

GROWTH PATTERNS IN GLOBAL REGIONS: DO SPECIFIC SUCCESS FACTORS MAKE A DIFFERENCE?

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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 industrial specialization and physical accessibility from outside.

The aim of this paper is to investigate how regions most exposed to globalization face tougher competition. Distinguishing between open and closed regional economies, the paper investigates the regional performance of each type of region and identifies the most important success factors linked to growth performance patterns. The aim of the analysis is to determine whether the role played by each success factor in regional growth changes across regions with different degrees of openness to the rest of the world. Interestingly, our results do not clearly show that more open regions take advantage from particular success factors. The impact of most success factors on regional differential growth, in fact, do not change among groups of regions. A higher average regional growth rate in open regions with respect to closed ones is therefore mainly explained by the regional endowment of success factors rather than by differentiated marginal effects among groups of regions.

Keywords: Globalization, Regional growth, Success factors

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1. Introduction

Globalisation is certainly not a new phenomenon, and in many periods of the last century it reached very high levels, ones even comparable with those of today. What is new is the long-term, contemporary acceleration of many parallel integration processes which reinforce and integrate each other in multiple ways. For almost thirty years, international trade has been steadily growing at a rate which is double that of world GDP. Foreign direct investments (FDI), in their turn, have grown at rates which are double that of international trade, and four times higher than world GDP. Most of these investments are directed towards developed countries (80 percent in the years 1986-1990, around 60 percent in 1993-97) and seem particularly attracted by accelerations in economic integration processes: in fact, the EU countries which led the process of creating the Single Market in 1991-92 received up to 50 percent of world FDI (UNCTAD, 1997; Camagni, 2002).

Globalization is not an unequivocally defined process, directly measurable through official statistics like GDP or international trade, or indirectly computable through single figures on migration and population ageing; it is a multifaceted synthesis of a vast number of factors of different nature – economic, social, technological, institutional – difficult to find in official data. Moreover, globalization is not a state of the world economy, but a process involving social, institutional, economic and technological changes bundled together in such a way that a clear distinction between causes and effects is difficult to draw (CEC, 2009).

In the context of this paper, globalization is mainly interpreted as a process of internationalization of production and markets which can take various forms – like increasing international trade or increasing foreign direct investments – all of which give rise to the growing integration and interdependency of European economies with other main world economies. According to this definition of globalization, its impacts are mainly of an economic nature and associated with long-run structural changes in the economy caused by the integration and internationalization of production and markets. 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 through either multilateral or “regional” liberalization policies (Panagariya, 2000); new international trade patterns which see more and more developing and emerging countries as exporters of manufacturing goods, thus forcing industrialized countries to change their specialization towards high quality goods and, mainly services (Bergoing et al. 2004; Kucera and Milberg, 2003), new composition of intermediate vs. final goods traded at international level, also as a result of multinational firms’ new strategies (Yi, 2004; Hummels et al., 1998 and Hummels et al. 2001; Hanson et al. 2005), new location patterns of foreign direct investments and consequent new growth opportunities for developing economies (Hansen and Rand, 2006; Lall and Narula, 2004; Moran et al., 2005), migration trends and international trade flows (Soubotina, 2004;

Lucas, 2008), 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 (Cooper et al., 2007; Capello et al., 2011).

Globalization provides greater access to other countries' markets and resources, while granting other countries greater access to the European market. Overall, this process is mutually beneficial. However, the benefits are not evenly distributed across the European territory and economic sectors and the consequence of increasing globalization is the creation of additional pressure on local economies, obliged to face tougher competition (Cooper et al., 2007). The research question of this paper is how regions most exposed to globalization face stronger competition, and whether specific success factors explain their growth patterns with respect to closer local economies.

Open regional economies are theoretically more dependent on innovation, required to face competition, and at the same time generated by linkages with international firms (Gorodnichenko et al., 2008); on the presence of high-value functions, as important factors to attract additional high-value functions (Kenney and Florida, 2004); on high quality human capital, that allows to keep control over processes of tasks unbundling at the international level, that de-localize mostly low-value tasks (Baldwin, 2006); on the attraction of FDI, expected to be growth-enhancing by allowing the incorporation of new inputs and foreign technologies in the production function of the recipient economy and by increasing the productivity of already existing input factors of the recipient economy through labour training and skill acquisition (Beugelsdijk et al., 2008; Borensztein et al., 1998; De Mello, 1999).

Whether the presence of these specific factors (e.g. innovation, high-value functions, high quality human capital and FDI) is more important for open regional economies than for closed economies is investigated in this paper through an empirical analysis. The latter is conducted on the entire European territory using a uniform dataset for 259 NUTS 2 regions of the 27 European member countries, excluding the overseas French departments (Guadeloupe and Martinique), the Azores, Madeira and the Canaries. At the empirical level, the main difficulty is the availability of a reliable dataset which comprises all NUTS 2 regions of the 27 member countries, and of the identification of "global regions", i.e. those regions with an economic structure more open, and therefore more sensible, to international trade.

