, and effectiveness of the public bureaucracy*. Low state capacity is often associated with higher degrees of political favouritism and clientelism (e.g. a lack of impartiality). This increases the risk that economic actors within countries will be forced to locate their activities in and around politically important regions (often urban and/or the capital region) in order to establish clientalistic networks, thus leaving peripheral regions behind.

Second, we test this claim empirically using panel data for all available EU countries. Employing the latest regional-level data available for European countries at NUTS 2 and NUTS 3 levels (from 1995–2008), we find that while EU-wide convergence has occurred overall, divergence has afflicted several individual countries. We posit that this pattern is associated with the shock of entering the common EU market, as predicted by several schools of thought on this topic, including NEG and new growth theory. However, we find that the extent to which states experienced regional divergence is a direct function of their level of state capacity during this time of transition. Using several different measures of 'divergence', we find the interaction between globalisation and state capacity to be highly robust. The findings point to several policy concerns for future enlargement.

What leads to regional inequality?

Jian et al. (1996: 2) point out that 'Since there is no accepted model of economic growth, there is no single theory of economic convergence'. Scholars from a host of disciplines have been interested in the question of regional inequality for decades, and empirical and theoretical analyses focusing on regional inequalities began many years ago (Myrdal, 1957; Williamson, 1965). Moreover, it should be stressed

that the literature on differences in economic divergences between countries is theoretically and empirically distinct from that on regional divergences within them. While space does not permit an entirely comprehensive review of this literature, we summarise several relevant strands in this section.

First, building on Kuznets' (1955) curve hypothesis, the neoclassical explanations postulate that regional divergence/convergence is a natural function of a country's development. Scholarship within this model tends to stress the non-linear 'bell curve' pattern of regional inequalities, highlighting factors such as competitive advantage and constant returns to scale as key mechanisms behind changes in regional inequalities. Based on the Solow-Swan growth model, which stresses the ratio of capital (K) to labour (L), we should expect convergence (or equality) when there is a relatively free level of mobility for K and L. In essence, while labour in poor regions tends to migrate to capital-rich areas, capital tends to go towards low-K, high-L areas. Thus, poorer regions with a lower ratio of K to L will tend to grow faster than those with a higher ratio of K to L. Such mechanisms favour more competitive 'core' regions with technological and infrastructural advantages in early stages of development due to economies of scale, yet after a period of excessive agglomeration in more developed regions, less developed regions become more attractive and gain investment, and cohesion occurs (Myrdal, 1957; Williamson, 1965).

Second, taking issue with the assumed exogenous rate of technological advancement in the neoclassical model, several scholars put forth endogenous growth models (Barro, 1991; Romer, 1994). Romer (1994) adds the element of endogenous technological advancement into the equation and argues that inequalities among regions will remain as long as the gains from such technology return to scale. This tends to favour regions that are well endowed in K to L as such gains can be reinvested in human capital, allowing rich regions to maintain their advantage over poorer ones (Jian et al., 1996: 2–3). Such theories focus on how initial environment and interactions between several domestic and international factors lead to greater concentrations of wealth if not offset by policies encouraging more even growth.

Third, while some studies show the benefits of increases in trade for overall growth (Dollar, 1992; Frankel and Romer, 1999), other scholars have posited that one consequence is positively linked with regional inequality. Based on the work of Krugman (1991), several studies have developed models of the 'New Economic Geography' (NEG), which elucidates the effects of how globalisation and openness to trade produce tensions for regional balances, via 'centrifugal' and 'centripetal' forces. Centripetal forces include factors such as the distance between consumers and suppliers, which along with innovation and learning tend to lead to a build-up of economic activity in particular areas. Centrifugal forces, on the other hand, such as immobile labour or land, poor environmental quality or high transport costs, discourage investment from certain regions. Thus, factors such as the economics of scale, transportation costs, and market size lead to uneven development, at the cost of more peripheral areas (Puga, 2002). For example, Krugman and Livas Elizondo (1996) explain regional imbalance in the Mexican context as a function of increased openness to trade, while Paluzie (2001) shows additional formal support for this argument.

Building in one way or another on all of these different channels through which development, technology and/or openness impact regional inequalities, a wealth of studies have emerged applying this literature to the EU convergence process. The overwhelming consensus is that the openness due to increased enlargement causes 'winners' and 'losers', whereby while EU states tend to converge, regions within states diverge, in particular among new members. For example, Puga (1999) argues that – in comparison with the US states – greater integration in Europe will lead to more agglomeration of economic activity and regional inequality due to less labour mobility, in particular among peripheral members. Moreover, Puga (2002) argues that in some cases, European regional policies such as transportation infrastructure can lead to a greater gap in accessibility between urban and rural regions, increasing divergence. Others point out that a reduction of trade barriers, transaction costs and weakened protected sectors, and increased capital liberalisation from enlargement will improve

the advantages of the urban areas endowed with highly skilled labour (Dunford, 1994; Ezcurra et al., 2005; Heidenreich, 2003), or that enlargement simply solidifies existing blocs of economic disparities in Europe such as North, South and East (Ertur and Koch, 2006).

Some scholars, however, point to how certain domestic institutions interact with increases in openness from enlargement, and possibly lead to greater convergence. It is argued that certain institutions are more prone to better distributing EU resources across domestic areas within countries. For example, such institutions are feder or decentralisation (Burzel, 1999; Ezcurra and Pascual, 2008; Rodríguez-Pose and Gil, 2004), or the type of capitalist economy (Falkner et al., 2004). While some posit that states that are more closely in line with the EU institutions are better equipped to adopt them and do so more quickly (Burzel, 1999).

Theory and hypothesis

The literature on regional inequalities is extensive, focusing on several key and interrelated causal factors. Building on the Europeanisation literature, which posits that domestic factors condition the extent to which European countries converge on policy (Burzel, 1999; Grabbe, 2001; Knill, 2005; Radaelli, 2005), a similar dynamic is put forth here. In short, and specifically within the EU context, the argument in this study posits an untested interaction effect: that while increases in openness tend to increase regional divergences, initial levels of state capacity at or around the time of significant increases in openness can mitigate such divergences.

The starting point of the theoretical story builds on the empirical and theoretical contributions of the NEG, which claims that increases in globalisation/trade openness tend to be positively related with regional inequalities. With respect to the effects of globalisation in the European context, it is argued that the accession path leading up to, as well as the immediate aftermath of, EU membership is an extreme form of openness in all senses, with the years leading up to official membership status constituting what is often known as an 'external shock'.[3]

This 'shock' to the system, which includes the myriad of new opportunities for growth and expansion, via entrance into a free trade zone with other wealthy member states and free trade and capital mobility, broadly benefits lesser developed countries on the whole, as predicted by neoclassical models. At the same time, it puts extreme pressures on less developed regions *within* lesser developed countries, which lack, among other things, the quality political institutions, infrastructure, or human capital necessary to remain competitive in a new free market zone.

