International Economics Seminar
Lecture 1

Trade, economic integration, and territorial equity

Andrés Rodríguez-Pose

Trade and inequalities: Aims of lecture

- **Do trade and economic integraton cause inequality?**
  1. Evidence
  2. Theory
  3. Empirics

Trade and inequalities

- **Trade as a catalyst for growth**
  1. One of the three Ds in the WDR (overcoming division)
  2. But also part of the other two (Density and Distance)
  3. And part of the solution (Integration)
- **Trade acknowledged to favour agglomeration**
  1. And thus to promote spatial inequality
- **But that may not matter in the long run**
  1. Trade promotes growth and development
  2. And growth and development automatically reduce disparities (Williamson, 1965)

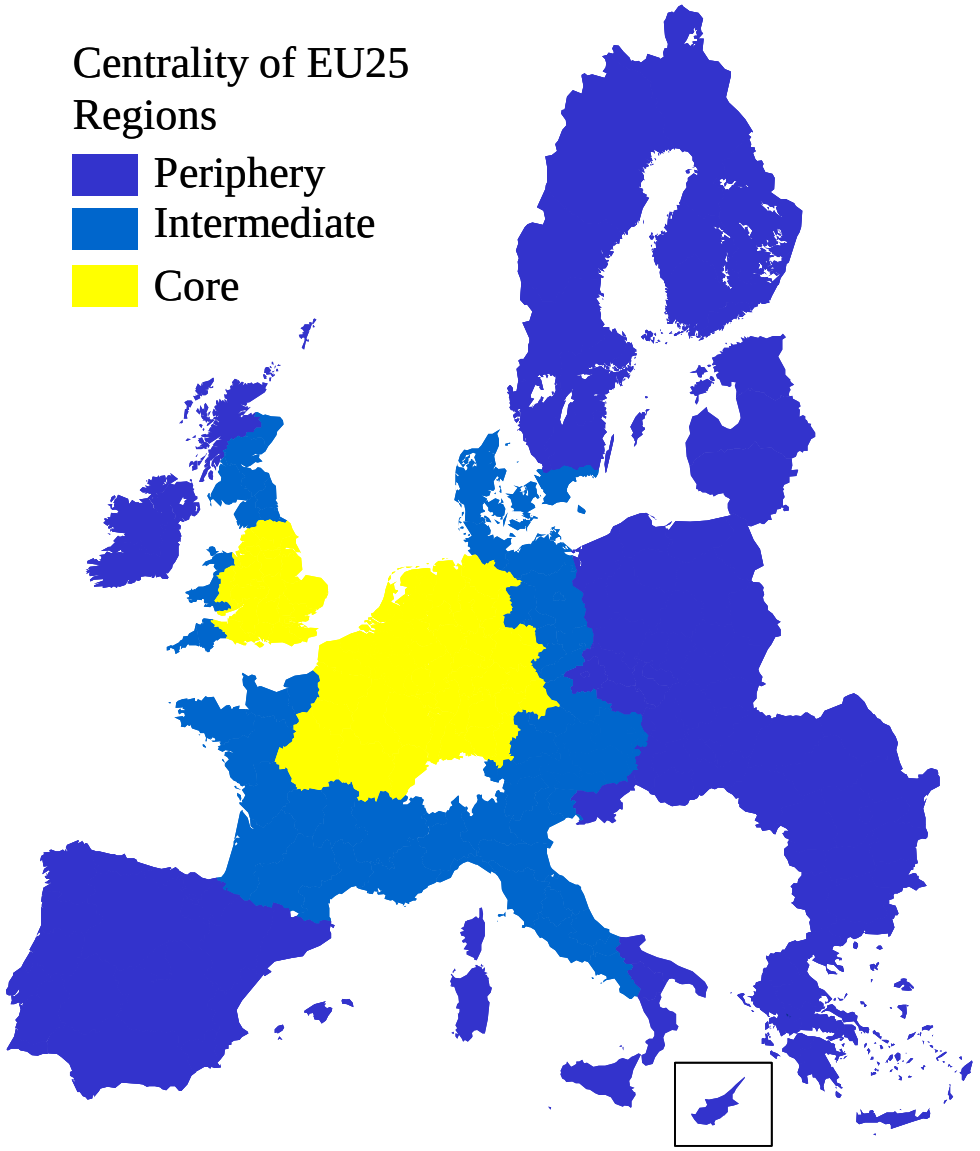
Trade and inequalities: the assumptions

- **Link between trade and inequality rests on a series of assumptions**
  1. Increases in trade lead to greater territorial disparities
  2. Disparities will subsequently recede
  3. The presence of disparities does not represent a threat for future development
- **But, is this the case?**
  1. Does trade lead to greater disparities?
  2. Do disparities subsequently recede?
  3. Does territorial inequality not undermine growth potential?

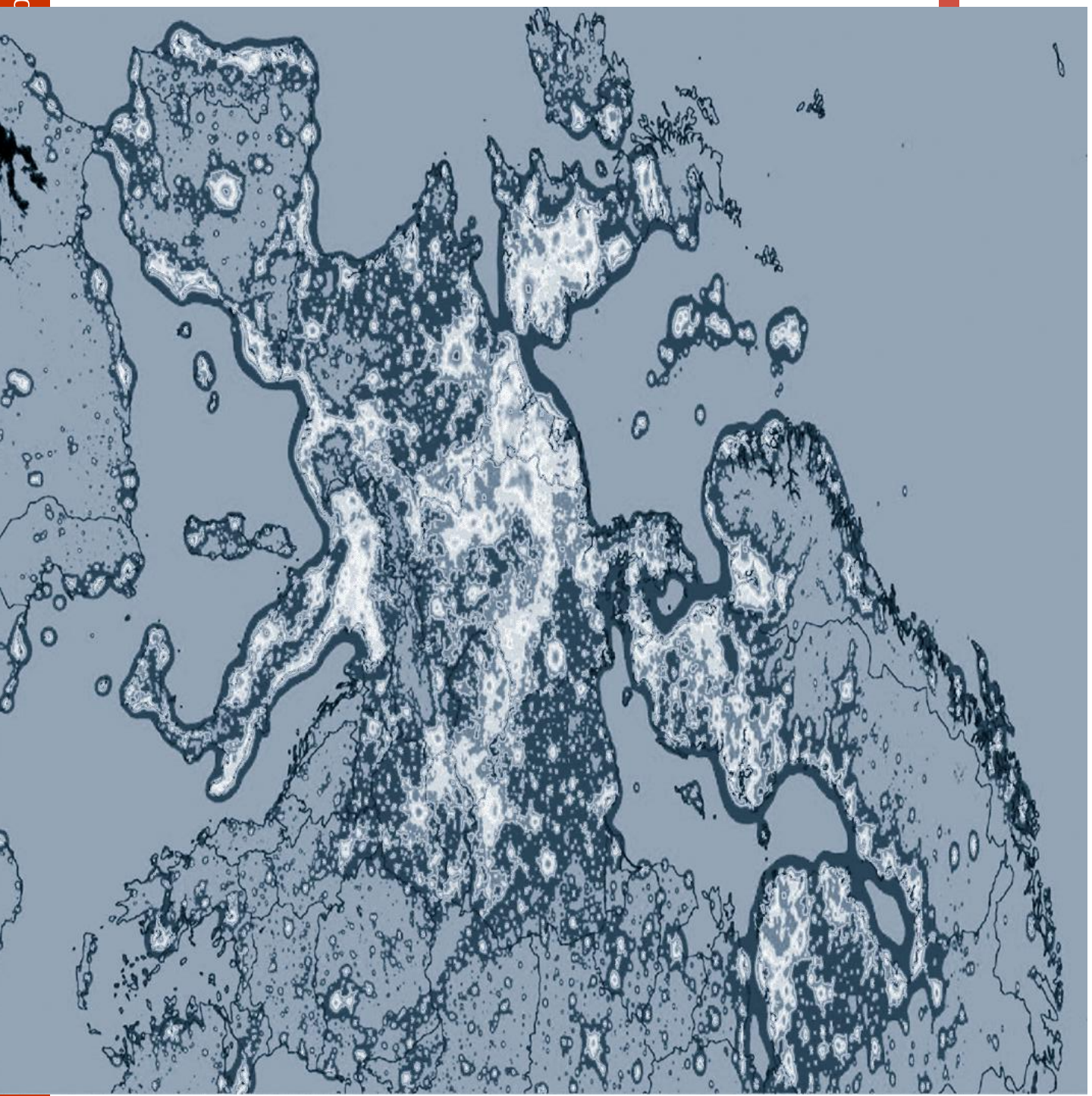
What does the literature say about this?

