Growth and regional economic inequalities in Europe

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Introduction

➢ Integration and cohesion in EU: empirical research shows that there are still deep income disparities, which have widened in the past two decades (Muštra and Škrabić, 2014).

➢ Europe has been allocating a significant share of its budget to regional policies; in 2017, 34% of the total budget was assigned to the objective of economic, social and territorial cohesion.

➢ According to the Treaty, the reduction of inequalities could be referred to countries or to regions inside countries.

➢ Cohesion on a regional ground seems to be a compulsory prerequisite for cohesion on a social ground. Then, the spatial dimension of inequalities could be an important determinant of inequalities at national level.

Introduction

➤ The existing evidence on European integration, shows a process of convergence between countries but not within regions inside countries.

➤ Inequality in Europe has risen quite substantially since the mid 1980's, and towards the end of 2000s income distribution in Europe was more unequal than in average OECD countries (Bonesmo Fredriksen, 2012).

➤ It is common to many countries, both developed and developing: the inequality in income per person among US metropolitan areas was 30% higher in 2016 than in 1980 (Ganong and Shoag, 2015).

Objectives and structure of the work

➢ We claim that EU cohesion policy is principally about converging average (per capita) income /productivity levels and does not have a sophisticated conception about the intra-country or intra-region distribution of income, nor about tradeoffs between agglomeration, income and spatial equalization. We assess existing inequalities and their recent evolution in the last 15 years, in order to verify whether there is a growing disconnection between the geography of income and that of production.

➢ Descriptive evidence about global convergence and local divergence are given at European level and at national level for Italy.

➢ Focus on how the process of spatial economic concentration is affecting growth and disparities among European regions.

➢ Link between growth and regional disparities, with the related policy implications for the trade-off of equity versus efficiency.

➢ Econometric analysis of the relationship between spatial and individual inequalities.

➢ Conclusions and policy considerations.

Regional inequality, national growth and spatial agglomeration
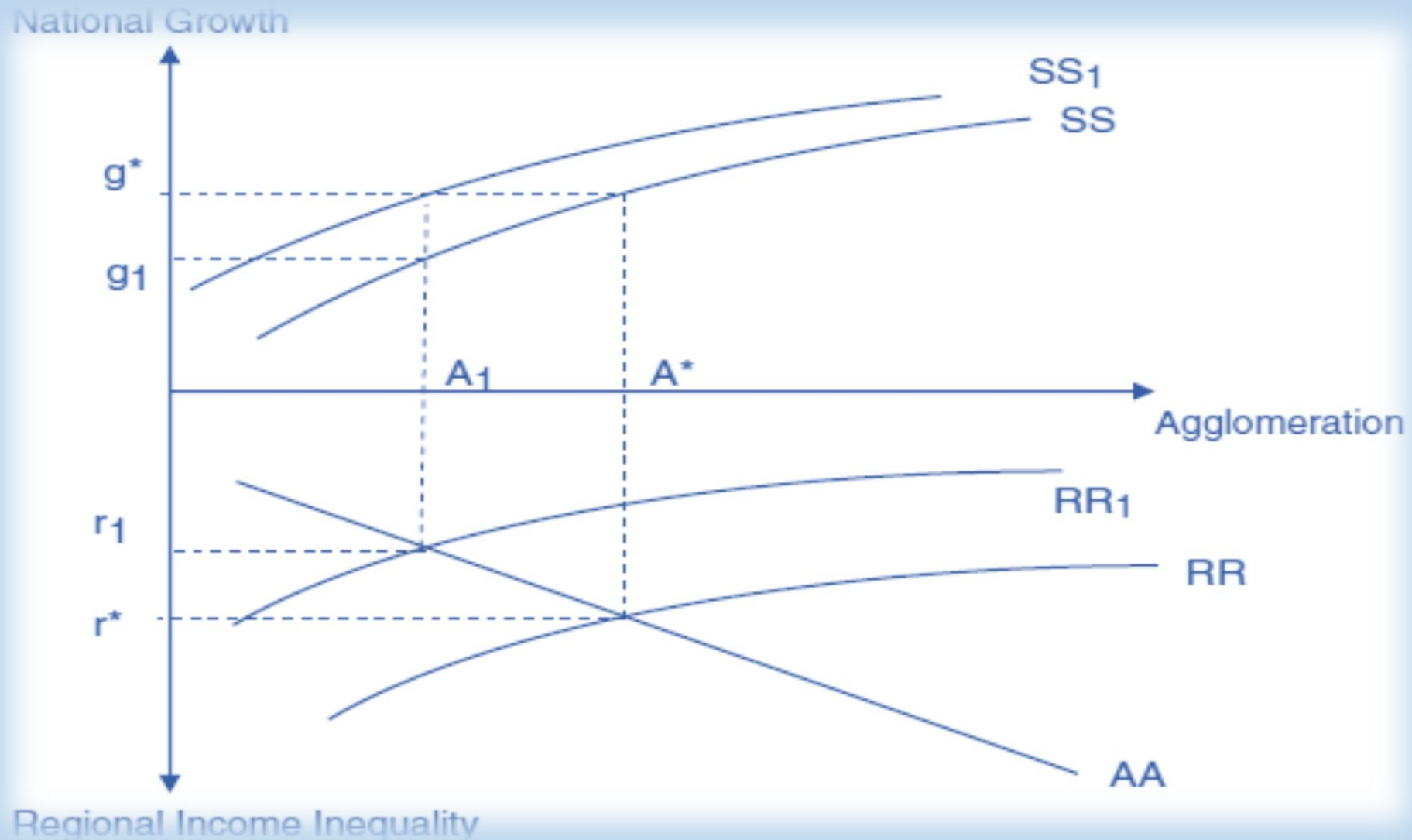
NEG Theory: centripetal and centrigufal forces

➤ According to NEG models the spatial structure of the economy is the outcome of two sets of opposing forces.

➤ On one hand NEG models predict that in presence of imperfect competition, increasing returns to scale and factor mobility there are strong centripetal forces that determine spatial concentration (agglomeration) of economic activity.

➤ On the other there are other centrifugal processes, such as transport costs, restricted factor mobility, market and local congestions effects that encourage geographical dispersion of firms and workers.