The structure of the paper is as follows. The paper first presents an operational way to identify different kinds of regions according to their degree of openness to the global world (sec. 2.1). The taxonomy will turn to be useful for our empirical analysis given the different growth patterns that the different groups of regions show (sec. 2.2). The paper then presents an interpretative analysis, run with the aim to test whether regions with different degrees of openness to the world economy perform differently. In particular,

the aim of the interpretative analysis is to determine whether the role played by each growth factor changes across regions, and in particular across regions with different degrees of openness to the rest of the world (sections. 3 to 5).

The first result evidences that the globalization process *per se* does not explain regional performance, since regions with different degrees of openness have no particular regional dynamics, *ceteris paribus*, once structural factors are taken into account. Moreover, our results show that the impact of each success factor on regional differential growth does not normally change among groups of regions. A higher average regional growth rate in global players with respect to regional and local ones seems hence to be mainly dependent on the regional endowment of success factors – especially those with high impacts on growth – rather than by differentiated marginal effects among groups of regions (sec. 6).

2. The performance of regions with a different degree of openness

2.1 A categorization of European regions based on their openness to globalization

The aim of the analysis conducted in this work is to identify local assets able to explain positive and increasing growth trajectories of European regional economies in a globalised competing world. If it is easy to understand that this aim has important consequences in terms of regional competitiveness policies, its implementation finds a first problematic issue in the identification of the degree of openness of regions to globalization.

Our approach, already applied in Capello et al. 2011, is based on two main dimensions that reinforce and complement each other in capturing the different aspects of integration (Table 1). They derive from two main streams of literature: the first oriented to the territorial/functional structure of the local economy in order to capture integration processes, the second to economic integration processes. The former strand of analysis identifies the competitive advantages of regions undergoing global processes in the presence of a large city in which the international headquarters of multinationals, high-value service functions (like international-level finance and insurance), and high-qualified human capital attracted from outside find an efficient location thanks to agglomeration externalities and physical accessibility. This idea stems from a well-defined body of studies (Scott, 2001; Taylor et al., 2007; Friedmann, 1986; Sassen, 1991). ‘World cities’, as they are termed by Friedmann (1986), are those cities at the top of a world city hierarchy. The ‘global cities’ described by Saskia Sassen (1991) are major cities that are strategically global in their function, while Allen Scott’s (2001) ‘global-city regions’ are cities in which economic (and social) development is linked to a global rather than a national growth pattern. The feature shared by all these concepts is the idea that one way to be integrated into the global economy, and to gain advantages from

it, is to comprise international high-value functions, qualified human capital, increasing returns in production activities, and physical accessibility.

The second dimension on which to measure a local economy's degree of integration into the world market is a pure economic dimension captured by the degree of that local economy's specialization in activities that are particularly open to international markets. This dimension explains the capacity of a region to grow by virtue of the presence in it of dynamic open sectors. It captures a MIX effect of a traditional shift-share analysis (Perloff, 1957; Perloff et al., 1960).

On the basis of these two approaches, global players are identified as:

- regions with high functional/territorial integration with global processes;
- regions with high market integration, i.e. specialized in competitive and dynamic open sectors (sectors in search of new markets, more open to competition, and better able to gain advantages from world competition).

Only those regions well endowed with physical connections and possessing the appropriate specialization in competitive and dynamic sectors have the potential to be global players, these being defined as regions where globalization's impact is felt first and most strongly. Global players are able to benefit from globalisation if they can exploit the opportunities offered by globalization, minimize the risks associated with it, and turn threats into opportunities.

Table 1. Taxonomy of regions according to their degree of integration into global markets

<i>Functional/territorial dimension</i>		
	<i>Economic dimension</i>	
	<i>Openness above average</i>	<i>Openness below average</i>
<i>Specialization in open growing sectors</i>	<i>1 Global players</i>	<i>2 Regional players</i>
<i>De-specialization in open growing sectors</i>	<i>4 Pure gateways</i>	<i>3 Local players</i>

Source: Capello et al., 2011

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

1. Global players. These are regions at the core of globalization processes: they are structurally open and have all the necessary 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 are specialized in open growing sectors but have below-average physical and functional connectedness 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 penalised with respect to global regions because their good sectoral mix does not take advantage of a strong and efficient territorial settlement structure, and does not exploit the agglomeration advantages guaranteed by a city-region. The economic dynamics of these areas are expected to be due to a MIX effect deriving from the presence in the region of sectors that are more dynamic and more open than average at regional level because of increasing demand in those sectors. The label “regional” is attached to these players because their sectoral specialization would allow them to play a worldwide role, but, given their lack of an urbanised settlement structure, they normally have to resort to global regions as gateways to world markets. The term “regional” is hence to be understood 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 consists of regions which have neither the functional/territorial 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 used as a control category by all the analyses conducted in the following sections. Trends that pertain to globalization forces are expected to be limited in this category. We label them “local” players because their markets are expected to be local, i.e. normally limited to their own region and, possibly, country;
4. The last category, gateway regions, are regions with a puzzling behaviour, i.e. regions with structural openness but specialized in closed sectors. This strange behaviour does not appear to exist in the reality, as evidenced in Capello et al. (2011) and in Fratesi (2011), where the statistical analysis leading to the empirical identification of the category of actual regions is presented in details.

The three first categories will be used in the following sections for the empirical analysis.