- **Not much**
- **Few studies analysing the link between trade and spatial inequality from a comparative perspective**
  1. Most based on urban rank-size rules
  2. Compartive analyses rely on high income countries
  3. Greater focus on internal factors than on external ones
- **Very little on the mechanisms through which trade impinges on inequality**

The core/periphery dimension in the EU

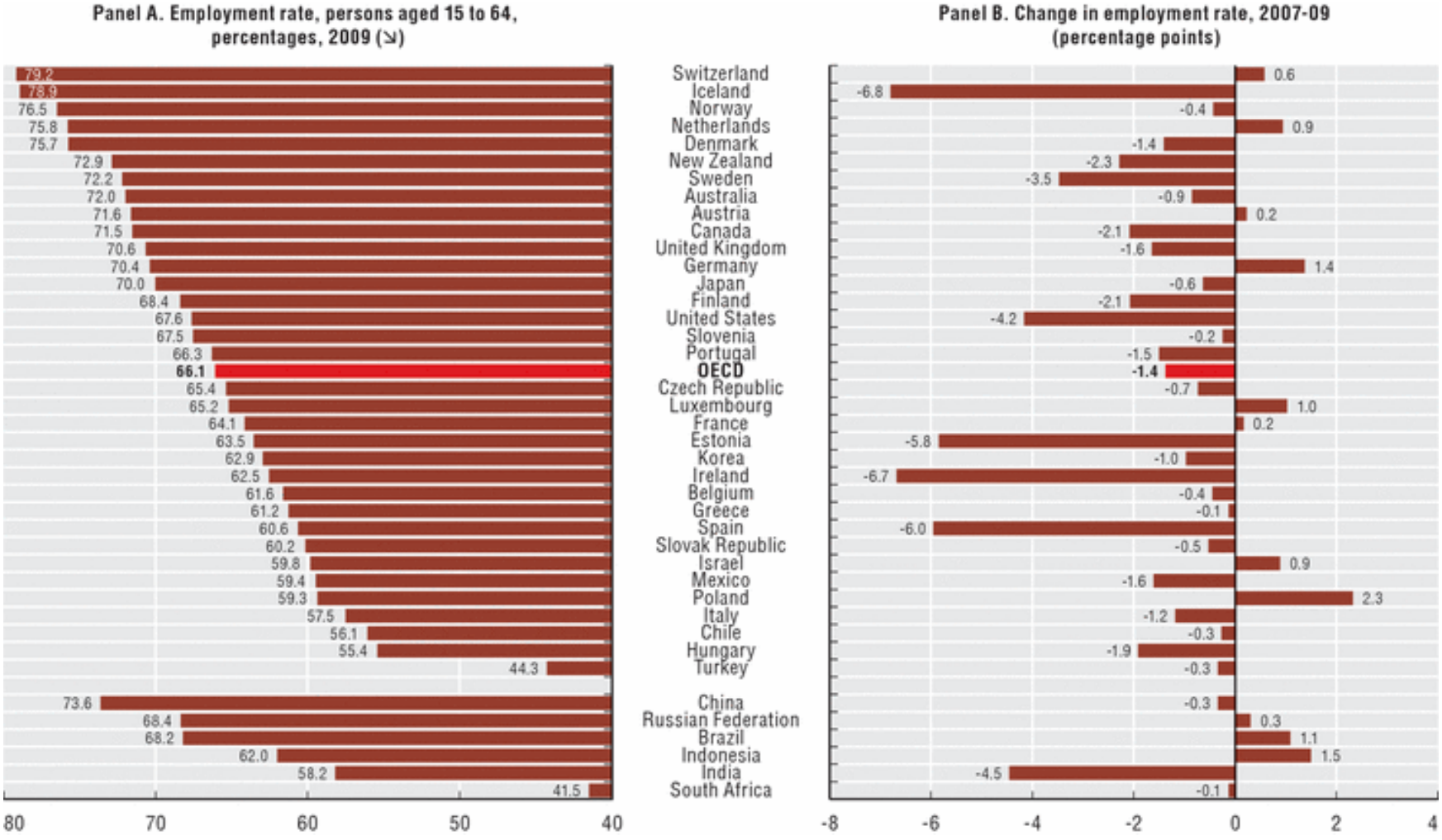


Source: Baldwin & Wyplosz 2012

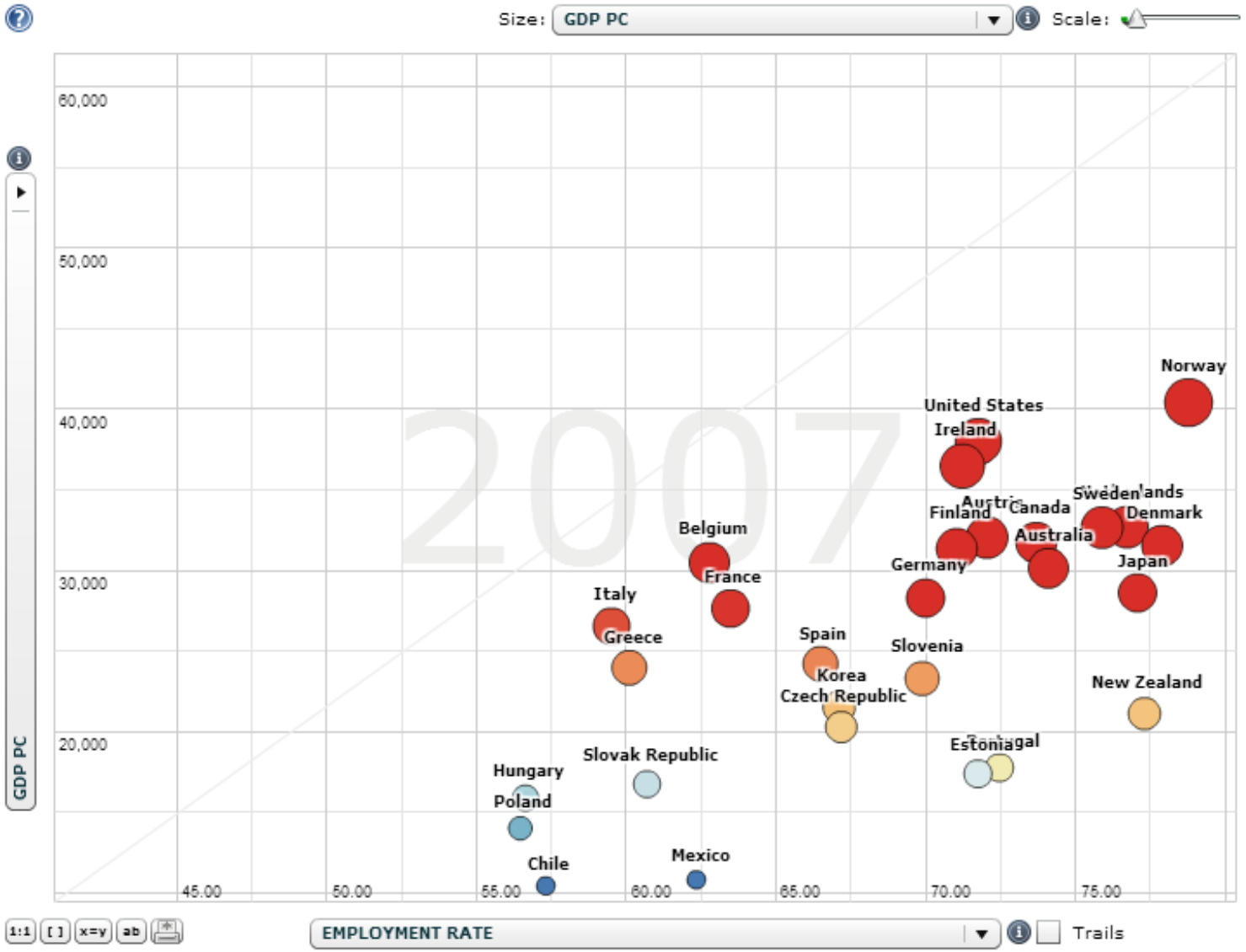


National disparities in the OECD 2011 (II)

Employment



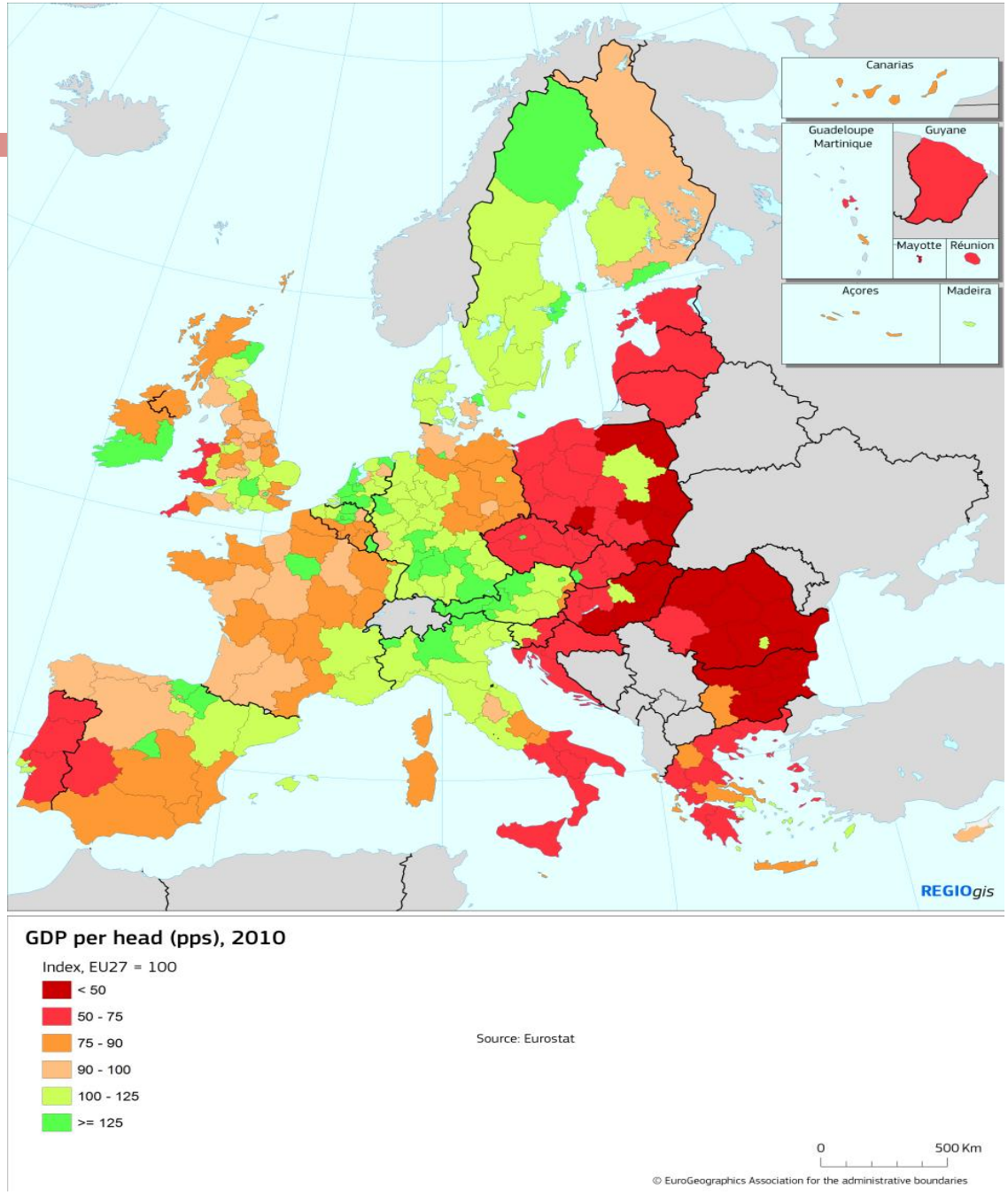
Link between GDP and employment



Regional disparities in the EU

- **Strong national contrasts hide even greater regional contrasts:**
  1. In 2010, the GDP per capita of Luxembourg was 7.5 times greater than that of Bulgaria
  2. Inner London's GDP was almost 13 times higher than that of Nord-Est (Romania)
  3. Unemployment ranges between levels of 2% and more than 35%
- **Internal economic disparities are evident in almost every single country in the EU**
  1. **Italy**
     - GDP: Lombardy ... Sicily
     - Unemployment: Bolzano .... Sicily

