Advances in Spatial Science

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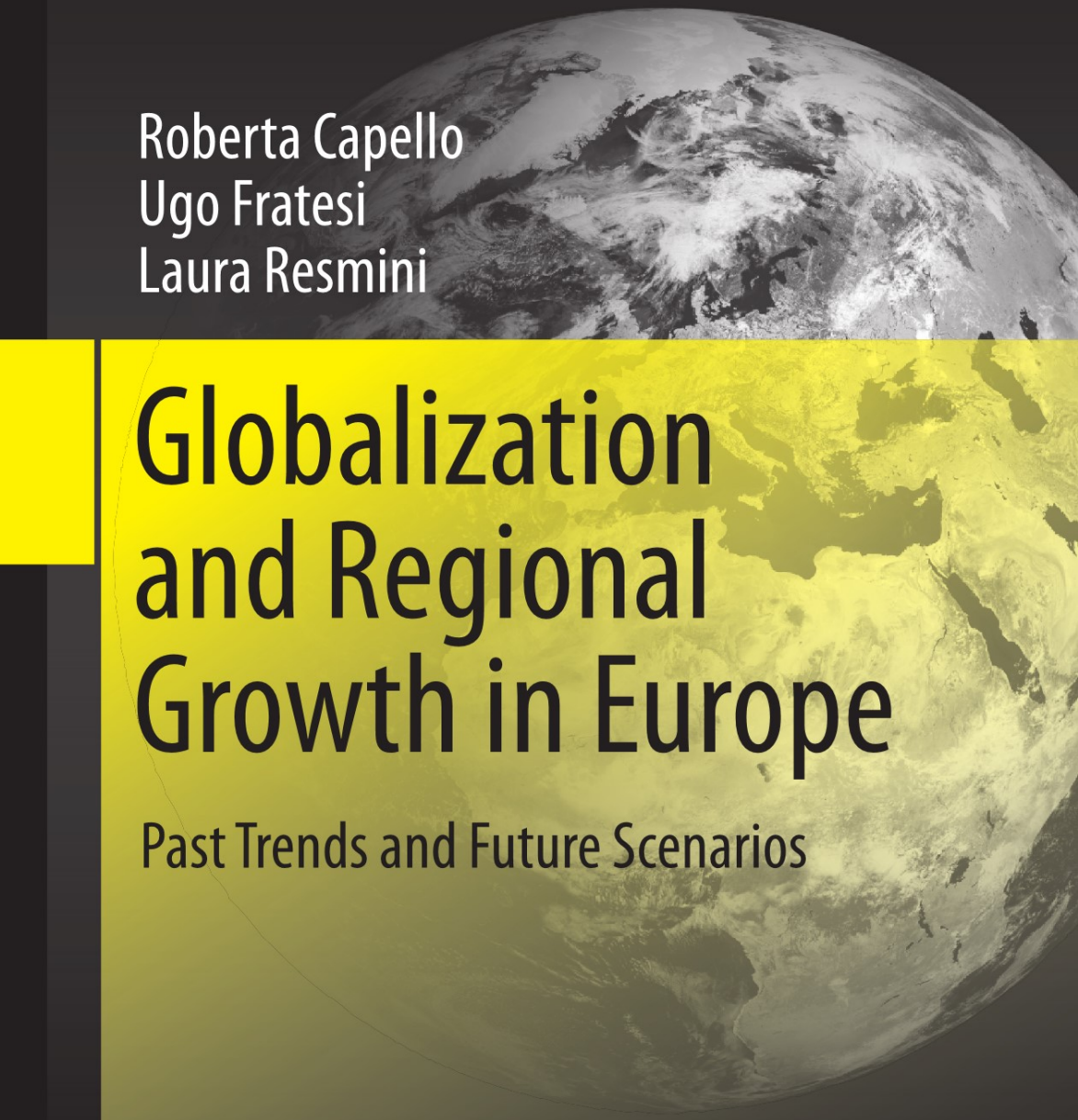

Globalization and Regional Growth in Europe

Past Trends and Future Scenarios

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Globalization and Regional Growth in Europe

Past Trends and Future Scenarios

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Acronyms

ACP	African, Caribbean and Pacific Group of States
ANOVA	ANalysis Of VAriance
APTA	Asia Pacific Trade Agreement
APTA countries	China, India, Bangladesh, Korea and Laos
ASEAN	Association of South-East Asian Nations
ATECO	Classificazione delle ATtività ECOnomiche (Classification of Economic Activities – Italian version of NACE classification)
BRICs	Brazil, Russia, India and China
BRIICS	Brazil, Russia, India, Indonesia, China and South Africa
CEC	Commission of European Community
CEEC	Central and Eastern European Countries
CIS	Commonwealth of Independence States
CMEA	Council of Mutual Economic Assistance
EGP professions	Erikson, Goldthorpe and Portocarrero's professions
ESPON	European Spatial Observation Network
EU	European Union
EVS	European Value Survey
FDI	Foreign Direct Investments
FUAs	Functional Urban Areas
GATT	General Agreement on Tariffs and Trade
GAWC	Globalization and World Cities
GDP	Gross Domestic Product
GVA	Gross Value Added
IGEAT	Institut de Gestion de l'Environnement et d'Aménagement du Territoire
ISCED	International Standard Classification of EDucation
ISCO	International Standard Classification of Occupations
ISLA	Center for Latin American Studies and Transition Economies
LFS	Labour Force Survey
MASST model	MAcroeconomic Sectoral Social Territorial model
MEGAs	Metropolitan European Growing Areas

MERCOSUR	Mercado Común del Sur
MNEs	Multinational Enterprises
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
NAFTA	North American Free Trade Area
NUTS	'Nomenclature des Unités Territoriales Statistiques'
OAG	Global Leader in Aviation Information
OECD	Organization for Economic Cooperation and Development
OLI	Ownership, Localization and Internalization
OLS	Ordinary Least Squared
PCA	Principal Component Analysis
PTAs	Preferential Trade Agreements
R&D	Research and Development
RCA	Revealed Comparative Advantage
SMEs	Small and Medium Enterprises
TENs	Trans-European Networks
UK	United Kingdom
UNCTAD	United Nations Conference on Trade And Development
USA	United States of America
USD	United States' dollar
VA	Value Added
WDI	World Development Indicators
WTO	World Trade Organization

Chapter 1
The Regional Dimension of Globalization: Past Trends and Future Scenarios

1.1 The Need for a Regional Dimension

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

Globalization 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. Moreover, it was not manifest in a single, catastrophic jump as the sudden adoption and fortune of the term in the political debate might suggest. 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 30 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 toward developed countries (80% in the years 1986–1990, around 60% in 1993–1997) 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 1991–1992 received up to 50% of world FDI (UNCTAD 1997; Camagni 2002). Moreover, the mobility (and volatility) of financial capital has grown spectacularly: in 1995 financial exchanges reached 1,000 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 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 internationalization of functions within production networks organized on a world-wide scale, to the most recent unbundling of functions themselves in specific tasks, giving rise to a trade-in-task economy. As a result of these qualitative changes, local production systems are increasingly tied together and made interdependent mainly through the global strategies of multinational corporations.

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Much theoretical and empirical work has been conducted on globalization in order to capture different effects of the quali–quantitative changes imposed by the integration of markets through either multilateral or "regional" liberalization policies (Panagariya 2000).[1] Some of the main issues treated in the recent literature are the following: new international trade patterns whereby developing and emerging countries are increasingly exporters of manufacturing goods, thus forcing industrialized countries to change their specializations to high quality goods and, mainly, services (Bergoeing et al. 2004; Kucera and Milberg 2003); a new composition of intermediate vs. final goods traded at international level, also as a result of new strategies adopted by multinational firms (Yi 2003; Hummels et al. 1998, 2001; Hanson et al. 2005); new location patterns of FDI and the consequent new growth opportunities for developing economies (Hansen and Rand 2006; Lall and Narula 2004; Moran et al. 2005); and migration trends and international trade flows (Soubbotina 2004; Lucas 2008).

From the perspective of the above-mentioned studies, however, globalization can be regarded as neutral in its spatial effects: opportunities and threats may seem equivalent to and specular with each other. Yet there are a number of good reasons for claiming that a *regional perspective* is instead essential in order to understand the real economic effects of globalization.[2]

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

This situation of tougher competition becomes even more dramatic if one considers that, unlike nations, regions compete on the basis of absolute rather than

[1]We refer here to Preferential Trade Agreements (PTAs), which have characterized the present wave of globalization not only because their number has increased exponentially since World War II, but mainly because they have changed both in nature and motivations (Fiorentino et al. 2007). PTAs may have both positive and negative effects on international trade relationships. They can perform an important role in promoting the liberalization and expansion of trade and fostering growth and development, thereby acting as stepping stones on the way to a multilateral agreement. But regional agreements may also make it more difficult for countries outside the region to trade with those inside it, and may therefore discourage the further opening up of markets, ultimately limiting growth prospects for all. On this still ongoing debate on PTAs as stumbling or building blocks toward multilateralism see Winters 1996; Panagariya 1999, 2000; Baldwin 1995; Baldwin and Venables 1995.

[2]An exception in this respect is the book by Cooper et al. 2007, devoted to regional science modeling, broadly construed, useful to what is transpiring in regional economies a globalization proceeds apace.

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 (recall 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 specialization and role in the interregional division of labor is not valid for regions. A region may 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 the case of insufficient public income transfers, emigration and possible desertification. In regard to this possible scenario, paying close attention to the regional effects of stronger global competition has a strong economic rationale.

Another reason for the importance of a regional dimension in a study on globalization effects concerns the nature of the new, modern, and strategic assets on which competitiveness is today based. The strategic factors that enable a region to achieve and maintain a position in the international division of labor in the long run are increasingly non-material factors linked to knowledge, culture, taste, and creativity. The laws determining the accumulation of these elements are especially dependent on local aspects: in fact, all these elements develop through slow learning processes fuelled by information, interaction, and long-term investments in research and education. Like all learning processes, they are inherently localized and cumulative, because they are embedded in human capital, interpersonal networks, specialized and highly skilled local labor markets, and local innovative *milieux*. They are therefore highly selective in spatial terms (Camagni 1991a, 1999). Moreover, whilst traditional material production factors are subject to hyper-mobility and are marketed and utilized everywhere (apparently playing 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 it is 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), and a sense of belonging to a society (Bowles et al. 2001; Lazear 1999; Alesina and La Ferrara 2000) are today the main sources of increasing returns for traditional economic production factors (Capello et al. 2010; Caragliu 2009). All these reflections point to the conclusion that the opportunities offered by globalization are far from being evenly distributed at the territorial level; they are deeply rooted in the history of the local society, in its endogenous capacities. For this reason, growth opportunities are difficult to replicate elsewhere, and they require ad hoc policy interventions.

An additional reason that recommends a regional analysis of globalization processes is the recent tendency toward the globalization of tasks in which even functions are unbundled and parts of them are off-shored or outsourced. Firms adopt more complex strategies as they seek to optimize multiple trade-offs between transportation and inventory costs, between skilled and unskilled labor, between

knowledge sources and low labor costs, and between the commodification of existing products and the need to shorten product design and time-to-market. In spatial terms, new cross-border relationships emerge, reflecting the fact that firms do not only look for labor cost advantages; they also require additional and more value-added local assets like knowledge, creativity and entrepreneurial spirit, flexibility of labor markets (rather than cost), and the presence of relational and social capital. Multinationals' choices especially favor those areas where the industrial tissue renews itself, where the mobility of resources is not limited by the rigidity of the economy, and where investments in services, infrastructure, and 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 USD 950 billion to over USD four trillion. Its share of 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 USD 500 billion (USD 450 for outflows) per year (World Investment Report 2004, pp. 97–98). This trend in service FDI leads to two consequences at the spatial level: on the one hand, specific territories like cities, which probably represent the most favorable locations for these FDI because they are particularly well-endowed with human and relational capital, are likely to be better able to grasp the full advantage of globalization; on the other hand, these areas compete strongly to attract such huge capital flows. Once again, heterogeneous impacts and growth opportunities are displayed at the territorial level.

A last consideration on the importance of a regional dimension in the analysis of globalization concerns the recent propensity of European national governments to decentralize policy interventions to regional administrative institutions. In the sphere of public investments in infrastructure, education, quality of public services and local governance, policy decisions require awareness of the success factors and the endogenous capabilities that enable a local economy to compete at the world level. Raising this awareness can only be done by sub-national studies which highlight the endogenous, strategic elements necessary to cope with world competition at the regional level.

The region is a useful territorial dimension on which to base a sub-national approach to the study of globalization trends and effects; a sub-regional dimension, in fact, would be too geographically limited to represent a self-contained area within which structural changes caused by globalization occur, such as the location of new production functions.

1.2 The Conceptual Approach Behind the Study

If the reasons explaining the need for a regional dimension in the study of globalization justify the effort of taking a spatial perspective in the analysis of the impact of globalization on local performance, the development of such analysis is fraught

with many difficulties, at both the conceptual and empirical levels. This section presents the conceptual underpinnings of this study, while the next section discusses the empirical aspects.

At the conceptual level, the main problem in studying globalization is the complex nature of the phenomenon. Globalization is not an unequivocally defined process, directly measurable through official statistics like GDP or international trade, or indirectly computable through figures on migration and population aging; 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).

One of the consequences of this complexity is that the measurement and the notion of the effects caused by globalization are not universal, but instead change according to the interest and the aims of the analysis. In the context of this study, globalization is mainly interpreted as a process of internationalization of production and markets which can take various forms – like increasing international trade or increasing FDI – 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. Its social consequences are measured in terms of changes in GDP per capita at regional level, and therefore in terms of dynamics in regional disparities.

Another consequence of the complexity of the notion of globalization is that a clear and solid ex-ante cause/effect chain must be highlighted in an analysis which unbundles complex phenomena and focuses on some specific processes more than others. The main concern of our study is to analyze the spatial distribution of the main economic advantages and disadvantages of globalization. Globalization, in fact, 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. The main aim of our analysis is to highlight how the economic benefits and costs are distributed across the European territory and to show the main structural factors of the economy that affect or explain that distribution.

The increasing globalization trends that affect the world economy are the point of departure for our exercise. The internationalization of production and markets inevitably leads to increasing levels of competition and severely threatens national systems and regional economies (Fig. 1.1). Globalization trends affect the division of labor of sub-national economies within advanced countries, and local systems are required *to grasp the opportunities offered by globalization*.

Opportunities and threats are created for local systems, which become increasingly tied together and made interdependent mainly by the global strategies of multinational corporations. Opportunities stem from macroeconomic effects

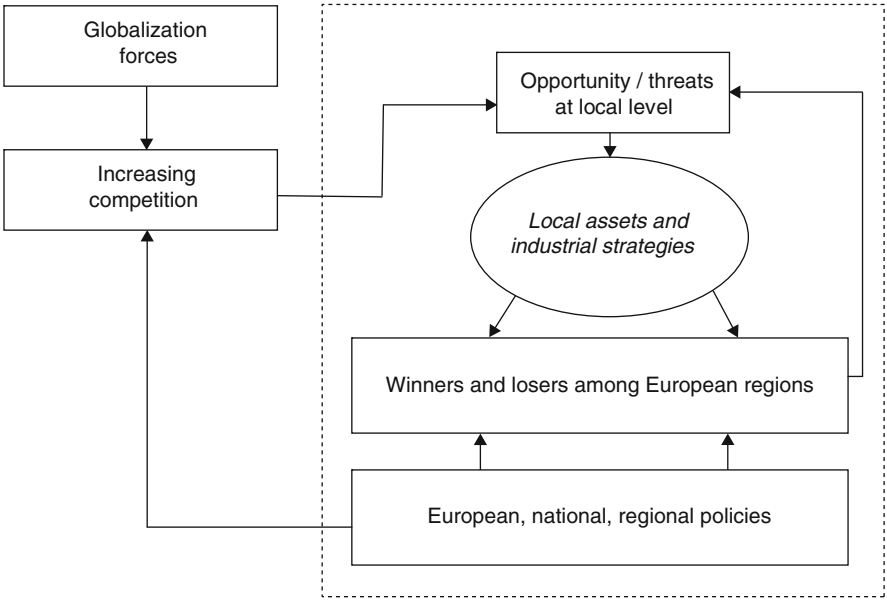


Fig. 1.1 The conceptual approach behind the study

generated by globalization, as well as by structural changes imposed on local economies. These opportunities are not homogeneously spread across the European territory. A low inflation rate generated by imports of low-price intermediate and final goods from Asian countries mainly takes place in those areas characterized by local production: in this case, local firms transfer part of the advantages of low-price imported intermediate goods to both lower prices of their final goods and higher wages, with the consequence that the purchasing power of local actors increases. Or the advantage of a low inflation rate accrues more to those areas where the composition of the population exhibits a higher share of retirees, civil servants, and low-income groups whose wage increases do not depend, or depend only to a limited extent, on productivity increases.

The natural selection among firms in favor of the most efficient ones that inevitably takes place in increasingly competitive environments like the one imposed by globalization occurs especially in those areas where territorial assets are weak, inefficient, and unable to attract or retain local productive resources. Local assets, especially non-material ones, and the way in which they are exploited, are the strategic elements that separate out winners and losers among local economies through a cumulative and self-reinforcing mechanism that feeds local economies with opportunities to turn threats into growth possibilities, and strengthens local assets with which to compete (Fig. 1.1).

The presence of local assets is important, and it is what makes the difference in a competitive world economy. However, as the process of pro-acting to international stimuli proceeds, the endowment of local assets is reinforced by the capacity of

local actors to put in place industrial competitive strategies that perceive an increase in productivity as the main means with which to achieve competitive advantages. These strategies have been identified as the following (Affuso et al. 2011):

1. A strategy of increasing productivity in the same sectors of specialization, which can be achieved by means of new technologies, organizational and managerial innovation, or, in some cases, corporate adaptation, especially vertical integration (with suppliers and customers) and horizontal integration (with similar firms in order to achieve economies of scale). This strategy protects and supports employment growth.
2. A strategy for the shift of regions to higher phases of the production process, i.e., decentralizing low-level production phases to areas with lower wages and production costs. This strategy preserves the regional specialization (especially in terms of value-added), generally at the cost of job losses.
3. A strategy for the shift of the regional sectoral structure from low value-added sectors to high value-added ones, leaving the production of the sectors most affected by competition to competitors newly arrived from other countries. This can take place either at the expense of job losses (cutting costs by changing sectors) or by increasing jobs (raising productivity by moving to higher value-added sectors).

The aim of the analysis conducted in this book reflects the logical reasoning presented above. The overall aim of the study is to highlight the factors explaining the spatially uneven distribution of the benefits and costs of globalization in European regional economies. In particular, identification of the local structural elements explaining the endogenous capacities of regions to be winners instead of losers in this process assumes importance for spatial policies. The focus of the analysis is therefore mainly on the dotted part of Fig. 1.1.

A large number of theoretical and empirical studies have examined the impact of European integration processes on regional growth; and they have done so even in recent years, despite the globalization processes ongoing.[3] By contrast, no systematic analyses have been conducted on the impact of globalization processes on regional competitiveness. However, there are differences between the study of the impacts on regional growth of integration processes or of globalization processes. Firstly, in the case of globalization, macroeconomic policies like devaluation of the Euro are still valid competitive policies, and all the pervasive characteristics of the national economy that explain part of regional competitiveness play a greater role, given the more marked difference that exists with respect to extra-European (especially developing) countries. Secondly, integration processes within Europe take place among countries that are more integrated in terms of exchange of goods, services and production factors, because of proximity effects, the absence of institutional barriers, and limited differences among institutional factors, than in

[3]See among others, Cuadrado Roura and Parellada 2002; Krieger-Boden et al. 2008; Neven and Gouyette 1994; Petrakos and Panagiotis 2009; Nijkamp and Siedschlag 2008; Traistaru et al. 2003.

the case of globalization processes. The role of the latter is reinforced by institutional factors when regional growth and competitiveness are explained at world level in terms of the performance of the high functions of the nation-state – those of legislation, justice and government; organizational factors like the efficiency of services of general interest, such as education, transport, communication, health and security services; economic factors like general fiscal pressure, effectiveness of public expenditure, pervasiveness of environmental regulations and efficiency of contract enforcement procedures, and general price-competitiveness in the case of less advanced countries.

This study takes these differences into account and analyses in detail the success factors that enable regional economies to benefit from globalization.

1.3 Methodological Requirements: Identification of Open Regions

The aim of the analysis conducted in this book is to identify local assets able to explain positive and increasing growth trajectories of European regional economies in a globalized competing world. To our knowledge, the present study is the first comprehensive analysis conducted on the impacts of globalization at the regional level.

The comprehensive nature of this study consists in three main aspects. Firstly, the empirical analysis 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. Secondly, the analysis deals with both spatial trends and impacts. It is therefore both descriptive and interpretative in its nature. Thirdly, the analysis is conducted both on the past and prospectively in light of different assumptions on how globalization will develop in the future.

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. As regards data on different forms of economic integration, this study benefits from a unique regional/sectoral database of firms newly established over a 3-year period, across a time span of three different periods (1997–1999, 1999–2002, 2002–2005).[4] However, it lacks data on international trade at regional level, which hampers direct identification of the most open regional economic systems. The identification of "open regions," i.e., those regions with an economic structure more open, and therefore more vulnerable, to international trade is made possible through the identification of the regional industrial specialization in open sectors. Also this

[4]The FDIRegio database has been created by the research group led by one of the authors of the present study, Laura Resmini, ISLA, Bocconi University.

kind of procedure has been made possible by the existence of a unique database on sectoral/regional employment created by IGEAT.[5]

The concept of an economic system's openness cannot, however, be simply related to international trade or FDI; it encompasses a series of other forms of globalization, like migration, and, in general, a region's physical accessibility from outside Europe. In this book, the concept of an open region encompasses different forms of openness to the external world. It does so thanks to a rich database on – besides regional extra-EU FDI – the number of offices of advanced services firms, the number of headquarters of transnational firms, number of extra European air-flows connections, migration of people from outside Europe (extra-European born population). With this rich and unique database, the European territory has been divided according to the degree of openness to extra-European economic processes, and the effects of the international processes have been measured and compared among different groups of regions. In this way, the winners and losers of globalized processes are identified among regions with similar degrees of openness to the outside world. Our analysis proves that globalization exerts strong and selective spatial effects notwithstanding the same degree of openness; a phenomenon which can only find an explanation in the spatially uneven distribution of non-mobile soft elements of a territorial capital, like entrepreneurship, knowledge, trust, sense of belonging, skills, culture, taste and creativity, all of which are elements strongly rooted in a local society and difficult to replicate elsewhere.

In the DGRegio project, where the preliminary ideas were first developed, the study focused on global regions, the intention being to highlight the structural elements of regions able to benefit from globalization.[6] A different approach was preferred for the exercise reported in this book. The idea was to incorporate the analysis of global regions into a wider perspective on the effects that globalization can, directly or indirectly, exert on other kinds of regions, notwithstanding their degree of openness. This broader perspective enables full consideration to be made of many important issues and challenges concerning the present – and the future – globalization process:

- The difficult industrial restructuring of peripheral regions specialized in traditional dynamic open sectors, and for this reason highly exposed to global competition
- The potential – not yet entirely discovered and properly exploited – residing in local specificities and "vocations," and which ranges from the natural and cultural heritage to the localized traditional skills and know-how of peripheral regions

[5]The sectoral/regional employment matrix has been estimated by IGEAT of the Free University of Brussels and kindly made available to the authors. See Annex 4.1 for a description of the IGEAT database.

[6]Part of the analysis conducted in this book bulids on some preliminary ideas developed within the DGRegio project on "Regions benefiting from globalization and trade" undertaken by the authors of the book with a third partner, IGEAT of the Free University of Brussels.

- The complex division of labor between global and non-global regions, and the local elements on which this division of labor rests and will rest in the future
- The potentialities that may derive from the integration and division of labor, both between Western and Eastern EU countries but also between global and non-global regions, in terms of growth spillovers stemming from market integration
- The narrow path faced by European non-open regions between the strength of consolidated advanced and global regions and the price-competitiveness of the new emerging countries competing in traditional sectors in which European non-open regions are generally specialized
- The identification of regions benefiting from globalization, even if they are non-open, by virtue of either endogenous local forces or spillover effects from open regions

According to our conceptual framework, a "globalization benefiting region" is one able to maintain, and even improve, its role in the international division of labor notwithstanding increasing world competition. This translates into an increase of GDP at regional level above the European average. This can be achieved in different ways: (a) when higher-than-average productivity growth generates good performance in both employment and output; (b) when higher-than-average productivity growth is achieved through employment cuts, leading nevertheless to good output performance; (c) when lower-than-average productivity performance occurs together with very good employment performance, so that the effect on total value-added is positive; this situation is sometimes accompanied by explicit or implicit assistance policies.

By the same token, a losing region is one in which employment cuts are unable to restore competitiveness, a condition that perpetuates job losses and low output growth; or it is a region in which poor productivity growth is accompanied (and sometimes explained) by better-than-average employment growth, at the expenses of better-than-average GDP growth; or it is a region in which productivity growth is achieved by closing down inefficient production units, generating lower-than-average GDP growth.

The growth patterns that identify a winning or a losing region are therefore based on different indicators (employment and productivity growth) at the same time. This approach makes it possible to overcome the simplified ideas that employment cuts consequent on relocation of activities in space are a sign of economic loss in an era of globalization, or that pure employment growth is a sign of economic success; when the increase in employment takes place in low value-added activities, like the well-known "call-center phenomenon" of the Italian economy, it happens at the expense of productivity growth, and of real production increases.

1.4 The Need for a Scenario Exercise

The identification of winners and losers in a globalized world in the past is an important exercise which yields strategic lessons and policy messages. The importance of local structural elements for the success of local economies are

captured over the past 10 years of our analysis (1995–2005), and the results enhance awareness of the weaknesses and strengths of regional economies in face of globalization processes.

However, there are good reasons for adopting a forward-looking perspective as well; a prospective analysis conducted over a medium-to-long period reinforces and extends knowledge on cause/effect changes between globalization and increasing competition, on the one hand, and regional performance on the other.

As said, globalization is in fact a process, not a state of the system; the way in which this process will develop (i.e., the actors and the geo-political framework that will emerge) will give rise to different scenarios confronting the European regions. While one can learn from the past, the main challenges reside in the future alternative trajectories that the main driving forces of change will follow. For this reason, a prospective analysis allows the identification of structural changes that may be important in supporting regional economies under different assumptions on the way that globalization will develop. A scenario exercise is able to raise awareness about the likely territorial effects generated by different (alternative and rather extreme) visions of the future states of the socio-economic system.

In the current situation of world economic downturn – not yet present in the historical data available up to 2007 – no scenario can be formulated without some assumptions on how the crisis will evolve. In our scenario building, we intend to take into consideration the speed of recovery from the economic downturn, which influences public expenditure growth rates, the capacity for growth of extra-European economies (which are exogenous variables in our model), competitive strategies in favor of protectionism of national goods, and incentives to national demand.

However, the present economic situation contains long-term breaks in the structural features of the economy stemming from recently emerging contradictions: demand based on debt in advanced countries; growth of the financial sector in Western economies; China and BRICs supporting Western consumption with low-price goods, Western real income due to low inflation, and financing the trade deficit of the USA (buying US Treasury Bonds). As a consequence, the balance of the geo-political game will be different; winning assets will be different; the dollar will no longer be the only reference currency for international exchanges; a "regionalized" globalization will take place. Needless to say, all these structural breaks will have strong effects on the possible future economic trajectories of regions in Europe. All these reflections are present in the last chapter of this book, where the implications of the structural changes from the economic crisis are analyzed in terms of policy actions, and indications are given for future research.

In the scenario exercise our concern is not to identify desirable, positive, ideological or most probable scenarios; rather, our aim is to combine in a strictly logical way the different trajectories, or different bifurcations, that can be envisaged in the main economic, institutional and social driving forces of change, and consequently to build a small number of alternative, likely and "conditional" scenarios. The approach is as neutral as possible vis-à-vis the results, leaving it to the new version of an econometric forecasting model (called MASST – MAcroeconomic, Sectoral,

Social Territorial model) to produce the outcome associated with a particular set of assumptions about the future.[7]

The scenarios depict the *tendencies and relative behavioral paths* of regional GDP growth (and regional population growth) in each individual region under certain conditions, i.e., probable states of the system that may become real under certain conditions that are exogenously assumed. The results will therefore furnish strong policy messages intended to encourage long-term strategic thinking among a wide range of actors, scientists and policy makers in response to the risks and opportunities that the European territory will face under different scenario assumptions.[8]

1.5 Structure of the Book

The book has been structured with the aim of producing a systematic work which encompasses an analysis of present global trends of the European economy, their consequences at regional level, and an in-depth empirical analysis on the effects of these trends on the past – and future – growth patterns of European regional economies.

The book is organized into three main parts (Fig. 1.2). Part A is devoted to in-depth analysis of the growing interdependency and integration of Europe with the rest of the world, highlighting recent trends in international trade and in FDI, and it identifies the spatial trends and effects that the main mega trends in globalization are expected to generate (Chap. 2). A reshaping of local economies has started and will continue in the future; potential benefits emerge from the new qualitative trends in globalization that, given their nature, are more likely to occur in some regions than in others. These reflections give rise to expectations as regards the winners and losers among European regions which will be verified in the empirical analysis (Chap. 3).

Part B presents the empirical analysis on past effects of globalization on regional economies. Chapter 4 divides the European territory on the basis of the degrees of openness to extra-European economies. The typology of global vs. regional or local regions – which is created on the basis of the degree of integration of regional economies in global markets – is used throughout the empirical analysis to test the extent to which globalization trends differently penetrate and affect regional economies according to their degree of openness.

Chapter 5 describes the spatial mega trends of globalization conceptually presented in Chap. 3. These mega trends and their regional effects are mapped, and the chapter describes whether some territories are more favorable than others vis-à-vis

[7]The MASST model is a model created by the research group of the Politecnico of Milan, to which two authors of the present volume belong. On the MASST model, see Capello 2007a, 2008.

[8]The methodology on which the scenarios are based is presented in Capello et al. 2008. In this book a revised version of the MASST model, able to produce estimates for industrial employment growth rates, is presented for the first time.

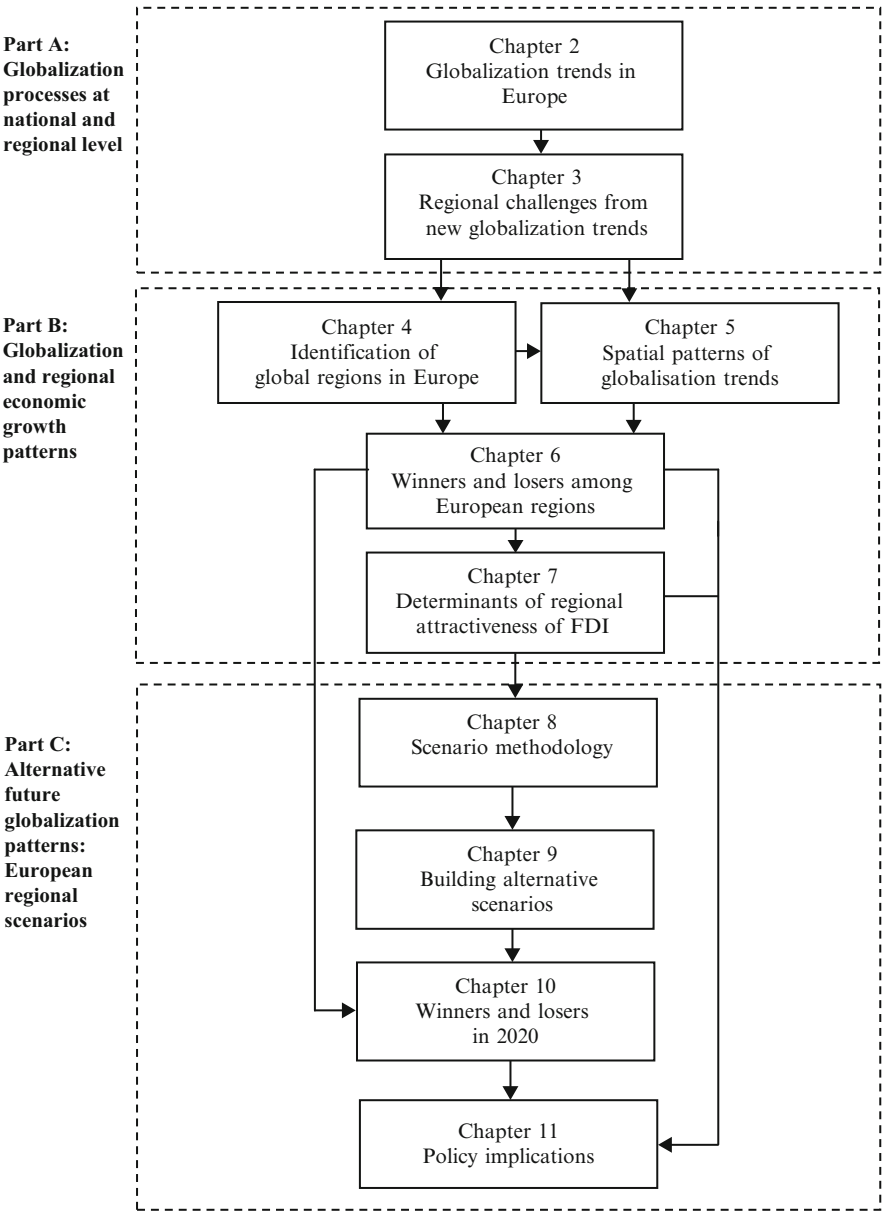


Fig. 1.2 Structure of the volume

some specific global trends, as conceptualized in Chap. 3. Chapter 6 deals with identification of the success factors of benefiting regions, and runs the analysis for the different types of region. Chapter 7 is devoted to the analysis of the main determinants of FDI attraction at regional level, trying to separate out national

effects from regional endogenous elements explaining FDI penetration levels. The identification of the regional discriminating elements in attracting FDI has relevant policy implications.

Part C of the book is devoted to the prospective analysis. Chapter 8 presents the scenario methodology, focusing especially on the new version of the MASST model, the regional growth forecasting model on which the simulations are based. Chapter 9 describes how the scenarios have been conceptualized by combining alternative competing strategies of different blocks of countries, alternative regional policy options of the European Commission, and the length of the present economic downturn, which is a serious uncertainty with respect to future economic trajectories, for a short- vs. long-term recovery implies different assumptions on the efficiency of the policies adopted, as well as the efficiency and the volume of resources put in place.

Chapter 10 sets out the results of the simulation procedure, stressing the winners and losers in our future scenarios. Chapter 11 reflects on policy implications, at both national and regional level, stressing the rationale for policy interventions and the modern style of interventions. Discussion is conducted on the role of structural policies in a period of crisis, together with the interest in creating scenarios built on the assumptions that the structural breaks generated by the economic crisis will be either accepted, and even anticipated by economic actors, or ignored. These reflections form the basis for our future research agenda.

Part I
National and Regional Globalization Processes

Chapter 2
The EU in the Global Economy

2.1 The EU Between Globalization and Integration Processes

Investigation of whether and to what extent the EU has been participating in the ongoing globalization process is not an easy task because globalization is a complex phenomenon and Europe has played a complex role in it.

Today, it is widely acknowledged that globalization has several dimensions – economic, social and political/institutional – and that each of them is the result of a myriad of effects which raise distinct issues and have distinct consequences. When discussing globalization, therefore, it is important to carefully distinguish among its different forms.

Economic globalization – the aspect on which this book concentrates – can be defined as a process whereby domestic products, capital and labor markets become more integrated across borders. This is not a new trend but rather a historical process, because nations were involved in more extensive and complicated relations even before the modern era (Baldwin and Martin 1999). Nevertheless, the current wave of globalization has characteristics which distinguish it from the previous ones: in particular, the technological progress that has improved the speed of transportation and communication while lowering their costs, economic policies marked by the deregulation of service industries, and the elimination of restrictions on international trade and investments. Deregulation has involved several types of action, ranging from the removal, simplification, or reduction of government restrictions to the privatization of state-owned firms and liberalization of several industries, while trade liberalization has been pursued both multilaterally through successive GATT/WTO negotiations and regionally, bilaterally or unilaterally through the action of an increasing number of developed and, mainly, developing and emerging countries.

Another recent trend, facilitated by the falling costs of trade and the development of information and communication technologies, concerns changes in production methods. Components and parts can be easily and cheaply shipped across the world and assembled where required. Production processes can be unbundled and located across the globe in order to exploit the economic advantages arising from differences in factor costs and availability, as well as from investment climate (Amiti and Wei 2005; Yi 2003; Hanson et al. 2005). The growth of these global

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_2,

production networks has been more marked in high-tech industries and in labor-intensive consumer goods. Recently, it has also become significant in service sectors, where technological progress has made it possible for services such as software development, financial services, and call centers to be supplied from different countries around the world. Consequently, trade now occurs more within than between industries, and countries tend to specialize more in activities that cut across industries than in specific final goods (Baldwin 2006).

Europe has played a significant role in shaping the past and current waves of globalization. It has been a source of technological progress, as well as of liberalization policies and practices that have often anticipated global trends.[1] The emergence of the single market as an outcome of the integration process has further enhanced both trade and investment, which are usually complementary activities.[2] More specifically, increasing liberalization and competition have led to an increase in the cross-border penetration of economic activities, because European Union firms may choose among a wider set of locations within the integrated single market. The latter has also increased the scope for the rationalization of production and the building of regional integrated networks that enable multinational firms to take advantage of local supply differentiation, free intra-firm trade, and lower cross-border coordination costs (Cantwell and Piscitello 2002). There is consequently no doubt that whilst Europe has made the world economy more "global", globalization has changed the structure of the European economy.

This chapter deals with these intertwined phenomena. Unfortunately, we cannot explore all of the dimensions of globalization, not even when considering economic globalization alone. Consequently, we focus on the two most important and visible aspects of the latter, i.e., the dynamics and the main characteristics of patterns of trade and FDI. Before the analysis begins, some clarifications are necessary. Firstly, when we discuss the characteristics that globalization has assumed in the EU, we consider patterns of extra-EU trade and extra-European inflows of FDI. In so doing, we implicitly assume that globalization concerns the integration of the EU as a whole in the world economy. Although patterns of intra-EU trade and FDI are important in quantitative terms, they are instead considered as the most direct consequence of the widening and deepening of the European integration process. By comparing the two phenomena, we show that they are not always complementary. Secondly, in dealing with the characteristics of these flows, we focus on quantitative changes at both aggregate and sectoral levels, rather than on qualitative variations in such flows. Therefore, at the end of this chapter the reader will have gained greater awareness about the relative size and

[1]We refer here, for example, to the liberalization of service sectors, which has been faster in Europe than under other preferential trade agreements, such as NAFTA and MERCOSUR.

[2]The complementary relationship linking FDI and trade has been highlighted at theoretical level by Mundell 1957, Helpman 1984, Helpman and Krugman 1985 and Baldwin and Ottaviano 2001. Empirically, the results are contradictory, although several authors demonstrate that a complementary relation is more likely than a substitute one. See, among many others, Fontagné 1999, Blonigen 2001 and Egger and Pfaffermayr 2005.

importance of the current globalization wave and the position of the EU with respect to its main competitors in the world. Qualitative changes are difficult to capture at aggregate level, since globalization may exert opposite effects at both country and region level, according to the specific socio-economic characteristics of each territorial unit. These important changes will be subjected to thorough discussion in Chap. 3, when we start to consider a regional perspective.

2.2 International Trade Patterns

2.2.1 The International Framework

The shift of trade policy toward more openness and the rapid economic growth of the emerging countries have resulted in new geographical and sectoral patterns of trade. Over the past two decades, international trade has expanded at record rates, with world exports rising by more than 6% per annum in real terms. This expansion has been partly driven by innovation in information technology and liberalization of several markets around the world, either in merchandise or in the service sectors.[3] Despite the small contraction of trade recorded in 2001 because of the burst of the new economy bubble, the average expansion of world trade has remained high, averaging 7.5% for the period 2001–2007. It has well outpaced the expansion of GDP, which has risen at an annual rate of about 3% throughout the period, and 3.3% in the 2000s (Fig. 2.1). Global imports have followed a similar trend. Over the period considered, in fact, imports of goods and services grew at an annual average rate of about 6.6%. In real terms, global imports increased from about USD 3,000 billion to more than USD 11,000 billion.

Both merchandise trade and trade in services contributed to the expansion of global trade. Not surprisingly, trade in services grew faster than merchandise trade, bringing global trade in services from about USD 423.5 billion in 1985 to USD 3,700 billion in 2007 (Fig. 2.2), when trade in services accounted for about 21% of global trade, 3% points more than its share in the mid-1980s.

Trade expansion did not occur uniformly across the globe. The most dynamic traders were industrialized countries, namely the European Union (EU),[4] the United States (USA) and Japan (Fig. 2.3), which accounted, and still account, for about

[3]Worth mentioning here are the formation of NAFTA in 1994 and MERCOSUR in 1992, the disintegration of the Council of Mutual Economic Assistance (CMEA) after the fall of the Berlin Wall in 1989, and the entry of China into the WTO in 2001.

[4]By "European Union" we always mean the current 27 member-states of the European Union, regardless of the period of time under consideration.

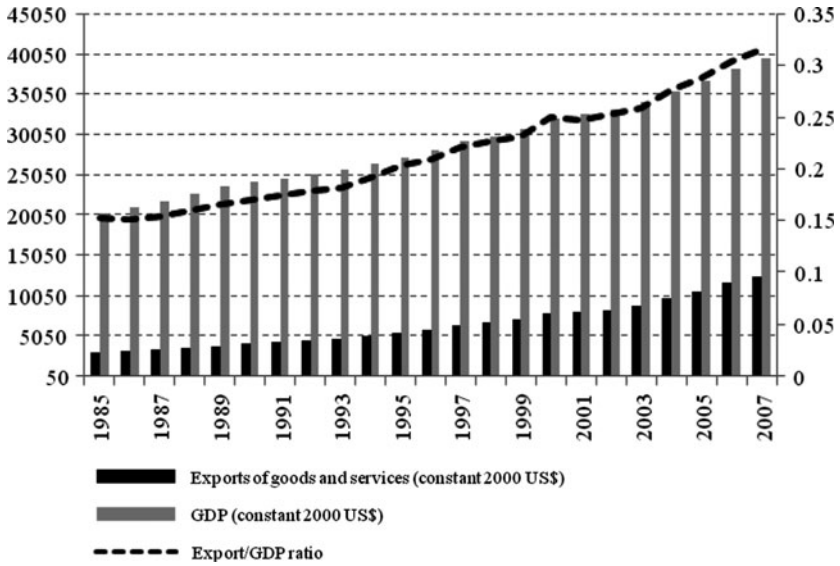


Fig. 2.1 Trends of world trade (based on exports) and GDP, 1985–2007
Source: Authors' calculations on WDI

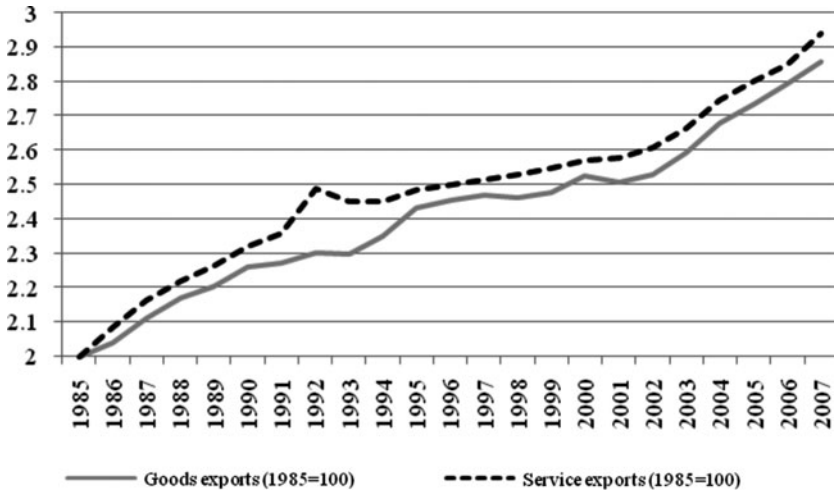


Fig. 2.2 Trends in world exports of merchandise and services (1985 = 100), 1985–2007
Note: vertical axis in logarithmic scale
Source: Authors' calculations on WDI

50% of total world exports. However, to be noted is that while the United States and Japan saw a strong deterioration of their world market shares, the EU was able to increase it.[5]

[5]These figures include both intra- and extra-EU trade.

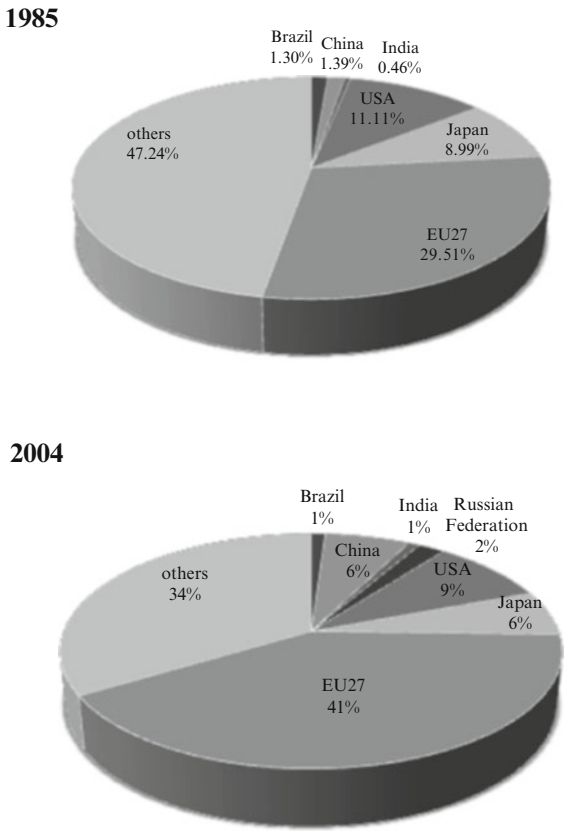


Fig. 2.3 Distribution of world exports by regions, 1985 and 2004
Source: Authors' calculations on UNCTAD data

The decline in Japan's and the USA's export shares was mainly due to the competitive pressure exerted by the emergence of new competitors, firstly the Asian newly industrialized countries and then China, the recovery of the CIS and the other BRICs, and more recently to the boom in commodity prices, which boosted the export shares of Africa, the Middle East and Latin America and Caribbean countries, which export mostly raw materials.[6] Increased competition from emerging countries in the world merchandise trade was initially concentrated in labor-intensive products, such as textiles and clothing. It then expanded rapidly in more technological intense products, such as consumer electronics and information technology goods.

Preferential trade agreements (PFTs) produced mixed effects on international trade flows. The stimulus provided by the NAFTA was not sufficient to reverse the

[6]The acronym BRICs was created to denote Brazil, Russian Federation, India and China. Several other variants exist, according to the emerging countries included. Recently, 'BRIICS', i.e., Brazil, Russia, India, Indonesia, China and South Africa, has also come into use (see OECD 2009).

decline in the share of the USA, while the European integration process, which continued to deepen and expanded to cover an increasing number of countries, was able to sustain and further strengthen the relative position of the EU in the world economy – as the next section will show in detail.

The prominent role played by industrialized countries in world merchandise exports is linked to their very large share in exports of manufactured goods, which is the most demanded product category, but whose importance has reduced over time, from about 83% of total merchandise trade in 1995 to 73% in 2008. Four categories of merchandise have been identified within manufacturing: raw materials, labor-intensive, capital-intensive, and research-intensive goods.[7] Given the skewed nature of this classification, it is not surprising to find research-intensive goods dominating the ranking at world level, followed by labor-intensive goods, which experienced a decline in world trade over the period considered. Raw materials, instead, tend to become more important over time, although the sharpest increases have been recorded in the new century, reflecting either the increase in world demand or the increase in prices of commodities. The other two categories of goods are, in general, stable over time, although their patterns have not been constant. In particular, the share of research-intensive goods increased sharply until 1999, when it reached the peak level of about 52% of total world trade, and decreased again afterwards, returning to the initial level, while capital intensive goods exhibited the opposite trend (Fig. 2.4).

2.2.2 The EU in Global Trade Markets: Intra- Vs. Extra-EU Trade

Since the 1950s, the EU's international trade has achieved a dynamic performance – as shown by Fig. 2.5 – stimulated first by the post-war reconstruction and then by the different phases of the deepening and widening of the European integration process, such as the elimination of all tariff and non-tariff barriers among member states, the introduction of the single currency, as well as the successive enlargements of the EU, especially those to Southern (Spain, Portugal and Greece in the mid-1980s), Northern (Austria, Finland and Sweden in the mid 1990s) and Eastern Europe, which enabled the EU to increase its share of world trade from about 30% in 1985 to 41% in 2004.

These apparently good results, especially if compared with the deterioration in the relative positions of the other countries of the Triad – i.e., Japan and the United States – have been mainly due to the EU's high degree of orientation toward the internal market. Although both intra- and extra-EU trade flows have constantly increased since the beginning of the integration process, the former have achieved growth rates above the world average, while the latter have grown at rates close to

[7]This classification is based on Akyüz 2003.

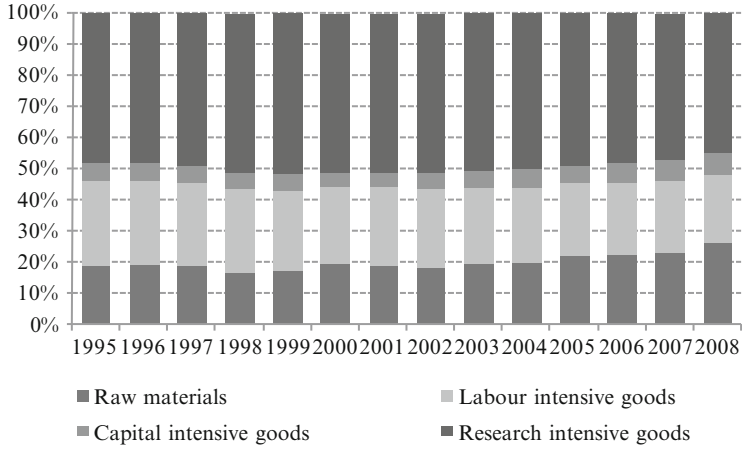


Fig. 2.4 The composition of world trade flows (exports)
Source: Authors' calculations on UNCTAD data

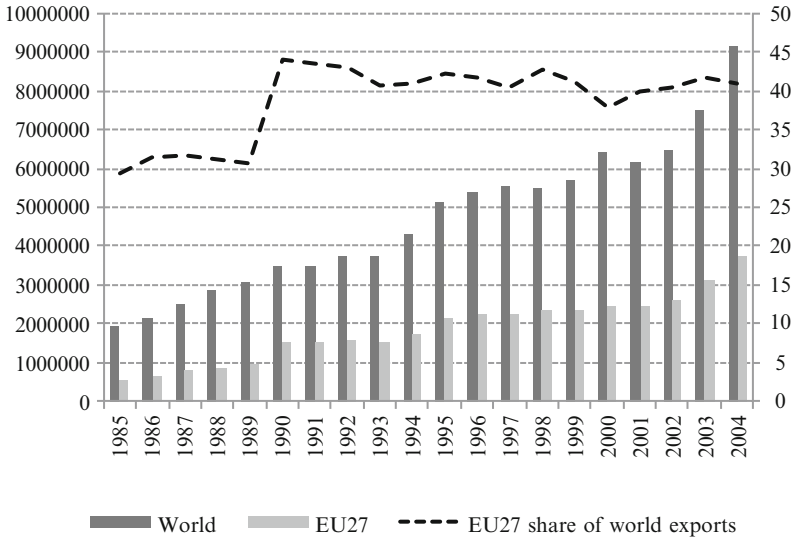


Fig. 2.5 The EU's export performance at world level, USD millions and percentage
Source: Authors' calculations on UNCTAD data

or below the world average. Consequently, the shares of extra-EU exports and imports on global flows decreased from 20 to 25% in 1950 to about 12 and 14% in 2006, respectively.

Therefore, once intra-EU trade is controlled for, the performance of the EU in the world market becomes quite similar to that of the other old industrialized countries. Hence, the EU has not been able to cope with the pressure of external

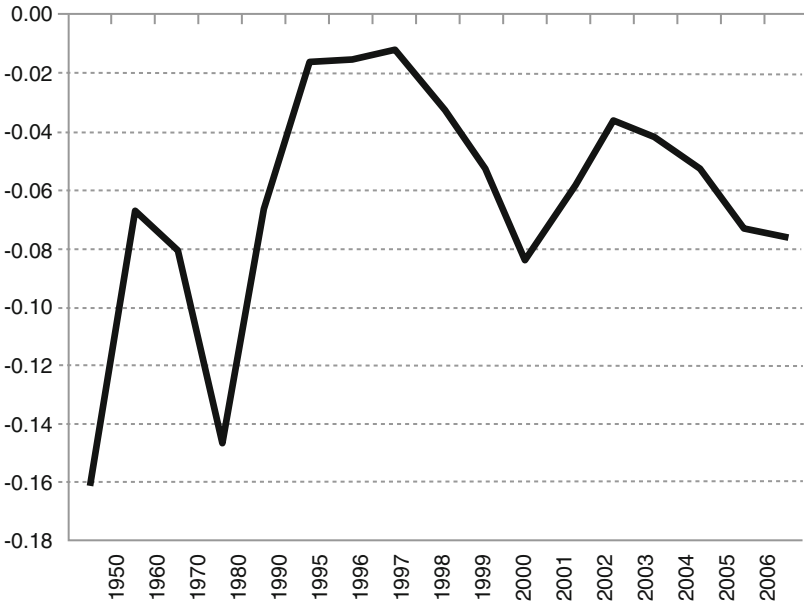


Fig. 2.6 EU external trade: normalized trade balance
Source: Authors' calculations on UNCTAD data

competition and the influence of the dynamism of newly-emerging trading powers.[8] The deterioration of the EU's relative position in global markets is also visible in its trade balance patterns: the EU is still in large deficit with the rest of the world, and its position has again worsened since 2000 (Fig. 2.6).[9]

The ongoing globalization process has also affected the geographical patterns of extra-EU trade (Fig. 2.7). APTA countries – China, India, Bangladesh, Korea and Laos – have become increasingly important as destination and origin markets for EU trade since the end of the 1990s, while EU trade with NAFTA has significantly reduced, although the latter is still the main market for extra-EU exports and imports. Because of these changes, the EU has accumulated large and rising deficits with most of its extra-EU trading partners, and mainly with Asian and South American emerging countries; deficits only partially compensated by the surplus

[8]Preferential Trade Agreements (PTAs) have been among the distinctive characteristics of the present wave of globalization. However, their effects on trade flows of integrated areas vary across the globe. Of course, the main differences concern extra-group trade flows and the relative position of each group in world trade. In particular, PTAs have enabled ASEAN and APTA to strengthen their positions at world level, while weakening those of NAFTA and MERCOSUR. Hence, PTAs have been complementary to globalization in Asia but have substituted it in Europe and America.

[9]The normalized trade balance is the ratio of the trade balance to the total value of trade (exports plus imports). It varies between −1 and 1, and it is equal to zero when exports are equal to imports. Therefore, the normalized trade balance gives a synthetic measure of the degree of disequilibrium of trade flows and its normalization makes it a suitable instrument for comparisons over time and space.

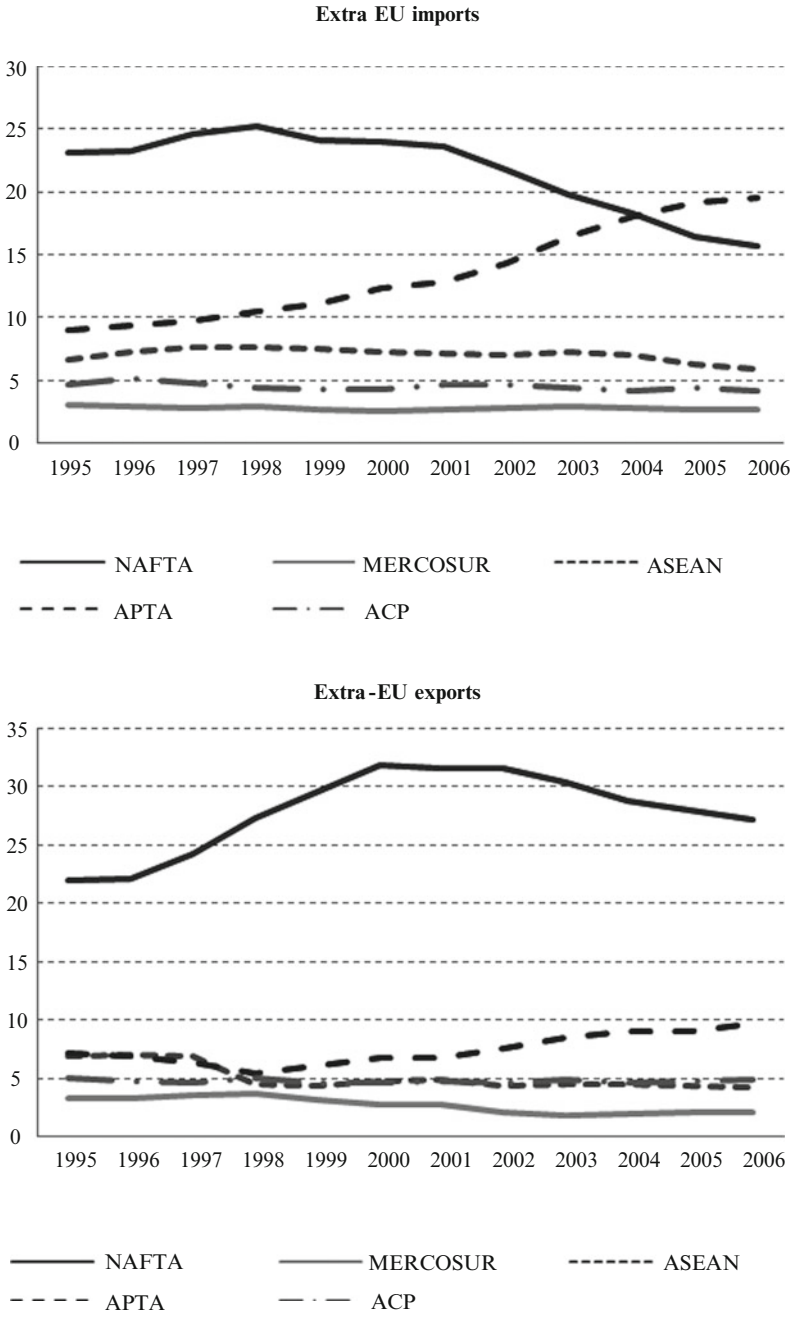


Fig. 2.7 The EU's main trade partners
Source: Authors' calculations on UNCTAD data

Table 2.1 The EU and its competitors: structure of export flows and shares of world markets

	World	Mercosur	Nafta	Apta	Asean	EU	Acp
1995							
Raw materials	19.05	44.09	18.96	11.20	23.87	13.66	53.86
Labor-intensive goods	27.12	23.13	20.09	46.54	22.34	29.04	26.22
Capital-intensive goods	6.19	11.70	4.53	5.08	2.71	7.12	10.16
Research-intensive goods	47.64	21.08	56.42	37.19	51.08	50.19	9.76
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
Raw materials	*100.00*	3.44	16.58	3.77	7.75	29.47	4.74
Labor-intensive goods	*100.00*	1.27	12.34	11.02	5.10	44.01	1.62
Capital-intensive goods	*100.00*	2.81	12.19	5.27	2.71	47.26	2.75
Research-intensive goods	*100.00*	0.66	19.73	5.01	6.64	43.31	0.34
Total	*100.00*	1.49	16.66	6.42	6.19	41.11	1.68
2006							
Raw materials	22.78	47.22	19.69	7.90	25.39	13.80	67.37
Labor-intensive goods	23.09	16.74	19.77	35.58	17.99	24.57	13.27
Capital-intensive goods	6.38	9.31	4.34	5.84	3.05	7.04	9.93
Research-intensive goods	47.76	26.73	56.20	50.68	53.56	54.58	9.44
Total	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
Raw materials	*100.00*	3.44	11.96	4.33	7.12	22.81	6.65
Labor-intensive goods	*100.00*	1.20	11.85	19.23	4.98	40.06	1.29
Capital-intensive goods	*100.00*	2.43	9.42	11.42	3.06	41.58	3.50
Research-intensive goods	*100.00*	0.93	16.29	13.24	7.17	43.01	0.44
Total	*100.00*	1.66	13.84	12.48	6.39	37.64	2.25

Source: Authors' calculations on UNCTAD data

which characterizes the EU's trade relations with NAFTA countries and, in particular, the USA.

The persistent nature of these deficits raises concerns regarding the existence of structural deficiencies at technology level. In this regard, Table 2.1 gives a breakdown of the main international trade flows (based on exports) by merchandise categories and by regions. When the EU's performance is compared with that of other regional country groups, several interesting facts emerge. On the exports side, the EU[10] was able to maintain its share of the world market for research-intensive goods stable during the period considered, while it lost positions in all other world markets. On the imports side, instead, the EU lost ground in all categories, although the smallest reduction was recorded by research-intensive goods. These facts indicate that the EU was able to cope with the challenges raised by globalization. However, to be noted are the impressive improvements made by APTA countries, which almost doubled their export shares in capital and research-intensive goods.