NEG Theory: agglomeration forces and regional inequality

➤ When transport costs are high, distant provision of goods is too costly, they have to be provided locally and firms will disperse around immobile markets.

➤ When transport costs and inter-regional transaction costs get lower immobile markets can be provided effectively at a distance and this pushes firms to agglomerate and gain from the various economies of scale and externalities.

➤ Agglomeration forces usually dominate in this kind of models, regional inequality increases and this turns fuels to further agglomeration since firms want to locate where demand and income are the highest and where the scope for inter-firm are linkages are high.

➤ Also workers are attracted by agglomeration because of more job opportunities (the home market effect). The result is a positive relationship between agglomeration and regional inequality (curve AA)

NEG Theory: agglomeration, national growth and congestion

➢ The spatial concentration of economic activities, through localized positive spillovers, has a beneficial effect on innovation and hence on national economic growth, via an increase of productivity and real output.

➢ The relationship between the degree of spatial agglomeration (regional concentration of economic activities) at national level and the rate of growth of the country (the local spillover effect, the curve SS) is positive.

➢ At the same time, a higher innovation rate attracts new firms that compete with incumbent firms thereby lowering profit rates, and this leads to reduction of regional disparities ("the competition effect"). Also the attraction of firms on the rich agglomeration region produces, at some point, to congestion effects and negative externalities which reduce again regional inequalities.

➢ Hence there is another relationship coming out, that is the agglomeration-competition and congestion relationship (the RR curve).

NEG Theory: *The equilibrium and the trade-off*

➢ NEG models at this point give an equilibrium (resulting from the intersection of the curves AA and RR), that determines the level of agglomeration, inequality and national growth.

➢ If policy makers want to reduce inequality through interventions that disperse economic activity from spatial agglomeration (or though redistributive fiscal and monetary measures) the curve RR shifts towards RR_1, with a decrease or regional inequality to r_1.

➢ The transfer of purchasing power to the poorer region increase market demand and attracts new firms, but since the decrease in spatial agglomeration is less conducive to spillovers and innovation this causes a fall in national growth.

➢ A trade-off between regional equality and national growth is predicted.

The evolution of regional disparities

➤ Spatial inequalities have developed among the countries' own internal regions in different ways.

➤ Duro (2001) has shown that up the mid-eighties GDP (he considers a period going from 1982 to 1997) per capita inequalities among member states represented half of the inequalities among regions, and inequalities among regions within each state were the other half.

➤ Rodriguez-Pose and Tselios (2009) found that in the period 1995-2000 (102 NUTS1 in EU-13) inequality slowly decreased, and this was due to the within component, which also explained the bulk of the total inequality (around the 80%).

➤ Borsi and Metiu (2013) find the presence of convergence clubs, on the basis of geographic regions, between 1970 and 2010, with a separation between new and old member states and along the south-east vs north-west dimension form the 90s.
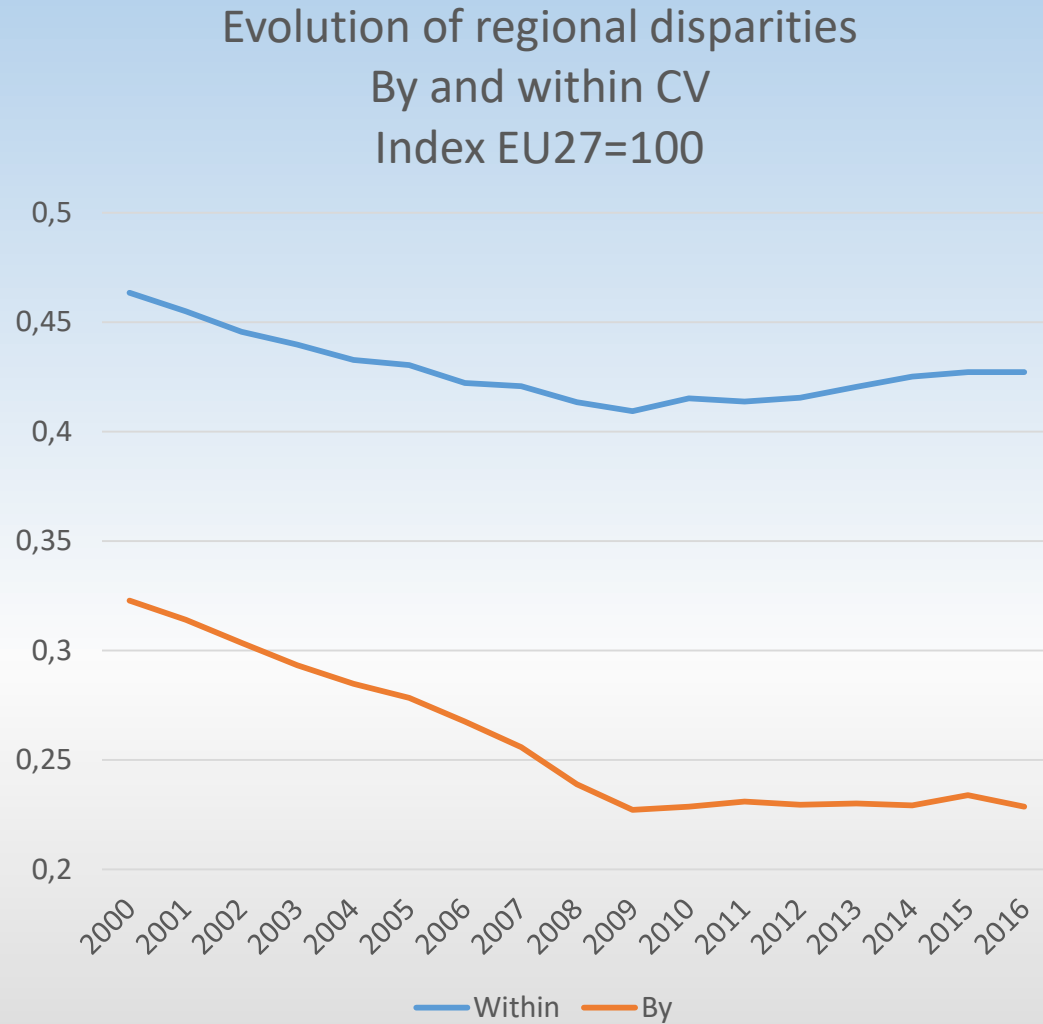
The evolution of regional disparities

➢Monfort (2008), calculates the coefficient of variation for the EU-15 and the EU-27, from 1979 to 2004: the process of convergence was strong up the mid-90s, but then it lost momentum. There is a clear downward trend from 1980 to 1996.