GDP per head (PPS) in the EU, 2010

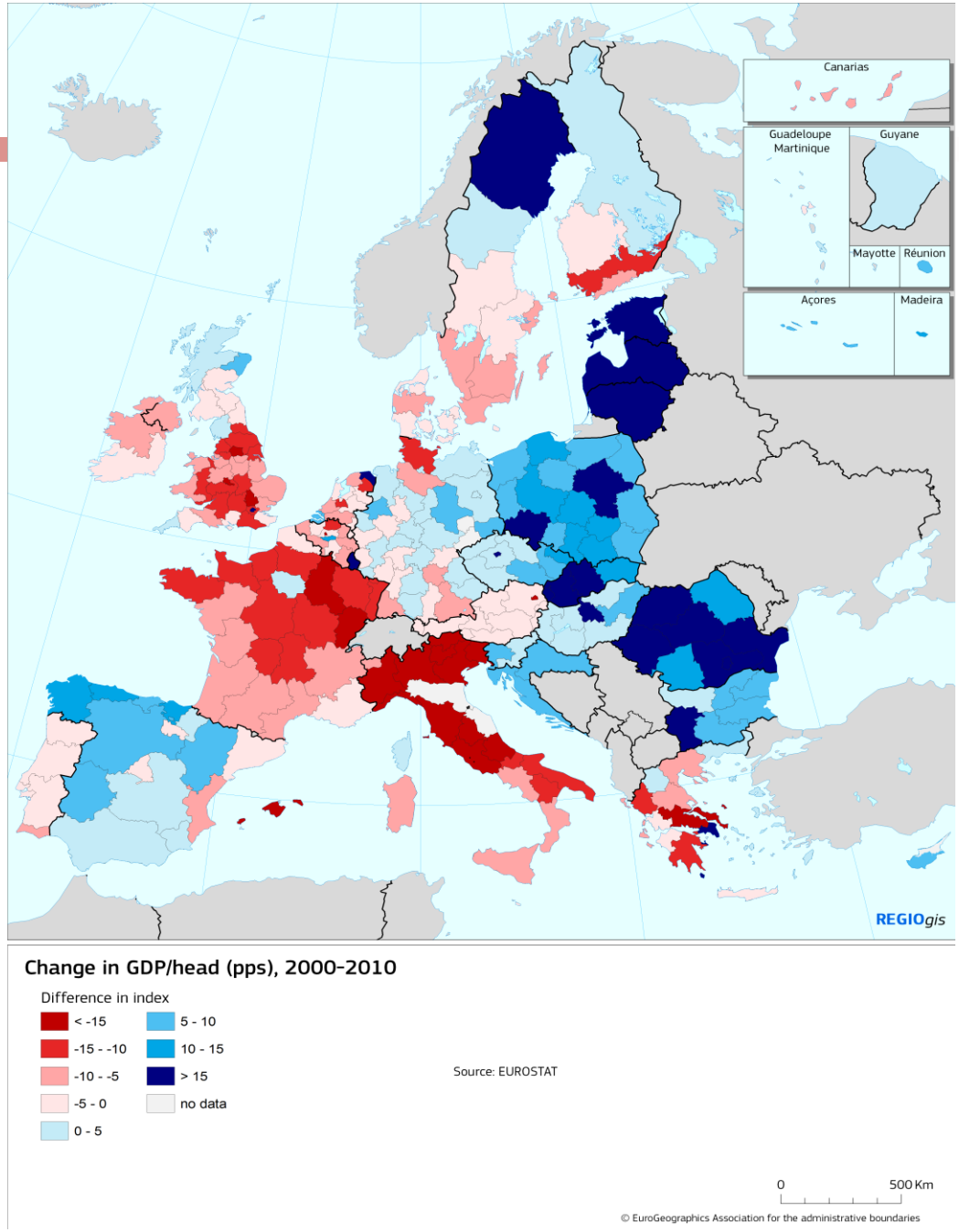


Source: EU, 2014

Regional disparities in the EU (II)

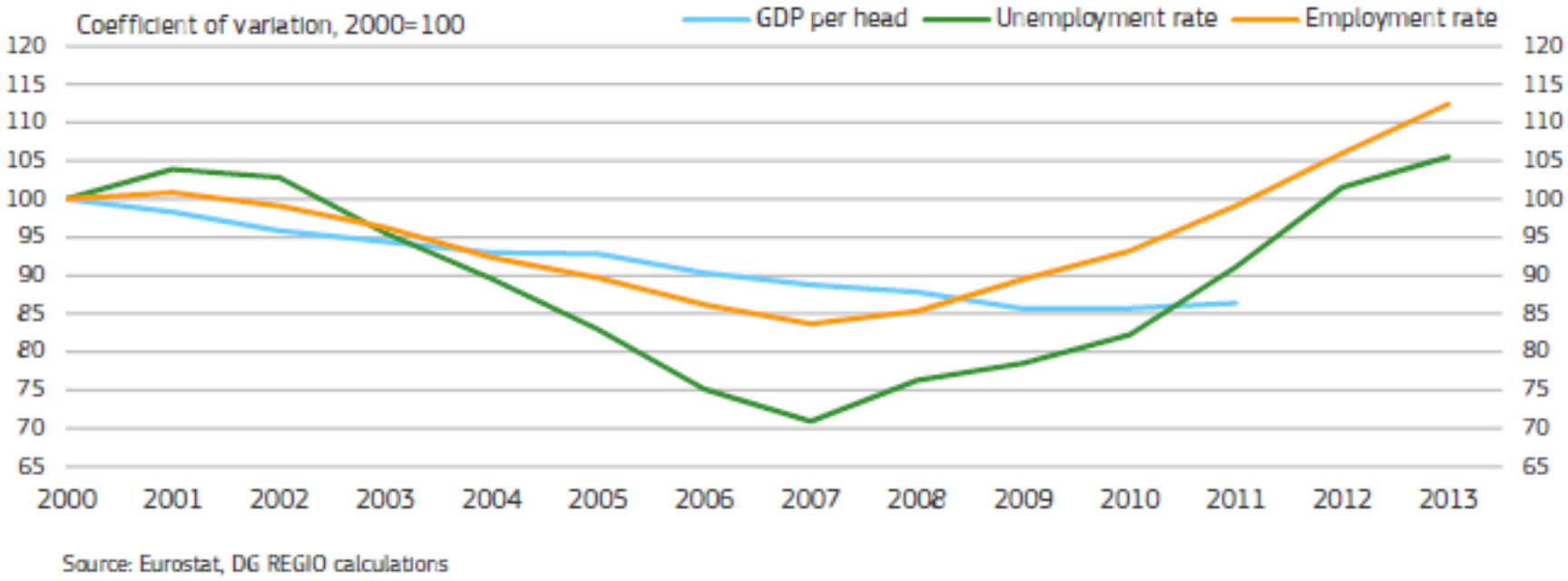
- **Strong regional contrasts also in:**
  1. Capital regions vs. the rest
  2. Portugal (Lisbon and the North vs. the South and Centre)
  3. France (Paris vs. the rest)
  4. Spain (Northeast and Madrid vs. South and West)
  5. UK (South vs. North)
  6. Germany (South vs. North)
  7. Sweden (South vs. North)
  8. Belgium (North vs. South)
  9. New member states (generally West vs East)
- **No regional contrasts in:**
  1. The Netherlands, Denmark, Luxembourg(!)

Change in GDP per person, 2000-2010



Shift from convergence to divergence

Figure 1.1 Coefficient of variation of GDP per head, employment rate (15-64), unemployment rate, EU-27 NUTS 2 regions, 2000-2012