However, state institutions can mitigate this impact. It has been posited by several leading studies that quality, impartial and uncorrupted state institutions create conditions for economic development via incentives from rules and institutions, which lower transaction costs for entrepreneurial activity and economic growth (Acemoglu and Robinson, 2012; North, 1990; Stiglitz, 1989) Empirically speaking, rather than simply confining this study to the 'rule of law', as is done in many prominent studies (Acemoglu and Robinson, 2012; North and Weingast, 1989), we look at 'state capacity' (Charron and Lapuente, 2010; Rothstein and Teorell, 2008) as a proxy for institutional quality that facilitates an overall environment for economic activity in a country. The concept of 'state capacity' is admittedly a broad one. We follow Rothstein and Teorell's (2008) operationalisation of state capacity,[4] in that a country with high state capacity is one with strong impartial institutions that treat all of its citizens in an unbiased way, regardless of wealth, political connections and ethnic background. State capacity implies a combination of several highly related concepts, which together tend to take the form of strong, impartial legal institutions that produce minimal levels of clientelism and low corruption. Conversely, in countries with low state capacity (and low impartiality, weaker rule of law) politicians in government tend to favour certain actors at the expense of others (be it via obtaining contracts, permits to start a business, or tax breaks, etc.) and are able to do so with impunity.

Countries with poor state capacity are expected to succumb to divergence pressures of openness to a larger extent than states with high state capacity. We

elucidate two principal mechanisms at work here: private (entrepreneurship) and public (investment). With respect to the first mechanism, where state capacity is low we would expect openness to lead to a concentration of 'clientalistic networks' focused mainly in the capital region, or other major urban centres of a country. When impartiality is low (e.g. high favouritism) and corruption is high, political connections are necessary to start or advance a business, and individuals have strong incentives to devote resources to making closer associations with the politicians. Therefore, it is rational, and at times necessary, for economic agents to be geographically nearer to the nexus of power, where they make and maintain their contacts. This leads to a concentration of businesses and economic activity in the capital or major urban regions, impacting the regional distribution of growth within countries. In a similar vein, Petrakos and Brada (1989) point to, and show empirically, a similar dynamic in explaining metropolitan area population growth in transitioning countries. Moreover, less impartial governments can use tools like regulation or clientelism to create an uneven playing field, favouring certain economic actors by reducing access to others, and a lack of strong and impartial rule of law essentially permits these forces to occur. Entrepreneurs who remain in peripheral regions are less likely to have access to such connections and the associated perks. For example, Charron et al. (2012) provide robust evidence that the overall levels of state capacity in a country significantly impact the spatial distribution of small and medium-sized firms in NUTS 2[5] regions in Europe.

The second mechanism pertains to necessary public sector investments for regional growth, particularly transport infrastructure (Button, 1998; Puga, 2002). Where corruption is high and the rule of law is weak, public expenditures are diverted or wasted and there are simply fewer resources available for state investments (Del Monte and Papagni, 2001). Decision-makers are likely to distort public investments and, due to weak auditing laws, award favoured interest groups public contracts that reduce the quality of overall infrastructure (Tanzi and Davoodi, 1998). This diversion of resources is most likely to negatively impact peripheral regions in weaker states, as corrupt bureaucrats might possibly permit cheap materials to be used in the construction of roads, rails or bridges, or simply ignore investments in peripheral regions altogether (Mauro, 1996). For example, Lopez et al. (2008) show that the investments in the 1990s into the accessibility and efficiency of the railway network in Spain were focused on politically and economically important regions.

EU countries with a high level of state capacity, on the other hand, tend to allocate resources more impartially, which is critical for country-wide development.[6] With the new opportunities and competition brought about by EU enlargement, a high degree of impartiality will ensure that resources are allocated more even-handedly across the country, rather than being consumed in areas such as urban and/or capital regions, where power interests tend to congregate. While in all states the exogenous shock to the system is expected to result in some short-term divergence patterns (Petrakos et al., 2005), the extent to which this occurs thus depends on the initial levels of state capacity.

In sum, in a similar way to NEG and many other studies of EU expansion, we contend that the relationship between openness and regional inequalities is positive. The argument in this paper, however, differs with respect to the mechanism behind this process. The crux of the story focuses thus on the *interaction* between the initial level of state capacity and globalisation in leading to more or less regional divergence. When countries with low state capacity undergo an 'openness shock' (such as EU membership, or the recent wave of new membership in the case of existing members), economic actors face even more pressure to geographically locate where there are more political connections, such as in urban, and especially, capital regions, at the expense of the peripheral regions.[7]

Data and design

The dependent variable: Regional inequality

The empirical literature has elucidated several measures that capture levels of inequality among countries or regions. While no one measure is perfect, we

highlight several different approaches often used by scholars in this literature. Since several previous studies have thoroughly addressed the advantages and drawbacks of the available measures,[8] we discuss only those that we use in this study.

One of the most often used measures is some type of variation of the weighted Gini index (G_w). Using the formula from Shankar and Shah (2003), we take the sum of the absolute difference of the population, weighted GDP per capita for $region_i$ and $region_j$, multiplied by the inverse of maximum value for $country_a$ ($2Y_a$). The weighted Gini index ranges from '0' (perfect equality) to $1 - (p_i - P_a)$ for $country_a$. While other measures such as the Theil index are at times used in the literature, several studies, using all measures, find that the measures are most often quite robust.[9,10]

$$G_w = \left(\frac{1}{2Y_a}\right) \sum_i^n \sum_j^n \left| y_i - y_j \right| \frac{p_i p_j}{P^2} \qquad (1)$$

For robustness purposes, we employ two additional measures: the 'coefficient of variation' (CV) and the 'relative mean deviation' (R_W), both of which are discussed in greater detail in Appendix 1.

Table 1 reports variation in the dependent variable spatially and over time, showing the so-called 'sigma converge' (σ) for all EU states, which captures absolute regional dispersion of wealth, using the Gini index and the CV.[11] We find that there is much variation in the dependent variable, both spatially and diachronically, with all New Member States (NMS)-12 countries experiencing significant diversion during this time period, while most EU-15 states do not. The exceptions to the latter case are Austria and Italy (which experienced significant convergence for both measures) and the UK and Ireland (which experienced significant divergence for both measures). Interestingly, when examining the NUTS 2 level across the entire EU for these two measures, as well as cohesion among the countries at the national level, we find that there is strong evidence supporting the occurrence of cohesion in general. Thus, we see an interesting cross-level dilemma confirming several previous studies (Cappelen et al., 2003) – that while in a broader EU-wide perspective, regions and countries have become more

harmonised with respect to wealth, in some countries regional wealth has diverged significantly.