In order to gain better understanding of the EU's relative position vis-à-vis the other world competitors, we also computed a measure of revealed comparative advantage (RCA) based on trade balances, in order to take the effects of business

[10]We refer here to both intra- and extra-EU trade.

Table 2.2 Revealed comparative advantage

	Mercosur	Nafta	Apta	Asean	EU	Acp
1995						
Raw materials	109.86	21.95	−61.74	48.07	−32.50	141.63
Labor-intensive goods	22.72	−34.33	116.45	14.22	5.61	10.29
Capital-intensive goods	38.55	−0.27	−12.35	−22.13	1.80	27.29
Research-intensive goods	−171.13	12.65	−42.36	−40.16	25.10	−179.21
2006						
Raw materials	120.19	−7.47	−105.60	10.23	−44.27	190.01
Labor-intensive goods	3.81	−25.98	88.32	8.01	5.74	−44.29
Capital-intensive goods	21.40	−4.69	−1.66	−18.52	0.88	22.10
Research-intensive goods	−145.40	38.14	18.94	0.29	37.65	−167.82

Source: Authors' calculations on UNCTAD data

cycles into account.[11] Table 2.2 confirms that most EU resources have been devoted to the production and export of research-intensive goods, followed by labor-intensive and capital-intensive goods. However, while the RCA in the former category has increased over time, those for the other two have remained unchanged. To be noted, moreover, is that in 2006 APTA and ASEAN countries recorded an RCA not only in labor-intensive products but also in research-intensive goods. These figures confirm that new players are emerging in the world arena and that the EU may encounter difficulties in maintaining its competitiveness.

2.2.3 International Trade in Services

Services play a major role in modern economies, and especially in an interlinked globalized economy. Increased trade in services and their availability boost economic growth by improving the efficiency of many other industries, for which they provide key intermediate inputs.

Since the mid-1990s world trade in services has steadily increased by about 8% per year. Consequently, services have maintained their share of about 23% of overall international trade.[12]

[11]The index was computed as follows:

$$RCA = \frac{1000}{(X+M)}\left[(X_i - M_i) - (X - M)\left(\frac{X_i + M_i}{X + M}\right)\right]$$

This indicates the contribution made to the trade balance by each good category. A positive contribution indicates a "revealed comparative advantage" for that category of goods. By definition, the sum over all categories of goods is zero. This index makes it possible to compare the relative specialization pattern of each factor intensity category within but not across countries. For more details see Freudenberg and Lemoine 1999.

[12]According to figures published by the World Trade Organization, in 2007 world trade (exports plus imports) of goods and services amounted to 28,261 and 6,486 billion USD, respectively.

Table 2.3 Trade in services (export based)

	1995				2006			
	Transport	Travel	Other	Total	Transport	Travel	Other	Total
Percentages								
World	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EU27 (world)	43.18	44.47	48.01	45.54	45.10	42.72	49.36	46.62
Brazil	0.86	0.24	0.52	0.51	0.54	0.57	0.72	0.64
China	1.10	2.16	1.37	1.57	3.28	4.52	2.56	3.25
India	0.62	0.64	0.49	0.58	1.19	1.15	3.84	2.52
Japan	7.42	1.06	8.23	5.55	5.88	1.13	4.84	4.09
Russian F.	1.25	1.07	0.53	0.90	1.57	1.02	0.92	1.10
USA	14.83	18.50	16.93	16.93	10.67	14.22	16.38	14.51
RCAs (normalized)								
EU27 (world)	−5.01	0.52	4.49		−8.77	−12.23	21.00	
Brazil	−3.32	−41.22	44.54		−24.04	13.51	10.53	
China	−100.28	158.63	−58.35		−56.23	64.32	−8.10	
India	−138.14	135.96	2.18		−159.39	2.02	157.36	
Japan	11.14	−80.86	69.72		3.52	−63.22	59.70	
Russian F.	87.55	−74.86	−12.69		83.82	−81.29	−2.53	
USA	−45.86	8.66	37.20		−62.78	7.30	55.48	

Source: Authors' calculations on WTO data

Inspection of the different categories of services for which total world figures are available shows that, between 1995 and 2006, travel and transport services as shares of total world exports decreased by about 8 and 3% points, respectively, while the share of other commercial services, which include business services, increased by 11% points, up to 51% of total world exports. Increasing fuel prices and the perceived lack of security in many world areas had a significant effect on transportation costs.

The EU remained the world's largest trader of services, with a share of total world trade well above 40% over the period considered.[13] It was followed at a considerable distance by the USA (13%) and Japan (about 5%). However, while Japan and the USA saw their aggregate shares decrease, that of the EU slightly increased. The most impressive changes were recorded by China and India, which more than doubled their shares in world service transactions over the period (see Table 2.3).

These aggregate figures hide some differences across countries. In particular, the EU recorded increasing surpluses in all service categories, transportation included. Also the USA ran persistent surpluses, with the exception of transportation services, whose trade imbalance worsened over time. Brazil, China and the Russian Federation showed increasing deficits, while toward the end of the period India turned deficits into surpluses in all categories but transportation, exhibiting increasing specialization in service activities.

[13]Data refer to both intra- and extra-EU trade in services. According to Eurostat, when intra-EU trade in services is not considered, the EU's world market shares become 28% for exports and 24% for imports.

Also in service sectors, the EU has a strong orientation toward the internal market, with 58% of the EU's total trade in services occurring between EU-member states. This share has decreased over time, however, suggesting an enhanced interest in markets outside Europe characterized by lower production costs, a large and still unexploited resource potential, and more dynamic user demands. Nevertheless, the EU shows consistent surpluses in external transaction in all categories of services but travel. Extra-EU trade in services is mainly directed toward North America and, in particular, the USA.

2.3 Spatial Patterns of FDI

2.3.1 FDI at World Level

Recent decades have seen two important waves of increasing FDI inflows at world level – the first occurring in the mid-1980s, the second in the mid-1990s – driven by worldwide sustained economic growth, an acceleration of technical progress, especially in information and communication technologies, as well as privatization programs and liberalization of new markets around the world. The EU has been a major player in these waves, since they have coincided with three important milestones of the European integration process: the single market program, introduction of the Euro, and Eastern enlargement. Despite the cyclical character of FDI flows and their dependence on economic fundamentals, inward FDI stocks in the EU have increased exponentially since the 1980s, reaching their peak in 2007, with more than USD 7,000 billion and a percentage of world stocks of about 45%.[14]

Better information on the capacity of an area to attract FDI can be drawn by adjusting inward FDI stocks with GDP. As shown in Fig. 2.8, the EU's capacity to attract FDI has increased over time and surpassed the world average from 1990 onwards. This suggests that the EU has been able not only to maintain but also to improve its attractiveness for foreign investments, despite the emergence of interesting new destinations around the world, such as China, India, and Brazil.

The dynamic of the distribution of FDI inward stocks within EU27 highlights a persistent geographical concentration of FDI across EU countries, while confirming an overall improvement in FDI penetration (Fig. 2.9). In particular, three phases, one for each decade, can be clearly distinguished. In the 1980s, FDI was largely concentrated in a few countries, as indicated by the gap between the minimum and the maximum values recorded, which is always very large, with negative minimums (Cyprus) and maximums (Ireland) exceeding 100. In the 1990s, instead, FDI was more geographically dispersed and thus involved a larger number of countries; while in the 2000s, the concentration again increased, although no negative values

[14]See UNCTAD, *World Investment Reports*, various issues for an in-depth analysis of FDI flows and stocks at European and world levels.

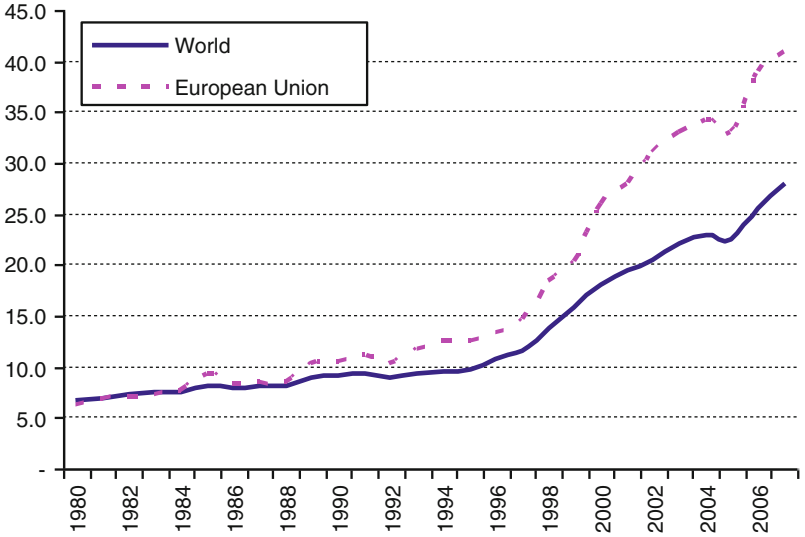


Fig. 2.8 FDI inward stocks over GDP
Source: UNCTAD data

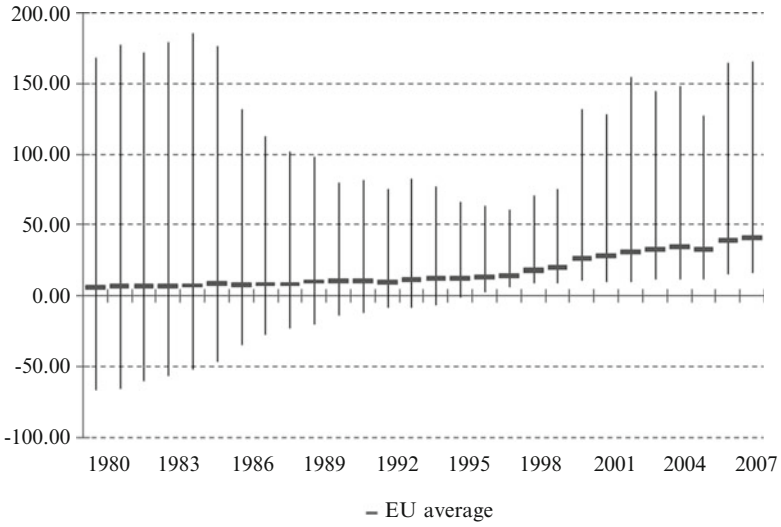


Fig. 2.9 FDI stocks as a percentage of GDP in the EU27, 1980–2007
Source: UNCTAD data

were recorded. These patterns may be explained by the enlargements of the EU, which have opened more and more markets to FDI over time, thus generating inequalities among new and old destinations. Also to be noted is that, on average, FDI penetration has increased over time, especially from 1990 onwards. This trend has

Table 2.4 New foreign firms by periods

	1997–1999	2001–2003	2005–2007
Total number of new foreign firms			
EU27	20,400	96,956	109,155
EU15	17,903	74,964	66,349
EU12	2,497	21,992	42,806
Intra EU FDI			
EU27	58%	62%	67%
EU15	60%	65%	65%
EU12	51%	53%	69%
Main recipient countries			
United Kingdom	23%	42%	32%
Romania	2%	16%	31%
France	14%	9%	8%
Germany	13%	4%	3%
Poland	1%	1%	5%

Source: Authors' calculations on the FDIRegio database

coincided with the opening up of the new markets of Central and Eastern European countries, which have attracted a substantial share of both intra- and extra-EU FDI.

2.3.2 Foreign Firms in the EU27: Geographical Patterns

Although useful for understanding the main facts and trends concerning FDI, international statistics on inflows and inward stocks at country level suffer from many shortcomings and distortions which make them less significant when detailed and more disaggregated analysis is conducted on the structure and evolution of foreign investments at sector and region levels. Information drawn from the FDI Regio dataset is instead much more useful for this purpose because it allows analysis of activity by multinational enterprises (MNEs) with reference to the economic sector, its origin within or outside Europe, and the location within each destination country.[15]

As expected, FDI penetration in the EU has increased over time, given the progressive liberalization of markets and the reduction of transportation costs which make it easier and more efficient for firms to exploit new production strategies based on off-shoring and outsourcing abroad. During the period considered, the number of new foreign firms established in the EU27 grew from 19,410 in the 1997–1999 period to 109,155 in the 2005–2007 period (Table 2.4). About one-third of these firms originated from non-EU countries. Globalization in Europe is

[15]The FDIRegio dataset has been compiled on the basis of the Amadeus database. Annex 2.1 provides more details on the FDIRegio dataset, including the main variables, its primary sources and the criteria used to construct it, its major advantages and shortcomings with respect to official aggregated data, as well as its level of significance in explaining general trends in FDI.

therefore more regional in nature, being sustained by the internal integration process. This trend has strengthened over time, as indicated by the share of intra-EU FDI on total FDI, which increased from 58% at the end of the 1990s to 67% in the mid-2000s.

Nevertheless, the apparent paradox of globalization (OECD 2007) – that is, global industry that is highly geographically concentrated – is confirmed by the EU experience. The geographical distribution of FDI within Europe is in fact very uneven, with EU15 accounting for 61% of total FDI flows and EU12 the remaining 39%. However, it should be noted that, in 1997–1999, only 12% of foreign firms chose to locate in Central and Eastern European countries. The current improvement in the attraction capacity of EU12 is mainly due to Romania, where flows of FDI have recently increased exponentially, driven by the country's improved economic conditions and completion of the reform process. In 2005–2007, the most important FDI recipient countries were the United Kingdom (32% of total FDI) and Romania (31%), followed by France (8%) and Poland (5%).

It is finally worth noting that, although globalization has reduced the importance of where to locate, the geographical concentration of foreign firms tends to increase over time, with two countries collecting more than 60% of FDI flows during the 2005–2007 period.

2.3.3 Foreign Firms in the EU27: Sectoral Patterns

One of the most striking characteristics of the globalization process has been the reduction of the importance of the manufacturing sector and the emergence of the service sector as a pillar of the economic structure of many countries and regions.

FDI is no exception in this respect. The recent liberalization and deregulation of service markets, as well as the rapid expansion of demand in several service markets have opened up new business opportunities in home markets, together with the capacity to expand internationally in certain service activities. This general phenomenon is common to several countries, European ones among them. As the share of FDI in the service sectors has dramatically increased over time, from 58% in the late 1990s to 75% in the mid-2000s, the share of FDI in manufacturing activities has decreased from about 41 to 24% of total FDI in 2005–2007. This pattern is particularly marked in EU12, where FDI in manufacturing sectors accounted for about 60% of total FDI in the late 1990s. Nevertheless, FDI in manufacturing sectors is relatively more important in the EU12 than in the EU15. FDI in primary sectors – e.g., agriculture and mining and quarrying – is still negligible, accounting for less than 2% of total FDI (Fig. 2.10).

Further inspection of the sectoral concentration of FDI highlights the existence of a clear divide between EU15 and EU12 member-states, with the former exhibiting a relative concentration of FDI in the service sectors which is greater than that in the manufacturing sectors (Fig. 2.11). The opposite trend characterizes EU12 countries.

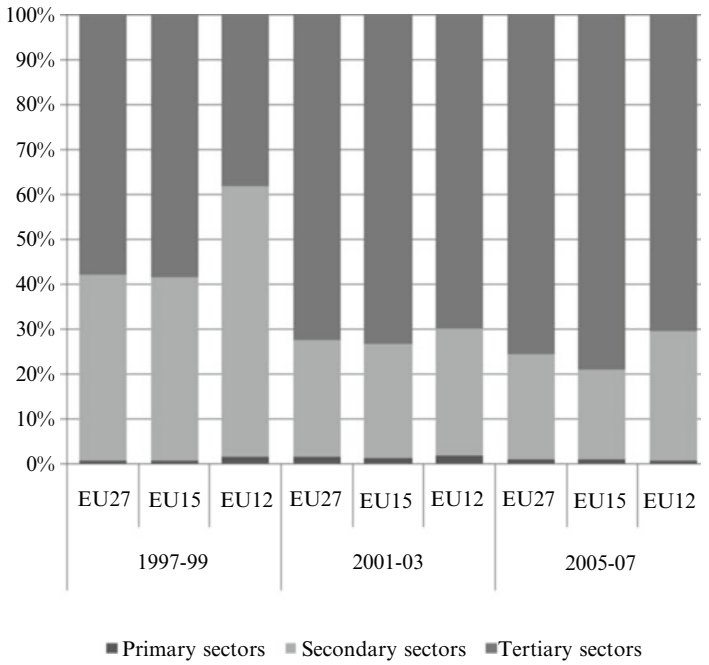


Fig. 2.10 FDI by sectors (percentages)
Source: Authors' calculations on the FDIRegio database

In particular, the Czech Republic, Hungary, Poland, Romania and Latvia have further increased their attractiveness for FDI in their manufacturing sectors, while Bulgaria has improved its position as a potential location for FDI in the service sectors because of its recent liberalization process.

2.4 Conclusions

In this chapter, we have provided a short description of the EU's position in the world economy. The main objective has been to determine whether and to what extent the EU has been able to participate actively in the ongoing globalization process, rather than passively accepting its consequences.

Since globalization is a complex phenomenon, this chapter has focused on its quantitative aspects, while the qualitative ones will be discussed in the next chapter. From a quantitative point of view, we have measured globalization in terms of trade and foreign investments. We have consequently examined the major trends observed in trade in goods and services and FDI and emphasized the EU's position in the world.

From the trade point of view, globalization has increased at consistent rates since the beginning of the period observed. Not surprisingly, trade expansion has been sustained mainly by trade in services rather than trade in goods, and secondly by the

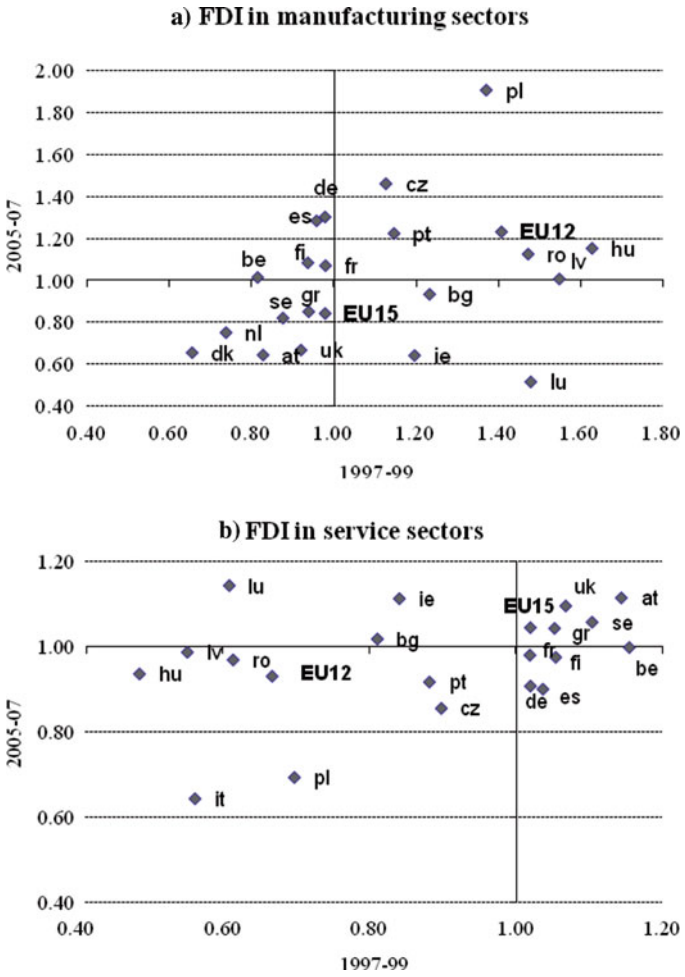


Fig. 2.11 FDI sectoral concentration by country
Source: Authors' calculations on the FDIRegio database

emergence of new players in the world arena, which have gained substantial shares of world trade at the expense of industrialized countries, in particular the United States of America and Japan. Although new emerging countries initially exported massive amounts of labor-intensive manufacturing products, they have rapidly moved to the more valuable segments of the value chain, both in manufacturing goods and in services. This phenomenon, still modest in quantitative terms, should not be undervalued because it may erode the comparative advantage of industrialized countries.

As regards the EU, international trade has been highly dynamic since the 1950s. However, its main engine has been the integration process, in its twofold dimension of horizontal and vertical integration, rather than closer integration with the rest of

the world, although this has always been supported with liberalizing policies both in trade and foreign investment.

The deepening of the integration process, especially between completion of the single market to adoption of the single currency, has exerted a strong effect on the EU's capacity to attract FDI from outside Europe, while the enlargement of the EU has created numerous new business opportunities for Western European firms, which have been able to regain competitiveness and efficiency through the delocalization of production as a whole, or of vertical stages of it, to Central and Eastern European countries.

From a sectoral point of view, the composition of FDI in the EU has changed over time, following the changes brought about by globalization: foreign firms providing services have become increasingly numerous, while the share of foreign firms producing manufacturing goods has diminished over time. This change is more apparent in Central and Eastern European countries, although these still remain particularly attractive to foreign manufacturing firms. Because of these patterns there seems to be a divide in the EU, with Western European countries increasingly specialized in services and Central and Eastern European countries in manufacturing FDI. The nature of these patterns, their determinants and possible consequences on the performance of EU regions will be explored in the following chapters.

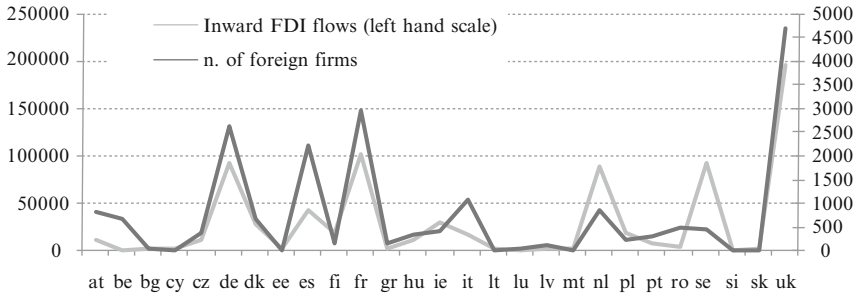
Annex 2.1 FDIRegio Dataset: Its Structure and Its Consistency with Official Data

In this book, we use firm-level information on inward FDI. The data are taken from the Amadeus database compiled by the Bureau Van Dijk (http://www.bvdep.com). The database consists of company accounts reported to national statistical offices concerning 11 million public and private companies in 41 European countries. For each company the database provides the year of creation, the country/region, and the ownership structure by nationality. The data also include the region where the firm was founded, as well as its sector of activity. Foreign firms were selected when they were newly created during the periods considered, i.e., 1997–1999, 2001–2003, and 2005–2007 and when the percentage of assets owned by non-residents was at least 10%. We also considered all EU27 countries as host countries, while distinguishing between European and non-European foreign investors.[16] For the first period, there were no data available for Cyprus, Malta and Slovenia, while for the second one only Cyprus and Malta were missing. Moreover, in the 1997–1999 period no foreign direct investments were recorded in Estonia, Lithuania, and Slovakia.

A limitation of this database when studying the geographical patterns of foreign firms is that it contains either plant or firm level information. This may bias the

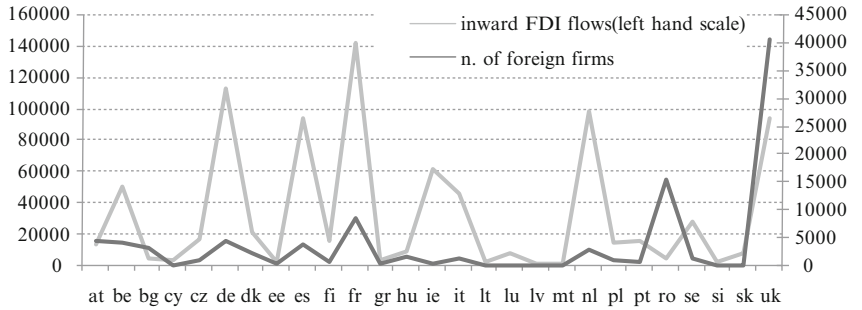
[16]We also considered Norway, Iceland, Liechtenstein as European investors because they have signed agreements with the EU which allow them to participate in the single market without being members of the EU.

a) 1997-99



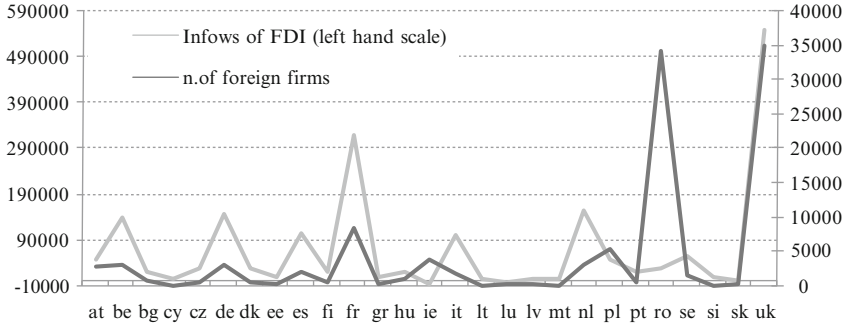
Pearson correlation coeff.: 0.871– p>0.000

b) 2001-2003



Pearson correlation coeff.: 0.415 – p>0.032

c) 2005-2007



Pearson correlation coeff.: 0.626 – p>0.000

Fig. 2.12 Number of foreign firms vs. inflows of FDI
Source: FDIRegio database

location of FDI in favor of regions and/or countries where headquarters tend to locate. But an advantage of this approach is that it is not necessary to estimate the regional distribution of foreign firms starting from national data. This top-down approach, in fact, is based on the simplifying assumption that the sensitivity of foreign firms to employment data – or whatever is used to regionalize patterns of FDI – is constant across foreign firms, regardless of the internationalization strategy that they pursue (efficiency, market, and resource-seeking FDI), the country of origin and the role that foreign affiliates may play within the group (productive vs. research units).

Comparing UNCTAD data on inward FDI flows with the total number of foreign firms extracted from Amadeus following the criteria just described shows that the correlation between the two measures of FDI flows is quite high in all periods, as indicated by Fig. 2.12. Thus, by considering the number of foreign firms instead of values of FDI, we do not introduce any significant distortion into the sample, although foreign investments in some destination countries have a relative importance that is different in terms of the number of firms with respect to the value of FDI inflows.

Chapter 3
Globalization and the Reshaping of Regional Economies: Favored Territories

3.1 Globalization and New Opportunities for Regional Economies

The previous chapter showed that the globalization of production is not just the offshoring and outsourcing of production phases in developing countries; it no longer simply affects the division of labor between emerging and advanced countries, developed and developing economies; and it is no longer confined to the manufacturing industries: the majority of cross-border relationships directly regard advanced countries and take place in service sectors. These various factors explain that current changes in the form of globalization trends affect the division of labor of subnational economies within advanced countries, and regional economies increasingly compete to seize the opportunities offered by globalization.

Regional competition becomes even a more critical issue if one recalls that the Ricardian law of comparative advantage does not hold in the case of comparison among local economies (interregional trade), so that the Ricardian conclusion that each country will always be granted some specialization and role in the interregional division of labor is not valid for regions. In fact, a region may well be pushed "out of business" if the efficiency and competitiveness of all its sectors are lower than that of other regions. At the interregional level, the two equilibrating forces that in principle allow transition from an "absolute advantage" to a "comparative advantage" regime either do not work properly or do not exist. The "classic" equilibrating process relies on the downward flexibility of prices and wages, and this is widely hampered by the existence of *national* wage contracts in both private and public structures and by the homogeneity of import prices (note that regions are very open economies). The second, "modern," process relies on the devaluation of the currency, and it is automatically excluded in an interregional context (Camagni 2002; Capello 2007b). Regions therefore compete on the basis of an "absolute" advantage principle, and whenever they are noncompetitive, they have no automatic mechanism on which to rely in order to maintain some export specialization (and to pay for their imports). Their fate is, in this case, mass unemployment and, in case of insufficient public income transfers, emigration and possible desertification.

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_3,

Globalization is *an unavoidable process* for regional economies owing to its pervasive nature. Globalization influences emerging and developed, old and new economies, and areas specialized in advanced and traditional sectors undertaking high- and low-value-added activities and tasks. Its pervasive nature suggests that the best strategy with which regional economies can face globalization is *adaptation to change* (Fontagné and Lorenzi 2005). Postponing such a strategy entails high risks for a local economy, which is obliged to operate in the world competition as a latecomer with respect to its competitors. Latecomers remain increasingly locked into old forms of production organization, with limited complementary skills developed for an adaptation strategy, while in the meantime they miss some important opportunities offered by globalization processes.

Globalization is not only a source of threats. It is first and foremost a source of *opportunities* made available to national and regional economies. Firstly, there are evident positive macroeconomic effects. On the consumers' side, a traditional advantage (in terms of increasing purchasing power in real terms) stems from international trade between advanced and emerging countries, with a consequent positive effect of a limited inflation rate in advanced economies. On the production side, outsourcing and off-shoring in low-cost areas allow final goods to be sold at low prices for the importer country; this means that firms are able to import intermediate goods from developing countries at lower prices, thereby obtaining productivity gains. One part of this productivity gain is reflected in a wage increase, and another part in the lower relative prices of manufacturing goods, in favor of traditional terms of trade advantages, competitive gains, and wider final consumption. Secondly, outsourcing and off-shoring of production in developing areas increase the purchasing power of those countries, which become growing potential markets for the final production of developed economies.

Besides macroeconomic effects, an important consequence of the current spatial reorganization of production in the globalized world is a *natural selection among firms, and jobs in favor of the most efficient ones*. In spatial terms, this selection takes place especially in those areas where the industrial fabric does not renew itself, where the mobility of resources is limited by the rigidity of the economy, where investments are weak, where technological change on a world scale is not captured by local R&D activities or by a local capacity to absorb external R&D, where advanced services are present to a limited extent, and where skills and know-how remain locked into an outdated production organization. For all these reasons, the best way to face globalization is, as said, a gradual adaptation to change.

Globalization is raising the competitive climate within which firms confront each other. In order to cope with this circumstance, and with the consequent growing level of dynamic uncertainty (about markets, technologies, and successful organizational models), firms increasingly rely on high-quality human factors, access to information, devices or "operators" enabling fast information assessment and transcoding, and forms of coordination and cooperation. As a consequence, directly or indirectly, through explicit locational decisions or through the selective effects of competition, they favor and support those territories that supply these new

"relational" factors. Territories, understood as collective actors, may help firms to be competitive by enhancing the presence of these new, strategic production factors and thus bring benefits to their "stakeholders" (local populations). In this sense, we can say that regional economies compete with each other, there being no other automatic device able to ensure long-term development and well-being (Camagni 2002).

In the next sections, we present what we consider to be the major megatrends currently at work within the general globalization process. Threats and opportunities are highlighted for each of them so that, given the nature of these globalization megatrends, the most favorable territories can be envisaged.

3.2 Globalization of Tasks

Globalization patterns are today much more than mere shifts of activities from developed to emerging areas; competitive gains are based on intra-industry reallocation of resources more than on interindustry reallocation. More than ever, corporate strategies are based on a horizontal division of labor in their activities rather than a vertical one: they externalize (outsource) or relocate (pure off-shoring) some of their functions to other international locations, notwithstanding the position of each function in the value chain (Table 3.1) (Fontagné and Lorenzi 2005; Cooper et al. 2007).

Local production systems are increasingly tied together and interdependent, mainly through the global strategies of multinational corporations. In the previous chapter, we showed how international trade and FDI have increased greatly over time in quantitative terms. Some quantitative indications are the following: for almost 30 years, international trade has been steadily growing at a rate double that of world GDP (and three times greater since 2000); foreign direct investments, in their turn, have grown – until the slump of 2000–2001 due to the bursting of the dot.com bubble and 9/11 – at rates double those of international trade, and four times greater than those of world GDP.[1] International trade has increasingly shifted from the pure exchange of final goods among national production systems to exchanges of intermediate goods and components within production networks organized on

Table 3.1 Modern forms of organization of production processes

	Internalized production	Externalized production (outsourcing)
Home country	Domestic production within a firm through increasing production efficiency and/or decentralization to a different location	Production outsourcing to a domestic firm
Foreign country (off-shoring)	Production by foreign affiliates (intrafirm trade)	Production by foreign local firms (intraindustry trade)

Source: authors' elaboration on UNCTAD 2004, p. 148

[1]Sources: OECD, *Economic Outlook*, various years; UNCTAD, *World Investment Report*, various years; World Bank, *World Development Report*, various years.

a world-wide scale. Data on intermediate goods trade (Fig. 3.1) and on the share of imports on exports in the same sector bear witness to these trends (Fig. 3.2).

Emerging within this trend is a new one described as *a new globalization paradigm* (Baldwin 2006). The off-shoring and outsourcing of phases of functions add to the traditional off-shoring and outsourcing of entire functions. They become routine corporate strategies with which firms seek to achieve productivity gains. Before the advent of this new paradigm, firms and sectors were the finest level at which globalization's impact was felt: more open trade explained the fortune of some firms and sectors able to exploit economies of scale in the production of final products in low-wage areas. Today, competition increasingly generates effects within the firm at the task level, and on a task-by-task basis. This requires firms to devise new competitive strategies based on the reallocation of phases of functions at the spatial level, and territories to adopt ones based on the supply of quality human factors, access to information, devices allowing fast information assessment and transcoding, and forms of coordination and cooperation (Feser 2007).

The growth of telecommunications and transport technologies has drastically decreased coordination costs over distance; as a consequence, firms have abandoned the simple low-cost advantage strategy, which consisted in moving activities and employment to low-cost countries and exporting low-value-added manufacturing goods from those countries. Firms now pursue more complex strategies designed to optimize multiple trade-offs between labor costs and temporal proximity to

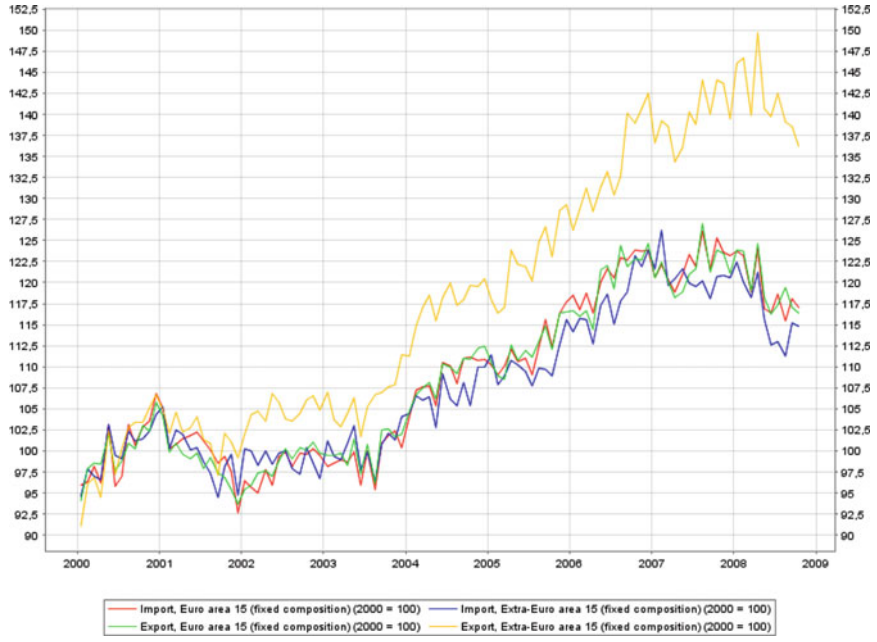


Fig. 3.1 Volume of intermediate goods trade 2000–2009
Source: authors' calculations on European Central Bank data

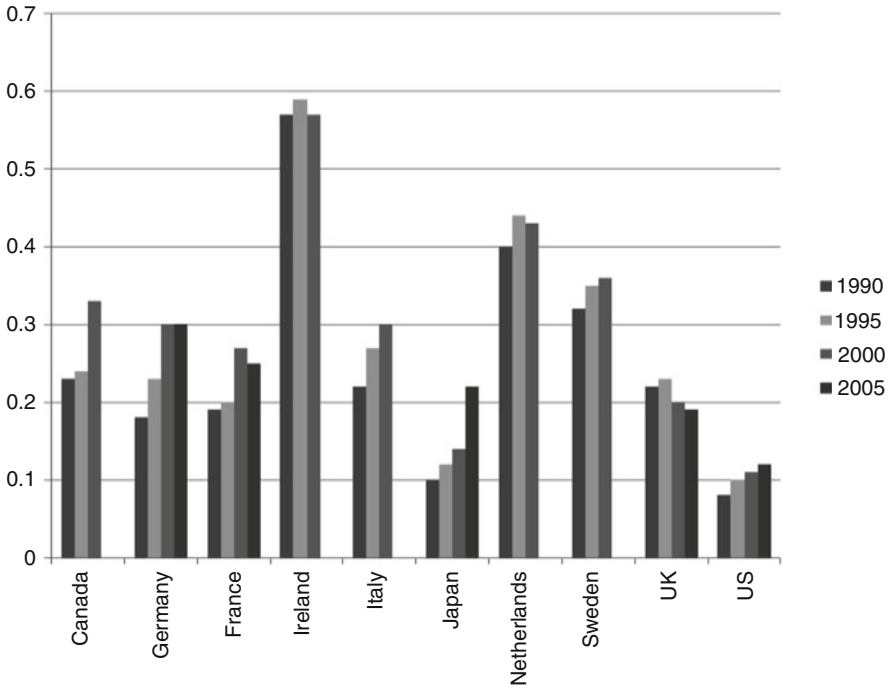


Fig. 3.2 Share of imports on exports in the same sector from national I–O matrices
Source: Godart et al. 2009

customers; between transportation and inventory costs; between access to knowledge sources and skilled labor and unskilled labor; and between commodification of existing products and the need to shorten product design and time-to-market.

All this inevitably generates *an increasing complexity in spatial terms*: "there is undoubtedly something profoundly new about new globalization" (Kenney and Florida 2004). The North/South, Centre/Periphery model of the past – which involved, as said, moving activities and employment to low-cost countries and exporting low-value-added manufacturing goods from those countries – was a model which could efficiently respond to competition on a firm-to-firm basis and yield competitive advantage based on the low labor costs of production phases.

But the new cross-border relationships now emerging reflect the fact that firms require additional and more value-added local assets such as knowledge, creativity, and an entrepreneurial spirit, flexibility of labor markets (rather than cost), and the presence of relational and social capital (Camagni 2008).

A complex interplay is now apparent among firms, industries, and regions, whereby firms and industries choose – and create – "places," but also places and regions attract and develop economic activities thanks to their factor endowments. In the case of advanced countries, these factors may be labeled "new territorial capital": accessibility to large markets, agglomeration economies, presence of

knowledge, creativity, and an entrepreneurial spirit, flexibility of labor markets (rather than cost), and the presence of relational and social capital.

Regions – considered as akin to collective agents implicitly or explicitly defining specific development trajectories – compete in the global economy, building on their historical strengths and identifying opportunities for diversification and enlargement of their specializations by strengthening their know-how and knowledge base.

Risks of loss of competitiveness exist for local economies on both sides of the process. Home areas, especially manufacturing regions, risk losing local core functions, local specific know-how, and competences that qualify local competitiveness and explain the role of the local economy in the international division of labor. Productivity and job losses are highly likely amid a process of this kind, given that there is strong competition to retain and/or attract high-value, productivity-increasing, tasks and/or functions.

One may speculate as to which regional economies will be most able to take up this challenge. Regions better able to grasp the full advantage of globalization of tasks are likely to be those particularly endowed with an efficient urban system; cities are probably the most favorable locations for high-level functions (command and control functions), given their endowments of human and relational capital. This holds especially for less developed countries, such as the Eastern regions, where human capital, R&D activities, and production activities are more spatially concentrated than in Western country regions. As specifically regards manufacturing offshoring and outsourcing, areas specialized in manufacturing activities, although

Table 3.2 Globalization trends: challenges and favored regions

Globalization trends	Challenges	Favored regions
Relocation of functions and tasks:		
Increase in manufacturing activity fragmentation	Attraction/accumulation of core specialized manufacturing high-value functions and delocalization of low-value activities	Industrial converting regions
Increase of service off-shoring and outsourcing instead of manufacturing off-shoring	Attraction/accumulation of high-value service functions and tasks	Large urban regions
Deindustrialization and the growth of a service economy:		
Reorientation of production to new growing industries and activities	Attraction/accumulation of high-value-added manufacturing activities related to core manufacturing activities	Industrial regions with command and control functions
Deindustrialization in favor of services in manufacturing areas	Attraction/accumulation of high-value-added service activities related to core manufacturing activities	Urban industrial regions
Decentralization of intertwined functions (manufacturing and related services)	Attraction/accumulation of intertwined production/R&D functions	Innovative industrial regions

threatened by changes in trade patterns and multinational location decisions, still find favorable contexts for subsistence and development in advanced and EU countries, on the condition that they *renovate their industrial and territorial strategies*: territorial concentration and clustering, focus on top-quality products and segments, engagement in continuous technological and organizational innovation and in human capital upgrading, and the conversion of the regional industrial structure from low-value-added activities to high-value-added ones (Table 3.2).

3.3 Off-Shoring and Outsourcing of Service Functions

New globalization trends are also reflected in the new spatial trends of FDI described in detail in Chap. 2. Most of these investments are directed to developed countries (80% in 1986–1990, around 60% in 1993–1997, and 65% more recently in 2006), and they seem particularly attracted by accelerations in economic integration processes: in fact, EU15 countries, at the end of the process of creation of the Single Market in 1991–1992, received up to 50% of world FDI, and similar accelerations were evident in the case of Eastern European countries after their accession.

Moreover, since 1990 services have accounted for the majority of total FDI; in 2005 they accounted for almost two thirds of the total, while manufacturing represented 30% and primary sectors less than 10%. Services still maintain a large share of greenfield FDI (42% in 2006, with manufacturing accounting for 54%), and greenfield FDI represent one third of total FDI.

The world's import stock of services quadrupled between 1990 and 2002, from an estimated USD 950 billion to over USD four trillion (UNCTAD 2004). This explosion was certainly linked to the liberalization of FDI policies, which began in the mid-1980s and gathered momentum during the 1990s. This process has had important consequences if one considers that services constitute the largest productive sector in most economies and that their competitive (and efficient) production is crucial for the welfare of a society as a whole.

The growth of service FDI has gone hand in hand with the industry mix of such FDI. Until 1990s, service FDI were concentrated in trade and finance, accounting for 25 and 40%, respectively, of total inward FDI stock in services (UNCTAD 2004). Since the 1990s, other services have undergone more dynamic FDI growth, among them telecommunications and electricity, water supply, and business services. This increasing tendency to off-shore services is likely to be a major trend in the next few years if one considers that service off-shoring is, compared to manufacturing off-shoring, simpler in terms of resources, space, and equipment requirements and may therefore be more "footloose" given the lower sunk costs involved. It affects firms in all sectors and may therefore have greater implications for the host economy than the fragmentation of manufacturing. It mainly affects white-collar workers, while manufacturing off-shoring primarily involves blue-collar

workers and generally creates jobs of this latter kind in the host area without destroying them in the home area.

This change of service mix also reflects the different reasons for off-shoring. Finance and retail trading used to be the traditional host-country market-oriented services; today, more complex strategies are put in place in order to obtain efficiency gains based on an interaffiliate division of labor, whereby foreign affiliates produce components not necessary for their parent firms but for other affiliates specialized in other components. Therefore, apparent in services as well is the breaking up of service activities into components produced wherever it is more convenient to do so, with the result that certain foreign affiliates perform back-office functions of various kinds for their parent company, or for other foreign affiliates.

While in Europe 45% of the largest firms with off-shoring experience have off-shored activities to their foreign affiliates, 48% of the companies have outsourced activities to third-party service providers (UNCTAD 2004), which evidences that the phenomenon of service outsourcing is also common. The choice between off-shoring and outsourcing service activities in favor of the former depends primarily on the need to maintain strict control on those activities. For example, the financial service industry appears to rely almost exclusively on internalized models of off-shoring. Moreover, off-shoring is preferred when the level of internal interaction with other functions matters. Service, manufacturing, and R&D activities require strong interaction if the firm is to be efficient; in contrast, back-office functions and customer interaction services can be easily outsourced. Outsourcing, in any case, is strongly conditional on the existence of capable local firms; there are several examples of cases in which off-shoring has been chosen because of the lack of efficient and reliable local companies in the host country.

The global shift in services offers large potential benefits for regions at both ends of the process: receiving countries gain jobs, skills, and access to foreign skills, while the sending ones improve their competitiveness by moving to higher level activities. Since most off-shoring and outsourcing have taken place among developed countries, this underscores that this process does not primarily represent a "North/South" divide and that it mainly affects regional economies in developed countries.

In theory, the areas in Europe most advantaged by this global shift are urban service specialized regions, since these are the most favorable locations in which to find capable local firms. The advantages that a host local area can achieve, however, depend on its ability to attract not only low-value-added activities, such as back-office functions or customer interaction services, but also high-value activities in services such as to guarantee an increase in GDP through productivity gains. A balance between low- and high-value activities in services is therefore required, i.e., a balance that guarantees either productivity increases or limited losses of productivity compensated by more than proportional increases in employment. This balance is probably easier to achieve in *urban service regions specialized in high-skilled professions*; for an urban market guarantees large-scale general-purpose services. Large urban regions, highly specialized in high-value service functions, are in fact likely to be those able to accumulate

high-value service functions attracted by cumulative learning processes, existing knowledge, and the availability of specialized human capital (Table 3.2).

3.4 Deindustrialization and the Rising of Service Economy

Globalization is generally associated with deindustrialization. In advanced countries, and in regions specialized in manufacturing, the new forms of production organization adopted by firms entail a shift of functions and tasks outside the area, with the expected consequence of job losses in industrial employment.

There is some confusion on this aspect in the literature, because deindustrialization is a process associated only with industrial employment losses. Yet pure industrial employment decrease is not enough to identify a deindustrialization process, which takes place when industrial employment losses are associated with industrial productivity losses, and with a real industrial GDP decline. While strategies of outsourcing and off-shoring easily impact on employment by eliminating some blue-collar activities in the traditional industrial regions of advanced countries, their effects on industrial productivity are contradictory. It may be the case that industrial productivity increases due to the dropping of inefficient functions and tasks or due to the region's specialization in higher value-added functions. However, this latter process must be efficient enough to guarantee an increase in industrial GDP at the local level.

In coping with deindustrialization, regional economies must strike an important balance through the spatial reorganization of production; the losses in industrial employment must be counterbalanced locally by a more than proportional increase in industrial productivity so as to guarantee at the same time an increase in real industrial GDP. Achievement of this goal depends on the capacity of regional economies *to reorient their specialization to new-growth industries and activities in related sectors*. Examples of such transitions include the switch from telephone handset production to mobile internet system design or from vehicle production to GPS, road sensing, and safety equipment (OECD 2007). *Industrial regions endowed with command and control and creative functions* are probably those best able to exploit this globalization trend.

More importantly, in a period of the rapid service fragmentation of production, a shift to the service sector has been highlighted as a possible counterbalance to industrial employment losses. An OECD Report (2007) shows that, between 1998 and 2004, most regions experienced large job losses in manufacturing (an average of 20,000 manufacturing jobs disappeared in each OECD country) and that these job losses were usually, although not always, offset by growth in service employment (OECD 2007). This substitution process between industry and service employment is a threat for regional economies, because it imposes the search for a balance between industry and service employment. In fact, major effects on the real local economy are registered when the new service jobs are high-value-added jobs, generally in "producer services" (working for industries from outside). On the

other hand, when regional specialization shifts toward low-value-added services, mainly in "consumer-oriented" activities or "low-profile functions" (e.g., call centers), the net advantage for the regional economy may be limited or even negative. At least part of the present slowdown of aggregate productivity growth in advanced countries is linked to a trend of this kind.

Moreover, service activities (both low- and high-value-added functions) exhibit a slower pace in innovation trends than manufacturing does. This element represents another challenge associated with the move toward service activities, which imposes a slower innovation pace on local economies specialized in services compared with those specialized in manufacturing, with a consequent reduction in productivity increases. Regional economies are obliged to strike a balance between industrial and service sectors so as to maintain a certain rate of innovation and productivity. The mere quantitative substitution between numbers of jobs lost and recreated is a dangerous strategy: high-quality skilled jobs must be protected, in order to achieve productivity gains. Territories favored by this globalization trend are *urban industrial regions* in which specialization in business services is already present and can act as a critical mass to attract high-value manufacturing activities.

3.5 Decentralization of Intertwined Functions

While the delocalisation of activities is a well-known behavior of firms today, what is relatively new is the fact that it usually involves "packages" *of intertwined functions*: R&D activities today follow production off-shoring in order to absorb the needs of new local markets and to develop products that respond to these high-growth markets (OECD 2007). This is especially important for high-tech industries, such as telecommunications, where technological advances must be tailored to local consumers' needs. There is abundant evidence of *innovation off-shoring*. The share of manufacturing R&D expenditure accounted for by foreign-owned companies can be very large indeed: a recent OECD research reports this share as being around 50% in old EU 15 countries, and more than 50% for EU Eastern countries (OECD 2007).

This logic has been pushed to an extreme by some firms, which maintain only a few internal functions such as *strategy, research*, *and branding*. Nike is a clear example of this "empty" or "hollow" type of firm: it produces no products within its organization, but has the "Nike" brand as a property asset, together with the design of new products. This also applies to IBM and Compaq, two competitors that share the same outsourcing company, Ingram, as the producer and assembler of their products (Fontagné and Lorenzi 2005). When extrapolated for a number of firms and industries in a region, this corporate strategy may lead to increased productivity for the region where these high-value activities are maintained, generating a process of local specialization in "command and control" functions.

This also applies to certain service activities that are in general off-shored and outsourced together with production activities, and sometimes also on their own. This is the case of pure R&D off-shoring in software production, of which Bangalore is a well-known example. *Innovative industrial regions* are expected to win the competition to attract these functions.

3.6 Conclusions

Globalization is still very much an intra-European phenomenon, and it is not just a process of off-shoring and outsourcing of production phases mostly in developing countries. This emphasizes the fact that competition is strongly increasing within advanced countries, and within them, among their regions.

New corporate strategies are being developed at the spatial level, with firms no longer simply looking for low-cost areas. New and more complex cross-border relationships emerge, and different local assets, such as human capital, local know-how, an entrepreneurial spirit, and social and relational capital, have become important factors in competing to attract advanced functions and tasks.

All this inevitably complicates the possible identification of regional winning and losing economies in developed countries. The concern of policy-makers is to understand the structural elements that at local level ensure that regional economies take advantage of increasing international competition. Moreover, policy-makers are interested in determining how the different globalization trends that may take place in the future will impact on regional economies. The identification of past winners and losers in a globalized world, and the reasons for success and failure of local economies, are the subject matter of the next part of this book. Instead, the third and last part examines possible scenarios – built upon different assumptions on the driving forces of globalization – depicting the future winners and losers among European regions. Regional policy implications are presented in the concluding chapter.

Part II
Globalization and Regional Economic Growth Patterns

Chapter 4
Global Regions in Europe

4.1 Measuring Globalization at Regional Level

The second chapter of this book evidenced that global economic processes are not homogeneous across space and that they differently affect the various blocks of countries and the European Union. Chapter 3 put forward some theoretical reasons as to why some territories are more influenced than others by the reorganization of production taking place at spatial level and generated by globalization processes. The argument developed in Chap. 3 requires in-depth empirical analysis able to highlight to what extent the various trends are actually due to globalization forces, and how these trends affect the regions of Europe.

Measuring globalization, however, is a difficult task; for globalization involves a large number of processes that take place simultaneously and are related to each other. It is especially difficult to capture its effects at regional level owing to the low availability of data: for most other indicators, especially trade, regional data are missing or are available for only a small subset of European countries. Moreover, the regional dimension of globalization cannot be captured by flow variables alone (FDI, trade, and migration flows all belong to this category) since the structure of the regional economy is fundamental for explaining the role that a region can play in the global economy and what flows it is able to attract.

Since the only reliable data available at EU27-wide NUTS 2 regional level are those on FDI flows furnished by the FDIRegio database,[1] the lack of direct statistical sources entails that an indirect method must be used to measure globalization, as explained in the next sections.

Given this lack of specific data, the following analysis employs an indirect method to measure globalization and its effects at regional level. It classifies regions according to their integration into global markets and uses the classification in order to determine whether the processes are connected to globalization. By using all existing globalization-related data at NUTS 2 level, in fact, it is possible to establish whether or not a region is closely integrated into global processes and classify all European regions according to their degree of integration. It will thus be

[1] For a description of the FDIRegio database, see Annex 2.1.

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_4,

possible to assume in the empirical analysis that, normally, a phenomenon which occurs with greater intensity in regions more integrated into the global economy is a phenomenon somehow linked to globalization processes, whereas other phenomena homogeneous across this typology of European regions are normally nondependent on globalization. An example of our approach is as follows: in Chap. 5, we will investigate the shift toward a service economy driven by globalization processes; if this structural change takes place more intensively in regions integrated into global markets, we can assume that this process is linked to globalization processes, as anticipated conceptually by Chap. 3.

The aim of this chapter is therefore to draw up a robust classification of European regions integrated into global markets, doing so on the basis of a conceptual taxonomy (Sect. 4.3) and of available globalization measures (Sect. 4.4).

4.2 Measuring Globalization: Two Logical Dimensions

Nor is measuring the integration processes of local economies an easy task. Our approach is based on two main dimensions that reinforce and complement each other in capturing the different aspects of integration. They derive from two mainstreams of the literature: the first oriented to the territorial/functional structure of the local economy in order to capture integration processes, and 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 follows:

- Regions with high functional/territorial integration with global processes (Sect. 4.4)
- Regions with high market integration, i.e., specialized in dynamic open sectors (sectors in search of new markets, more open to competition, and better able to gain advantages from world competition) (Sect. 4.5)

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*. As we shall see in the next chapters, global players are able to benefit from globalization if they can exploit the opportunities offered by globalization, minimize the risks associated with it, and turn threats into opportunities.

The rest of the chapter focuses on the methodology which makes it possible to cluster European regions into homogeneous groups according to their degree of integration into the world market, and therefore according to the potential advantages that they can obtain from globalization. Identification of their actual performances is left to Chap. 6.

The next sections discuss the two main indicators capturing respectively the functional/territorial and the economic dimension of a region integrated into the global markets. The indicator for the functional/territorial dimension relates in general to the accessibility of regions, i.e., to an area's degree of openness (Sect. 4.4), whereas the economic dimension of integration is based on an indicator for specialization in dynamic and open sectors (Sect. 4.5). Section 4.6 will cross-reference the two dimensions to identify global players, regional players, and local players: the three types of region which are at the basis of the empirical analyses conducted in the following chapters. Section 4.7 contains a preliminary descriptive and exploratory analysis which will show a large number of structural aspects in which the three different categories of regions differ from each other. The last section of the chapter (Sect. 4.8) introduces the following chapters by showing how this taxonomy will be used in practice.

4.3 Gateways for Globalization

Table 4.1 contains the conceptual taxonomy obtained if the two dimensions of integration into global markets – the territorial/functional and the economic dimensions – are cross-referenced: on the vertical axis is the degree of openness to globalization, i.e., a *globalization index*; on the horizontal axis is the *regional specialization in open growing sectors* (belonging either to services or manufacturing).

The territorial/functional dimension (vertical axis) requires a synthetic indicator for the openness of regions, which affects their participation in global networks. The economic dimension (horizontal axis), in the absence of trade data at regional level, requires identification of the degree of specialization in open growing sectors of each region. This horizontal dimension is therefore the result of a two-step

Table 4.1 Taxonomy of regions according to their degree of integration into global markets

Functional/territorial dimension / Economic dimension	Openness above average	Openness below average
Specialization in open growing sectors	1 Global players	2 Regional players
Despecialization in open growing sectors	4 Pure gateways	3 Local players

procedure that first identifies those sectors which are more open at European level and then identifies the regions which are specialized in them.

On the basis of these two dimensions, four theoretical regional types can be 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 that 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 penalized with respect to global players 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 urbanized settlement structure, they normally have to resort to global players 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 that 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 chapters. 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. *Pure gateways*. These are regions whose behavior is puzzling: they have functional/territorial integration elements, but at the same time they are not specialized

in open growing sectors. For this reason, they lie outside global trade flows, and rather act as gateways to the world for neighboring regions which are instead specialized in export sectors. We shall see in Sect. 4.4 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.

4.4 Openness to Globalization

4.4.1 The Elements of a Globalization Indicator

This section is devoted to the creation of a globalization indicator, which will make it possible to distinguish between regions falling in the left and right quadrants of Table 4.1. Regions have in fact different levels and degrees of participation in globalization processes and global networks, and the aim of the indicator is exactly that of measuring the degree of participation by each European region in global (i.e., extra-European) networks.

A synthetic indicator must be constructed to capture the various components that define structural openness to globalization[2]; in fact, there exist a number of indicators, not statistically independent from each other but normally positively correlated one another.

The synthetic indicator is built using a principal component analysis (PCA) on five available relevant indicators. Each of these indicators captures a different element in the functional/territorial integration of European regions with the extra-European world and economy. Table 4.2 synthesizes the indicators, the proxies that they represent, and their sources. The five indicators are bound to represent four related elements of functional/territorial integration: the presence of foreign human capital, the presence of physical connections, the presence of advanced functions, and the attraction of international high-value functions.

The first relevant aspect is the attraction of labor from outside Europe. The literature, in fact, has often evidenced that cooperation and integration between regions take place through people (Poot 2008; Longhi et al. 2009; Ozgen et al. 2009; Faggian and McCann 2009), so that the presence of extra-European workers in a region is an enabler of (if not a prerequisite for) economic integration. Mobility of more qualified workers is obviously more important for economic integration; however, since there is a high correlation between foreign workers and foreign qualified workers for the regions where this datum is available, the share of extra-European born population, available for the EU27, is applied.

[2]The globalization index is built upon the data and work developed by IGEAT of the Free University of Brussels within the DG-Regio project "European Regions Benefiting from Globalization and Increased Trade."

Table 4.2 Indicators used in the globalization index

Indicator	Proxy for	Source of data
Extra-European born population	Attraction of foreign labor	Census data for Eurostat completed by LFS for Greece; National statistics for Belgium and Germany
Extra-European airflow connections	Integration of a region with global networks	OAG (Global Leader in Aviation Information)
Number of offices of advanced services firms	Presence of value-added functions	GAWC (Globalization and World Cities)
Headquarters of transnational corporations	Attraction of international high-value functions	IGEAT calculations from Fortune magazine
Extra-European FDI in the region	Attraction of extra-European capital	FDIRegio database

Air connectivity is probably the measure that most immediately reflects the physical connectivity of a region with the rest of the world. For commercial and economic reasons, extra-European airflows are concentrated by airlines into a limited number of hub airports, and this makes some regions intrinsically more connected because their airports are the hubs for a major airline. On the other hand, regardless of why some regions possess this important feature, it considerably affects the extra-European accessibility of some regions, in particular those with global cities which also have airports conveying flows of passengers from Europe to the rest of the world: in order of traffic volumes, London, Paris, Frankfurt, Amsterdam, and Madrid. Also thanks to their connectivity, these global areas tend to comprise most transnational headquarters of corporations and the most important stock exchanges.

The functional structure of regions is another factor enabling interactions of regions with the rest of the world. In fact, without previously existing knowledge and an industrial tissue, regions can only become the containers of low-cost-seeking investments. The number of offices of advanced services firms captures these aspects. Manufacturing has been deliberately excluded because the purpose of this indicator is to capture value-added urban functions, which are mainly service activities.

The presence of international economic activities is captured by two indicators: the first is the number of transnational headquarters, which approximates the presence of multinationals, not in generic terms, but rather in those of a region's command and control functions, which generally coincide with the headquarters of transnational corporations. To a certain extent, this indicator may also provide an idea of the stability of the region's integration into the world economy, since headquarters tend to be more stable than production plants. The other indicator is an indicator of foreign direct investments from outside Europe. It would be useful to know the stock of these past FDI, but this datum is not present in the FDIRegio database. However, given the significant stability within countries in the rankings of regions as regards FDI flows (see Chap. 5), the latter relative to the country average are applied. These FDI flows are also able to capture a different aspect with respect to transnational headquarters: in fact, they reflect generic FDI and not only commanding FDI.

4.4.2 A Synthetic Globalization Indicator

As shown by Table 4.3, the various indicators are significantly and positively correlated with each other. This supports the idea of grouping them with a PCA in order to build a synthetic indicator which should eliminate possible regional outliners and specificities in one single indicator. In this way, if the first component of the PCA represents a sufficiently wide percentage of total variance, a synthetic indicator is built. This is called the *globalization index*.

Since the indicators are all positively correlated with each other, there is no surprise in the results obtained: the first component of the principal component accounts for more than 56% of total variance (Table 4.4). This component is associated with a high eigenvalue, the only one which is greater than 1. It is therefore empirically justified to take only the first component of the analysis and to disregard the others, including the second one.