➢The index falls from 0.43 in 1995 to 0.35 in 2005. The plausible interpretation is that if convergence is still at work in the enlarged EU, it is due to the fact the poorest regions of the new member states are catching up on the richest ones, while among the EU-15 regions convergence is no longer taking place.

The evolution of regional disparities

- Behind the mild increase of regional disparities, considering Europe as a whole, there are some strong increases for some countries, and this stems from the fact that in each country the process of growth presents significant local differences and is usually limited to a number of regions generally including the capital city regions.

- This is consistent with the complexity of the EU panorama in terms of regional inequalities.

- A territorial patchwork of diverging real incomes between states and regions, within regions, between core and peripheral areas, between large urban agglomerations and stagnating industrialised and remote regions.

The evolution of regional disparities

The possible divergence between geography of production and income

Evolution of regional disparities
By and within CV
Index EU27=100

CV of disposable income per capita
European regions

Within — By
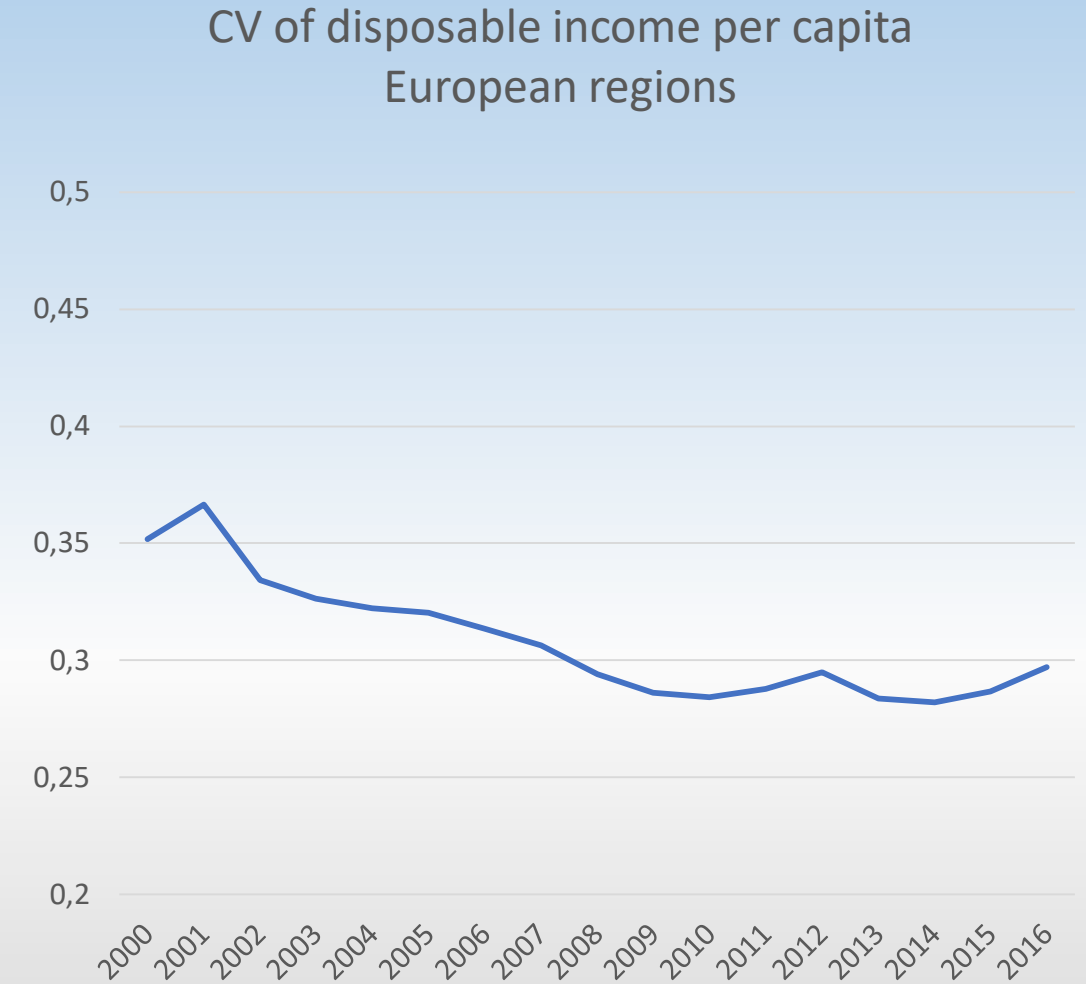
The possible divergence between geography of production and income, the case of Italy

