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Globalization and Endogenous Regional Growth

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Abstract

Globalisation is not a state of the world but an evolutionary process, which entails the increasing planetary integration of markets for goods and services, markets of location sites for economic activities, markets of production factors as technologies and information. Regions are involved in the globalization process to a different extent depending on their structure and specialization.

The aim of this paper is to investigate why and to what extent the involvement in global networks of European regions influences their growth. For this reason, a taxonomy of European regions in front of globalization is first built taking into account their structural connectivity features and their specialization in sectors which are open to international trade. Then, for each type of regions, the performance is analyzed in terms of the patterns of GDP, employment and productivity growth.

The paper also investigates the factors of growth, showing that, after national effects and innovative capabilities, one of the most important aspects is represented by FDI penetration. Finally, with a decomposition, the paper shows that the different involvement of regions in global networks also accounts for a significant, and growing, share of European regional disparities.

1. European regions in the global economy

Globalisation is not a state of the world but an evolutionary process, which entails the increasing planetary integration of markets for goods and services, markets of location sites for economic activities, markets of production factors as technologies and information.

For sure, globalisation is not a new phenomenon and in many periods of last century it reached very high and even comparable levels than today; moreover, it did not show up in a single, catastrophic jump, as the sudden adoption and fortune of the term in the political debate could suggest. What is new is the long-term, contemporary acceleration of many parallel integration processes, reinforcing and integrating one another in multiple ways. Since almost thirty years, international trade has been steadily growing at a rate which is the double of world GDP. Foreign direct investments, on their turn, have grown at rates which are the double with respect to international trade, and four time those of world GDP. Most of these investments are directed towards developed countries (80% in the years 1986-1990, around 60% in years 1993-97) and look particularly attracted by accelerations in economic integration processes: in fact EU countries, at the top of the process of creation of the Single Market in 1991-92, received up to 50% of world FDI (UNCTAD, 1997; Camagni, 2002). Moreover, mobility (and volatility) of financial capital has grown spectacularly: in 1995 financial exchanges reached one thousand billion dollars a day, more than the foreign exchange reserves of all national governments together. The short term profit objective of these movements imposes serious constraints on the governance of the international financial system. Finally, the nature of international trade has evolved from pure exchange of (final) goods among national production systems, to exchange of intermediate goods through the internationalisation of functions within production networks organised on a world-wide scale, to the most recent unbundling of functions

themselves in specific tasks, leading to a trade-in-task economy. With these qualitative changes, local production systems find themselves increasingly tied together and interdependent, mainly through the global strategies of multinational corporations.

Much theoretical and empirical work has been developed on globalization, trying to capture different effects of the quali-quantitative changes imposed by the integration of markets; new international trade patterns as a result of new relative price among nations, new industrial specialisation in international trade, new composition of intermediate vs. final goods traded at international level, as a result of new strategies of multinational firms, new location patterns of foreigner direct investments and consequent new growth opportunities for developing economies, migration trends and international trade flows represent some of the main issues treated in the recent literature.

From the perspective of the above mentioned studies, though, globalisation can be regarded as neutral for what concerns its spatial effects: opportunities and threats may look equivalent and specular. A number of good reasons exists, however, for claiming that a *regional perspective* is instead fundamental in order to understand the real economic effects of globalization, and that conceptual and empirical analyses at regional level are fundamental.

A first reason lies in the fact that fiercer competition, which represents an inevitable consequence of the integration of markets, leads to a worsening of regional disparities, especially driven by intra-national disparities, exacerbated by the concentration of economic resources in most advanced and dynamic places, where the most successful cities lie, and by resource inefficiency and lack of competitive advantage in peripheral regions. All this is even more remarkable, if one thinks that regional economic systems are more vulnerable to external shocks than nations; regions are by definition very open economies, highly dependent from external trade conditions and international terms of trade, from external final goods for internal consumption and from external intermediate goods and natural resources for local productions.

A situation of fiercer competition is even more dramatic if one thinks that, differently from nations, regions compete on the basis of absolute rather than comparative advantages. The two “classical” equilibrating processes of a comparative advantage rule *à la* Ricardo do not work properly or do not exist at the regional level: the first process relies on downward flexibility of prices and wages, which is widely hampered by the existence of *national* wage contracts in both private and public structures and by the homogeneity of import prices (we remind that regions are very open economies); the second “modern” process relies on the devaluation of the currency, and it is automatically excluded in an inter-regional context (Camagni, 2002). The ricardian conclusion that each country will always be granted some specialisation and role in the interregional division of labour is not valid for regions. A region can well be pushed “out of business” if the efficiency and competitiveness of all its sectors is lower than that of other regions, and its fate is, in this case, mass unemployment and, in case of insufficient public income transfers, emigration and possible desertification. In front of this possible scenario, taking care of the regional effects of stronger global competition bears a strong economic rationale.

Another reason explaining the importance of a regional dimension in a study on globalization effects depends on the nature of the new, modern and strategic assets on which competitiveness is nowadays based. The strategic factors that enable a region to achieve and maintain a position in the international division of labour over the long run are more and more non-material factors, linked to knowledge, culture, taste and creativity. The laws of accumulation of these elements are especially dependent on local aspects: in fact all these elements develop through slow learning processes, fed with information, interaction, long term investments in research and education. Like all learning processes, they are inherently localised and cumulative, as they embed in human capital, interpersonal networks, specialised and highly skilled local labour markets and local innovative *milieux*; therefore they are highly selective in spatial terms (Camagni, 1991; 1999). Moreover, while traditional material production factors are subject to a hyper-mobility, marketed and utilised everywhere (playing apparently no role in a competing environment), the skills and “relational

capital” required for their most efficient or innovative use are by no means available everywhere, and are these elements that make the difference: trust (Glaeser et al., 2000; McCloskey and Klamer, 1995), social capital (Glaeser et al., 2002; Knack and Keefer, 1997; La Porta et al., 1997; Beugelsdijk and van Schaik, 2005), sense of belonging to a society (Bowles et al., 2001; Lazear, 1999; Alesina and La Ferrara, 2000) are nowadays the main sources of increasing returns for traditional economic production factors (Capello et al., 2010a; Caragliu, 2009). All these reflections lead to the consideration that the opportunities offered by globalisation are far from being evenly distributed at the territorial level; they are highly rooted in the history of the local society, in its endogenous capacities. For this reason growth opportunities are difficult to replicate somewhere else, and require ad-hoc policy interventions.

An additional reason that calls for a regional analysis of globalization processes is the recent tendency of globalisation of tasks, in which even functions are unbundled and parts of them are off-shored or outsourced. Firms strategies are nowadays more complex, looking for an optimisation of multiple trade-offs, between transportation and inventory costs, between skilled and unskilled labour, between knowledge source and low labour cost, between commodification of existing products and necessity to shorten product design and time-to-market. In spatial terms, new cross-border relationships emerge, reflecting the fact that firms do not look only for labour cost advantages, but require additional and more value added local assets, like knowledge, creativity and entrepreneurial spirit, flexibility of the labour markets (rather than cost), presence of relational and social capital. Multinational choices favour especially those areas where the industrial tissue renews itself, where the mobility of resources is not limited by the rigidity of the economy, where investments in services, in infrastructure and in advanced services in general are strong.

Moreover, service FDI has grown more rapidly than FDI in other sectors. The world’s inward stock of services FDI quadrupled between 1990 and 2002, from an estimated \$950 billion to over \$4 trillion. Its share in the world’s total inward FDI stock rose to some 60% in 2002, compared to less than half in 1990 and only one-quarter in the early 1970s. On average, services accounted for about two-thirds of total FDI inflows (and 70% of outflows) over 2001-2002 – an estimated \$500 billion (\$450 for outflows) per year (UNCTAD, 2004, p. 97-98). This trend in service FDI leads to two consequences at the spatial level: on the one hand, specific territories like cities, that represent most likely the most favourable locations of these FDI since they are particularly endowed with human and relational capital, will likely be more able to capture the full advantage of globalisation; on the other hand, a strong competition takes place among these areas for the attraction of these huge capital flows. Once again, heterogeneous impacts and growth opportunities are displayed at the territorial level.

A last consideration concerning the importance of a regional dimension in an analysis on globalization lies in the recent propensity of European national Governments to decentralise policy interventions to regional administrative institutions. In the sphere of public investments in infrastructure, education, quality of public services and local governance, policy decisions call for awareness of the success factors and of the endogenous capabilities present in the local economy to compete at the world level. Raising such an awareness can only come from sub-national studies in which endogenous, strategic elements to cope with world competition at the regional level can be highlighted.