2.2 The performance of regional typologies

Among the causes of regional success and failure are, on the one hand, certain pervasive characteristics of the national economy and, on the other, regional elements. A first interesting analysis concerns how these two components play a role in the different types of regions. Table 2 presents the average annual real GDP growth rates in two periods of time of the three types of regions (at Nuts2 level), as well as the results of a test to determine whether these growth rates are significantly different.

Since in the years 2000's the Eastern European Countries (i.e. the New 12 Member States of the EU) significantly outperformed on average their western counterparts, and

this could induce a bias in the analysis, we chose to present table 2 also for the two groups separately³.

In the first period of time, i.e. 1999-2002, global players significantly outperformed the other types of regions in terms of real GDP performance. This was the case of both regions in the Old 15 member countries and in the New 12 ones. Interestingly, in Western regions regional players are the second performers, close to global players, whereas in Eastern regions global players by far outperform local players (the second best performers) as well as regional players. In the second period of time (2002-2005), global players were again the best performers among European regions, but not significantly so overall and in Western countries. In Eastern countries, by contrast, the growth rate of global players was still significantly higher.

National effects were controlled for once regional growth had been analysed with respect to its national average. The results show that global players have been leading their respective countries in terms of growth rates; being a global player appears significantly to increase the possibility of being a region benefiting from a period of rapid globalization 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 that of the other regions in both periods. In Western countries the differential growth rate is larger in both periods, but significant only in the first period. These results show that global players have a higher capacity on average to pro-act and re-act to global trends. A more in-depth analysis allows us to determine whether this is true for all global regions, and to identify which endogenous success factor positively affects the endogenous capacity for growth in a period of globalization.

In an aggregate analysis, global regions record higher performance rates and outperform all other regions in the country. Two main questions arise in this regard: first, whether all global regions have high performance rates and, by the same token, whether all local players have low performance rates; second, which local assets explain these performances and especially whether local success assets differ among the groups of regions. The answers to these questions have important policy implications because they can help in devising ad-hoc, *place-specific* (in the words of the Barca Report, Barca, 2009) policy recommendations intended to reinforce those elements of the territorial capital on which the competitiveness of each single regional type depends.

³ Notice that, with the inclusion of national dummies, this separation is no longer necessary in the following sections.

Table 2. Growth performance of the three types of regions, 1999-2002 and 2002-2005

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

Source: Authors' elaborations

3. Success factors for regional growth

The previous sections have evidenced that European regional growth patterns are differentiated between Western and Eastern European regions, and among groups of regions with different degrees of world integration. One of the main findings has been that the characteristics associated with the performance of regions are very different between open regions (i.e. global and regional players) and less open regions (i.e. local players).

National economic trends are crucial in the determination of regional performance (see Table 2); and among those trends, some important ones linked to globalization processes exert their effects at national level, such as the movements of financial capitals, interest rates and exchange rates. Other aspects of the globalization processes, on the other hand, deploy their effects directly at regional level. Many of these aspects are linked to the reorganization of production processes, and here the attractiveness of the local economies to high or low value-added tasks and phases plays a crucial role. It is therefore of interest to analyse which regional factors positively affect regional performance once country-wide, mainly monetary, effects have been controlled for.

The aim of this section is to interpret regional growth differentials in order to highlight the most important success factors explaining regional growth performance patterns and especially *to determine whether these success factors exert a positive effect on growth in different ways according to the global stance of European regions.*

In order to test the role played by globalisation in regional growth, we not only used a dummy that accounts for globalisation stance but also interacted this dummy with the other explanatory variables in order to test whether the estimated coefficients varied across types of regions.⁴ This strategy made it possible to assess, on the one hand, whether open regions are, *ceteris paribus*, more dynamic than other kinds of regions, and, on the other hand, whether success factors have different impacts on growth according to the degree of world integration of regional economies.

Conceptually, we estimate a regional growth model in which the dependent variable is the regional growth rate, controlling for national effects through national dummies, which will turn out to be highly significant, in line with other findings (OECD, 2009a and 2009b).⁵

The choice of the success factors explaining regional performance was based on the consideration that the regional growth rate that remains to be explained once the national effects have been considered depends on the endogenous elements which are

⁴ Since the globalization index includes, among other things, also extra-European FDI, the latter has been excluded from FDI variables in order to avoid multicollinearity.

⁵ From a technical point of view, this requires the inclusion in the regression equations of two sets of dummy variables: the first set consists of one dummy variable for each typology of EU region, while the second made up of country dummy variables, as well as possible interacted effects.

recently be termed ‘territorial capital’, which consists of material and intangible, private and public, soft and hard elements (Camagni, 2009).

In the vast literature on regional growth, a high number of factors are identified and come from different paradigm shifts that took place over time:

- from development (or even location) factors to innovation factors (Cappellin and Nijkamp, 1986; Crescenzi and Rodriguez-Pose, 2011; Boschma and Lambooy, 1999; Boschma, 2005; Boschma and Martin, 2010);
- from hard to soft factors consisting of either intangible, atmosphere-type, local synergy and governance factors (Becattini, 1990; Camagni, 1991), or human capital and knowledge assets (Foray, 2000).