It can also be observed (Table 4.5) that the first component has high values for all five indicators, whereas the second component seems to differentiate between "Number of offices of advanced services firms and Extra-European FDI," on the one hand, and "Extra-European born population, Extra-European airflow connections, and Headquarters of transnational corporations" on the other hand. However,

Table 4.3 Correlation among single indicators

	Extra-European born population	Extra-European airflow connections	Number of offices of advanced services firms	Headquarters of transnational corporations	Extra-European FDI
Extra-European born population	–				
Extra-European airflow connections	0.412**	–			
Number of offices of advanced services firms	0.420**	0.570**	–		
Headquarters of transnational corporations	0.582**	0.643**	0.459**	–	
Extra-European FDI	0.143**	0.381**	0.197**	0.193**	–

* = significant at 5%; ** = significant at 1%

Table 4.4 Share of information taken into account by each component

Component	Eigenvalue	% of Variance
1	2.85	56.92
2	0.73	14.67
3	0.60	12.04
4	0.44	8.86
5	0.38	7.51

Table 4.5 Relationship between the five globalization indicators and the two first components

	Component 1 (globalization index)	Component 2
Extra-European born population	0.694	−0.554
Extra-European airflow connections	0.836	−0.134
Number of offices of advanced services firms	0.744	0.417
Headquarters of transnational corporations	0.793	−0.165
Extra-European FDI	0.696	0.455

the eigenvalue of the second component is less than one, so that the interpretation of the first component captures the territorial/functional dimension of European regions' integration with the world. This component can be labeled the "globalization index".

A second PCA was run with the previous indicators calculated in absolute terms, the aim being to overcome the possible biases of the first analysis. Because the globalization indicator is based on ratios (i.e., indicators on population or on jobs), in fact, it 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, an arbitrary threshold was fixed for the first component of the second principal component with absolute terms, and a region is considered to be a possible global player only if it scored higher than the mean minus 1/5 of the standard deviation of this second principal component.

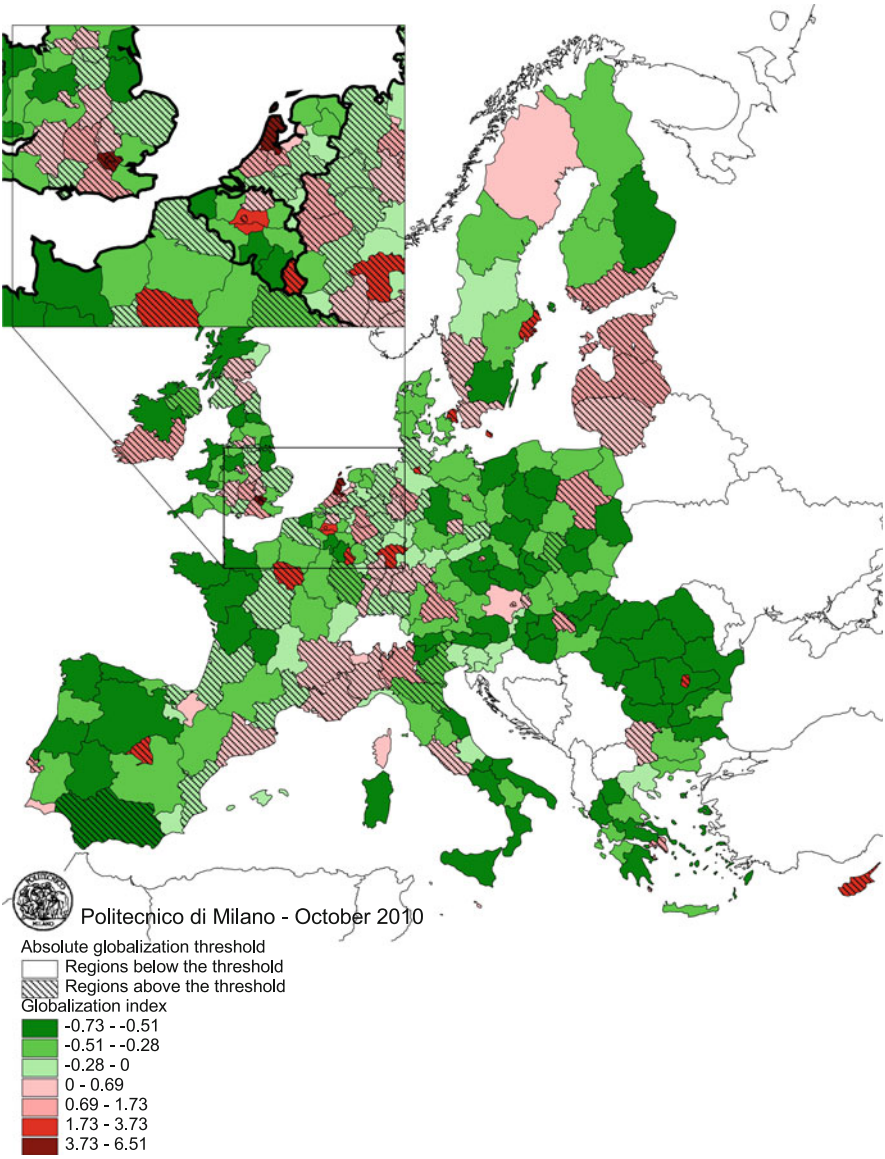
As shown by Map 4.1, this correction with this threshold does not radically change the results obtained with the globalization indicator, but it prevents the classification of some regions as very open to globalization when they are, on the contrary, small and rather peripheral, such as Corse in France and Valle d'Aosta in Italy.

4.5 Sectoral Specialization and Globalization

4.5.1 The Reasons to Define Open Growing Sectors

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

Regional sectoral trade data would be extremely useful here. However, given the lack of sectoral trade data at regional level for all EU countries, sectorally open regions had to be identified by means of a two-step procedure.



Map 4.1 Globalization indicator and absolute threshold
Source: authors' results on PCA

As in a traditional shift-share analysis (Perloff et al. 1960), in fact, regional specialization in more dynamic sectors is a factor which, ceteris paribus, enables regions to benefit from the global processes of which the same sectors are the principal beneficiaries.

The first step is therefore 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 this end, data from the analysis on the external (extra-EU) performance of European sectors at NACE1 level were used, both on trade and on FDI. On the other hand, used for regional specialization was the IGEAT matrix, which provides sectoral value added in 30 sectors at NUTS 2 level for the year 2004.[3]

Open sectors are defined as those with good economic performances in either extra-European FDI attraction or extra-EU trade. As regards FDI, positively affected sectors are those which have a growing share of extra-EU FDI. This applies (Table 4.6) to only two small manufacturing sectors (DD and DN) and to five large service sectors (G, H, I, K, and MNOP); given the decisive orientation toward service FDI, in fact, the share of goods sectors has decreased by 24.8%, while the share of service sectors increased by 24.4% between the periods 1997–1999 and 2001–2003.

As far as trade is concerned, one single indicator cannot capture all needed features. Fulfillment of three complementary requirements defines an open growing sector:

1. The sector's increasing international openness over time. The classic indicator for this is the change in the sum of export and imports, made relative to GVA in order to avoid biases due to the changing importance of sectors in the international economy
2. An increase in exports by 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, signaling that European goods and services in that sector have been increasingly competitive worldwide. Trade patterns are good indicators of this, but these too need to be made relative to sectoral GVA in order to avoid biases due to the changing importance of sectors in international trade.

A sector which fulfills all three requirements at the same time is an open sector via trade activities.

Any sector which complies either with the FDI requirements or with the trade requirements is an open sector according to our definition. However, since a sector whose GVA decreases over time is hardly a sector which benefits from globalization, a further requirement is that sectors have been growing in real terms.[4]

[3]For a detailed description of the IGEAT matrix, see Annex 4.1.

[4]As will be observed from Table 4.6, only a few European sectors decreased their real GVA over the period 1995–2005, and none of them were among those fulfilling the trade or FDI requirements.

Table 4.6 Identification of open growing sectors

Sectors	Nace code	Share of the different sectors in total EU GVA in 2005 (%)	Growing share of extra-EU FDI (1996–2005)	Increasingly open sectors (1996–2005)	Export growing sectors (1996–2005)	Improving European trade balance (1996–2005)	Annual GVA growth (1995–2005)
Mining	*C*	*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 fibers	**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 nonmetallic 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**

(*continued*)

Table 4.6 (continued)

Sectors	Nace code	Share of the different sectors in total EU GVA in 2005 (%)	Growing share of extra-EU FDI (1996–2005)	Increasingly open sectors (1996–2005)	Export growing sectors (1996–2005)	Improving European trade balance (1996–2005)	Annual GVA growth (1995–2005)
Goods		*19.1*	*−24.8*	*48.3*	*−2.2*	*1.7*	*0.1*
Electricity, gas, and water supply	*E*	*2.2*	*−0.2*	*3.1*	*0.1*	*−1.6*	*1.5*
Construction	*F*	*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**
Services		*71.9*	*24.2*	*2.8*	*2.8*	*0.3*	*2.6*

In *italics*, aggregations or sectors not considered. In *bold*, open growing sectors.
Source: authors' calculations

4.5.2 The Identification of Open Growing Sectors

4.5.2.1 Data Availability

The identification of open growing sectors requires data on trade and FDI at European and world level. FDI data are available thanks to the FDIRegio database. FDI flows at regional (NUTS 2) and sectoral (NACE 1–2) level were made available for three periods (1997–1999, 2001–2003, and 2005–2007), while no FDI stock data exist. In order to keep globalization separate from internal, intra-EU effects, the data used to represent the globalization effects only concern the FDI from outside Europe.

The main source for trade data is the CHELEM database, where only data for extra-European trade are used, again in order to separate globalization processes from European ones.

However, the FDIRegio database has already the sectoral disaggregation of the IGEAT matrix, whereas CHELEM is originally based on merchandise classifications. For this reason, the first step with the data was to classify goods trade data into sectors. Moreover, service trade data were available from 1995 for only the 15 old members of the EU, and only across a much shorter period of time for the 12 new member countries. Rather than working with a very short time span (2004–2006), or working only with the 15 old members of the EU, we considered it better to use a mixed approach and work with the EU27 for goods trade and with only the EU15 for the services trade. In fact, the first option would have lost the trends and the second one, excluding the New12 member countries, would have lost an important part of European manufacturing. In services, the weight of Eastern countries was particularly small,[5] so that their influence on the sectoral distribution ought be almost negligible.

For the purposes of this analysis, also the FDIRegio database has its limitations, since it only considers FDI investments taking place in Europe and is hence unable to provide a comparison measure for total FDI taking place at world level.

4.5.2.2 FDI-Open Sectors

The inexistence of data on FDI at world level obliges to use the evolution of the sectoral share of inward FDI over total EU inward FDI. This implies that a sector can be an open growing one if its share of inward FDI (calculated on the total with the exception of the mining sector) is increasing. The indicator used is therefore the following:

[5]The share of the New 12 member countries in service exports and imports rose from less than 9% in 1995 to less than 14% in 2005.

$$\text{Indicator FDI} = \left(\frac{\text{FDI}_{i\text{EU}}}{\text{FDI}_{\text{EU}}}\right)_{2005-2007} - \left(\frac{\text{FDI}_{i\text{EU}}}{\text{FDI}_{\text{EU}}}\right)_{1997-1999} \tag{4.1}$$

where i is a generic sector.

A sector qualifies as a FDI-open sector (and hence as a potential open growing sector) if indicator FDI1 is positive. As can be observed in Table 4.6, the FDI-open sectors are the following: DD, DN, G, H, I, K, and M+N+O+P.

4.5.2.3 Trade-Open Sectors

As far as trade is concerned, three related and complementary indicators make it possible to capture the trade openness of a sector and the possible positive effects of globalization upon it.

Firstly, a sector must be increasingly open at EU27 level. This is the minimum requirement for a sector to be considered an open growing one amid globalization. Otherwise, since global trade flows have been rapidly increasing, the sector would be one with decreasing relative openness. Used for this indicator is a traditional index of openness calculated with the absolute change in the sum between 2006 and 1995 of sectoral imports and exports over sectoral GVA, as follows:

$$\text{Indicator T1} = \left(\frac{X_i + M_i}{\text{GVA}_i}\right)_{2006} - \left(\frac{X_i + M_i}{\text{GVA}_i}\right)_{1995} \tag{4.2}$$

where i is a generic sector.

A sector qualifies as a potential trade-open sector if indicator T1 is positive; according to Table 4.6, all manufacturing sectors and most service ones comply with this requirement, owing to the increase of trade at world level (see Chap. 2).

The second requirement for a sector to be considered a trade-open growing one is that it should be characterized by growing EU27 exports. The second trade indicator required is therefore an indicator of EU export performance at sectoral level with respect to the world, which would capture the consistency of the European export performance. This could be calculated as follows: $X_{i\text{EU}}/X_{iW}$, where i represents a generic sector. However, total world trade is not available and whence derives the decision, analogously to the case of FDI, to use the share of sectoral exports and calculate its absolute change between 1995 and 2006 as follows:

$$\text{Indicator T2} = \left(\frac{X_i}{X_{\text{EU}}}\right)_{2006} - \left(\frac{X_i}{X_{\text{EU}}}\right)_{1995} \tag{4.3}$$

where i is a generic sector.

This indicator represents the growing importance of a sector in European extra-EU exports. Indirectly, it is also an indicator of European global competitiveness in a sector – which is what it is deemed to represent.

A sector qualifies as a potential trade-open sector if indicator T2 is positive. This applies to the following sectors (Table 4.6): DD, DF+DG, DH, DJ, DL, DM, E, J, and K.

The third requirement for a sector to be trade-open is to have an improving trade balance at EU27 level. Growing exports, in fact, are not enough to define a sector as an open growing one, because they may be merely the outcome of the growing importance of that sector in international trade, rather than of European competitiveness in the sector.

For this reason, also needed is an indicator showing in what sectors the EU has been able to improve its position vis-à-vis the rest of the world, i.e., improve its trade patterns. Used to capture this effect is an indicator which measures the trade surplus relative to the sectoral size in terms of GVA. This indicator is as follows:

$$\text{Indicator T3} = \left(\frac{X_i - M_i}{\text{GVA}_i}\right)_{2006} - \left(\frac{X_i - M_i}{\text{GVA}_i}\right)_{1995} \tag{4.4}$$

where i is a generic sector.

A sector qualifies as a potential trade-open sector if indicator T3 is positive, and this applies to the following sectors (Table 4.6): A+DA, DD, DE, FD+DG, DH, DK, DM, J, and K.

All three requirements must be fulfilled simultaneously to define a sector as a trade-open sector. According to Table 4.6, the sectors that comply with the three requirements are three manufacturing and two service ones, namely: DD, DF+DG, DH, DM, J, and K.

4.5.2.4 Open Growing Sectors

In the case of trade-open sectors, therefore, the three indicators are complementary, so that a sector must comply with all three criteria at the same time. In contrast, in order to combine FDI- and trade-open sectors into a single classification, it is enough for a sector to satisfy only one of the two criteria, for the following two reasons:

- Trade and FDI are two substitute ways in which a sector can grow. Sectors, in fact, can grow either because of the strength of endogenous firms (which is reflected in trade data) or because of their attractiveness to foreign firms, which move in and invest locally, thereby increasing local production and exports (FDI data)
- FDI have been growing in sectors which are disjoint from those which performed well in trade. In fact, FDI have increased their importance in service sectors and, because of market-seeking attitudes, even in those whose European export performances were negative

As Table 4.6 shows, five manufacturing (DD, DF+DG, DH, DM, and DN) and six service sectors (G, H, I, J, K, and M+N+O+P) comply with the FDI or the trade

requirements. But openness is still not enough, because it may hide negative sectoral trends.

For the above-mentioned reason, once it is decided that FDI and trade criteria are substitutes for each other, and fulfillment of only one of them suffices to identify an open growing sector, there is a final requirement for a sector to be considered an open growing one: total real GVA in the sector at European level grew in the period 1995–2005. It is hence necessary for the GVA indicator, calculated as below, to be positive:

$$\text{Indicator GVA} = \left(\left(\frac{\text{GVA}_i^{2005}}{\text{GVA}_i^{1995}} \right)^{1/10} - 1 \right) 100 \tag{4.5}$$

Summing up, a sector qualifies as an open growing one if the above GVA indicator is positive and complies with either the FDI requirement or the trade requirement. Interestingly, none of the sectors that were either FDI-open or trade-open have decreased their real GVA, as one would also expect given the large sectoral aggregations and the relatively long time span.

The sectoral analysis hence concludes with 11 open growing sectors. As regards manufacturing sectors, the following are identified as open growing sectors:

- DD, manufacture of wood and wood products
- DF-DG, manufacture of chemicals, chemical products and man-made fibers
- DH, manufacture of rubber and plastic product
- DM, manufacture of transport equipment
- DN, manufacturing not else classified

The service open growing sectors, which are less disaggregated, represent overall a higher proportion of European GVA. This is to be expected since, as Chap. 2 illustrates, the most recent globalization trends affect services more than manufacturing. Especially because of FDI, service sectors are more represented than manufacturing sectors among open growing sectors:

- G, trade (retail and wholesale)
- H, hotels and restaurants
- I, transportation and communications
- J, finance and insurance
- K, business services
- MNOP, personal, cultural, and recreational services

The sectors identified above are instrumental for the second step of the methodology, i.e., determining which regions have the right specializations in regard to globalization. This can be easily calculated through a quotient for location in open growing sectors obtained from the IGEAT matrix.

If the location quotient is greater than 1, regions are specialized in these sectors and, ceteris paribus, they are expected to gain an advantage from their specialization due to the composition of sectors present in the analysis – which is called the

MIX effect in traditional shift-share analysis. In contrast, if the quotient for location in open growing sectors is less than 1, the region is disadvantaged by its specialization. The next section applies this simple method to the European NUTS 2 regions.

4.6 Global Regions in Europe: Empirical Results

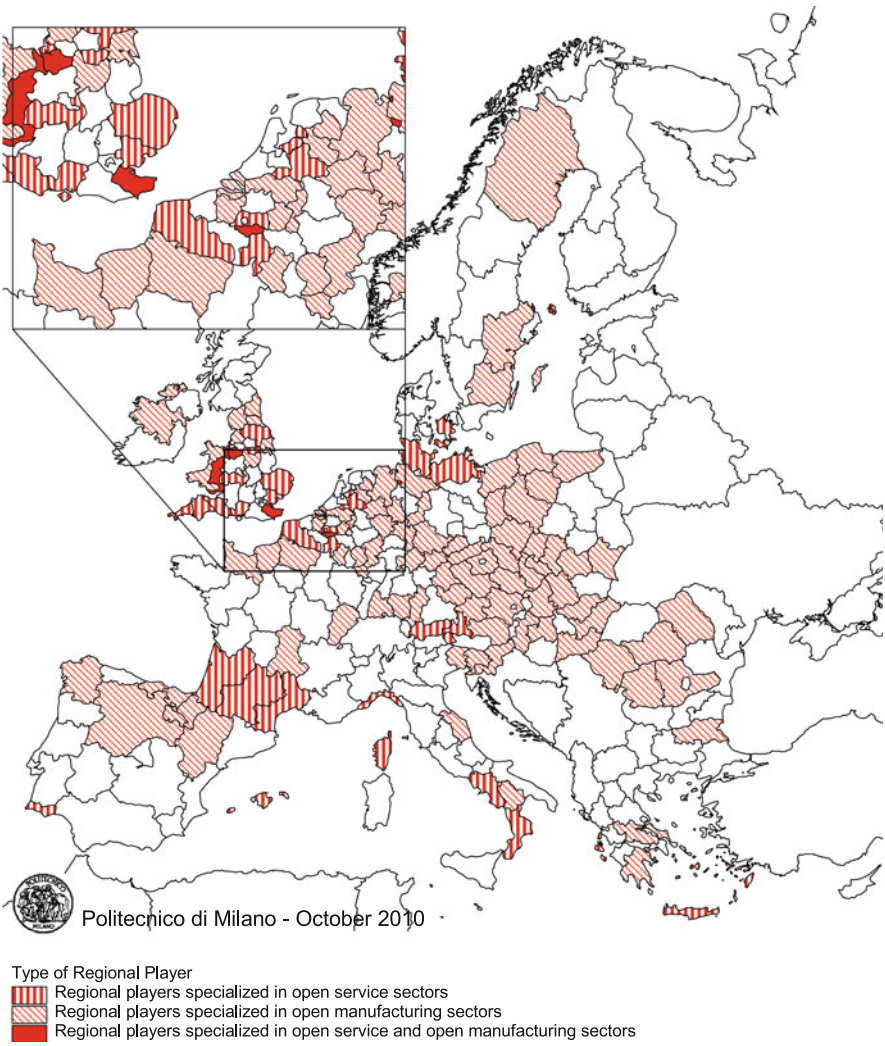
This section presents the results of the methodology applied to 265 European NUTS 2 regions and based on both the globalization indicator and specialization in open growing sectors. As regards the latter, because service and manufacturing specialization are very different in their nature, regional specialization has been calculated for both service and manufacturing; any region with one (or both) location quotients higher than 1 qualifies as a regional player or a global player depending on its score on the globalization index. The distinction between service or manufacturing specialization yields various possibilities: global players specialized in manufacturing open growing sectors; global players specialized in service open growing sectors; and global players specialized in both.

Regional players, i.e., those regions with below-average structural openness, but specialized in service or manufacturing open sectors, account for about half of EU regions (Table 4.7). Most of them (91 out of 132 regions) are specialized in manufacturing open growing sectors and only a relatively small number (35 out of 132) in service open growing sectors. Almost negligible (6 regions out of 132) is the presence of regions specialized in both manufacturing and service open growing sectors.

Map 4.2 depicts regional players: they are found throughout Europe, and they never form the core of their countries, even if they are sometimes the regions neighboring their capitals.

Table 4.7 Taxonomy of regions according to their degree of integration with global markets: an empirical result

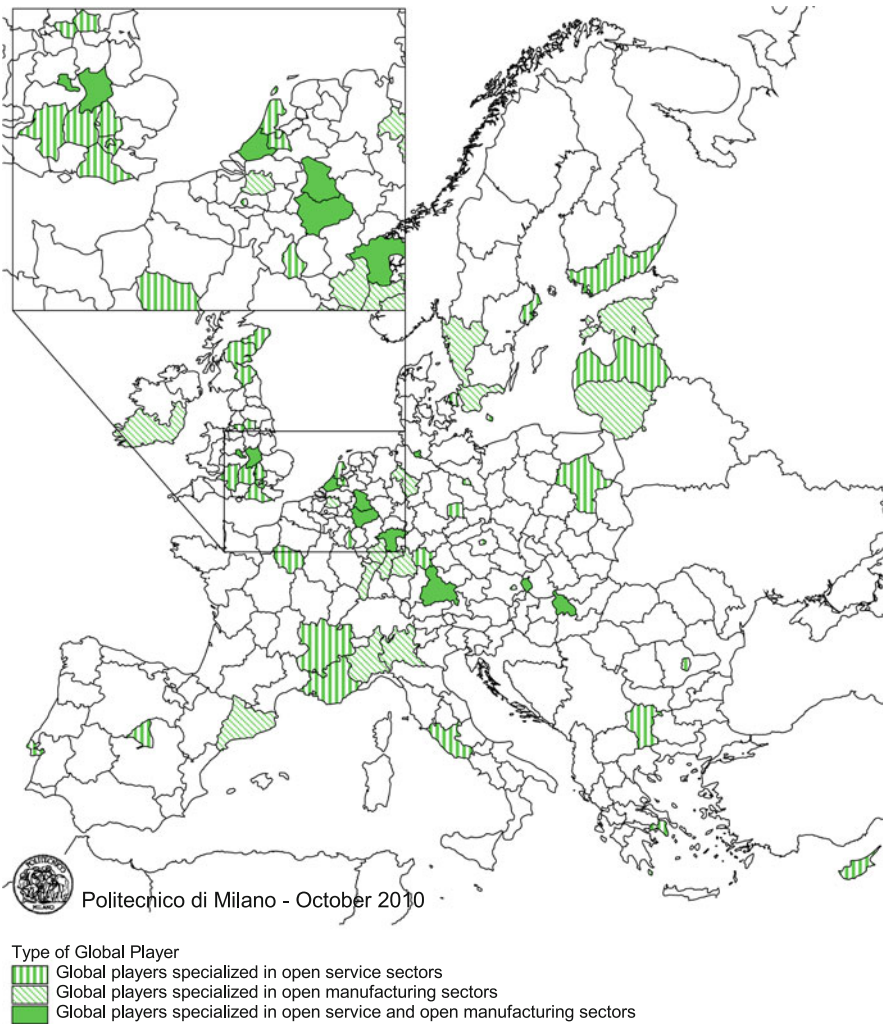
Functional/territorial dimension		
Economic dimension	Above-average openness	Below-average openness
Specialization in open growing sectors	*53 (+5) Global players*, of which:	*132 Regional players*, of which:
	29 (+5) specialized in service open sectors	35 specialized in service open sectors
	14 specialized in manufacturing open sectors	91 specialized in manufacturing open sectors
	10 specialized in both	6 specialized in both
Despecialization in open growing sectors	*5 Pure gateways*, in most cases specialized in service open sectors (aggregated with service specialized global players)	*75 Local players*



Map 4.2 Regional players in Europe

Global players, i.e., those regions with above-average structural connectivity and specialized in open growing sectors, are fewer in number than regional players, in that they represent only 58 regions. Unlike regional players, global players are mainly service regions: 29 out of 58 are specialized in service open growing sectors and ten more are specialized in both service and manufacturing open growing sectors (Table 4.7).

Map 4.3 shows that global players include all major metropolitan and capital areas of Europe; they therefore represent a larger share of the EU population and especially of GDP.



Map 4.3 Global players in Europe

Empirically, pure gateways appear to be an almost irrelevant category: in fact, only five regions belong to this group, confirming the theoretical intuition that this group is difficult to be envisaged in the reality, given the combination of high functional openness and specialization in sectors mainly focused on local markets.

Closer inspection of the location quotients of these five regions shows that they are very close to 1 (normally higher than 0.95) for service open growing sectors, whereas they are much lower for manufacturing open sectors. Hence, starting with

Map 4.3 and throughout the book hereafter, these regions are classified as service open global players, increasing the number of the latter from 29 to 34.

Interestingly, a small but significant group of global players is specialized in manufacturing open growing sectors, signaling that manufacturing is still important for globalization despite the increasing service trend of the economy. This group accounts for 14 regions out of 58, but if those regions specialized in both service and manufacturing open growing sectors are also considered, more than 41% of global players are specialized in manufacturing.

The last group is the residual one, i.e., the local players, whose regions precluded from playing any role in globalization because of their low functional openness and specialization in nonopen sectors. There are 75 of these regions, and they are mainly peripheral regions in almost all EU countries.

Of particular interest is the finding that all regions with above-average structural openness are specialized in open growing sectors, which signals that, for global players, integration is the result of both economic and physical openness.

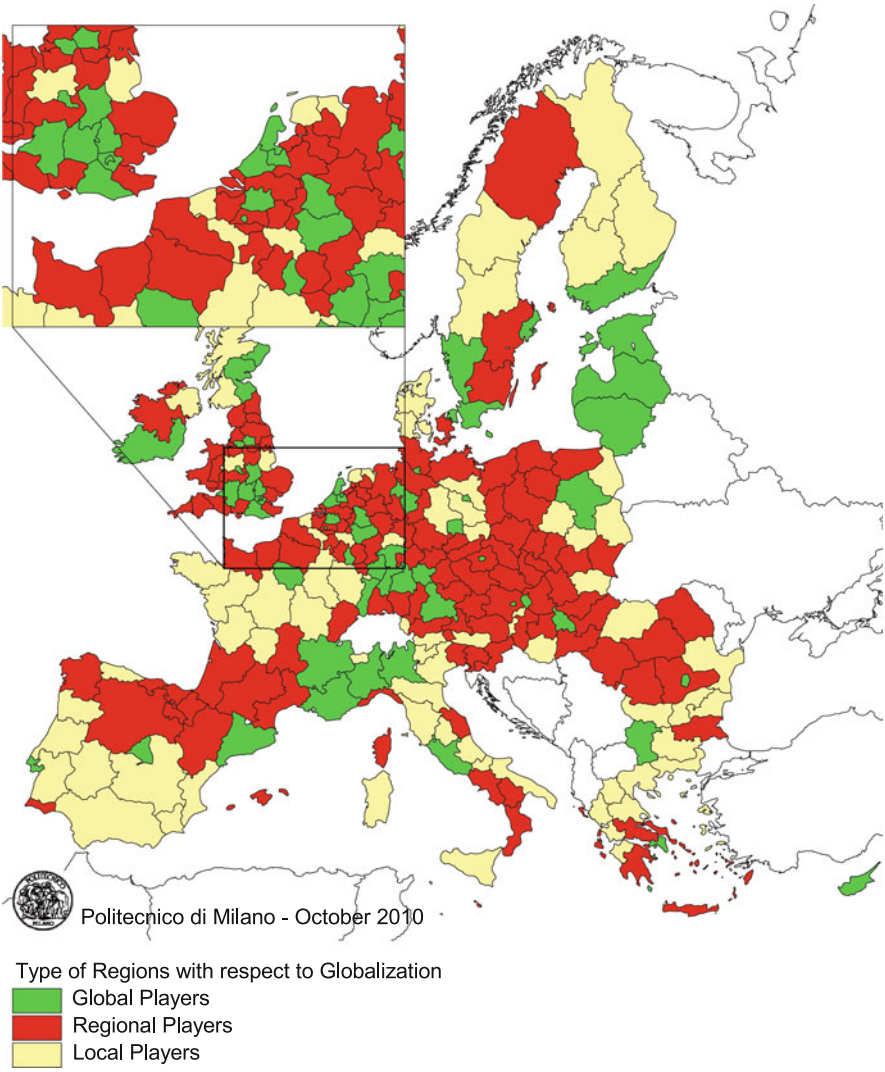
Owing to the empirical irrelevance of pure gateways, the theoretical four-category classification collapses into an empirical classification with only three categories, which is the one that will be used in all the following chapters (see Map 4.4):

- 58 global players
- 132 regional players
- 75 local players

4.7 A Structural Profile of European Global Regions

Before the empirical analysis on the impacts of globalization on regional growth and development of the different typologies of regions begins in the next chapters, it is useful to provide a descriptive picture of the structural features of the economy of global, regional, and local players. An exploratory analysis was accordingly run by means of an ANOVA in order to detect statistical differences among the average values of the main economic variables. The results of this exploratory analysis open the way to an explanatory study of the economic growth patterns of the different types of regions, which are presented in Chap. 6.

The results of the ANOVA exercise are reported in Table 4.8, divided by groups of variables. A first important result concerning the *economic variables* is that global players have a GDP per person, which is considerably higher than that of the other types, especially local players. The globalization of regions is hence associated with higher individual well-being, although the analysis was not able to test the direction of the causal relationship. Given their higher level of wealth, global players are less keen to be supported by development policies; structural funds expenditure per capita is in fact much lower.



Map 4.4 Typology of regions in regard to globalization

Global players are also characterized by lower unemployment rates. This feature is shared with regional players and is statistically different from local players. The specialization in open growing sectors characteristic of the first two groups therefore appears to be correlated with employment levels.

There are also significant differences as regards labor productivity. The productivity of global players is significantly higher than that of the other two types of

Table 4.8 Quantitative characteristics of global and regional players

Regional globalization types / Structural variables	Global players	Regional players	Local players	*F*-test	Sig.
Economic variables					
Regional GDP per inhabitant (2000, 1995 prices)	22,296	14,712	13,579	18.93	0.000
Regional GDP per inhabitant in PPS (2005, 1995 prices)	54,881	18,783	20,509	40.670	0.000
Regional unemployment rate (2000)	0.072	0.086	0.105	5.8	0.004
Growth spillovers (2000)	15.936	2.057	1.057	3.730	0.025
Structural fund expenditure per 1,000 inhabitant 1994–1999	159566	291983	666291	13.000	0.000
Labor productivity (value added/total employment in 2000)	39.136	30.799	29.946	6.270	0.002
Labor productivity in the primary sector (2000)	22.551	25.724	21.015	0.180	0.838
Labor productivity in the manufacturing sector (2000)	43.846	34.140	32.838	4.68	0.010
Labor productivity in the service sector (2000)	41.041	31.914	32.063	5.380	0.005
Territorial structure and population					
Number of Megas (2000)	41 out of 58	20 out of 132	7 out of 75		
Regional population (2000)	2909.658	1484.740	1597.975	24.050	0.000
Population density (2000)	740.698	172.923	99.338	21.71	0.000
Share of rural population (2000)	0.131	0.338	0.351	29.06	0.000
Rurality index[a]	0.531	1.421	1.397	8.660	0.000
Area	12,987	14,085	22,200	5.55	0.004
Population growth (1999–2002)	0.900	0.566	0.164	1.830	0.163
Population growth (1995–2002)	0.268	0.192	0.049	2.560	0.080
Birth rate (2000)	10.97	10.39	10.17	2.10	0.125
Death rate (2000)	9.84	10.07	10.58	2.40	0.093
Innovativeness					
Total factor productivity (residual of $\ln(y) = \alpha \ln(k) + \beta \ln(l)$ in 2000)	0.329	0.031	−0.041	11.960	0.000
Human resources in science and technology (% of total population in 2000)	28.52	20.33	18.13	45.75	0.000
Human resources in science and technology (% of active population in 2000)	38.81	29.15	26.70	44.25	0.000
Percentage of people with ISCED 5 or 6 instruction	1.23	0.89	0.91	17.40	0.000
Overall R&D expenditure on GDP (2003)	2.12	1.28	0.97	18.57	0.000
Infrastructure endowment					
Kilometer of railways over regional area (2000)	0.096	0.060	0.043	19.590	0.000
Kilometers of roads over regional area (2000)	0.271	0.155	0.105	15.650	0.000
Infrastructure endowment (total transport infrastructure on area from ESPON Kten in 2000)	0.189	0.071	0.044	13.830	0.000
Social capital					
Share of citizens trusting others "a lot" or "quite" (2000)	0.358	0.285	0.323	4.660	0.010

(*continued*)

Table 4.8 (continued)

Regional globalization types / Structural variables	Global players	Regional players	Local players	*F*-test	Sig.
Share of citizens who believe others evade taxes "a lot" or "quite" (2000)	2.274	2.235	2.318	1.550	0.214
Share of citizens who believe others bribe public officers "a lot" or "quite" (2000)	2.656	2.629	2.573	1.480	0.232
Sectoral specialization					
Location quotient (VA) for the primary sector (sectors A/B in 2004)	0.506	1.573	2.464	30.790	0.000
Location quotient (VA) for the mining sector (sector C in 2004)	0.841	1.680	2.848	2.710	0.068
Location quotient (VA) for the manufacturing sector (sector D in 2004)	0.897	1.151	0.947	11.700	0.000
Location quotient (VA) for the electricity sector (sector E in 2004)	1.025	1.221	1.400	3.430	0.034
Location quotient (VA) for the construction sector (sector F in 2004)	0.896	1.117	1.250	17.230	0.000
Location quotient (VA) for the retail trade sector (sector G in 2004)	1.075	1.013	0.943	4.170	0.017
Location quotient (VA) for the hotel and restaurants sector (sector H in 2004)	0.859	1.191	1.190	1.850	0.160
Location quotient (VA) for the transport sector (sector I in 2004)	1.229	0.962	0.919	9.940	0.000
Location quotient (VA) for the financial intermediation sector (sector J in 2004)	1.261	0.645	0.627	51.430	0.000
Location quotient (VA) for the real estate sector (sector K in 2004)	1.036	0.790	0.761	32.810	0.000
Location quotient (VA) for the public administration sector (sector L in 2004)	0.971	1.050	1.227	11.150	0.000
Location quotient (VA) for the education sector (sector M in 2004)	0.912	1.099	1.219	20.220	0.000
Location quotient (VA) for the healthcare sector (sector N in 2004)	0.863	0.992	1.039	4.310	0.014
Location quotient (VA) for the OP sector (sector OP in 2004)	1.066	0.843	0.753	26.320	0.000
Location quotient (VA) for the food and beverages sector (sector DA in 2004)	0.910	1.327	1.362	10.330	0.000
Location quotient (VA) for the textiles and clothing sector (sectors DB/DC in 2004)	0.753	0.993	1.730	10.430	0.000
Location quotient (VA) for the wood sector (sector DD in 2004)	0.882	1.730	1.709	7.380	0.001
Location quotient (VA) for the paper sector (sector DE in 2004)	1.102	0.827	0.775	8.400	0.000
Location quotient (VA) for the oil and chemicals sector (sectors DF/DG in 2004)	1.122	1.111	0.544	9.690	0.000
Location quotient (VA) for the rubber sector (sector DH in 2004)	0.832	1.325	0.814	16.580	0.000
Location quotient (VA) for the nonmetallic products sector (sector DI in 2004)	0.696	1.387	1.561	16.380	0.000
Location quotient (VA) for the basic metals sector (sector DJ in 2004)	0.708	1.176	1.111	8.400	0.000
Location quotient (VA) for the machinery sector (sector DK in 2004)	0.773	1.001	0.827	2.710	0.069

(*continued*)

Table 4.8 (continued)

Regional globalization types / Structural variables	Global players	Regional players	Local players	*F*-test	Sig.
Location quotient (VA) for the electrical components sector (sector DL in 2004)	0.966	1.005	0.757	2.530	0.082
Location quotient (VA) for the transportation equipment sector (sector DM in 2004)	0.925	1.286	0.466	18.010	0.000
Location quotient (VA) for the manufacturing sector not elsewhere classified (sector DN in 2004)	0.797	1.247	1.057	8.100	0.000
Location quotient (VA) for manufacturing open growing sectors (in 2004)	0.966	1.254	0.695	30.870	0.000
Location quotient (VA) for services open growing sectors (in 2004)	1.049	0.903	0.883	39.150	0.000
Location quotient (VA) for all open growing sectors (in 2004)	1.042	0.932	0.867	58.590	0.000
Location quotient (VA) for manufacturing high-technology sectors (in 2004)	0.966	1.005	0.757	2.530	0.082
Location quotient (VA) for manufacturing medium- to high-technology sectors (in 2004)	0.947	1.131	0.611	21.970	0.000
Location quotient (VA) for manufacturing medium- to low-technology sectors (in 2004)	0.732	1.248	1.136	15.000	0.000
Location quotient (VA) for manufacturing low-technology sectors (in 2004)	0.927	1.154	1.235	7.690	0.001
Variation of the Lawrence index in the manufacturing sector (1995–2004)	0.153	0.167	0.142	2.910	0.056
Lawrence index in the whole economy (1995–2004)	0.104	0.132	0.127	5.250	0.006
Number of regions	**58**	**132**	**75**		

[a]As calculated in ESPON project 1.1.2.

regions, and this is confirmed for manufacturing and services. Only in agriculture is the productivity of the three types of region not significantly different.

In the case of *territorial structure*, global players include most MEGAs (i.e., Metropolitan European Growing Areas[6]). They are therefore those with the strongest urban structures. This finding was expected because global players have world connections typical of urban structure. Because they are mainly urban regions, their population density is much higher than in the other regions, and the share of rural population is considerably lower. Because of this density, also total population is higher in global players, although this is not because of the regional area, which is similar between local and global players, whereas local players are rural and much more extended.

[6]Megas are regions in which are located at least one of the 76 "Megas" – FUAs with the highest scores on a combined indicator of transport, population, manufacturing, knowledge, and decision-making in the private sector. They have been defined by a European ESPON project (Espon project 1.1.1; see Espon website).

It is interesting to note that population growth tends to be higher for the more globalized regions, though demographic factors are also at work and make this differentiation of little significance. In fact, because birth and death rates do not differ markedly, the higher population growth rate of global players is probably due to the fact that they attract more migration than other regions.

Inspection of the *innovation* indicators shows that the technological level is higher in global players because total factor productivity (estimated as the residual of a regression of GDP over capital and labor) is much higher in global players than in the other regions (see also Map. 4.5). In particular, if we look at the indicators of the presence in the region of the preconditions for the knowledge economy, global players have more human resources in science and technology, whatever indicator is used to measure them (on total population or on active population). Also, significantly higher is the percentage of people with higher education and possessing degrees (ISCED 5 and 6). It is consequently not surprising that overall R&D expenditure on GDP is much higher in global players with respect to regional players, where it is slightly higher than in local players.

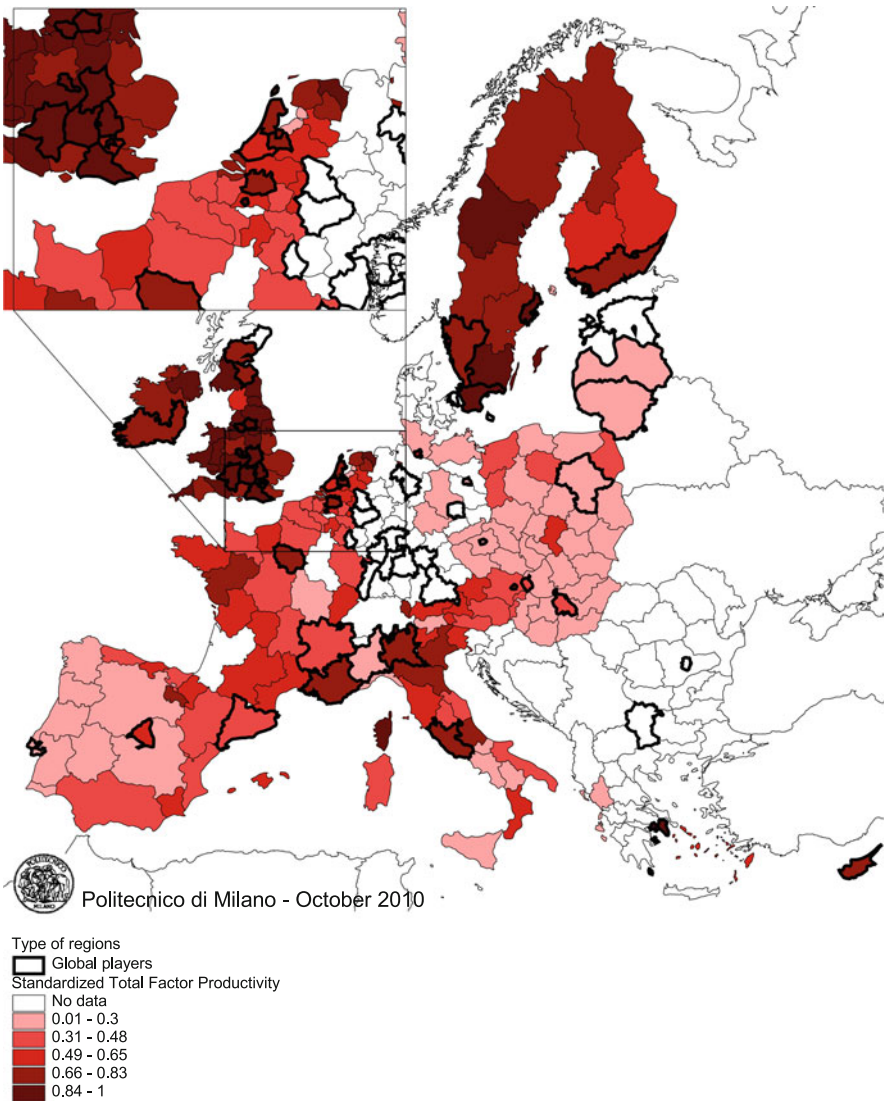
Also as regards *transport infrastructure endowment* there are significant differences among the three types of regions, with global players being significantly more endowed with total infrastructure (and also with railways and roads separately) than regional players and, to a larger extent, local players. The endowment of roads per square kilometer is also shown in Map 4.6, which highlights the greater transport infrastructure endowment of areas such as the Randstadt, and around cities such as London and Paris.

Social capital also differs among the three groups. When measured by a proxy like trust – the percentage of citizens trusting others reported by the European Values Survey[7] – social capital is significantly higher in global players and, interestingly, the lowest position is occupied by regional players rather than local players (see also Map 4.7). Perceived bribing and tax cheating, however, exhibit no significant differences among groups of regions.

Table 4.8 finally shows the *specialization* of regions, which depends on their countries, but is also linked to their role in global processes: global players are generally despecialized in manufacturing, which is concentrated among regional players, and also in agriculture, mining, and electricity, which all characterize local players.

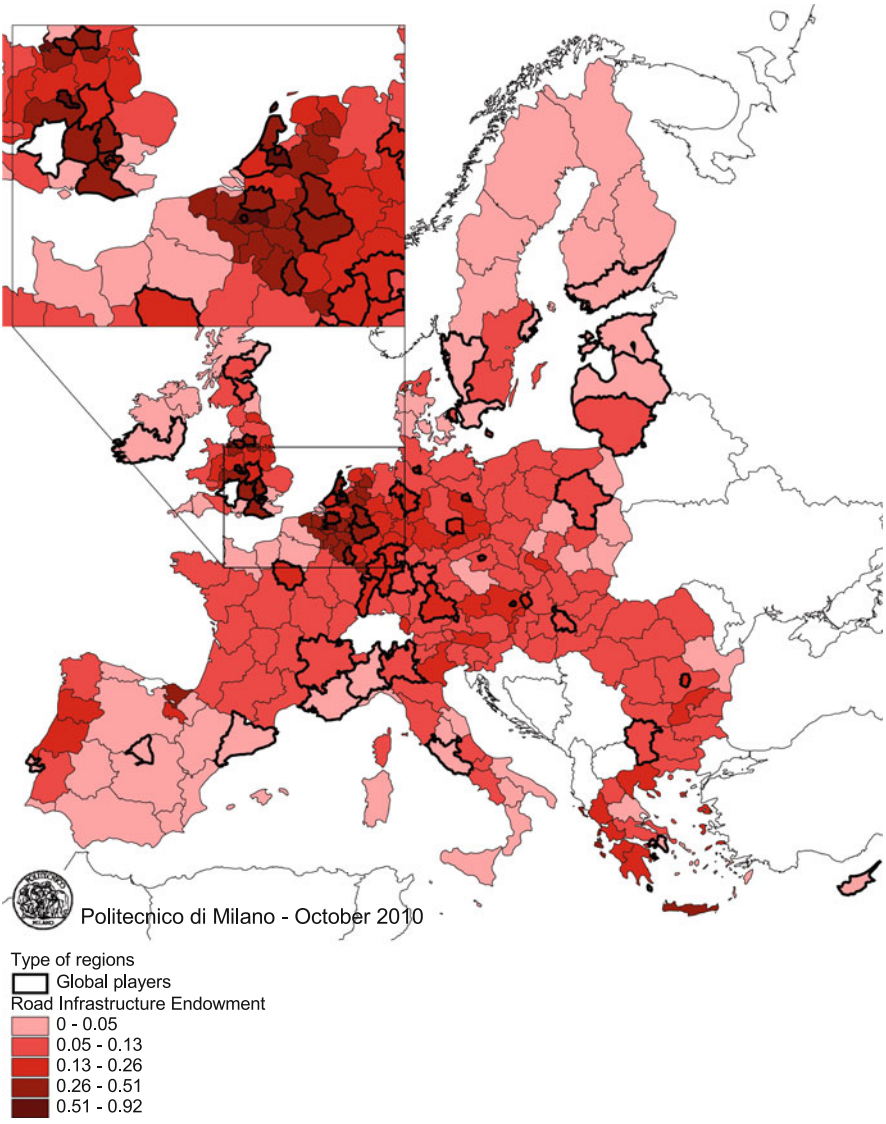
Global players are instead specialized in numerous service sectors: wholesale and retail trade (G, probably due to the higher purchasing power); transport, storage, and communication (I); real estate, renting, and business activities (K) (see also Map 4.8); and other community, social, and personal service activities and activities of households (O+P). More than any other sector, the relative specialization of global regions is in financial intermediation (J), given that they are the natural locations for the headquarters of these activities (see Map 4.9).

[7]This database has been used in several scientific papers (for instance, Beugelsdijk and van Schaik 2005; Hauser et al. 2007; Caragliu and Nijkamp 2009; Capello et al. 2010).



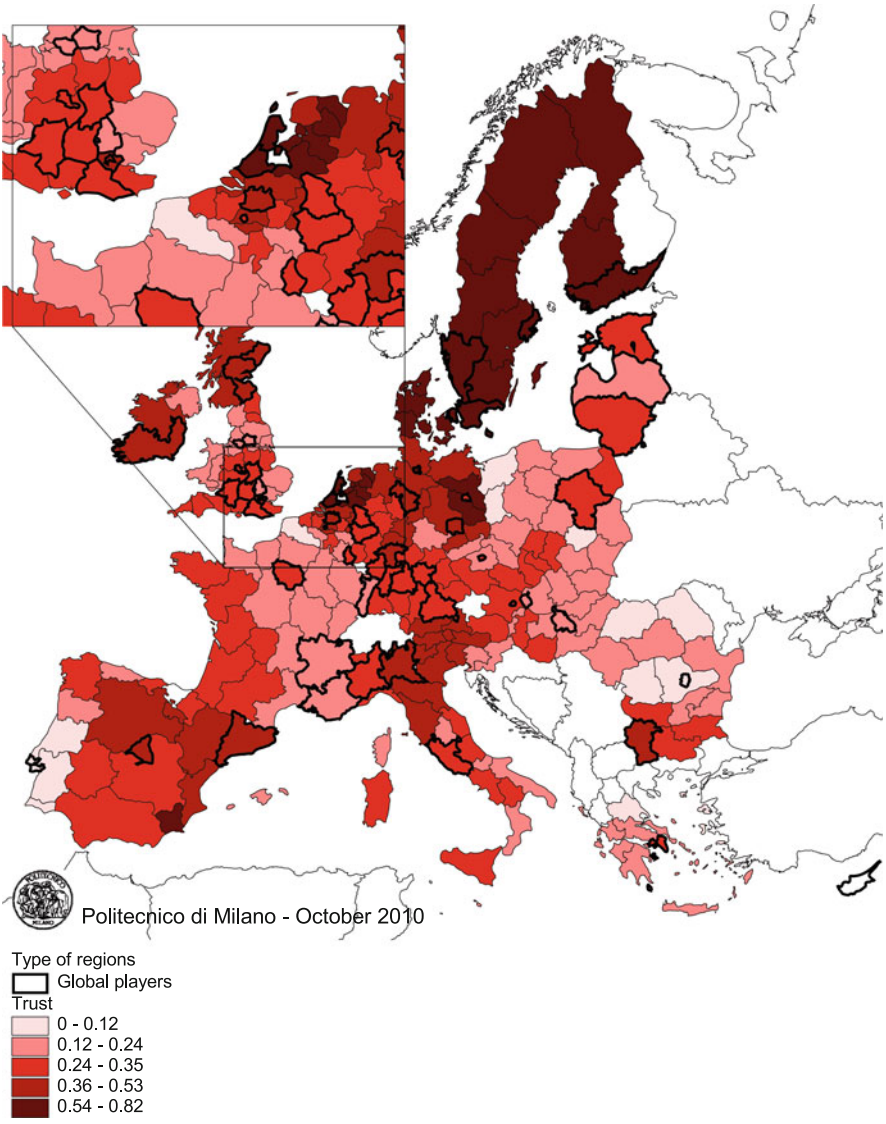
Map 4.5 Total factor productivity in 2000
Source: our calculations on Eurostat data

In the other service sectors, global players exhibit no clear specialization patterns. These sectors are hotels and restaurants (H); public administration and defense and compulsory social security (L); education (M); and health and social work (N); all these sectors characterize local players. Global players are, on the contrary, regions whose economies depend much less on the public sector than the others.



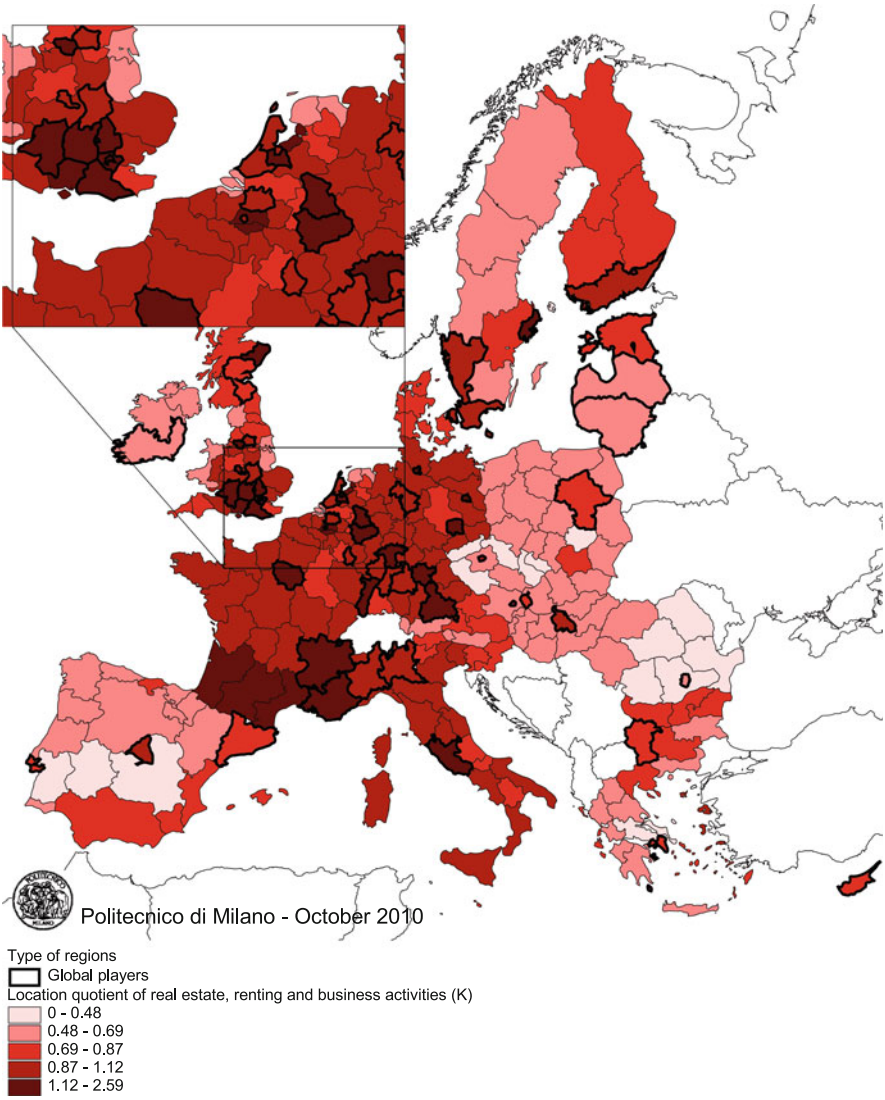
Map 4.6 Infrastructure endowment (roads per m^2 in 2000)
Source: authors' calculations on ESPON database

Within the manufacturing sectors, global players are despecialized in all sectors, with the exception of manufacture of coke, refined petroleum products and nuclear fuel and manufacture of chemicals, chemical products, and man-made fibers (DF+DG) (probably due to the presence of headquarters and research rather than production), whose location quotient, however, is similar between regional players



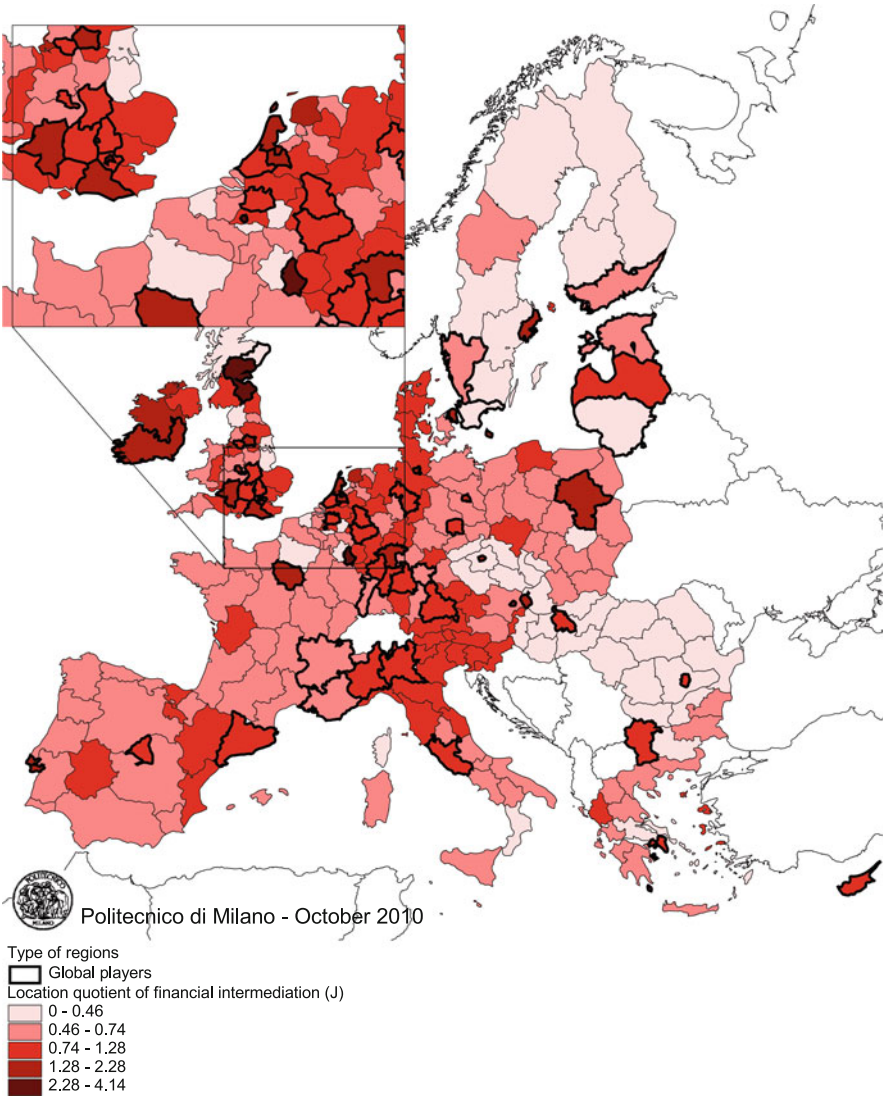
Map 4.7 Degree of trust
Source: authors' calculations on European Value Survey

and global players and much lower in local players. The other exception is sector DE: manufacture of pulp, paper, and paper products, and publishing and printing, which is a sector strictly linked to information and culture, which are features of large urban areas.



Map 4.8 Degree of specialization in real estate, renting, and business activities in 2004
Source: authors' calculations on IGEAT matrix

Regional players are mostly specialized in two export-oriented manufacturing sectors: machinery (DK) and transportation equipment (DM). Regional players are also more specialized in manufacturing open growing sectors, whereas in the case of service open growing sectors the most specialized are global players. The



Map 4.9 Degree of specialization in financial intermediation in 2004
Source: authors' calculations on IGEAT matrix

manufacturing specialization of regional players is also reflected in their greater specialization in manufacturing high technology and medium-to-high technology according to the Pavitt classification (Pavitt 1984). The most specialized in manufacturing low-technology sectors are instead the local players.

Finally, on looking at the stability of specialization in global regions over time, one observes that the specialization structure of global players is significantly more

stable than in all other regions, because the change in specialization measured by the Lawrence index is lower.[8] This is a signal of strength if it is due to an endogenous ability to maintain value-added levels in face of threats; or it is a signal of weakness if it is due to the inability to change specialization in response to technological and demand changes. The first interpretation is more persuasive in this case, as it becomes evident in Sect. 5.4.2.

4.8 Conclusions: Toward an Interpretation of the Performance of Global Regions

This chapter has highlighted which of the European regions are global players, those where globalization is expected to be felt with increasing intensity. Global players, and to a lesser extent regional players, have a potentially higher probability of benefiting from globalization, but they are also more likely to suffer from it should they be unable to turn threats into opportunities.

Because of their definition, in fact, global players are regions with full potential to benefit from globalization processes, both in terms of specialization in open growing sectors, and in terms of physical attractiveness and accessibility. Nevertheless, as it is evident in Chap. 6, although on average their economic performance is higher, some of them register lower than European average performance rates.

On the basis of the regional categorization developed in this chapter, the next chapters will be able to analyze empirically the role of globalization in the wide array of economic processes described in Chap. 3; and in particular, how and to what extent the major globalization trends highlighted in Chap. 3 – like the relocation of functions and tasks instead of sectors – take place more in global than in regional players or local players.

Moreover, the concern of the analysis is to determine how global players and regional players are able to handle globalization processes, for example, by striking the necessary balance between high- and low-level functions, or by attracting high-level service functions.

In particular, Chap. 5 analyzes the main globalization trends, highlighting that they develop differently in global regions with respect to regions of other kinds, and

[8]The Lawrence index is a measure of change in sectoral specialization in a region. It is calculated as follows:

$$L_r^{1995-2002} = \frac{1}{2}\sum_j \left| \frac{^{2002}VA_j^r}{^{2002}VA^r} - \frac{^{1995}VA_j^r}{^{1995}VA^r} \right|$$

where *VA* is value added (but it can also be calculated in terms of employment), *r* is the region, *j* are the manufacturing sectors at one-digit level and the premultiplication by 1/2 is necessary in order to ensure that the index ranges from 0 to 1.

the main globalization challenges in order to evidence the extent to which they are linked with globalization. Specific analysis will be devoted to the capacities of the different types of regions to attract FDI. Regional spatial patterns of FDI are analyzed and the specificities of single types of regions (global players vs. regional players) are examined (Chap. 5).