The regional dimension reflects a useful territorial dimension on which a sub-national approach to the study of globalisation trends and effects can be based; a sub-regional dimension would in fact be too limited from the geographical point of view to represent a self-contained area within which structural changes caused by globalisation occur, like the location of new production functions.

In general, even recently theoretical and empirical studies have focused the attention to the impact on regional growth of European integration processes (Cuadrado Roura, 2010; Krieger-Boden et al., 2009; Petrakos, 2008; Nijkamp and Siedschlag, 2008; Neven and Gouyette, 1994): on the contrary, no analyses have been run on the impact of globalization processes on regional competitiveness. This paper – which is part of a wider study which will soon be published in a volume (Capello et

al., 2010b) is a first attempt in this direction. In particular, in this paper the aim is to analyze the endogenous factors allowing regions to compete successfully in a globalized economy.

These factors are expected to vary across different groups of regions, due to their different specialization and different endowment of structural connections with the world; for this reason, our analysis is conducted for all regions of Europe but also by groups, by considering separately regions with specialization in the most performing sectors and an high endowment of connections ('global players') and regions with the right specialization in the most performing sectors but little endowed with connections ('regional players'). We expect the role of other regions ('local players') to be marginal, since they don't have the features to compete in the global economy and their growth will hence be pulled by exogenous factors.

The paper will hence be organized as follows: in the next section a theoretical taxonomization of regions in front of globalization will be built, which will allow to classify all European regions according to their involvement in global networks. In Section 3, the economic performance of the three types of regions will be analyzed in terms of GDP, employment and productivity, evidencing that these performances are different and that regional and national effects are at play at the same time. Section 4 will be devoted to highlight success factors behind the different performances of regions, putting most emphasis on FDI. Section 5 will evidence that the globalization degree of regions is not only relevant for performance, but also for regional disparities in Europe. Section 6 will conclude the paper.

2. A typology of European regions in front of globalization

2.1. A theoretical taxonomy

Measuring globalization is a difficult task; globalization involves in fact a large number of processes which take place simultaneously and are related the one to the other. Especially, it is difficult to capture its effects at regional level, due to the low availability of data. As a consequence, an indirect method is needed to measure globalization as a consequence of the lack of direct statistical sources. Moreover, the regional dimension of globalization cannot be captured by flow variables alone (FDI, trade, migration flows, all belong to this category) since the structure of the regional economy is fundamental to explain which role a region can play in the global economy and which flows it is able to attract.

The main idea of this method is to classify regions according to their integration in global markets, and use the classification in the empirical analysis assuming that normally a phenomenon which takes place with higher intensity in regions more integrated in the global economy is a phenomenon somehow linked to globalization processes.

Two main dimensions are relevant in order to identify the degree of integration of a local economy in a global economy. The first dimension is a functional / territorial dimension, identified in the presence of a large city where international headquarters of multinationals, high-value service functions (as finance, insurance, operating at international level), high qualified human capital attracted from outside, and - in general - physical accessibility are guaranteed. This idea stems from a well defined stream of literature (Scott, 2001; Taylor et al., 2007; Friedmann, 1986; Sassen, 1991); 'world cities', in the words of Friedmann (1986), refers to those cities at the top of a world city hierarchy; the name 'global cities' of Saskia Sassen (1991) identifies major cities that are strategically global in their function; 'global-city regions' are, according to Allen Scott (2001), those cities whose economic (and social) development is linked to a global rather than to a national growth pattern, giving rise to a new regionalism; 'metropolitan cities' is a general term to identify large and densely populated cities. Despite the label, all these definitions have in common the idea that a way to be integrated to the global economy is the presence of international high-value functions and human capital.

The second dimension used to measure the degree of integration of the local economy in the world market is a pure economic dimension, captured by the degree of participation of the local economy in international markets, through trade and in FDI attraction.

Table 1 contains the conceptual taxonomy obtained if the two dimensions of integration in global markets – the territorial/functional and the economic dimensions – are crossed: on the vertical axis the degree of openness to globalization, i.e. a *globalisation index*; on the horizontal axis the *regional specialization in open growing sectors* (either belonging to services or manufacturing).

The territorial/functional dimension calls for a synthetic indicator of the openness of regions, which affects their participation to global networks. The horizontal dimension, in the absence of trade data at regional level, requires the identification of the degree of specialization in open growing sectors of each region. This horizontal dimension is therefore the result of a two step procedure, which first identifies those sectors which are more open and which are growing at European level, and then identifies the regions which are specialized in them.

Table 1. Theoretical taxonomy of regions according to their degree of integration in global markets

Territorial/functional dimension			
Economic dimension	Openness above average		Openness below average
Specialization in open growing sectors	1 Global players		2 Regional players
De-specialization in open growing sectors	4. Pure gateways		3 Local players

On the basis of these two dimensions, four theoretical regional typologies are identified:

- 1- *Global players*. These are regions at the core of globalization processes: they are structurally open and have all the physical and functional linkages with the rest of the world; moreover, they are specialized in sectors which are open and growing, so that their role in world trade flows and FDI attractiveness is maximum. These regions are therefore expected to be able to lead Europe and drive patterns of response to globalization also for the other regions of the EU.
- 2- *Regional players*. These regions have a specialization in open growing sectors, but have a lower than average physical and functional connection with other areas in the world. These regions are therefore expected to take advantage of their specialization, but they are also expected to be somewhat passive, because their good sectoral mix does not result from their pro-active strategies and behaviours, but more from the chance of being specialized in the right sectors at the right time. Their label “regional” players is due to the fact that their sectoral specialization would allow them to play a worldwide role, but, lacking the structural connectivity, they normally have to resort to global regions as gateways to the world markets. The term “regional” is hence to be intended in its trade literature meaning, which interprets Europe as a region of the world; at the same time, the term recalls the limited physical accessibility to and from the world.
- 3- *Local players*. This category is made up of regions which have neither the structural elements to connect with the world nor the appropriate specialization in open growing sectors. These regions are rather peripheral to globalization processes and will hence be labelled “local” players because their markets are expected to be local, i.e. normally limited to their own regions and, possibly, countries.
- 4- *Pure gateways*. These are regions whose behaviour is puzzling: they have structural connections to other areas in the world, but at the same time they are not specialized in open growing sectors. For this reason, they are out of the global trade flows, and rather act as

gateways to the world for neighbouring regions which are instead specialized in export sectors. We will see in Section 3.4 that there are no regions which are actually included in this category, confirming that the striking theoretical characteristics of this category are difficult to find in practice.

2.2 The taxonomy applied to European regions

In order to create a globalization indicator which allows to distinguish between regions falling in the left and right quadrants of Table 1, a synthetic indicator has to be built capturing the different components that define a structural openness to globalization; there is in fact a number of indicators exist, not statistically independent the one from the other but rather positively correlated one another.

The synthetic indicator is built using a principal component analysis on five available relevant indicators. All these indicators capture different aspects of the integration of European regions with the extra-European world and economy. Table 2 synthesizes the indicators, the proxy they are representing and their sources. The five indicators are bound to represent five related aspect of structural integration: the presence of foreign human capital, the presence of physical connections, the presence of advanced functions and the attraction of extra-European capital.¹

Since the indicators are all positively correlated the one to the other, there is no surprise in the results achieved: the first component of the principal component accounts for more than 56% of total variance. This component is associated with a high eigenvalue, the only one which is higher than one. It is therefore empirically justified to take only the first component of the analysis and to disregard the others, including the second one.

Table 2. Indicators used in the globalization index

Indicator	Proxy for	Source of Data
Extra-European born population	Attraction of foreign labour force	Census data for Eurostat completed by LFS for Greece; National statistics for Belgium and Germany
Extra-European airflow connections	Integration of a region in global networks	OAG
Number of offices of advanced services firms	Presence of value-added functions	GAWC
Headquarters of transnational corporations	Attraction of international high-value functions	IGEAT elaborations from Fortune magazine
Extra-European FDI in the region	Attraction of extra-European capital	FDI-Regio database

A second principal component analysis was run with the previous indicators calculated in absolute terms, with the aim to overcome the possible biases of the first analysis. Being based on ratios (i.e. indicators on population or on jobs), in fact, the latter tends to overestimate the global connectivity of very small regions where a few connections can alter the ratio, and show high connectivity values only as statistical results, when in reality global processes need a threshold to be activated in any region. For this reason, the first component of the principal component with absolute terms was taken into consideration only if lower than the mean minus 1/5 of standard deviation. This correction does not change radically the results obtained with the globalization index, but it avoids

¹ For the latter indicator, the paper uses the FDIRegio database owned by ISLA, Bocconi University, partner of the DGRegio project from which this paper comes. The authors are grateful to Laura Resmini for having allowed the use of the database for this purpose.

classifying as very open to globalization some small and rather peripheral regions such as Corse in France and Valle d'Aosta in Italy.