For this reason, a rather differentiated set of local assets were chosen, namely:⁶

- the degree of innovation of regions (*inno*), expected to affect positively the regional growth rates, as a large body of literature suggests (e.g. Howells, 2005; Johansson and Karlsson, 2009; de Groot et al., 2009; Audretsch and Aldridge, 2009). Innovation was proxied by the share of human resources in science and technology;
- physical density (*den*), measured by the endowment of roads per square kilometre as a proxy for the intensity of use of regional land. Measured as such, this variable is not thought to capture infrastructural endowment and is expected to have a negative sign when congestion effects prevail;
- the endowment of human capital (*humcap*), measured by share of university professors reported by the labour force survey (Park et al, 1925; Jacobs, 1961; Thompson, 1965; Lucas, 1988; Karlsson et al., 2009);
- a balanced urban system, with the presence of cities (Beguin, 1988), as the tradition of the Christaller and Losch’s models suggest. This is proxied by a series of dummies on the settlement structure of regions, developed within the ESPON programme;⁷
- FDI penetration in a region as a measure of regional attractiveness (*fdi*). We only considered FDI originating from within Europe, in order to avoid endogeneity with the globalization index built with extra-European FDI (Baldwin and Martin, 1999; Casi and Resmini, 2011; OECD, 2007);
- an exogenous but very important variable explaining regional differential growth is the presence of public funds (*pol*) which, because they are aimed at either demand-side support or supply-side development, should yield positive

⁶ All independent variables were lagged in order to reduce problems of endogeneity and reverse causation.

⁷ More precisely, rural regions are those regions with a population density < 100 / km sq. and a centre > 125,000 inh. or a population density < 100 / km sq. with a centre < 125,000; urban regions are those regions with a city of between 150,000 and 300,000 inhabitants and a population density of 150 – 300 inhabitants / km sq.; or a lower population density (100-150 inh. /km) with a larger centre (>300,000). Agglomerated regions, instead, are those regions with a city of > 300,000 inhabitants and a population density of > 300 inhabitants / km sq. or a population density of 150 – 300 inhabitants / km sq.

growth effects if funds are wisely spent. We used structural funds expenditure per capita as a proxy for this factor, since national transfers are not available. Moreover, the model includes national dummies which account for the fact that some countries (e.g. the New Member countries of the EU) have grown considerably more than the others. Since some countries do have just one region at Nuts2 level, these countries, were the dummy would explain everything, are excluded from the analysis. The model estimated was therefore the following, where the only coefficient with expected negative sign is the one for excess physical density:

$$\begin{aligned} regrowth_r = & \alpha_0 + \beta_1 natgrowth_r + \beta_2 inno_r + \beta_3 den_r + \beta_5 pol_r + \\ & + \beta_6 humcap_r + \beta_7 fdi_r + \beta_8 city + \varepsilon_r \end{aligned} \quad (10)$$

The dependent variable for the empirical model is the real GDP growth rate at Nuts2 level for all European regions in the period 2002-2005. This period was characterized by rapid globalization and was far from the big economic crisis which started in 2007. Estimations with a longer time-span (i.e. 2000-2005) were also attempted and provided results consistent with those presented here, but were not chosen because for many independent variables only the value in 2000-2001 was available and the regressors needed to be lagged in order to reduce the possible endogeneity problems.

In order to test the role played by globalisation on regional growth, as previously mentioned we will first introduce a dummy accounting for globalisation stance into eq. (1) (i.e. a dummy for the typologies) and then interacted this dummy with the other explanatory variables in order to test whether the estimated coefficients varied across types of regions.⁸ This strategy makes it possible to assess, on the one hand, whether global regions are, *ceteris paribus*, more dynamic than other kinds of regions, and, on the other hand, whether success factors have different impacts on growth according to the degree of world integration of regional economies.

4. Results for European regions

Table 3 reports the standardized⁹ coefficients obtained by regressing the model (eq. 1). Most coefficients have the expected sign and are significant, with the exception of high-value functions, which remain positive though non-significant. Physical density has a negative sign, signalling that congestion effects prevail over accessibility advantages.

First of all, the national dummy variables show a strong significance, witnessing that regional growth very much depend on national growth.

The share of human resources in science and technology, a proxy for innovation, also has a positive and significant coefficient, close to 0.17; an innovative environment helps

⁸ Since the globalization index included, among other things, also extra-European FDI, the latter was excluded from FDI variables in order to avoid multicollinearity.

⁹ The beta coefficients are the regression coefficients obtained by first standardizing all variables to have a mean of 0 and a standard deviation of 1, and are presented here in order to allow some comparison among coefficients of variables with very different scales.

regions thrive in an age of globalization. Physical density has a negative and significant coefficient; the excessive density of some areas, which are consequently subject to congestion diseconomies, is captured. Public policy support has a positive but slightly insignificant standardized coefficient (0.08), which is in line with an ample literature on structural funds where debate is ample and still not conclusive on their effectiveness (Boldrin and Canova, 2001; Rodríguez-Pose and Fratesi, 2004; Dall’Erba and LeGallo, 2008; Mohl and Hagen, 2010). Human capital has a positive and significant coefficient, stable in other regressions.