Independent variables

Regarding other variables of interest, we operationalise the concept of openness as trade openness (*OPENNESS)* as defined in the KOF index of globalisation (Dreher, 2006, update 2011). This definition takes into account 'long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges'. The concept is constructed by combining the two sub-indices 'actual flows' and 'restrictions'. Actual flows measures the levels of Foreign direct investment (FDI) trade and country portfolio investment, whereas 'restrictions' captures the extent to which trade is inhibited through tariffs, import barriers, taxes on international trade and capital controls. We consider this as a proxy for the pressures brought on by the years leading up to, and immediately following, EU accession, for new member countries, as well as existing members who experienced an influx of new trading partners. The data show that these countries have considerably increased their respective levels of *OPENNESS* since the mid-1990s.

The second key concept, 'state capacity' (*CAPACITY*) is defined broadly as an uncorrupted and efficient public bureaucracy (often known as 'Weberian' in contrast to a patronage-based or patrimonial one), a legal system that is impartial (non-discriminatory) and enforces contracts and citizens' private property rights. As with any abstract concept in the social sciences, such as democracy or minority rights, 'hard measures' of concepts such as corruption or bureaucratic efficiency are problematic and nearly impossible to decide upon. We elect to employ two standard measures. First, we use the PRS group (an expert organisation that analyses risk in foreign investment), 'international country risk guide' (ICRG), from which we combine 'bureaucratic effectiveness', 'corruption', and the 'strength of the rule of law'. Advantages of this measure are the timeframe of availability as well as the internal consistency of the assessment. Secondly, we use 'control of corruption', 'government effectiveness' and 'rule of law' from the World Governance

Table 1. Sigma convergence/ divergence within European countries: 1995–2008.

Country	Gini Coefficient			Country	Coefficient of Variation		
	Country Specific	Time Trend	p-value		Country Specific	Time Trend	p-value
Austria	0.13***	−0.002***	0.004	Austria	0.25***	−0.004***	0.000
Italy	0.16***	−0.001**	0.020	Italy	0.29***	−0.002*	0.100
Spain	0.13***	−0.001*	0.090	Belgium	0.37***	−0.002	0.120
Finland	0.09***	−0.001	0.380	Spain	0.23***	−0.002	0.160
Belgium	0.17***	−0.0006	0.990	Germany	0.20***	−0.001	0.470
France	0.14***	−0.0003	0.610	Finland	0.16***	−0.001	0.520
Germany	0.11***	−0.0001	0.910	France	0.26***	0.001	0.420
Netherlands	0.07***	0.001	0.230	Netherlands	0.12***	0.001	0.310
Sweden	0.08***	0.001	0.160	Sweden	0.18***	0.001	0.330
Slovenia	0.11***	0.002***	0.004	Greece	0.14***	0.002	0.110
Portugal	0.11***	0.002***	0.003	Portugal	0.24***	0.002	0.130
Greece	0.07***	0.002***	0.000	Slovenia	0.22***	0.003***	0.010
UK	0.09***	0.002***	0.000	Ireland	0.28***	0.005***	0.000
Poland	0.10***	0.003***	0.000	UK	0.20***	0.005***	0.000
Slovakia	0.15***	0.003***	0.000	Poland	0.19***	0.006***	0.000
Estonia	0.16***	0.004***	0.000	Slovakia	0.39***	0.008***	0.000
Ireland	0.13***	0.004**	0.000	Estonia	0.31***	0.009***	0.000
Czech Rep.	0.10***	0.005***	0.000	Czech Rep.	0.27***	0.01***	0.000
Latvia	0.22***	0.005***	0.000	Hungary	0.28***	0.01***	0.000
Hungary	0.15***	0.006***	0.000	Latvia	0.39***	0.01***	0.000
Bulgaria	0.08***	0.008***	0.000	Bulgaria	0.15***	0.02***	0.000
Lithuania	0.08***	0.009***	0.000	Lithuania	0.13***	0.02***	0.000
Romania	0.09***	0.009***	0.000	Romania	0.17***	0.02***	0.000
EU-wide regional level cohesion							
All NUTS 2	0.33***	−0.005***	0.000	All NUTS 2	0.58***	−0.007***	0.000
Country level cohesion (within group)							
EU-27	0.27***	−0.006***	0.000	EU-27	0.51***	−0.01***	0.000
EU-15	0.12***	−0.003***	0.000	EU-15	0.22***	−0.005***	0.000
NMS-12	0.23***	−0.004***	0.002	NMS-12	0.55***	−0.015***	0.000

Note: Country-specific coefficient corresponds to approximately the Gini or CV for the year 1995, while the 'time trend' coefficient is each individual country's trend of the Gini or CV from 1995–2008. All GDP and population data were taken from Eurostat. In both columns, the countries are listed in order from the greatest change in divergence to the greatest change in convergence. White corresponds to significant within-country convergence (negative time trend) while dark grey corresponds to significant divergence (positive time trend). Light grey represents insignificant change. p-values shown for the time trend coefficient.
***p<0.01, **p<0.05; *p<0.10

Indicators ('WGI', Kaufmann et al., 2009), which is a composite index. Although not available as far back as the ICRG measure, the WGI offers a more transparent method, broader country coverage and a broader annual assessment of *CAPACITY*. Moreover, the measures are widely used in the
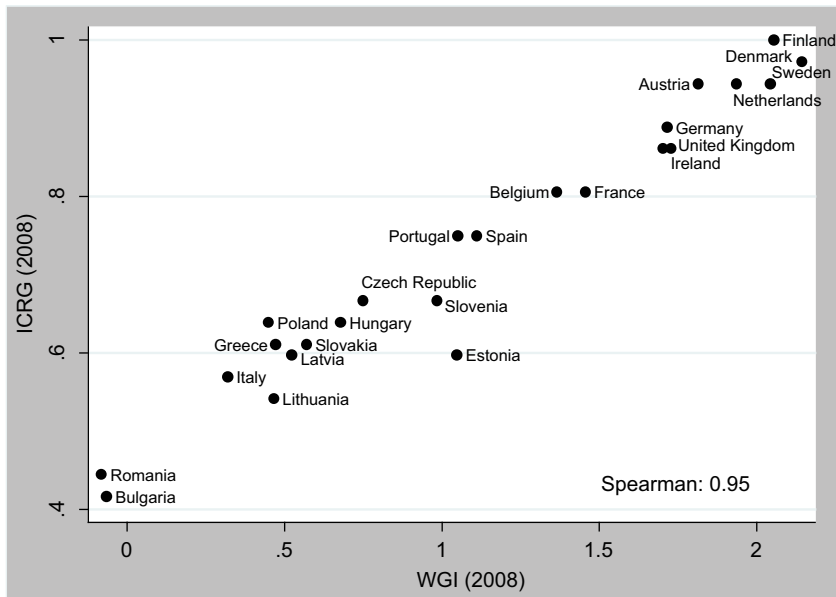
Figure 1. Two measures of state capacity in EU countries: 2008.

literature as a proxy for 'government quality' or state capacity.[12]

Both data sources, which correlate at 0.92 for the entire time series, confirm that there is a substantial degree of variation in *CAPACITY* among the states in the sample. For example, while states such as Finland, Sweden, Denmark and Netherlands are among the world's top performers, Bulgaria and Romania fall below the world average.[13] Figure 1 shows a scatterplot of the two measures for the latest year in the sample, 2008.