The second dimension of the external openness of regions is their industrial specialization. In fact, being specialized in sectors relatively more open to trade than the average, and performing relatively better than the EU average in periods of high globalization processes is an important channel by which regions can take advantage of globalization trends. On the contrary, a specialization in closed and/or declining sectors, makes regions less able to play a role in globalization processes, and hence to take advantage of external opportunities.

Regional trade data would be extremely useful here; however, given the lack of sectoral trade data at regional level for all EU countries, the identification of sectorally open regions has to be accomplished in a two step procedure.

Like in a traditional shift-share analysis, in fact, the regional specialization in sectors which are more dynamic is a factor which, *ceteris paribus*, allows regions to benefit from the global processes of which the same sectors are the principal beneficiaries.

The first step is hence to determine which sectors are the open and growing ones, and the second step is to determine which regions are specialized (i.e. have a location quotient higher than 1) in those sectors.

To achieve this goal, Data from the analysis on the external (extra-EU) performance of European sectors at NACE1 level were used, both on trade and on FDI. The sectoral analysis is reported in Section 3.3.2. For regional specialization, on the other hand, a database on regional/sectoral employment was applied, which provides sectoral value added in 25 sectors at Nuts2 level for the year 2004.²

Open sectors are defined as those which have a good economic performance in either FDI or Extra-EU trade. As far as FDI are concerned, positively affected sectors are those which have a growing share of extra-EU FDI. As far as trade is concerned, one single indicator cannot be able to capture all needed features. Three complementary requirements define an open growing sector (a sector has to comply with all three requirements at the same to be considered open sector in trade activities):

1. an increasing openness of the sector over time. The classic indicator for that is the sum of export and imports, relative to GVA to avoid biases due to the changing importance of sectors in the international economy;
2. an increase in exports in the sectors that have grown more than the EU average. This can be captured by the fact that a sector has increased its share in EU exports;
3. an increasing European trade balance over time, signalling that European goods and services in that sector have been increasingly competitive worldwide. The trade patterns are a good indicator for that, but also these ones need to be made relative to sectoral GVA in order to avoid biases due to the changing importance of sectors on international trade.

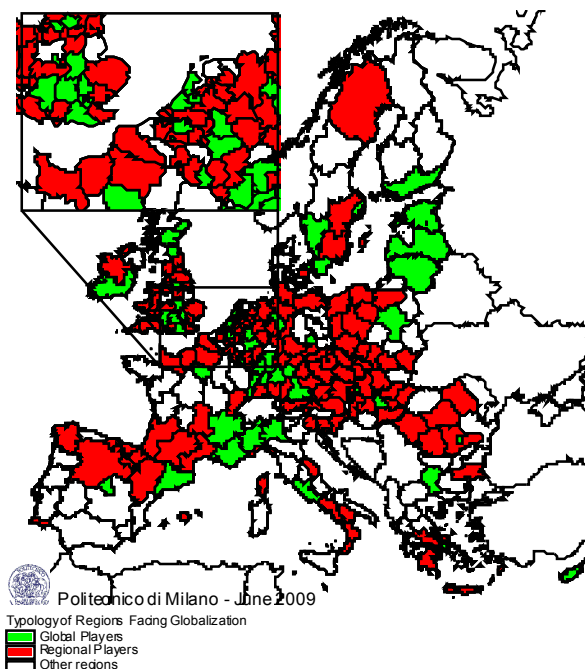
The sectors identified in this way are instrumental for the second step of the methodology, i.e. to determine which regions have the good specialization in front of globalization. This is easily calculated through a location quotient in open growing sectors, obtained from the IGEAT matrix, which contains the employment and value added disaggregated by NACE1 sector for all regions of the EU.

If the location quotient is higher than 1, regions are specialized in these sectors and, *ceteris paribus*, are expected to get an advantage from their specialization due to the composition of sectors present in the analysis, called MIX effect in a traditional shift-share analysis. On the contrary, the location quotient in open growing sectors being lower than 1, the region is disadvantaged by its specialization.

² This database has been made available by IGEAT, University of Brussels, the third partner of the DGRegio project where this paper comes from. The authors are grateful to Gilles Van Hamme for having allowed the use of the database for this purpose.

The actual score of all sectors with respect to FDI and trade is reported in Appendix 1. Based on both the globalization the globalization index and the specialization in open growing sectors the typologies of regions have been identified (Map 1).

Map 1. Typology of regions in front of globalization



Notice that, empirically, pure gateways appear to be an almost irrelevant category: in fact, only 5 regions initially belong to this group, confirming the theoretical intuition that this group is somehow improbable, being the combination of high structural openness and specialization in sectors mainly focusing on local markets. By looking more carefully at the location quotient of these 5 regions, however, it can be observed that they are very close to 1 (normally higher than 0.95) for service open sectors, whereas they are much lower for manufacturing open sectors; these regions are hence classified within the global players.

The next section will analyse the performance of the different groups of regions, in order to evidence to what extent they differ the one from the other and which are the reasons behind these different performances.

3. Benefiting regions in Europe

3.1 The performance of the three regional typologies

In this section we analyse the performance of European regions, by typology, in a period of sustained globalization, i.e. 1999-2005.

In Table 3 we present the average annual GDP growth rates in two periods of time of the three typology of regions in front of globalization, as well as a test to analyze if these growth rates are significantly different.

In the first period of time, i.e. 1999-2002, global players significantly outperform the other types of regions in terms of GDP performance. This holds true for both regions in the Old 15 member countries and in the New 12 member countries. Interestingly enough, in Western regions regional players are the second performers, close to global players, whereas in eastern regions global players by far outperformed the other regions (second best performed) and the regional players. In the

second period of time, again global players were the best performers among European regions, but not significantly overall and in Western countries. In Eastern countries, on the contrary, the growth rate of global players was significantly higher.

Table 3. Growth performance of the three types of regions, 1999-2005

	All European regions				Old 15 country regions				New 12 country regions			
	Global players	Regional players	Local players	F	Global players	Regional players	Local players	F	Global players	Regional players	Local players	F
Growth rate 1999-2002	3.17	2.22	1.87	8.21***	2.54	2.25	1.62	4.04**	6.22	2.14	3.20	24.28***
Growth rate 2002-2005	2.76	2.47	2.09	2.06	1.91	1.79	1.74	0.22	6.78	4.43	3.93	9.28***
Differential growth with respect to the nation 1999-2002	0.37	-0.39	-0.83	7.33***	0.12	-0.16	-0.89	5.08***	1.54	-1.08	-0.48	9.89***
Differential growth with respect to the nation 2002-2005	0.16	-0.15	-0.41	4.39**	0.03	-0.13	-0.24	0.97	0.77	-0.21	-1.30	6.64

National effects have been eliminated by looking at the performance of the three regional typologies has been analyzed also with respect to their national averages. Results show that global players have been leading their respective countries in terms of growth rates; being a global players appears to increase significantly the possibility to be a benefiting region and to lead the country in terms of growth. In Eastern countries, the differential of global players with respect to their countries is high and significantly different from the one of the other regions in both periods. In western countries the differential growth rate is larger in both periods but significantly larger only in the first period.

These results witness that global players have on average a higher capacity to pro-act and re-act to global trends. A more in depth analysis allows us to highlight whether this is true for all global regions, and which are the elements of the territorial capital affecting positively the endogenous capacity of growth in a period of globalization.

3.2. The growth patterns of European regions

In an aggregate analysis, global regions register higher performance rates and outperform all other regions in the country. Two main questions emerge in this respect. The first is whether all global regions have the a high performance rate and, by the same token, whether regional and local players have all low performance rate. The second is which local assets explain these performances and especially whether local success assets differ between the different groups of regions. On the results, important policy implications that can draw on ad-hoc intervention policies oriented to reinforce the elements of the territorial capital that are more suitable for sustaining local development in the different types of regions.