Table 3. Success factors for European regions

	Model1 No FDI			Model1 (complete)		
	stand. coeff.	p-value	sig.	stand. coeff.	p-value	sig.
Innovation (Share of science and technology employment 2000)	0.177	0.025	* *	0.141	0.085	*
Physical density (Total km of infrastructure on sqm 2000)	-0.177	0	* * *	-0.198	0	* * *
Policies (Structural funds per capita 1994-1999)	0.081	0.219		0.075	0.254	
Human capital (1999-2001)	0.129	0.085	*	0.134	0.07	*
FDI (number of FDI per million people 1999-2001)				0.070	0.009	* * *
City effect (dummy for rural regions with no large city)	-0.099	0.041	* *	-0.097	0.045	* *
Constant			* * *		0.001	* * *
Country dummies	Included	significant		Included	significant	
Obs	246			246		
R2	0.7104			0.7134		
F	84.26			59.15		
Moran's I	0.719	0.472		0.578	0.563	
Spatial Error						
Lagrange multiplier	1.99	0.158		2.26	0.133	
Robust Lagrange multiplier	0.734	0.392		0.703	0.402	
Spatial Lag						
Lagrange multiplier	1.301	0.254		1.689	0.194	
Robust Lagrange multiplier	0.044	0.834		0.132	0.717	

Source: Authors' elaborations

A globalization-related variable used in this general regression model is regional attractiveness, measured by the amount of total intra-European FDI on the population received by regions, and whose standardized coefficient is positive, significant and large (0.07); as expected, the capacity of a region to attract capital, and foreign direct investments in particular, has a positive impact on growth performance amid globalization. The inclusion of this variable is not plain, since FDI can induce regional

growth but, at the same time, regional growth can be an attractor for FDI, hence posing the possibility of endogeneity. The variable is hence included lagged with respect to the period of estimation, but if this reduces possible endogeneity, it does not necessarily wipes it out if there is serial correlation. Since the inclusion or exclusion of FDI does not alter the results for the other coefficients (Table 3), and in the impossibility to have time series of regional FDI for European NUTS2 regions, we chose to keep FDI in the regressions, trusting the literature which finds positive impacts of lagged FDI on regional growth (Borensztein et al., 1998; de Mello, 1999; Mullen and Williams, 2005; Beugelsdijk et al., 2008), though other literature is critical and this result is still debated (Carkovic and Levine, 2005).

The final explanatory variable is the settlement structure, which was used as a proxy for agglomeration economies. Between the various settlement structure dummies, the one that has the highest explicative power is the rural dummy, which comes out negatively related to regional growth and strongly significant; this means that the lack of large cities is of detriment for regional growth.

The results were tested for spatial effects using various matrices, including a standardized distance matrix and a standardized distance matrix with a threshold. All tests rejected the presence of spatial autocorrelation in the regressions, and the need to use a spatial lag or spatial error model, probably because the inclusion of national dummies already captures all those spatial effects which are more country-dependent than proximity dependent.

5. Success factors in regions with different degrees of world integration

An interesting question is whether regions with different degrees of world integration perform differently. This is the first kind of spatial heterogeneity in which we are interested.

Table 4 presents the results of estimations of eq. (1), when only a dummy for either global, regional or local players was inserted simply to capture whether a different degree of world integration explains a higher regional differential growth rate, everything else equal.

The results show that the addition of a dummy for global players does not significantly alter any other result (model 2, Table 4). The same non-significant result is obtained when regional or local players are analysed (models 3 and 5, Table 4); even global and regional players together (measured in the dummy “globalized regions”) do not register any particular performance (model 4, Table 4). This means that regions which outperform the others do not belong exclusively to either global or regional or local players but are present in all of them. These results underline once again that globalisation *per se* does not explain regional growth once structural factors are taken into account, as mentioned several times in this work.

A second question is whether the different success factors have different impacts on regional growth for regions with different degrees of world integration. Two analyses were run, in sequential order.

The first analysis split the region sample into two groups, global and regional players on the one hand - being regions with an integrated economy (although with different intensity) - and local players on the other, and determined whether the estimates were statistically different using a Chow test. Table 5 presents the results of a regression analysis performed separately on the two groups: global and regional players in the middle, and local players on the right, while the first column retains the same basic model of eq. (1) in order to allow comparisons. Model 7 on the local players is presented twice, since the first model shows the existence of a spatial dependence in the error terms and a SEM model is required. The last column contains the SEM for the local players. Coefficients are not standardised and therefore a direct comparison is not possible. When the first three columns are analysed, most standardized coefficients appear to be similar between the two groups and the general regression model, suggesting that the differences with respect to in growth models are not very high.

The Chow test, performed on the different models of Table 5, produced a p-value .95, and is not conclusive on whether the null hypothesis that the two regressions actually have the same coefficients cannot be rejected. An implied ambiguity therefore remains.

To overcome this doubt, and to test whether some specific coefficients differ across types of regions, spatial heterogeneity was measured on each single coefficient, multiplying each variable by a typology dummy, namely local players, i.e. estimating eq. (1). This technical procedure made it possible to disentangle the differential effects of each success factor in local players, and compare them against global and regional players. Table 6 sets out the results of a regression in which each variable was crossed with the local players dummy.