To test the crux of the hypothesis – that openness leads to greater divergence in countries with lower *CAPACITY* – we combine these two measures into an interaction term (*OPENNESS*CAPACITY*).

We elect to keep the models as parsimonious as possible while accounting for several control variables from the literature. First, economic development in terms of GDP per capita has been found to be a highly salient predictor of regional inequalities across countries (for example, see Ezcurra and Rapun, 2006; Wlliamson, 1965). Following the neoclassical explanations, we also acknowledge that critics might contend that the dependent variable is more

related to economic developments than *CAPACITY* – that is, that states experiencing less divergence in the face of increased *OPENNESS* are simply further along in the modernisation process. To control for this, we control for the level of economic development (*PPP per capita)* using Eurostat data. In addition, we also elect to interact this variable with *OPENNESS* in some models to compare with *CAPACITY*OPENNESS*. Since EU countries are, relatively speaking, all moderately to very developed, we expect that the level of development will be negatively associated with the dependent variable.

Several empirical studies find that the size of a country in terms of population is empirically related to regional divergence (Ezcurra and Rapún, 2006; Guoping and Hongzhong, 2003; Heidenreich and Wunder, 2008; Puga, 1999). To test whether there are any systematic trends with respect to country size and level of regional inequality (from Eurostat), we control for the population (*POPULATION*), using the logged value of *POPULATION* to avoid misleading conclusions from outliers. In checks for robustness, we rerun all models using population density as well to check

Table 2. Testing the Impact of Openness and State Capacity on Regional Inequalities: 1995–2008.

	Dep. Variable = Population Weighted Gini index							
	1	2	3	4	5	6	7	8
Economic Openness	0.001***	0.003***	0.001*	0.003***	0.001***	0.002**	0.006***	0.002***
	(0.007)	(0.001)	(0.09)	(0.001)	(0.05)	(0.04)	(0.000)	(0.01)
State Capacity	–0.067***	0.11	0.048*	0.169*	0.058**	0.151*	–0.02	–0.002
	(0.000)	(0.08)	(0.08)	(0.06)	(0.05)	–0.07	(0.82)	(0.71)
Openness*State Capacity		–0.003***	–0.001*	–0.003***	–0.001**	–0.002**		
		(0.001)	(0.006)	(0.000)	(0.03)	(0.05)		
No. of Regions	0.0006*	0.0004		0.001*			0.0002	
	(0.07)	(0.19)		(0.09)			(0.48)	
GDP p.c. (log)	0.009	0.007	–0.001	0.004	–0.001	0.026***	0.04	0.01**
	(0.15)	(0.22)	(0.62)	(0.49)	–0.55	(0.000)	(0.003)	(0.03)
Population (log)	–0.006**	–0.006**	–0.029	–0.009***	–0.024	–0.137***	–0.01*	–0.02
	(0.04)	(0.03)	(0.12)	(0.01)	(0.13)	(0.000)	(0.06)	(0.33)
NMS (1/0)	0.056***	0.048***		0.048**			0.05***	
	(0.000)	(0.000)		–0.04			(0.000)	
Decentralisaation				0.001**	0.003***	0.001***		
				–0.04	–0.25	(0.000)		
Lagged DV			0.84***		0.83***			
			(0.000)		(0.000)			
Opennenss*GDP							–0.0002**	–0.0002***
							(0.02)	(0.01)
Constant	0.13*	–0.003	0.37	0.03	0.37	1.87***	–0.23*	0.21
	(0.08)	(0.97)	(0.11)	(0.75)	(0.13)	(0.000)	(0.07)	(0.50)
Obs	318	318	298	306	286	306	318	298
States	24	24	24	24	24	24	24	24
Years	14	14	13	14	13	14	14	13
R²	0.63	0.65		0.65		0.9	0.64	
Pr. Wald χ²			(0.000)		(0.000)			(0.000)

Note: Models 1, 2, 4, 6 & 7 are estimated with Prais Winston (ar1) regression with panel-corrected standard errors (in parentheses). Openness, ICRG and GDP are lagged by one year. Models 3, 5 & 8 are estimated with FGLS controlling for heteroskedasktisktic panels and fixed effects and include a lagged dependent variable (*t*–1). *p*–values in parentheses.
p<.01***. *p*<.05**. *p*<.10*

whether concentrated populations are more prone to regional divergence.

We also control for the number of regions for each country against the background of the assumption that countries with fewer regions might have an easier time maintaining equality (*REGIONS*). In an attempt to take the sub-national level with the greatest degree of political relevance, the NUTS 2 level is used for most states, with the exception of Germany and the UK (NUTS 1). NUTS 3 level is used for five small states, which only have one NUTS 2 region (Slovenia, Estonia, Ireland, Lithuania and Latvia). The EU countries Malta, Cyprus and Luxembourg are excluded from the analysis due to the lack of regions to capture the dependent variable. *REGIONS* range from four (Slovakia) to 26 (France).

We also use a parsimonious control for geographic and historical differences across EU states. As Table 2 shows, there are systematic differences between the NMS-12 and the EU-15 with respect to *INEQUALITY*; thus, we include a dummy variable to equal '1' if a country is an NMS-12 country and '0' if not.

Finally, we control for the level of both political and fiscal decentralisation, as there is reason to believe that greater levels of decentralisation – in particular in lower-and middle-income countries – will allow for more sub-national level variation in wealth (Kanbur and Zhang, 2005; Prud'homme, 1995; Rodríguez-Pose and Escurra, 2010). While quality time series data on decentralisation is still somewhat scarce, we employ the best and most comprehensive indicator to our knowledge, the 'regional authority index' (RAI) from Hooghe et al. (2010). This index provides the most comprehensive panel data on the extent to which political and fiscal powers are decentralised for OECD countries. The RAI is based on 10 measures of political and fiscal decentralisation from 1950–2011 and is measured along eight dimensions of political, legal and economic decentralisation: institutional depth, policy scope, fiscal autonomy, representation, law-making, executive control, fiscal control, constitutional reform. We use the entire index in the main table, which ranges from 0 (no decentralisation, such as in Latvia or Slovenia) to 29.5 (Germany) and check for the isolated effects of certain aspects of decentralisation in several robustness checks. Based on the findings of previous studies of decentralisation in the EU, we expect a negative relationship with _DECENTRALISATION_ and _INEQUALITY_.[14,15] All summary statistics are found in Appendix 2.