Our interest is therefore to identify benefiting regions, i.e. those regions that maintain and even improve their competitive positions in the European economy thanks to globalization processes, i.e.

those regions able to increase their relative production capacity (measured in terms of GDP) more than the European average.

This may result from the following different economic growth conditions: i) employment growth takes place in both high and low value-added functions, the former having a greater effect in quantitative terms than the latter. If this occurs, both employment and productivity increase, and therefore GDP as well; ii) employment losses take place in low value-added activities and are more than off-set by high value-added functions. In this case, employment losses are more than off-set by productivity increases, and GDP increases; iii) employment increases in low value-added functions, accompanied by a limited loss, if any, of high-skilled jobs. GDP increases despite the loss of productivity.

Three measures are of interest to find out all these three cases, namely:

- GDP growth rate;
- GDP growth rate per employee (i.e. productivity growth rate);
- employment growth rate.

A way to disentangle these three conditions is the way presented in Figure 5.1. It plots growth of labour productivity and of employment in the period 2002-2015, relatively to the European average growth. A 45° negative line passing through the origin approximates a condition of regional GDP growth rate equal to the European one; above this 45° negative line GDP growth at regional level is higher than the European average, while below this line are all situations of regional GDP growth lower than the EU average (Camagni, 1991b). The two indicators can hence be represented in Figure 5.1, calculated on the basis of the following formulas:

$$\left(\frac{Prod_r^{2005}}{Prod_r^{2000}} \right)^{1/5} - \left(\frac{Prod_{EU}^{2005}}{Prod_{EU}^{2000}} \right)^{1/5} \quad (1)$$

$$\left(\frac{Emp_r^{2005}}{Emp_r^{2000}} \right)^{1/5} - \left(\frac{Emp_{EU}^{2005}}{Emp_{EU}^{2000}} \right)^{1/5} \quad (2)$$

Six possible patterns of metropolitan GDP per capita growth emerge in Figure 1, each as a result of a combination of statistical and economic effects, namely:

1. *virtuous growth*, i.e. a real economic per capita GDP growth, when higher than average productivity growth is associated to higher than average GDP growth, which more than counterbalances higher than average employment growth (quadrant 1);
2. *growth associated to productivity increases*, when a higher than average GDP growth is associated to higher than average productivity growth and a lower than average employment growth, the latter reinforcing productivity GDP growth (quadrant 2);
3. *crisis associated to job losses*, when higher than average productivity growth is not enough to counterbalance lower than average employment losses, leading to lower than average GDP growth (quadrant 3);
4. *real economic crisis*, when lower than average productivity growth is associated with both lower than average employment and GDP growth (quadrant 4);
5. *crisis associated to productivity decline*, when a lower than average GDP growth is associated to relative productivity decline and a higher than average employment growth, the latter reinforcing relative productivity decline (quadrant 5);
6. *growth associated to job creation*, when higher than average GDP growth is associated to higher than average employment growth which does not counterbalance relative productivity decline (quadrant 6).

Quadrant 3 displays false economic growth conditions; it depicts a situation of higher than average per capita GDP growth, when in reality GDP growth is below the average. Quadrant 5, on the contrary, highlights a higher than average employment growth when relative GDP and productivity growths decline.

Benefiting regions fall in three quadrants, namely 1, 2 and 6. What these situations have in common is a higher than average GDP growth, obtained, however, through very different growth patterns. The regions which position in the virtuous cycle increase both in terms of productivity and employment growth more than the average; the ones in quadrant 2 achieve higher than average productivity growth through severe employment cuts, leading nevertheless to good output performance: an apparently good productivity performance is the result of the simple suppression of productive units, with no or scarce positive counterparts. In the case of quadrant 6, the good GDP growth is obtained by good employment condition; however employment dynamics in this case generally does not come from endogenous regional development but rather from exogenous (somehow artificial) intervention policies, which are unlikely to induce a virtuous cycle in the medium and long run. All other situations register a negative growth rate and are hence not part of our benefiting definition.

Once this methodology is applied to the European regions, it clearly emerges that the national component is by far more important than the endogenous component in explaining regional growth patterns; regions belonging to the same country belong in a large number to the same quadrant. Moreover, a clear Eastern-Western dichotomy is present, showing a clear country convergence effect which makes regions in the New 12 member countries grow more rapidly than their counterparts in the Old 15 member countries. For this reason, the patterns picture is split into two, one for the Old 15 countries (Fig. 1) and one for the New 12 countries (Fig. 2).

By looking at the patterns followed by Western regions (Fig. 1), one can observe that they place on average slightly below the European average in terms of productivity growth. On the contrary, employment growth has been strong in the period of analysis, which make a relatively larger number of regions falling into the two quadrants of sheltered development and industrial conservatism. Among the best performing (virtuous cycle) regions, there are mainly regional players and global players, signalling that for non global regions it is hard to be growing in periods of increasing globalization. However, there are global players also in the lower quadrants, showing again that being open is not enough to perform well.

If we look at the patterns followed by Eastern regions (Fig. 3)³, we observe that almost all New 12 regions are above the EU mean in terms of GDP growth. Many of them, however, achieve this positive GDP performance with a restructuring process, in which the lower value added jobs are cut and a smaller number of higher value added jobs are created. It is also interesting to observe the large number of global players in the upper part of the virtuous cycle quadrant. Global regions, in the East, appear to have been especially effective in applying their structural and sectoral features to achieve positive economic performance.

The patterns followed by Eastern and Western regions are different and strictly linked to national effects; for this reason the analysis cannot be performed with all regions together, but will be run separately on the Old15 and the New12 member countries.

Table 4 reports results on the number of regions belonging to the different growth patterns. Western regional players are more equally spread, and it even turns out that the highest percentage of benefiting regions is found, in the West, among the other regions. All this analysis highlights some degree of convergence within the Old 15 regions.

The results in the New12 countries are much different. 8 out of 10 global players are indeed benefiting regions even if compared with the New12 averages, and 7 of them are in the virtuous cycle quadrant. Also for regional players there is an over-representation in the virtuous cycle quadrant, but less strong and accompanied by a large number of regions in the industrial

³ Again, the analysis does not consider Polish regions because of their strange data.

conservatism one (Table 4). It hence appears that being a global player, in the East, is strictly linked with being a benefiting region, a result which is rather different to the Western part of Europe.

Figure 1. Regional Growth Patterns in Old 15 member countries

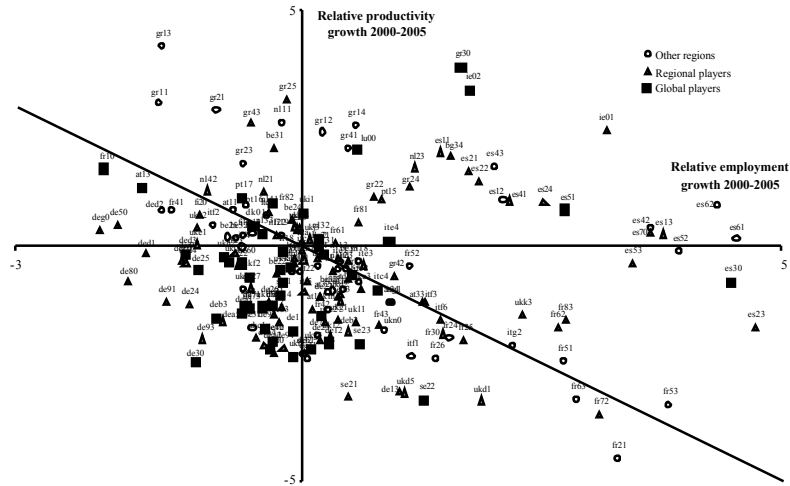
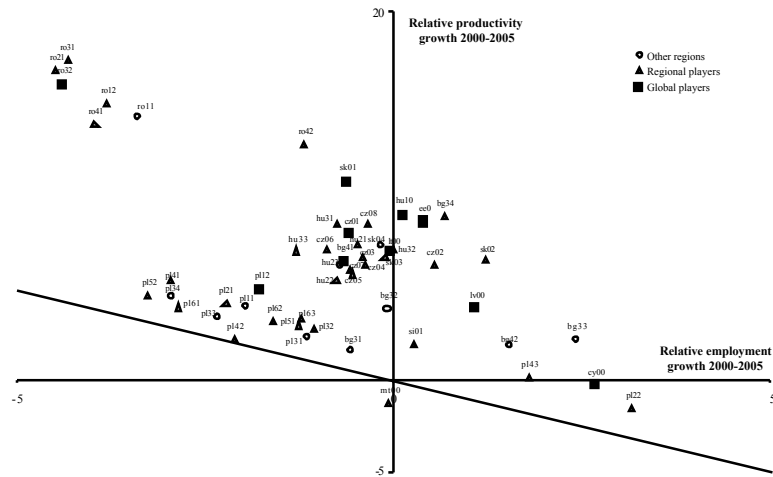


Figure 2. Regional Growth Patterns in New 12 member countries



The analysis above, though interesting, was purely descriptive and only underlined the actual behaviour of regions, without explaining which factors allow some of them to perform better than others. This is left for the next section, in which regression analyses will be introduced in order to evidence the role of the various factors and in particular of globalization, measured through FDI penetration.