The general results (first column in Table 6), valid for global and regional players, remain very similar to those of Table 3, with lower significance in some regressors, probably because of the reduced number of degrees of freedom. Inspection of the differential effects of success factors on local players, presented in the second column of Table 6, highlights a general result: spatial heterogeneity is present only in the case of physical density. All other marginal effects are insignificant, and in all but one case they are highly insignificant.

The main conclusion to be drawn is that for most success factors spatial heterogeneity does not hold: success factors impact in the same way on regional growth, despite the degree of openness of regional economies. This finding raises the following question: if the success factors are by and large the same for global, regional and local players, and if their impact on growth is the same among these groups of regions, what is it that explains the higher regional growth that, on average, global regions achieve? This is the subject of the next section.

Table 4. Success factors for European regions: the effects of regional types

	Model1 stand. coeff. p-value sig.			Model2 stand. coeff. p-value sig.			Model3 stand. coeff. p-value sig.			Model4 stand. coeff. p-value sig.			Model5 stand. coeff. p-value sig.		
Innovation (Share of science and technology employment 2000)	0.141	0.085 *		0.111	0.183		0.146	0.086 *		0.138	0.089 *		0.138	0.089 *	
Physical density (Total km of infrastructure on sqm 2000)	-0.198	0 ***		-0.208	0 ***		-0.197	0 ***		-0.201	0 ***		-0.201	0 ***	
Policies (Structural funds per capita 1994-1999)	0.075	0.254		0.076	0.248		0.078	0.241		0.084	0.202		0.084	0.202	
Human capital (1999-2001)	0.134	0.07 *		0.139	0.059 *		0.133	0.075 *		0.134	0.071 *		0.134	0.071 *	
FDI (number of FDI per million people 1999-2001)	0.070	0.009 ***		0.066	0.01 **		0.071	0.009 ***		0.069	0.009 ***		0.069	0.009 ***	
City effect (dummy for rural regions with no large city)	-0.097	0.045 **		-0.090	0.058 *		-0.097	0.046 **		-0.092	0.058 *		-0.092	0.058 *	
Global players				0.034	0.394										
Regional players							0.009	0.821							
Global and regional players										0.028	0.482				
Local players													-0.028	0.482	
Constant		0.001 ***			0.001 ***			0.004 ***			0.002 ***			0.001 ***	
Country dummies	Included	significant		Included	significant		Included	significant		Included	significant		Included	significant	
Obs	246						246			246			246		
R2	0.7134			0.714			0.7135			0.7141			0.7141		
F	59.15			46.5			58.56			52.64			52.64		
Moran's I	0.578	0.563		0.543	0.587		0.597	0.55		0.598	0.55		0.598	0.55	
Spatial Error															
Lagrange multiplier	2.26	0.133		2.322	0.128		2.24	0.134		2.236	0.135		2.236	0.135	
Robust Lagrange multiplier	0.703	0.402		0.755	0.385		0.706	0.401		0.774	0.379		0.774	0.379	
Spatial Lag															
Lagrange multiplier	1.689	0.194		1.681	0.195		1.654	0.198		1.541	0.215		1.541	0.215	
Robust Lagrange multiplier	0.132	0.717		0.114	0.736		0.12	0.729		0.079	0.779		0.079	0.779	

Source: Authors' elaborations

Table 5. The spatial heterogeneity of success factors

	Model 1 (all regions)			Model 6 (only global and regic			Model 7 (only local players)			Model 7 SEM (only local playe		
	stand. coeff.	p-value	sig.	stand. coeff.	p-value	sig.	stand. coeff.	p-value	sig.	stand. coeff.	p-value	sig.
Innovation (Share of science and technology employment 2000)	0.141	0.085 *		0.154	0.059 *		0.146	0.36		1.600	0.851	
Physical density (Total km of infrastructure on sqm 2000)	-0.198	0 ***		-0.208	0 ***		-0.367	0.039 **		-4.929	0.009 ***	
Policies (Structural funds per capita 1994-1999)	0.075	0.254		0.095	0.199		-0.043	0.713		0.000	0.183	
Human capital (1999-2001)	0.134	0.07 *		0.091	0.256		0.092	0.423		75.729	0.256	
FDI (number of FDI per million people 1999-2001)	0.070	0.009 ***		0.065	0.018 **		0.258	0.212		0.003	0.161	
City effect (dummy for rural regions with no large city)	-0.097	0.045 **		-0.127	0.043 **		0.028	0.734		0.168	0.478	
Constant		0.001 ***			0.001 ***			0.808		2.644	0.103	
Country dummies	Included	significant		Included	significant		Included	significant		Included	significant	
Obs	246			175			71			71		
R2	0.7134			0.7607			0.7599			Squared correlation	0.779	
F	59.15			82.2						Sigma	0.76	
Moran's I	0.578	0.563		0.488	0.626		-1.367	1.828				
Spatial Error												
Lagrange multiplier	2.26	0.133		2.398	0.121		6.445	0.011 **				
Robust Lagrange multiplier	0.703	0.402		0.591	0.442		4.445	0.035 **				
Spatial Lag												
Lagrange multiplier	1.689	0.194		2.088	0.148		2.743	0.098 *				
Robust Lagrange multiplier	0.132	0.717		0.281	0.596		0.743	0.389				