It is thus be possible to lay the bases for the following chapters, which are devoted to regional performances in the past (Chaps. 6 and 7) and to alternative scenarios in the future (Chaps. 9–11).

Annex 4.1 The IGEAT Matrix of Sectoral/Regional Employment and GVA Data

Sectoral specialization at regional level can be identified thanks to the availability of a unique source of nonofficial data, the IGEAT matrix, a complete matrix of employment and GVA at regional level in 1995, 2002, and 2004 derived by IGEAT of the Université Libre de Bruxelles from Eurostat and national sources. In order to draw up this matrix, IGEAT used regional accounts of the REGIO database from Eurostat, the SBS database from Eurostat, and completed them with national sources.

This matrix was originally at NUTS 2 level except for some countries, for which it was at NUTS 3 (France, Italy, Denmark, Poland and Spain). In this case, the NUTS 2 have been obtained by aggregation by the authors of this book.

The sectoral division used in this matrix consists of 17 branches, with manufacturing split into 14 subbranches, that is to say, 30 sectors (see also Table 7.10).

Annex 4.2 Data Sources

Table 4.9 Variables description and data sources

Data and indicators	Definition	Source of raw data
Regional GDP	Regional GDP in real terms at NUTS2 level in the period 1995–2005, computed from the nominal one, using national GDP deflators.	Eurostat
Regional employment by sector	Regional employment of the primary, tertiary and manufacturing sectors, in the years of period 1995–2005	Eurostat
Location quotient by NACE 2 sector	Regional share of employment or value added by sector for the years 1995 and 2002 at NUTS2 level	IGEAT matrix

(*continued*)

Table 4.9 (continued)

Data and indicators	Definition	Source of raw data
labor productivity by sector	Ratio between regional value and employment in the three sectors (agriculture, manufacturing, and services the years between 1995 and 2005)	Eurostat
FDI	Number of new foreign firms per million inhabitants. Reference period 1999–2001	FDI-Regio database [Eurostat and Amadeus]
Mega regions	Regions with the location of at least one of the 76 "Megas" – FUAs with the highest scores on a combined indicator of transport, population, manufacturing, knowledge, decision-making in the private sectors	Espon database
Regional population	Regional average population in each year at NUTS 2 level in the years 1995–2005.	Eurostat
Regional average annual population growth rate	Average annual population growth rate at NUTS 2 in the period 1995–2002	Eurostat
Birth rate	Births for 1,000 inhabitants in 2000	Eurostat
Death rate	Deaths for 1,000 inhabitants in 2000	Eurostat
Rurality index	Share of rural population divided by the share of rural population of the country	Espon 1.1.2
Regional employment by function (ISCO)	Regional employment by function at ISCO 2 digit classification at Nuts 2 level	European labor Force Survey
Innovation/Regional share of human resources in S&T	Share of people working in S&T on population in the year 2000	Eurostat
Regional educational achievement	Percentage of people with ISCED 5 and 6 in 2000	Eurostat
Regional unemployment	Share of unemployed people, available for the period 1995–2002	Eurostat
Regional infrastructure endowment	Kilometers of high-speed railways, main rails, express roads, motorways, and inland waterways in year 2000	KTEN data within the Espon database
Per capita structural funds	Total structural funds expenditure/on population in the period 1994–1999. Also divided into five types of expenditure	Espon database
Spatial growth spillovers	Calculated for the period 1999–2002	Eurostat
Regional trust	Share of citizens trusting others "a lot" or "quite" (2000)	EU Value Survey
Regional tax evasion	Share of citizens who believe others evade taxes "a lot" or "quite" (2000)	EU Value Survey
Regional bribery	Share of citizens who believe others bribe public officers "a lot" or "quite" (2000)	EU Value Survey
Sectoral reconverting regions	Lawrence index of sectoral reconversion higher than the EU average	Igeat Matrix 1995–2004

Chapter 5
Spatial Patterns of Globalization Trends

5.1 Describing Spatial Globalization Patterns: A Challenging Task

In the first part of this book, close attention has been paid to the importance of a regional analysis of globalization trends since these are expected to be spatially differentiated, and to have diverse impacts not only at the national, but especially at the regional level. This chapter takes up the challenge of describing the spatial patterns exhibited by globalization trends over recent years, the aim being to highlight which European regions are most affected.

The approach taken by this chapter is therefore mainly of an empirical and descriptive nature; all interpretative analyses of globalization trends are left to the other chapters in this part of the book.

The following description of the spatial patterns of globalization trends is at the same time innovative and challenging. It is innovative because, to the best of our knowledge, this is the first attempt in the literature to describe globalization trends for all EU-27 member country regions. It is challenging because globalization comes about through a wide number of channels (including trade, FDI, migrations, technological collaborations), data on which are normally not available at regional level, especially for all European regions.

The aim of the chapter is not merely to describe the spatial trends of traditional globalization phenomena like FDI. It is also to describe the spatial patterns of the new forms assumed by globalization, like the relocation of functions and tasks, or the increased off-shoring and outsourcing in the service sector discussed in Chap. 3.

Each new form of globalization inevitably generates structural changes in the local economy. In fact, regions compete in the global economy; and for this purpose, they build on their historical strengths, but especially they identify opportunities to diversify and enlarge their specializations by strengthening their know-how and knowledge base. The way in which regional economies pro-act and re-act to the new forms of globalization demonstrates whether they have been able to take up the challenge created by the new global economy, and to obtain advantages from the globalization of production. Chapter 3 speculated on which regional economies

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_5,

will be best able to meet these challenges; the aim of this chapter is to test whether the speculations in Chap. 3 find confirmation in the real world.

Some unique data will make it possible to overcome the methodological challenges and to conduct an empirical analysis of the kind described. As regards traditional forms of globalization, the study will be based on a unique database for FDI, namely the FDIRegio database, which contains data on inward FDI for all European regions for three time periods.[1] As regards international trade, no such detailed data are available; but this lack of information can nevertheless be remedied by using the synthetic indicator of a regional economy's degree of globalization on which the regional typology developed in Chap. 4 was based. Throughout the chapter, structural changes in the local economies will be investigated, with the focus on the different intensities with which they take place in the different types of region. Whether these structural changes in the economy are linked to globalization is inferred from the fact that they take place more intensively in those regions which are more open to globalization; because global players are more exposed to globalization, they are expected to be more affected by globalization trends than are other kinds of regions. Most of analyses will be re-run to investigate whether the structural changes take place more in regions with higher FDI penetration, the purpose being to determine whether the processes are linked to a specific globalization channel (FDI) for which primary source data at regional level are available.

The empirical analysis will benefit from the existence of other data which are normally not available, such as those on functional and industrial specialization at Nuts 2 level for all Europe. Functional specialization is proxied by the professional status of the labor force present in a region as reported by the European Union's European Labor Force Survey conducted by Eurostat, while examination of industrial specialization is made possible by the existence of regional industrial gross value-added data estimated by IGEAT.[2]

Three main aspects are described in this chapter, which proceeds according to a general-to-particular logic; general trends are first described, thereby preparing the ground for analysis of which kinds of region are able to take up the challenges raised by the new forms of globalization.

Regional FDI location patterns are therefore first presented and mapped for all regions in Europe as indicators of a globalization trend that affects European local economies. The development patterns of FDI are geographically differentiated at regional level, and this holds in a subsequent analysis which discriminates among origin (Sect. 5.2.1), regional type (Sect. 5.2.2), and type of economic activity (Sect. 5.2.3). Secondly, the new forms of globalization in the field of FDI are investigated in terms of their spatial patterns of development: in particular, the relocation of functions and tasks is analyzed in Sect. 5.3.1; deindustrialization and the rise of the service economy is described in Sect. 5.3.2; and the decentralization

[1]For a description of the FDIRegio database, see Annex 2.1 to Chap. 2.

[2]This database has been kindly made available to the authors by IGEAT, University of Brussels. For a description of the regional sectoral gross value-added dataset, see Annex 4.1 to Chap. 4.

of intertwined functions is analyzed in Sect. 5.3.3. Thirdly, and lastly, analysis is made of how these new forms impact on local economies, imposing or stimulating structural changes in regional functional and industrial specialization (Sect. 5.4). With the help of specific proxies (explained in Sect. 5.4.1), this analysis investigates the extent to which the structural changes are due to globalization by considering how intensively they take place in global players compared with less integrated regions. It will be interesting to test how far the speculations made in Chap. 3 concerning the regions best able to face these changes are borne out in reality.

5.2 Spatial FDI Patterns

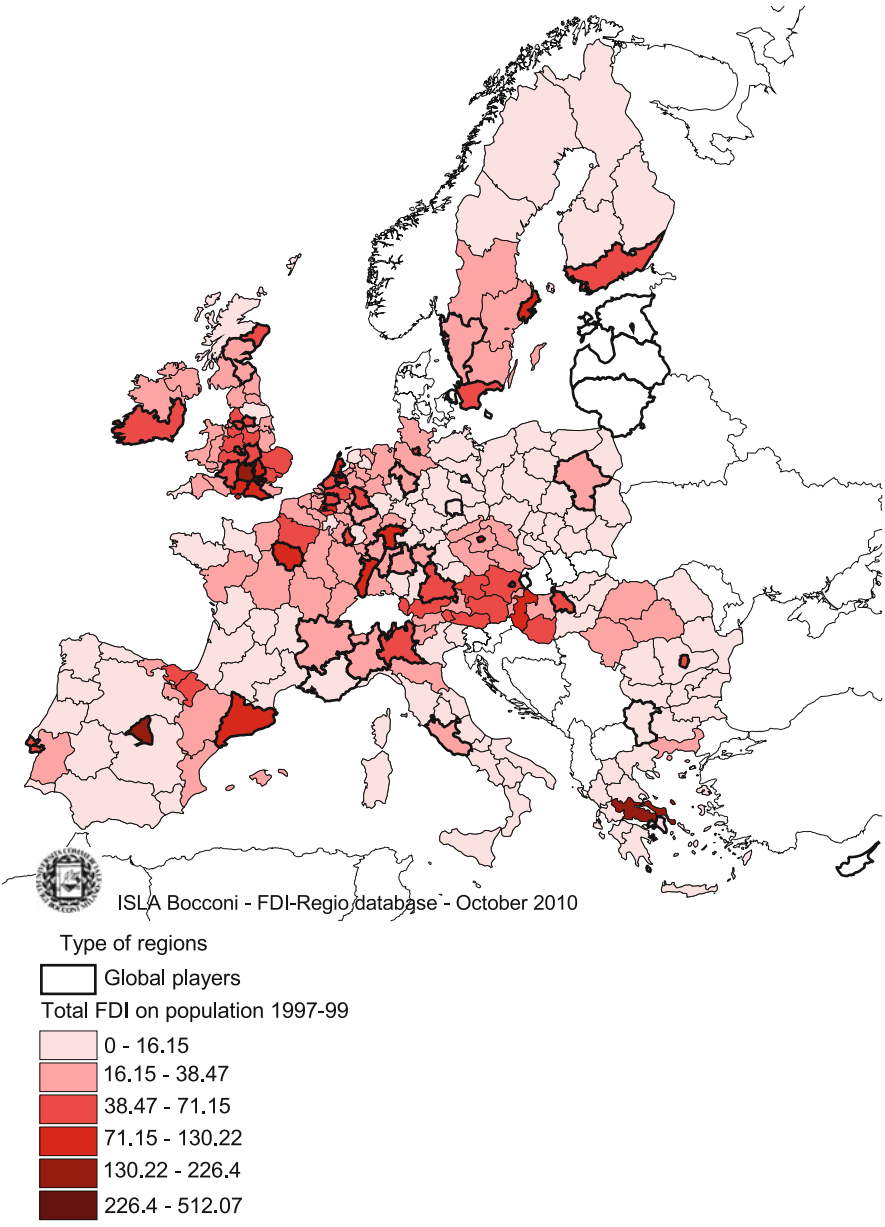
5.2.1 The Origin of FDI

In a globalizing world, distances and national boundaries have substantially diminished as most of the obstacles to market access have been removed. In this global market, multinational enterprises (MNEs) are perceived to be the key vehicles through which globalization has occurred and continues to evolve. Thanks to information and communication technologies, firms organize themselves into translational networks in response to intense international competition and the need for strategic interactions. Moreover, because of the complexity of information flows, MNEs seek to organize their activity and management differently, changing their relationships with clients, suppliers, and competitors so that they can more efficiently manage the process of technical change and innovation.

Globalization has also induced MNEs to change their portfolios of mobile assets in order to achieve a better match with the immobile assets of different locations. These new portfolios now include certain functions that create and reinforce ownership advantages, such as R&D, and training and strategic management. Studying the location patterns of multinationals in the EU should then aid understanding of how the benefits of the internationalization of the EU economies spread across regions.

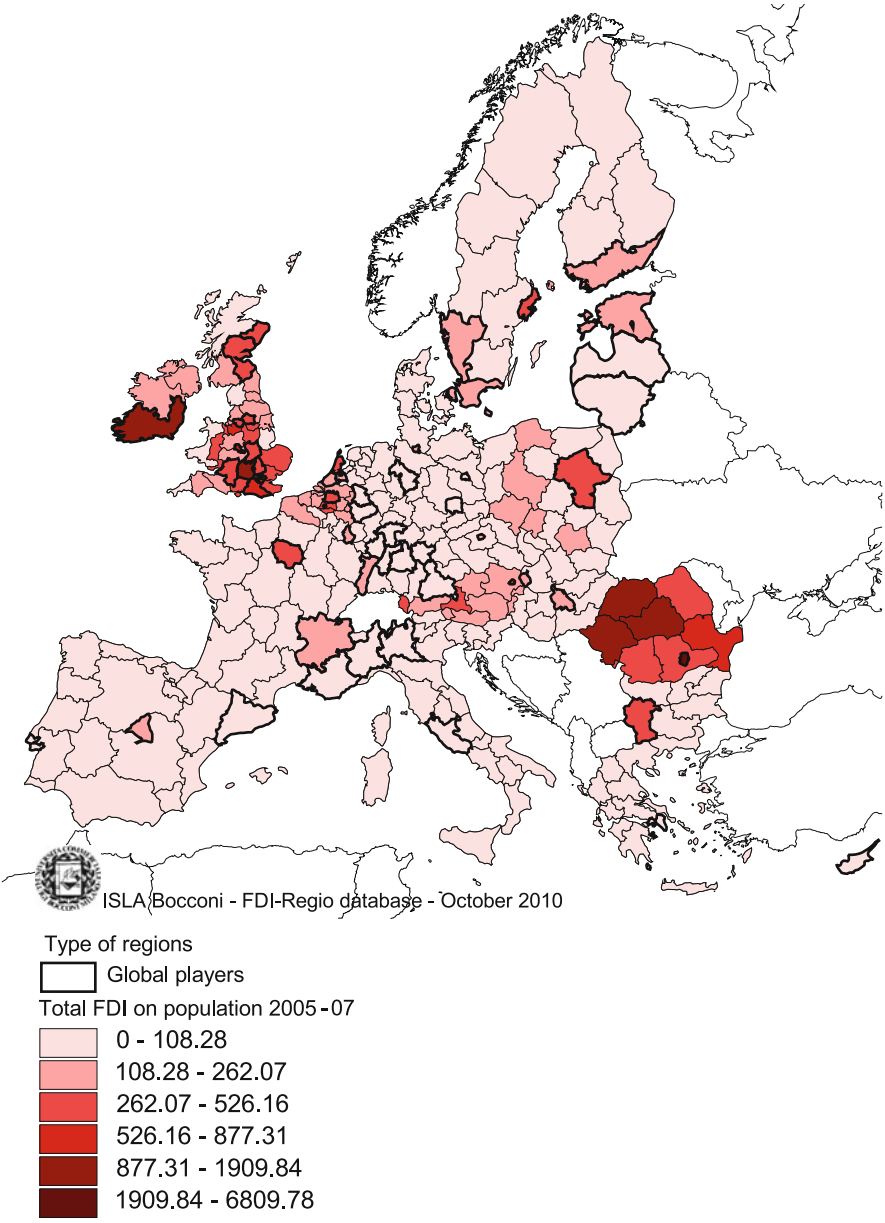
Spatial patterns of FDI exhibit strong concentration, though they tend to change over time, as emerges clearly when comparing the distribution of FDI across regions at the beginning and the end of the periods considered, i.e., 1997–1999 and 2005–2007 (see Maps 5.1 and 5.2, respectively).[3] In particular, in the late 1990s, most new foreign affiliates appear to have been located around the "blue banana", i.e., regions located from the UK to the North of Italy (Lombardy), including the Île de France. Belgium, the Netherlands, and Denmark also host a large number of new multinational affiliates, as well as some South-Western German regions. On average, the Southern and Eastern peripheries do not seem able to attract

[3]Since large regions collect, in general, more firms than small regions, data on FDI have been size-adjusted. The following maps plot the number of new foreign firms per millions of inhabitants.



Map 5.1 Spatial patterns of FDI, 1997–1999
Source: FDIRegio database

a substantial amount of FDI, with a few major exceptions, such as Lombardy in Italy, Madrid, Cataluña, and the Basque country in Spain, as well as central Greece and the Lisbon region. FDI in Central and Eastern Europe was largely concentrated in the



Map 5.2 Spatial patterns of FDI, 2005–2007
Source: FDIRegio database

Czech Republic, the Western Hungarian regions, and the North-Western Romanian regions. Two capital regions, however, led the ranking of the most attractive regions in Central and Eastern Europe, i.e., Prague and Bucharest (see Map 5.1). While the

reluctance of foreign investors to invest in Central and Eastern regions can be explained, at least in part, by the economic and political instability that affected most of the Central and Eastern European economies during that period, as well as by the very slow start-up of economic reforms in most of these countries, we can only speculate as to the causes of the scant attractiveness of the Southern periphery: poor market access, a weak industrial base, a low-educated labor force, and inefficient local institutions.[4]

As expected, these patterns have changed over time. In the mid-2000s, a larger number of regions were more exposed to globalization, as indicated by the increased amount of new foreign firms hosted by the EU. The diffusion of globalization had not, however, occurred uniformly across regions. FDI flows, in fact, continued to be higher in Austria, Belgium, the UK, and the Dublin region. Most interestingly, new recipient regions had emerged, especially in the Eastern periphery, where FDI was widespread across all the Romanian regions, several Polish regions, Estonia, and Latvia. While some regions had gained, others had become marginal. The latter were the German regions, Cataluña and other Spanish regions, Central Greece and Lisbon, and Eastern French regions, with a few notable exceptions. These trends had further increased the marginalization of the Southern periphery, while capital regions had on average increased their capacity to attract FDI (Map 5.2), probably because of their endowment of a diversified economy, which allowed foreign firms to exploit the so-called urbanization externalities (Jacobs 1969).[5]

When we look at the origins of MNEs, we observe other interesting phenomena. First of all, both intra- and extra-European multinationals became more selective in the choice of new locations over time. In 2005, in fact, new foreign affiliates were established in a smaller number of regions than in 1999 (see Maps 5.3 and 5.4).

Secondly, there has been a re-direction of FDI flows from Western to Eastern regions. This trend is particularly apparent in the case of extra-EU foreign firms, which in the mid-2000s established new affiliates in a few groups of regions belonging to three countries, i.e., Romania, Bulgaria, and the UK. While this last country was already among the favorite locations for extra-Europe FDI – together with Ireland – at the end of the 1990s, the former two represented a new trend probably driven by the accelerated pace of the economic reforms and privatizations which brought Romania into the EU and certainly contributed to boosting investor confidence (Pauwels and Ionita 2008).

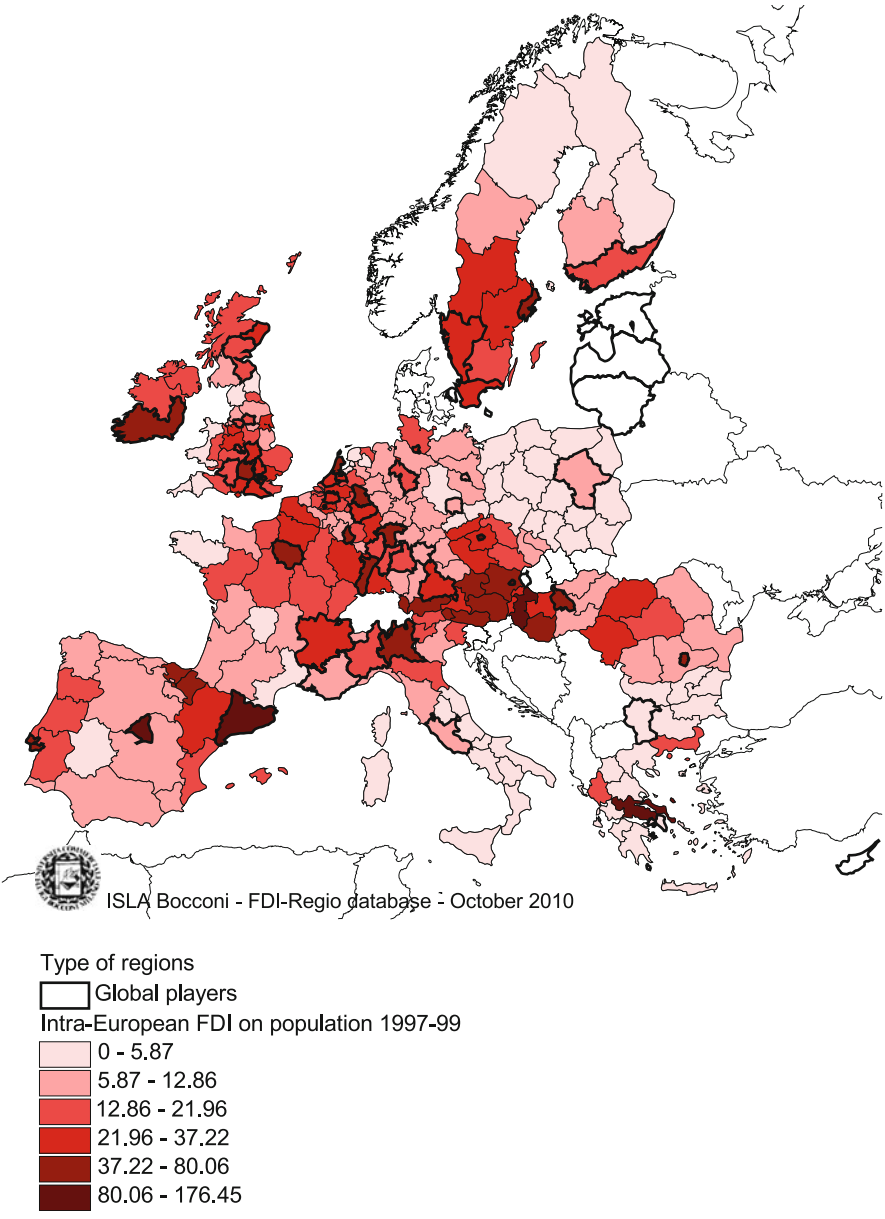
Thirdly, the opening of Central and Eastern European economies was driven by the European integration process rather than by globalization.[6] Intra-European

[4]The econometric evidence discussed in Chap. 7 will shed more light on these issues.

[5]Urbanization externalities occur because of the proximity of various economic activities. This encompasses market size effects, diversity of services, intermediate and final products, and the presence of social capital (infrastructure, innovation potential and social capability). See Fujita and Thisse 2002, for an in-depth analysis of different kinds of agglomeration economies.

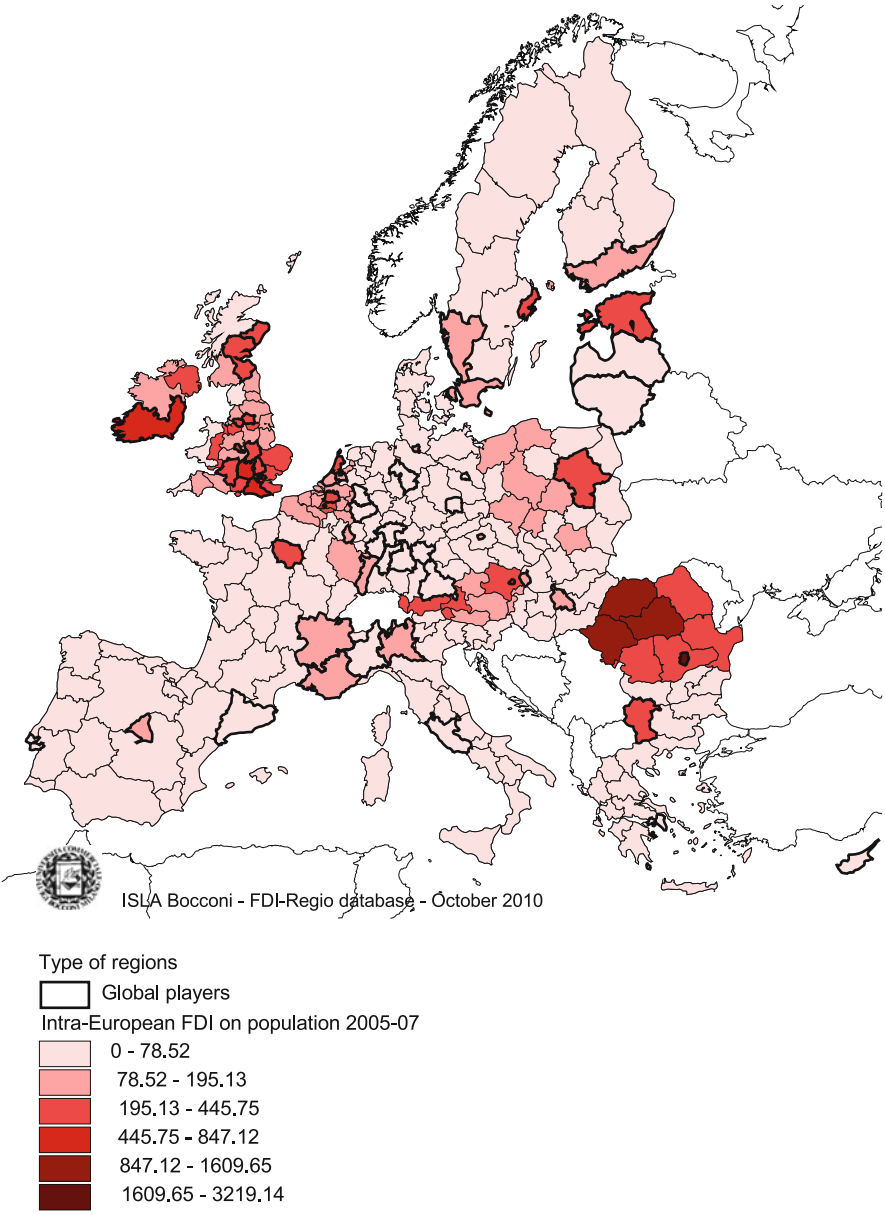
[6]On the role played by the EU in fostering the re-integration of Central and Eastern European countries within the global economy see (Traistaru et al. 2003; Petrakos et al. 2000; Resmini 2007).

a) 1997–1999



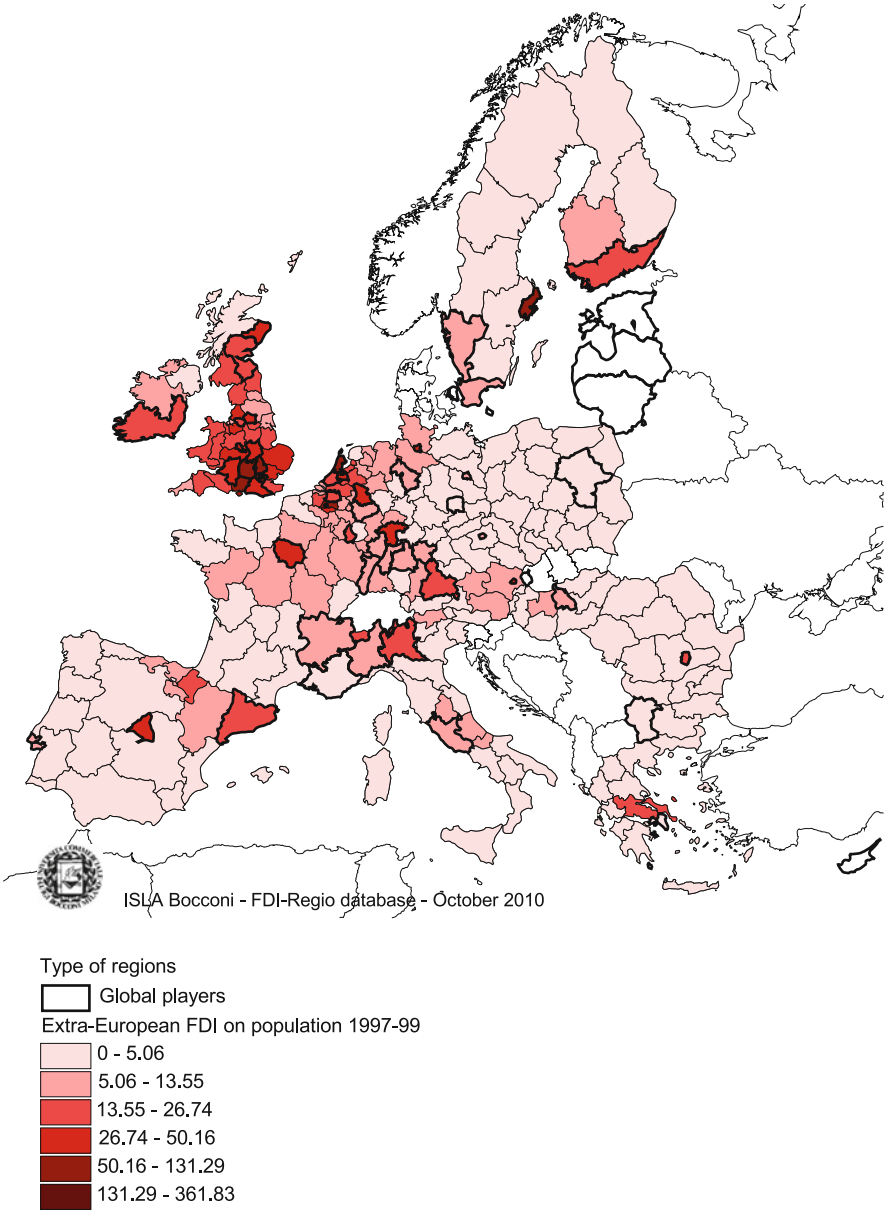
Map 5.3 The distribution of intra-uropean foreign firms by region
Source: FDIRegio database

b) 2005–2007



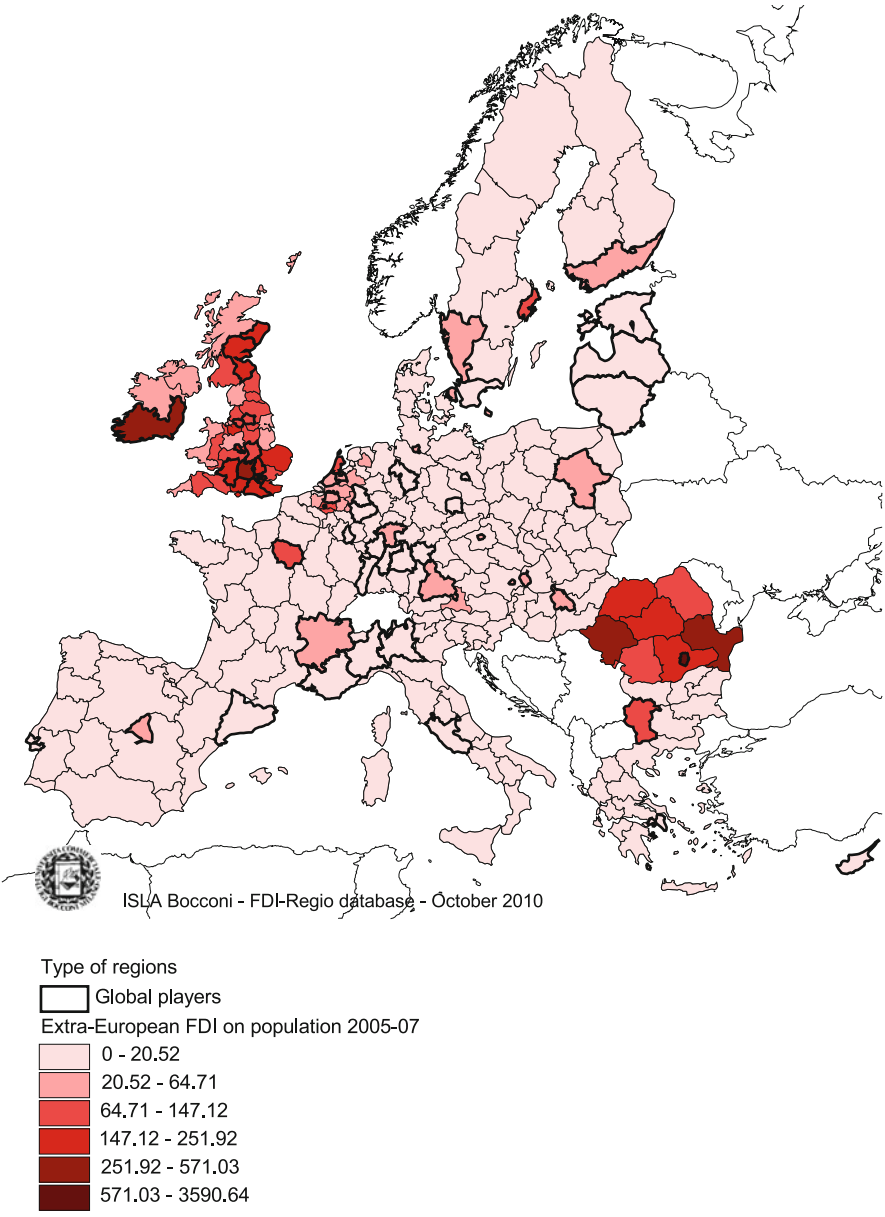
Map 5.3 The distribution of intra-European foreign firms by region – Continued
Source: FDIRegio database

a) 1997–1999



Map 5.4 The distribution of extra-European foreign firms by region
Source: FDIRegio database

b) 2005–2007



Map 5.4 The distribution of extra-European foreign firms by region – Continued
Source: FDIRegio database

foreign firms, in fact, started to penetrate Central and Eastern European regions earlier than did extra-European FDI. In 1997–1999 Western European firms established foreign affiliates in several Central and Eastern European regions, although they were concentrated in three main countries: Hungary, Czech Republic, and Romania, with the sole exception of the Warsaw region in Poland. Extra-European foreign firms were virtually absent, and those few that existed were concentrated in two capital regions, i.e., Prague and Bucharest. In 2005–2007, besides Romania and Poland, Bulgaria, with the good performance of Sofia region, and Estonia emerged as favorite locations for both intra- and extra-European foreign firms.[7]

Finally, to be noted is that the relocation of FDI in the Eastern regions occurred at the expense of Western regions and, especially, the South-Western ones. Flows of FDI into those regions dramatically reduced in the mid-2000s with respect to 10 years previously, regardless of the origin of FDI (Buch et al. 2003). This does not necessarily imply that Western regions were less globalized than Eastern ones, but it may suggest that globalization in Western regions was no longer driven by FDI.

5.2.2 Did Globalization Drive FDI Patterns of Location?

In this section, we change perspective and analyse whether and to what extent globalization has driven FDI location patterns. In other words, we investigate FDI location patterns by distinguishing regions according to their degree of globalization. In so doing, we consider the threefold classification discussed in Chap. 4, according to which EU regions can be considered global, regional, or local players according to their connectedness with the world economy and their specialization in dynamic open sectors. Of course, we expect to find a relative concentration of foreign firms in globalized regions, because it is there that they can take advantage of structural connections with global markets and gain in efficiency by producing in a rich and dynamic economic local context.[8] Nonetheless, other groups of regions may also be attractive for FDI, because multinational firms' location strategies do not depend exclusively on localized advantages, i.e., the intrinsic characteristics of regions, but also on motivations that induce firms to become multinationals (Dunning 2009). Therefore, we cannot exclude *a priori* that non-globalized regions also possess factors that fit well with foreign firms' objectives.

In order to analyse the relative position of each group of regions within FDI spatial patterns, we compare the distribution of foreign firms across the three groups of regions and over time.[9]

[7]On the dynamics of patterns of location of foreign firms in Central and Eastern European regions see (Altomonte and Resmini 2002; Alessandrini 2000; Resmini 2008).

[8]This necessarily holds for extra-European FDI, which enters the definition of global regions, but it needs to be verified for intra-European FDI.

[9]Simple descriptive statistics techniques (ANOVA) were used to explore this issue. Readers not familiar with this methodology can find useful explanations in Rabe-Hesketh and Everitt 2004.

Table 5.1 The distribution of FDI across types of regions and over time (descriptive statistics)

	2005–2007			1997–1999		
	Total FDI	Extra-EU FDI	Intra-EU FDI	Total FDI	Extra-EU FDI	Intra-EU FDI
Local players	76.22	15.36	60.85	15.02	3.91	11.10
Regional players	133.11	29.73	103.37	23.29	8.08	15.20
Global players	462.03	186.21	275.82	72.16	32.660	39.50
Signif. (Test *F*)	9.43***	7.49***	10.15***	36.30***	22.86***	31.63***
Global regions' specialization						
Other sectors	112.40	24.51	87.89	20.31	6.58	13.72
Services	655.23	286.48	368.76	86.42	42.19	44.23
Manufacturing	185.55	37.15	148.40	46.25	12.89	33.36
Man. & services	192.22	53.95	138.27	57.58	26.19	31.39
Signif. (Test *F*)	9.83***	8.72***	9.51***	27.84***	19.83***	21.93***
Regional players' specialization						
Other sectors	244.47	89.86	154.60	39.18	16.07	23.11
Services	138.82	38.36	100.46	23.93	11.24	12.69
Manufacturing	119.55	22.07	97.47	21.74	6.00	15.74
Man. & services	306.43	97.16	209.27	42.11	20.90	21.21
Signif. (Test *F*)	1.06	1.09	0.92	3.07**	2.60*	2.266**

***,**,* implies significance at 1, 5 and 10% respectively
Source: authors' calculations on FDIRegio database

As expected, global regions are more attractive for foreign firms than other types of regions, as indicated by the mean of the distribution, which is higher for this group of regions than – and statistically different from – that of the other groups (Table 5.1).[10] It is also worth noting that, among global regions the most attractive for FDI are the ones that specialize in open service sectors. These results hold for both intra- and extra-European FDI. Therefore, we can conclude that in an era in which competition is becoming increasingly global, multinational enterprises prefer to locate in regions well endowed with those factors that enable them to react to changes brought about by globalization itself. This concentration of knowledge, skills, and expertises – in short, technological advances – embodied in MNEs can further improve the growth prospects of global regions provided that they are able to reap the intangible benefits of learning embedded in agglomerations of foreign firms.[11]

Although regional players also enjoy a specialization in open and dynamic sectors as global regions, the distribution of FDI within them does not vary according to their industry specialization. This finding suggests two interesting considerations that warrant further analysis: on the one hand, it indicates that the capacity of regional players to attract FDI relies on other factors; on the other,

[10]In particular, the distribution of FDI differs between globalized and non-globalized regions taken together, while no statistically significant differences have been detected between regional and local players.

[11]The presence of regional specific assets is only relevant in regional development processes if these assets complement the strategic needs of global producers (Coe et al. 2004).

industry specialization becomes important as a factor of FDI attraction only in the presence of other specific characteristics peculiar to global regions. Chapter 7 will allow us to shed more light on these issues.

These trends are more or less stable over time, indicating that the globalization process was already in progress during the late 1990s, and therefore coexisted with the European integration process. The only striking difference between the two periods of time is that in the late 1990s regional players with strong specialization in both manufacturing and service open sectors were able to attract foreign firms – mainly those coming from another European country. This on the one hand suggests that regional players were involved in the European integration process; on the other hand, it confirms that regions of this type were substantially unprepared to face the challenges brought by globalization.

5.2.3 FDI Patterns by Typology of Economic Activity: Industry Versus Services

Globalization has increased the importance of service activities, not only within countries, but also across national borders. Advances in technologies have made the international exchanges of many services possible, thereby enabling multinational firms to reorganize their production spatially. These transformations can be observed by inspecting spatial patterns of FDI at sectoral level.

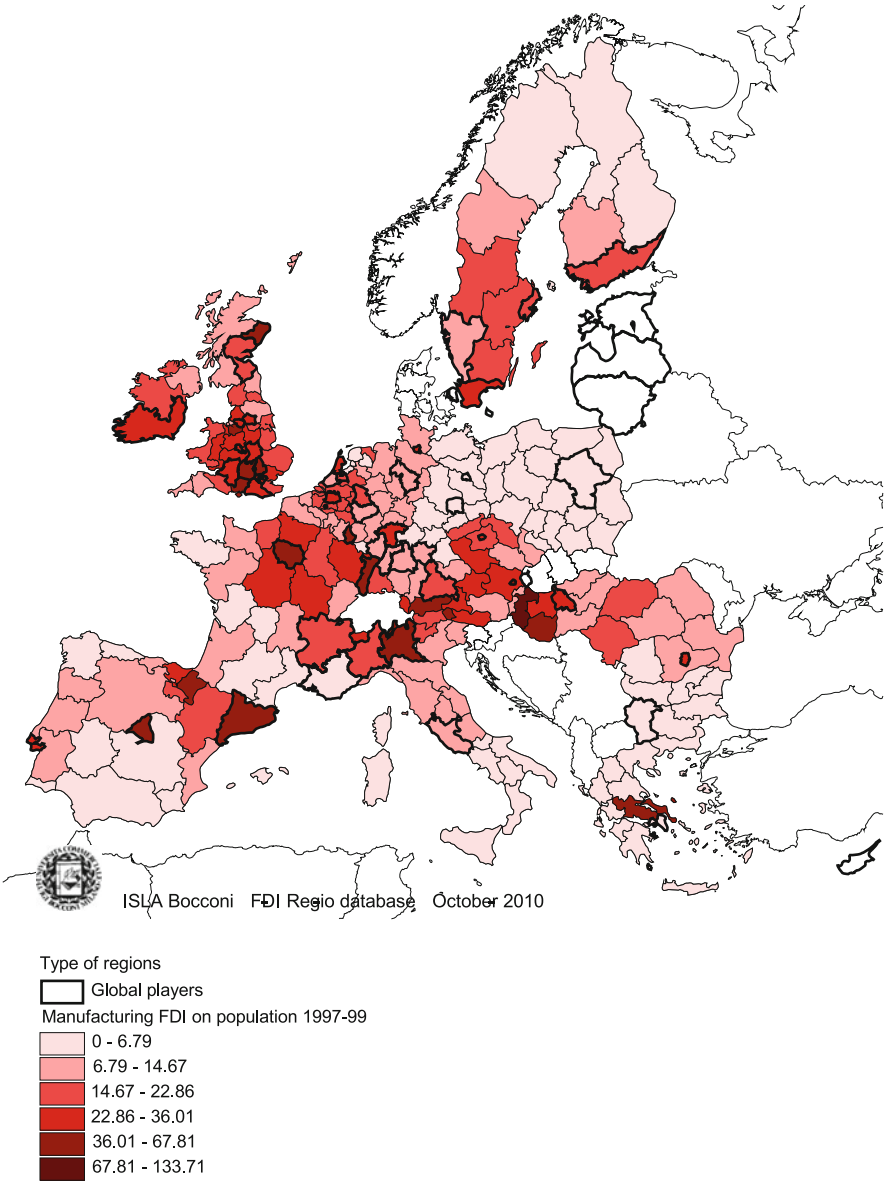
In order to capture globalization effects as closely as possible, we distinguish first between manufacturing and service FDI and then among more disaggregated branches of activities within the secondary and tertiary sectors. Of course, we maintain the distinction between extra- and intra-European FDI, which allows us to assess the relative importance of globalization and the European integration process, respectively.

Patterns of manufacturing foreign firms are quite similar to the main trends highlighted in the previous section. In particular, we observe a shift over time toward Central and Eastern European regions, and a wider dispersion of FDI across Western regions (see Map 5.5a and b). Major concentrations still concern Romania and Poland in Central and Eastern Europe, and the United Kingdom and Ireland in Western Europe. The presence of manufacturing foreign firms is still marked in Austria and in regions located along the French–German border and in the Benelux.

The polarization of FDI in services is particularly apparent (see Map 5.6a and b). In the mid-2000s, only a small group of regions, mainly located within three countries, i.e., the UK and Ireland in Western Europe and Romania in Eastern Europe, seemed to satisfy foreign firms' needs. Also capital regions comprised a substantial number of foreign firms providing services. However, the most striking feature is the almost complete overlap between the location patterns of manufacturing and service foreign firms.

The "global" stance of EU regions, together with the origin of foreign firms inside or outside Europe, offers additional insights into the spatial patterns of FDI (Table 5.2). Global regions still lead the ranking of the main recipient regions,

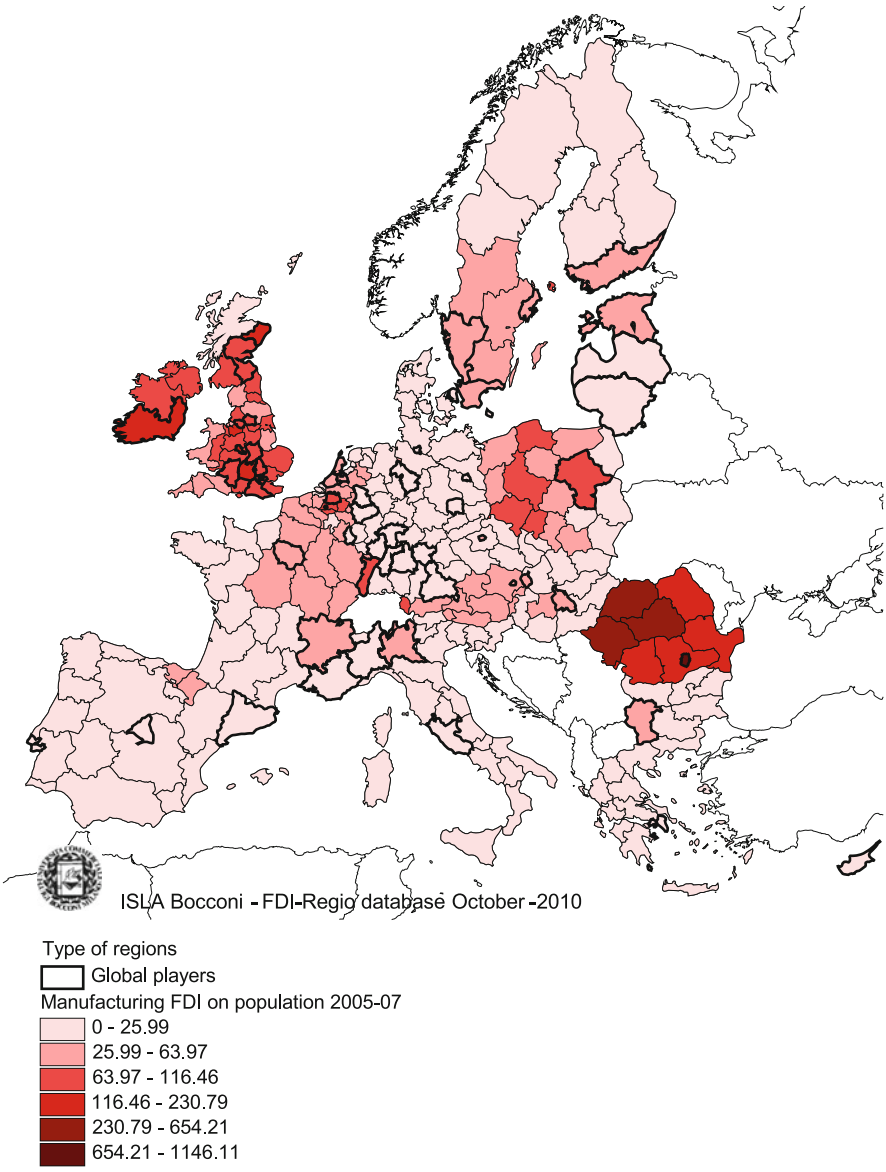
a) 1997–1999



Map 5.5 The distribution of manufacturing foreign firms by region
Source: FDIRegio database

but their capacity for attraction varies among different types of foreign firms. Foreign firms operating in service sectors definitely concentrate on global players, regardless of their origin, while only extra-European manufacturing foreign firms

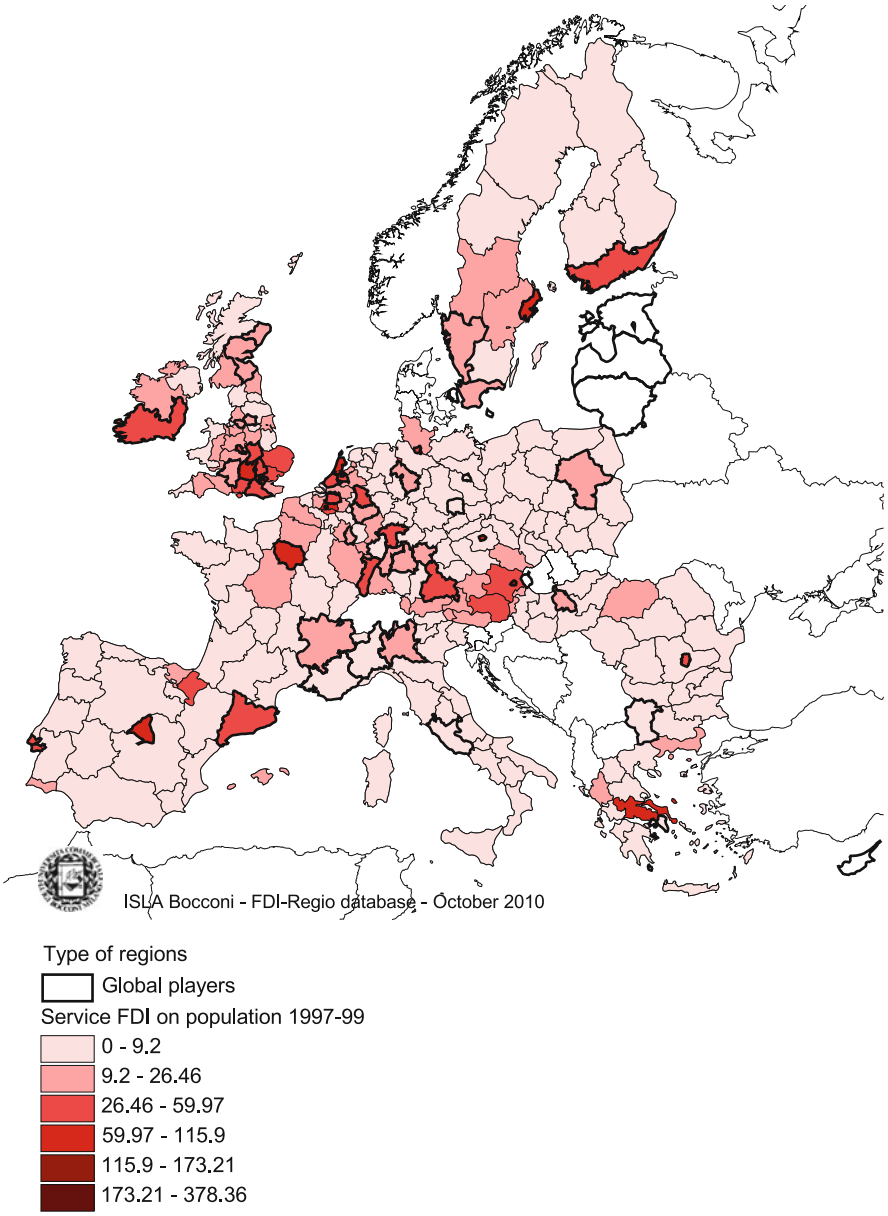
b) 2005–2007



Map 5.5 The distribution of manufacturing foreign firms by region – Continued
Source: FDIRegio database

consider these regions to be preferential locations. This implies that regional differences are perceived as more important by extra-European investors than by intra-European ones.

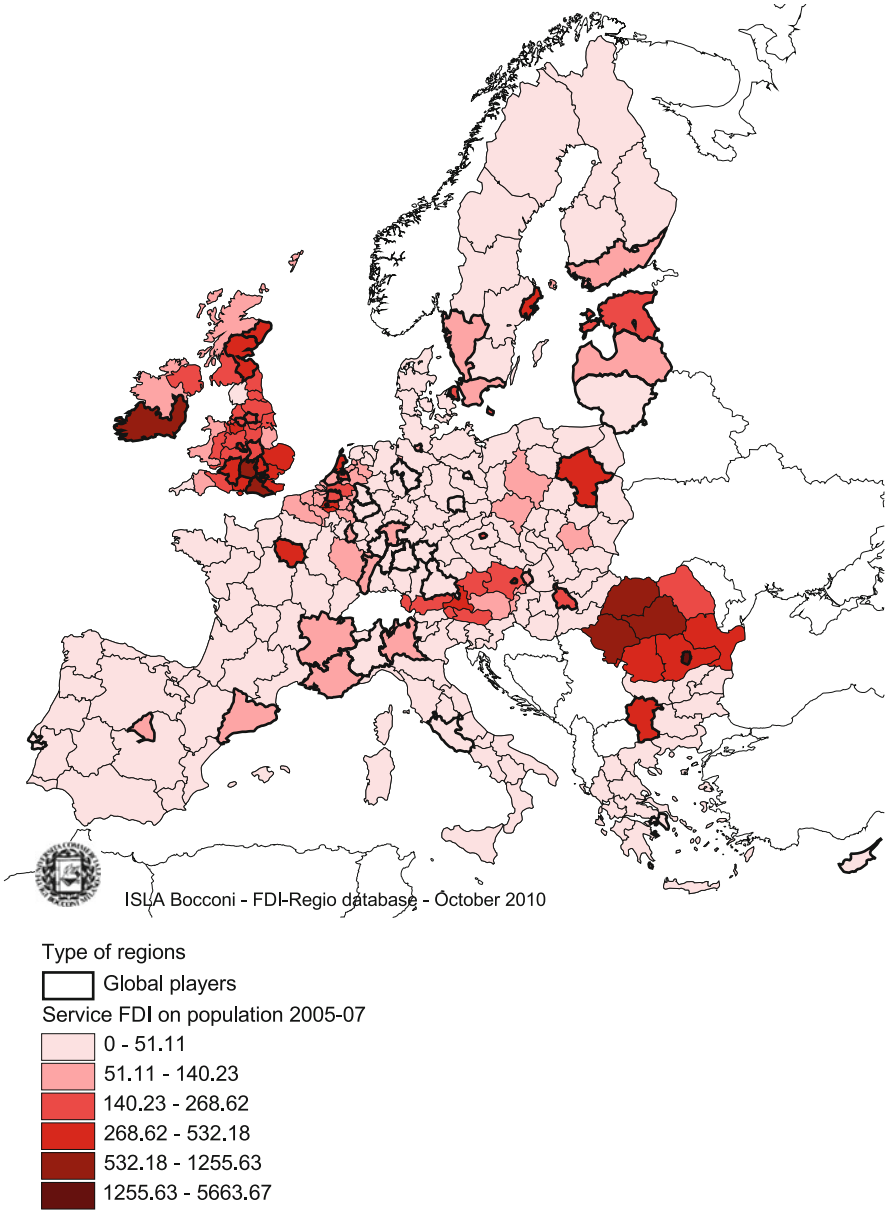
a) 1997–1999



Map 5.6 The distribution of service foreign firms by region
Source: FDIRegio database

Within global regions, foreign investors prefer to locate in regions with strong specialization in services, regardless of their own sector of activity, while the specialization of regional players plays no role in attracting foreign firms.

b) 2005–2007



Map 5.6 The distribution of service foreign firms by region – Continued
Source: FDIRegio database

Table 5.2 The distribution of FDI by sector and group of regions (2005–2007)

	Manufacturing foreign firms			Service foreign firms		
	Total	Extra-EU	Intra-EU	Total	Extra-EU	Intra-EU
2005–2007						
Local players	28.60	5.14	23.47	47.61	10.23	37.39
Regional players	44.21	8.48	35.72	88.90	21.25	67.65
Global players	75.39	26.54	48.84	386.65	159.66	226.99
Signif. (Test *F*)	3.81**	7.35**	2.11	10.47***	7.38***	13.13***
Global regions' specialization						
Other sectors	38.53	7.27	31.26	73.87	17.24	56.63
Services	97.58	37.81	59.78	557.64	248.67	308.98
Manufacturing	43.40	8.52	34.88	142.15	28.62	113.52
Man. and services	44.68	13.48	31.20	147.53	40.47	107.07
Signif. (Test *F*)	3.57**	7.96***	1.58	10.98***	8.68***	12.46***
Regional players' specialization						
Other sectors	49.01	14.47	34.53	195.46	75.39	120.07
Services	34.23	9.73	24.50	104.58	28.62	75.96
Manufacturing	46.00	7.14	38.86	73.55	14.94	58.61
Man. and services	73.62	21.84	51.78	232.81	75.32	157.49
Signif. (Test *F*)	0.35	0.98	0.45	1.31	1.10	1.42
1997–1999						
Local players	10.11	2.85	7.26	4.91	1.06	3.84
Regional players	13.30	4.39	8.91	9.98	3.69	6.29
Global players	27.22	11.63	15.60	44.93	6.56	23.90
Signif. (Test *F*)	25.54***	21.63***	11.82***	34.02***	21.23***	35.54***
Global regions' specialization						
Other sectors	12.15	3.83	8.32	8.16	2.75	5.41
Services	29.21	13.64	15.56	57.22	28.54	28.67
Manufacturing	24.91	6.79	18.13	21.34	6.10	15.23
Man and services	23.49	11.13	12.37	34.08	15.06	19.02
Signif. (Test *F*)	16.64***	16.36***	8.02***	28.63***	19.60***	26.99***
Regional players' specialization						
Other sectors	17.35	6.56	10.79	21.83	9.51	12.32
Services	11.47	5.02	6.45	12.46	6.21	6.25
Manufacturing	13.64	3.80	9.85	8.10	2.21	5.89
Man and services	18.39	9.55	8.85	23.70	11.35	12.36
Signif. (Test *F*)	1.89	2.39*	1.57	3.36**	2.52*	3.32**

***,**,* implies significance at 1, 5 and 10% respectively
Source: authors' calculations on FDIRegio database

Therefore, structural transformations, driven by globalization, matter for the location choice processes of MNEs. This was not the case in the late 1990s, when regional players with strong specialization in open sectors were able to attract extra-European foreign manufacturers and foreign service providers.

This observation further reinforces the previous considerations concerning the difference in the perception of regional differences between extra- and intra-European foreign firms and the intertwined nature of globalization and the European integration process.

A final look at a more disaggregated classification of both manufacturing and service sectors shows how globalization is shaping the European economy. As illustrated by Table 5.3, capital-intensive manufacturing sectors are unevenly

Table 5.3 The distribution of FDI across types of regions by open sectors (2005–2007)

All FDI	Local players	Regional players	Global players	Signif. (Test *F*)
Wood and wood products	1.49	2.11	1.03	0.43
Oil refinement and chemical products	1.80	2.90	6.57	18.44***
Rubber and plastic products	1.53	2.25	2.93	1.48
Transport equipments	0.93	1.90	2.23	6.15***
Other manufactured products	1.67	2.63	3.87	1.74
Wholesale and retail trade	21.74	34.78	126.58	4.47**
Hotels and restaurants	2.42	3.25	6.79	1.44
Transportation and communications	3.65	6.61	21.41	9.25***
Finance and insurance	0.73	2.80	20.57	11.21***
Real estate and renting	3.35	5.98	27.75	7.10***
Business services	12.45	29.76	160.43	12.19***
Education	0.13	0.32	1.13	9.30***
Heath and social works	0.34	0.91	2.69	5.42***
Other social & pers. service activities	1.95	3.64	17.34	7.53***

***,**,* implies significance at 1, 5 and 10% respectively
Source: authors' calculations on FDIRegio database

distributed across regions, with a strong preference for global regions, while more traditional labor-intensive manufacturing sectors spread more equally across global and non-globalized regions. By contrast, the spatial distribution of FDI in service sectors is more unbalanced in favor of global regions. These trends are mainly driven by intra-European FDI, while extra-European foreign firms, as expected, concentrate on global regions.

The above analysis suggests that different kinds of foreign firms may share the same spatial distribution. In order to understand the intensity of these relationships, we performed a principal component analysis on the main categories of foreign firms, i.e., extra- and intra-European foreign firms operating in service and manufacturing sectors. The results, plotted in Fig. 5.1, suggest that common factors, summarized by component 1, explain large part of FDI location patterns. However, there are interesting differences between manufacturing and service FDI (component 3) that warrant further investigation.[12]

A more disaggregated analysis shows that patterns of location may also differ within manufacturing FDI and among manufacturing and service FDI (Fig. 5.2). In particular, we observe similarities between medium–high and high-tech FDI and between medium–low and low-tech FDI. As regards foreign firms operating in services, these seem to follow FDI in high-tech manufacturing sectors (component 2),

[12]According to principal component analysis, common factors explain 85% of the sample variance, while factors specific to either intra- or extra-European FDI account for another 11% of variance. Another 3% can be explained by differences between manufacturing and service FDI. The complete results are set out in Annex 5.1 to this chapter.