Table 4. Number of regions in each quadrant by typology

Quadrant	Global players Old 15	Regional players Old 15	Local players Old 15	Old 15	Global players New 12	Regional players New 12	Local players New 12	New 12
<i>q1 - virtuous growth</i>	6	17	13	36	6	11	1	18
<i>q2 - growth associated to productivity increases</i>	8	18	15	41	1	4	2	7
<i>q3 - crisis associated to job losses,</i>	10	14	11	35	0	0	0	0
<i>q4 - real economic crisis</i>	19	24	9	52	1	6	3	10
<i>q5 - crisis associated to productivity decline</i>	2	15	8	25	1	9	5	15
<i>q6 - growth associated to job creation</i>	2	9	5	16	1	4	1	6
<i>TOTAL</i>	47	97	61	205	10	34	12	56
<i>Benefiting regions (q1+q2+q6)</i>	16	44	33	93	8	18	5	31
<i>Benefiting regions (%)</i>	34	45.4	54.1	45.4	80	52.9	41.7	55.4

4. Success factors of benefiting regions

4.1. The choice of success factors

The previous sections have evidenced that the patterns of growth of European regions are differentiated and that, though on an average different regional typologies perform differently and global players perform better (see Table 3) the growth behaviours within typologies are highly differentiated. The descriptive analysis has evidenced that the characteristics associated with the performance of regions are very different between global and regional players.

Table 3 also evidenced that strong country effects take place, so that the general performance of regions highly depends on the country to which they belong. National economic trends, especially some trends linked to globalization processes, like the movements of financial capitals, interest rates and exchange rates, exert their effects at national level. Other aspects of the globalization processes, on the contrary, show their effects at regional level, for instance most aspects linked to the reorganization of the production processes, on which the attraction of local economies of high or low value added tasks and phases plays a crucial role. It becomes therefore interesting to analyze what of the regional structure affects regional performance once country-wide, mainly monetary, variables are kept separate.

In this section of the paper, therefore, the use of regression analysis will be made with the purpose of investigating in a causal way the factors which explain the growth rate of European regions, focusing on FDI, the main globalization channel for which we have data. One way to do such an analysis would be to use as dependent variable the GDP differential growth of the regions with respect to their respective countries, but this assumes that country effects are taking place for all of them in the same way; a better option is to use regional growth as dependent variable and introduce the national growth rate among the regressors, so that the data are allowed to estimate the elasticity

of regional growth to national growth without imposing the restriction that it is 1, a restriction which is implicitly assumed when regressing the differential growth rate.

To detect the structural features more associated with positive regional economic performance of regions in an age of globalization we hence use multivariate regression analysis in which a number of factors be used together in an explicative model.

The logic behind the choice of the success factors in explaining the performance of benefiting regions is the following. The differential growth rate is what remains to be explained ones the national effects are taken into consideration through the insertion of the national growth rates among the regressors. As suggested in the introductory section to this paper, according to the most recent theory explaining endogenous regional growth, territorial capital assets, made of material and non-material, private and public, soft and hard elements, explain the endogenous performance of regions (Camagni, 2008). For this reason, a quite large set of different local assets that cover all these characteristics has been chosen, with the usual limitations that characterises a database that has to cover all European territory.⁴ In particular, the following variables have been selected:

- the national growth rate, which measures all the national factors which have an impact which is the same for all regions of the country. In order to avoid endogeneity, this national growth rate is calculated using only the GDP of the other regions of the country to whom the region belongs⁵. We expect national factors to positively influence regional growth and with a coefficient not far from one.
- growth effects induced by the regional geographical position, being it close to fast growing regions or close to regions unable to grow fast. Depending on the role of neighbouring regions growth (i.e. if it induces growth by demand effects or if it steals away growth because of competition), these effects can be positive or negative. The variable by which we measure it is the spillover of growth;
- a soft and private element of territorial capital, namely the innovativeness of regions, which we expect to affect positively the regional growth rates and which is proxied by the share of human resources in science and technology;
- a hard element of the territorial capital, infrastructural endowment of regions, which ought be positive but can also be negative if congestion effects prevail. This aspect is measured by the endowment of roads per squared kilometer;
- a private hard territorial capital element that reflects the private fixed capital stock present in the region, proxied by the functions in which the region is specialized. In a period of globalization, we expect that the highest the function a region performs, the highest its growth rate. The functions are approximated by the share of high corporate managers, coming from the labour force survey;
- a mixed (hard/soft) element of territorial capital, agglomeration economies, captured through the settlement structure of regions.
- another mixed (hard/soft) element of territorial capital, i.e. receptivity of regions to foreigner firms, which is expected to have a positive effect. This is proxied by the number of total incoming FDI per thousand inhabitants;
- last, but not least, an important variable explaining regional differential growth is the presence of public funds which, either being demand side support or supply side development aimed, should bring positive growth effects. We use structural funds expenditure per capita as a proxy for this factor.

The results of the regression model are reported in Table 5⁶. In the first reported model (Model 0, for reasons which will be evident below), which has all variables except from the settlement

⁴ All independent variables are lagged in order to reduce the problems of endogeneity and reverse causation.

⁵ This has the drawback of eliminating from the regressions the country which only have one Nuts2 region, namely Luxembourg, Cyprus, Malta, Estonia, Latvia, Lithuania. In any case, this decreases the sample of only 6 observations.

⁶ We tested for spatial autocorrelation our regression models, but, due to the fact that among the regressors spatial spillovers and country effects are present, the spatial tests turned out as non significant so that the testing methodology is OLS with robust standard errors.

structure, all coefficients have the expected sign, apart from infrastructure which has a negative one, and all coefficients are highly significant, with the exception of high-value functions which are positive and (nearly) significant.

In particular, the coefficient of the national growth rate is positive and close to 0.8, implying that national factors are very important and being part of a country which grows 1% faster imply 0.8% faster growth rate for a region *ceteris paribus*, i.e. independently from the regional endogenous characteristics.

The human resources in science and technology are also positive and significant, meaning that the hypothesis that they are needed for regions to thrive in an age of globalization is confirmed.

Growth spillovers are on the contrary negative and significant, meaning that being close to strong and fast growing regions has more negative effects due the presence of strong competitors nearby than positive effects due to induced demand.

Somehow puzzling, infrastructure endowment has a negative and significant coefficient, probably due to the fact that road endowment is not able to capture the smoothness of traffic on these roads, but rather tends to capture the excessive density of some areas, which are hence subject to congestion diseconomies.

Public policy support has a small but positive and significant coefficient, implying that within their countries, the most assisted regions take benefit of this assistance *ceteris paribus*.

High level functions are not significant at 0.1 threshold. However, their coefficient is positive, quite stable (as we will see in the rest of the Section) and has a p-value which is only slightly higher than 0.1. For this reason it is possible to keep this variable in the regressions, also because of the theoretical importance of this variable for the globalization processes.

The last variable which is used in this general regression model is the amount of total FDI on population received by regions, whose coefficient is positive and significant, meaning that being able to attract FDI has a growth effect in a period of globalization.

To the first model, it is possible to add settlement structures, which turn out to be significant without altering the other coefficients, nor their significance. In particular, it turns out in Model 1 that the “urban” regions (i.e. the intermediate ones in terms of density and presence of large cities⁷) have outperformed the rest of the regions *ceteris paribus*. Probably, the most “agglomerated” regions suffer for decreasing agglomeration economies, if not congestion diseconomies, which are still not present in the intermediate category. On the contrary, the more sparsely populated “rural” regions, also due to the absence of large cities within, are unable to reach the critical mass needed to generate agglomeration economies and, consequently, growth.