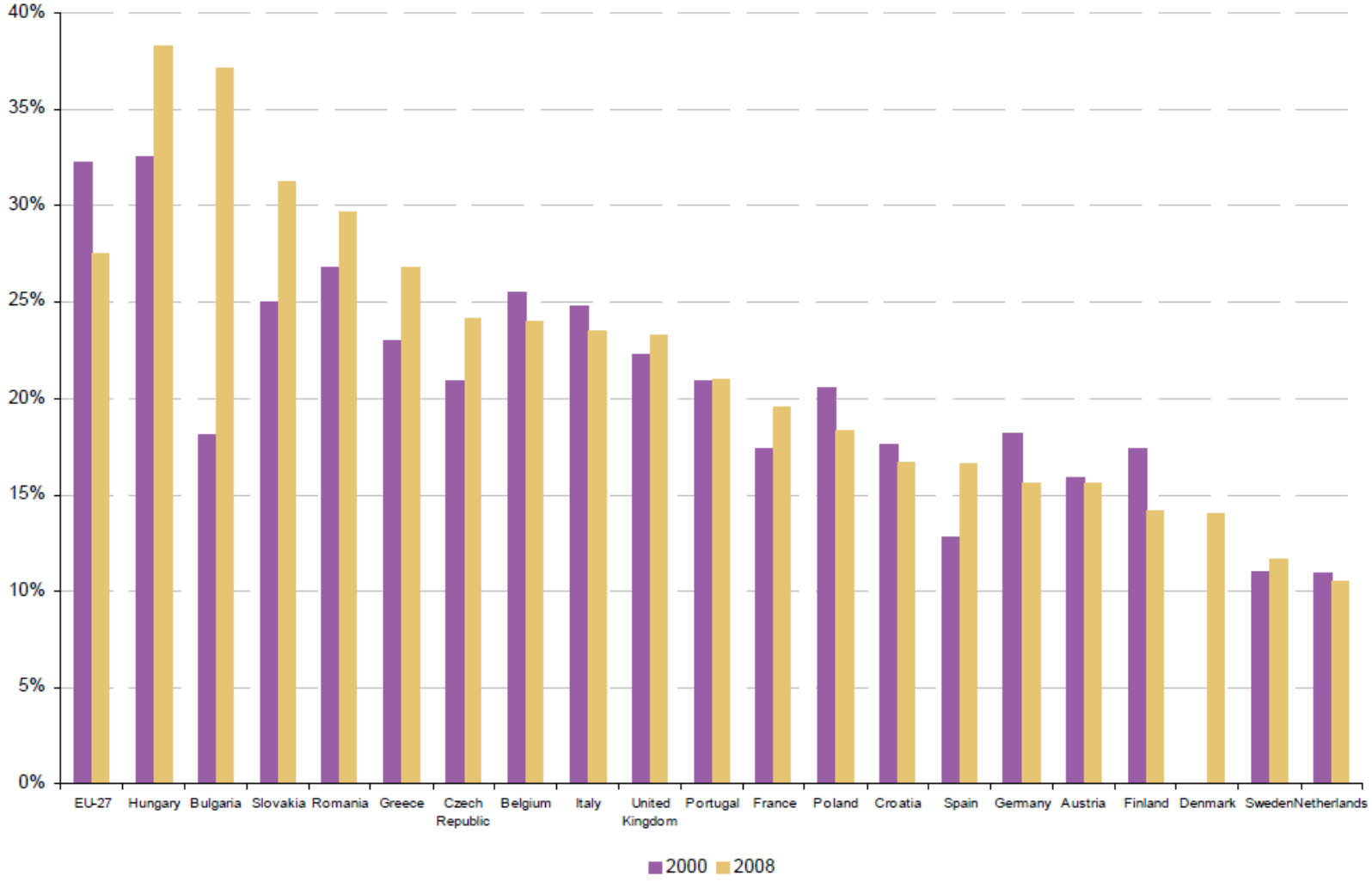


Source: Eurostat, DG REGIO calculations

Source: European Commission, Sixth Report on Economic, Social and Territorial Cohesion, 2014

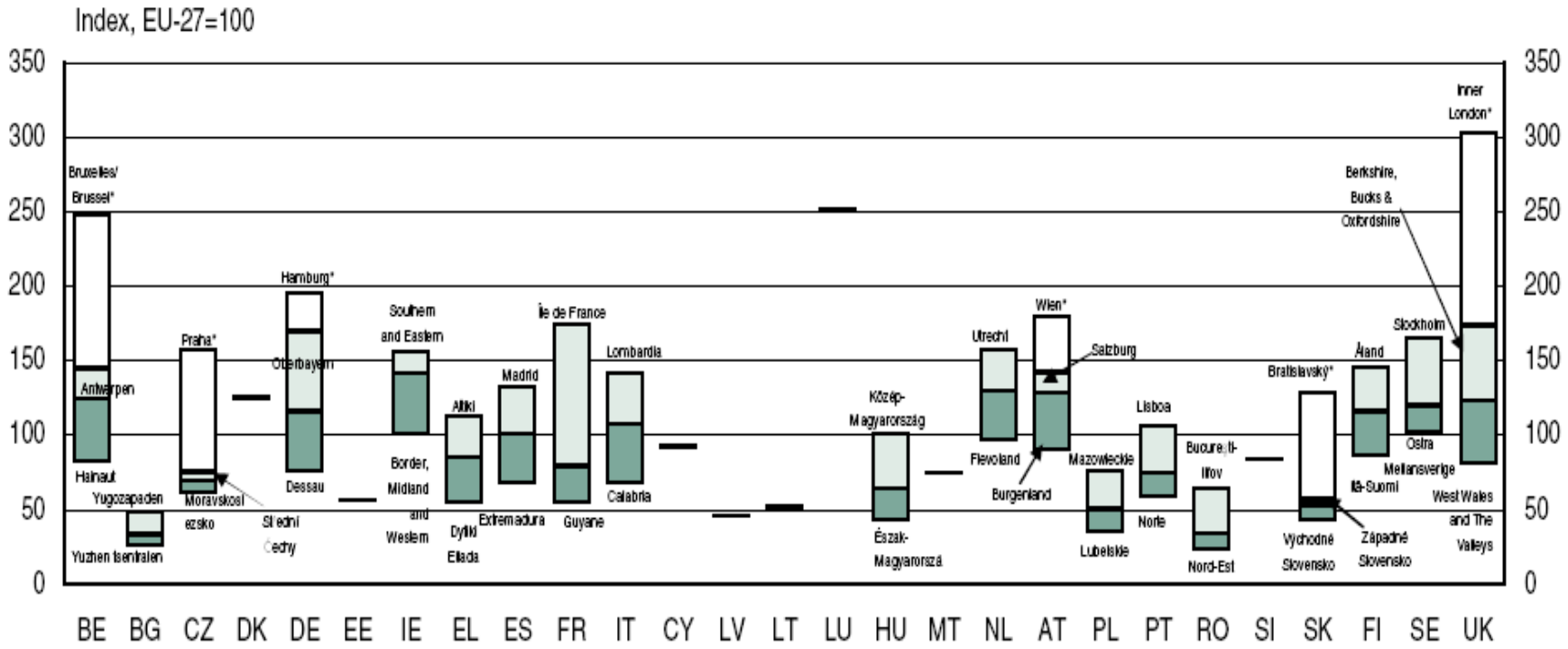
http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion6/index_en.cfm

Regional within country differences



Regional within country differences (II)

1.7 GDP per head (PPS) in Member States and regional extremes, 2004



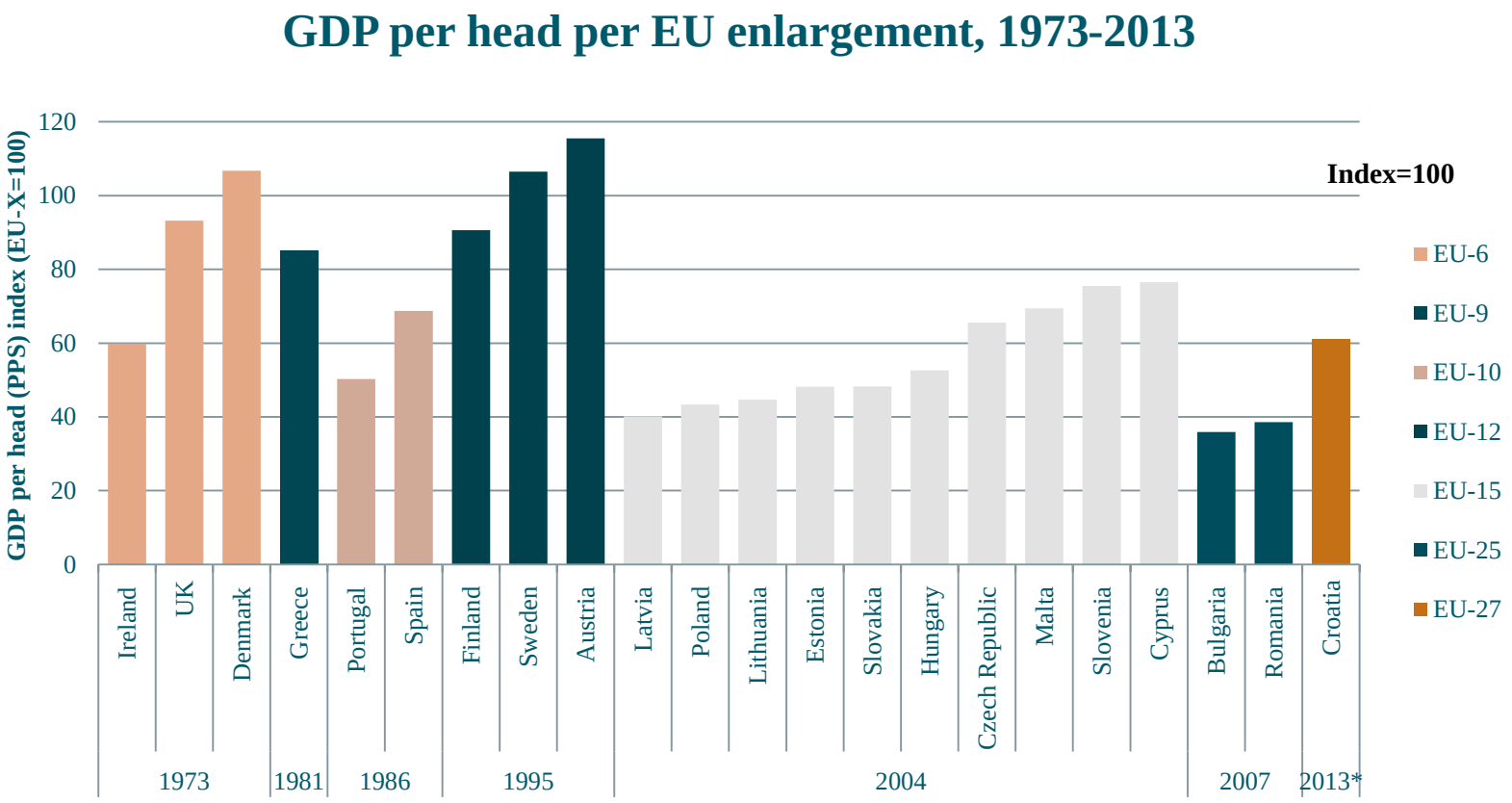
** In these regions, the GDP per head figure tends to be overestimated because of commuter flows.*