CV of GDP per capita
Italy NUTS2 regions
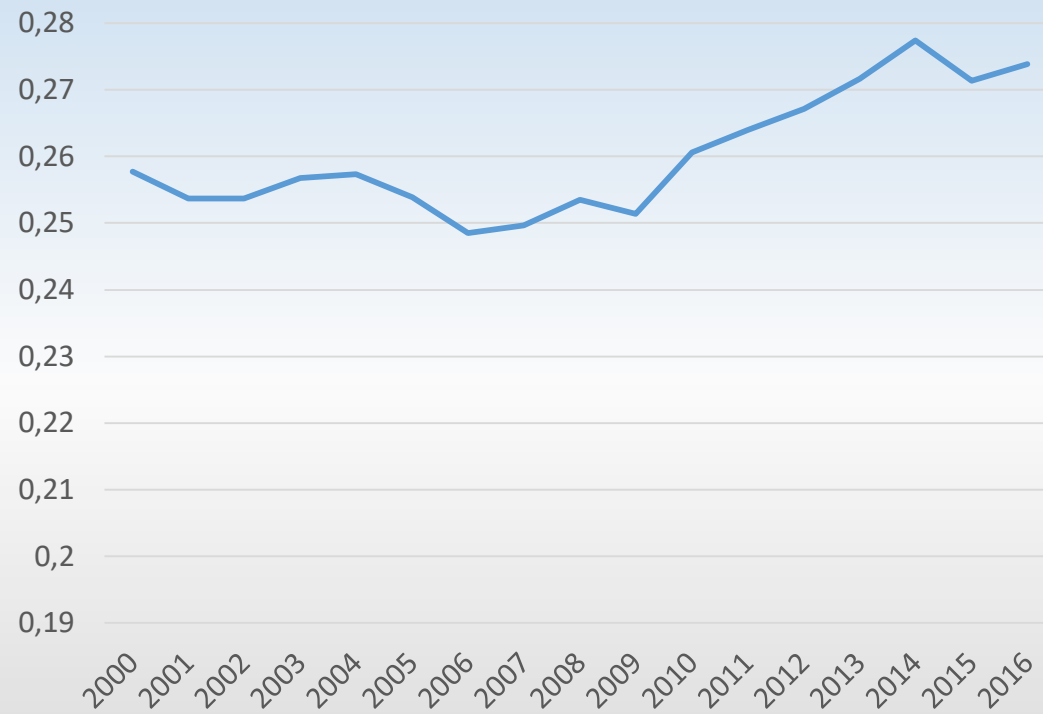
CV of disposable income per capita
Italy NUTS2 region

The possible divergence between geography of production and income, the case of Italy

➢There is a growing disconnect between the geography of production, more unequal, and the geography of incomes becoming more equal (Davezies 2001): regional convergence cannot be always considered a synonymous of regional cohesion.

➢Regional income transfers are important even though it is quite hard to quantify the impact of public versus private transfers, in explaining differences between GDP and disposable income.