It is also possible to test the significance of the typologies in front of globalization as dummies. As evidenced in Model 2, the addition of a dummy for global players does not alter significantly any other result, but this dummy is not significant. If on the contrary a dummy for only the global players in New12 member states is added (Model 3), this dummy turns out significant since these regions have outperformed the rest of their countries and of Europe in the period of analysis. The dummy for Eastern global players, however, is collinear with other variable, in particular the FDI⁸ which concentrate in these regions in the New12 countries. Moreover, there is a sense of tautology by explaining the performance of regions in front of globalization not through their endowment but on their globalization typology. For this reason, it is Model 1 the one which will act as benchmark for the analyses which will follow in the rest of this section.

As a technical but important note, being regional growth the dependent variable, the models have been tested for spatial effects using different matrices, including standardized distance matrix and a standardized distance matrix with a threshold. All test reject the presence of spatial autocorrelation in the regressions, and the need to use a spatial lag or spatial error model. This is likely to be due to two concomitant effects: on the one hand the regressions have an explicit growth spillover

7 Urban regions are defined as those regions with a city of between 150,000 and 300,000 inhabitants and a population density 150 – 300 inhabitants / km sq. (or a smaller population density – 100-150 inh. /km with a bigger centre (>300,000) or a population density between 100 – 150 inh./km sq.

8 Remember also that FDI are among the definitory variables for the typology of regions in front of globalization developed in section 2.

coefficient inside, i.e. some sort of spatial lag; on the other hand, the fact that the regressions include the national growth rate is another way in which growth in neighbouring regions is taken into account.

Table 5 General growth factors for regions in a period of globalization

<i>Variables</i>	<i>Mod. 0</i>	<i>Mod. 1</i>	<i>Mod. 2</i>	<i>Mod. 3</i>
National growth rates of all other regions in the country 2000-05	0.755***	0.76***	0.76***	0.688***
Share of science and technology employment 2000	0.176***	0.17***	0.13***	0.063
Growth spillovers 1999-2000	-0.065***	-0.062***	-0.066***	-0.055***
Total infrastructure on sqm 2000	-0.176***	-0.175***	-0.187***	-0.163***
Structural funds per capita 1994-1999	0.095***	0.103***	0.094***	0.087***
High level functions (share of private managers) 1999-2001	0.077	0.059	0.054	0.111**
Total FDI penetration rate 2001-03	0.165***	0.175***	0.158***	0.099
Urban		0.078**	0.098**	0.080**
Global			0.088	
Global in New 12				0.296**
<i>Number of observations</i>	246	246	246	246
<i>R-square</i>	0.58	0.59	0.59	0.66

*** p< 1%; ** p< 5%; * p< 10%.

Independent variable: regional growth rates 2000-05.

Coefficients are expressed in logarithms.

4.2. The effects of FDI by source, sector and technological level

FDI are not homogeneously distributed over space, they belong to different sectors, and vary in terms of origin and technological development. Given their important role in explaining endogenous growth, a more detailed analysis worths inspection.

In order to test all differential effects in FDI, starting from Model 1 of section 4.1 a number of FDI typologies were regressed to see if they have a more or less important role in regional growth with respect to generic FDI. The results are presented in Table 6, where the first two models are in order to differentiate between intra-European and extra-European FDI.

First it has to be observed that the coefficients and the significance of the other regressors are stable. Concerning the FDI, those coming from intra-EU appear to have a larger coefficient and elasticity with respect to those coming from extra-EU, but the significance of these coefficients is very high for both and even higher for extra-EU FDI (models 2 and 3 in Table 6). This implies that both types of FDI are significantly able to help regional growth, though with different intensity.

One could also analyze the effects of service FDI, which have increased their importance over the last few years. In Models 4 and 5 service FDI are divided into high value added and low value added, with the first ones being more of support to production and/or producing services which can be exported, whereas the low value added ones are those related to the personal services and retail.⁹ It turns out that the two coefficients are similar and also the elasticities, but high-value services are more significant than low-value services.

The same has been done for manufacturing FDI (models 6 and 7 in Table 6), which have been divided in high-tech and low-tech using the Pavitt classification.¹⁰ The results show an interesting result: differently from the service sector, high-tech manufacturing FDI, though having a positive coefficient, do not have a statistically significant impact on regional growth, whereas the coefficient for low-tech FDI is positive and significant. Among the different explanations for this apparently counterintuitive result, one can recall that high tech manufacturing FDI in Europe are very limited

⁹ In particular, High-value FDI are those of Ateco 1.1 sectors I (Transport, storage and communication), J (Financial intermediation) and K (Real estate, renting and business activities). The other service sectors are included in low-value.

¹⁰ In particular, high-tech FDI are those in sectors classified high-tech or medium-high tech by Pavitt (1984), with the other sectors (Pavitt medium-low tech and low-tech) composing low-tech FDI. Notice that the results are consistent when using only the high-tech and the low-tech of Pavitt.

in their number and that manufacturing FDI in general are a phenomenon typical of Eastern countries, where they induce growth and what matter is more their quantity than their specialization; manufacturing FDI are less common and less important in the West.

Table 6. The effects of FDI on regional growth by source, sector and technological level

<i>Variables</i>	<i>Mod. 1</i>	<i>Mod. 2</i>	<i>Mod. 3</i>	<i>Mod. 4</i>	<i>Mod. 5</i>	<i>Mod. 6</i>	<i>Mod. 7</i>
National growth rates of all other regions in the country 2000-05	0.76***	0.77***	0.77***	0.79	0.77***	0.79***	0.72***
Share of science and technology employment 2000	0.17***	0.17**	0.18***	0.18	0.17***	0.19***	0.19***
Growth spillovers 1999-2000	-	-	-	-0.06	-	-	-
	0.062***	0.05***	0.06***		0.053***	0.050***	0.05***
Total infrastructure on sqm 2000	-	-	-	-0.16	-0.15***	-0.14***	-
	0.175***	0.21***	0.14***				0.17***
Structural funds per capita 1994-1999	0.103***	0.10***	0.10***	0.10	0.10***	0.10***	0.11***
High level functions (share of private managers) 1999-2001	0.059	0.065	0.064	0.053	0.09	0.024	0.05
Urban	0.078**	0.08	0.069*	0.07	0.06*	0.06*	0.07*
Total FDI penetration rate 2001-03	0.175***						
Total intra FDI penetration rate 2001-03		0.19***					
Total extra FDI penetration rate 2001-03			0.13***				
High value-added service FDI penetration rate 2001-03				0.13			
Low value-added service FDI penetration rate 2001-03					0.14*		
High value-added manufacturing FDI penetration rate 2001-03						0.09	
Low value-added manufacturing FDI penetration rate 2001-03							0.21***
<i>Number of observations</i>	246	246	249	246	246	246	246
<i>R-square</i>	0.59	0.59	0.58	0.58	0.59	0.57	0.60

*** p< 1%; ** p< 5%; * p< 10%.

Independent variable: regional growth rates 2000-05.
Coefficients are expressed in logarithms.

4.3. The effects of FDI in global and regional players

Though a simple Chow test is unable to reject the hypothesis that the coefficients of Model 1 are different between global and regional players on one side, and local players on the other side, it is still interesting to observe if the effects of FDI are differently significant for global and regional players. Also in this case regressions on local players are not reported because of the scarce number of observations.

First of all the model for global and regional players is almost identical to the general model for all regions, apart from the coefficient for the urban settlement structure, which has a similar coefficient but is no longer significant. It hence appears that most of its significance is due to the local players, where probably urban regions outperform the rest (Table 7).

As for the general model, intra-European FDI have a higher coefficient and elasticity with respect to extra-European FDI. Moreover, also in this case high service FDI have a more significant effect with respect to low-service FDI. The most interesting thing to observe, however, is that the general result of a positive and significant coefficient for low-tech manufacturing FDI is confirmed. This was unexpected due to the fact that in this case only global and regional players, i.e. only regions specialized in open growing sectors, are taken into account; however, regional players are still highly dependent on manufacturing, and being able to attract these FDI, even in low-tech sectors is still an important growth factors for them, especially in the East.

Having shown in that the three types of regions perform differently and for different reasons, this makes it supposable that the global exposure of regions is also part of the explanation for the existence of regional disparities in Europe. For this reason, the next section will be devoted to the analysis of regional disparities.