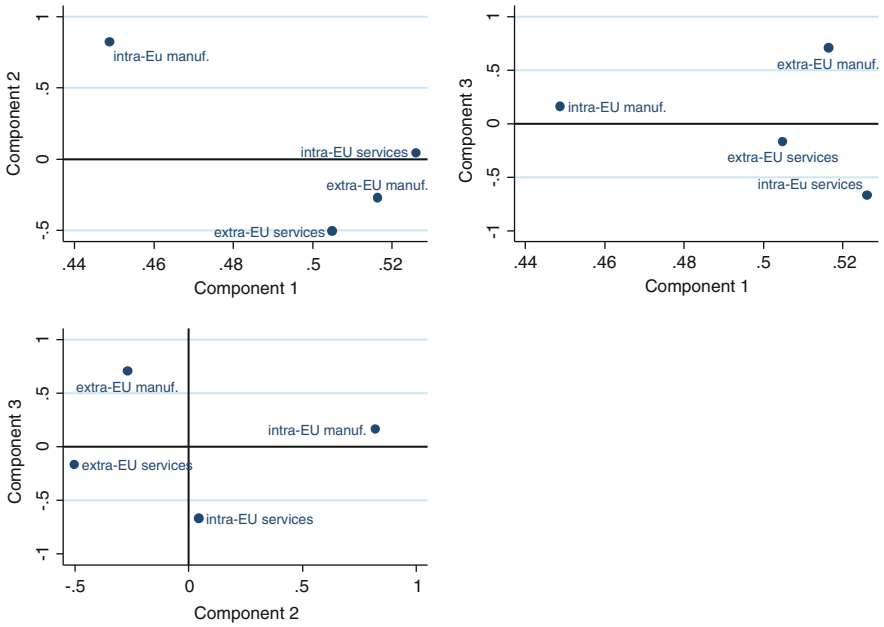


Fig. 5.1 Patterns of location of intra- and extra-European FDI: a principal component analysis
Source: authors' calculations on FDIRegio database

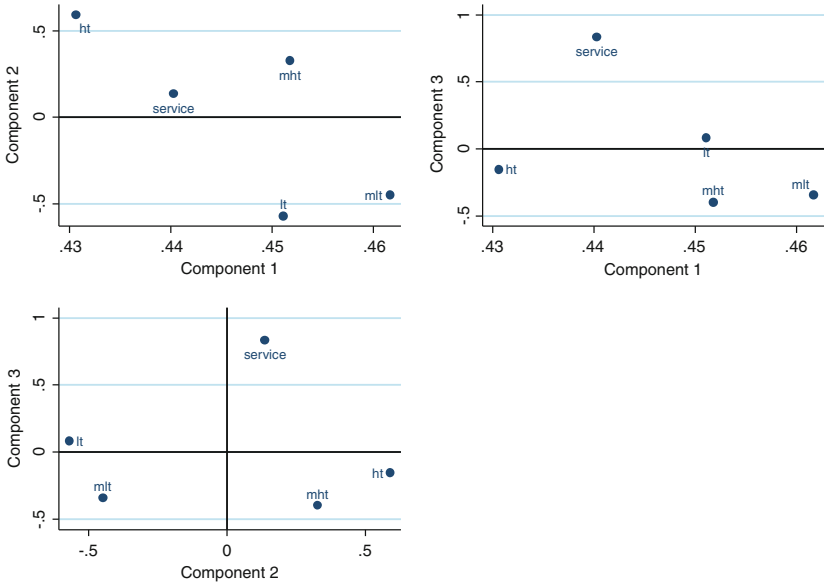


Fig. 5.2 Patterns of location of manufacturing and service FDI: a principal component analysis. *Abbreviations*: *ht* high-tech sectors, *mht* medium high-tech sectors, *mlt* medium low-tech sectors, *lt* low-tech sectors
Source: authors' calculations on FDIRegio database

while component 3 indicates a weak association with low-tech FDI. These results may suggest that location patterns of foreign firms in services are conditioned by a follow-the-client strategy. Chapter 7 will shed more light on these issues.

5.3 New Forms of Globalization Trends

5.3.1 Relocation of Functions and Tasks

Globalization brings with it important processes of relocation of production. Today, the best way to capture these trends is no longer the industry level, since competitive gains are based on the intra-industry reallocation of resources more than on inter-industry reallocation. The offshoring and outsourcing of phases of functions add to the traditional offshoring and outsourcing of entire functions, and they become routine corporate strategies with which firms seek productivity gains. Firms and sectors are no longer the finest level at which the impact of globalization can be analyzed; the functional specialization of regions is more efficient than industrial specialization in capturing the regional ability to compete amid globalization. The data that furnish the most detailed insights into regional functions are those on professional status collected by the European Union's European Labor Force Survey (LFS) and classified at regional level.

Table 5.4 shows the evolution of high-level professional status grouped according to the typology proposed by Erikson, Goldthorpe, and Portocarrero in 1979

Table 5.4 Evolution of high-level professions by type of regions

	Types of regions	Evolution of the share in high level professions (percent) 2000–2006	Share of absolute growth in high level professions by type of regions (percent) 2000–2006	Evolution of the share in high level professions with respect to national average (percent) 2000–2006
NEW 12	Global players	4.2	6.1	2.3
	Regional players	2.5	7.9	−0.2
	Local players	1.3	0.9	−1.4
OLD 15	Global players	3.1	38.0	0.0
	Regional players	2.5	24.3	−0.1
	Local players	3.3	22.9	−0.3
Europe	Global players	3.3	44.1	0.4
	Regional players	2.5	32.2	−0.1
	Local players	3.1	23.8	−0.4

Source: authors' elaborations on Erikson, Goldthorpe and Portocarrero's 1979 typology of professions

(Erikson et al. 1979).[13] The results show that the highest attractiveness of high-level professional status over the period 2000–2006 was recorded by global regions. In relative terms with respect to the national average, this holds in both Western and Eastern European countries; global regions record a growth rate of high-level professions higher than in the other kinds of regions. In absolute terms, the growth of high-level professions is more pronounced in global regions in Eastern countries (4.2% growth rate), while global regions in Western countries record a similar growth rate than that of local players (Table 5.4). In the latter, in any case, the share of absolute growth is registered in global regions (38%, in comparison to 22.9% for local players and 24.3% for regional players).

Global players seem to be those that attract high-level professionals to a greater extent than the rest of the national territories. A more detailed and disaggregated analysis of the dynamic patterns of functional specialization is useful in detecting the spatial trends in functional relocation.

The evolution of individual professional status (at 1, 2, 3 digit ISCO-88 International Standard classification code of jobs) is analyzed for the three types of regions set out in Fig. 5.3.[14] The selection of professions to be analyzed is based on the results of the Anova testing presented in Chap. 4; those that proved to be statistically significantly different among types of regions are depicted in detail in Fig. 5.3.

Global players have a larger share of corporate managers (Isco 12), which is indicative that they carry out *command and control functions*. Transnational headquarters find their most natural location in these regions, and this pattern is reflected in the command functions of all corporations. The change in corporate managers does not exhibit a significant pattern, even if it registers an increase in all types of regions, because of the increasing importance of coordination with respect to production activities.

Another important factor for regional competitiveness is the ability to undertake the *highest phases of the production processes*, those which need more skilled workers and produce higher value added. Inspection of the data on scientific professionals shows that also in this case these high-professions are significantly more common in global regions. Moreover, they are constantly increasing in global regions, while the increase in regional players and the other regions is a more recent trend.

The highest production phases require sufficient technology and innovation located in the region. Given the impossibility of disentangling private from public researchers in the labor force survey, we analyzed university researchers, whose presence is often considered necessary to complement in-firm R&D. Also this occupation is significantly more present in global regions taken as a whole.[15] Its increase, on the contrary, is a pattern common to all European regions.

[13]In 1979, Erikson et al. propose merging "higher-grade professionals, administrators and officials, managers in industrial establishments" to form a high-level profession category.

[14]For the specifications of the professional types, see Annex 5.2 to this chapter.

[15]The tiny size of the sample precludes reliable results for individual regions.

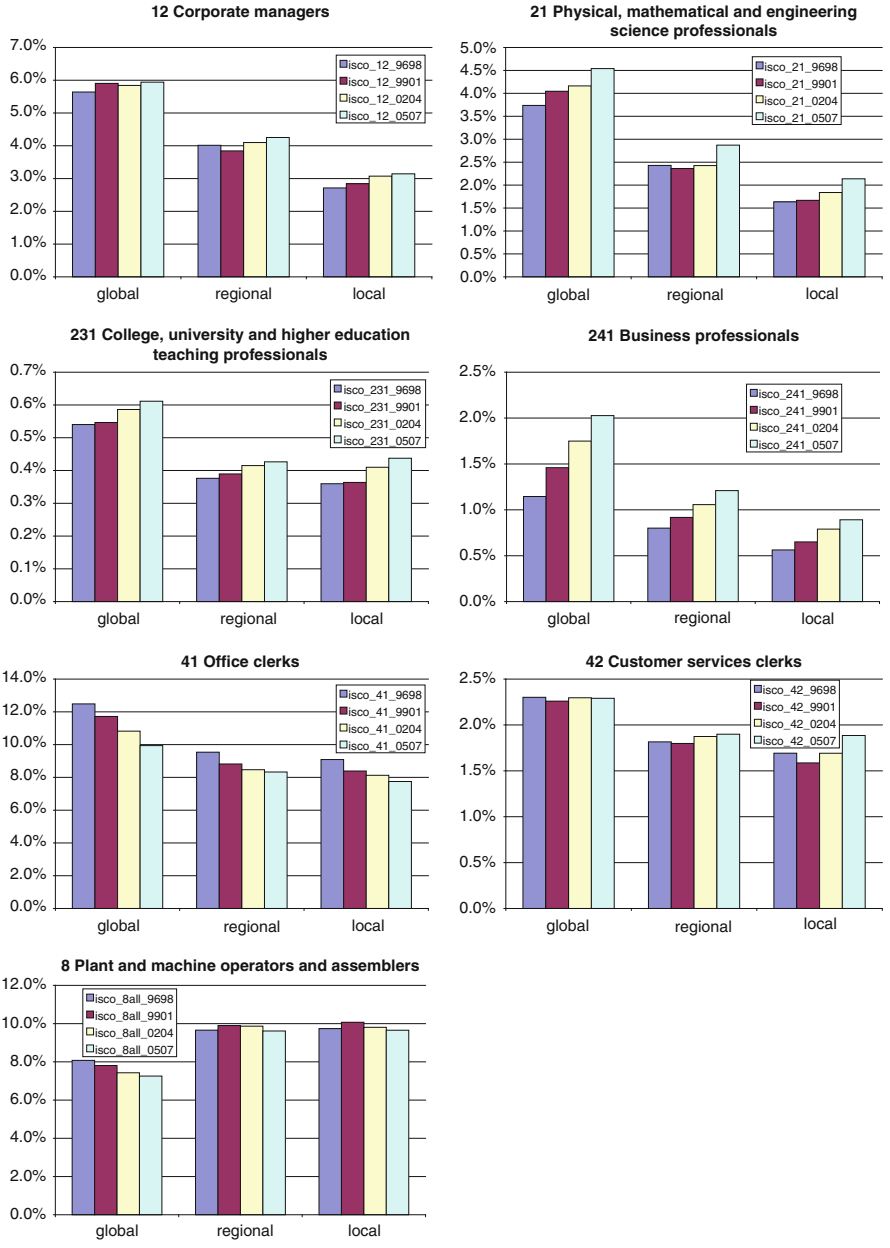


Fig. 5.3 Regional shares in selected professions – 1996–2007
Source: authors' calculations on labor force survey ISCO-88 data

Chapter 3 also evidenced the importance of *related service activities* for the growth of core regional productions. In the labor force survey, these functions were proxied with business professionals. These occupations are not only considerably more widespread in global regions but they are also increasing at a statistically significant and faster pace in those regions.

A different role is played by the lower-classified white-collar jobs. These can be measured in terms of office workers and customer service workers. Both are significantly more common in global players because of the higher incidence of services in those regions. However, white collar jobs are decreasing throughout Europe, being replaced by other, higher value-added professions, and this pattern is stronger in global regions. As regards customer service workers, these are overall quite stable, but recently increasing in other regions. These regions, therefore, are probably attracting these low-scale functions owing to lower labor costs and the increasing simplicity of telecommunications.

Significant differences are apparent in the shares of blue collars. These are much less widespread in global players (which are more tertiary and which, in manufacturing as well, apparently tend to keep the command functions and delegate the production phases). The dynamic is also significantly different: compared with a nearly stable pattern in regional players and other regions, global players exhibit a significant decrease in blue collars, signaling that they increasingly delegate the production phases of manufacturing.

5.3.2 Deindustrialization and the Rising of the Service Economy

As mentioned in Chap. 3, globalization is generally associated with a shift to services often involving an outright deindustrialization process, which implies not simply that industrial employment decreases but that industrial employment losses are associated with industrial productivity losses, with a decline in industrial GVA in real terms. For this reason, analyses of employment, GVA, and productivity must be performed simultaneously.

Analyzing the trends of these variables from a globalization perspective is not easy because, besides global forces, these trends are also pulled by local endogenous ones. We are not therefore able to determine *ex-ante* the extent to which they take place because of the global or the local push. However, as in the rest of the chapter, it will be possible to show that deindustrialization and the shift to services take place differently in regions with different exposures to globalization, and in particular in the three groups identified in Chap. 4.

Figure 5.4a shows the patterns followed in the period 1995–2005 by the three main indicators of regional growth, namely, employment, productivity, and value added, for the three types of region: the global players, the regional players, and the local players. Only two of these indicators are really independent, and data on the third of them have been obtained by combining the other two.

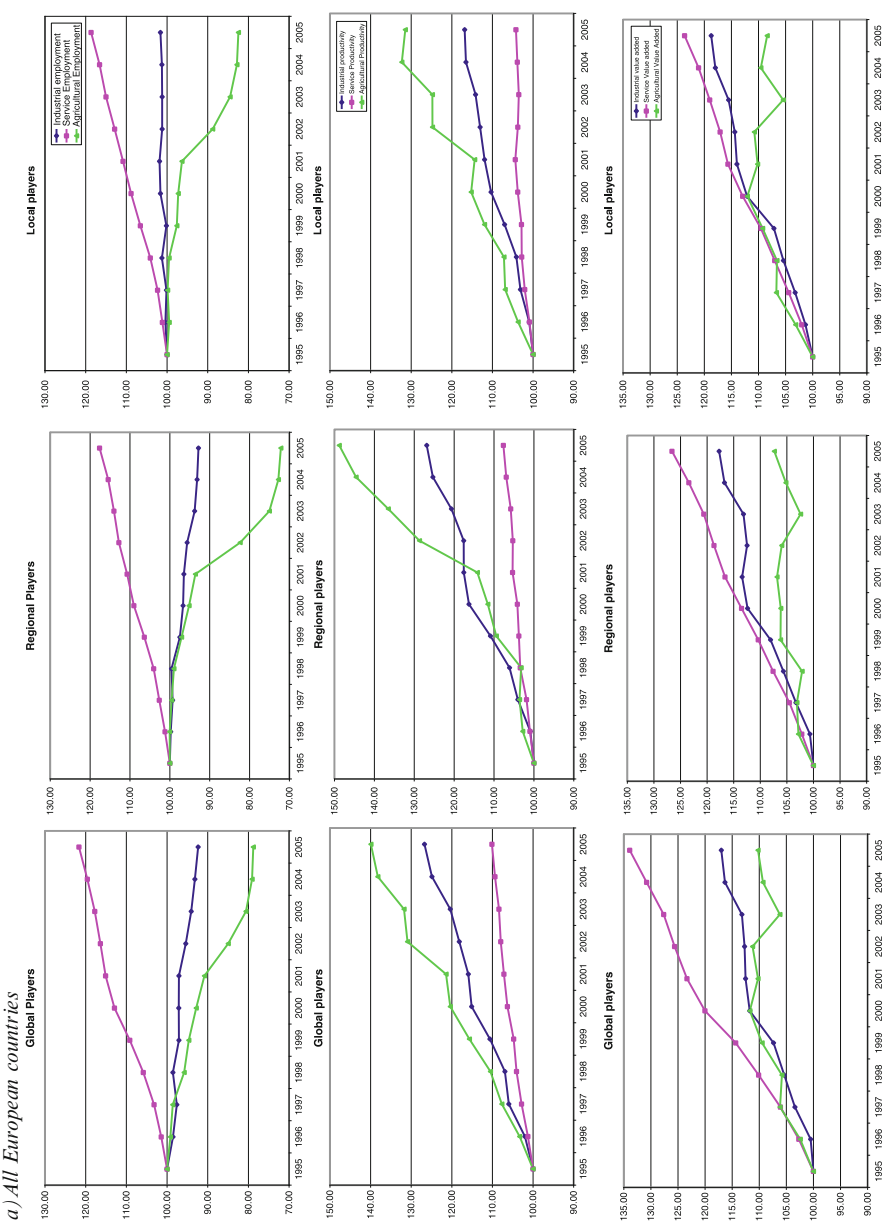


Fig. 5.4 Globalization trends in different groups of regions
Source: authors' calculations on Eurostat data

b) Old 15 member countries

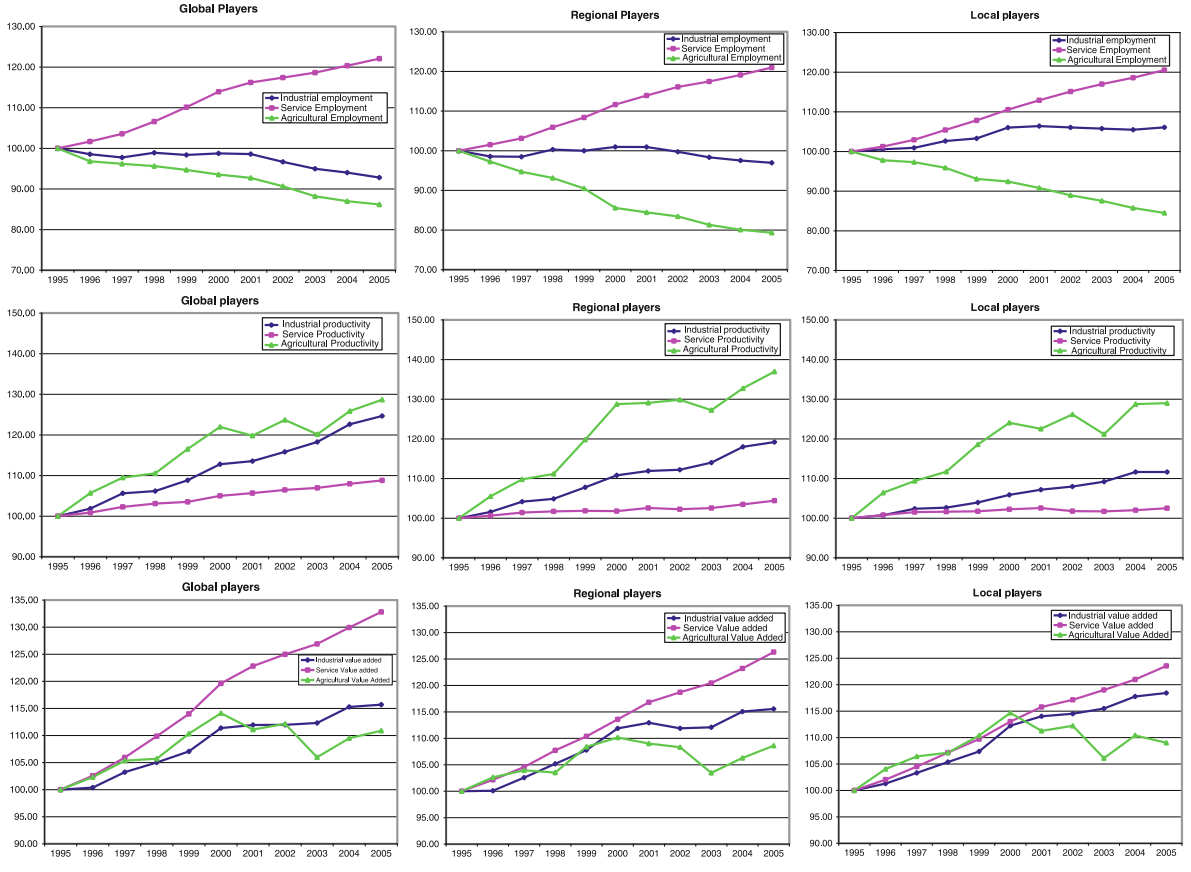


Fig. 5.4 Globalization trends in different groups of regions
Source: authors' calculations on Eurostat data

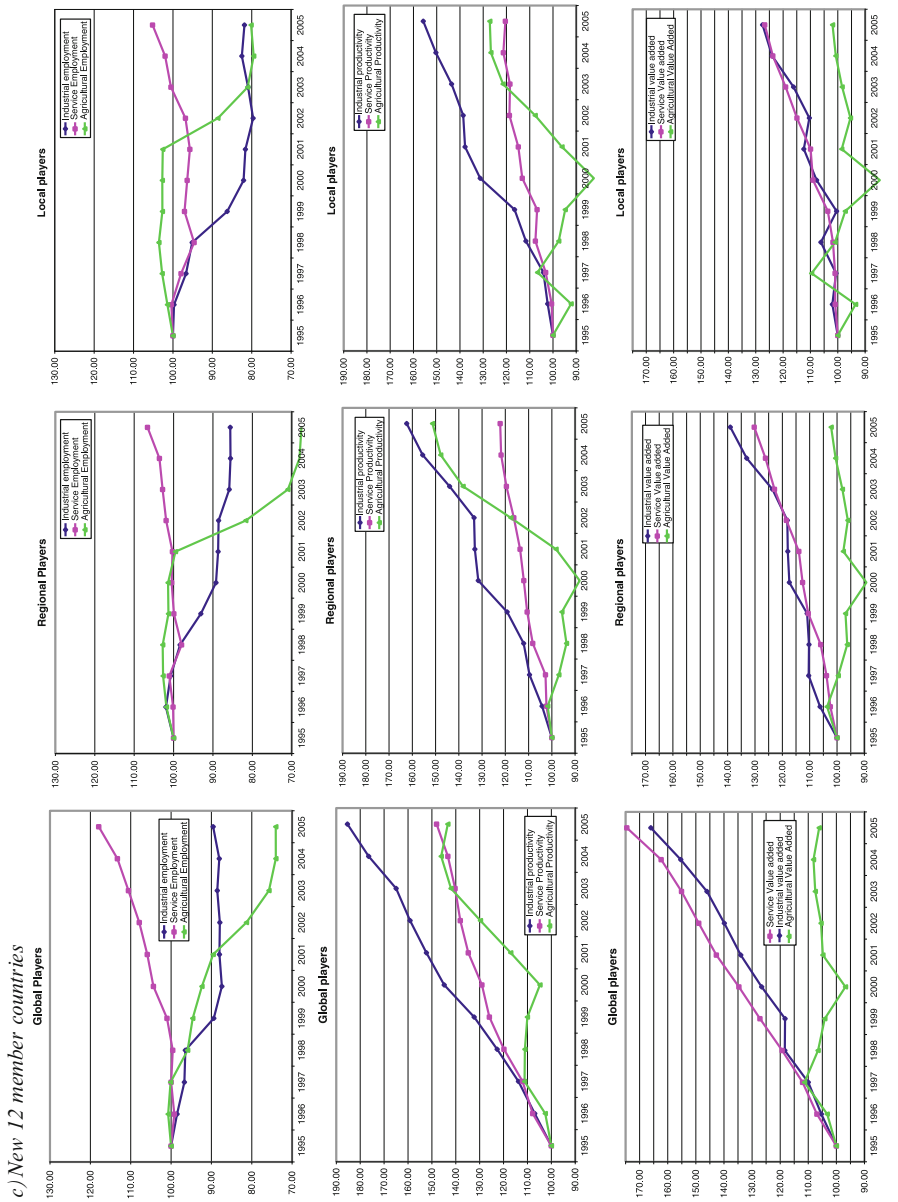


Fig. 5.4 Globalization trends in different groups of regions – Continued
Source: authors' calculations on Eurostat data

Each indicator is represented separately for manufacturing, services, and agriculture, in order to capture the different patterns followed by the macro-sectoral activities of the economy. All patterns are represented as indices with year 1995 used as numeraire and set to 100 in order to allow comparisons between different regional groups and different variables. Figure 5.4b, c replicate the analysis for the Old 15 member states and the New 12, respectively.

Employment growth exhibits a clear shift to service activities: employment has rapidly grown in services, whereas employment in manufacturing has grown much more slowly and has often decreased. The same negative dynamics is apparent in the agricultural sector, although the trend seems to be affected by some data inconsistency, given the sudden strong downturn in 2001. Moreover, service employment growth has increased earlier and more markedly in global players, whereas the growth among regional and local players is substantial but less marked.

Manufacturing employment, by contrast, has decreased in both global and regional players, and at a comparable pace. Specializing in open growing sectors, therefore, is not enough to maintain manufacturing employment levels. Manufacturing employment has remained substantially stable in local players compared with global and regional players. It is likely that this employment stability can be explained by the locally protected nature of local player's markets with respect to the other regions, at least before the recent economic crisis, which has inevitably hit all local economies via a generalized decrease in local demand.

The gap between the service and manufacturing employment indicators may represent the shift to service activities of the regional economies; it is evident that this is much stronger in global players than in regional players, and even more so with respect to local players. We can therefore assume that a shift in the globalization process toward the services sector in the European economy is indeed taking place, and that it is affecting global regions much more than the others.

The second line of Fig. 5.4a represents productivity growth. First to be observed is that, in European regions of all types, manufacturing productivity has been growing more than service productivity. The slow growth of productivity in services – the sector accounting for almost all employment growth – signals that there is an ongoing process of manufacturing restructuring, and that the service sector also acts as a channel for job creation.

However, this increase takes place especially in low-quality jobs, at the expense of productivity gains. This is supported by observation of the agricultural sector, where restructuring is strongest, and the decrease in jobs induces high productivity increases, but total value added decreases.

Productivity increases have been larger in global players both in services and manufacturing. Manufacturing productivity has also grown rapidly in regional players which are specialized in open growing sectors, whereas productivity increases have been consistently lower in the other regions, signaling that, at least apparently, globalization forces are drivers of productivity increases either because of technological transfer or because of the competition that compels the most open regions to react by increasing productivity.

The third line of Fig. 5.4a represents the patterns of value added. These patterns can be simply obtained by multiplying employment and productivity patterns; they are nevertheless interesting because they make it possible to understand whether some effects are purely statistical or whether they hide important economic trends. In fact, productivity increases can be obtained by cutting the less productive jobs, and in this case total value added would also decrease. However, it is also possible that, owing to technological or organizational innovations, the restructuring process can yield higher total value added with lower employment levels.

It is the second possibility that appears to apply in manufacturing, in both global and regional players: total value added has increased due to productivity increases and despite employment decreases. Globalization forces may have played a role in this regard. Despite the same increase in total value added, the pattern followed by the other non-global regions is completely different: much lower productivity increases, and a maintenance of, or even an increase in, employment levels. Local players, de-specialized in open growing sectors, have therefore been the collectors of lower manufacturing production phases, whereas the most open regions have had to shift to phases with higher value added, and to cut and delocalize the lower phases.

The patterns exhibited by services are much simpler: global players have grown faster in both employment and productivity, so that also their total value added has grown more than in any other group of regions. There follow the regional players, which have had slower service employment growth and service productivity growth, implying lower total value-added growth. Local players record even lower value-added growth due to much lower productivity and employment growth.

Hence, global players appear to have benefited from their position and socio-economic structure in order to develop their service activities to a greater extent, especially by capturing larger shares of the economy in this sector and the higher value-added functions. The other regions, by contrast, have experienced lower service employment growth, limited to the lowest value-added functions, those that can be more easily decentralized.

To evidence possible differences between the two main areas of the European Union, the same analysis was performed separately for regions belonging to the 15 old member countries and to the 12 new member countries. These results are presented respectively in Fig. 5.4b, c.

While the trends followed by regions belonging to the 15 old member countries (Fig. 5.4b) are almost identical to those of the EU as a whole, owing to the much larger weight of these countries in terms of population and economy, some differences emerge in regard to the trends in the 12 new member countries (Fig. 5.4c).

The first trend in regional economies is lower employment growth in services, for all groups of regions, and in particular for regional and local players, where the shift to service activities appears to be still a recent and not particularly significant process (Fig. 5.4c, upper part). The second difference concerns the loss of manufacturing employment, which is slightly larger in the 12 new member countries than in the 15 old member countries for global and regional players. But for the local players, which in the West have maintained their industry

employment levels, there is a decisive decrease in industry employment. The third difference concerns the loss of agricultural employment, which is stronger in the East than in the West but remains stronger for regional players.

The patterns followed by productivity are even more markedly different in the East with respect to those in the West (Fig. 5.4c, middle).

As regards the patterns followed by industrial productivity, these are much steeper in the 12 new member countries than in their 15 old counterparts. This applies in particular to Eastern global players, which not only outperform Western global players but also considerably outperform Eastern regional players, whereas Figure 5.4b shows a much more similar pattern between Western global and regional players. Also in the East, however, local players are the worst performing in terms of industry productivity, which leads to the conclusion that the process of manufacturing restructuring in Eastern regions has been closely linked with globalization.

Also service productivity has grown to a much greater extent in the east than in the west in the 10-year period of analysis (Fig. 5.4c), and in this case too, this process has been much more evident in global players, whereas Eastern regional and local players are almost at the same level, although this is still larger than in the West. Services in the East, therefore, have not only been creators of employment but they have also contributed considerably to the increase in productivity.

Finally, albeit with kinks which raise doubts concerning the full reliability of the data, agricultural productivity has increased in the East more than in the West but less than in industry. In this case, it appears that the process of agricultural restructuring has been rapid in global and regional players, whereas lower productivity increases have been achieved by local players, where less employment has been lost.

The last indicator to analyze is value added (Fig. 5.4c): the growth of value added, in services and in manufacturing – but not in agriculture – has been much more rapid in the East than in the West of Europe.

In services and, unlike in the West, also in manufacturing, Eastern global players have considerably outperformed regional players, not to mention the other lagging regions. Global players in the 12 new member countries, therefore, have not only led their countries through a shift to service activities, they have also led them with manufacturing growth, something which has not happened at all in the 15 old global players, which on the contrary have outperformed the rest of the regions only in services.

The last difference concerns regional players, which in the west have shifted to services whereas those in the east have grown more in manufacturing than in services.

5.3.3 Decentralization of Intertwined Functions

Another form assumed by globalization is the decentralization of intertwined functions, which applies especially to innovation and production functions, as

shown in Chap. 3. An empirical analysis of this macro-trend requires investigation of the patterns followed by regional functional specialization; in particular, the main empirical question is whether functional patterns are strictly linked with each other, so that one can expect that regions which increase their specialization in some functions will also generally increase their specialization in other functions more closely linked with the former.

Analyzing a large number of functions in several regional types is not straightforward. An exploratory correspondence analysis, using the presence of labor performing the various functions in the various types of regions in 2002–2004, will be a useful starting point. The evolution of professions in the three regional types will then be depicted.

Used as proxies for the functions are a number of professions covered by labor force surveys and selected on the basis of two criteria: their capacity to represent functions, and their statistical significance. The professions selected are therefore the same as in Fig. 5.3 plus public managers, managers of small enterprises, scientific professionals, retail workers, and craft workers.

As for regions, the three types developed in Chap. 4 have been used. Each of them has been divided between regions belonging to EU15 and the 12 new member countries in order to disentangle the differences between the two groups of countries.

The results of the correspondence analysis of occupations in regional types are shown in Fig. 5.5, which reports the two main dimensions, accounting for 84.17 and 13.01% of the inertia, respectively (see Annex 5.3). The first and most important dimension can be read in terms of advanced service functions versus lower value-added manufacturing functions. The second dimension appears to be mainly linked to a divide between large firms corporations and small firms craft activities.

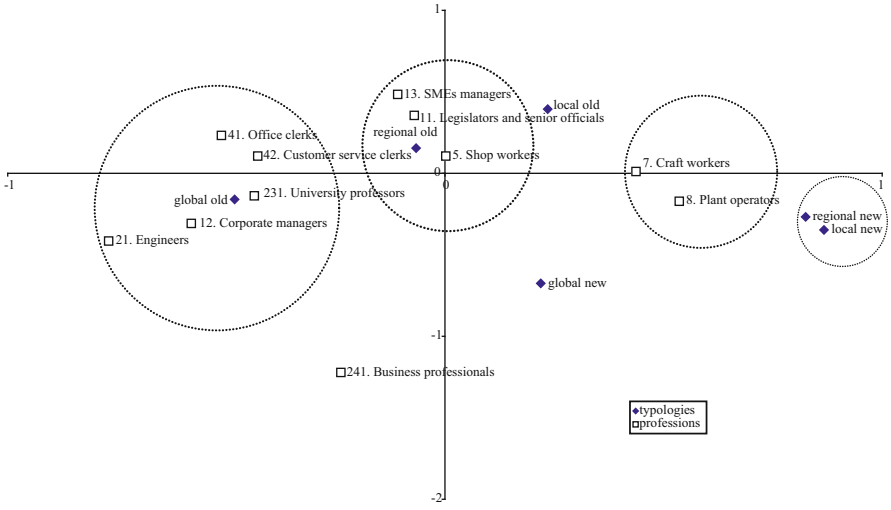


Fig. 5.5 Functional specialization and regional typology: a correspondence analysis
Source: authors' calculations on LFS ISCO-88 data

It is interesting to observe that different regional types appear to cluster with different occupations. In particular, there is an evident cluster linking global players in the EU15 with some advanced functions connected with innovation, i.e., corporate managers, university lecturers, and scientific professionals. Global players in the West are also closer than any other regional type to mid-level service professions, namely office workers and customer service workers.

By contrast, regional players in the EU15 countries are characterized by functions at a lower level in a knowledge economy, i.e., managers of SMEs, public managers, and retail workers.

Global players in the 12 new countries are less characterized by high value functions and not dissimilar from local players in the EU15 along the first dimension. However, these two categories lie midway between tertiary and manufacturing functions, and both are distant from regional and local players of the 12 new member states, which appear to be very close to each other and distant from any professional status with the exception of craft workers and blue collars, two professions which appear to have a close correspondence.

Finally, business professionals appear to be distant from any other function or any regional type on the second dimension, but have the highest correspondence with global and regional players in the EU15 countries along the first dimension.

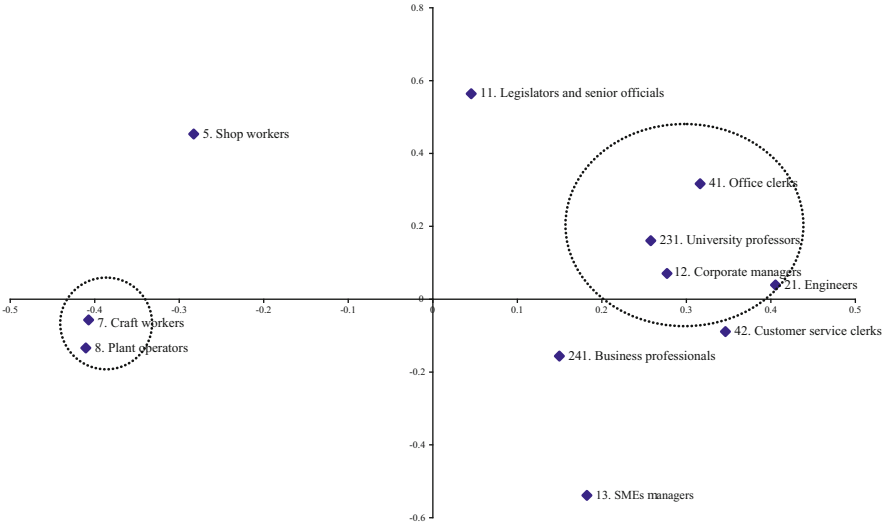
When analyzing the relocation of functions and tasks, however, the static picture of the professional characterization of regions is not enough, more important is the evolution of functional specialization in time.

The data for this analysis are the changes in the regional shares of workers in the various functions over the period 2002–2004 vs. 2005–2007, data which are more complete with respect to the previous periods and hence more reliable for use in differences. Although not orthogonal, these changes are clearly correlated. By definition, all shares always sum to one, so that, in a region, an increase in one share automatically implies a decrease in another. However, there are a large number of strong correlations between the functions, often with a positive sign, implying that the decentralization of intertwined functions also exists empirically. Reading these large numbers of correlations on a table is difficult. Hence, in order to capture the co-movements of the various functions overall and within the three types of regions, a principal component analysis was run to summarize the data and enable their graphical representation (the quantitative results of the PCA are presented in Annex 5.4).

For each of the three types of regions, two dimensions were detected as highly representative (eigenvalues of 2 or above) with sometimes a third dimension with an eigenvalue slightly above 1. For consistency, two dimensions were kept for all three types, and in the three cases they, respectively, represented 60, 41, and 47% of total variance. The results are shown in Fig. 5.6.

Figure 5.6a depicts the closeness between the path of the occupations/functions in global players along the first two components of the PCA. In global regions two distinct patterns of functional specialization (proxied by professional status) can be observed:

a) Global players



b) Regional players

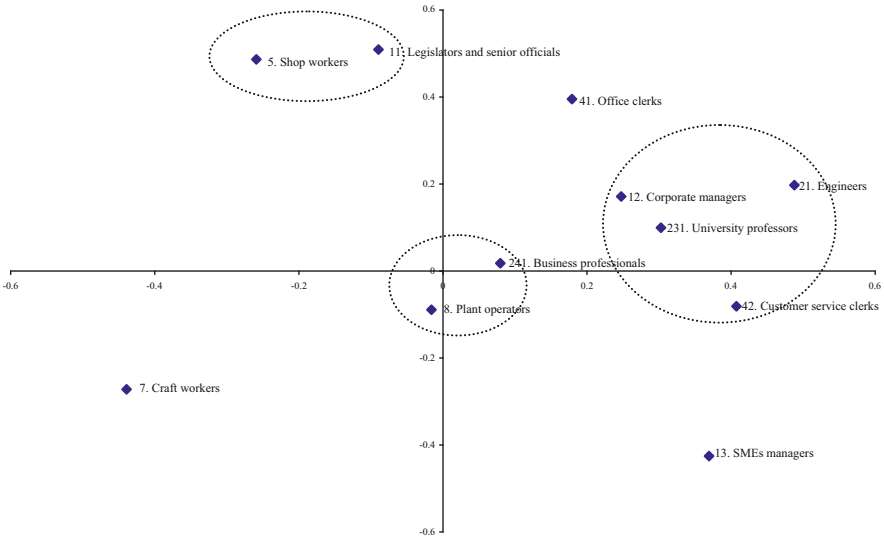


Fig. 5.6 Growth of intertwined functions by type of regions
Source: authors' elaborations on LFS data

c) Local players

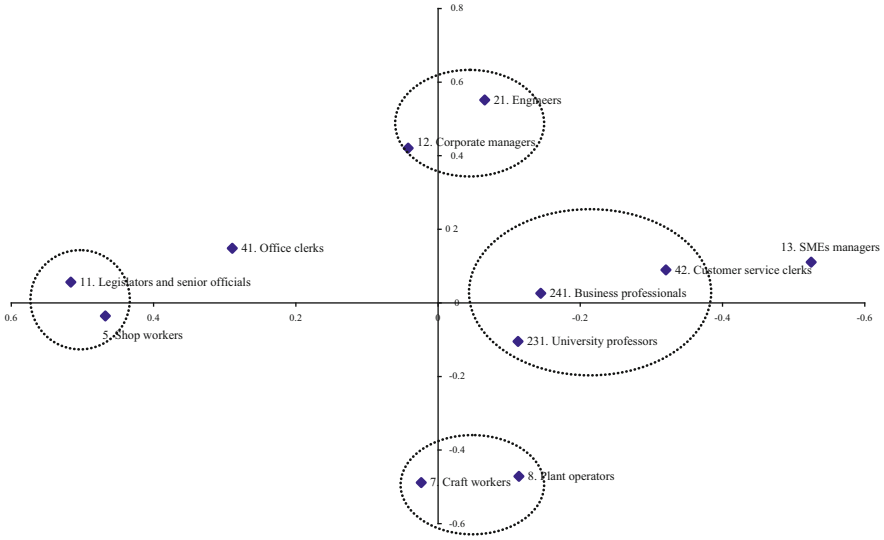


Fig. 5.6 Growth of intertwined functions by type of regions – Continued
Source: authors' elaborations on LFS data

– *A low-level and manufacturing functional (de-)specialization pattern*; in fact, the patterns followed by craft workers and blue collars are very similar, so that regions which have (de-)specialized in one of the two have also (de-) specialized in the other one. This result may signify that strong global regions are shifting their economies toward higher value-added functions while weak global regions are maintaining low-wage employment in these sectors, rather than a trend in which functions are intertwined.
– *A high-level and service functional specialization pattern*. A number of service functions, often relatively advanced, including business professionals, corporate managers, university lecturers, office workers, customer service workers, and scientific professionals (Isco 21) appear to be interrelated with each other. In this case, it is more likely that these functions are intertwined because corporate managers, science professionals, and business professionals are all related to large enterprises.

Apparently less related to the other functions are the patterns exhibited by public officers, managers of small enterprises, and retail workers. These results depict a sort of functional specialization tendency of global regions in Europe either toward service and high-level activities or manufacturing and low-level activities.

A completely different picture is apparent in regard to regional players (Fig. 5.6b): in these regions different functional specialization patterns emerge with respect to global regions, viz.:

- A *production and related service specialization pattern*, whereby blue-collar functions (plant operators) are intertwined with business service functions: the patterns of blue collars and business professionals are closer together. In these regions, production tends increasingly to locate in areas where business services are present, or to re-locate together with business services
- A *high-level functional specialization pattern* emerges also in regional players, since the patterns followed by corporate managers, university lecturers, scientific professionals, and customer service workers are similar and intertwined as in the case of global players. This is probably the pattern followed by regional players with strong urban settlement structures
- *A consumer service specialization pattern* is exhibited by public managers who appear to be related to retail workers. In this case, more than to intertwined functions, this pattern appears to be linked to the Keynesian demand-side multiplier effects of public employment

The patterns of small enterprise managers appear to be quite unrelated to any other, as in the case of global players; but in this case also unrelated is the pattern of retail workers.

Less clear functional specialization patterns emerge in the case of local players (Fig. 5.6c), where the following specialization patterns are apparent:

- A *consumer service specialization pattern,* as in the case of regional players. In this case, public managers still seem to be related to retail workers, as the consequence of a demand effect linked to public employment
- A *high-level functional specialization pattern* regarding activities related to innovative large business, which are intertwined as in all other cases. In fact, private innovative activities, expressed by scientific professionals, tend to co-move with command and control functions as expressed by corporate managers
- A *medium-low level service functional specialization pattern* comprising blue-collar workers, business professionals, customer service workers, and university lecturers. This is unlikely to be the result of intertwined functions and is more probably due to the presence in some local players of higher education institutions.

The closeness between intertwined service and blue-collar functions appears to be a characteristic unique to regional players because, for local players, as for global players, retail workers and blue collars go together and are unrelated to any other function.

The analysis of macro-trends could only be developed from a purely descriptive and macro perspective. However, the macro-trends raise some issues which will be investigated more deeply in the next sections by determining the extent to which they are related to globalization, and the regions where they have the strongest impact.

5.4 Globalization Challenges for Local Economies

5.4.1 Some Methodological Aspects

As mentioned several times in this study, globalization imposes structural changes on local economies. The way in which regional systems are able to adjust to these structural changes determines whether or not a regional economy can gain advantages from globalization. The main challenge faced by regional systems is the achievement – through structural changes in the local economy imposed by the internationalization of production phases – of higher GDP growth rates, either through limited employment cuts or through productivity increases, or, in the best case, through an increase in both productivity and employment.

Globalization requires the spatial re-organization of production, and a search for locations endowed with knowledge, creativity and entrepreneurial spirit, labor-market flexibility, and the presence of relational and social capital, and also for locations where efficiency in production can be achieved through low labor costs. The challenge for local economies is to attract at the local level, or keep in loco if already present, the following:

(a) Core specialized manufacturing high-value functions while delocalizing low-value activities
(b) High-value service functions and tasks
(c) High value-added manufacturing activities related to core manufacturing activities
(d) Intertwined production/R&D functions.

The challenge for regional economies is to keep or attract high-value activities, avoiding simple quantitative substitution effects in the labor force between high and low functions, between manufacturing and low-level service activities, and between core specialised and general manufacturing activities.

The aim of this section is to show firstly whether regional economies in Europe have been able to meet these challenges, and whether this is particularly true for global regions. Owing to particular local asset endowments, some regions are expected to be better able than others to respond to these challenges, as mentioned in Chap. 3. This section conducts an empirical analysis to determine whether the expectations concerning the most favored regions are correct.

The empirical analysis is descriptive in nature; no explanation can be provided as to why the challenges exist or the reasons why some regions appear to be more successful than others in meeting them. Simple correlations are run. Causalities will not be investigated at this stage but will be left for Chaps. 6 and 7.

Each of the four above-mentioned challenges (from a. to d.) will be approximated by a correlation between two variables: although we cannot infer any causality between them, their general correlation will imply the presence of a relationship (possibly spurious) between the two. One variable, a structural one (in levels), will be lagged with respect to the other, which is a performance variable

(in growth rate), so that it is less critical to infer something about their relationship. Maps on the spatial trends of two variables, reflecting, respectively, the structural changes in 1 year and the local performance in a subsequent period, provide a picture of the results achieved.

More interesting than investigating causalities is determining whether the challenges are linked to globalization and to what extent. As in the previous sections of the chapter, this test is conducted with an indirect method by describing that the challenges related to globalization are felt more strongly and/or significantly in those regions with greater openness to the international economy.

The availability of data on FDI makes it possible to test whether structural changes and their impact on local economies are stronger in the presence of higher FDI. If this is the case, it cannot be ruled out that the FDI channel is the one relevant to this type of challenge.

Finally, the analysis considers the favored regions and determines whether the regions conceptually assumed in Chap. 3 to be the best able to cope with some challenges more strongly than other regions are indeed those able to undertake the structural changes imposed by globalization in the most suitable way.

The analysis conducted in these subsections needs proxies to represent the various phenomena under investigation. In particular, three kinds of proxy are required to capture performance, functional regional specialization, and regions endowed with specific local assets – this last depicting favored regions. Performance is measured as an increase in productivity, either in the manufacturing or the service sector. The share of particular functions in the region is a proxy for the functional specialization undergone by the region in recent years. Data from the Labor Force Survey (LFS) are used to identify the functions within regions, assuming that professional statuses are good enough proxies for the functions that they have in the economy. Local specificities are depicted by means of specific variables capturing peculiarities of local areas, like the region's degrees of innovation, industrial shift and specialization, and its urban settlement structure. Table 5.5 summarizes both the trends analyzed and the proxies for each trend.

5.4.2 Relocation of Functions/Tasks and Productivity Growth

The first two challenges require the regional economy to attract, or keep if already present, high-level functions and tasks (see Chap. 3). In particular, the first challenge for regions facing globalization is to attract/accumulate core specialized manufacturing high-value functions and to delocalize low-value activities. If this challenge is tackled effectively, the regional economy prospers from the offshoring of the lowest phases and tasks and from the upgrading of the highest phases and functions.

In order to test whether this happens empirically, analysis was conducted of the relationship between the share of high-value manufacturing activities and the growth of industrial productivity. The results are presented in Table 5.6.

Table 5.5 Indicators, proxies and data sources

Trends	Proxies	Source of original data
Economic performance		
Manufacturing productivity growth	Annual average per employee manufacturing GDP growth	Eurostat
Private service productivity growth	Annual average per employee service GDP growth	Eurostat
Functional specialization in		
High value service functions	Share of corporate managers (Isco 12)	LFS
High value-added manufacturing	Share of physical, mathematical and engineering science professionals (Isco 21)	LFS
High value-added service activities	Business professionals (Isco 241)	LFS
R&D functions	Human resources in Science and Technology on population	Eurostat
Command and control functions	Share of legislators, senior officials and managers (Isco 1)	LFS
Favored regions		
Large urban regions	Agglomerated regions (in terms of density and presence of large cities)	ESPON database
Innovative regions	Regions with human resources in Science and Technology on population higher than EU average	Eurostat
Regions registering sectoral shift	Lawrence index of sectoral shift higher than the EU average	Igeat Matrix 1995–2004
Industrial regions	Location quotient of Sector D (manufacturing) higher than 1	Igeat Matrix 2004

At the European level there is no correlation between the two; but a positive correlation exists between the two variables for global players. One can argue that the increase in productivity signals a shift of global regions from the lowest to the highest tasks in the international division of labor brought about by globalization processes.

This finding is reinforced by the positive and significant correlation between specialization in manufacturing activities and growth of manufacturing productivity in regions with above-average FDI penetration; instead, no correlation is found between the same variables in those regions where FDI penetration is below-average.

Regions that are conceptually more inclined to attract and to keep high-level functions are those that exhibit an above-average ability to re-orient their production structure, moving from lower phases to higher phases of the production process while maintaining the same industrial specialization. This expectation is empirically confirmed because this challenge proves to be more important in regions with below-average industrial specialization shift. Regions which do not shift industrial specialization are the only ones for which there is a positive and significant correlation.

Looking at Fig. 5.7, it is evident that the favored regions, those with below-average sectoral reconversion, are less dispersed vertically and exhibit some

Table 5.6 Results of a correlation analysis

Challenges	General correlation	Correlation by group of regions			FDI		Favored regions	
		Global players	Regional players	Local players	FDI above the mean	FDI below the mean	Favored	Non favored
1 Share of high-value manufacturing activities and growth of manufacturing productivity	0.0116	0.2918*	−0.0662	−0.0662	0.3051***	−0.0621	0.2154***	0.0325
2 Share of high-level service functions and growth of service productivity	0.2645***	0.3410**	0.2594**	0.2594**	0.3770***	0.2235***	0.4933***	0.1403*
3 Share of high-value manufacturing activities and growth of manufacturing productivity	0.0116	0.2918*	−0.0662	−0.0662	0.3051***	−0.0621	0.2121*	−0.0544
4 High value-added service activities related to core manufacturing activities and growth of manufacturing productivity	0.3087***	0.4903***	0.1592***	0.1592	0.5140***	0.2975***	0.3949***	0.2800***
5 R&D functions and growth of manufacturing productivity	0.0648	0.5330***	0.1099	0.1099	0.3663**	−0.0223	0.3441***	0.0326

***,**,* implies significance at 1, 5 and 10% respectively

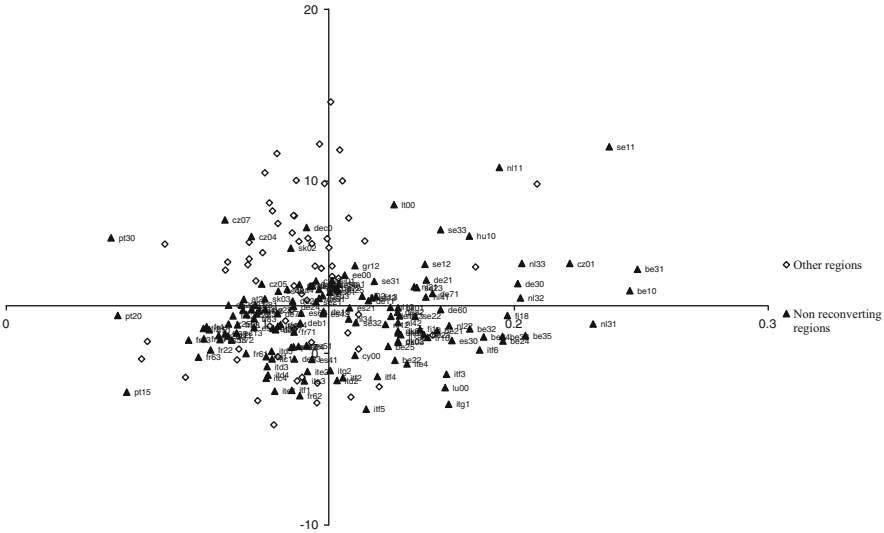


Fig. 5.7 Share of high-value manufacturing activities and growth of manufacturing productivity: non-reconverting regions
Source: authors' elaborations

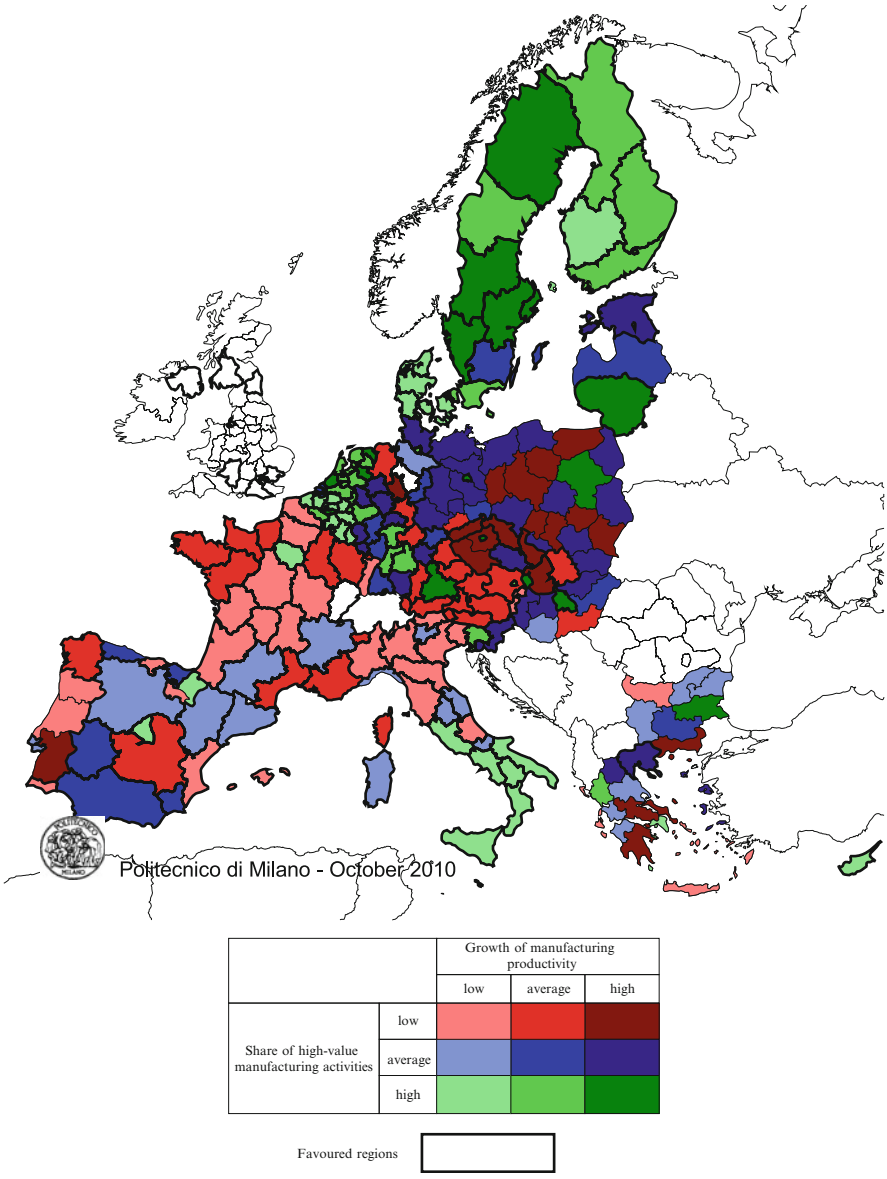
correlation patterns; the other regions show a lack of any correlation between the two variables.

Map 5.7 shows how the challenge to attract/accumulate core specialized manufacturing high-value functions and to delocalize low-value activities affects the various regions in Europe. It is first possible to observe from the map that high-value manufacturing functions are most present in Scandinavian countries, plus the former Benelux and the most agglomerated global regions of Central, Southern, and Eastern Europe. Somehow oddly, these functions are also concentrated in Southern Italy. The highest productivity growth rate characterizes Central and Eastern European Countries, including Eastern Germany, plus a number of Scandinavian regions.

Map 5.7 also shows that, among the favored regions, there is a prevalence of either regions with low high-value manufacturing activities and low productivity growth or regions with high-value manufacturing activities and high productivity growth, confirming that the challenge is important among the favored regions. Regions with low (high) specialization of high-value manufacturing activities and high (low) growth of manufacturing productivities are limited to some cases. With the exceptions of some regions in Southern Italy and Belgium, these cases do not generally belong to the "non-industrial reconverting" regions.

The second challenge for regions in a globalized world economy concerns their capacity to attract high-level functions and tasks rather than low-value-added ones.

Empirically, one observes a positive correlation between the share of high-level service functions and the growth of service productivity. Although it is not possible



Map 5.7 Share of high-value manufacturing activities and growth of manufacturing productivity among European regions

to demonstrate whether or not there is a causality, regions with a larger share of high-level service functions outperform those with smaller shares.

This correlation is stronger in global regions, although less so than for other trends. In fact, the correlation is positive and significant in all types of regions, but

higher among global players (Table 5.6). This challenge also appears to be present in those regions with higher FDI penetration, although in the case of this form of globalization, too, the correlation is positive and significant also among regions with lower FDI penetration.

Theoretically, this challenge is expected to be present in large urban regions. Highly specialised in high value service functions, these regions are in fact likely to be those able to cumulate high-value service functions attracted by cumulative learning processes, existing knowledge, and availability of specialized human capital. The results show that the correlation between high-level service functions and the growth of service productivity is much higher and more significant among large urban areas, although it also remains positive and significant among the rest of EU regions.

The relationship can also be observed in Fig. 5.8, which plots a blurred correlation overall, and also puts most of large urban regions, the favored regions, either in the first quadrant or in the third one. Moreover, large urban regions experience a large share of high-value service functions normally accompanied by a service productivity performance above the average of the European Union.

Map 5.8 shows that, in this case, national effects occur. However, there is marked regional differentiation within countries as well. Countries characterized by a greater presence of high-level service functions are those of Scandinavian and Northern Europe, including Belgium and the Netherlands, plus Hungary. Within countries, core and capital regions normally have larger shares of these functions, whereas more peripheral regions generally have smaller ones. Also noteworthy is

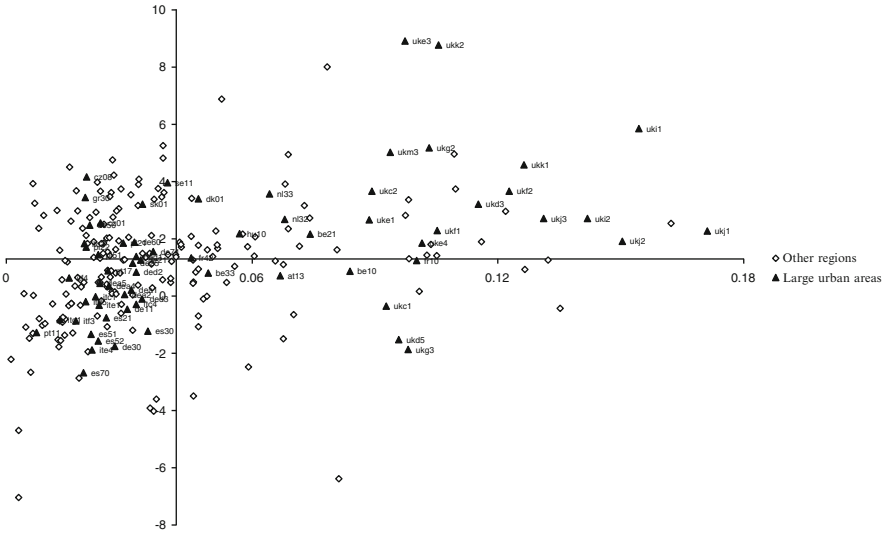
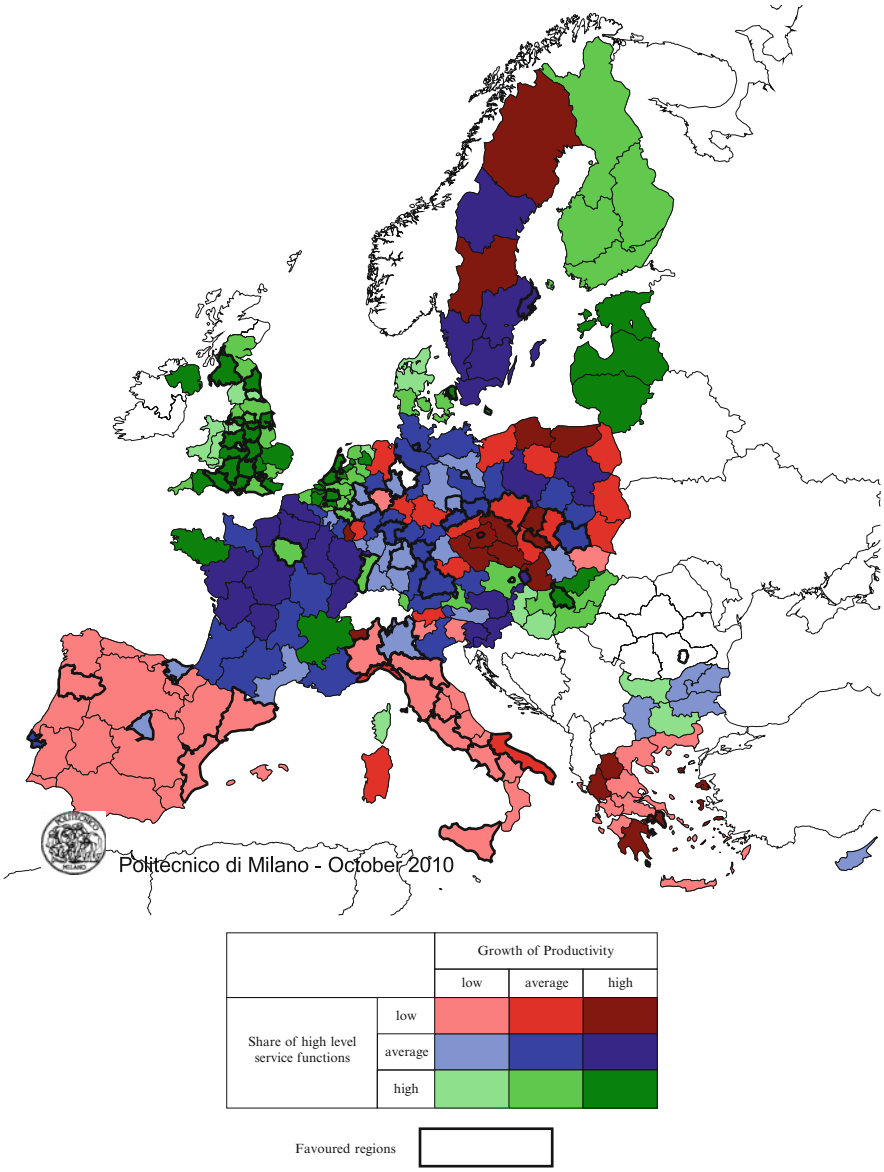


Fig. 5.8 Share of high level service functions and growth of service productivity: large urban areas vs. other regions
Source: authors' elaborations



Map 5.8 Shares of high-level service functions and growth of service productivity among European regions

the quite large number of regions with high-level service functions and high service productivity growth, especially among the favored regions, i.e., in this case large metropolitan areas. Conversely, there are a large number of regions with low

command and control functions which also have low productivity growth. This is especially the case among the favored regions, where only Athens and Prague have low high-level service functions – relative to the EU, not to their country – and high productivity growth. Cases in which high (low) functional specialization in high-level service functions and low (high) service productivity growth are very few, and especially so among large urban areas.