Some evidence about agglomeration

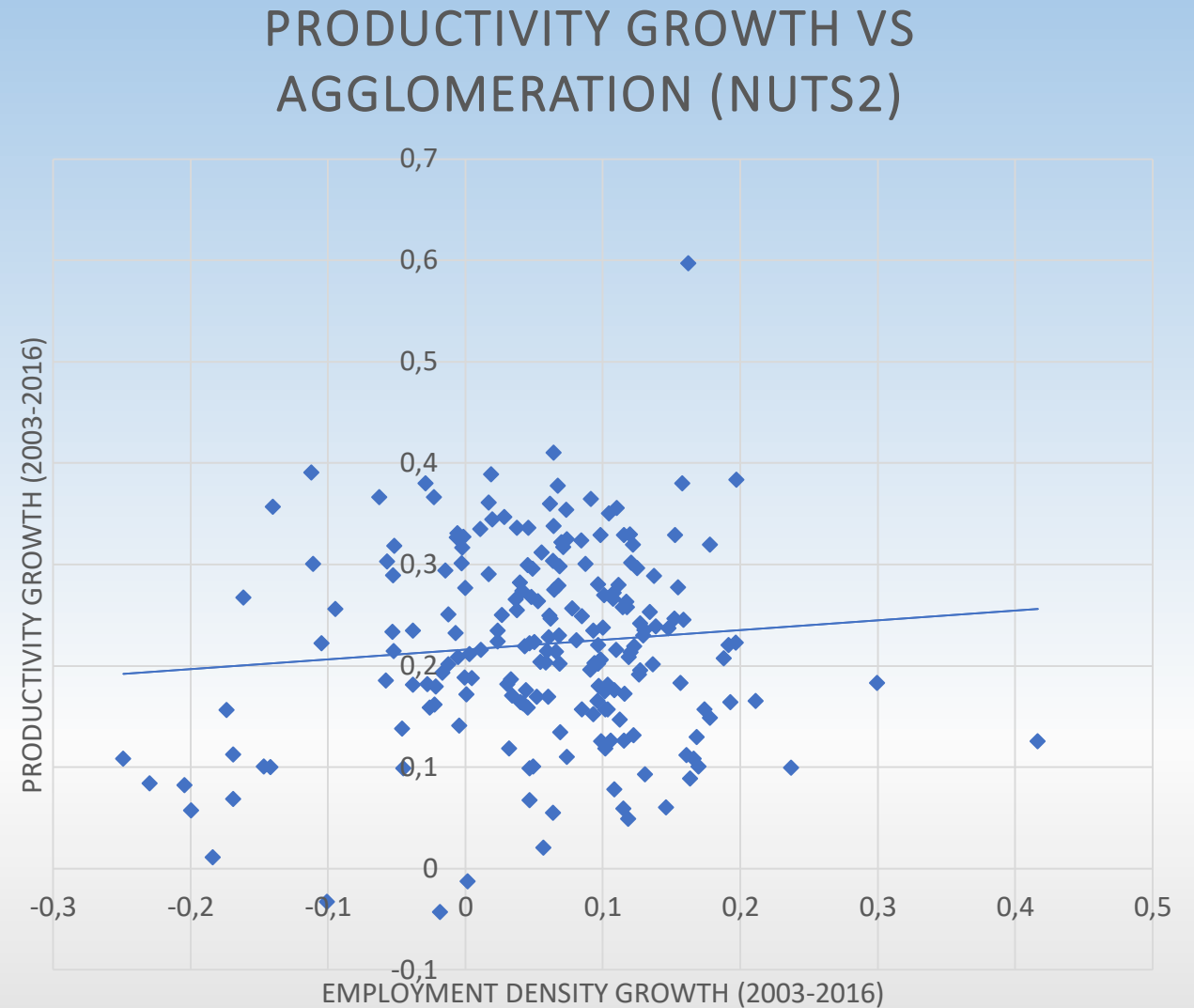Geographical concentration of manufacturing activity
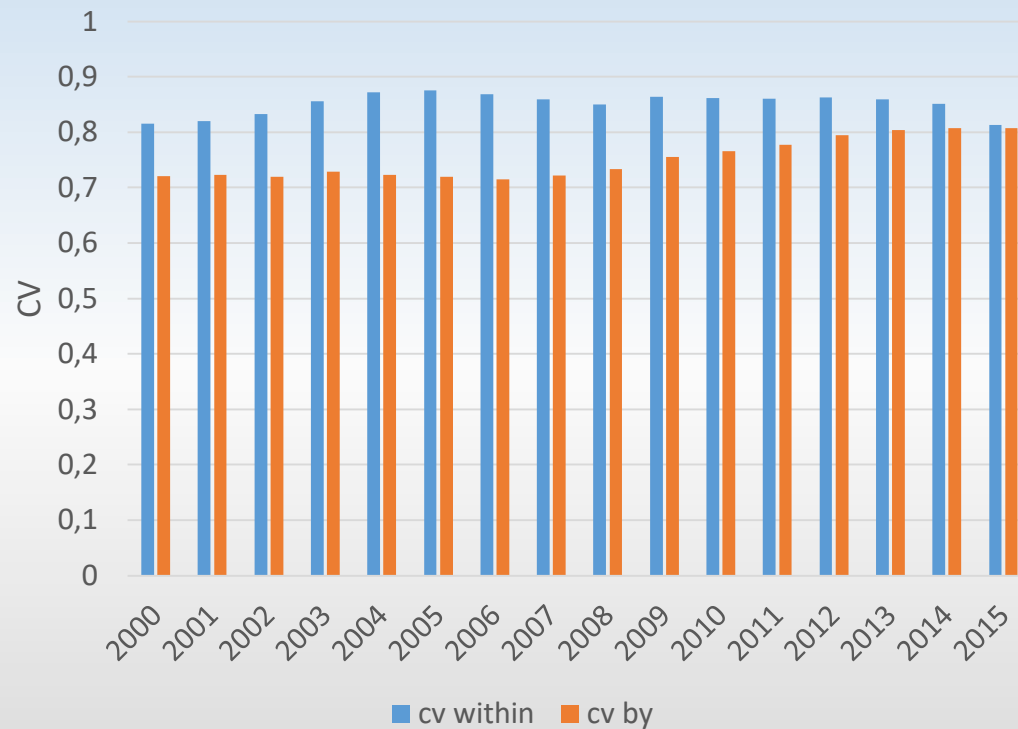
Locational Gini Coefficient
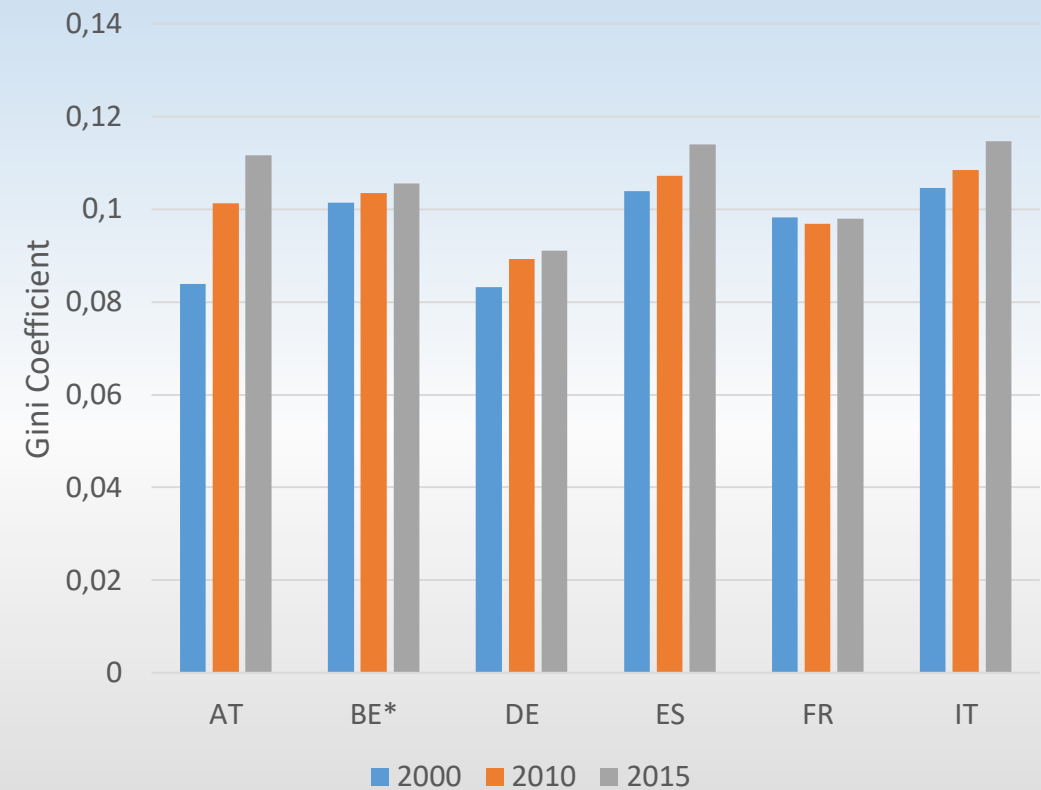
Some evidence about agglomeration

- Ciccone (2002) shows that employment density and agglomeration effects have a positive effects on productivity levels.

- In contrast Bosker (2007) in a study of 280 regions across Europe (1977-2002) found that regions with dense agglomeration of economic activity grew slowly than other regions, indicating a negative agglomeration effect.

- In our case, a positive relationship comes out, but not of the sort assumed or implied by NEG theory models.

PRODUCTIVITY GROWTH VS AGGLOMERATION (NUTS2)

PRODUCTIVITY GROWTH (2003-2016)

EMPLOYMENT DENSITY GROWTH (2003-2016)

Inequality and concentration of GDP and of manufacturing activity

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Growth, equity and efficiency in regional policy

➢ A motivation for public intervention at regional level is that of efficiency, but much of the language of European cohesion policy eschews the idea of a trade-off between equity and efficiency.

➢ Efficiency may demand more or less spatial concentration.

➢ If in Europe country convergence goes along with local divergence, then the argument of efficiency gains with spatial concentration is getting priority.

➢ Excessive equality may be detrimental to growth if it involves limiting productivity and innovation enhancing effects of agglomeration, while some degree of inter-regional inequality may raise the overall rate of growth (Farole et al. 2011).

➢ Therefore, a trade-off between equity and spatial efficiency appears and it cannot easily be assessed (Martin 2009).