Statistical methods

We perform several empirical tests for our hypothesis. Since the hypothesis is dynamic, we use panel regression analyses. Admittedly, panel data can be problematic. To ameliorate some of the common problems associated with autocorrelation, we use a Prais Winston estimation, with panel-corrected standard errors (PCSE), and we run several regressions, with a lagged dependent variable. By doing so, we test for the effects of the independent variables away from the first-order trends of the dependent variable. To account for any unobserved variation, unique to each country not accounted for by the other variables in the model, we run models both with and without country fixed effects. For models with a lagged dependent variable and country fixed effects, we

estimate using feasible generalised least squares (FGLS), correcting for heteroskedasticity, since variance in several of the variables are spatially unequal. Moreover, not surprisingly, several of the variables on the right-hand side of the model correlate significantly with one another, for example GDP per capita and CAPACITY (see Appendix 2). Although multicollinearity does not lead to biased estimates, it can reduce the efficiency of the standard errors. We run several model specifications, and report the variation inflation factor (VIF) for each of the models where highly correlated independent variables are included together.

Results

We begin with a few illustrative examples of the theoretical story, using only the EU members that entered in the 5th or 6th rounds of accession, taking current EU-27 members that have undergone the greatest recent increases in openness. We predicted that countries with the highest state capacity before and/or during accession would have the most even growth among their regions − in other words, the lowest change in regional inequality. Since all NMS states in our sample experienced some level of divergence during this time (see Table 1), we are thus looking at how much state capacity mitigated this change. A closer look into regional development patterns within these states corroborates several previous findings about capital region concentration of growth in NMS and finds strong evidence that this is especially occurring in cases of weak institutional capacity. Yet, in cases like Slovenia and Estonia (and especially the NMS from the 4th round of accession), we see these trends toward divergence from the pressures of openness are sizeably offset by state capacity.

But, how do we know that the pattern we find in Romania, Lithuania and Bulgaria did not happen in non-EU European countries with similar state capacity during this time? Data for regions within countries outside of the EU is of course limited over time. Therefore, to account for this possibility, we show patterns of two European non-EU27 states for which we have data at the regional level (NUTS 2), showing
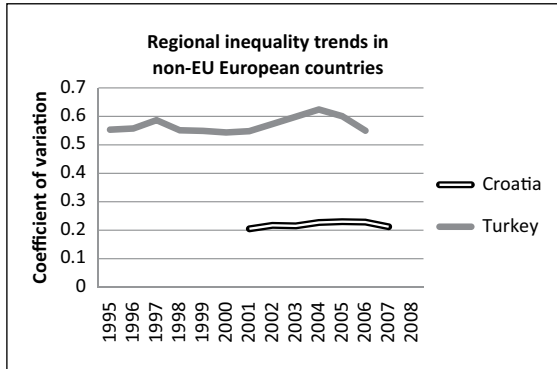
Figure 2. Regional Inequality Trends in Two Non-EU Countries: Croatia and Turkey.

the trends in regional inequality during the same time period. It should be noted that the levels of *CAPACITY* in Turkey are more or less equivalent to Bulgaria, while Croatia is indistinguishable from countries such as Latvia and Lithuania. Figure 2 shows the CV trends over time, where data are available. We notice a marked difference in the patterns of these two countries, as compared to the 5th- and 6th-round EU member states. Moreover, when performing the basic cohesion/divergence test in Table 1 for these two non-EU27 states, the data show that the modest increases in regional divergence in these countries are insignificant from their starting levels (Turkey *p*-value=0.20, Croatia *p*-value=0.76). Thus, we find empirical evidence for the 'shock value' of EU membership on new member states, with lower levels of *CAPACITY*, both when comparing within the new members and when comparing to other European, non-member states with more or less equivalent levels of capacity.

We now move from bivariate to multivariate models, shown in Table 2. In the first two models, we use the Prais Winston estimate to test the independent, baseline effects of both openness and state capacity, controlling for population, GDP per capita, the number of regions and whether a country is an NMS-12 country or not, while accounting for autocorrelation (*t*-1) and panel-corrected standard errors. We find that trade openness has a positive effect on regional inequality, while state capacity is associated with conversion, with both significant at the 99% level of confidence. Next, we test whether

there is an interaction between the two, as outlined in the hypothesis. Model 2 shows empirical support for the notion that stronger levels of state capacity can offset the pressures that trade openness applies toward inequality, as the coefficient of the interaction term is negative and significant. In model 3, we find that the effects of the interaction are robust to fixed effects and with a lagged dependent variable. Models 4 and 5 include a measure of decentralisation from Hooghe et al. (2010), which in both models is positive and significantly associated with regional cohesion. Despite several specifications and controls, we find that the conditional effects of state capacity on the pressures from openness associated with entering the common market are robust.[16]

Yet, how do we know that it is not simply 'economic development' that is the underlying source of explanation? This is admittedly very difficult to parse out empirically with this data and sample, as state capacity and GDP per capita are positively correlated.[17] To account for this, we test the interaction between GDP per capita and openness, during the same time period in models 7 and 8 for the sake of transparency of results. Not surprisingly, the interaction is significant, implying that the pressures on regional divergence caused by economic openness are also offset by economic development. We report the visual of the interaction terms with a 95% confidence interval around the estimate, based on models 4 and 8 respectively in Figure 3.