5.4.3 *Deindustrialization, the Rise of the Service Economy and Productivity Growth*

Two challenges are linked to deindustrialization and the rise of the service economy. The first concerns the re-orientation of production toward new growing industries and activities, and consists in the attraction/accumulation of high value-added manufacturing activities related to core manufacturing activities. In fact, regions with total deindustrialization are rarely successful in a global economy. However, the most successful regions do not abandon manufacturing completely but keep or attract the highest value-added phases of manufacturing, delocalizing the lower value-added ones.

Empirically, as already said in regard to the results for the first challenge, there is no significant correlation between the share of high-value manufacturing activities and the growth of manufacturing productivity at the level of all European Nuts-2 regions (Table 5.6). This challenge does not appear to be binding overall; when regions are exposed to globalization, linkage between the share of high-value manufacturing activities and the growth of manufacturing productivity becomes more important since there is a positive and significant correlation among global players. It consequently appears that, among the regions most exposed to globalization, those with larger shares of high-value manufacturing activities have been able to outperform – in terms of manufacturing productivity – those with fewer such activities.

This trend appears to be strictly linked with FDI, since there is no correlation for regions with below-average FDI penetration, whereas there is a positive and significant correlation for regions with above-average FDI penetration.

Regions specialized in high command and control functions are the favored regions for this trend to appear, and they are therefore expected to be the ones where this correlation is stronger. Empirically, in regions specialized in command and control functions there is a positive and significant correlation which is not present elsewhere (Table 5.6). This is confirmed by Fig. 5.9, where, amid the general dispersion, favored regions appear to exhibit a clearer positive pattern.

Map 5.9 depicts the same variables as Map 5.1, namely the share of high-value manufacturing activities and the growth of industrial productivity. However, Map 5.9 highlights a different group of favored regions, namely those with high command and control functions. It appears that there are a relatively large number of affected regions with either a large share of high-value manufacturing activities

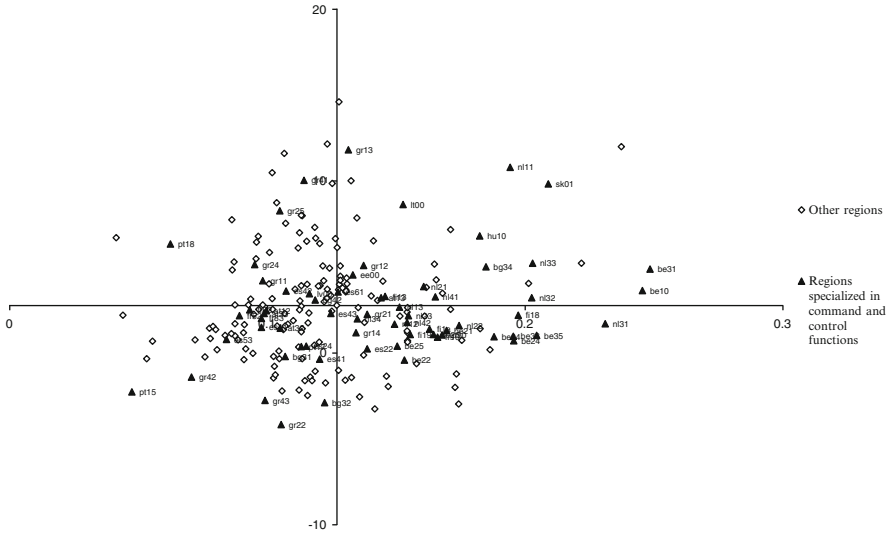


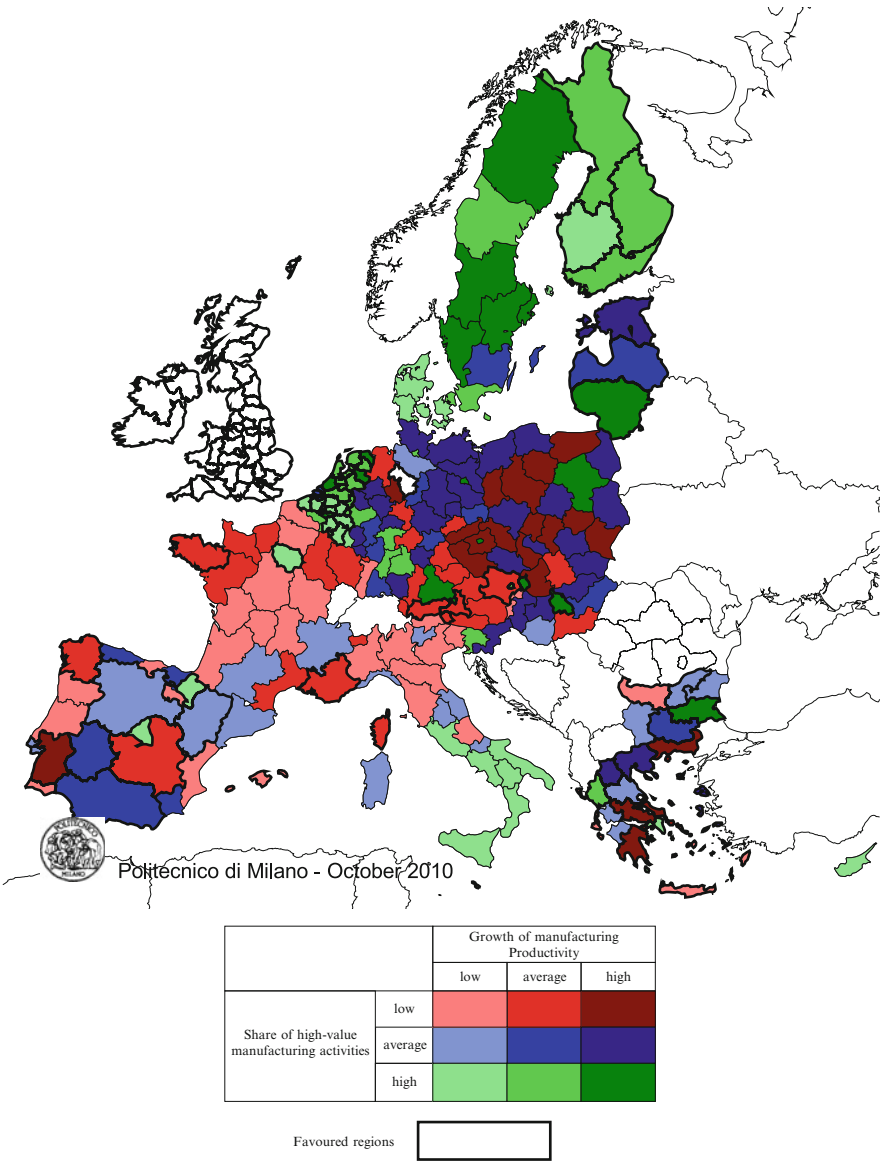
Fig. 5.9 Shares of high-value manufacturing activities and growth of industrial productivity
Source: authors' elaborations

and high growth of industrial productivity, or a small share of high-value manufacturing activities and low growth of industrial productivity. It appears from Map 5.9 that the cases in which the specialization in high (low) value manufacturing activities is related with a low (high) growth of industrial productivity are restricted to a few countries, especially Poland, Belgium, and Southern Italy. Only in Belgium, however, are these cases of regions that are expected to benefit.

The second challenge linked to deindustrialization and the rise of the service economy is the need to attract/accumulate high value-added service activities related to core manufacturing activities. The existence of advanced services specialized in local manufacturing activities clearly plays an important role in supporting the efficiency and effectiveness of manufacturing processes.

Of interest in this regard are the empirical results of a correlation analysis (with no proof of causal relationship) between high value-added service activities related to core manufacturing activities and the growth of manufacturing productivity. There is a positive and significant correlation for all European Nuts-2 regions, which suggests that service activities are important for regional performance in manufacturing. However, the challenge does not affect all regions in the same way; this linkage is stronger where globalization trends are stronger. In fact, the correlation is not significant among the local players, whereas it is positive and highly significant among both regional players and global players, with a higher coefficient among the latter.

Interestingly, the correlation of high-value-added service specialization and manufacturing productivity growth is not necessarily present in regions with



Map 5.9 Shares of high-value manufacturing activities and growth of industrial productivity: regions specialized in command and control functions

above-average FDI penetration levels. This suggests that regions traditionally specialized in services are the natural locations for service off-shoring; at the same time, a positive effect on manufacturing productivity growth is registered in

these regions. Urban industrial regions can be expected to be "favored regions" because they are territories where a positive linkage between service specialization and manufacturing productivity growth can more naturally occur. Table 5.6 shows that this expectation is confirmed: despite the positive correlation in all EU regions, it is stronger in the ones expected to be favored.

This result is depicted in Fig. 5.10, where, amid a somewhat blurred general pattern, favored regions appear to have on average a larger share of high-value-added service activities related to core manufacturing activities and also higher manufacturing productivity growth, which bears witness to a higher correlation.

Map 5.10 shows that the regions with a low share of high-value service activities related to manufacturing activities characterize the Mediterranean countries of Italy, Spain, Greece, France, and Portugal, with the exceptions of the capital regions of Rome, Madrid Athens, and Lisbon.

Conversely, high shares of high-value service activities related to manufacturing activities characterize a large number of regions in Central, Northern, and Eastern Europe, especially core and capital regions. Among the favored regions with low high-value service activities related to manufacturing activities, most regions have achieved very poor manufacturing productivity growth, whereas among the favored regions with high-value service activities related to manufacturing activities there is a clear prevalence of regions with above-average manufacturing productivity growth.

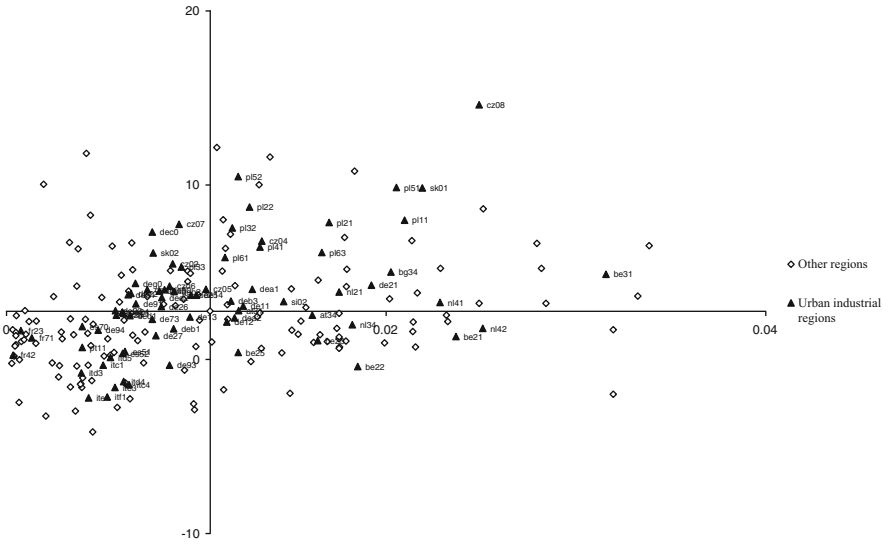
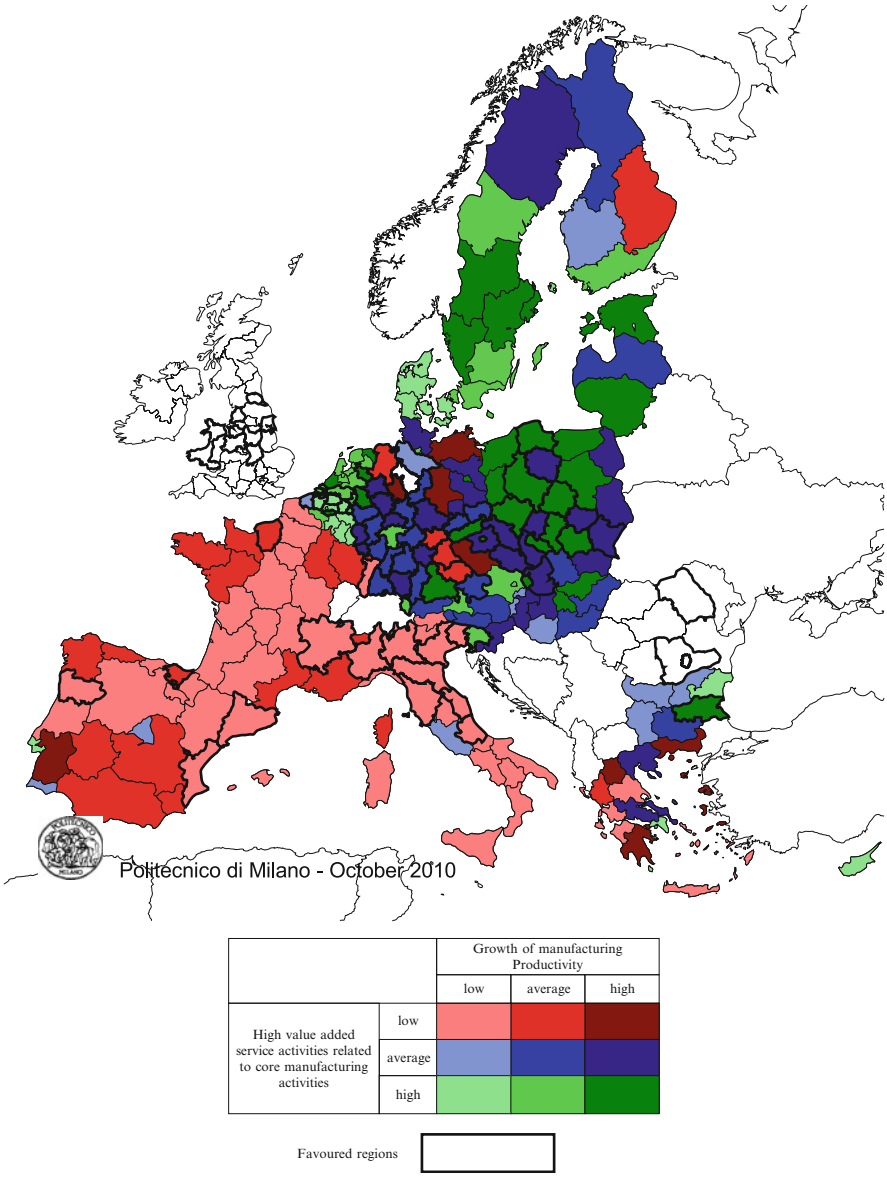


Fig. 5.10 High value-added service activities related to core manufacturing activities and growth of manufacturing productivity: urban industrial regions
Source: authors' elaborations



Map 5.10 High value-added service activities related to core manufacturing activities and growth of manufacturing productivity: urban industrial regions

Map 5.10 also indicates that there are a few cases in which specialization in high-value service activities related to manufacturing activities is not related to manufacturing productivity growth. However, Map 5.10 also indicates that the

positive correlation is spread widely, and not confined to industrial urban regions.

5.4.4 *Decentralization of Intertwined Functions and Manufacturing Productivity Growth*

The last challenge to be analyzed stems from the macro-trend of decentralization of intertwined functions taking place in manufacturing and services. The challenge resides in the ability of regions to attract/accumulate intertwined functions in production and R&D because there are positive feedbacks from research on the quality of manufacturing products, but there are also positive repercussions of manufacturing production on the possibility to conduct applied research.

Empirically, there does not appear to be a significant correlation between R&D functions and the growth of manufacturing productivity at the EU-27 level. However, this trend, which does not appear to be strong overall, becomes significant when regions are connected to global processes because, for only global players, this correlation becomes highly positive and significant. This correlation holds especially for regions with above-average FDI penetration levels, whereas it is not significant among regions with below-average FDI penetration.

We expected the challenge of attracting intertwined R&D and production functions to be especially important for regions where both production and innovation

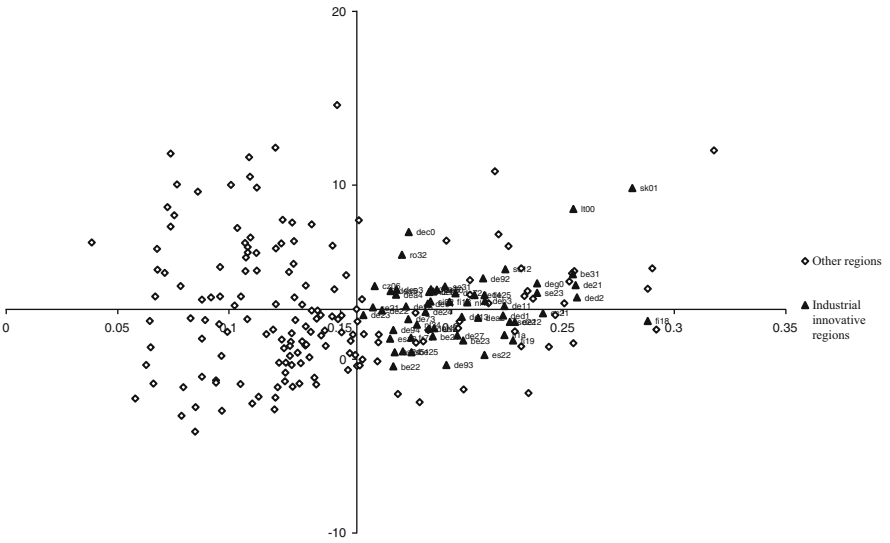
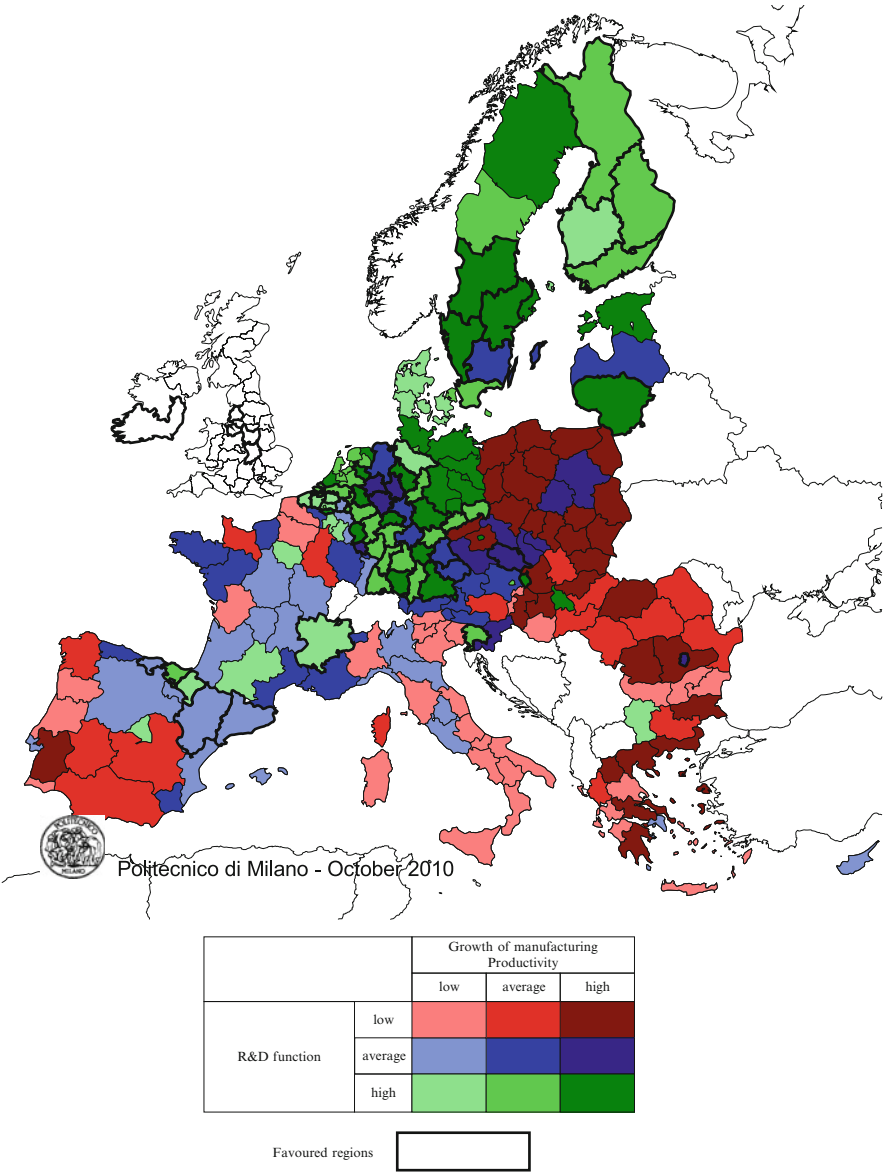


Fig. 5.11 R&D functions and growth of manufacturing productivity: industrial innovative regions
Source: authors' elaborations



Map 5.11 R&D functions and growth of manufacturing productivity: industrial innovative regions

activities are present; industrial innovative regions are the "favored" regions in which this trend may occur. The empirical results bear out this expectation, since these regions exhibit a high and significant correlation, whereas among the rest of regions there is no correlation whatsoever.

This is shown graphically by Fig. 5.11, where industrial innovative regions all fall in the two right-hand quadrants. However, one also observes that there is a clearer pattern among these regions, with a positive correlation, whereas the picture is random overall.

Map 5.11 shows the low concentration of R&D functions in Eastern and Southern regions; nevertheless, many Eastern regions have high industrial productivity growth. Most regions with higher concentrations of R&D functions are present in Scandinavia and Central Europe, namely Germany, Belgium, and the Netherlands. In France, innovation appears to be concentrated in the poles of Paris, Lyon, and Toulouse, but this pattern is general because it also characterizes Spain, Portugal, Italy, and all the Eastern countries.

Cases in which high regional R&D specialization is accompanied by low growth of manufacturing productivity are very rare in Western regions. The reverse situation of low R&D and high manufacturing productivity growth turns out to be typical of some Polish regions and other Eastern regions, where industrial restructuring, rather than innovation, explains manufacturing productivity gains. By contrast, most of the Scandinavian regions and the Northern German regions evince the positive spillover effects of R&D on local manufacturing productivity growth.

As expected, the innovative industrial regions exhibit a positive correlation between the presence of R&D functions and manufacturing productivity growth. These regions are mainly concentrated in Central and Northern Europe, and among them there is a clear prevalence of regions with high manufacturing productivity growth.

5.5 Conclusions

The aim of this chapter has been to describe empirically how globalization trends, in the new forms that they have recently assumed, affect the European regions. Moreover, the chapter has addressed the issue of how these trends impact on regional performances and whether the theoretical guesses made in Chap. 3 concerning the regions best able to take advantage of these globalization trends were empirically grounded. Interestingly, the analysis has confirmed in all cases the theoretical priors developed in Chap. 3.

This analysis conducted in this chapter was not meant to extend beyond a spatial description of globalization trends. The issue of causal relationships is left for the next part of the empirical analysis, together with a reply to one of the most important questions: what determines regional performance amid current globalization?

For this reason, the next two chapters will investigate to what extent and under what local conditions regional economies take advantage of globalization trends. Chapter 6 is devoted to the analysis of regional performance, while Chap. 7 provides an analysis of the regional determinants of FDI attraction.

Annex 5.1 FDI Location Patterns: A Principal Component Analysis

Table 5.7 Extra- vs. Intra-European FDI

Component	Eigenvalue	Difference	Proportion	Cumulative
Component 1	3.41	2.96	0.85	0.85
Component 2	0.45	0.35	0.11	0.96
Component 3	0.10	0.08	0.03	0.99
Component 4	0.03		0.001	1.00

Correlation coefficients

Variable	Comp 1	Comp 2	Comp 3	Unexplained
Extra-EU FDI: services	0.50	−0.50	−0.17	0.012
Extra-EU FDI: manufacturing	0.53	0.04	−0.67	0.007
Intra-EU FDI: services	0.52	−0.27	0.71	0.004
Intra-EU FDI: manufacturing	0.45	0.82	0.16	0.003

Source: authors' elaborations

Table 5.8 Manufacturing and service FDI

Component	Eigenvalue	Difference	Proportion	Cumulative
Component 1	3.96	3.48	0.79	0.79
Component 2	0.48	0.18	0.10	0.89
Component 3	0.30	0.10	0.06	0.95
Component 4	0.21	0.16	0.04	0.99
Component 5	0.05		0.01	1.00

Correlation coefficients:

Variable	Comp 1	Comp 2	Comp 3	Unexplained
High tech	0.43	0.59	−0.15	0.09
Medium-high tech	0.45	0.33	−0.39	0.09
Medium-low tech	0.46	−0.44	−0.34	0.02
Low tech	0.45	−0.56	0.08	0.04
Services	0.44	0.14	0.83	0.01

Source: authors' elaborations

Annex 5.2 Typology of Professions

Table 5.9 ISCO-88 International Standard classification of professions (at 1, 2, 3 digit)

Label	Full name	ISCO code
Public managers	Legislators and senior officials	11
Corporate managers	Corporate managers	12
Managers of small enterprises	Managers of small enterprises	13
Scientific professionals	Physical, mathematical and engineering science professionals	21

(*continued*)

Table 5.9 ISCO-88 International Standard classification of professions (at 1, 2, 3 digit)

Label	Full name	ISCO code
Public managers	Legislators and senior officials	11
Corporate managers	Corporate managers	12
Managers of small enterprises	Managers of small enterprises	13
Scientific professionals	Physical, mathematical and engineering science professionals	21
University professors	College, university and higher education teaching professionals	231
Business professionals	Business professionals	241
Office clerks	Office clerks	41
Customer services clerks	Customer services clerks	42
Retail workers	Service workers and shop and market sales workers	5
Craft workers	Craft and related trades workers	7
Blue collars	Plant and machine operators and assemblers	8

Source: Labor force survey

Annex 5.3 Functional Specialization and Regional Type: A Correspondence Analysis

Table 5.10 Results of the correspondence analysis

Dimension	Singular value	Principal inertia	Chi2	Percent	Cumulative percent
1	0.189394	0.03587	13145.73	84.17	84.17
2	0.074474	0.005546	2032.63	13.01	97.18
3	0.028723	0.000825	302.36	1.94	99.12
4	0.016524	0.000273	100.06	0.64	99.76
5	0.010122	0.000102	37.55	0.24	100.00
Total		0.042617	15618.33	100.00	

Categories	Mass	Overall quality	% intertia	Dimension 1		Dimension 2		Dimension 3	
				Coord	Sqcoord	Contrib	Coord	Sqcoord	Contrib
Types									
Local Players – Old 15	0.203	0.969	0.103	0.235	0.484	0.059	0.375	0.485	0.383
Regional Players – Old 15	0.288	0.854	0.021	−0.066	0.270	0.007	0.155	0.584	0.093
Global Players – Old 15	0.326	0.996	0.350	−0.481	0.954	0.397	−0.160	0.042	0.112
Local Players – New 12	0.031	0.968	0.113	0.872	0.912	0.123	−0.347	0.057	0.049
Regional Players – New 12	0.111	0.989	0.357	0.830	0.950	0.403	−0.267	0.039	0.106
Global Players – New 12	0.042	0.764	0.055	0.219	0.162	0.011	−0.675	0.602	0.256

(*continued*)

Table 5.10 Results of the correspondence analysis (continued)

Categories	Mass	Overall quality	% intertia	Dimension 1		Dimension 2		Dimension 3	
				Coord	Sqcoord	Contrib	Coord	Sqcoord	Contrib
Professional status									
11. Public managers	0.007	0.412	0.004	−0.070	0.037	0.000	0.355	0.375	0.012
12. Corporate managers	0.073	0.985	0.123	−0.580	0.887	0.130	−0.308	0.098	0.093
13. SMEs managers	0.055	0.820	0.031	−0.108	0.092	0.003	0.484	0.728	0.172
21. Scientists	0.047	0.990	0.141	−0.769	0.888	0.148	−0.416	0.102	0.110
231. University lecturers	0.008	0.901	0.008	−0.436	0.867	0.008	−0.138	0.034	0.002
241. Business professionals	0.020	0.908	0.064	−0.238	0.080	0.006	−1.222	0.827	0.406
41. Office workers	0.151	0.987	0.191	−0.511	0.913	0.207	0.232	0.074	0.109
42. Customer service workers	0.032	0.990	0.027	−0.428	0.966	0.031	0.106	0.023	0.005
5. Retail workers	0.219	0.567	0.008	0.002	0.000	0.000	0.106	0.567	0.033
7. Craft workers	0.241	0.992	0.207	0.437	0.991	0.244	0.011	0.000	0.000
8. Blue collars	0.146	0.988	0.197	0.536	0.950	0.222	−0.172	0.038	0.058

Number of obs = 366,484; Pearson chi2(50) = 15,618.33; Prob > chi2 = 0.0000; Total inertia = 0.0426; 6 active rows; 11 active columns; Expl. inertia (%) = 97.18

Source: authors' elaborations

Annex 5.4 Growth of Intertwined Functions by Regional Type: A Principal Component Analysis

Table 5.11 Results of the principal component analysis

(a) Global players

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 1	4.62438	2.70638	0.4204	0.4204
Comp 2	1.91800	0.842786	0.1744	0.5948
Comp 3	1.07522	0.242096	0.0977	0.6925
Comp 4	0.833123	0.131953	0.0757	0.7682
Comp 5	0.701170	0.097682	0.0637	0.8320
Comp 6	0.603489	0.121974	0.0549	0.8869
Comp 7	0.481514	0.197143	0.0438	0.9306
Comp 8	0.284371	0.073177	0.0259	0.9565
Comp 9	0.211195	0.056001	0.0192	0.9757
Comp 10	0.155194	0.042854	0.0141	0.9898
Comp 11	0.11234		0.0102	1

Variable	Comp 1	Comp 2
Professions		
11. Public managers	0.0455	0.5638
12. Corporate managers	0.2772	0.0703

(*continued*)

Table 5.11 (continued)

Variable	Comp 1	Comp 2
13. SMEs managers	0.1824	−0.539
21. Engineers	0.4056	0.0389
231. University lecturers	0.2580	0.1605
241. Business professionals	0.1499	−0.1563
41. Office workers	0.3164	0.3166
42. Customer service workers	0.3464	−0.0891
5. Retail workers	−0.2828	0.4534
7. Craft workers	−0.4072	−0.0572
8. Blue collars	−0.4104	−0.134

(b) Regional players

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 1	2.320310	0.21789	0.2109	0.2109
Comp 2	2.102420	0.747693	0.1911	0.4021
Comp 3	1.354720	0.232161	0.1232	0.5252
Comp 4	1.122560	0.225499	0.1021	0.6273
Comp 5	0.897060	0.184589	0.0816	0.7088
Comp 6	0.712474	0.039738	0.0648	0.7736
Comp 7	0.672737	0.100145	0.0612	0.8348
Comp 8	0.572591	0.086663	0.0521	0.8868
Comp 9	0.485928	0.029141	0.0442	0.9310
Comp 10	0.456787	0.154373	0.0415	0.9725
Comp 11	0.302415		0.0275	1

Correlation coefficients	Comp 1	Comp 2
Professions		
11. Public managers	−0.0893	0.5092
12. Corporate managers	0.2476	0.1711
13. SMEs managers	0.3694	−0.4257
21. Engineers	0.4879	0.1972
231. University lecturers	0.3028	0.0992
241. Business professionals	0.0798	0.0178
41. Office workers	0.1792	0.3950
42. Customer service workers	0.4075	−0.0812
5. Retail workers	−0.2588	0.4863
7. Craft workers	−0.439	−0.2722
8. Blue collars	−0.0157	−0.0894

(c) Local players

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 1	2.90783	0.616848	0.2643	0.2643
Comp 2	2.29098	0.645045	0.2083	0.4726
Comp 3	1.64593	0.510357	0.1496	0.6222
Comp 4	1.13557	0.325234	0.1032	0.7255
Comp 5	0.810341	0.136088	0.0737	0.7992
Comp 6	0.674252	0.228745	0.0613	0.8604
Comp 7	0.445507	0.036875	0.0405	0.9009
Comp 8	0.408632	0.090290	0.0371	0.9381
Comp 9	0.318343	0.082796	0.0289	0.9670

(*continued*)

Table 5.11 (continued)

(c) Local players				
Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 10	0.235547	0.108480	0.0214	0.9884
Comp 11	0.127068		0.0116	1

Correlation coefficients	Comp 1	Comp 2
Professions		
11. Public managers	0.5162	0.0561
12. Corporate managers	0.0419	0.4203
13. SMEs managers	−0.5247	0.1106
21. Scientists	−0.0658	0.5513
231. University lecturers	−0.1126	−0.1049
241. Business professionals	−0.1446	0.0257
41. Office workers	0.2892	0.1484
42. Customer service workers	−0.3205	0.0894
5. Retail workers	0.4676	−0.0358
7. Craft workers	0.0236	−0.4885
8. Blue collars	−0.1138	−0.4716

Source: authors' elaborations

Chapter 6
European Regional Performance in a Globalized World

6.1 Regional Endogenous Growth: The Role of Territorial Capital

The results of the descriptive analysis of globalization trends carried out in the previous chapter evidence a European territory fragmented with respect to globalization in that some regions are more favoured than others as the natural locations for some globalization processes to occur. Whether or not the growth opportunities offered by globalization processes are grasped depends closely on a region's capacity to pro-act and re-act to external stimuli.

This chapter is devoted to identification of the regional endogenous elements that explain the capacity of regions to take advantage of globalization processes, and in general to grow in a period of globalization.

The factors determining regional performance have two main sources. In fact, the causes of regional success and failure comprise, on the one hand, certain pervasive characteristics of the national economy and, on the other, regional dynamics. National factors are: (1) institutional features like the efficiency of the legislative, judicial and governmental functions of the nation state; (2) organisational factors like the quality of services of general interest like education, transport, communication, health and security services; (3) economic factors like general fiscal pressure, effectiveness of public expenditure, pervasiveness of environmental regulations, the efficiency of contract enforcement procedures, and general price-competitiveness in the case of less advanced countries. Moreover, national economic dynamics are linked to the overall performance of regional economies through close inter-regional, within-country integration, in terms of the exchange of goods, services and production factors, due to proximity effects and the absence of institutional or linguistic barriers. Besides the national component, a crucial role in explaining regional performance is played by each region's internal development capability, and its endogenous capacity to turn threats stemming from higher competition into growth opportunities.

The concern of this chapter is to interpret the regional component of growth, and in particular the structural elements that explain a positive regional growth

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differential identified theoretically in terms of a triple paradigm shift that has taken place in the last few decades, as follows:

- From development (or even location) factors to innovation factors (Cappellin and Nijkamp 1986)
- From hard to soft factors consisting of either intangible, atmosphere-type, local synergy and governance factors (Becattini 1990; Camagni 1991a), or human capital and knowledge assets (Foray 2000)
- From a functional approach to a cognitive approach (Boschma and Lambooy 1999; Boschma 2005; Boschma and Martin 2010; Capello 2009)

This last paradigm shift is the most recent one. A cognitive approach is increasingly superseding the traditional functional approach, and it shows that cause–effect deterministic relationships should give way to other kinds of complex, inter-subjective relationships which impinge on the way economic agents perceive economic reality, are receptive to external stimuli, can react creatively, and are able to co-operate and work synergetically. Local competitiveness is interpreted as residing in co-operation, trust, and a sense of belonging rather than in pure availability of capital; in creativity rather than in the pure presence of skilled labour; in receptivity to new business ideas and organisational styles more than in the presence of SMEs per se; in connectivity and relationality more than in pure accessibility; in local identity besides local efficiency and quality of life (Camagni and Capello 2009).

All the above elements – which add to, but do not substitute for, more traditional, material and functional approaches – can be encapsulated in a concept that, strangely enough, has only recently made its appearance, and has done so outside a strictly scientific context: the concept of territorial capital. This concept was first proposed in a regional policy context by the OECD in its Territorial Outlook (OECD 2001), and it has been recently reiterated by DG Regio of the Commission of the European Union:

> "...each region has a specific 'territorial capital' that is distinct from that of other areas and generates a higher return for specific kinds of investments than for others, since these are better suited to the area and use its assets and potential more effectively. Territorial development policies (policies with a territorial approach to development) should first and foremost help areas to develop their territorial capital" (CEC 2005a, p. 1).

In our view, territorial capital consists in the set of localised assets – natural, human, artificial, organisational, relational and cognitive – that constitute the competitive potential of a given territory. In this very broad sense it encompasses (Camagni 2009; Camagni and Capello 2009):

- Natural resources and social overhead capital
- Impure public goods or mixed public/private goods (landscape, cultural heritage)
- Agglomeration and district externalities
- Club goods such as proprietary networks
- Private fixed capital stock and relational private services
- Social and relational capital

- Human capital, entrepreneurship, creativity and leadership
- Co-operation networks and strategic public/private partnerships in knowledge creation
- Governance structures

It is evident that the concept of territorial capital encompasses not just non-material and relational assets but also material ones in the form of natural and cultural resources, public goods and general urban structure. In this latter respect, it aids understanding of the role performed by a well-shaped geographical structure and form of settlements in both the efficiency-competitiveness of territories and the general welfare conditions of populations. In this sense, "integrated spatial/urban development policies" have been recently indicated by OECD (2001) and the EU (CEC 2005b; Ministers of Spatial Planning 2007) as the new policy approach with which to integrate economy and territory and achieve the best utilisation of the economic potential and the territorial capital of each local economy.

The aim of the empirical analysis developed in this chapter is to highlight the role of territorial capital – that is, of endogenous local material and non-material, public and private assets – in explaining the capacity of a region to grow more than others in a period of globalization.

To this end, we start by identifying what we call "benefiting regions", defined as those regions that maintain and even improve their competitive positions in the European economy thanks to globalization processes, and which are therefore able to increase their relative productive capacity by more than the European average (Sect. 6.2). Our empirical results show that benefiting regions are distributed among all types of regions regardless of their degree of openness, as expected since external connections are not a guarantee of economic performance, especially when not coupled with strong internal ones (Fratesi and Senn 2009). Benefiting regions are hence numerous in global as well as regional and local players. They are thus evidence that the globalization process *per se* does not explain regional performance. Moreover, although global regions record higher GDP growth on average, both in absolute terms and with respect to the national average, a very differentiated growth rate emerges when they are analysed individually (Sect. 6.2).

This first result leads us to a second question: whether the structural features that characterise benefiting regions differ among the three types of global, regional and local players. In particular, the structural features which enable global players to be competitive are expected to be different from those characterising regional players. The two types of regions, in fact, differ in terms of their degree of openness and of the international competition that they must face. While regional players share with global players a specialisation in open industries, the latter must also deal with world accessibility, which may increase their vulnerability in face of tougher international competition.

As expected, the results show that the structural features associated with benefiting global players are different from those associated with benefiting regional ones. In light of these results one may speculate that even if globalization *per se*

does not explain regional performance, the degree of openness of the local economy requires specific success factors if that economy is to cope with global competition (Sect. 6.3).

In order to go a step further in the examination of the relationship between regional economic performance and local structural characteristics in each group of regions, global players are grouped according to their trends on certain economic performance variables (productivity levels and growth in services and manufacturing, GDP, as well as employment levels and growth). On looking at the structural features of the regional economies that accompany global players, conjectures can be made as to the possible macroeconomic policies and industrial strategies that are behind each economic growth pattern. The exercise is repeated for regional players, and differences with global players once again emerge (Sect. 6.4).

An interpretative exercise is run to supplement the descriptive analysis. The aim of this exercise is not only to identify the most important success factors linked to growth performance patterns but also, and especially, to determine whether the role played by each success factor in regional growth changes across regions, and in particular across regions with different degrees of openness to the rest of the world (Sect. 6.5).

Interestingly, our results show that spatial heterogeneity does not explain regional differential growth: the impact of each success factor on regional differential growth, in fact, does not change among groups of regions. A higher average regional growth rate in global players with respect to regional and local ones is therefore explained by the regional endowment of success factors – especially those with high impacts on growth – rather than by differentiated marginal effects among groups of regions (Sect. 6.5.5).

Last, but not least, analysis of how regional disparities evolve is of paramount importance in answering the question of whether increasing globalization driving tougher competition is also being accompanied by a worsening of regional imbalances. Our results show that regional disparities are not only a matter of an Eastern–Western divide but also one of a different degree of globalization (Sect. 6.6).

6.2 Regions Benefiting from Globalization

6.2.1 Regional Performances in Europe in Recent Years

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 6.1 presents the average annual GDP growth rates in two periods of time of the three types of regions, as well as the results of a test to determine whether these growth rates are significantly different.

Table 6.1 Growth performance of the three types of regions, 1999–2002 and 2002–2005

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

***,**,* significant at 1, 5 and 10% respectively
Source: calculated by the authors on Eurostat data

In the first period of time, i.e., 1999–2002, global players significantly outperformed the other types of regions in terms of 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 especially in Western countries. In Eastern countries, by contrast, the growth rate of global players was 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 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 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 elements of the territorial capital positively affect the endogenous capacity for growth in a period of globalization.

6.2.2 *Identification of Benefiting Regions*

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 regional and 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.

Our interest is therefore to identify benefiting regions, defined as those regions that maintain and even improve their competitive positions in the European economy thanks to globalization processes. In measurement terms, these regions are identified as those able to increase their production capacity (in terms of GDP) by more than the European average.

Different economic growth patterns may be concealed behind above-average GDP growth: (1) 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 so does GDP; (2) 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; (3) 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.

A way to disentangle these three conditions is presented in Fig. 6.1, where growth of labour productivity and of employment in the period 2002–2005, relatively to the European average growth, are plotted.

Growth of labour productivity (Prod) and of employment (Emp) are calculated on the basis of the following formulas:

$$\left(\frac{\text{Prod}_{\text{r}}^{2005}}{\text{Prod}_{\text{r}}^{2000}}\right)^{1/5} - \left(\frac{\text{Prod}_{\text{EU}}^{2005}}{\text{Prod}_{\text{EU}}^{2000}}\right)^{1/5} \tag{6.1}$$

$$\left(\frac{\text{Emp}_{r}^{2005}}{\text{Emp}_{r}^{2000}}\right)^{1/5} - \left(\frac{\text{Emp}_{\text{EU}}^{2005}}{\text{Emp}_{\text{EU}}^{2000}}\right)^{1/5} \tag{6.2}$$

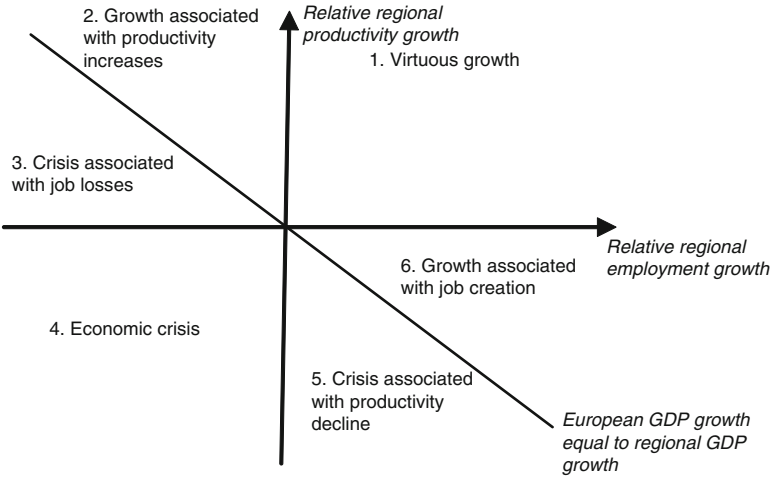


Fig. 6.1 Regional growth patterns

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 lying below this line are all situations of regional GDP growth lower than the EU average (Camagni 1991b).

Six possible patterns of GDP growth emerge in Fig. 6.1, each of them resulting from a combination of statistical and economic effects:

1. *Virtuous growth*, when higher-than-average productivity growth is associated with higher-than-average GDP growth, which more than counterbalances higher-than-average employment growth (quadrant 1)
2. *Growth associated with productivity increases*, when a higher-than average-GDP growth is associated with higher-than-average productivity growth and lower-than-average employment growth, the latter reinforcing productivity GDP growth (quadrant 2)
3. *Crisis associated with 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. *Economic crisis*, when lower-than-average productivity growth is associated with both lower-than-average employment and GDP growth (quadrant 4)
5. *Crisis associated with productivity decline*, when lower-than-average GDP growth is associated with relative productivity decline and higher-than-average employment growth, the latter reinforcing relative productivity decline (quadrant 5)
6. *Growth associated with job creation*, when higher-than-average GDP growth is associated with higher-than-average employment growth which does not counterbalance relative productivity decline (quadrant 6).

Quadrant 3 displays false economic growth conditions; for it depicts a situation of higher-than-average 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.

According to our definition, benefiting regions fall in three quadrants, namely 1, 2 and 6. These situations share a higher-than-average GDP growth accompanied by different economic conditions. The regions positioned in the virtuous cycle increase both productivity and employment by more than the average; the ones in quadrant 2 achieve higher-than-average productivity growth by means of severe employment cuts, leading nevertheless to good output performance. A good productivity performance is in this case the result of the simple elimination of productive units, with limited positive effects. In the case of quadrant 6, relative GDP growth is obtained by relative employment increases; in this case employment growth generally does not arise from endogenous regional development but rather from exogenous (somehow artificial) intervention policies, which are unlikely to induce a cumulative growth pattern in the medium and long run.

Figure 6.2 depicts the growth patterns of all European NUTS 2 regions. Figure 6.2a is devoted to global players, Fig 6.2b to regional players and Fig. 6.2c to local players. Comparison among the three figures shows that there are regions of all three types in each of the six quadrants, which demonstrates that openness to globalization is not in itself enough for a region to achieve a good economic performance.[1] A second interesting result that emerges from comparing global, regional and local players in Fig. 6.2 is that global regions are the only ones that rarely increase their GDP through the mere creation of employment that outperforms productivity decline; a condition which is instead common for regional and local players. Growth associated with job creation does not seem to be common among global players.

However, a relatively high number of global players fall below the 45° sloped negative line (Fig. 6.2a): a result which testifies that being a global player does not guarantee being a benefiting region; global players more often fall short of the average GDP growth, even if the comparison is made with the EU15 average rather than with the total European average, which also contains fast-growing Eastern regions (Table 6.2).

A second important result is that the national component is far more important than the endogenous component in explaining regional growth patterns; regions of one country belong in large number to the same quadrant. Moreover, a clear Eastern–Western dichotomy is present and exhibits a clear country convergence effect whereby the New 12 member countries grow more rapidly than Old 15 members, which suggests that Eastern and Western countries should be analysed separately.

[1]The Polish and Romanian data are rather suspect: the strong correlation between GDP and employment data at regional level probably hides an estimate of regional GDP from regional employment, or vice versa.

On looking at the patterns followed by Western regions (Fig. 6.3a), one observes that they rank on average slightly below the European average in terms of productivity growth. The best performing (virtuous cycle) regions are mainly regional players and global players, signalling that it is more difficult for local players to grow in periods of increasing globalization. However, mixed evidence appears in the case of global players: the latter also lie in the lower quadrants, which again shows that being open is not enough to perform well.

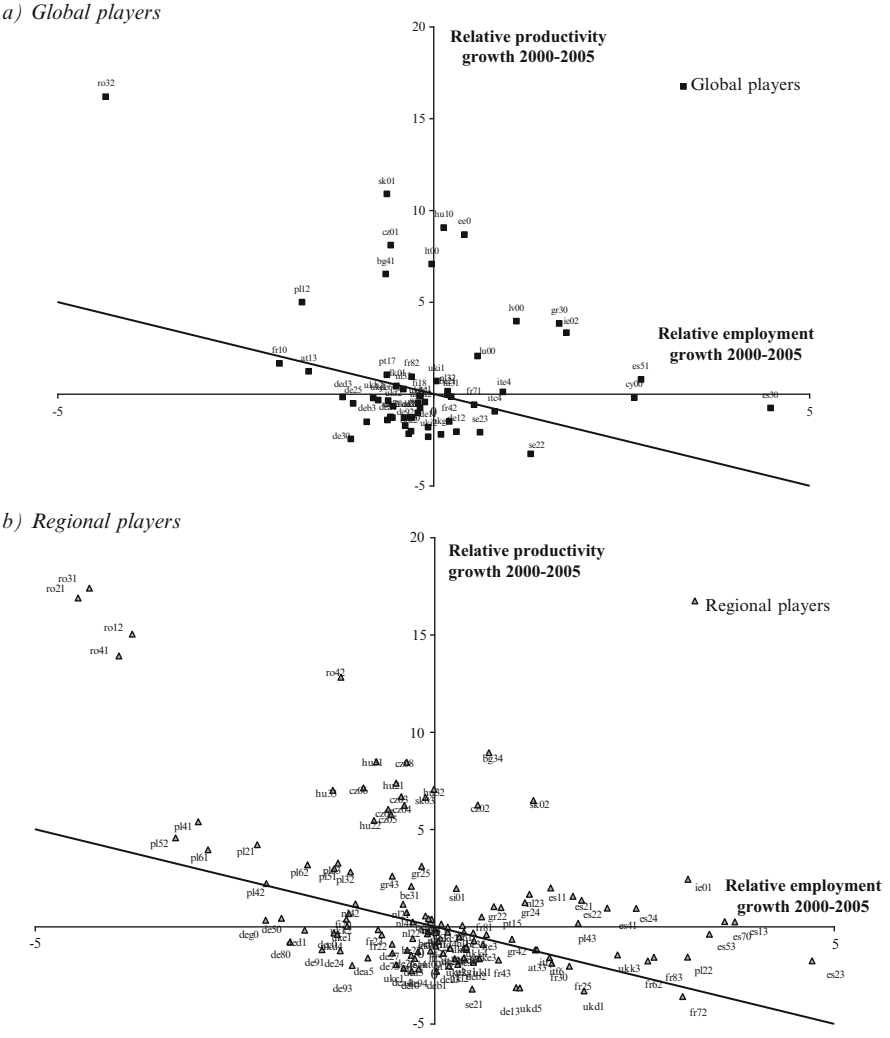


Fig. 6.2 Regional growth patterns for all European regions
Source: authors' calculations on Eurostat data

c) Local players

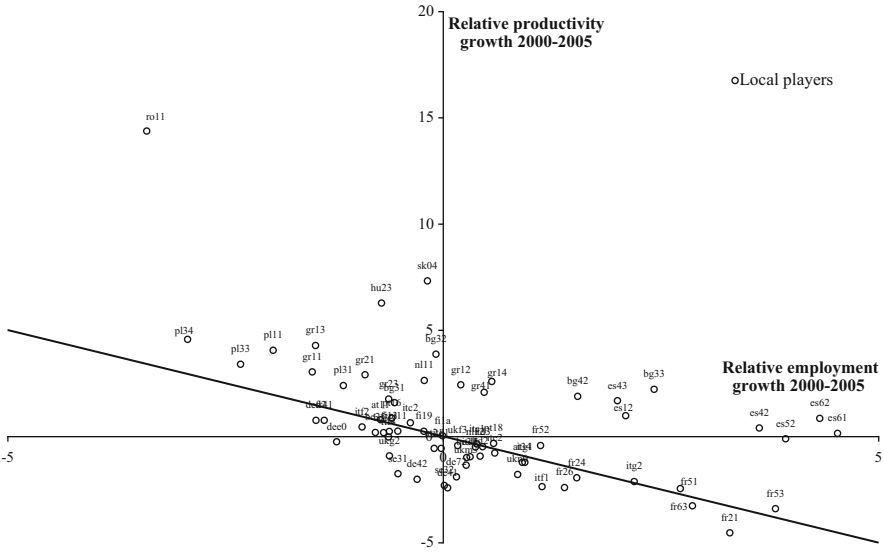


Fig. 6.2 Regional growth patterns for all European regions – Continued
Source: authors' calculations on Eurostat data

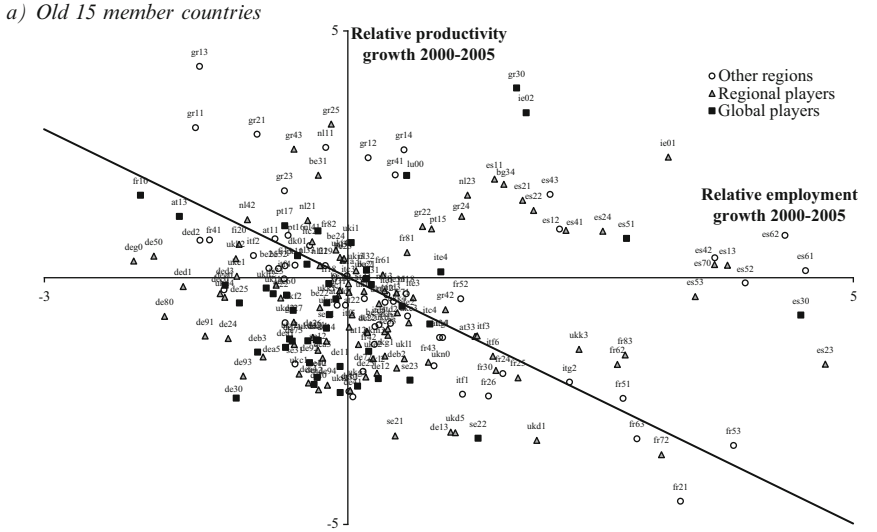
Inspection of the patterns followed by Eastern regions (Fig. 6.3b) shows that almost all New 12 regions are above the EU average in terms of GDP growth. Many regions, however, achieve a relative GDP growth performance by cutting employment, and thereby increasing productivity. A large number of global players lie in the upper part of the virtuous cycle quadrant.

The descriptive results obtained thus far show that Eastern and Western regions have different growth patterns, which are partly explained by national effects, but especially by an Eastern/Western divide. Two "growth models" are hidden behind our results, and they suggest that Old 15 and New 12 member countries should be treated separately in the analysis which follows.

Table 6.2 summarises the number of regions belonging to the different growth patterns. Western regional players are nearly equally spread, and the majority of benefiting regions are local players, suggesting some degree of convergence within the Old 15 regions.

The results for the New 12 countries are different. Eight out of ten global players are benefiting regions even if compared with the New 12 averages, and 6 of them are in the virtuous cycle quadrant (Table 6.2). Differently from Western

a) Old 15 member countries



b) New 12 member countries

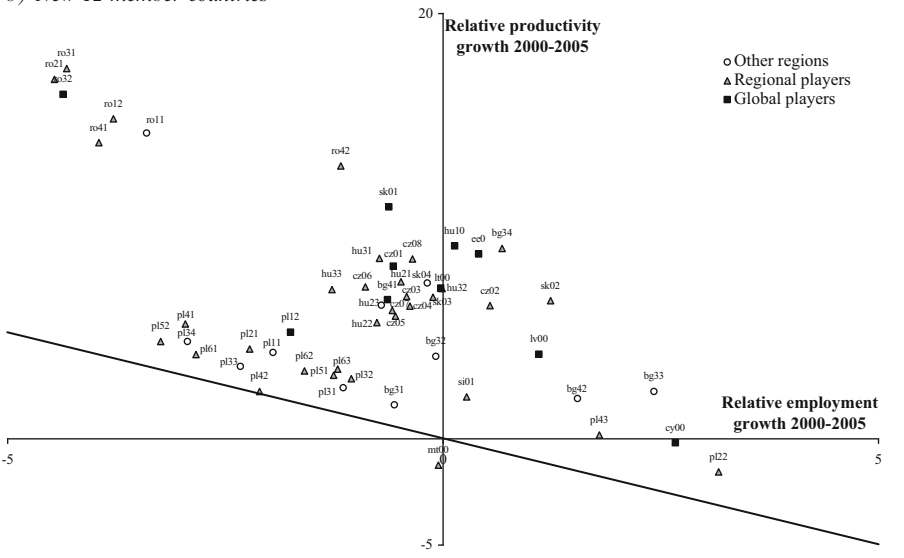


Fig. 6.3 Regional growth patterns for the Old 15 and New 12 countries
Source: authors' calculations on Eurostat data

Table 6.2 Number of regions in each quadrant by type[a]

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
$q1$ – virtuous growth	6	17	13	36	6	11	1	18
$q2$ – growth associated with productivity increases	8	18	15	41	1	4	2	7
$q3$ – crisis associated with job losses	10	14	11	35	0	0	0	0
$q4$ – real economic crisis	19	24	9	52	1	6	3	10
$q5$ – crisis associated with productivity decline	2	15	8	25	1	9	5	15
$q6$ – growth associated with job creation	2	9	5	16	1	4	1	6
Total	47	97	61	205	10	34	12	56
Benefiting regions ($q1 + q2 + q6$)	16	44	33	93	8	18	5	31
Benefiting regions (%)	34	45.4	54.1	45.4	80	52.9	41.7	55.4

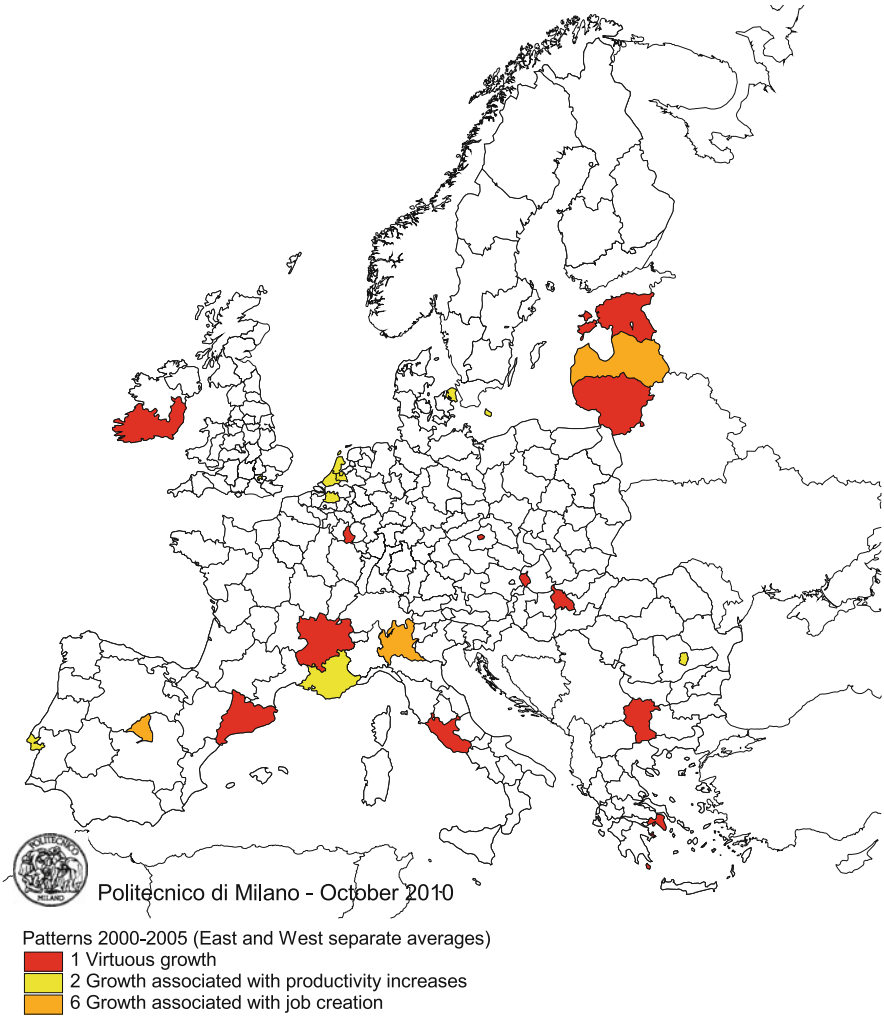
[a]Average growth rates are calculated for Western and Eastern Europe separately
Source: authors' calculations

countries, Eastern global players are definitely the ones that improve their economic positions. Maps 6.1 and 6.2 represent the benefiting regions among global and regional players, respectively, identified on the basis of Old 15 and New 12 averages.