Growth, equity and efficiency in regional policy

GDP per capita vs disparities (2015)
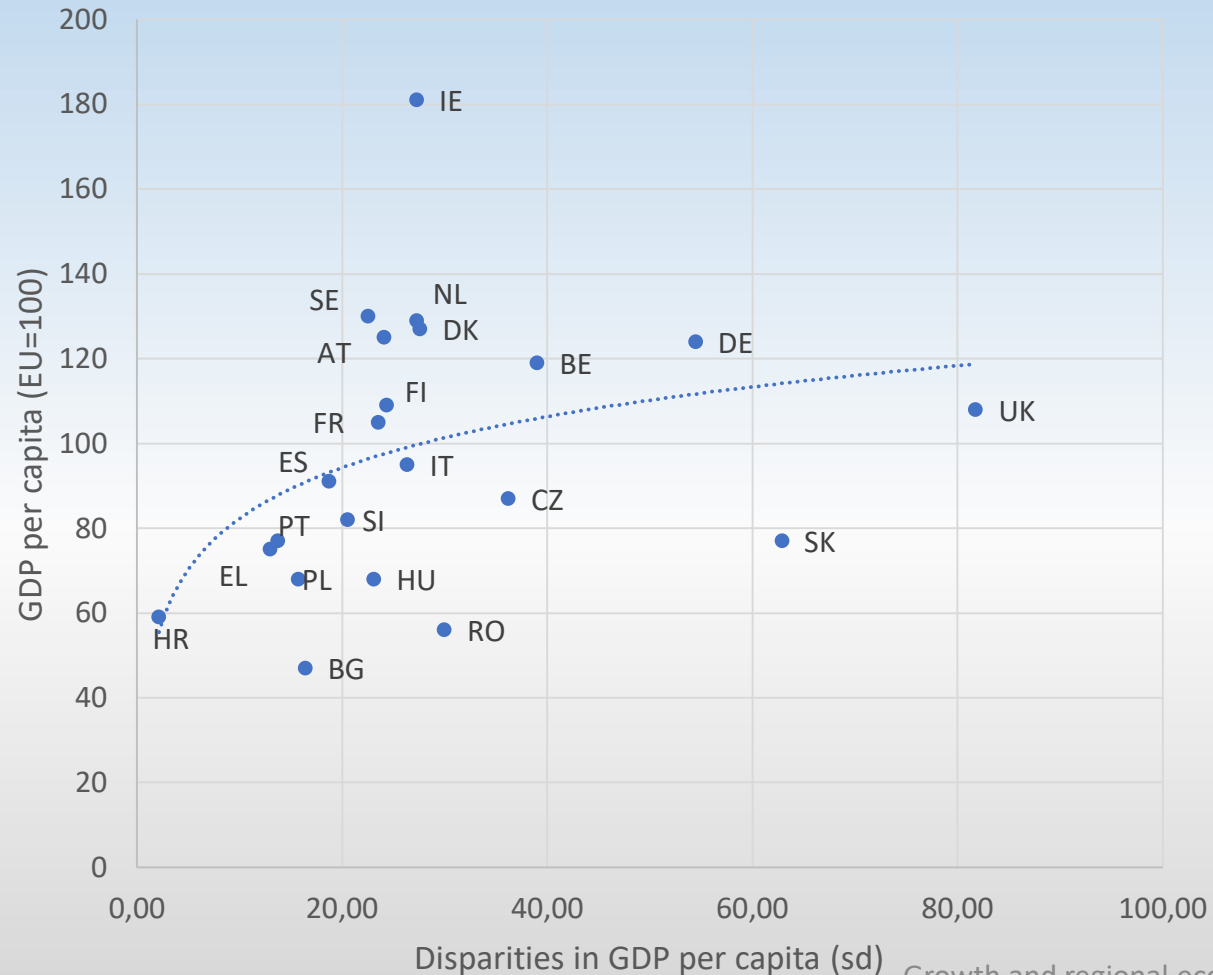
Growth and regional disparities 2000-2015

Growth and regional economic inequalities in Europe
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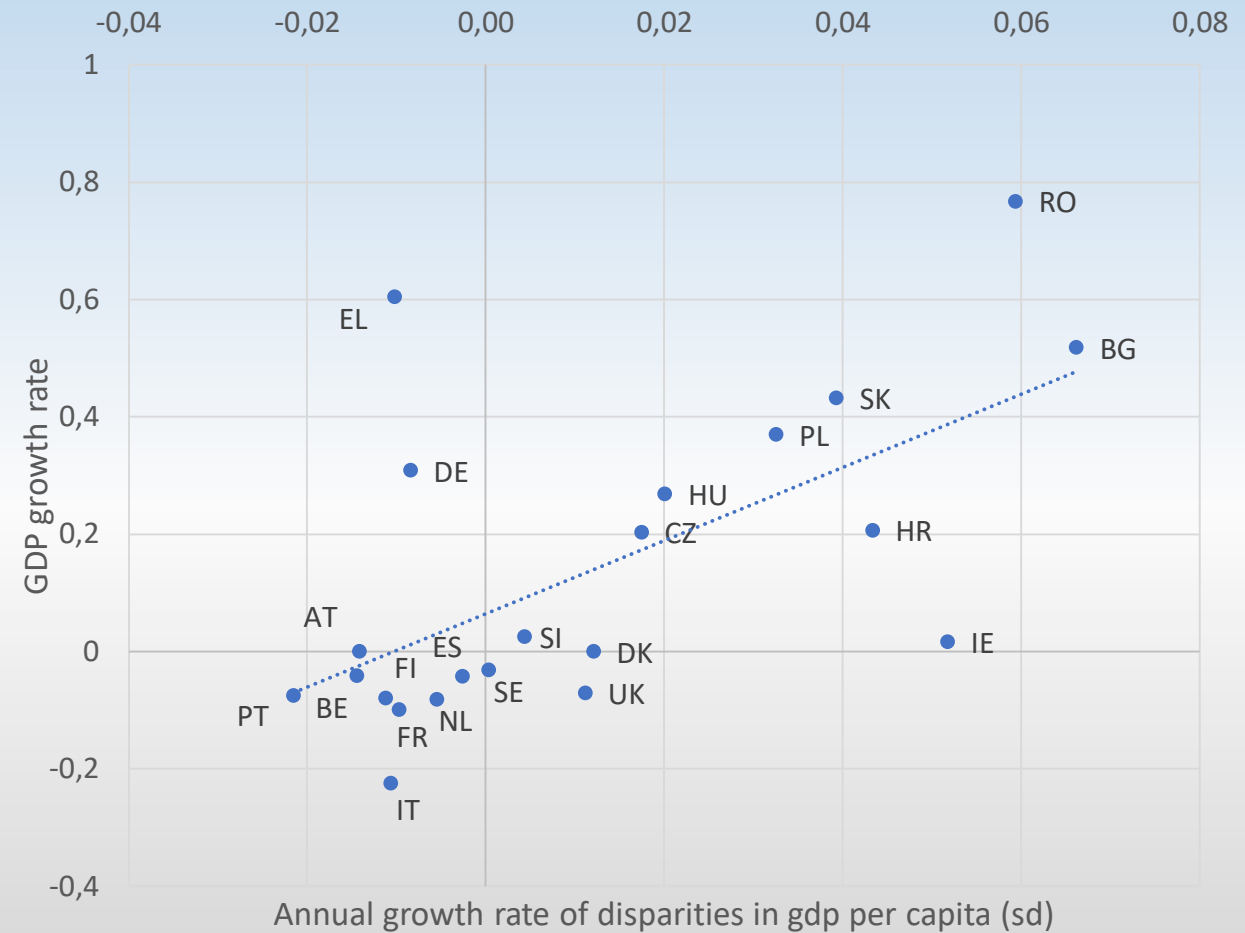
Growth, equity and efficiency in regional policy