Source: Eurostat

Impact of successive enlargements

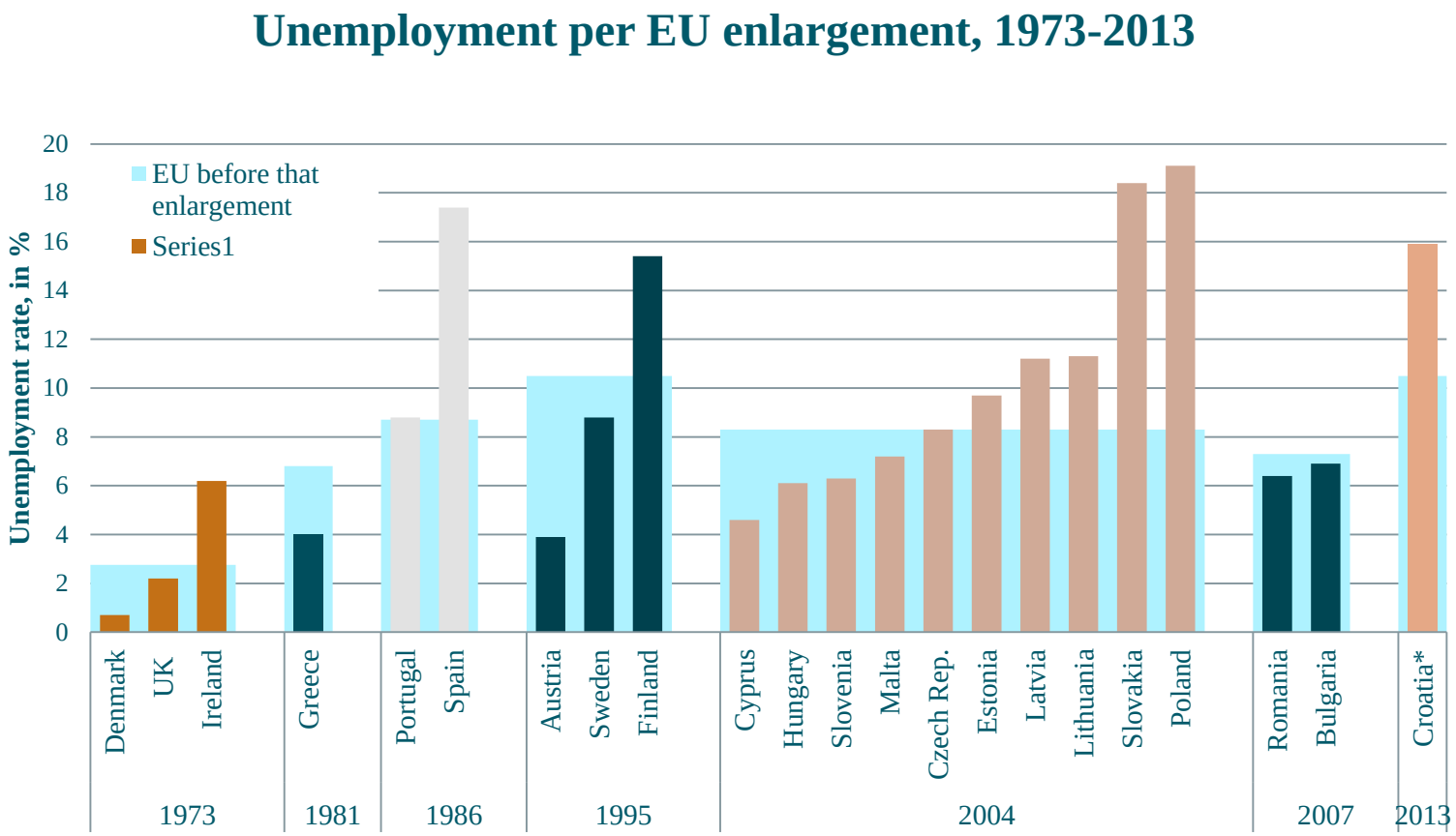
- **Each enlargement – with the exception of the 1995 enlargement – has enhanced regional disparities**
- **This has created political problems**
  1. ***Statistical effect:*** Some regions have been pushed above 75% of average and have lost the highest level of support

Impact of successive enlargements (II)



Source: Sixth Cohesion Report, 2014

Impact of successive enlargements (III)



Source: Sixth Cohesion Report, 2014

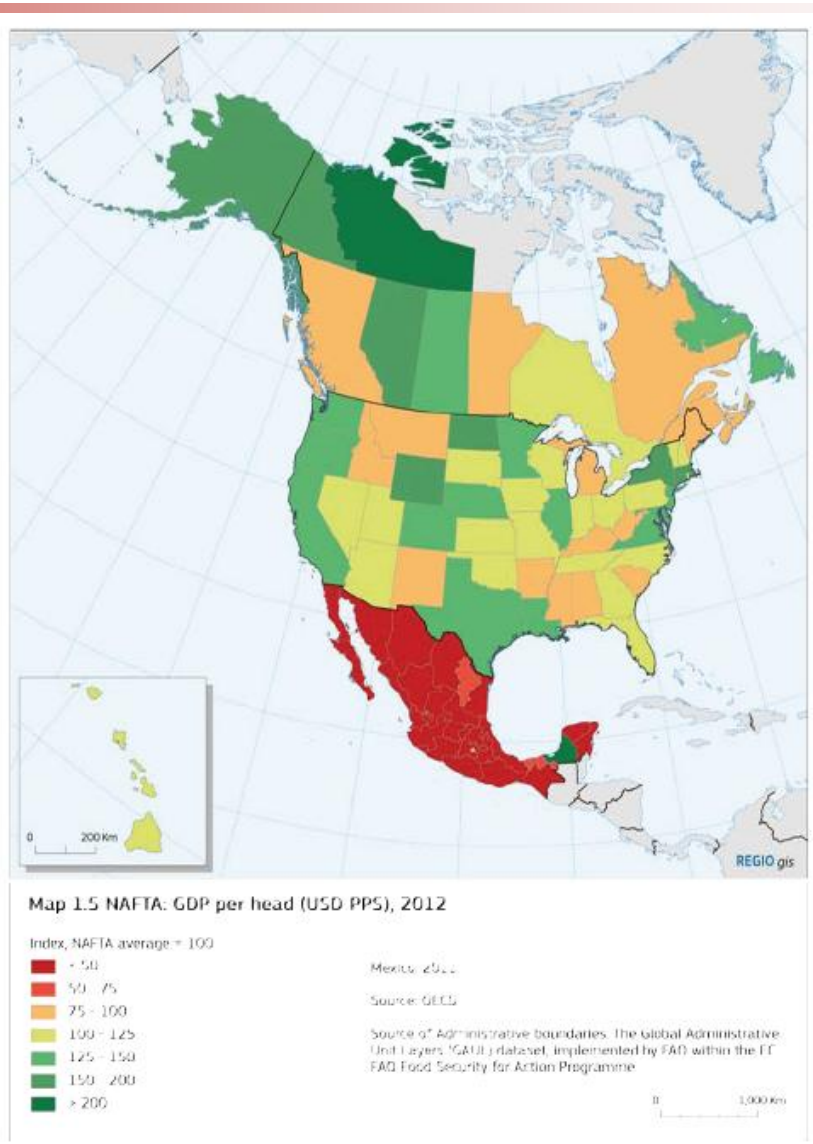
How big a problem?

Changes in regional disparities in selected territories (1980-2000)

	Year			% Change		
	1980	1990	2000	1980-90	1990-00	1980-00
Developing Countries						
China	0.578	0.483	0.581	-16.31	20.20	0.60
India	0.352	0.377	0.441	7.10	16.98	25.28
Mexico	0.388	0.383	0.435	-1.29	13.58	12.11
Brazil	0.588	0.488	0.494	-17.01	1.23	-15.99
Developed Countries						
US	0.136	0.152	0.148	11.76	-2.63	8.82
Germany	0.184	0.188	0.186	2.17	-1.06	1.09
Italy	0.265	0.269	0.277	1.51	2.97	4.53
Spain	0.207	0.199	0.222	-3.86	11.56	7.25
France	0.151	0.164	0.163	8.67	-0.29	8.36
EU15		0.247	0.275		11.24	

Source: updated from Rodríguez-Pose and Gill (2004)

How big a problem? (II)



Source: European Commission, Sixth Report on Economic, Social and Territorial Cohesion, 2014