We find that *OPENNESS* has a negative impact on regional equality; in other words, it leads to divergence up until the point where *CAPACITY* is fairly high (0.81, about 0.04 above the EU mean). In cases where *CAPACITY* is above 0.81 (according to these estimates), we find the impact of *OPENNESS* on *INEQUALITY* to be negligible. Similar results are found when looking at the interaction between economic development and *OPENNESS*, whereby the impact of the latter on regional divergence becomes negligible at values of 9.6 and higher for GDP per capita (sample mean is 9.3). In Figure 4, we look at these interactions for the NMS only, focusing on changes in the dependent variable, as determined by initial levels of both state capacity and economic development. Again, although both are significantly
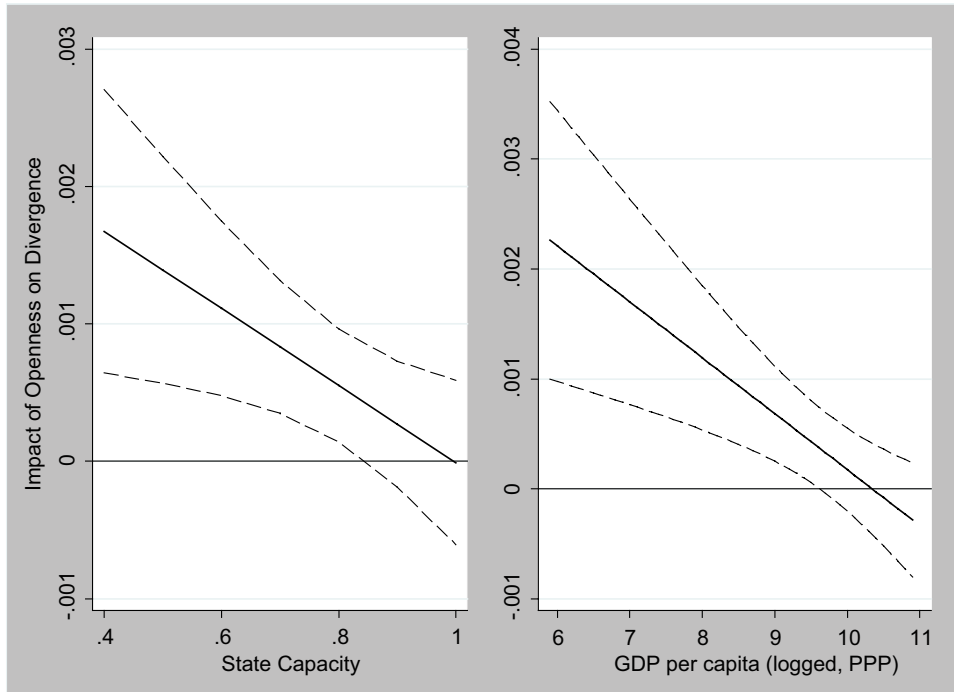
Figure 3. The marginal impact of economic openness on regional divergence at various levels of state capacity and economic development. PPP: Purchasing power parity.
Figure produced using the 'margins' command in STATA.

correlated with the total amount of divergence during the time period of 1995–2008, initial levels of state capacity explain over 70% of the variance in divergence in the NMS, while the GDP variable explains less than 50%.

In Table 3, we check the robustness of these results using alternative measures of *INEQUALITY* and adjust the NUTS level within the sample. The R_w measure (which correlates at 0.91 with the Gini index) is used in models 1–3, while the CV is used in models 4–6. Using the latter dependent variable, there are no empirical differences in the results for models 1–3, irrespective of the inclusion of decentralisation (model 2) or a lagged dependent variable and fixed effects (model 3). Using the CV in models 4–6, we find the results to be slightly less robust for the interaction terms, in particular in model 5, when the decentralisation variable is

added, rendering the *p*-value of the interaction (0.19) under the level of acceptable significance. However, in model 6, when putting 'pressure' on the model by including a lagged dependent variable and fixed effects, we find that the conditional effect of state capacity through *OPENNESS i*s again strongly significant.

Finally, we check to see whether including several countries at the NUTS 3 level with a majority of NUTS 2-level states provides misleading results.[18] In model 7, using the CV (provided by Eurostat), we include all available country years at the NUTS 3 level only.[19] In model 8, we rerun model 2 from Table 2 using the populated-weighted Gini index while removing all NUTS 3-only countries. The substantive effect holds in both cases: regional divergences from globalisation are mitigated by state capacity.[20]
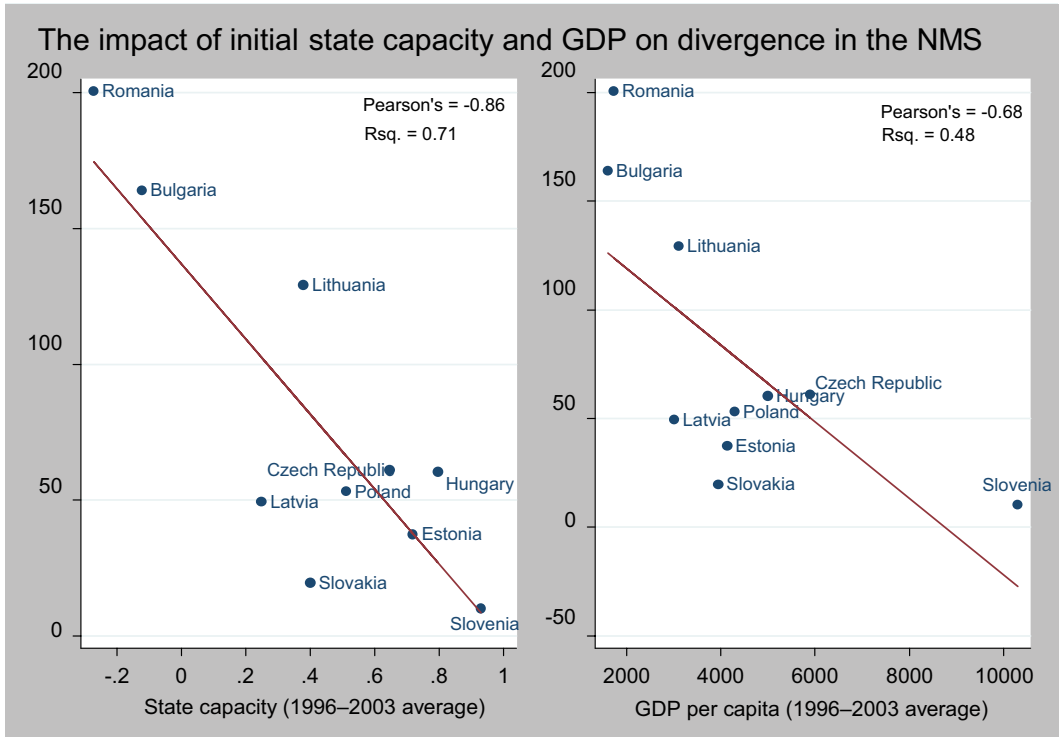
Figure 4. The impact of initial state capacity and GDP on divergence in the NMS.

Discussion

In this study, we have attempted to elucidate a new dynamic in regional disparities of wealth within countries in the face of increases in globalisation, in this case due to EU expansion. The data in the analysis show that convergence, which is one of the most widely invested policy goals of the European Commission, has occurred in the past decade and a half, at both the national and regional levels EU-wide. However, the data also show that, when looking *within countries* themselves, many EU countries have experienced high levels of regional divergence over the same time period. Building on past neoclassical and NEG theoretical arguments, this study posits that some of this divergence can be significantly explained as a function of openness. However, despite a variety of warnings from previous works, EU enlargement does not impact all

states equally – even those new to membership – as it is shown that the impact of openness on regional divergence is in large part conditioned by state capacity.