➢ The poorest countries are also those with the lowest level of disparities (Hungary, Portugal, Bulgaria, Greece, Poland, Croatia, Slovenia),

➢ The group of rich countries exhibits an intermediate level of disparities (Spain, Italy, France, Finland, Denmark, Austria, The Netherlands, Sweden, Ireland and Belgium).

➢ The highest level of disparities is held by UK, followed by Slovakia and Germany. Eurostat data in 2015 show that this is due to the strong GDP growth of the capital city regions.

Growth, equity and efficiency in regional policy

➢The first implication of the existence of a trade-off is relative to the definition and the quantification of objectives of regional policy, so that a choice has to be made between the objective of lowering absolute differences in GDP per capita among regions inside countries and that of fasting convergence towards the rest of EU.

➢It is a strategic choice between internal and external convergence, to which the financing and the location of infrastructural projects is connected.

➢Theory predicts slow convergence through diffusion processes and labor mobility, but these mechanisms do not seem to work any longer to trigger economic convergence.

➢Instead strong barriers in terms of skill structures and formal and informal institutions are at work against territorial development. Inter-regional inequality may represent not only an economic problem but also a source of political and social instability (Iammarino et al. 2018).

Country (j)	$\overline{Y}_j$ (average country GDP)	Regions (i) of country (j)	Y_{ij} (i=1, 2; j=A, B) GDP per capita of each region)	Spatial inequality $\frac{Y_{1A}}{Y_{2A}}$; $\frac{Y_{1B}}{Y_{2B}}$ (Ratio of GDP of the rich region to the poor one)	Population (n. of individuals)	Distribution of Income between individuals	Social (overall) inequality (%of income that goes to the richest 10%)
Country A	1.9	Region 1A	1.9	$\frac{Y_{1A}}{Y_{2A}}$ 1.9/1.9=1 No spatial inequality	50	5 individuals earn 10 (total=50); 45 individuals earn 1 (total=45)	100/190= 53% very unequal society
		Region 2A	1.9		50	5 individuals earn 10 (total=50); 45 individuals earn 1 (total=45)	
Country B	1.9	Region 1B	2.3	$\frac{Y_{1B}}{Y_{2B}}$ 2.3/1.5=1.5 There is spatial inequality	50	10 individuals earn 5.5 (total 55); 40 individuals earn 1.5 (total 60)	55/190= 29% less unequal society
		Region 2B	1.5		50	50 individual earn 1.5 (total 75)	

Name of the variable	Acronym	Source	Definition	Meaning
Index of Interpersonal inequality	$INEQ_{i,t}$	Eurostat Regio	Logarithm of the ratio of the mean net income of the top decile to the bottom decile. Net income is the disposable income in purchasing power standard based on final consumption per inhabitant. It is calculated among all regions (NUTS2) being part of the country.	Social/interpersonal /income- inequality/disparity
Coefficient of Variation of GDP per capita	$CVgdp_{i,t}$	Eurostat Regio (GDP) Cambridge Econometrics (POP)	Coefficient of Variation (standard deviation/mean) on GDP per capita at regional level (NUTS2), in purchasing power parities in percentage of the EU average. The analytical weights are given by the population.	Spatial/territorial-inequality/disparity in production; Geography of production
GDP per capita	$GDP_{i,t}$	Eurostat Regio	Gross Domestic Product per capita in pps in percentage of EU Average, (NUTS0)	Well-being/wealth
Expenditure per capita in social protection	$SE_{i,t}$	Eurostat Regio	Expenditure in social protection in Purchasing power standard (PPS) per inhabitant (NUTS0)	Country preference for redistribution
Dispersion of unemployment	$DU_{i,t}$	Eurostat Regio	Coefficient of variation of regional unemployment rates (NUTS2). CV is defined as the ratio of standard deviation to the mean. This CV is multiplied by 100 to make a percentage.	Cohesion (another measure of spatial inequality)
CV of manufacturing activity	$CVman_{i,t}$	Eurostat Regio	Coefficient of variation of regional manufacturing employment (NUTS2). The analytical weights are given by total employment in NACE sectors	Geographic concentration of economic activity (manufacturing)

The econometric model: specification, methods and results

➤*Methodology*

We apply the difference-generalized method of moments (GMM) framework, as proposed by Arellano and Bover (1995) and Blundell and Bond (1998).