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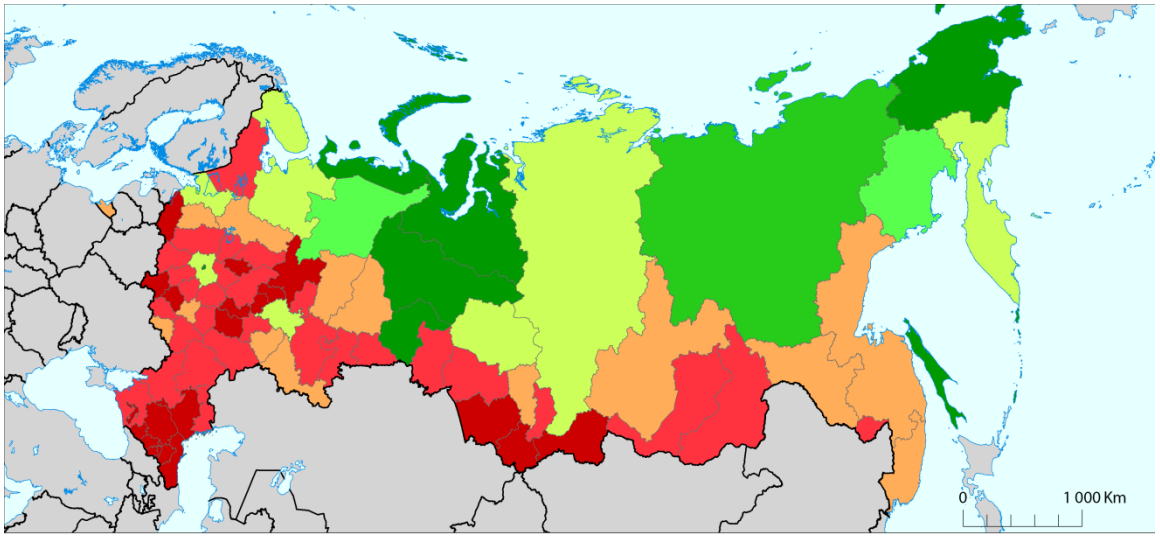
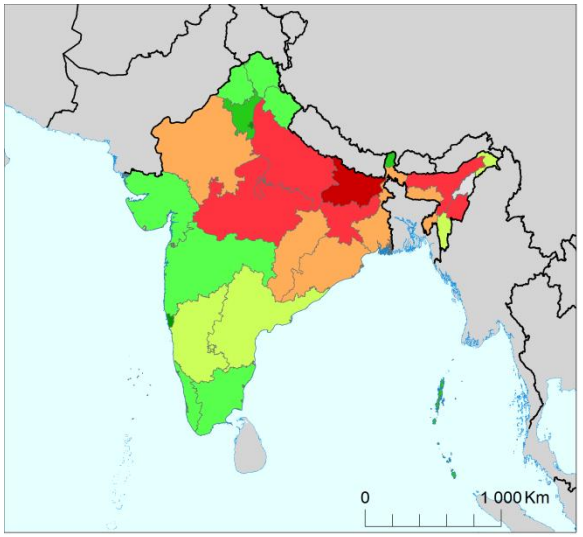
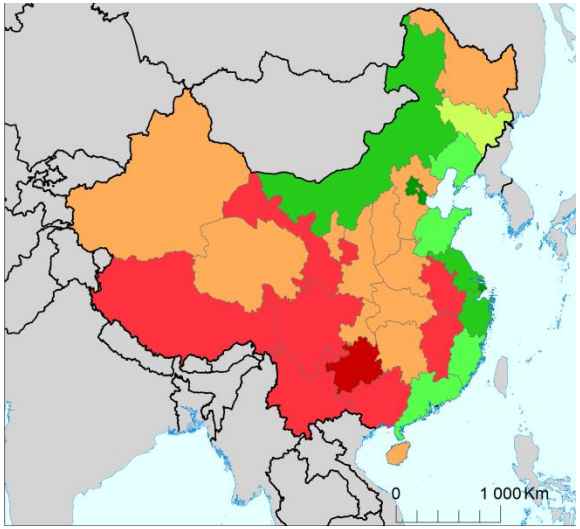
How big a problem? (III)







Russia (2009), India (2010), China (2011) and Brazil (2010) regional GDP per head

Index, national average = 100

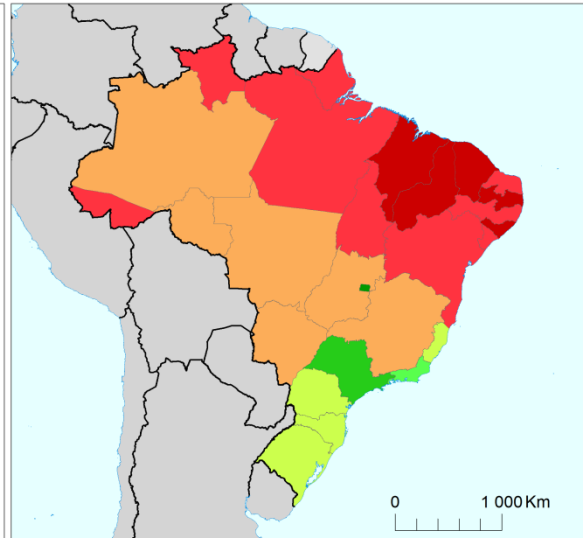
- < 50
- 50 - 75
- 75 - 100
- 100 - 125
- 125 - 150
- 150 - 200
- > 200

National GDP/head in PPP (current international $) (index, EU-27 = 100):
Russia: 70.1
India: 11.6
China: 27.5
Brazil: 35.5

Source: NSO, World Bank, DG REGIO

Source of Administrative boundaries: The Global Administrative Unit Layers (GAUL) dataset, implemented by FAO within the EC FAO Food Security for Action Programme

REGIOgis

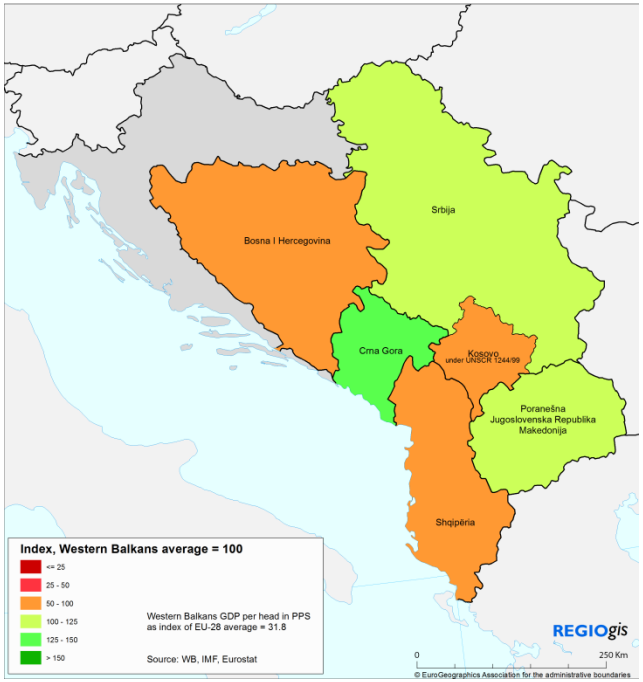


Source: Sixth Cohesion Report, 2014

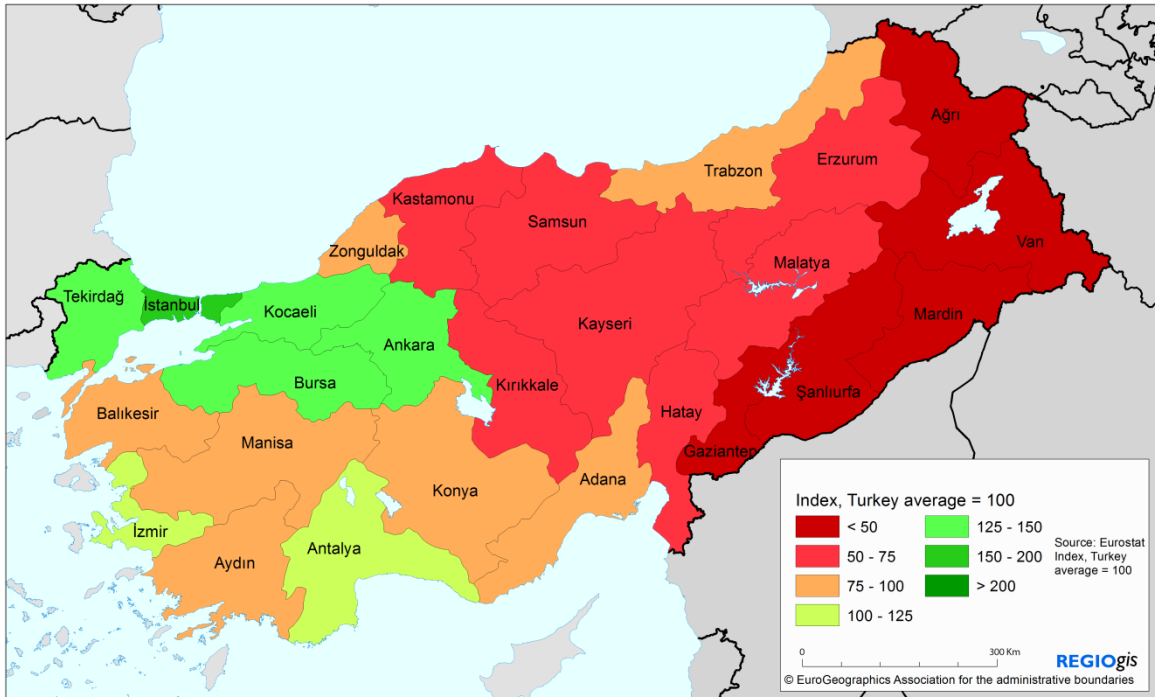
How big a problem? (IV)