Source: Authors' elaborations

Table 6. Spatial heterogeneity by success factor

	Model 1 (all regions)			Model 8 (crossed effects)					
	stand. coeff.	p-value	sig.	General coefficient	p-value	sig.	Marginal effect on local players	p-value	sig.
Innovation (Share of science and technology employment 2000)	0.141	0.085 *		0.102	0.212		0.257	0.106	
Physical density (Total km of infrastructure on sqm 2000)	-0.198	0 ***		-0.211	0 ***		-0.108	0.028 **	
Policies (Structural funds per capita 1994-1999)	0.075	0.254		-0.013	0.863		0.100	0.206	
Human capital (1999-2001)	0.134	0.07 *		0.160	0.036 **		-0.092	0.19	
FDI (number of FDI per million people 1999-2001)	0.070	0.009 ***		0.065	0.01 **		0.030	0.53	
City effect (dummy for rural regions with no large city)	-0.097	0.045 **		-0.123	0.058 *		0.053	0.454	
Constant		0.001 ***			0 ***		-0.204	0.269	
Country dummies	Included	significant							
Obs	246			246					
R2	0.7134			0.7248					
F	59.15			55.74					
Moran's I	0.578	0.563		0.415	0.678				
Spatial Error									
Lagrange multiplier	2.26	0.133		2.485	0.115				
Robust Lagrange multiplier	0.703	0.402		1.323	0.25				
Spatial Lag									
Lagrange multiplier	1.689	0.194		1.163	0.281				
Robust Lagrange multiplier	0.132	0.717		0.001	0.982				

Source: Authors' elaborations

6. Regional endowment of success factors

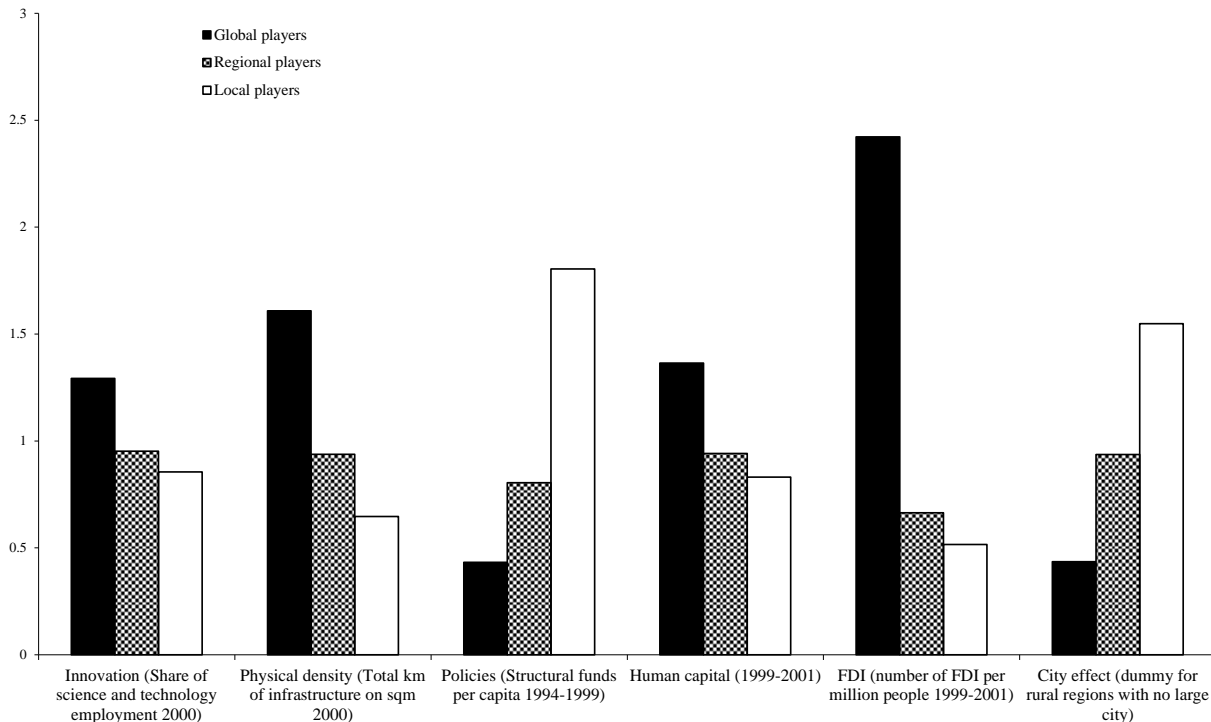
The previous sections have provided evidence of the lack of spatial differences in success factors. Regardless of the degree of international integration, the structural features that explain higher differential growth rates at regional level are generally the same. Innovation capacity helps growth in global, as well as in regional and global regions, and so do national growth, FDI penetration and human capital.

A legitimate question raised by these results is why therefore, on average, global players grow more than regional and local ones; the answer depends on the capacity of regions to endow themselves with those success factors that have an important role in regional growth.