➤*The model*

Hence, we use the GMM framework, to estimate the following equation:

$\Delta ln(INEQ_{i,t}) = \beta_1 \Delta ln(INEQ_{i,t-1}) + \beta_2 \Delta ln(GDP_{i,t}) + \beta_3 \Delta ln(CVgdp_{i,t}) + \beta_4 \Delta ln(SE_{i,t}) + \beta_5 \Delta ln(DU_{i,t}) + \beta_6 \Delta ln(CVman_{i,t}) + \Delta \varepsilon_{i,t}$,

where $\Delta \varepsilon_{i,t} = \Delta u_{i,t} + \Delta v_{i,t}$,

the subscripts $i = (1,…, N)$, $t = (1,…,T)$ indicate respectively the number of individuals (22 European countries) and the period of time (T=16 years), and all the variables being first differences, i.e. $\Delta lnX_{i,t} = lnX_{i,t} - lnX_{i,t-1}$.

GMM-Difference dynamic panel-data estimation.								
Dependent variable: INEQ								
1st model			2nd model			3rd (full) model		
Independent Variable:	Coefficient	Std. Error	Independent Variable:	Coefficient	Std. Error	Independent Variable:	Coefficient	Std. Error
lnINEQ $_{i,t-1}$	-1.8973***	0.0426	lnINEQ $_{i,t-1}$	0.5524***	0.0047	lnINEQ $_{i,t-1}$	0.5458***	0.0026
lnGDP $_{i,t}$	-0.9384***	0.0318	lnGDP $_{i,t}$	-0.0351***	0.0083	lnGDP $_{i,t}$	-0.0130**	0.0059
lnCVgdp $_{i,t}$	0.1026***	0.0089	lnCVgdp $_{i,t}$	0.0159***	0.0018	lnCVgdp $_{i,t}$	0.0161**	0.0076
			lnSE $_{i,t}$	-0.0265***	0.0008	lnSE $_{i,t}$	-0.0384***	0.0021
						lnDU $_{i,t}$	-0.0043*	0.0025
						lnCVman $_{i,t}$	0.0171***	0.0039
J-statistic	19.35849		J-statistic	17.79052		J-statistic	15.0479	
Prob(J-statistic)	0.498645		Prob(J-statistic)	0.469531		Prob(J-statistic)	0.658675	
Arellano-Bond Serial Correlation Test	AR(1) p-value: 0.0056	AR(2) p-value: 0.7647	Arellano-Bond Serial Correlation Test	AR(1) p-value: 0.0995	AR(2) p-value: 0.9912	Arellano-Bond Serial Correlation Test	AR(1) p-value: 0.1096	AR(2) p-value: 0.9525

The econometric model: specification, methods and results

➢ Previous inequalities have clearly a weight on actual inequalities.

➢ Spatial inequalities in GDP strongly affect interpersonal inequalities (an increase of 10% of spatial disparities has an impact of 0.16% on social inequalities, 2nd model).

➢ The per capita expenditure on social transfer affects negatively social inequalities.

➢ GDP per capita has a negative and highly statistically significant coefficient.

➢ Other variables of spatial inequality, such as *CVman*, and *DU* are significant but with different sign. *CVman* is positive as expected by theories of NEG. The sign of DU is negative, with the possible interpretation that in those regions where unemployment is high and persistent and phenomena of polarization take place, dispersion is getting lower and this has a positive effect on inequalities.

Conclusions

➢Regional Inequalities in Europe exist, persist and are pervasive.

➢Geographical disparities at regional level are wider than at country level, with a mild increase in recent years.

➢Some countries experiment strong increases, and this can stem from the fact that the process of growth presents significant local differences and is usually limited to a number of regions generally including the capital city.

➢This process of convergence between countries but not within regions can be explained with regional divergence in production and in some specific cases, like Italy and France, in more equal geography of disposable income, so generating a sort of "scissor effect" between geography of production and that of income.

Conclusions

➢At regional level agglomeration of economic activities is higher than at country level (with some strong increases for specific countries) and the persistence of spatial disparities (both related to the geography of production and of manufacturing activity) affect social disparities.

➢Countries with major regional inequalities are also those with more individual inequalities, with a mitigating effect of social expenditure and GDP per capita.

➢Possible trade-off between equity and efficiency (generated by growth induced by agglomerative processes): European regional policy cannot claim legitimacy on either grounds.

Conclusions

➢ In literature a different approach to policy framework is emerging: if the European scenario is that of different structural development groups with weak convergence and diffusion mechanisms, the standard distinction between people-based policies (mobility and education) and place-placed approaches (job development, innovation support) is not effective.

➢ "Place-sensitive approaches" are based on individual and territorial logics of tackling diverse development trajectories, without referring to the conventional notions of convergence and redistribution.

➢ Factor mobility generates significant agglomeration effects from which prosperity does not descend sufficiently for all regions. European integration tends to concentrate high-skilled people and knowledge in few core places, so that Europe-wide general-purpose policies cannot address the problems of spatially uneven development.

Conclusions

➢ The right mix of instruments should be tailored to the structural prospects of different kinds of European regions.

➢ The disaggregation of different development realities within a place-sensitivity approach should allow to combat under-utilization of regions' resources, to distribute more widely development and to unleash the potential output of all regions.

➢ It is essential to take into account the potential barriers to people mobility and to spreading employment, especially for those groups of regions that have middle income and low income.

Conclusions

➢ The middle income regions: individual inequalities can be reduced increasing the productivity of individuals and systems by enhancing education and labour force participation. Ad hoc place-sensitive strategies:

✓ making significant investment in re-skilling

✓ more attractive inward investment flows

✓ a stronger participation on global production networks

✓ the realization of knowledge links between university and industry and of networks between workers, universities, investors and government

Conclusions

➤ The low income regions: limited skills and assets in technology and organization, not attractive for business, their key supply factor, labour, is not fully mobilized, limited intra-regional and external networks. European integration, can accelerate youth loss to higher income places (as NEG theory predicts) so undermining the economic and social potential. Ad hoc sensitive strategies:

- ✓ investment in infrastructure with intra-periphery connections
- ✓ policies and reform to increase labour force participation
- ✓ creation of start-ups, education reforms, job-skills matching, university-industry linkages
- ✓ identification of complementarities across agriculture, manufacturing and services

Thank you very much for your attention!