Possible effect of enlargement

Western Balkans: GDP per head (PPS), 2012



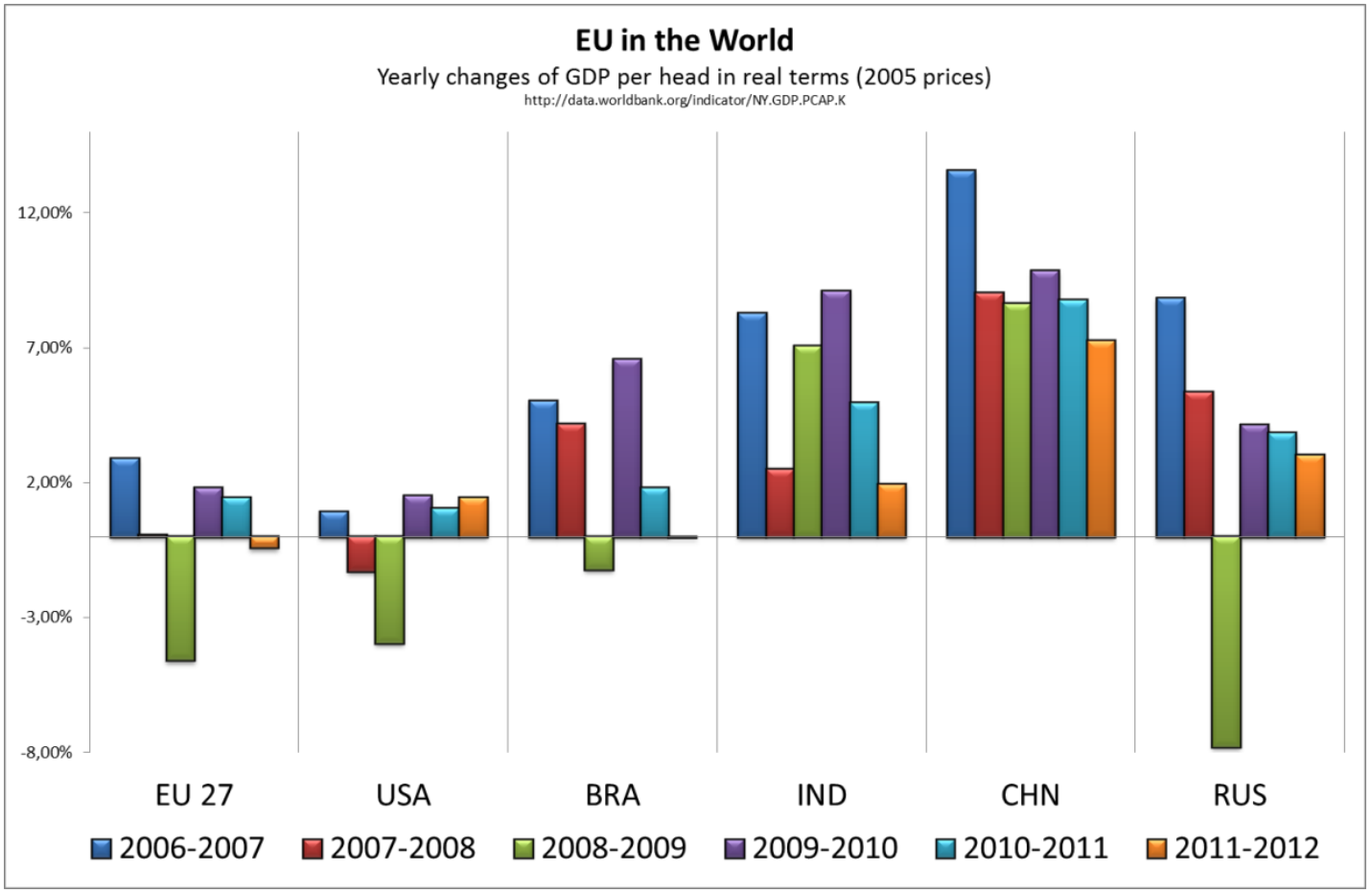
Turkey: GVA per head, 2008



Source: Sixth Cohesion Report, 2014

How big a problem? (IV)

But lower growth than in the BRICs



Source: Sixth Cohesion Report, 2014

Are these disparities caused by integration?

- **Test two of the assumptions about trade and inequalities in the WDR 2009**
  1. Whether changes in trade matter for regional disparities
     - And whether they matter in dffierent ways for developed and developing countries
  2. Whether there is a dynamic dimension to this association
- **Unbalanced panel**
- **28 countries**
  1. 15 high income
  2. 13 low and medium income
- **Combining trade with internal factors**
  1. In static and
  2. Dynamic panels

The literature

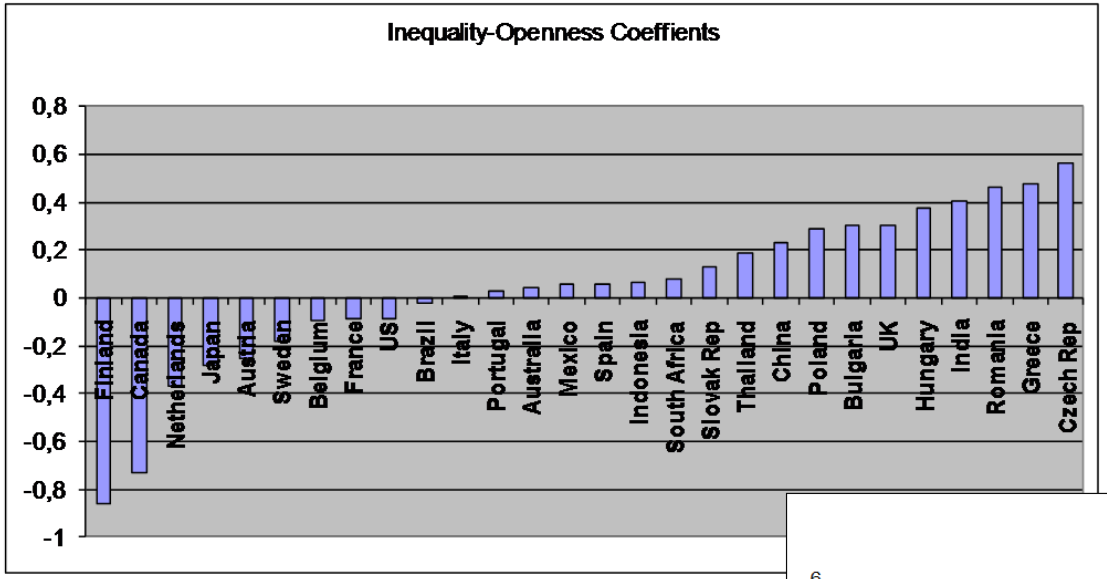
- **Lot of research on what trade does:**
  1. For sectors
  2. For firms
  3. For individuals
  4. But very little on territories
- **Emergence of NEG has contributed to alleviate this gap from a theoretical perspective**
  1. Two sector models
  2. But many of the results of these models are contradictory (Krugman and Livas Elizondo, 1996 vs. Paluzie, 2001)

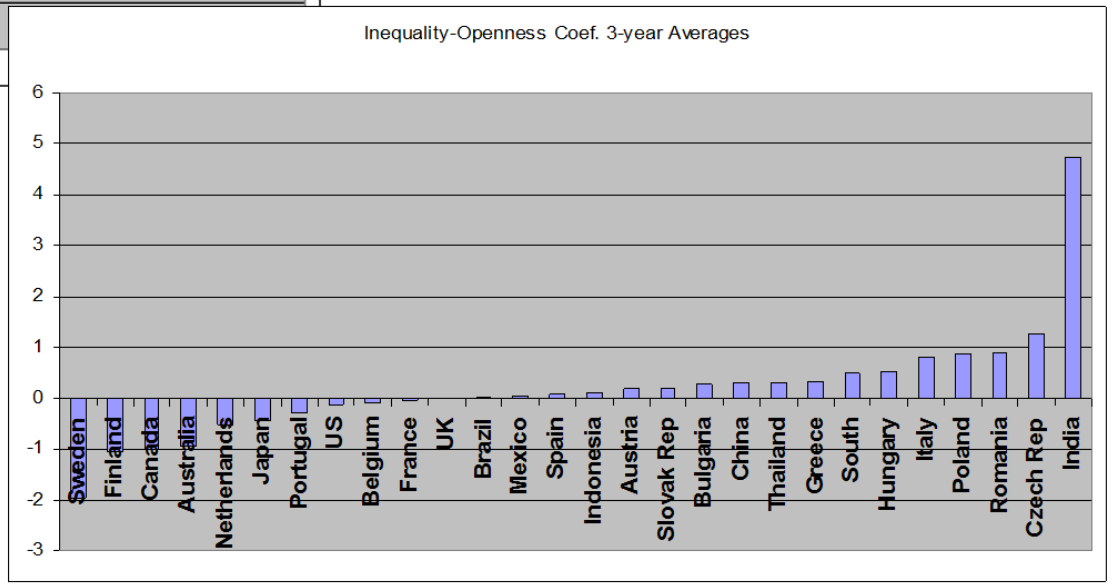
The literature (II)

- **Empirical models**
  1. Most studies country cases
  2. But very limited number of cross-country comparisons
- **Country cases**
  1. China
     - Trade leads to greater regional inequality (Yang, 2002; Zhang and Zhang, 2005)
  2. Mexico
     - Greater location of economic activity in the border with the US, leading to convergence, followed by divergence (Hanson, 1996; Rodríguez-Pose and Sánchez-Reaza, 2005; Faber, 2007; Jordaan, 2008)
- **Cross-country analyses**
  1. Milanovic (2005): Absence of a significant relationship between trade and inequality
  2. Rodríguez-Pose and Gill (2006): Shifts in trade composition matter

Is trade the cause for rising disparities?

Trade patterns do not seem to make an overall difference

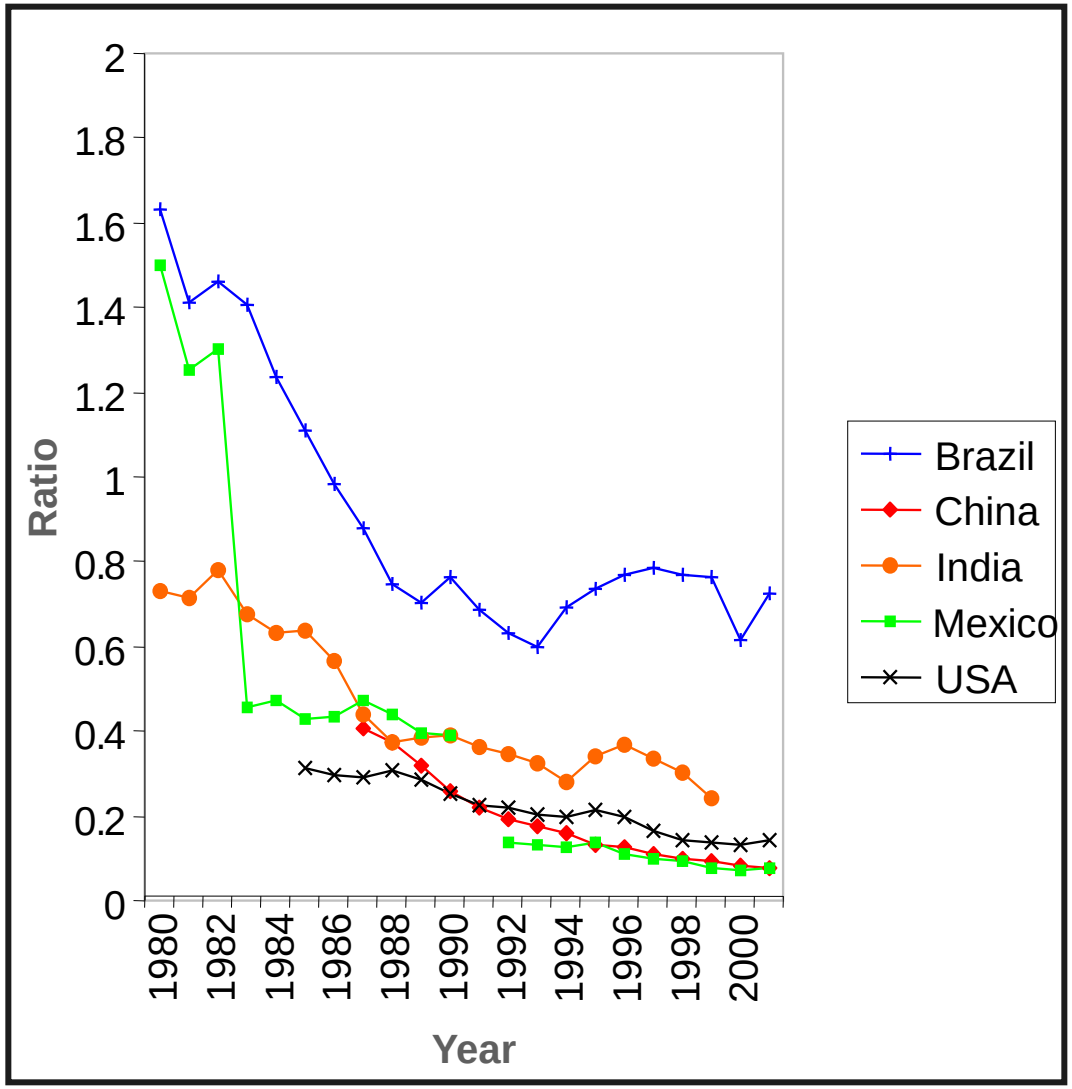




Sectoral shift

Agricultural to industry export ratios in selected countries show that:

The importance of agricultural exports has been declining compared to industrial goods



Source: Own elaboration from Comtrade, United Nations Statistics Division data

The model

NEG

1. Greater trade openness will have a more polarising effect in countries characterised by:
   - higher differences in **foreign market accessibility** among its regions
   - where there is also a high degree of **coincidence** between the **regional income** distribution and **accessibility** to foreign markets.

Conditioning factors

1. Greater impact in countries exhibiting higher regional **differences endowments and sectoral specialisation**
2. Greater impact in countries with a weaker **redistributive capacity by the central government**
3. Ambiguous impact depending on **labour mobility** and the specific conditions of the country
4. 'Inappropriate' **institutions** will represent an important barrier for trade, leading to a spatial effect of trade more severe in countries with a significant gap in institutional capacity among its regions.

The model (III)

$$\ln Inequality_{it} = \alpha + \beta 1\ [\ln(GDPcap_{it}) * Development_i] + \beta 2\ [\ln(Trade_{it}) * \ln(MarketAccess_i) * \ln(Coincidence_i)] + \beta 3\ [\ln(Trade_{it}) * \ln(Sectors_i)] + \beta 4\ [\ln(Trade_{it}) * \ln(Government_i)] + \varepsilon_{it}$$

- ***Inequality***$_{it}$ represents the level of within-country regional inequality in country i in year t, measured using the Gini index of regional GDP per capita.
- ***GDPcap***$_{it}$ denotes real GDP per capita in PPP constant US$ (2000) for country i in year t.
- ***Development***$_i$ is a dummy variable which takes the value of 1 if country i is developing or transition economy and 0 otherwise
- ***Trade***$_{it}$ represents the total Imports and exports in current US$ divided by GDP in PPP current US$ for country i in year t.
- ***Sectors***$_i$ is a variable aimed at capturing the degree of inter-regional sectoral differences that exist in different countries
- ***Government***$_i$ denotes the size of government in country i, captured by the share of non-military/non-defence government expenditure in total GDP
- ***MarketAccess***$_i$ denotes the degree of inter-regional differences in foreign market access across countries

Method

- **Static analysis**
  1. Static OLS with country and time fixed effects
- **Dynamic analysis**
  1. 1st difference Arellano-Bond GMM estimation

Trade and level of development

Levels of trade on their own are not associated with changes in regional disparities

But, after controlling for the level of development of a country, trade seems to have a more polarising effect in developing countries

Table 2: Static Panel with Country and Time Fixed Effects

	2	3
GDPcap	.2433**	.2766**
GDPcap*Development	-.1223	-.1721
Trade	.1728***	.1042*
Trade*Development		.1237*
Constant	-3.631	-3.811
R^2 (within)	0.227	0.2327
Observations	435	435
F-test for country dummies	Prob>F =0.000	Prob>F =0.000

Trade and conditioning factors

Trade has a more polarising effect in countries with low levels of government expenditure and redistribution

And in those where there is a significant difference in sectors among regions

Table 2: Static Panel with Country and Time Fixed Effects

	4	5
GDPcap	.2657**	.3049***
GDPcap*Development	-.1523*	-.1992**
Trade	-.4840***	.8620***
Trade*Development		
Trade*Government	-.3337***	
Trade*Sectors		.2081***
Trade*Coincidence50*MAPolarisation		
Trade*Coincidence25*MAPolarisation		
Trade*Coincidence50*Surface		
Trade*Coincidence25*Surface		
Constant	-3.729	-3.968
R^2 (within)	0.2527	0.2577
Observations	435	435
F-test for country dummies	Prob>F =0.000	Prob>F =0.000

Trade and market access

Differences in market access represent a key factor determining whether trade leads to greater territorial polarisation

Specially when differences in market access coincide with differences in regional wealth

	6	7	8	9
GDPcap	.1799	.1791	.2251**	.2418**
GDPcap*Development	-.0540	-.0404	-.1025	-.0998
Trade	7055***	1.770***	1.1955**	1.2968***
Trade*Development				
Trade*Government				
Trade*Sectors				
Trade*Coincidence50*MAPolarisation	.7888			
Trade*Coincidence25*MAPolarisation		.8889***		
Trade*Coincidence50*Surface			.1544***	
Trade*Coincidence25*Surface				.1351***
Constant	-3.297	-3.317	-3.699	-3.841
R^2 (within)	0.2503	0.2622	0.2775	0.2885
Observations	435	435	435	435
F-test for country dummies	Prob>F =0.000	Prob>F =0.000	Prob>F =0.000	Prob>F =0.000

Trade and conditioning factors

Adding greater nuance to the developed/developing country division reinforces the level of polarisation in the developing world

But there is no real difference between upper and lower middle income countries

Table 4: Trade Effect [illegible] Developed and Deve[illegible]ping Countries

	1	2	3	4
GDPcap	.27[illegible]**	.4628**	.1427	-.0954
GDPcap*Development	-.17[illegible]	-.3489[illegible]	-.2438**	.3507*
Trade	.1042*	-.05[illegible]	.9534**	2.8924***
Trade*Development	.1237*			-3.2878***
Trade*GDPcap			-.0814**	-.2888***
Trade*GDPcap*Development				.3508***
Trade*Middle Income		.3963***		
Trade*Low Income		.3523***		
Constant	-3.811	-5.027	-2.262	-1.951
R^2 (within)	0.2327	0.2968	0.2347	0.2681
Observations	435	435	435	435
F-test for country dummies	Prob>F =0.000	Prob>F =0.000	Prob>F =0.000	Prob>F =0.000

Empirical results. Dynamic analysis

	1	2	3	4	5	6	7	8	9	10
quality	.7132***	.7188***	.6917***	.6917***	.7126***	.7154***	.7112***	.7090***	.7099***	.6917***
	-.0102	.0002	.006	.0216	-.0165	-.0106	-.0168	-.0137	.0040	.0037
evelopment	.0303	.0243	.0141	-.0038	.0289	.0261	.0338	.0311	.0166	.0133
	.0158	.0200	-.2429**	.2631**	-.1196	-.0803	.0862	.1187	.0232	.1172
elopment		-.0116								-.0486
ernment			-.1384**							-.0636
ors				.0726**						.0596
ıcidence50*MAPolarisation					-.0110					
ıcidence25*MAPolarisation						.0694				
ıcidence50*Surface							.0009			
ıcidence25*Surface								.0174		
ıcidence25*Development									.7210**	.5898*
ıs	379	379	379	379	379	379	379	379	379	379
:	Prob>chi2	Prob > chi2	Prob>chi2	Prob>chi2	Prob>chi2	Prob>chi2	Prob>chi2	Prob>chi2	Prob>chi2	Prob>chi2
	=0.9355	=0.9407	=0.8894	=0.9147	=0.9493	=0.9484	=0.9541	=0.9461	=0.9530	=0.9395
utocorrelation	Pr>z=	Pr > z=	Pr>z=	Pr>z=	Pr>z=	Pr>z=	Pr>z=	Pr>z=	Pr>z=	Pr>z=
	0.5032	0.4920	0.5262	0.5343	0.5011	0.4886	0.5333	0.5252	0.4877	0.4958

Results of the dynamic analysis

- **Most differences in current within-country regional inequalities are explained by previous levels of inequality**
- **Sectoral differences and low government expenditure are factors associated with rises in regional inequality**
- **But we cannot say the same about market access and and whether differences in market access coincide with differences in wealth**
  1. The coefficients are insignificant, although they have the same signs as in the static analysis
- **Inertia seems to be the main factor explaining levels of territorial polarisation in the medium-term**

Overall results

- **Country-specific characteristics determine how trade affects the evolution of regional disparities**
- **Trade leads to greater territorial polarisation in countries with:**
  1. Higher inter-regional sectoral differences
  2. Lower shares of government expenditure
  3. A combination of higher internal transaction costs with higher degrees of coincidence between wealthier regions and foreign market access.
- **But the importance of differences in market access and pre-existing disparities wanes in time**
  1. Most differences in current within-country regional inequalities are explained by previous levels of inequality

Overall results (II)

- **Trade patters affect the evolution of regional inequality in developing countries to a much greater extent than in developed ones**
  1. At polarisation seems to drecease at a slower pace than in developed countries
  2. Trade also seems to have a greater sway on the evolution of regional inequality than economic growth
  3. Economic growth cannot easily offset the polarising effects of greater trade in the developing world
- **Structural characteristics in the developing world increase the polarising effect of trade**
  1. Greater sectoral polarisation
  2. Weaker states
  3. Differences in market access
  4. In countries with already strong interal differences in wealth

Trade, economic integration, and territorial equity

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More information at

http://personal.lse.ac.uk/rodrigu1/