6.3 Structural Features of Benefiting Regions

6.3.1 Structural Features of Benefiting Global Players

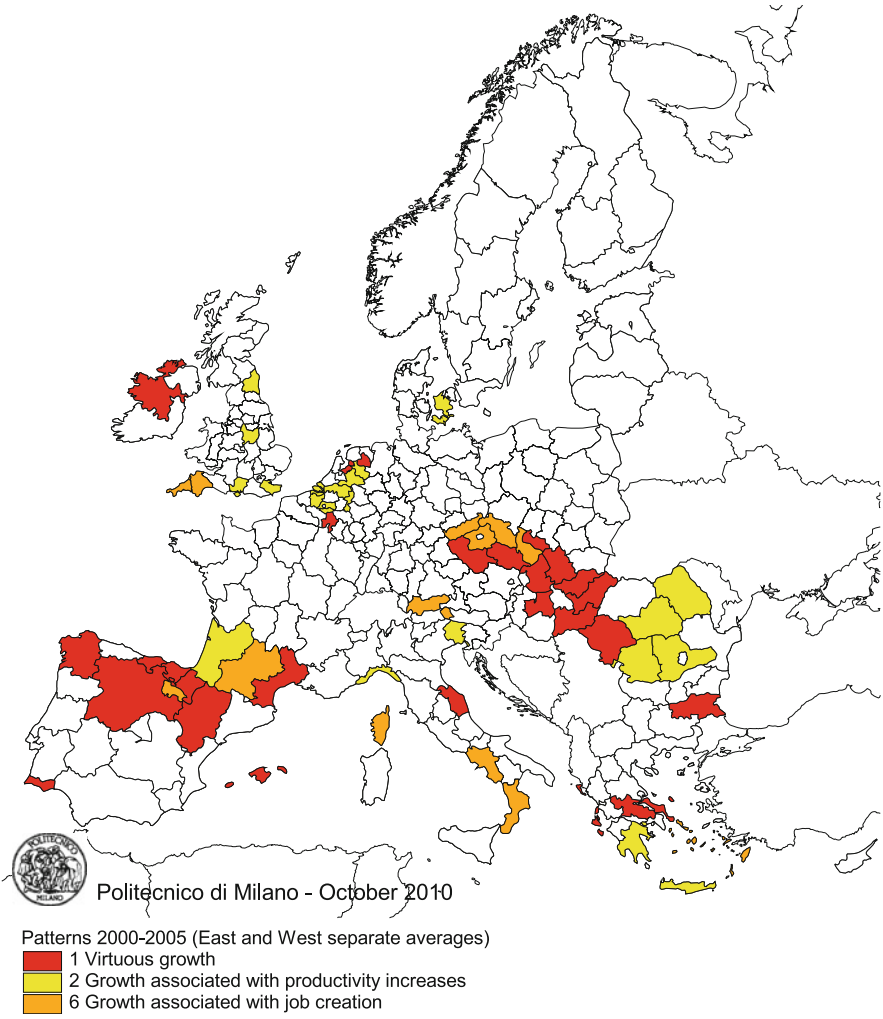
The main result of the foregoing analysis is that globalization *per se* does not seem to account for relatively higher regional growth patterns. Understanding the higher differential growth rates recorded by global players requires in-depth analysis of the structural features characterising benefiting regions with respect to non-benefiting ones in each group of regions. The structural features of a local economy are all



Map 6.1 Benefiting regions among global players

territorial capital assets that conceptually explain regional growth patterns, from the quality and quantity of human capital to entrepreneurship, innovation, productive functions, transport infrastructure endowment. Structural features also encompass the mix of sectors in the region, the regional sectoral specialisation and its spatial concentration, as well as policy measures like structural funds.

An analysis of variance makes it possible to compare the values that structural features assume between benefiting and non-benefiting regions, and to calculate the statistical differences among these values. The comparison is made between benefiting and non-benefiting regions, keeping global and regional players as well as



Map 6.2 Benefiting regions among regional players

Western and Eastern regions separate from each other, given the "two growth models" hidden behind the economies of the two blocks of countries.[2]

The results for Western global players are presented in Table 6.3, where only the statistically significant differences in the structural characteristics between benefiting and non-benefiting global players are given. Benefiting regions are characterised to an above-average extent by the presence of high growth metropolitan

[2]Unfortunately, the small number of global players in the East (and the fact that almost all these regions are benefiting) precludes the use of this type of analysis.

Table 6.3 Selected characteristics of benefiting global players in Western countries

Variables	Benefiting 2002–2005	Non-benefiting 2002–2005	*F*	Sig.
Megas	0.85	0.53	4.98	**
Per capita structural funds (1994–1999)	398,479	97,440	8.36	***
Annual average population growth (2000–2002)	0.71	0.25	15.85	***
Location quotient in sector I Transport, storage and communications (2002)	1.24	1.04	4.26	**
Location quotient in sector J Financial intermediation (2002)	1.11	1.61	4.28	**
Herfindal index in manufacturing sectors (2002)	0.16	0.14	3.43	*
Share of legislators and senior government officials (average value over 3-year period 1999–2001)	0.008	0.005	4.47	**
Share of managers in SMEs (average value over 3-year period 1999–2001)	0.04	0.03	8.07	***
Location quotient of growing manufacturing sectors (2002)	1.17	0.87	3.14	*
Location quotient of growing service sectors (2002)	1.40	1.07	7.49	***
FDI penetration index (average value over 3-year period 1999–2001)	4.94	3.76	0.33	

***,**,* significant at 1, 5 and 10% respectively
Source: authors' calculations on Eurostat data

areas (MEGAs[3]) with respect to non-benefiting ones, a result mostly embedded in the definition of global regions. These areas also exhibit high population attraction. The presence of service sectors (I, Transport, storage and communication and J Financial intermediation) and of high-level government functions (public managers) characterise benefiting global players in Western countries with respect to non-benefiting ones.

These areas are more specialised in growing service and manufacturing sectors than are non-benefiting global regions; moreover, the presence of command and control functions in SMEs (measured as the share of managers in SMEs) makes a difference with respect to non-benefiting regions (Table 6.3). Another marked difference is the endowment of structural funds received by benefiting global players: one may speculate that this is a signal of efficiency in the use of these structural funds.

An unexpected result is obtained for FDI penetration. Despite being greater in global regions than the rest of EU global regions, FDI penetration does not appear to differ between benefiting and non-benefiting global regions.

[3]Recall that megas are those regions with the location of at least one of the 76 'Megas' – FUAs with the highest scores on a combined indicator of transport, population, manufacturing, knowledge, decision-making in the private sectors. They have been defined by an European ESPON project (Espon project 1.1.1; see Espon website).

6.3.2 Structural Features of Benefiting Regional Players

Also among regional players there appear to be a large number of benefiting regions whose economic performances are above the average, either because of productivity dynamics (growth obtained through productivity increases) or because of employment dynamics (growth associated with job creation) or, finally, because of both effects at the same time (virtuous cycle quadrant).

The characteristics which enable regional players to be competitive are expected to be different from those that enable global players to grow, given the lack of world accessibility that characterises regional players.

The results of the analysis for regional players in Old 15 member countries are reported in Table 6.4. The dynamics of benefiting regional players in the West are not

Table 6.4 Selected characteristics of benefiting regional players in Western countries

Variable	Benefiting 2002–2005	Non-benefiting 2002–2005	*F*	Sig.
Annual average service employment growth (2000–2002)	1.95	0.76	14.7	***
Structural funds per capita (1994–1999)	554,996	271,260	6.1	**
Annual average population growth (2000–2002)	0.56	0.12	13.1	***
Location quotient in sector D Manufacturing (2002)	0.88	1.19	15.4	***
Location quotient in sector H Hotels and Restaurants (2002)	2.10	0.83	16.0	***
Location quotient in sector L Public Administration and Defence (2002)	1.12	1.00	2.8	*
Location quotient in High-tech manufacturing sectors (2002)	0.61	1.07	13.6	***
Location quotient in Medium High-tech manufacturing sectors (2002)	0.85	1.28	12.1	***
Location quotient in Medium-Low manufacturing sectors (2002)	0.93	1.31	8.7	***
Herfindal index in manufacturing sectors (2002)	0.09	0.08	6.7	**
Share of legislators and senior government officials (average value over 3-year period 1999–2001)	0.11	0.08	8.8	***
Share of managers in SMEs (average value over 3-year period 1999–2001)	0.05	0.03	31.2	***
Share of physical, mathematical and eng. science professionals (average value over 3-year period 1999–2001)	0.02	0.03	6.6	**
Share of people with second level education (share of people in EGP-2 professions)	21.3	19.2	8.6	***
Share of people with higher than graduate education (Isced 5 and 6) (average value over 3-year period 1999–2001)	0.83	0.97	4.6	**
FDI penetration index (average value over 3-year period 1999–2001)	0.46	0.83	0.8	***

***,**,* significant at 1, 5 and 10% respectively

Source: authors' calculations on Eurostat data

driven by manufacturing specialisation, neither in high nor in low-tech activities, but rather by specialisation in traditional service sectors, such as those linked with tourism (H, Hotels and restaurants) and the public sector (L, Public administration and defence; compulsory social security). The success of these regions can probably be explained by their ability to innovate in mature sectors, offering new and attractive services in traditional activities (e.g., agri-tourism, balanced coastal tourism). The Herfindal index is higher in regional benefiting than in regional non-benefiting players; this result testifies that regional benefiting regions draw advantage from localisation economies stemming from spatial concentration in manufacturing sectors. Moreover, regional benefiting regions are more assisted than their non-benefiting counterparts by public policies, and structural funds in particular.

The economies of benefiting regional players are characterised to a more than an average extent by control functions (legislators, senior officials and managers), and in particular those of SMEs (share of managers in SMEs), while the scarce presence of physical, mathematical and engineering science professionals may be due to their service specialisation. This datum is corroborated by the scant presence of people with post-graduate degrees (ISCED 5 and 6) and the higher presence of people with second-level qualifications (high share of people in EGP-2 professions). Overall, it appears that, among Western regional players, the benefiting ones are those characterised by intermediate-level service functions and by high functions in the public service sector.

The last analysis performed is for regional players in Eastern regions (Table 6.5). Here a large number of characteristics emerge which differentiate benefiting from non-benefiting regions. Firstly, a convergence process seems to take place.

Benefiting regional players in Eastern countries are poorer than the rest of Eastern regional players, and they record lower productivity levels in both services and manufacturing, only partly compensated by a larger agricultural productivity with respect to non-benefiting regions. The benefiting regional players in the East are specialised in Agriculture, hunting and forestry (A) Fishing (B), Manufacturing (D) and Construction (F), and they are able to maintain their specialisation over time, as evidenced by the high manufacturing Herfindal index and the low Lawrence index. The latter measures the changes in a region's specialisation: the lower the index, the lower the changes in the sectoral specialisation of a region.

Among the service sectors, regional benefiting regions in Eastern countries are only specialised in traditional sectors (Transport, storage and communication – I), and they are particularly de-specialised in some advanced services, namely Financial intermediation (J) and Real estate, renting and business activities (K), with respect to non-benefiting regions.

Interestingly, the benefiting regional players in the East are specialised in the low- and medium-tech manufacturing sectors, with few physical, mathematical and engineering science professionals and a low share of people with post-graduate degrees (Isced 5 and 6). Low shares of basically service workers, like clerks, are compensated by a high percentage of craft and related trade workers. This sectoral/functional specialisation again shows that, in Eastern

Table 6.5 Selected characteristics of benefiting regional players in Eastern countries

Variable	Benefiting 2002–2005	Non-benefiting 2002–2005	*F*	Sig.
Per capita GDP in PPS (2002)	13,021	17,616	2.93	*
Agricultural productivity (2002)	6.90	2.84	36.92	***
Industry productivity (2002)	7.77	9.68	3.79	*
Service productivity (2002)	7.51	11.3	8.46	***
Growth of service employment (2000–2002)	0.32	1.48	4.02	*
Loc. Quot. in sectors A Agriculture, hunting and forestry B Fishing (2002)	3.45	2.00	4.66	**
Location quotient in sector D Manufacturing (2002)	1.56	1.25	10.41	***
Location quotient in sector F Construction (2002)	1.08	0.90	17.29	***
Location quotient in sector I Transport, storage and communications (2002)	1.23	0.95	8.72	***
Location quotient in sector J Financial intermediation (2002)	0.31	0.61	52.21	***
Location quotient in sector K real estate, renting and business activities (2002)	0.50	0.63	18.31	***
Location quotient in Medium Low-tech manufacturing sectors (2002)	1.78	1.29	4.99	**
Location quotient in Low-tech manufacturing sectors (2002)	1.65	1.38	3.17	*
Herfindal index in manufacturing sectors (2002)	0.13	0.11	6.07	**
Lawrence index in all sectors (1995–2002)	0.15	0.21	10.75	***
Share of legislators and senior government officials (average value over 3-year period 1999–2001)	0.04	0.06	7.13	**
Share of physical, mathematical and engineering science professionals (average value over 3-year period 1999–2001)	0.012	0.02	3.69	*
Share of clerks (average value over 3-year period 1999–2001)	0.054	0.08	11.04	***
Share of craft and related trade workers (average value over 3-year period 1999–2001)	0.21	0.18	6.72	**
Location quotient of growing manufacturing sectors (2002)	1.47	1.04	5.53	**
Location quotient of growing service sectors (2002)	0.94	1.08	2.93	*
Share of people with higher than graduate education (Isced 5 and 6) (average value over 3-year period 1999–2001)	0.73	0.95	5.95	**
FDI penetration index (average value over 3-year period 1999–2001)	0.95	0.16	3.8	*

***,**,* significant at 1, 5 and 10%, respectively
Source: authors' calculations on Eurostat data

countries, benefiting regions are the less developed ones that start up a convergence process.

All these results suggest that more in-depth analysis is required in order to identify certain strategic behaviours that can be associated with relatively better aggregate economic performance within global and regional players. This is the subject of the next section.

6.4 Common Behaviours Among Regions

6.4.1 Winning Behaviours for Global Players

In this section our main concern is to identify common behaviours in the economic performance of global players and to associate these behaviours with specific structural features of this group of regions.

For this purpose, we report a cluster analysis run in order to group our 57 global regions according to common growth patterns. The cluster analysis grouped observations (in our cases, regions) according to certain variables. In our case, these variables were chosen in such a way as to measure GDP dynamics in one period (2002–2005), and both productivity and employment growth rates and levels lagged in time (1998–2002) to avoid endogeneity in the results. The exception to this rule was private service productivity growth, which, because of data unavailability, was measured in the same period as GDP growth. The variables that clustered our regions were the following:

- Annual average productivity growth in services and in industry, over the period 1999–2002
- Annual average productivity growth in private services, over the period 2002–2005
- Annual average employment growth rates in industry and services, over the period 1998–2002
- Levels of productivity in industry and services in 1998
- Annual average regional differential growth (with respect to the nation) over the period 2002–2005

Once the clusters had been obtained, they were characterised in terms of structural factors of the local economies. Among all possible structural features, those reported in the tables of the cluster results are those that were particularly helpful either in the interpretation of each cluster or in distinguishing among clusters.

Table 6.6 sets out the results. Three main clusters are identified, with the addition of a clear outlier (cluster 3, Inner London), which records values decisively above the global regions' average, and which for this reason is no longer considered in the analysis. Cluster 1 is made up of 14 regions and records a differential regional GDP growth relatively higher than the average of all global regions. This relatively good performance is accompanied by the highest levels of service productivity, manufacturing productivity, and service and manufacturing employment in the previous period. Also private service productivity growth performs well. This group of regions is characterised by the presence of high-value functions and a relatively low level of low-value functions, as well as R&D capacity and FDI attraction.

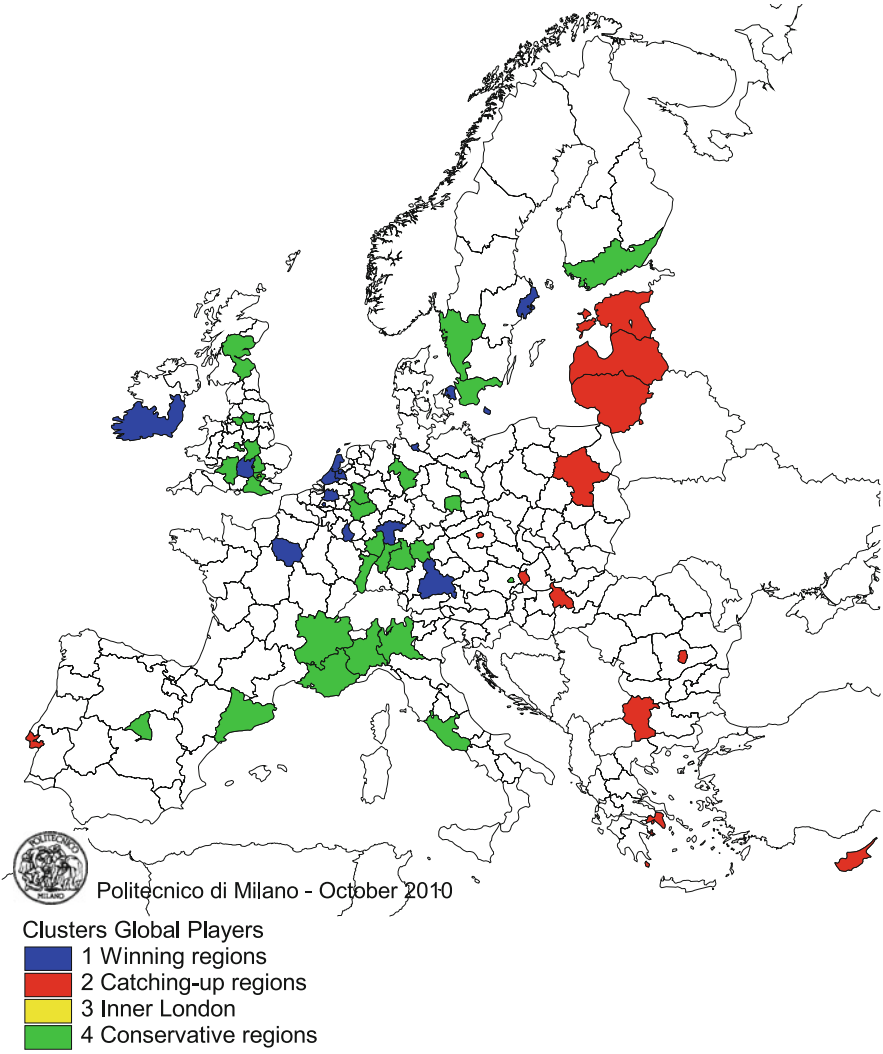
Cluster 2 is made up of 12 regions, prevalently Eastern regions, with the exception of Attica and Lisbon. Their low economic level at the beginning of the period – which is evident from the data on the level of manufacturing and service productivity – is associated with the highest productivity growth rates and the highest GDP differential

Table 6.6 Results of the cluster analysis on global players

Clusters	Cluster 1 winning regions	Cluster 2 catching-up regions	Cluster 3 inner London (outlier)	Cluster 4 conservative regions	Average value for all global players
Variables defining clusters					
GDP regional differential growth (2002–2005)	0.69	2.73	3.60	−0.52	0.54
Services productivity growth (1999–2002)	1.72	5.49	3.18	1.33	2.33
Manufacturing productivity growth (1999–2002)	2.22	7.69	2.07	0.51	2.47
Service productivity (1998)	73.13	18.35	199.43	52.89	53.16
Manufacturing productivity (1998)	75.59	15.64	128.65	58.07	54.68
Service employment growth (1998–2002)	2.48	1.71	2.25	2.42	2.28
Manufacturing employment growth (1998–2002)	−0.37	−1.96	−1.83	−1.14	−1.16
Private services productivity growth (2002–2005)	2.62	3.09	5.83	1.05	1.95
Number of observations	14	12	1	30	57
Variables describing clusters					
Structural funds expenditures (1994–1999)	148,835	237,861	107,215	135,931	160,256
FDI penetration (1999–2001)	4.53	4.97	44.35	2.85	4.24
Share of low-skilled workers (2000)	0.23	0.35	0.14	0.30	0.29
Share of high-skilled workers (private managers) (2000)	0.01	0.006	0.007	0.008	0.009
Share of managers in SMEs (an average value over a 3-year period 1999–2001)	0.032	0.06	0.036	0.032	0.038
Share of employees in S&T (2001)	0.11	0.08	0.11	0.09	0.10

growth rate among clusters. These regions have the highest shares of low-skilled workers, which suggest that they are the preferred locations for Western manufacturing firms. This is borne out by their achievement of the highest FDI penetration index, and by their specialisation (Table 6.6).

Cluster 4 is rather interesting, especially when compared with Cluster 1. Cluster 4 is the most numerous cluster: it consists of 30 global regions, all from Western countries. These regions are the least well-performing ones in terms of regional differential GDP growth, which is accompanied by a below-average capacity to increase both manufacturing and private service productivity. Interestingly, private service productivity growth increases, as well as the amount of service employment; this suggests that service employment growth takes place especially in public sectors. Manufacturing employment growth is less negative than the average, but it is again accompanied by very low productivity growth in manufacturing; job creation policies may explain this outcome.



Map 6.3 A typology of global players

These results enable deeper interpretation of these clusters (Map 6.3). Cluster 1 can easily be labelled "*winning regions*". These regions pursue two strategies at the same time. Firstly, they increase productivity in their sectors of specialisation through new technologies, organisational and managerial innovation, doing so at the expense of employment (Figs. 6.3 and 6.4). At the end of the period, these regions record a positive GDP differential growth rate compared with the negative one of Cluster 4 and the lowest decreasing rate of manufacturing employment. Secondly, these regions seek an increase in high-quality service employment

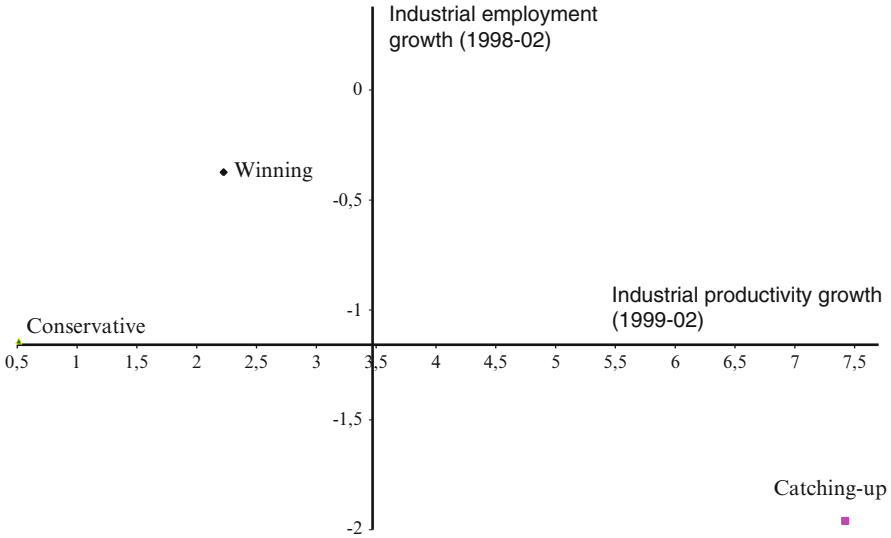


Fig. 6.4 Relationship between industrial employment growth and industrial productivity growth
Source: results from the cluster analysis

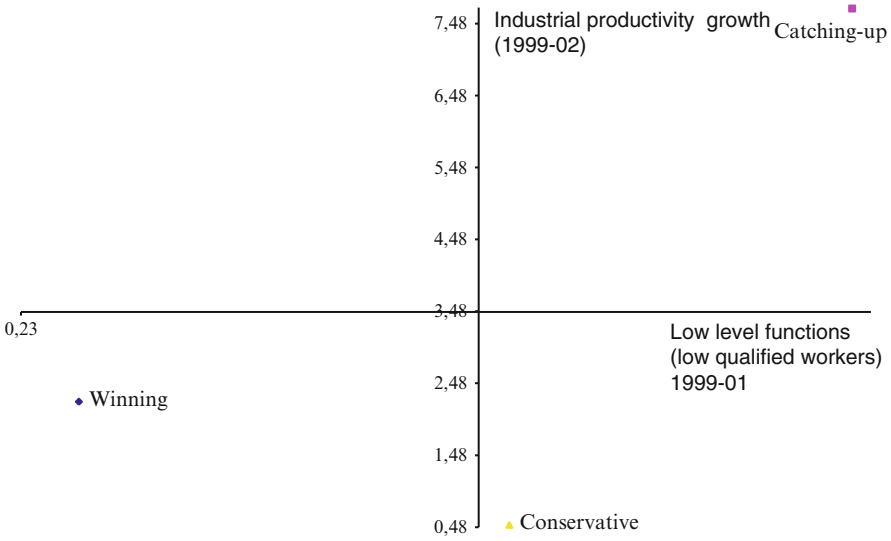


Fig. 6.5 Relationship between low-level functions and industrial productivity growth
Source: results from the cluster analysis

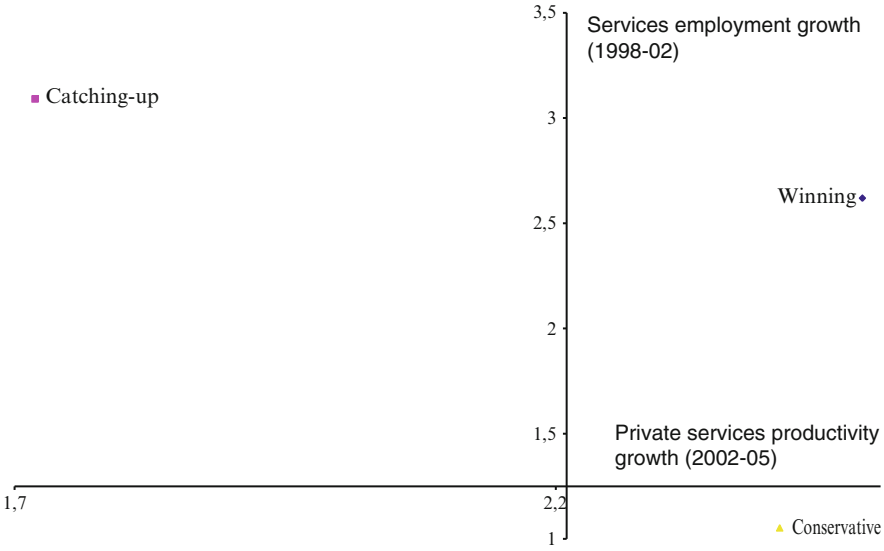


Fig. 6.6 Relationship between service employment growth and private service productivity growth
Source: results from the cluster analysis

recorded as an increase of private service productivity growth (Figs. 6.5 and 6.6). Pursuit of this mixed strategy of keeping industrial activity and increasing private service productivity is made possible by these regions' endowments of high-skilled workers and human capital in science and technology.

Cluster 2 can be called a cluster of "*catching-up regions*" able to achieve higher regional differential growth rates because of their high FDI attractiveness, and also able to rationalise industrial activities (decrease in manufacturing employment growth and increase in manufacturing productivity growth) because of a high endowment of low functions. Service employment growth is limited, and it is linked to increases in productivity.

The picture in reverse is provided by Cluster 4, which consists of Western regions that can be labelled "*conservative regions*" within global regions. In fact, this cluster mainly comprises Western regions with negative GDP differential growth rates. Suffering from deindustrialisation, they are unable to reconvert their sectoral specialisation and to increase manufacturing productivity (Figs. 6.4 and 6.5). Indeed, they are specialised in mature sectors like chemical products and transport equipment. This situation is not offset by any substantial growth in services: in fact, the lowest productivity growth rate of private services is recorded in this cluster with respect to all other clusters (Figs. 6.6 and 6.7).

In a purely inductive way we may infer from our analysis that the winning regions are those that adopt the following effective strategies (Affuso et al. 2011):

– Increasing manufacturing productivity in their sectors of specialisation. This is achieved by means of new technologies, organisational and managerial innovation, or, in some cases, corporate adaptation, especially vertical integration

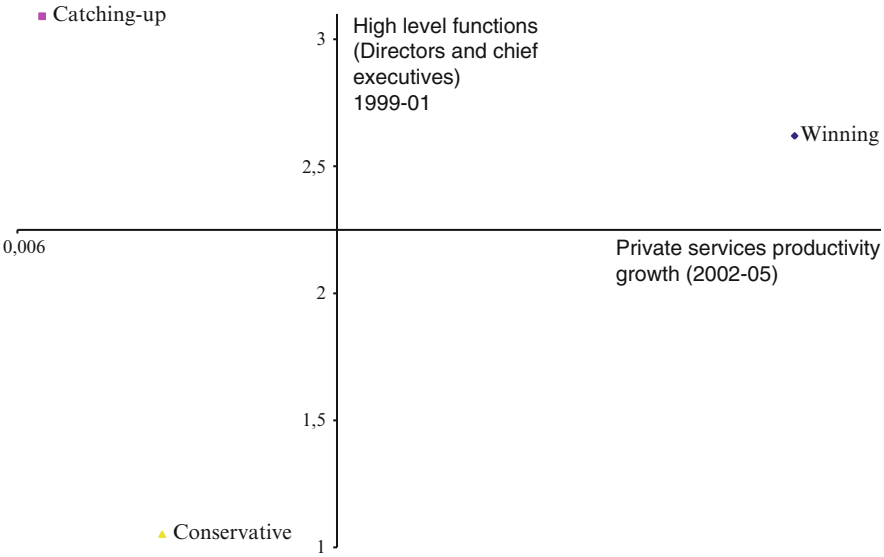


Fig. 6.7 Relationship between high-level functions and private service productivity growth
Source: results from the cluster analysis

(with suppliers and customers) and horizontal integration (with similar firms in order to achieve economies of scale). This strategy protects and supports manufacturing employment growth

– Regional shifts to higher phases of the production process, i.e., decentralizing low-level production phases to areas with lower wages and production costs. This strategy preserves the region's specialisation (especially in terms of value added), generally at the expense of job losses
– Changes in the regional sectoral structure from low value-added sectors to high value-added ones, moving to high-level service activities, and avoiding the mere quantitative substitution effect between manufacturing and service jobs.

6.4.2 Winning Behaviours for Regional Players

Also in the case of regional players, behaviours in terms of growth patterns are quite heterogeneous, and the same empirical exercise as for the global players was conducted in their regard. The results are presented in Table 6.7.

The analysis identified four clusters. Regional players in Eastern countries form a cluster on their own (cluster 4), as identified by the descriptive variables of the clusters. Regional players in Eastern countries record below-average differential regional GDP growth and low manufacturing employment growth. These regions

Table 6.7 Results of the cluster analysis on regional players

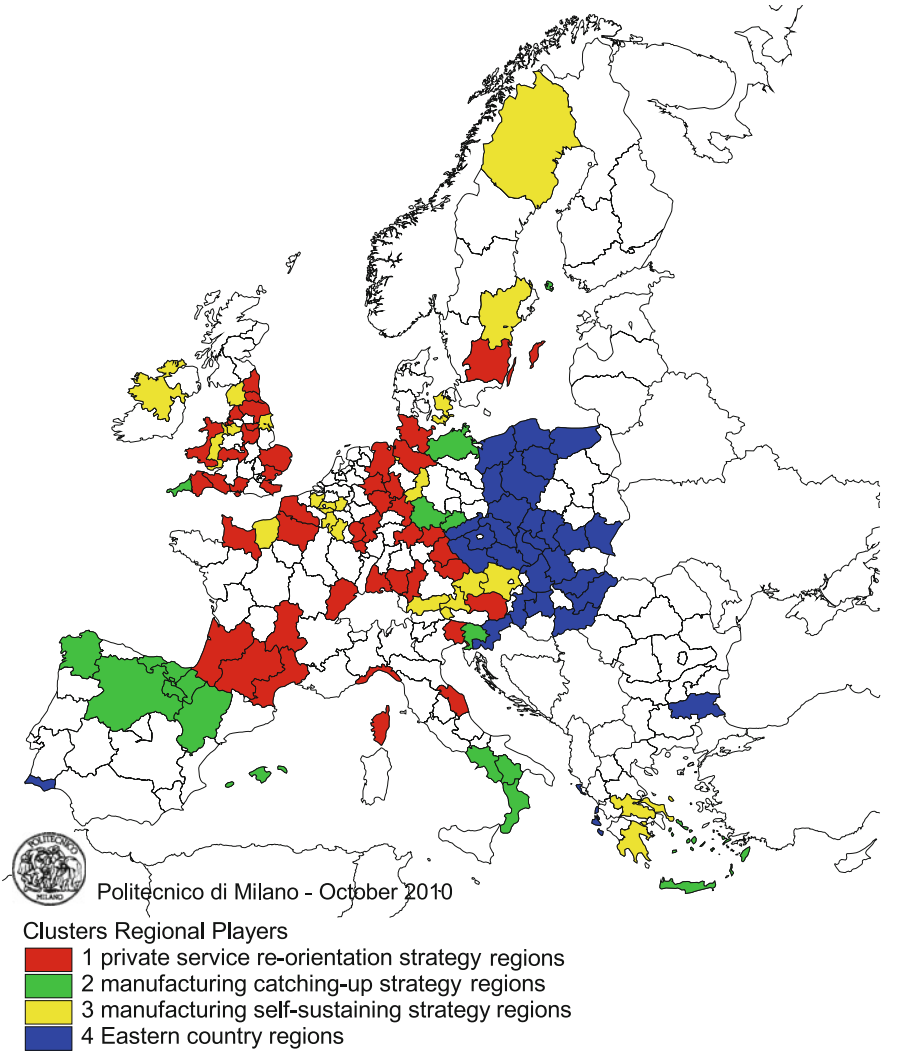
Clusters	Cluster 1 private service re-orientation strategy regions	Cluster 2 manufacturing catching-up strategy regions	Cluster 3 manufacturing self-sustaining strategy regions	Cluster 4 Eastern country regions	Average value for all regional players
Variables defining clusters					
GDP regional differential growth (2002–2005)	0.40	−2.38	0.16	−0.85	−0.42
Services productivity growth (1999–2002)	1.34	1.01	−0.62	3.00	1.31
Manufacturing productivity growth (1999–2002)	0.26	3.27	0.65	2.71	1.46
Manufacturing productivity (1998)	51.45	35.01	67.54	11.52	41.93
Service productivity (1998)	43.82	33.12	43.81	12.37	34.27
Service employment growth (1998–2002)	−0.67	2.64	−0.17	−2.33	−0.39
Manufacturing employment growth (1998–2002)	2.25	2.90	2.79	0.58	2.06
Private services productivity growth (2002–2005)	1.70	−0.73	1.55	1.60	1.21
Number of observations	46	21	23	29	119
Variables describing clusters					
New 12	0.00	0.04	0.00	0.93	0.23
FDI penetration (1999–01)	0.89	0.20	0.75	0.16	0.56
Share of low-skilled workers (2000)	0.33	0.38	0.30	0.40	0.35
Share of public managers (2000)	0.002	0.002	0.006	0.004	0.003
Share of high-skilled workers (private managers) (2000)	0.054	0.027	0.055	0.033	0.04
Share of managers in SMEs (an average value over a 3-year period 1999–2001)	0.032	0.059	0.036	0.032	0.031
Share of employees in S&T (2001)	0.11	0.08	0.11	0.09	0.10
Structural funds expenditure (1994–1999)	146,137	972,342	345,956	90,539	316,764

are characterised by high service productivity growth: if service productivity growth is analysed by dividing public and private services, it turns out that private service productivity growth is above the average, but it is not the highest among clusters. In regional players of Eastern countries, the penetration rate of FDI is relatively low, and the presence of high-skilled workers is the lowest among all clusters.

The situation is more diversified in Western countries. Three clusters emerge from the results. Clusters 1 and 3 contain regional players that perform relatively

well. Cluster 1 is made up of regions strongly oriented towards restructuring in the service sector, especially in the private sector, which exhibits a high private service productivity increase, while manufacturing activities record a limited increase in productivity and in employment growth. Innovation capacities in this cluster are probably more oriented to the services sector, and the high FDI penetration rate probably explains most of the *private service re-orientation strategy*.

Cluster 2 has characteristics completely different from those of the previous clusters. It consists of regions that record increases in both service and manufacturing



Map 6.4 A typology of regional players

employment growth rates, but show an increase in productivity growth rates only in manufacturing. The low level of the FDI penetration rate suggests that the *manufacturing catching-up strategy* is put in place primarily by local firms. Cluster 3 is instead much more dependent on manufacturing dynamics, because it records both high manufacturing productivity levels and high employment growth rates. The service sector shows employment and productivity growth rates lower than those of Cluster 1: the high innovation and FDI penetration rates that characterise this cluster probably help a *manufacturing self-sustained strategy*.

Map 6.4 depicts the four clusters of regional players, as follows. Cluster 1: the *private service re-orientation strategy* regions mostly located in central countries, like France, UK, Germany, and Northern and Central Italy; Cluster 3: the *manufacturing re-orientation strategy* regions, which are instead mainly part of peripheral countries, like Greece, Scandinavia, Ireland and Austria; finally, Cluster 2: the *manufacturing catching-up strategy* regions typical of southern countries like Spain and Southern Italy. In general, a country effect emerges clearly, which again shows that regional growth is only partly an endogenous effect.

6.5 Success Factors for Regional Growth: An Interpretative Approach

6.5.1 Methodological Aspects: Spatial Heterogeneity

The previous sections have evidenced that European regional growth patterns are differentiated between Western and Eastern 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 global and regional players.

A strong country effect is apparent in Table 6.1 and Fig. 6.2. National economic trends are in fact crucial in the determination of regional performance; 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 deploy their effects directly at regional level. Many of these aspects are linked to the reorganisation of production processes, and here the attractiveness of the local economies to high or low value-added tasks and phases plays a crucial role, as we shall see in the next chapter. 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 not only the most important success factors explaining regional growth performance patterns but also to determine whether these success factors exert a

positive effect on growth in different ways across space. In other words, we shall take spatial heterogeneity (LeSage 1998; Anselin 2010) into account.

Spatial heterogeneity, regardless of the form that it takes, is a conceptual rather than technical problem which can be easily solved by using a regression model to test the restriction of uniform coefficients across regions belonging to the same countries or to different countries. However, this optimal strategy is rather costly in terms of degrees of freedom.[4] Given the lack of the latter, we had to look for second-best solutions. The general objectives of this book suggested that we should explore two different potential sources of spatial heterogeneity.

As discussed in Chap. 4, regions are characterised by different attitudes towards economic globalization. In order to test the role played by globalization in regional growth, we not only used a dummy that accounts for globalization stance but also interacted this dummy with the other explanatory variables in order to test whether the estimated coefficients varied across types of regions.[5] This strategy made 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.

Conceptually, the dependent variable in our regional growth model is a regional differential growth rate. Methodologically, the use of the regional GDP differential growth with respect to nation assumes that country effects occur for all regions in the same way. A better option is to regress regional growth on, among other things, the national growth rate; in this case the data are allowed to estimate the elasticity of regional growth to national growth without imposing a restriction equal to 1, which is implicitly assumed when the dependent variable is the differential growth rate.

How the success factors were chosen and the basic structure of the model are described in the next sub-section.

6.5.2 *The Choice of Success Factors and the Basic Regional Growth Model*

The choice of the success factors explaining regional performance was based on the consideration that the differential growth rate is what remains to be explained once the national effects have been considered by including the national growth rates among the regressors. As suggested in the introductory section to this chapter, a recent theory summarises the elements explaining endogenous regional growth in

[4]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 EU region, while the second made up of country dummy variables, as well as possible interacted effects.

[5]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.

what is termed "territorial capital", which consists of material and intangible, private and public, soft and hard elements (Camagni 2009). For this reason, a rather differentiated set of local assets were chosen: some were traditional material factors like transport infrastructure, geographical position, and the functions in which a region is specialised; others were intangible, like agglomeration economies, with the usual limitations that characterise a database that must cover the entire European territory.[6]

In particular, the following variables were selected:

- The national growth rate (*natgrowth*), which measures all the national factors with an equal impact for all regions of the same country. In order to avoid endogeneity, this national growth rate was calculated using only the GDP of the other regions of the country to which the region belonged.[7] We expected national factors to positively influence regional growth
- The growth effects induced by the regional geographical position, whether it is close to fast-growing regions or close to regions unable to grow fast (*spill*). These effects can be positive or negative depending on the role of neighbouring regions, which may induce growth through demand effects or steal it away through competition. The indicator used was a spatial growth spillover indicator for a generic region r, capturing economic potential (Clark et al. 1969) as the sum of the annual absolute difference between income growth rates of all other regions j divided by the distance between each region r and region j, defined as:[8]

$$\mathrm{SP}_{rt} = \sum_{j=1}^{n} \frac{\Delta Y_{jt}}{d_{rj}}; \quad r \neq j \tag{6.3}$$

where:
ΔY_{jt} = income growth rate of region j at time t
j = all regions except region r
d_{rj} = physical distance between region r and j
n = all regions of the sample;

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

[7]This had the drawback of eliminating from the regressions countries which have only one NUTS 2 region, namely Luxembourg, Cyprus, Malta, Estonia, Latvia and Lithuania. Nevertheless, this decreased the sample by only six observations.

[8]An indicator weighting each regional growth rates for the share of each regional economy on the European total GDP was calculated in addition to the non-weighted one. A high statistical correlation emerged between the two, as shown by a Pearson correlation coefficient of 0.93. Moreover, the difference between the two standardised indices showed a low spatial autocorrelation, with a Moran's I index of 0.30. On removing a few outliers (mainly Nordic and Spanish regions), the Moran's I index was 0.18. On the basis of this correlation, it was decided to use the non-weighted spillover indicator, given its closer similarity to the classic spatially-lagged models of spatial econometrics. This indicator is an economic potential measure which is generally calculated as the accessibility to total income at any location allowing for distance, following Clark et al. 1969. Here the concept of economic potential is measured in terms of accessibility to the income growth rates.

- A soft and private element of territorial capital, namely the degree of innovation of regions (*inno*), expected to affect positively the regional growth rates, as a large body of literature suggests.[9] Innovation was proxied by the share of human resources in science and technology
- A hard element of the territorial capital: the transport infrastructural endowment of regions, which ought to be positive but may also be negative if this variable measures the density of roads and congestion effects prevail.[10] This aspect was measured by the endowment of roads per square kilometre
- Regional specialisation in high-value functions. In a period of globalization, it is to be expected that the higher the functions that a region performs, the higher its growth rate.[11] These functions were approximated by the share of high-value service functions (i.e., share of corporate managers) (*funct*) reported by the labour force survey
- A mixed (hard/soft) element of territorial capital: agglomeration economies, which were captured with a dummy measuring the settlement structure of regions (*Daggec*). In particular, agglomeration economies were proxied by dummies measuring the presence in regions of dense and large cities. Specifically, use was made of two different dummies built on different thresholds of densities and sizes of cities;
- 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;
- Last, but not least, an 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 growth effects. We used structural funds expenditure per capita as a proxy for this factor.

The base model estimated was therefore the following:

$$\begin{aligned}\text{regrowth}_r = {} & \alpha_0 + \beta_1 \text{natgrowth}_r + \beta_2 \text{inno}_r + \beta_3 \text{spill}_r + \beta_4 \text{in}_r + \beta_5 \text{pol}_r \\ & + \beta_6 \text{funct}_r + \beta_7 \text{fdi}_r + \alpha_1 \text{Daggec}_r + \varepsilon_r \end{aligned} \tag{6.4}$$

In order to test the role played by globalization on regional growth, as previously mentioned we first introduced a dummy accounting for globalization stance into (6.4). We then interacted this dummy with the other explanatory variables in order to test whether the estimated coefficients varied across types of regions. The estimated model therefore became:

[9]For a review of the role of innovation in regional growth, see Howells 2005; Johannson and Karlsson 2009; de Groot et al. 2009; Audretsch and Aldridge 2009; Fratesi 2010.

[10]For a review of the role of transport infrastructure in regional growth, see Bröcker and Rietveld 2009.

[11]On the role of functions in regional growth, see Chap. 3 of this book.

$$\text{regrowth}_r = \alpha_0 + \beta_1 \text{natgrowth}_r + \beta_2 \text{inno}_r + \beta_3 \text{spill}_r + \beta_4 \text{in}_r + \beta_5 \text{pol}_r + \beta_6 \text{funct}_r + \beta_7 \text{fdi}_r + \alpha_1 \text{Daggec}_r + \alpha_2 D_{\text{GLO}} + \alpha_3 D_{\text{GLO}} \sum_{n=1}^{8} * X_{nr} + \varepsilon_r \tag{6.5}$$

where *GLO* is a categorical variable equal to 1 if region r is either a global, a regional or a local player and 0 otherwise, and X_{nr} is the vector of the eight explanatory variables which can affect regional growth, as discussed when explaining (6.4).[12]

The next section reports the results.

6.5.3 Success Factors for European Regions

Table 6.8 reports the standardised coefficients obtained by regressing the basic model (6.4). Most coefficients have the expected sign and are significant, with the exception of high-value functions, which remain positive though non-significant. Transport infrastructure has a negative sign, signalling that congestion effects prevail over accessibility advantages.

In particular, the standardised coefficient of the national growth rate is positive and close to 0.8, implying that national factors are very important: being part of a country which grows faster implies a higher growth rate for a region, independently of its endogenous characteristics.

The share of human resources in science and technology, a proxy for innovation, also has a positive and significant coefficient, close to 0.15; an innovative environment helps regions thrive in an age of globalization.

Spatial growth spillovers are on the contrary negative and significant. In this case, the negative competition effect appears to prevail over the positive demand effect, so that being close to strong and fast growing regions has negative effects. However, the standardised coefficient is in this case rather small, being in the order of −0.02.

Public policy support has a small but positive and significant standardised coefficient (0.05), implying that within their countries, the most assisted regions benefit from this assistance *ceteris paribus*.

Another 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 standardised coefficient is positive, significant and large (0.10); as expected, the capacity of a region to attract capital,

[12]Since we did not have enough degrees of freedom we re-estimated (6.5) twice, with a dummy for regional and local players, respectively.

Table 6.8 Success factors for European regions

	Model 1 (all EU27 regions)			Model 2 (Old 15 regions)		
	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.
Country growth (2002–2005)	0.79	0.00	***	0.59	0.00	***
Innovation (share of human resources in science and technology) (2001)	0.14	0.02	**	0.04	0.48	
Spatial growth spillovers (1999–2002)	−0.02	0.01	**	−0.04	0.00	***
Transport infrastructure endowment (2001)	−0.15	0.00	***	−0.25	0.00	***
Structural funds	0.05	0.01	**	0.07	0.00	***
High value functions (an average value over the period 1999–01)	0.06	0.16		0.24	0.00	***
FDI penetration (an average value over the period 1999–01)	0.10	0.03	**	0.11	0.02	**
Agglomeration economies (urban regions)	0.07	0.05	*	0.04	0.33	
Constant	−0.66	0.11		−0.66	0.66	
n. of obs.	246			195		
R-squared	0.59			0.49		
F-test	36.40	0.00	***	30.80	0.00	***
Moran's I	1.67	0.09	*	3.38	0.00	***
Spatial error						
Lagrange multiplier	0.12	0.72		1.92	0.16	
Robust Lagrange multiplier	0.53	0.46		0.13	0.71	
Spatial lag						
Lagrange multiplier	0.20	0.65		2.51	0.11	
Robust Lagrange multiplier	0.61	0.43		0.72	0.39	

***$p < 1\%$; **$p < 5\%$; *$p < 10\%$

Independent variable: regional growth rates 2002–2005. Standardised coefficients

and foreign direct investments in particular, has a positive impact on growth performance amid globalization.

The final explanatory variable is the settlement structure, which was used as a proxy for agglomeration economies. Two dummies, built with two different thresholds of density and urban size, were available to capture agglomeration economies.[13] Between the two dummies, the one measuring the presence of more medium-sized cities, labelled *urban* regions, turned out to be significant, while the dummy capturing the presence of large-size cities (not reported in our results), once inserted in (6.4) proved non-significant in explaining regional growth. This result can be interpreted by arguing that agglomeration economies play a role up to a certain city size; but above a certain threshold, they are unable to spread their effects on growth, and diseconomies of scale prevail.

[13]More precisely, 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^2; or a lower population density (100–150 inhabitants/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^2 or a population density of 150–300 inhabitants/km^2.

The results were tested for spatial effects using various matrices, including a standardised distance matrix and a standardised 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. This is likely to have been due to two concomitant effects: (i) the regressions comprised an explicit spatial growth spill-over coefficient, i.e., some sort of spatial lag; (ii), the fact that the regressions included the national growth rate was another way in which spatial dependence was taken into account.

The descriptive results of the previous sections, highlighting the presence of "two growth models" in Western and Eastern countries, suggested that (6.4) should be tested separately for the two blocks of countries. The limited number of observations prevented regressing the model on the New 12 countries, while the results for the Old 15 member countries are reported in Table 6.8.

The results obtained are similar to those of the general model run on all regions, although a few differences are apparent. Perhaps because of a highly differentiated regional structure in the West, the national growth rate has a lower standard coefficient, while infrastructure endowment, a signal of congestion diseconomies, is more sizeable. The last difference concerns agglomeration economies: these are insignificant for regions in Western countries, which signals that this effect is more a characteristic of Eastern countries.

6.5.4 Spatial Heterogeneity of Success Factors

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 6.9 presents the results of estimations of (6.5), when only a dummy for either global, regional or local players was inserted in (6.4) 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. Nor is the dummy global significant (model 2, Table 6.9). The same non-significant result is obtained when regional or local players are analysed (models 3 and 4, Table 6.9); even global and regional players together do not register any particular performance (model 5, Table 6.9). As found by previous analyses reported in this chapter, benefiting regions 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 globalization *per se* does not explain regional growth, as mentioned several times in this chapter.

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.

Table 6.9 Success factors for European regions: the effects of regional types

	Model 1			Model 2			Model 3			Model 4			Model 5		
	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.
Country growth (2002–2005)	0.79	0.00	***	0.78	0.00	***	0.79	0.00	***	0.78	0.00	***	0.78	0.00	***
Innovation (share of human resources in science and technology) (2001)	0.14	0.02	**	0.10	0.10		0.14	0.02	**	0.13	0.05	*	0.13	0.05	*
Spatial growth spillovers (1999–2002)	−0.02	0.01	**	−0.03	0.00	***	−0.02	0.01	**	−0.02	0.01	**	−0.02	0.01	**
Transport infrastructure endowment (2001)	−0.15	0.00	***	−0.16	0.00	***	−0.15	0.00	***	−0.16	0.00	***	−0.16	0.00	***
Structural funds (1994–1999)	0.05	0.01	**	0.04	0.05	*	0.05	0.01	**	0.05	0.03	**	0.05	0.03	**
High value functions (average value over the period 1999–2001)	0.06	0.16		0.06	0.21		0.06	0.17		0.057	0.22		0.06	0.22	
FDI penetration (average value over the period 1999–2001)	0.10	0.03	**	0.08	0.06	*	0.10	0.04	**	0.10	0.04	**	0.10	0.04	**
Agglomeration economies (urban regions)	0.07	0.05	*	0.09	0.01	*	0.07	0.07	*	0.06	0.08	*	0.06	0.08	*
Global players				0.08	0.11										
Regional players							0.00	1.00							
Global and regional players										0.04	0.29				
Local players													−0.05	0.29	
Constant	−0.66	0.10		−0.66	0.22		−0.66	0.10		−0.66	0.10	*	−0.66	0.30	
n. of obs.	246			246			246			246			246		
R-square	0.59			0.60			0.59			0.60			0.59		
F-test	36.42	0.00	***	32.51	0.00	***	32.66	0.00	***	33.74	0.00	***	33.74	0.00	***
Moran's I	1.68	0.09	*	1.54	0.12		1.68	0.09	*	1.64	0.10		1.64	0.10	
Spatial error															
Lagrange multiplier	0.12	0.72		0.06	0.81		0.12	0.72		0.103	0.75		0.10	0.75	
Robust Lagrange multiplier	0.54	0.46		0.41	0.52		0.54	0.46		0.40	0.53		0.40	0.53	
Spatial lag															
Lagrange multiplier	0.20	0.65		0.26	0.60		0.20	0.65		0.12	0.73		0.12	0.73	
Robust Lagrange multiplier	0.61	0.43		0.62	0.43		0.62	0.43		0.41	0.52		0.41	0.52	

***$p < 1\%$; **p $< 5\%$; *$p < 10\%$

Independent variable: regional growth rates 2002–2005

Standardised coefficients

The first analysis split the region sample into two groups, global and regional players on the one hand, and local players on the other, and determined whether the estimates were statistically different using a Chow test. Table 6.10 presents the

Table 6.10 The spatial heterogeneity of success factors

	All regions			Global and regional players (marginal effects)			Local players (marginal effects)		
	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.	Coeff.	*p*-value	Sig.
Country growth (2002–2005)	0.79	0.00	***	0.80	0.00	***	0.81	0.00	***
Innovation (share of human resources in science and technology) (2001)	0.14	0.03	**	0.14	0.06	*	0.14	0.14	
Spatial growth spillovers (1999–2002)	−0.02	0.01	**	−0.03	0.00	***	0.12	0.33	
Transport infrastructure endowment (2001)	−0.15	0.00	***	−0.15	0.00	***	−0.25	0.02	**
Structural funds (1994–1999)	0.05	0.01	**	0.04	0.19		0.14	0.14	
High value functions (average value over the period 1999–2001)	0.06	0.16		0.08	0.10	*	−0.07	0.51	
FDI penetration (average value over the period 1999–2001)	0.10	0.04	**	0.10	0.08	*	0.07	0.32	
Agglomeration economies (urban regions)	0.07	0.05	*	0.06	0.17		0.11	0.10	
Constant	−0.66	0.107		−0.66	0.11		−0.66	0.64	
n. of obs.	246			175			71		
R-square	0.59			0.62			0.59		
F-test	36.42	0.00	***	36.11	0.00	***	11.58	0.00	***
Moran's I	1.68	0.09	*	0.58	0.56		0.77	0.44	
Spatial error									
Lagrange multiplier	0.12	0.72		0.22	0.64		0.37	0.54	
Robust Lagrange multiplier	0.53	0.46		0.60	0.44		0.12	0.72	
Spatial lag									
Lagrange multiplier	0.20	0.65		0.05	0.81		0.25	0.61	
Robust Lagrange multiplier	0.61	0.43		0.43	0.51		0.00	0.95	

***$p < 1\%$; **$p < 5\%$; *$p < 10\%$

Independent variable: regional growth rates 2002–2005

Standardised coefficients

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 (6.4) in order to allow comparisons. Most standardised coefficients appear to be similar between the two groups and the general regression model, suggesting that the amount of spatial heterogeneity in this respect is not very high. In particular, the coefficient of the national growth rate is very similar, while the standardised coefficient of innovation, i.e., human resources in science and technology, is significant only in global and regional players, which suggests that innovation is more important for the competitiveness of regions with a high degree of integration.

The effects of spatial growth spillovers appear to be significant (and negative) only for global and regional players. Their higher degree of openness to the rest of the world economy probably explains their greater external competition, including that by neighbours. Thanks to their protective closed economies, local players suffer less from the presence of fast-growing competitors in their surroundings.

The negative coefficient for the endowment of infrastructure is larger for local players, although the significance is the same, suggesting that global and regional players may be better able to deal with congestion because of their global ties.

FDI penetration remains significant only for global and regional players, and it explains regional growth dynamics in world integrated economies. Moreover, high-level functions become significant for global and regional players, testifying to the importance of high value-added activities in periods of strong competition.

Finally, agglomeration economies are significant in the general model, but it appears that the effects of location in an urban (i.e., intermediate) region tend to be more marked among local players, where the standardised coefficient is larger and almost significant despite the smaller number of observations.

Notwithstanding the differences discussed above, the Chow test, performed on the different models of Table 6.10, produced a value of 1.33, and implied that the null hypothesis that the two regressions actually have the same coefficients cannot be rejected.

A doubt remains, however; given the high importance of the coefficient of the national growth rate in all models, this result may be due to more than similarities in all coefficients. 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 (6.4). 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 6.11 sets out the results of a regression in which each variable was crossed with the local player dummy.

The general results (first column in Table 6.11), valid for global and regional players, remain very similar to those of Table 6.8, 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 6.11, highlights a general result: spatial heterogeneity is

Table 6.11 Spatial heterogeneity by success factor

	Global and regional players (average effect on all regions)			Local players (marginal effects)		
	Coeff	*p*-value	Sig.	Coeff	*p*-value	Sig.
Country growth (2002–2005)	0.86	0.00	***	−0.17	0.11	
Innovation (share of human resources in science and technology) (2001)	0.14	0.06	*	0.02	0.90	
Spatial growth spillovers (1999–2002)	−0.03	0.00	***	0.08	0.31	
Transport infrastructure endowment (2001)	−0.14	0.00	***	−0.12	0.12	
Structural funds (1994–1999)	0.04	0.20		0.05	0.26	
High value functions (average value over the period 1999–2001)	0.08	0.10		−0.09	0.26	
FDI penetration (average value over the period 1999–2001)	0.09	0.08	*	0.01	0.79	
Agglomeration economies (urban regions)	0.06	0.17		0.03	0.49	
Constant	−0.66	0.11		0.14	0.47	
n. of obs.	246					
R-square	0.61					
F-test	23.21	0.00	***			
Moran's I	1.03	0.30				
Spatial error						
Lagrange multiplier	0.04	0.84				
Robust Lagrange multiplier	0.07	0.78				
Spatial lag						
Lagrange multiplier	0.00	0.96				
Robust Lagrange multiplier	0.04	0.84				

$***p < 1\%$; $**p < 5\%$; $*p < 10\%$
Independent variable: regional growth rates 2002–2005
Standardised coefficients

not present. In fact, most marginal effects are insignificant, and in all but two cases they are highly insignificant. The only two coefficients which may be less similar are the national growth rate and the transport infrastructure endowment.

The main conclusion to be drawn is that 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 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.

6.5.5 Regional Endowment of Success Factors

A legitimate question raised by these results is why, on average, global players grow more than regional and local ones; the answer seems to be related to the

Table 6.12 Impacts and effects of each success factor on regional growth

	Standardised coefficients (impacts)	Global players		Regional players		Local players	
		Average value	Effect on growth[a]	Average value	Effect on growth[a]	Average value	Effect on growth[a]
Country growth	0.78	2.14	1.85	2.64	2.27	2.54	2.19
Innovation (share of human resources in science and technology)	0.14	0.14	1.03	0.10	0.74	0.09	0.67
Spatial growth spillovers	−0.02	11.88	−0.02	1.38	0.00	0.70	0.00
Transport infrastructure endowment	−1.15	0.38	−0.49	0.21	−0.27	0.14	−0.18
Structural funds	0.05	7,160	0.02	9,544	0.03	8,434	0.03
High value functions	0.06	0.06	0.20	0.04	0.13	0.03	0.10
FDI penetration	0.10	299.9	0.28	98.2	0.09	81.4	0.08
Agglomeration economies (urban regions)	0.07	0.15	0.04	0.47	0.13	0.25	0.07
Constant		−0.66	−0.66	−0.66	−0.66	−0.66	−0.66

[a]The effect on growth has been obtained by multiplying the estimated coefficients by the average value of each variable

Source: calculated by the authors

capacity of regions to endow themselves with those success factors that have an important role in regional growth.

To verify whether this is so, Table 6.12 reports the standardised coefficients of the estimated 6.4, 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 effect that each success factor generates in terms of growth, obtained by multiplying the raw coefficient for the average value.

Figure 6.8 shows the endowment of success factors by groups of regions. On average, global regions are more endowed with innovation, high-value functions and FDI penetration than are the other two types of regions, while regional players have a higher number of urban regions than the other two groups and, to a limited extent, they have a higher structural funds endowment. Local players have low spatial growth spillovers and low infrastructure endowments, which negatively influence regional growth.

Last, but not least, local players are relatively less endowed with transport infrastructure; and for this reason the negative impact of this element on growth is modest (−0.18 points). Their limited spatial growth spillovers do not generate particular effects on growth, given their limited impact.