To verify whether this is so, Figure 1 reports the endowment of success factors by groups of regions, standardized to the European mean value. On average, global player regions are more endowed with innovation, human capital, large cities and FDI penetration than are the other two types of regions, while regional players come second. Global players are also more dense (and therefore congested) but this effects is probably surpassed by the other positive effects.

Local players only have the highest policy support, whose influence on regional growth is positive but weaker.

Figure 1. Endowment of success factors, for global, regional and local players



Source: Authors' elaborations

Table 7 reports the non-standardized coefficients of the estimated eq. (4), which are measures of the weight of each variable on growth and, for each type of region, the average values of regressors in each group of regions and the average effect that each success factor generates in terms of growth, obtained by multiplying the raw coefficient for the average value.

Table 7 shows that the three success factors that on average are more frequently present in global regions – namely innovation, human capital and FDI – are also those that weight most on growth. Thanks to both the high endowment and the high coefficient, these generate a large part of regional growth in global player regions. The relatively high endowment of human capital in global regions has a decisive positive effect on growth (0.98 points).

Regional players are similar to global players in their features, but with lower absolute values, and only have a bit more of policy support.

It is the high number of rural regions (proxy for the lack of agglomeration economies) that distinguishes local players from the others; their relatively negative important weight on growth, the lack of agglomeration economies produce -0.22 point increase less in regional player GDP growth. Local players are only relatively more positively affected by policies (.14) and less characterised by congestion effects.

As a summary of and conclusion to the analysis of success factors, it is possible to state that regional success factors for European regions are consistent with the theory and very similar between global and regional players and local players, so that only one statistically significant difference arises. However, the endowment of success factors differs across types of region; in particular, global players are better endowed with those factors that have a high impact on growth.

Table 7. Impacts and effects of each success factor on regional growth

	<i>Non-Standardized coefficients</i>	All regions		Global Players		Regional Players		Local Players	
		Average Value	Effect on Growth	Average Value	Effect on Growth	Average Value	Effect on Growth	Average Value	Effect on Growth
Innovation (Share of science and technology employment 2000)	7.10	0.11	0.76	0.14	0.98	0.10	0.72	0.09	0.65
Physical density (Total km of infrastructure on sqm 2000)	-1.59	0.23	-0.36	0.37	-0.58	0.21	-0.34	0.15	-0.23
Policies (Structural funds per capita 1994-1999)	2.1E-07	369'212	0.08	159'566	0.03	297'151	0.06	666'291	0.14
Human capital (1999-2001)	80.02	0.00	0.33	0.01	0.44	0.00	0.31	0.00	0.27
FDI (number of FDI per million people 1999-2001)	0.0003	192.34	0.06	465.95	0.14	127.74	0.04	99.16	0.03
City effect (dummy for rural regions with no large city)	-0.36	0.40	-0.14	0.17	-0.06	0.37	-0.13	0.61	-0.22
Constant	1.45	1	1.45	1	1.45	1	1.45	1	1.45
Estimated non weighted average growth			2.17		2.41		2.11		2.09
Actual non weighted average growth			2.43		2.76		2.47		2.09

Source: Authors' elaborations

7. Conclusions

This paper has conducted an interpretative analysis of the success factors for growth at regional level, with the aim to highlight whether the assets that guarantee an economic performance are different for regions that are more open to integration processes than for regions that are more isolated.

A first result is that more internationally integrated European regions record GDP performance rates on average higher than those of the other kinds of regions. Their higher general positive growth rates amid globalization highlight their capacity to turn threats generated by a global economy into opportunities; their competitive advantages are strong enough to enable their local economies to compete on a world market. Moreover, global players lead their national economies, showing consistently positive endogenous growth rates.

A second important result is that whilst global regions outperform the others on average, a their trend is heterogeneous, once accounting for structural factors in a multivariate regression, regional typologies do not explain higher-than-average GDP growth, *ceteris paribus*.

The analysis of this paper shows that success factors explaining regional growth differentials are fundamentally common to global, regional and local players. This shows that openness to a global economy *per se* does not give rise to economic growth; innovation, human capital, policy support and national effects make a difference in explaining regional growth differentials in global, as well as regional and local, players. If this is a reasonable result, a counter-intuitive one is that these factors appear to have the same impacts on growth across space, for example the marginal effect of innovation on growth does not vary between global, regional and local players.

If this is the case, the reasons why global players grow, on average, more than the other groups of regions reside in their greater endowment of the success factors that play an important role in growth, as shown in the last part of the paper.

This result is important for the development of ad-hoc intervention policies, that should be devoted to the reinforcement of those regional success factors able to increase inter-sectoral productivity, namely through innovation where innovation is not merely intended as the degree of R&D produced by a region, but in a more general sense as all efforts devoted to increase knowledge, to foster industrial transformation, to develop local capabilities in order to cooperate synergically with other regions, and to invent new organizational solutions at both the firm and public governance levels.

All this requires a change in policy style; integrated, inter-industry, pervasive policies have to be devoted to prepare territories for innovation and global competition, enhancing their adaptability to a changing external context, promoting their openness and receptivity to new business ideas and organisational styles, rather than forcing the

locational decisions of single firms, and to negotiate the terms for fruitful cooperation between territories and firms, rather than merely supplying favourable location factors.

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