The key contributions of this paper are thus two-fold. First, this study, building on the theoretical work of Petrakos and Brada (1989), puts forward a novel interaction hypothesis in explaining patterns of regional divergence that offers an alternative mechanism to the agglomeration of economic activity in core areas due to openness due to 'rational' economic agents. For this, we focus on the 'supply side', for example state institutions. Broadly speaking, the NEG puts forth that the impact of rapid increases in trade, political, and social openness tends to lead to an unequal distribution of resources among regions within countries. Neoclassical expectations would predict that less developed EU states would experience the most drastic forms of

Table 3. Robustness checks.

	Dep.Var. = Relative Mean Deviation			Dep.Var = Coefficient of Variation			All NUTS 3	No NUTS 3
	1	2	3	4	5	6	7	8
Economic Openness	0.005***	0.005***	0.001**	0.004	0.003	0.002**	0.004**	0.002**
	(0.005)	(0.003)	(0.05)	(0.12)	(0.13)	(0.03)	(0.03)	(0.02)
State Capacity	0.25	0.26*	0.08*	0.16	0.16	0.14**	0.19	0.10
	(0.12)	(0.09)	(0.07)	(0.46)	(0.45)	(0.03)	(0.25)	(0.20)
Openness*State Capacity	−0.006***	−0.005***	−0.002**	−0.004*	−0.004	−0.002***	−0.004**	−0.002**
	(0.01)	(0.01)	(0.03)	(0.09)	(0.19)	(0.01)	(0.05)	(0.03)
No. of Regions	0.0001	0.0001		−0.0003	0.0001		−0.0003	0.0002
	(0.91)	(0.33)		(0.76)	(0.58)		(0.57)	(0.17)
GDP p.c. (log)	−0.02*	−0.01	−0.001	0.03***	0.03**	−0.002	0.02*	0.02***
	(0.07)	(0.20)	(0.87)	(0.01)	(0.03)	(0.62)	(0.10)	(0.003)
Population (log)	−0.02***	−0.03***	−0.05**	−0.004	−0.02	−0.05*	0.01	−0.01
	(0.002)	(0.000)	(0.03)	(0.66)	(0.12)	(0.07)	(0.14)	(0.97)
NMS (1/0)	0.08***	0.09***		0.14***	0.16***		0.10***	0.06***
	(0.001)	(0.001)		(0.002)	(0.002)		(0.000)	(0.000)
Decentralisation		0.002***	0.0003		0.003***	0.0002		
		(0.002)	(0.42)		(0.001)	(0.56)		
Lagged DV			0.78***			0.81***		
			(0.000)			(0.000)		
Constant	0.01	0.16	0.83**	−0.21	0.02	0.88*	−0.31	−0.16*
	(0.93)	(0.36)	(0.02)	(0.37)	(0.93)	(0.08)	(0.11)	(0.07)
Obs	309	309	289	309	309	309	275	266
States	24	24	24	24	24	24	23	19
Years	14	14	13	14	14	13	14	14
R²	0.58	0.59		0.56	0.58		0.64	0.62
Pr. Wald χ²	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Models 1, 2, 4, 5, 7 and 8 are estimated with Prais Winston (ar1) regression with panel corrected standard errors. Openness, ICRG and GDP are lagged by one year. Models 3 & 6 are estimated with FGLS controlling for heteroskedasktisktic panels and fixed effects and include a lagged dependent variable (t-1). Model 7 takes all countries at the NUTS 3 level using the CV (from Eurostat). Model 8 removes countries that are only available at the NUTS 3 level (e.g. Estonia, Slovenia, Lithuania, Latvia and Ireland); the dependent variable is the population weighted Gini index. p-values in parentheses.
$p<.01$***. $p<.05$**. $p<.10$*

divergence from the recent large membership increases. However, as with much of the literature on 'Europeanisation' and theories of endogenous growth, we argue that domestic factors – in particular, institutions – mitigate the extent to which international factors affect country developments, namely how states converge/diverge due to openness. We find that member states with high levels of state capacity, such as the fourth-round countries (Sweden, Finland and Austria), have a strong rule of law, low

corruption and impartial public sectors, which can resist the pressures to concentrate resources around the power centres of the country. Conversely, in most states with relatively low state capacity around the time of expansion – those with relatively high corruption, weak rule of law and low impartiality of public services – power actors are more easily able to establish clientalistic networks in a concentrated geographic area, mainly in urban and/or capital regions. Moreover, public investments in areas like

infrastructure are likely to be much less efficiently spent or even diverted, and this negative effect is much more likely to impact the less politically important regions in the periphery. Thus, when faced with increases in globalisation, divergence occurs to a greater extent when state capacity is weak. A key advantage of introducing measures of CAPACITY into this literature is that it offers a specific mechanism within the broad and all-encompassing concept of 'development' which is usually put forth by scholars arguing that regional divergence patterns are reversed 'U'-shaped over time (Ezcurra and Rapún, 2006; Williamson, 1965), and inserts a degree of politics into alternative explanations of agglomeration of economic activity as a consequence of the activity of rational economic actors.

Secondly, we present robust empirical evidence to support our theory. The findings show that, first, urban/capital regions in states within countries with lower state capacity have experienced considerably higher levels of economic wealth since the 1990s relative to peripheral regions. This in turn has been the catalyst behind the fact that countries with low state capacity have undergone the greatest levels of regional divergence. The results are robust in several alternative explanations of divergence and when using several different measures of regional inequality, sample alterations and testing at various NUTS levels. Furthermore, we find that lower-capacity European states (Turkey and Croatia) that did not experience the same increases in openness during the period of time in question, did not experience significant regional divergences. Thus, we show that it is not simply the pressures associated with vast increases in openness accompanied by the enlargement of the EU, but the *interaction* with state capacity that gives us a clearer picture of why states experience within-country divergence, if at all.

The normative implications of this study are also worth mentioning. Rapid economic divergence among regions within a country can create many social and political problems, from lack of trust and feelings of resentment to regional awareness and potential problems with issues of internal conflict or succession. Although there are undoubtedly obvious benefits for countries entering the EU, the results

should offer a clear warning to EU policymakers that allowing states with weaker institutions of governance poses critical challenges, not only for the Union as a whole, but for the country itself. The theory and evidence here imply that regional harmony cannot simply be solved with development or cohesion policies alone. Adhering to the strict tenets of the Copenhagen Criteria with respect to corruption and the rule of law should be of the utmost concern before allowing new memberships and should not be 'dealt with' afterwards. This is both for the sake of the Union and the potential new country itself.