Table 7. The effects of FDI on regional growth in global and regional players

Variables	Mod. 1	Mod. 2	Mod. 3	Mod. 4	Mod. 5	Mod. 6	Mod. 7	Mod. 8
National growth rates of all other regions in the country 2000-05	0.76***	0.76***	0.77***	0.77***	0.79***	0.77***	0.79***	0.72***
Share of science and technology employment 2000	0.17***	0.17**	0.16**	0.18**	0.18**	0.06**	0.19***	0.19**
Growth spllovers 1999-2000	-	-	-	-	-	-	-	-
Total infrastructure on sqm 2000	0.062***	0.07***	0.07***	0.07***	0.07***	0.08***	0.06***	0.07***
Structural funds per capita 1994-1999	-	-	-	-	-	-	-	-
High level functions (share of private managers) 1999-2001	0.175***	0.17***	0.22***	0.13***	0.15***	0.26***	0.13***	0.17***
Urban	0.103***	0.10***	0.10***	0.10***	0.10***	0.14***	0.10***	0.11***
Total FDI penetration rate 2001-03	0.059	0.07	0.07	0.07	0.06	0.11**	0.04	0.06
Total intra FDI penetration rate 2001-03	0.07**	0.05	0.06	0.04	0.04	0.09	0.03	0.05
Total extra FDI penetration rate 2001-03	0.16***	0.17	0.21***	0.13***				
High value added service FDI penetration rate 2001-03					0.13***			
Low value added service FDI penetration rate 2001-03						0.24**		
High value added manufacturing FDI penetration rate 2001-03							0.08	
Low value added manufacturing FDI penetration rate 2001-03								0.21**
Number of observations	246	175	175	175	175	175	175	195
R-square	0.59	0.60	0.60	0.59	0.58	0.59	0.58	0.55

*** p< 1%; ** p< 5%; * p< 10%.

Independent variable: regional growth rates 2000-05.
Coefficients are expressed in logarithms.

5. Globalization and regional disparities

As a concluding analysis of this paper devoted to the analysis of regional growth in a period of globalization, an analysis of regional disparities is presented. This analysis will not be a standard one; the interest is in fact is twofold. The first is the traditional interest to see how regional disparities have developed over the last period. The second is to understand how much of this trend is due to globalization.

To represent regional disparities the Theil index is used, which has the precious characteristics of being decomposable into parts, i.e. of allowing to disentangle how much disparities depend on one factor or another.

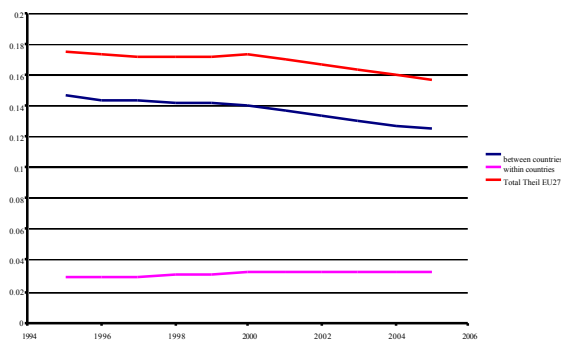
In Figure 4 represented are the general Theil indexes of regional disparities, i.e. without taking into account globalization forces in order to work as benchmark. If we look at the total European regional disparities (Fig. 4a) we can observe that the total Theil index of regional disparities has decreased significantly from 1995 to 2005 (our period of analysis). This is due, as found in other works, to the decrease of the between countries disparities, whereas within countries there is a small but consistent increase of disparities, signalling that lagging countries have generally outperformed the strongest ones, but lagging regions have generally been unable to catch up with their national frontrunners.

The aggregate effects, however, hide the fact that an important effect in the convergence process has been due to the stronger performance of the New12 member countries of the EU, which are still significantly less rich than their western counterparts but have been growing much faster. This can be observed in Figure 4b, where it can be observed that a large part of EU total disparities (about two thirds) is due to the difference between Old15 and New12 member countries and that, while this part has decreased fast, the disparities within the two parts of Europe have increased, though with a lower pace.

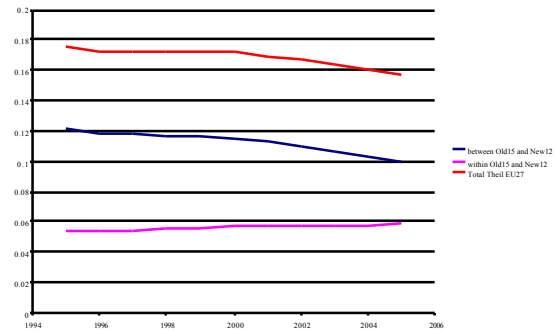
It is possible to further decompose the Theil index in order to examine the role of three levels at the same time. For this reason in Figure 4c it can be observed that, once the very large and decreasing effect of Old15-vs-New12 countries has been extracted, the remaining of regional disparities can be attributed in similar parts to between country and within country disparities, with the latter slightly larger than the former, signalling that the results of Figure 4a are biased by the difference between Old15 and New12, and once it is wiped out, within countries disparities are even more relevant than between countries ones. Notice that the two effects are slightly increasing, differently from the disparities between New and Old member states.

Figure 4 General Theil indices of regional disparities

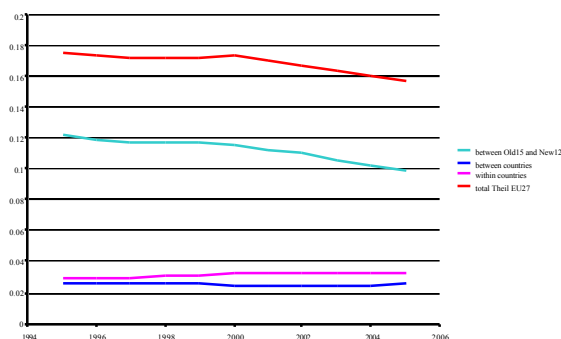
a European regional disparities



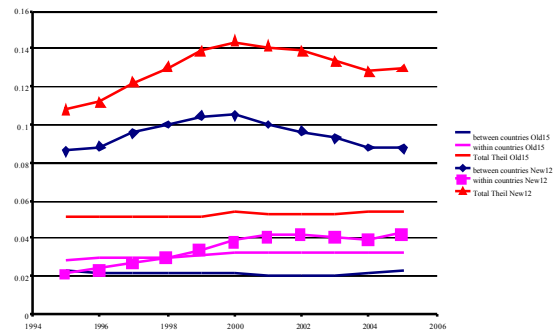
b Disparities between and within Old15 and New12 countries



c Disparities between Old15 and New12, between countries and within countries.



d Disparities within Old15 and New12 separated.



In order to see if the two groups of countries hide different patterns, Figure 4d represents in the same picture (for comparative purposes) the Theil indexes calculated between and within countries for Old15 and New12 countries separately. It is immediately evident that the total level of disparities within the New Member States is considerably higher; moreover, in these countries total disparities exhibit in many years a tendency to increase, whereas they are substantially stable in Old15 countries. This is due to the fact that, in New12 member states, between country disparities first increase and then decrease, whereas within countries exhibit a clear growing pattern, due to the fact that the core areas of these countries have normally outperformed the rest of their respective countries. Interestingly enough, within countries disparities in the New12 member states have exceeded those in Old15 countries, which have only marginally increased. All types of disparities (total, between countries and within countries) have remained quite stable in Old 15. The last thing which is interesting to observe is that in Old15 countries the disparities between countries are lower than those within, signalling that dualisms between rich and poor regions are more important than

differences among countries, whereas in the New Member states the disparities between countries remain significantly higher than those within countries despite the doubling of the latter.

The analysis of regional disparities can be performed also by looking at the effect of the three regional typologies of regions in front of globalization (i.e., in order of average GDP per capita for global players, regional players and local players). Firstly, in Figure 5a it can be observed that most of European disparities are accounted for within regional typologies, and not between them; this means that the levels of income between the three types of regions are only lowly different, and most disparities take place within regions belonging to the same group. This despite of the fact that the level of disparities between typologies is stable whereas the one within typologies is significantly decreasing.