Notes

1. For more details about cohesion funds, cohesion policy and qualifying regions, see: http://ec.europa.eu/regional_policy/funds/feder/index_en.htm#Convergence
2. For example, see Krugman (1991, 1998), Baldwin and Krugman (2004) and Puga (2002).
3. NUTS refers to *Nomenclature of Territorial Units for Statistics*. The EU references up to three levels of NUTS per country for purposes both of statistics and the recipients of EU structural funds. For more information on the NUTS system of regions within the EU, see: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction
4. Of course it is worth mentioning that there is a degree of nuance to this point about which it is difficult to generalise, due to the fact that different countries are limited to various degrees by the Commission (Romania and Bulgaria, for example, with respect to Schengen), or others willingly limit the 'full membership' themselves – for example the UK or Ireland with Schengen, or Austria using the maximum transitional period of seven years in limiting migrants from the NMS after 1995. The point of this argument is not that EU accession or membership is an immediate 'shock', but a somewhat short- to mid-range transition process of several years that represents a significant increase in political, social and economic openness. Moreover, this relationship is symbiotic: as new members enter and become more 'open', existing members become more 'open' as well due to the entrance of the new member. The theory and empirical analysis capture the broad scope of this effect.
5. This concept is known as 'quality of government' (QoG) in their article.

6. Rothstein and Teorell (2008).
7. Although data on corruption or clientalism at the sub-national level is limited, there is in fact recent empirical evidence to suggest that capital regions in the NMS have greater levels of corruption in the form of both bribery as well as overall citizen perceptions, compared with peripheral regions. The same study shows that in EU-15 countries, this difference between capital and periphery with respect to corruption tends to be negligible (see Charron et al., 2013a, 2013b)
8. For a more thorough critique of the leading measures in this sub-field, please see Shankar and Shah, 2003.
9. Shankar and Shah (2003); Ezcurra and Pascual (2008) and Rey and Janikas (2005).
10. The Pearson pairwise correlations among the three measures of regional inequality are strong. The CV correlates with the R_W and Gini at 0.91 and 0.94 respectively, while the R_W and Gini measures correlate at 0.96 for the sample used in this analysis.
11. We test the robustness (not reported) using the so-called 'Beta converge' (Shankar and Shah, 2003), yet since there is very little regional overlapping over time, the results are indistinguishable from Sigma measures.
12. For example, see Kanck and Keefer (1995) and Charron and Lapuente (2010).
13. WGI is a standardised measure with a world mean of '0' and a standard deviation of '1'.
14. See Ezcurra and Pascual (2008) for example for fiscal; Shankar and Shah (2003) for example for political.
15. In addition, we considered controlling for EU structural funds, but this variable is highly correlated with GDP per capita, with poorer countries getting greater levels of funds as a percentage of GDP on average. In addition, the results would be misleading because many of the EU-15 countries that were once 'Objective 1 regions' prior to the 2004 membership round were consequently no longer considered eligible for structural funds due to being wealthier than 75% below the EU average. Moreover, the NMS-12 states were not in the same structural fund arrangement as the EU-15 states until after 2004. Thus to avoid unnecessary complication, we elect to simply control for GDP per capita as a general proxy for development, which we also feel captures more or less what 'structural funds' would capture in the regression model.
16. In addition, we test alternative specifications with more spatial controls, such as whether the NMS state shares a border with an EU-15 country and the amount of tertiary education the population has received in the aggregate. Neither variable alerted the results.

17. The bivariate Pearson correlation coefficient between these two variables in the sample is 0.65; see Appendix 2 for all bivariate correlations. The variation inflation factor (VIF) for the variable GDP per capita ranges from 6.3 to 7.2 across models, implying a degree of multicollinearity that warrants some caution in interpreting the results.
18. I would like to thank an anonymous reviewer at *European Urban and Regional Studies* for this suggestion.
19. The number of observations is reduced due to several missing years for Italy, Austria and Hungary.
20. In addition, we run all models again using population density in place of the log of population and find no substantive difference. The density variable was never statistically significant and thus for the sake of space, we do not report those results.

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Appendix I

Additional measures of regional inequalities

1. The 'coefficient of variation', (CV) from Williamson (1965), which calculates the regional inequalities in $country_a$ as the square root of the sum of the regional (or national in-country studies) differences ('y_x') from the mean in $country_a$ ('Y_a'), divided over the country mean. This measure, however, was found to be sensitive to the number of regions within a country and thus population weights ('P_x') were added to the region, which is a much more apt measure for cross-country comparisons. The measure ranges from '0' (perfect equality), to $\sqrt{N-1}$ (e.g. if all GDP is held in one region) and is calculated using the following formula:

$$CV_a = \sqrt{\sum_a p_x (y_x - Y_a)} / Y_a$$

2. The Relative mean deviation (R_w), which does not take the squared regional differences from the country mean, which makes it less sensitive to outliers (Kakwani, 1980). The measure is calculated by subtracting the absolute, population-weighted regional GDP per capita from the mean (R_w) in R_w, divided by R_w. It ranges from '0' (perfect equality) to '2'. The measure is calculated as the following:

$$R_w = \frac{\sum_a |y_x - Y_a| \frac{p_x}{P}}{Y_a}).$$

Appendix 2

Summary statistics and bivariate correlations

Variable	obs	mean	s.d.	min	max	source
Dep. variables						
Gini index	341	0.135	0.045	0.064	0.302	Eurostat, author-created
Coefficient of variation	334	0.271	0.099	0.121	0.588	Eurostat, author-created
Relative mean diff.	334	0.22	0.81	0.087	0.529	Eurostat, author-created
CV NUTS 3	298	0.26	.08	0.12	0.53	Eurostat
Ind. variables						
State capacity	320	0.78	0.159	0.41	I	PRS Group, ICRG
GDP per capita (logged)	336	9.38	0.94	6.8	10.7	Eurostat
Population (logged)	336	16.21	1.13	14.08	18.23	Eurostat
Number of regions	335	11.6	7.66	4	26	Eurostat
Decentralisation	336	10.09	8.43	0	29.5	Hooghe, Marks and Schakel (2010)
NMS	336	0.41	0.49	0	I	Author-created
openness*capacity	336	61.47	17.31	24.14	95.46	Author-created
openness*GDP	336	739.87	148.7	309.7	1004.2	Author-created

Bivariate Pearson correlations

	Gini index	Coef. of var.	Rel. mean diff.	State capacity	GDP p.c. (log)	Pop. (log)	No. of regions	Openness	Decen.
Gini index	I								
Coefficient of variation	0.94	I							
Relative mean diff.	0.97	0.90	I						
State capacity	–0.56	–0.57	–0.52	I					
GDP per capita (logged)	–0.38	–0.40	–0.34	0.66	I				
Population (logged)	–0.32	–0.29	–0.4	0.09	0.27	I			
Number of regions	–0.23	–0.25	–0.29	0.11	0.33	0.74	I		
Openness	0.08	0.05	0.14	0.46	0.63	–0.21	–0.11	I	
Decentralisation	–0.22	–0.26	–0.30	0.30	0.55	0.65	–0.14	0.22	I
NMS	0.54	0.58	0.51	–0.66	–0.84	–0.43	–0.38	–0.45	–0.63