It must be observed, however, that global players, regional players and local players all feature regions in Old15 and in New12 countries, and this brings important effects for the development level of these regions. For this reason, we further decompose the Theil index in three parts, by separating the effect of being part of the Old or the New Member countries (Figure 5b). As in all cases, the total Theil index remains the same; as Figure 5c shows, a very large part of EU27-wide regional disparities is due to the differences between the two groups of member countries. The decrease in total disparities reflects the decrease of differences between Old15 and New12 countries, as it was already observed in Figure 4c. More interesting here is the relationship between our typologies and regional disparities: the share of disparities accounted for by within-typology disparities (i.e. disparities unrelated to globalization forces) is now commensurable to the one accounted for by between-typology regional disparities, with the latter still smaller but slowly increasing and surpassing 12% of total disparities in 2004 and 2005. This means that *regional disparities are not only a matter of Eastern-Western divide, but also, though on a lesser extent, of globalization openness divide.*

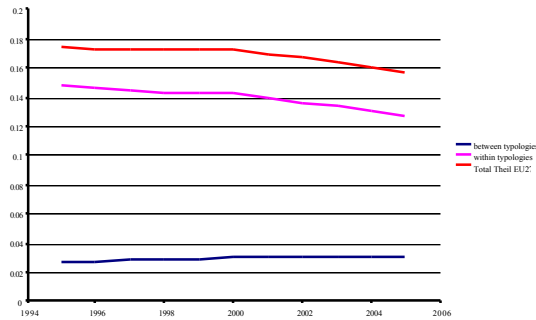
Finally, since the Eastern-Western divide is so important, it is interesting to investigate whether the two groups of countries behave differently internally or not. Figure 5c hence represents the Theil indexes calculated separately for New12 and Old15 countries, in the same graph for comparative purposes, as it was already done in Figure 4d. As in that Figure, the total Theil index is much higher for New 12 than for Old15, and increasing in the former and stable in the latter. In the West, similarly to the overall pattern of the EU, within typology disparities are higher than between typology ones, and the two are quite stable and much smaller than in the East. Within the Old15 member countries, slightly more than one third of regional disparities is accounted for by the fact that regions are differently open with respect to global forces.

The situation in the East is more dynamic. Overall, within typology disparities, those unrelated to globalization, are higher than those between typologies. They appear to follow an U-shaped pattern, which is also reflected in total disparities. The disparities related to the place of regions in global processes, the between typology disparities, start quite low, at a level which is lower with respect to the one in Old15 countries, but increase fast and steadily throughout, more than doubling in absolute value and reaching almost 1/3 of the total (a value very similar to the one in the West) at the end of the period of analysis. The patterns of regional disparities in the New12 member countries hence appear to also be significantly dependent on globalization processes, and on the different performance achieved by different typologies in front of globalization.

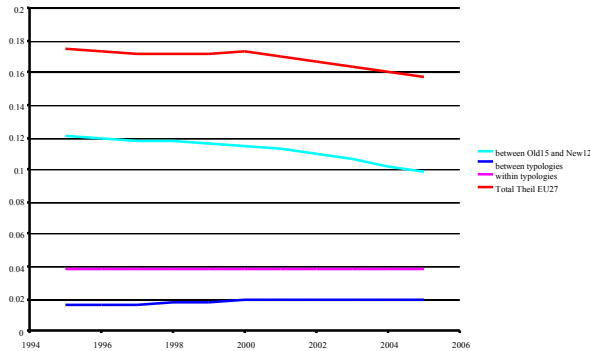
As a general and last consideration, one can claim that regional disparities are put under stress also by the globalization processes that are occurring, and this calls for attention by policy makers for ad-hoc structural intervention policies.

Figure 5. Theil indices of regional disparities linked to globalization processes

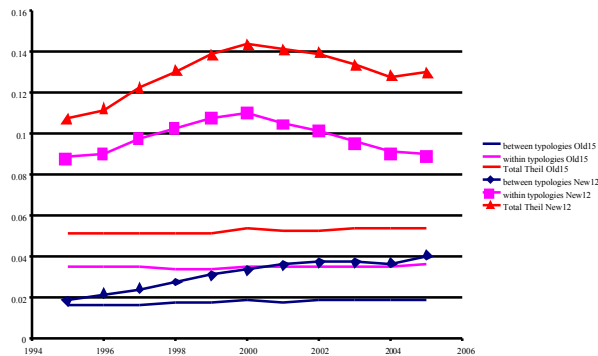
a European regional disparities within and between regional typologies



b European regional disparities within and between regional typologies, departing from the East-West divide



c European regional disparities within and between regional typologies, in Old15 and New12 member countries



6. Conclusions

This paper has analyzed the performance of European regions in a period of fast globalization. To do this, it has first classified the European regions in Global Players, Regional Players and Local Players accordingly to the extent to which they are involved in global networks. This classification turns out to be significant for the performance of regions, for their success factors and for the trends of European regional disparities.

A first result which emerges is that global regions in Europe on an average show higher performance rates than the other kinds of regions. Their higher general positive growth rates in a globalization period highlights their capacity to turn threats generated by a global economy into opportunities; their competitive advantages are strong enough to make their local economies compete on a world market. Moreover, global players lead their national economies, showing consistently a positive endogenous growth rate.

A second important result is that if this is true on an average, a heterogeneous performance trend characterizes global regions: among global regions, unexpectedly only 34% are benefiting regions, i.e. regions that register higher than average GDP growth. This result becomes more interesting if the percentage of benefiting regions in the other two groups of regions is emphasized, namely 45% and 54% respectively for regional and local players.

Interesting messages come also from the interpretative strategies. First of all, the national component of growth plays an important role in the explanation of regional growth. For the endogenous part of regional growth, the elements of territorial capital that make the difference in the endogenous performance growth are different between global and regional players, on the one hand, and local players on the other; in particular, the presence of FDI allows a global or regional players to grow more than the others.

A last consideration obtained in our in-depth analysis is that regional disparities are not only a matter of Eastern-Western divide, but also of globalization openness divide. All these results witness the importance of globalization and FDI regional attractiveness for regional growth.

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Appendix 1 The performance of growing sectors

Table A.1 the performance of open growing sectors

<i>Sectors</i>	Nace code	Share of the different sectors in the total EU GVA in 2005 (%)	Growing quota of extra EU FDI [absolute change in FDI/FDIeu]	Increasingly open sectors [absolute change in (X+M)/GVA]	Export growing sectors [absolute change in Xi/Xeu]	Improving European trade balance [absolute change in (X-M)/GVA]	GVA criterium [yearly growth 1995-2005]
<i>Mining</i>	<i>C</i>	0.8					1.9
Food	A+DA	4.0	-0.5	9.4	-1.9	0.8	-0.6
Manufacture of textiles and textile products	DB-DC	0.8	-0.4	117.7	-1.7	-64.3	-1.8
Manufacture of wood and wood products	DD	0.4	0.3	12.0	0.1	5.0	0.2
Manufacture of pulp, paper and paper products; publishing and printing	DE	1.5	-2.3	4.0	-0.6	6.1	-0.1
Manufacture of chemicals, chemical products and man-made fibres	DF-DG	2.1	-4.9	100.0	3.9	14.6	0.8
Manufacture of rubber and plastic products	DH	0.8	-1.1	39.1	0.0	11.0	0.4
Manufacture of other non-metallic mineral products	DI	0.8	-0.6	9.3	-0.5	-1.7	-0.3
Manufacture of basic metals and fabricated metal products	DJ	2.3	-1.9	39.1	0.1	-6.2	0.5
Manufacture of machinery and equipment n.e.c.	DK	1.9	-4.0	35.7	-1.3	13.4	0.5
Manufacture of electrical and optical equipment	DL	2.0	-7.6	96.3	0.3	-9.2	0.4
Manufacture of transport equipment	DM	1.8	-1.3	52.0	0.3	8.8	1.1
Manufacturing n.e.c.	DN	0.7	0.2	59.5	-0.9	-16.9	0.3
<i>Goods</i>		19.1	-24.8	48.3	-2.2	1.7	0.1
<i>Electricity, gas and water supply</i>	<i>E</i>	2.2	-0.2	3.1	0.1	-1.6	1.5
<i>Construction</i>	<i>F</i>	6.0	0.0	-2.0	-0.7	-0.4	2.1
Trade (retail and wholesale)	G	11.4	3.3				1.8
Hotels, restaurants	H	2.9	1.1				3.2
Transportation and communication	I	7.1	0.6	11.3	-0.9	-1.5	2.4
Finance and insurance	J	5.7	-0.8	5.4	0.8	1.4	3.3
Business services	K	22.0	16.9	5.0	3.4	1.4	3.3
Government services	L-Q	6.3	0.0	-0.6	-0.4	-0.2	1.4
Personal, cultural and recreational services	M-N-O-P	16.5	3.1	0.0	-0.1	0.0	2.6
<i>Services</i>		71.9	24.2	2.8	2.8	0.3	2.6

Legend: in bold open growing sectors