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

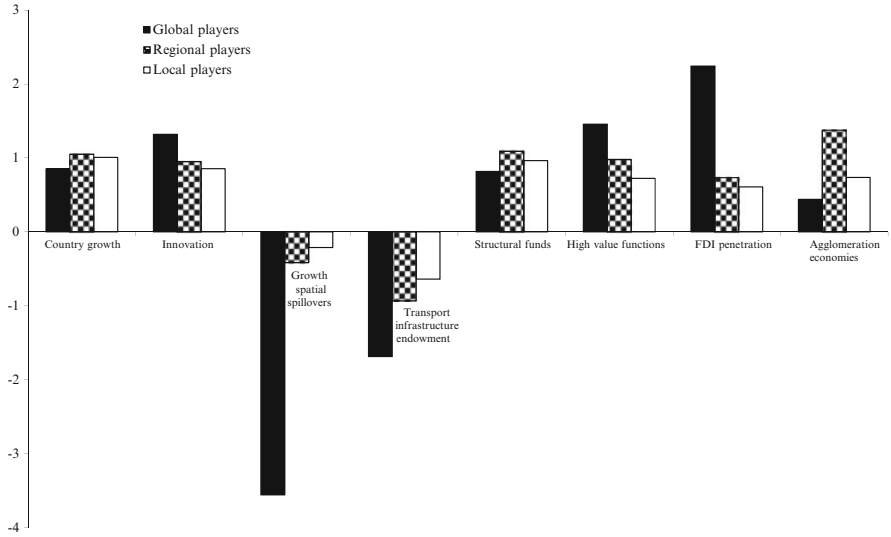


Fig. 6.8 Endowment of success factors, and level of national growth and spillover effects for global, regional and local players. EU average = 1
Source: calculated by the authors

that no statistically significant difference arises. However, the endowment of success factors differs across types of region; in particular, global players are well endowed with those factors that have a high impact on growth.

Table 6.12 shows that the three success factors that on average are more frequently present in global regions – namely FDI, innovation and high-value functions – are also those that weight most on growth (higher standardised coefficients). Thanks to both the highest endowment and the highest weight, these generate a large part of regional growth in global regions. Moreover, growth in global regions is not negatively affected by the high spatial growth spillovers that characterise their economies; the limited impact of spillovers on regional growth generates a loss of only −0.02 points. The relatively high endowment and weight of transport infrastructure in global regions has a decisive negative effect on growth (−0.49 points), which is however counterbalanced by all other elements.

It is the high number of urban regions (proxy for agglomeration economies) that distinguishes regional players from the others; despite their relatively important weight on growth, agglomeration economies produce only a 0.13 point increase in regional player GDP growth, being the only success factor with which they are more endowed than the other regions.

6.6 Globalization and Regional Disparities

The concluding section of this chapter on regional growth in a period of globalization presents an analysis of regional disparities. This analysis will not be a standard one, for it has two aims: the first is the traditional one of seeing how regional

disparities have developed over the recent period; the second is to determine how much of this trend is due to globalization.

Regional disparities are represented using the Theil index, which has the valuable characteristic of being decomposable into parts, so that the extent to which disparities depend on one factor or another can be disentangled.

Figure 6.9 shows the traditional Theil indexes of regional disparities, decomposing the within- and between-country effects. If we look at the total European regional disparities (Fig. 6.9a) we find that the Theil index decreased significantly from 1995 to 2005 (our period of analysis). As in other previous studies (Martin 1998; Rodrìguez-Pose and Fratesi 2004; Rodrìguez-Pose and Gill 2006; Ezcurra and Rodriguez-Pose 2009), this pattern is due to a decrease in the between-country

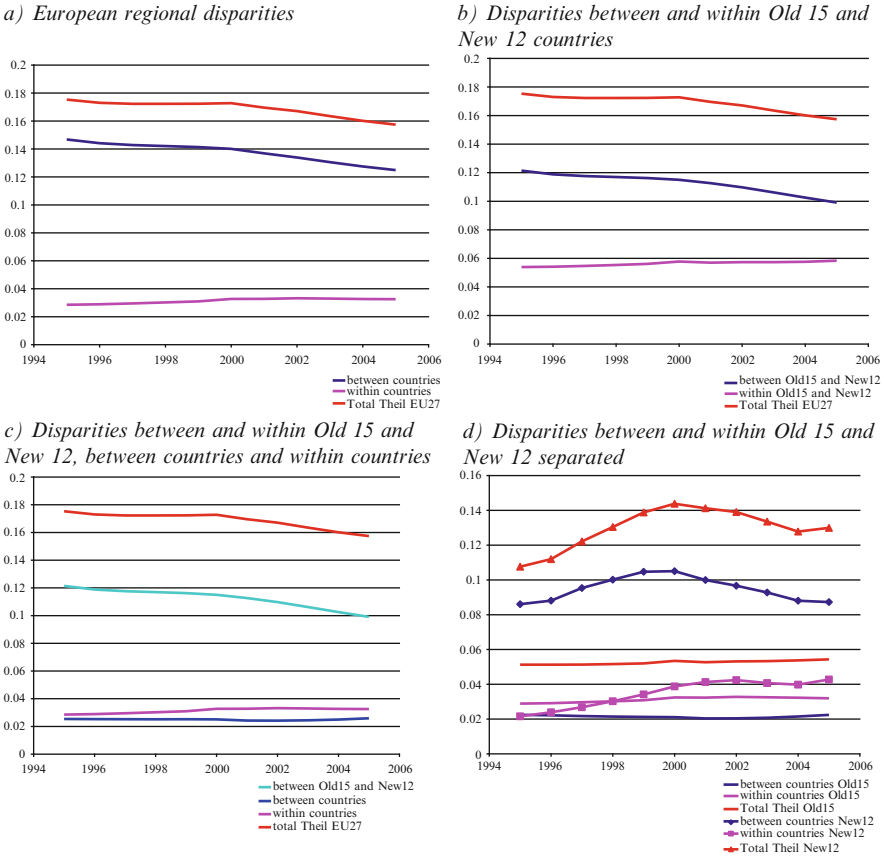


Fig. 6.9 General Theil indices of regional disparities
Source: authors' elaborations on Eurostat data

effect, whereas the within-country effect records a small but consistent increase in regional imbalances, which signals 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, conceal an important effect in the convergence process; this has been due to the stronger performance of the New 12 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 Fig. 6.9b, which shows that a large part of EU total disparities (about two-thirds) is due to differences between Old 15 and New 12 member countries, and that, while this part has decreased rapidly, the disparities within the two areas of Europe have increased, albeit at a lower pace.

It is possible to decompose the Theil index further in order to examine the role of three levels at the same time. For this reason, in Fig. 6.9c we can observe that, once the very large and decreasing effect of Old 15-vs.-New 12 countries has been extracted, the remaining regional disparities can be attributed to similar extents to between-country and within-country disparities, with the latter being slightly larger than the former, which signals that the results of Fig. 6.9a are biased by the difference between Old 15 and New 12. Once this difference is removed, within-country disparities are even more relevant than between-country ones. Note that the two effects are slightly increasing, unlike the disparities between New and Old member states.

In order to see if the two groups of countries exhibit different patterns, Fig. 6.9d represents, in the same picture (for comparative purposes), the Theil indexes calculated between and within countries for Old 15 and New 12 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 a tendency to increase in many years, whereas they are substantially stable in Old 15 countries. This is due to the fact that, in New 12 member states, between-country disparities first increase and then decrease, whereas within-country inequalities exhibit a clear growth pattern, owing to the fact that the core areas of these countries have normally outperformed the rest of their respective countries. Being these countries still far from the presence of congestion diseconomies, national performance is enhanced by the concentration of policies, which increase within-country disparities (Fratesi 2008). Interestingly, within-country disparities in the New 12 member states have exceeded those in Old 15 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 finding of interest is that, in Old 15 countries, the disparities between countries are lower than those within them – 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, notwithstanding the doubling of the latter.

Regional disparities can also be analysed by considering the effect of the three types of regions. Firstly, Fig. 6.10a shows that most European disparities are

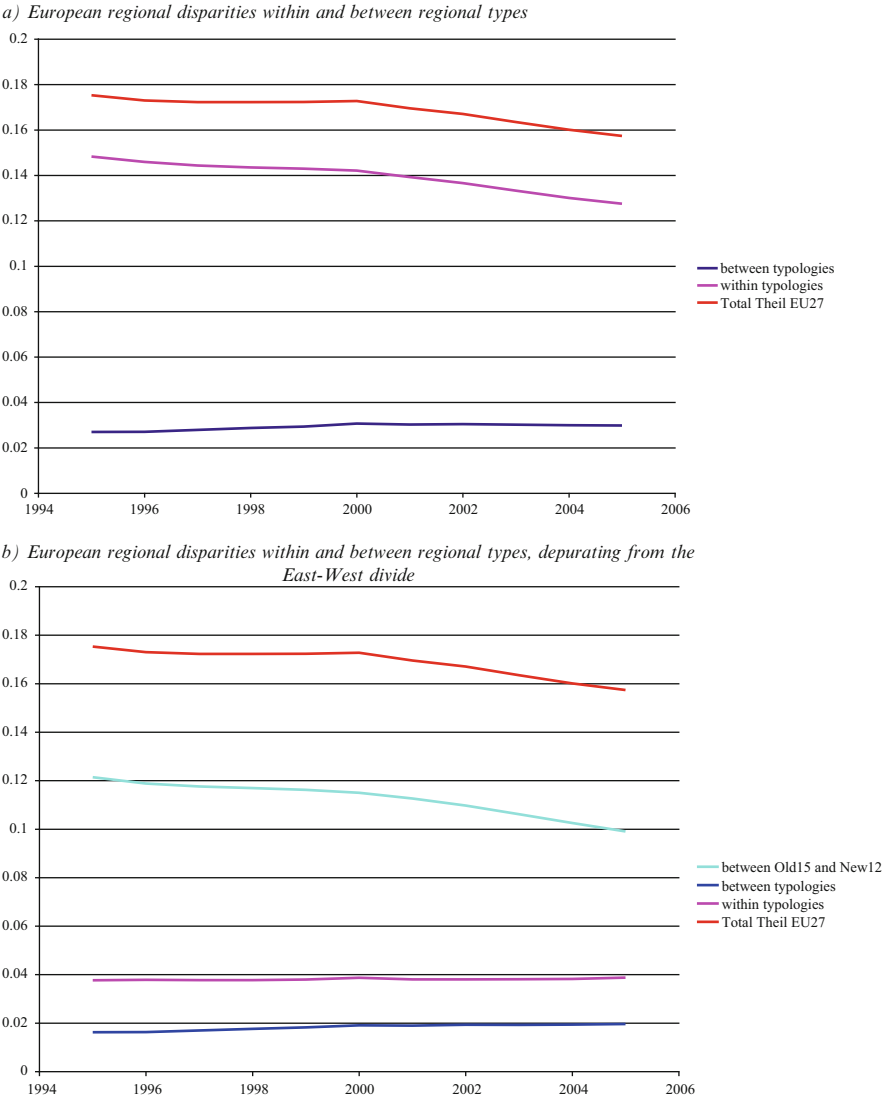


Fig. 6.10 Theil indices of regional disparities linked to globalization processes
Source: authors' elaborations on Eurostat data

accounted for within regional types, not between them; this means that the levels of income between the three types of region are only slightly different, and most disparities take place within regions belonging to the same group. This is despite the fact that the level of disparities between types is stable, whereas the level within types is significantly decreasing.

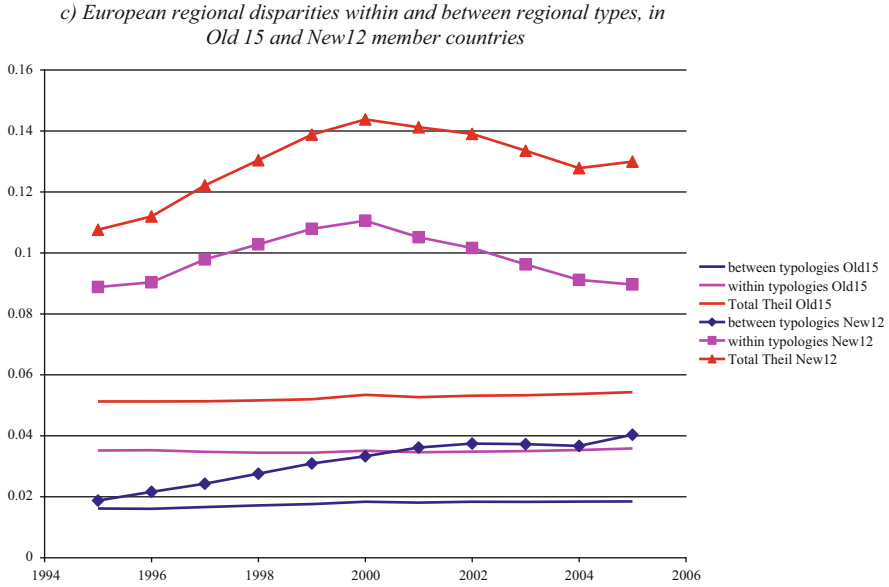


Fig. 6.10 Theil indices of regional disparities linked to globalization processes – Continued
Source: authors' elaborations on Eurostat data

We further decompose the Theil index into three parts by separating the effect of Old and New Member countries (Fig. 6.10b). The total Theil index remains the same; the large majority of EU27-wide regional disparities are due to the differences between the two groups of member countries. The decrease in total disparities reflects the decrease in differences between Old 15 and New 12 countries, as already observed in Fig. 6.9c.

Once the East–West divide is controlled for, the share of disparities accounted for by within-type disparities (unrelated to globalization forces) is now commensurable to the one accounted for by between-type regional disparities, with the latter still smaller but slowly increasing and surpassing 12% of total disparities in 2004 and 2005 (Fig. 6.10b). This means that regional disparities are not only a matter of an Eastern–Western divide; they are also, though to a lesser extent, a matter *of a globalization openness divide*.

Finally, given that the Eastern–Western divide is so important, it is of interest to investigate whether or not the two groups of countries behave differently internally. Figure 6.10c represents the Theil indexes calculated separately for New 12 and Old 15 countries in the same graph for comparative purposes, as was previously done in Fig. 6.9d. Once again, the total Theil index is much higher for New 12 than for Old 15 countries, and increasing in the former and stable in the latter. In the West, similarly to the overall pattern of the EU, within-type disparities are higher than between-type ones; and the two are quite stable and much smaller than in the East.

Within the Old 15 member countries, slightly more than one-third of regional disparities are due to the fact that regions are differently open with respect to global forces.

The situation in the East is more dynamic. Overall, within-type disparities, those unrelated to globalization, are higher than those between types. They appear to follow an inverted U-shaped pattern, which is also reflected in total disparities. The disparities related to the place of regions in global processes, the between-type disparities, start quite low, at a level similar to that of the Old 15 countries, but increase rapidly and steadily thereafter, more than doubling in absolute value and reaching almost one-third of the total (a quota very similar to the one in the West) at the end of the period of analysis. The patterns of regional disparities in the New 12 member countries hence appear to be also significantly dependent on globalization processes, and on the different performances achieved by different types in face of globalization.

As a general and last consideration, it can be stated that regional disparities are influenced also by current globalization processes, and this calls for ad-hoc structural intervention policies.

6.7 Conclusions

This chapter has conducted a descriptive and interpretative exploration of the causes behind the success of regional economies in recent years. A first result is that more internationally integrated European regions record 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 this is true on average, a heterogeneous performance trend characterises global regions: unexpectedly, only 34% of global players are benefiting regions, i.e., regions that achieve higher-than-average GDP growth. This result becomes more interesting if the percentage of benefiting regions in the other two groups of regions is emphasised: 45 and 54%, respectively, for regional and local players.

The socio-economic profiles of benefiting regions differ somewhat among the different categories of regions. The elements in the so-called “territorial capital” that makes the difference between benefiting and non-benefiting regions in the case of global players are different from those associated with benefiting regional players. The success factors for benefiting global players are high-value functions and high-value sector specialisation, especially in the advanced services sector. By contrast, regional players in Western Europe rely more on

specialisation in traditional services, such as those linked with tourism, and benefit from localisation economies stemming from spatial concentration in manufacturing sectors. Moreover, regional benefiting regions are assisted more than their non-benefiting counterparts by public policies, and structural funds in particular.

These results suggest that a successful strategy for Western regional players would be to avoid competition with global players and move towards the restructuring of traditional sectors by specializing in second-order services and functions. The success factors for the Eastern regional players reside in a strong and dynamic manufacturing activity linked to the presence of FDI.

Moreover, a cluster analysis has identified clear growth strategies. Global regions with good average productivity rates, both in services and manufacturing, are able to achieve good endogenous performance rates by increasing productivity levels, both in services and manufacturing, and achieving substantial innovation rates. A conservative strategy does not pay off for global players that catch-up with the others through the presence of FDI and a restructuring of manufacturing activities: global regions with such an approach lose in terms of growth potentialities.

Regional players' growth strategies show that FDI penetration together with a strategy of re-orienting activities in traditional sectors make the difference in terms of endogenous growth.

Interesting insights have also been provided by the interpretative analyses. Success factors explaining regional growth differentials are common to global, regional and local players. This once again shows that globalization *per se* does not give rise to economic growth; innovation, high-value functions, structural fund support, 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 have the same impacts on growth across space. 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.

The presence of FDI is one of the success factors with most significance in explaining regional growth differentials in global regions. Chapter 5 has already shown that FDI distribution over space is not homogenous. Given its role in regional growth differentials and its development in a period of globalization, the reasons for FDI regional attractiveness should be more thoroughly investigated. In particular, two important issues should be emphasised: on the one hand, whether intra-European FDI are attracted to the same regions in which extra-European FDI are present. On the other hand, it would be interesting to see whether FDI are more attracted by national systems that are more competitive in Europe or by regional economic systems that are more competitive within their own nation. This is the subject of the next chapter.

Annex 6.1 Regional Variables

Table 6.13 Variables description and data sources

Variables	Definition	Source of raw data
Regional GDP	Regional GDP in real terms at NUTS2 level in the period 1995–2005, computed from the nominal one, using national GDP deflators	Eurostat
Regional employment by sector	Regional employment of the primary, tertiary and manufacturing sectors, in the years of period 1995–2005	Eurostat
Regional employment by NACE 2 sector	Regional NUTS2 employment for each NACE 2 sector for the year 2002	IGEAT matrix
Location quotient by NACE 2 sector	Regional share of employment or value added by sector for the years 1995 and 2002 at NUTS2 level	IGEAT matrix
Regional value added by NACE 2 sector	Regional value added for each NACE 2 sector for the years 1995 and 2002	IGEAT matrix
FDI	Number of new foreign firms per million inhabitants. Reference period 1999–2001	Eurostat and Amadeus
Regional employment by function (ISCO)	Regional employment by function at ISCO 2 digit classification at Nuts 2 level	European Labour Force Survey
Innovation/Regional share of human resources in S&T	Share of people working in S&T on population in the year 2000	Eurostat
Regional average annual population growth rate	Average annual population growth rate at NUTS 2 in the period 1995–2002	Eurostat
Regional unemployment	Share of unemployed people, available for the period 1995–2002	Eurostat
Regional infrastructure endowment	Km of high-speed railways, main rails, express roads, motorways and inland waterways in year 2000	KTEN data within the Espon database
Per capita structural funds	Total structural funds expenditure/population in the period 1994–1999. Also divided into five types of expenditure	Espon database
Regional average annual differential GDP growth rate	Annual average regional GDP growth rate less national GDP growth rate in the period 1999–2002	Eurostat
Spatial growth spillovers	Calculated for the period 1999–2002	Eurostat
Agglomerated regions	With a city of $>$300,000 inhabitants and a population density $>$300 inhabitants/km^2 or a population density 150–300 inhabitants/km^2	Espon database
Urban regions	With a city of between 150,000 and 300,000 inhabitants and a population density 150–300 inhabitants/km^2 (or a smaller population density – 100–150 inhabitants/km with a bigger centre ($>$300,000) or a population density between 100 and 150 inhabitants/km^2)	Espon database
Rural regions	With a population density $<$100/km^2 and a centre $>$125,000 inhabitants or a population density $<$100/km^2 with a centre $<$125,000	Espon database

(*continued*)

Table 6.13 (continued)

Variables	Definition	Source of raw data
Mega regions	Regions with the location of at least one of the 76 'Megas' – FUAs with the highest scores on a combined indicator of transport, population, manufacturing, knowledge, decision-making in the private sectors	Espon database
Regional population	Regional average population in each year at NUTS 2 level in the years 1995–2005	Eurostat
Regional trust	Share of respondents in the EU Value Survey which have high or very high trust in other persons	EU Value Survey
Sectoral reconverting regions	Lawrence index of sectoral reconversion higher than the EU average	Igeat Matrix 1995–2004

Chapter 7
Regional Attractiveness and Its Determinants

7.1 Regional Attractiveness and FDI Determinants

As discussed in the previous chapter, high-quality and efficient territorial capital assets, together with high regional attractiveness, are the elements on which regional competitiveness is based. Territorial attractiveness therefore matters for regional growth, and this applies to all regions, regardless of their exposure to globalization processes. The continuous inflows of competitive and innovative economic factors, and mainly entrepreneurship and financial capital, not only from other regions of the same country but also from outside the country's borders, make the difference in explaining regional growth differentials.

These considerations introduce the specific focus of this chapter: empirical analysis of the factors responsible for the uneven distribution of FDI across EU regions, which is an indirect way to understand whether and why regional attractiveness differs so markedly among EU regions.

Theoretical thinking on the determinants of foreign direct investments has been developed from different conceptual approaches and disciplines. Initially, the emphasis was on the preconditions necessary for foreign investments to be undertaken, rather than on the factors able to attract them. Within this framework, a firm became multinational in order to exploit three kinds of advantages, summarized in the acronym of the well-known OLI (Owernship, Location, and Internationalization) paradigm (Dunning 2001). This states that to become multinationals, firms must possess *ownership advantages* – such as a superior technology, specific know-how, and managerial competences – which provide inward investors with essential advantages over local firms, and then *internalization advantages*, which make the establishment of a production plant abroad the first-best strategy to serve foreign markets, because it allows the internalization of not only trade costs but also externalities from firm-specific assets.[1] *Locational advantages*, instead, are all the benefits accruing to the firm from its decision to operate in a particular host location (Dunning 2009; Cantwell 2009).

[1]See Markusen 1995, for a critical and exhaustive survey on the main literature on ownership and internalization advantages.

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_7,

The identification of location advantages has been the specific subject of subsequent advances in international economics since the OLI paradigm. Generally speaking, the theory has identified two broad groups of factors able to attract FDI, and whose importance cannot be assessed without considering the motivations at the basis of the decision to invest abroad (Markusen 1984; Helpman 1984; Shatz and Venables 2000): (1) the cost and the quality of production factors, as well as the endowments of natural and technological resources; and (2) access to, and the size of, the final markets, both local and potential. Vertical FDI, which is characterized by the spatial fragmentation of the production chain, positively responds to factors included in the first group, while horizontal FDI, which implies the duplication of production plants in different markets far from the home one, is more sensitive to market characteristics.[2]

Besides demand- and supply-side characteristics, other factors, related to both the home and the host countries as well as to their bilateral relationships, have been identified by the empirical literature as potential determinants of FDI. We refer to the economic fundamentals and the quality of the institutions (Bénassy-Quéré et al. 2007), agglomeration forces as proxies for human capital and infrastructure endowments (Braunerhjelm and Svensson 1996), and tax and other incentives to FDI (Wheeler and Mody 1992). Needless to say, their importance varies according to FDI motivations, although the empirical literature is rather inconclusive on this issue (Blonigen 2005; Barba Navaretti and Venables 2004).

The purpose of this chapter is not simply to investigate which regional socio-economic characteristics are able to attract FDI; it is also and mainly to examine whether the relationship between FDI flows and such factors varies across regions. The aim is also to explain the causes of such differences. One possible explanation is that globalization has different impacts across regions because of their specialization and degree of connectivity with the rest of the world, as highlighted in Chap. 4. If more open regions are able to attract substantial inflows of extra-European FDI, they may also be competitive in attracting intra-European FDI flows. Another explanation may be linked to the country effect on regional growth rates described in Chap. 6, which may also affect regional attractiveness, making regions more or less attractive for foreign firms.

In order to test these hypotheses, we consider total and intra-European newly created foreign firms in the EU during the 2005–2007 period.[3] Our results show that, even after controlling for traditional determinants of FDI, regional attractiveness

[2]Resource and strategic seeking FDI is usually considered a particular form of vertical FDI, since it is attracted by specific resources (i.e., natural and/or technological) that are abundant, and therefore, cheap, in the foreign location. More recently, Helpman 2006 has pointed out that this classification has become less useful in practice because of the increased complexity of MNEs sourcing strategies. Very often MNEs invest in low-cost countries to create export platforms from which to serve other countries around the world. This kind of investment cannot be considered either horizontal or vertical. See Ekholm et al. 2007, on export platform FDI.

[3]Since we are working with flows of FDI rather than stocks, by using a three-year period instead of a single one we are able to control for potential factors that may affect FDI flows in specific years.

differs across the EU. However, globalization does not seem to be either the correct or the only explanation for this diversity, given that regional attractiveness varies not only across global, regional, and local players, but also within each group of regions, as indicated by Fig. 7.1, which compares the distribution of foreign firms across and within the EU regions classified with respect to their degrees of openness towards the rest of the world.

The most likely cause of differences across regions in terms of FDI attraction capacity is the country effect and its impact on regional performance, which can be disentangled into a within- and between-country effect. Regions perform differently both within and across countries, and this may reflect differences in their potential attractiveness, as indicated by Fig. 7.2, which shows that the geographical distribution of foreign firms varies not only across but also between countries.

Therefore, in order to understand the geographical distribution of foreign firms in Europe and the mechanism that drives their location decision process, we need to consider not only sector and firm specificities, as suggested by the theory, but also geographically specific effects able to affect regional attractiveness. We argue that the lack of a clear geographical dimension is responsible not only for the inconclusiveness of the empirical evidence on the main factors driving foreign firms' location decisions but also for the ineffectiveness of most FDI promotion policies.

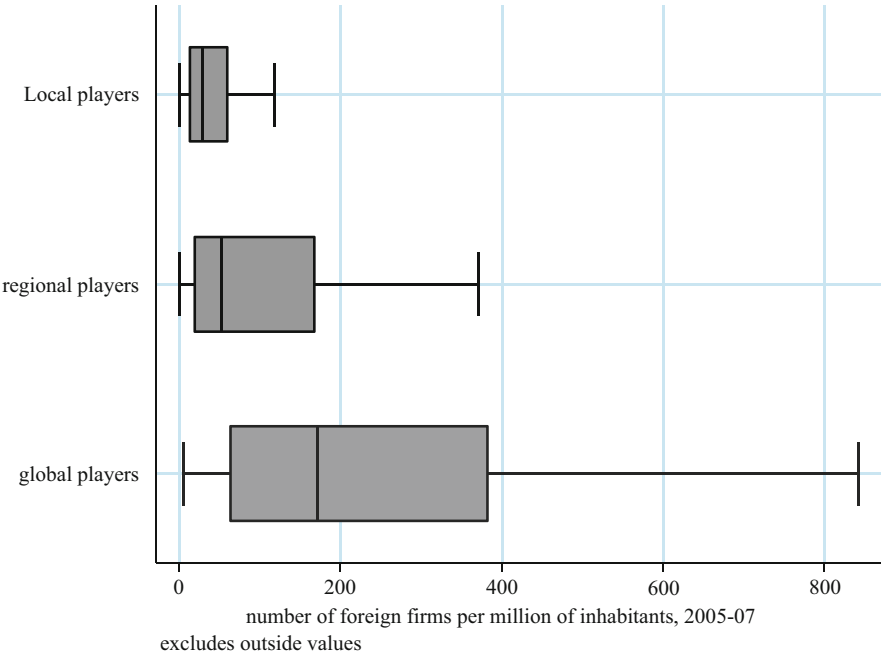


Fig. 7.1 The spatial distribution of FDI within and across types of regions, 2005–2007
Source: authors' calculations on FDIRegio database

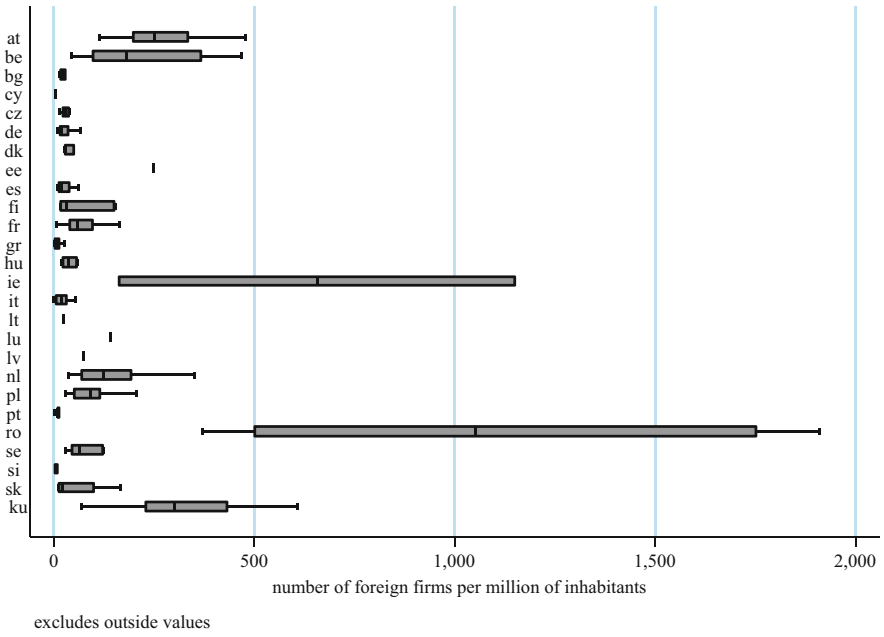


Fig. 7.2 The spatial distribution of FDI within and across countries in the EU, 2005–2007
Source: authors' calculations on FDIRegio database

7.2 Factors Affecting Regional Attractiveness

7.2.1 The Traditional Factors

In order to analyze factors at the base of FDI regions' attractiveness, we started with the following simple model, which relates FDI flows – measured as the number of newly established foreign firms in region *r* per million inhabitants in the 2005–2007 period – to various regions' characteristics able to affect FDI flows, at least from a theoretical point of view:

$$\frac{FDI_r}{POP_r} = \alpha_0 + \beta_1 FDI_r + \beta_2 LABCOST_r + \beta_3 MKTPOT_r + \beta_4 MAN_{ir} + \beta_5 SER_r + \beta_6 HUMCAP_{kr} + \alpha_1 D_{RO} + \alpha_2 D_{PL} + \varepsilon_r \quad (7.1)$$

Regional determinants of FDI are the market potential (*MKTPOT*), costs (*LABCOST*) and skills (*HUMCAP*) of the labor force, the region's industrial specialization

in manufacturing (*MAN*) and business services (*SER*), and previous inflows of FDI (*FDI*).[4]

The composition of the set of the explanatory variables reflected different motivations for FDI. In particular, foreign firms pursuing market-seeking strategies will be driven by market access. Needless to say, the reference market was not that of the region where foreign firms locate, but the potential market (Head and Mayer 2004), i.e., the entire market that foreign firms can serve from that location. In order to control for transportation costs, we measured market potential as the sum of each region's GVA normalized by the inverse of the distance between the region where foreign firms locate and all other EU regions. We expected to find a positive relation between FDI flows and market potential.

Conversely, foreign firms delocalizing abroad for efficiency reasons were expected to pay closer attention to labor costs, the quality of the labor force, and industrial relations. High labor costs may discourage FDI, although high productivity levels and workforce qualification and skills may compensate for this effect. Unlike previous related studies, we did not proxy the quality of the human capital with education variables, but instead with functional variables. In particular, we included in (7.1) regional endowments of command and control functions – proxied by corporate managers and scientists and professionals, medium-level functions (proxied by SME managers) and low-level functions, such as clerical workers and machine and plant operators. We believe that functions reflect human capital competencies and foreign firms' needs better than educational levels. In particular, scientific and technological expertise may attract foreign firms wanting to exploit know-how-related assets in foreign locations in order to sustain or improve their international competitiveness (Ethier and Markusen 1996). Advanced regions are generally best placed to offer these kinds of advantages and are thus more likely to attract strategic-asset seeking FDI than laggard regions. Finally, high geographical concentrations of manufacturing and/or service activities can also attract efficiency-seeking FDI, since they signal to potential entrants the availability of supporting industries and services, as well as good potential links with local suppliers and buyers. We measured the geographical concentration of industries in absolute terms by computing the shares of three manufacturing branches (low-, medium-, and high-tech sectors) and business services on regions' total employment.[5]

Finally, we expected to find that an existing concentration of foreign firms facilitates the gathering of information via business relationships and signals to potential entrants the quality of the business environment. Therefore, the larger the number of foreign firms in a given location, the less likely is the risk (and the cost) for a new foreign firm deciding to locate there.

[4]All the explanatory variables are lagged by one period in order to minimize possible endogeneity problems. Lags may vary according to data availability. See Table 7.9 in the Annex to this chapter for more detailed definitions of the variables included in (7.1) and the data sources.

[5]See Table 7.10 in the Annex for definitions of the manufacturing and service branches included in (7.1).

Besides the error term, (7.1) also includes two dummy variables, one for Romanian regions and the other for Polish regions. These variables capture potential biases due to the characteristics of our sample.[6]

In estimating (7.1) we started with traditional OLS techniques and then controlled for spatial dependence in foreign firm location patterns (Blonigen et al. 2007; Resmini and Casi 2010). As suggested by spatial diagnostics, the latter does exist and can be controlled for using a spatial error model. The novelty of our analysis, however, consists in its explicit consideration of different forms of spatial heterogeneity, as discussed in Sect. 7.3.

7.2.2 Empirical Results

According to the results of the regression analysis, which are shown in Table 7.1, the attractiveness of EU regions relies on several factors, most of which, not surprisingly, have been already highlighted by previous similar studies.

On looking at the spatial error model only (column 2 of Table 7.1), we find that agglomeration among FDI seems to play an important role in foreign firms' location choices. The larger the number of foreign firms which have set up production plants in the previous period, the larger the number of new foreign firms that a region is able to attract. Labor costs are not significant, and they enter the regression with a positive sign, indicating that regional attractiveness relies on high productivity rather than on cheap labor. As expected, market access is also marginally significant, given that all foreign firms can serve the entire EU market regardless of the region in which they are located. This may also indicate that transportation costs are not important for foreign firms delocalizing activities in the EU. As far as regional specialization is concerned, location externalities arise in low-tech manufacturing sectors and in business services, while regions specialized in high-tech manufacturing sectors do not seem to be attractive, since competition effects are stronger than localization externalities, as indicated by the negative and significant sign of the corresponding variables. What turns out to be indeed crucial in attracting FDI is the human capital endowment. This holds true for all its specifications except SME managers. We interpret this result as signaling that MNEs and local industrial networks, which in most EU countries consist of a large number of small- and medium-sized enterprises, are two separate spheres that do not collaborate but instead compete against each other for local production factors and local demand.

[6]As discussed in Chap. 2, Poland and Romania attract a large number of foreign firms but a low amount of foreign investments. These trends are not necessarily in contradiction with each other, but may simply indicate that Poland and Romania are favored locations for small multinational firms. Since, however, we had no information on foreign firms' size, we preferred to control for this fact in order to avoid potential distortions due to sample biases.

Table 7.1 The traditional factors

	OLS			Spatial error model			Spatial error model (EU15)		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.40	0.06	***	0.42	0.04	***	0.45	0.05	***
Labor costs	0.06	0.04		0.06	0.05		0.84	0.34	**
Market potential	0.08	0.05		0.08	0.05	*	0.05	0.05	
Manuf. (LT)	4.58	2.41	*	4.46	2.11	**	5.19	2.34	**
Manuf. (MT)	−0.77	1.66		−0.81	1.35		−2.44	1.55	
Manuf. (HT)	−5.37	2.85	*	−6.93	3.28	*	−12.58	4.02	***
Business services	2.84	1.57	*	2.68	1.29	**	0.96	1.55	
Corp. managers	25.23	1.62	***	25.33	2.25	***	23.71	2.49	***
SME managers	−8.02	4.32	**	−7.85	2.96	***	−8.90	3.81	**
Professionals	4.30	1.86	**	4.88	1.80	***	3.09	2.22	
White collars	4.63	2.13	**	4.38	2.52	*	4.49	2.80	
Blue collars	11.91	2.48	***	11.16	2.12	***	12.49	2.73	***
n. of obs.		260			260			197	
λ					0.92	***		0.93	***
R-square	0.82								
Moran's I	13.94	***							
Spatial error									
LM	41.40	***							
Robust LM	43.47	***							
Spatial lag									
LM	1.66								
Robust LM	3.74								
Wald test of $\lambda = 0$				141.43	***		158.53	***	
LM test of $\lambda = 0$				41.40	***		44.99	***	
Log likelihood				−244.41			−178.84		

All variables are in log form; therefore coefficients can be interpreted as elasticities. The constant term as well as dummies for Romania and Poland – which are significant in all specifications – has been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

Overall, these results indicate that MNEs investing in Europe look mainly to European regions well endowed with human capital, and they are willing to pay a higher cost to access those specific skills.

Most of these results seem to be driven by the EU15 regions, as indicated by the coefficients reported in column 3 of Table 7.1.[7] To be noted is that, for EU15, regions' productivity becomes a significant factor of attraction for foreign firms, while market potential matters only for Eastern European regions, given their peripheral position with respect to the EU core market. Not surprisingly, competition effects in high-tech manufacturing sectors are stronger than the average effect, while the regional endowments in intermediate functions, such as clerical workers and professionals do not represent potential attractiveness factors for EU15 regions, which, instead, become more competitive as endowments in command and control

[7](7.1) could not be estimated for Eastern European regions because of the lack of degrees of freedom.

functions and machine and plant operators increase. These results are in line with recent trends in globalization whereby foreign firms delocalize not only production activities but also high value added functions (OECD 2007).

7.3 The Role of Globalization and the Country Effect

7.3.1 Spatial Heterogeneity

Although informative, the model just analyzed suggests that differences in the attractiveness of regions are entirely due to the availability at local level of the factors able to attract FDI. Moreover, it presumes that model parameters are constant across space, and thus that European regions are homogeneous. In other words, the model does not account for spatial heterogeneity. This hypothesis, however, is rather unrealistic because regions may differ in several respects, such as morphology, institutional system, culture, language, and so on. These differences may concern regions belonging to different countries, but they may also arise within the same country, altering the explanatory power of the previously identified determinants of FDI.

In order to control for spatial heterogeneity, and thus understand the role played by globalization on regional attractiveness, we applied the same methodology used in Chap. 6 to assess the role of globalization on regional growth. Therefore, we first included in (7.1) a dummy that accounted for globalization stance, and then interacted it with the other explanatory variables in order to test whether the estimated coefficients varied across types of regions.[8] This strategy allows assessment of first whether global regions are, *ceteris paribus*, more attractive than other kinds of regions, and then whether globalization is able to affect factors of attractiveness of foreign firms. The model estimated was therefore as follows:

$$\begin{aligned}\frac{FDI_r}{POP_r} &= \alpha_0 + \beta_1 FDI_r + \beta_2 LABCOST_r + \beta_3 MKTPOT_r + \beta_4 MAN_{ir} + \beta_5 SER_r \\ &+ \beta_6 HUMCAP_{kr} + \alpha_1 D_{RO} + \alpha_2 D_{PL} + \alpha_3 GLO \\ &+ \beta_7 \left[GLO^* \sum_{n=1}^{6} X_n \right] + \varepsilon_r \end{aligned} \tag{7.2}$$

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

where *GLO* is a categorical variable equal to one if region *r* is a global player and zero otherwise, and X_n is the vector of the six explanatory variables which can affect FDI inflows, as discussed when explaining (7.1).[9]

The second source of spatial heterogeneity that should be considered relates to regional performances, which are different not only across EU regions, but also among countries and within global, regional, and local players, as discussed in Chap. 6. In particular, country dynamics not only have a strong impact on the dynamics of regions regardless of their attitude towards globalization, as we showed in Chap. 6, but they have also been proven to exert positive effects on FDI flows, at least at country level (Billington 1999; Culem 1988).

Given these considerations, we maintain that the relationship between FDI flows and GDP growth rates may be affected by two distinct phenomena: (1) the relative position of each region within the country to which it belongs and (2) the relative position within Europe of the country to which each region belongs. This implies that laggard regions in well-performing countries may attract more (less) FDI than well-performing regions in laggard countries and/or vice versa.

In order to test these hypotheses, we constructed two dummy variables. The first, which we call *national champion* (*NATCH*), equaled one when region *r*'s growth rate was above the national mean and zero otherwise. The second, called *European champion* (*EUCH*), equaled one when region *r* belonged to a country whose growth rate was above the EU mean and zero otherwise. By including these dummies in (7.1) and interacting them with regional factors of FDI attraction, we were able to assess whether and to what extent being a leading region within a country or belonging to a leading country in the EU gives regions additional advantages in attracting FDI. The first effect captures the within-country advantage while the latter accounts for a between-country advantage in terms of FDI.

When the within-country effect was tested, the regression equation became as follows:

$$\begin{aligned}\frac{FDI_r}{POP_r} = {} & \alpha_0 + \beta_1 FDI_r + \beta_2 LABCOST_r + \beta_3 MKTPOT_r + \beta_4 MAN_{ir} + \beta_5 SER_r \\ & + \beta_6 HUMCAP_{kr} + \alpha_1 D_{RO} + \alpha_2 D_{PL} + \alpha_3 NATCH \\ & + \beta_7 \left[NATCH^* \sum_{n=1}^{6} X_n \right] + \varepsilon_r \end{aligned} \tag{7.3}$$

In order to test the between-country effect, the *NATCH* dummy variable was substituted with the *EUCH* dummy variable, all else equal.

[9]Since we did not have enough degrees of freedom we re-estimated (7.2) twice, with a dummy for regional and local players, respectively.

7.3.2 Global Vs. Non-Global Regions

In this section, we enquire whether and to what extent the regional stance towards the global economy matters in terms of FDI. We first test for the presence of fixed effects due to a region's attitude towards globalization. As the first three columns of Table 7.2 show, the answer to this research question is that global regions attract, on average, more foreign firms than regional and local players. Therefore, being an open region with a high degree of connectedness with the world economy represents, *ceteris paribus*, a further advantage in the FDI attraction game.

In order to check whether the attitude towards globalization is also able to magnify the impact of the traditional FDI attraction factors, we interacted the global dummy with the other explanatory variables, as shown in (7.2). Interestingly, we found that spatial heterogeneity does exist and that it affects the performance of global regions, as the last two columns of Table 7.2 show.[10]

However, we also found that globalization exerts an impact on only two broad factors: the absolute specialization in business services, and the concentration of skilled labor force and, in particular, of professionals and scientists, and, somewhat surprisingly, plant and machine assemblers, all else equal.

We may therefore conclude that qualitative changes brought about in a region's economic structure by globalization are able, *ceteris paribus*, to improve that region's attractiveness in terms of FDI flows. However, the impact of globalization is rather limited. We consequently cannot say that globalization is the main cause of the uneven distribution of FDI across EU regions. Better results are obtained when considering the between- and within-country effects.

7.3.3 Region Vs. Country Dynamics

When discussing potential reasons for differences in regional attractiveness, we argued that regional performance and, consequently, the capacity to attract FDI may be conditioned by country specificities that can work either within or between countries. In order to test the within-country effect, we estimated (7.3), always controlling for spatial dependence. The results are set out in Table 7.3.

Although regions performing better than the national average are, *ceteris paribus*, more attractive than other regions, as indicated by the positive sign of the dummy variable, this effect is rather weak and it is unable to affect the relationship between FDI flows and location advantages, with the exception of market potential. This result indicates that MNEs are, as expected, interested in the EU market and not in segmented national markets. Hence, regions with good accessibility to EU

[10]The coefficients reported in the last column are differential slope coefficients, indicating the extent to which the slope coefficients of the explanatory variables in global regions differ from those of regional and local players considered as a whole.

Table 7.2 The impact of globalization

	Model with fixed effects but constant parameters within each group of regions									Spatial heterogeneity: the impact of globalization (7.2)					
	Global players			Regional players			Local players			Other regions (average effect)			Global regions (marginal effects)		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.41	0.04	***	0.41	0.04	***	0.42	0.04	***	0.39	0.04	***	−0.06	0.10	
Labor costs	0.07	0.05		0.06	0.05		0.06	0.05		0.10	0.05	*	−0.10	0.22	
Market potential	0.05	0.05		0.08	0.05		0.08	0.05		0.02	0.07		0.02	0.10	
Manufacturing (LT)	3.97	2.10	*	4.02	2.14	*	4.62	2.13	**	3.17	2.11		−7.16	7.51	
Manufacturing (MT)	−0.58	1.34		−0.32	1.42		−1.05	1.41		−0.03	1.47		−1.14	3.60	
Manufacturing (HT)	−7.31	3.24	**	−7.01	3.27	**	−6.96	3.28	**	−5.93	3.39	*	−2.92	8.07	
Business services	1.43	1.37		2.52	1.30	*	2.55	1.30	*	−0.71	1.53		5.81	3.25	***
Corp. managers	25.72	2.23	***	25.77	2.28	***	25.14	2.27	***	28.08	2.53	***	−4.36	3.74	
SME managers	−8.11	2.92	***	−7.46	2.97	**	−8.12	2.99	***	−9.52	3.12	***	6.30	7.29	
Professionals	4.07	2.80	**	4.68	1.80	***	4.86	1.80	***	1.78	1.94		6.39	3.38	*
White collars	4.51	2.49	*	4.48	2.51	*	4.35	2.52	*	7.10	2.86	**	−7.03	5.52	
Blue collars	10.84	2.10	***	11.10	2.11	***	11.14	2.12	***	9.44	2.18	***	11.35	6.67	*
Global player	0.32	0.13	**												
Regional player				−0.10	0.09										
Local player							−0.06	0.10							
n. of obs.	260			260			260			260					
λ	0.92	0.08	***	0.92	0.08	***	0.92	0.08	***	0.92	0.08	***			
Wald test for $\lambda = 0$	138.69	***		144.97	***		138.57	***		124.25	***				
LM test of $\lambda = 0$	41.02	***		42.29	***		40.49	***		35.56		***			
Log likelihood	−241.27			−243.74			−244.24			−228.58					

Spatial error models. All variables are in log forms, therefore coefficients can be interpreted as elasticities. The constant term as well as dummies for Romania and Poland has been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

Table 7.3 Spatial heterogeneity: the within-country effect

	Other regions (average effects)			National champions (marginal effects)		
	Coeff.	St. Err.	Sig.	Coeff	St. Err.	Sig.
FDI flows ($t-1$)	0.39	0.05	***	0.10	0.06	
Labor costs	0.08	0.06		−0.05	0.08	
Market potential	0.18	0.06	***	−0.18	0.09	**
Manufacturing (LT)	4.56	2.76	*	−3.70	4.09	
Manufacturing (MT)	1.12	1.87		−3.63	2.56	
Manufacturing (HT)	−9.92	4.98	**	6.05	5.99	
Business services	4.15	1.73	**	−3.94	2.46	
Hum. Cap. – Corp. managers	26.72	4.77	***	−1.36	5.24	
Hum. Cap. – SME managers	−9.16	3.44	***	6.79	4.89	
Hum. Cap. – Professionals	3.77	2.45		−1.14	2.88	
Hum. Cap. – White collars	1.43	3.09		4.69	3.77	
Hum. Cap. – Blue collars	12.53	2.66	***	−3.18	3.81	
Constant	−2.94	0.92	***			
National champion dummy	1.86	1.07	*			
n. of obs.	260					
λ	0.91	0.09	***			
Wald test for $\lambda = 0$	109.93	***				
LM test of $\lambda = 0$	28.39	***				
Log likelihood	−231.64					

Spatial error model. All variables are in log forms, therefore coefficients can be interpreted as elasticities. The dummies for Romania and Poland regions have been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

core markets are definitely more attractive than regions with a good market potential from a national point of view.

In conclusion, these results suggest that inequalities in the distribution of foreign firms across regions are not explained by within-country differences: performances above the respective national averages, on the one hand, do not help regions to attract, *ceteris paribus*, more investments than other regions and, on the other hand, do not magnify the impact that location advantages exert on FDI flows.

By contrast, the between-country effect is not only more significant but also able to alter the relationship between FDI flows and location advantages, as shown in Table 7.4.

In particular, we found that regions belonging to a well-performing country in the EU are *ceteris paribus* more attractive than other regions, as indicated by the positive and significant coefficient of the corresponding dummy variable (Table 7.4 column 1). Also, the importance of each location advantage seems to differ between the two groups of regions. In particular, the country's growth potential positively affects location externalities in medium- and high-tech manufacturing sectors, as well as in business services, and negatively affects the importance of already-established foreign firms, labor productivity, and regions' endowments of medium- and low-level functions. This implies that if local industrial systems are to generate positive externalities, they must be part of a highly dynamic national system, while

Table 7.4 Spatial heterogeneity: the between-country effect

	Other regions (average effects)			European champions (marginal effects)		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.49	0.05	***	−0.16	0.08	**
Labor costs	1.33	0.38	***	−1.23	0.39	***
Market potential	0.17	0.08	**	−0.01	0.10	
Manufacturing (LT)	3.79	3.02		−2.04	4.02	
Manufacturing (MT)	−4.63	1.83	**	6.46	2.56	**
Manufacturing (HT)	−13.40	4.75	***	12.23	6.21	**
Business services	−1.71	2.29		6.91	2.76	**
Hum. Cap. – Corp. managers	25.30	4.67	***	−5.17	5.43	
Hum. Cap. – SME managers	6.35	5.19		−21.09	6.37	***
Hum. Cap. – Professionals	−1.96	2.87		4.49	4.30	
Hum. Cap. – White collars	9.01	3.54	**	−11.59	4.87	**
Hum. Cap. – Blue collars	15.05	3.30	***	−11.57	4.45	***
Constant	−15.11	3.90	***			
EU champion dummy	14.03	3.98	***			
n. of obs.	260					
λ	0.85	0.15	***			
Wald test for $\lambda = 0$	31.42	***				
LM test of $\lambda = 0$	7.72	***				
Log likelihood	−214.07					

Spatial error model. All variables are in log form, therefore coefficients can be interpreted as elasticities. The dummies for Romania and Poland regions have been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively.

the other location advantages partially lose their capacity to attract foreign firms, especially in the case of regions not belonging to national competitive systems.

It is also worth noting that regional endowments of command and control functions are totally independent from the country's performance, while medium- and low-level functions, such as blue and white collars, become less relevant when the between-country effect is accounted for. The opposite occurs for labor costs, which however, remain less relevant than productivity.[11]

7.3.4 Sector and Firm Heterogeneity

According to the theoretical literature on FDI, the attractiveness of a location does not depend on its specific advantages alone, but also on firm' and sector specificities, if they exist (Barba Navaretti and Venables 2004). In what follows, we report analysis performed to determine whether and to what extent these specificities affect the results obtained thus far. In particular, we wanted to know whether the

[11]This effect is due to new member states, because the estimated coefficient of the labour cost variable was not significant when (7.3) was estimated for EU15 countries only.

within- and between-country effects are constant across manufacturing and service sectors and between intra- and extra-EU foreign investors.

At sectoral level, we found that, on average, the attractiveness of regions is only marginally affected by the within-country effect, which is however less significant in manufacturing than in service sectors, while the between-country effect turns local disadvantages into positive externalities and vice versa, although the latter effect occurs in only a rather limited number of cases.

In particular, we found that the between-country effect makes sectoral externalities, both in manufacturing and business service sectors, emerge and positively affect FDI flows, as well as heightening the role of labor costs as a disadvantage for foreign firms. In other words, the attractiveness of regions belonging to well-performing countries depends less on labor productivity as an attractiveness factor than in other regions, given that, on average, it is likely that productivity and the labor force have better standards and skills in those regions than in regions belonging to laggard countries, regardless of their relative performance within the country.

Besides these regularities, foreign manufacturing and service firms respond to different locational advantages, which explain the motivations behind their internationalization strategies. Generally speaking, foreign manufacturing firms pursue efficiency-seeking strategies, because they are sensitive to labor costs, agglomeration externalities in medium-high tech manufacturing sectors and in business services, and regions' endowments of plant and machine assemblers, as indicated by Table 7.5. The importance of these factors varies across regions: the attractiveness of regions belonging to advanced countries stems mainly from low labor costs and agglomeration externalities, while other regions' competitiveness depends on labor productivity and low-skilled labor. Overall, these results suggest that regions belonging to laggard countries mainly attract foreign firms operating in traditional labor-intensive manufacturing sectors, while regions belonging to dynamic national systems attract foreign firms operating in the higher stages of the production chain.

By contrast, foreign firms providing services are, not surprisingly, market oriented, as indicated by the positive and significant estimated coefficient of the market potential variable (see Table 7.6). In this regard, we found that, although several services are not tradable, the European market is more important than the national ones, as indicated by the negative signs assumed by these variables when the within- and the between-country effects are accounted for. Another interesting finding is that, *ceteris paribus*, regions outperforming their own country are better able than other regions to attract more foreign firms operating in services. However, this potential advantage seems to be offset by the fact that the traditional determinants of FDI become less significant than the average effects. Thus, in service sectors, regions undergoing a counter-cyclical trend seem to be penalized in the FDI attraction game.

Conversely, the between-country effect is always positive, thereby magnifying the importance of traditional FDI determinants. In particular, we found that it magnifies regional specialization in high value added activities, such as manufacturing high-tech sectors and business services, and in the related high-level

Table 7.5 The country effect: manufacturing sectors

	Within-country effect						Between-country effect					
	Other regions (average effects on all regions)			National champions (marginal effects)			Other regions (average effects on all regions)			EU champions (marginal effects)		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.31	0.05	***	0.02	0.06		0.33	0.05	***	−0.08	0.07	
Labor costs	0.07	0.06		−0.01	0.08		0.92	0.36	**	−0.81	0.36	**
Market potential	−0.00	0.06		−0.03	0.08		0.10	0.07		−0.06	0.09	
Manufacturing (LT)	3.92	2.63		−3.31	3.90		3.42	2.80		−4.50	3.72	
Manufacturing (MT)	2.20	1.79		−3.48	2.44		−4.75	1.70	***	8.57	2.37	***
Manufacturing (HT)	−4.58	4.75		3.37	5.72		−7.47	4.39	*	8.67	5.75	
Business services	3.51	1.65	**	−4.25	2.35	*	−4.55	2.12	**	8.63	2.56	***
Corp. managers	22.21	4.56	***	1.43	5.00		19.46	4.33	***	1.24	5.03	
SME managers	−6.64	3.29	**	1.52	4.67		1.76	4.81		−13.54	5.91	**
Professionals	2.19	2.33		−1.93	2.75		−0.65	2.65		0.05	3.98	
White collars	5.27	2.95	*	2.78	3.60		17.09	3.28	***	−21.82	4.51	***
Blue collars	13.36	2.54	***	0.04	3.64		19.21	3.06	***	−13.55	4.12	***
Country effect	1.39	1.02					10.08	3.68	***			
n. of obs.	260						260					
λ	0.89	0.10	***				0.85	0.15	***			
Wald test for $\lambda = 0$	75.93	***					30.13	***				
LM test of $\lambda = 0$	18.63	***					5.99	**				
Log likelihood	−219.43						−194.12					

Spatial error model. All variables are in log form, therefore coefficients can be interpreted as elasticities. The dummies for Romania and Poland regions have been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

Table 7.6 The country effect: service sectors

	Within-country effect						Between-country effect					
	Other regions			National champions			Other regions			EU champions		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.54	0.06	***	0.08	0.08		0.64	0.06	***	−0.24	0.09	**
Labor costs	0.51	0.08		−0.09	0.10		1.10	0.46	**	−1.02	0.47	**
Market potential	0.22	0.08	***	−0.20	0.10	*	0.24	0.09	**	−0.07	0.12	
Manuf. (LT)	4.27	3.21		−5.33	4.75		3.26	3.62		−2.21	4.81	
Manuf. (MT)	1.44	2.17		−5.13	2.98	*	−4.61	2.20	**	5.94	3.07	**
Manuf. (HT)	−10.93	5.79	*	4.81	6.97		−6.14	5.69	***	13.97	7.48	**
Business services	5.27	2.01	***	−5.29	2.86	**	−1.11	2.74		6.96	3.31	**
Corp. managers	30.52	5.54	***	−4.31	6.09		32.98	5.60	***	−13.00	6.50	**
SME managers	−6.62	4.01	*	4.16	5.68		4.66	6.22		−18.77	7.65	**
Professionals	4.37	2.84		−3.87	3.35		−6.26	3.43	*	9.53	5.15	*
White collars	−1.13	3.59		8.49	4.38	**	6.85	4.24		−6.21	5.83	
Blue collars	12.01	3.09	***	−7.20	4.43		10.23	3.96	**	−8.67	5.34	
Country effect	3.67	1.24	***				11.31	4.77	**			
n. of obs.	260						260					
λ	0.90	0.10	***				0.80	0.19	***			
Wald test for $\lambda = 0$	85.95	***					17.43	***				
LM test of $\lambda = 0$	22.70	***					4.81	**				
Log likelihood	−270.68						−261.13					

Spatial error model. All variables are in log forms, therefore coefficients can be interpreted as elasticities. The dummies for Romania and Poland regions have been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

functions, such as professionals and scientists, while reducing the explanatory power of agglomeration among foreign firms, labor productivity, and command and control functions, whose positive effects can be indirectly captured by the dummy signaling regions belonging to well-performing countries, that is, countries with higher productivity, higher quality of human capital, and a more friendly business environment than other countries and regions.

When intra- and extra-EU FDI are distinguished, the previous results do not change dramatically, especially as far as intra-EU foreign firms are concerned. The latter, in fact, behave as indicated by the general model, and as suggested by the estimation results reported in Table 7.7, which are quite similar to those previously discussed for the entire sample (see Tables 7.3 and 7.4).

Extra-EU foreign firms, instead, seem to exhibit different location patterns.[12] Several striking features are should be noted. Firstly, extra-EU foreign firms' location patterns are affected by spatial dependence only within the country, as indicated by the λ coefficient, which is not significant when the between-country effect is accounted for (Table 7.8).

Secondly, both the within- and between-country effects are less important than in the sample as a whole. This implies that the attractiveness of regions depends more on traditional FDI determinants than on spatial differences at work either within or between countries. In particular, the between-country effect heightens the importance of labor costs and externalities in medium-high tech manufacturing sectors, while it reduces the importance of low-level functions.

Thirdly, the results fully confirm the importance of good accessibility to EU-wide markets as a factor in attracting extra-EU foreign firms, which prefer to locate in regions where other foreign firms are already operating, and which are well-endowed with high-level functions. These locational advantages do not seem to be affected by spatial heterogeneity.

7.4 Conclusions

The analysis in this chapter has yielded a number of important findings, which are now summarized.

Firstly, we have found that regional attractiveness can be improved by strengthening various economic factors, which include market accessibility, labor costs, agglomeration externalities, and the labor force's expertise and competences.

Secondly, we have seen that these factors of attractiveness are not of equal importance. Rather, their capacity to attract FDI must be assessed together with firm and sector specificities. In particular, foreign manufacturing firms, in that they are motivated by efficiency reasons, do not respond to improvements in market

[12]In this regard, it should be borne in mind that extra-EU FDI represents only one third of our sample. See Chap. 5 for a description of extra-EU FDI trends.

Table 7.7 The country effect: intra-EU FDI

	Within-country effect						Between-country effect					
	Other regions			National champions			Other regions			EU champions		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.40	0.05	***	0.10	0.07		0.49	0.06	***	−0.16	0.08	**
Labor costs	0.07	0.07		−0.05	0.09		1.22	0.40	***	−1.12	0.40	***
Market potential	0.18	0.07	***	−0.17	0.09	*	0.19	0.08	**	−0.36	0.10	
Manuf. (LT)	5.10	2.86	*	−3.36	4.23		4.48	3.12		−2.10	4.14	
Manuf. (MT)	0.47	1.93		−3.40	2.65		−5.45	1.89	***	7.13	2.64	***
Manuf. (HT)	−12.04	5.16	**	7.04	6.21		−16.33	4.90	***	15.92	6.40	**
Business services	3.51	1.79	**	−4.04	2.55		−3.11	2.36		8.08	2.84	***
Corp. managers	24.73	4.94	***	−2.76	5.43		24.11	4.82	***	−7.63	5.60	
SME managers	5.27	3.91		6.71	5.07		5.12	5.35		−19.04	6.57	***
Professionals	4.42	2.54	*	−1.54	2.99		−1.82	2.96		4.56	4.43	
White collars	2.20	3.21		5.27	3.91		10.75	3.66	***	−13.28	5.02	***
Blue collars	13.07	2.75	***	−3.34	3.95		15.39	3.41	***	−12.13	4.59	***
Country effect	1.92	1.10	*				12.79	4.10	***			
n. of obs.	260						260					
λ	0.92	0.08	***				0.86	0.14	***			
Wald test for $\lambda = 0$	141.78	***					40.36	***				
Lagrange multiplier test of $\lambda = 0$	34.95	***					9.29	***				
Log likelihood	−241.11						−222.09					

Spatial error model. All variables are in log forms, therefore coefficients can be interpreted as elasticities. The dummies for Romania and Poland regions have been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

Table 7.8 The country effect: extra-EU FDI

	Within-country effect						Between-country effect					
	Other regions			National champions			Other regions			EU champions		
	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.	Coeff.	St. Err.	Sig.
FDI flows ($t-1$)	0.27	0.05	***	0.04	0.06		0.26	0.05	***	0.02	0.08	
Labor costs	0.05	0.06		0.02	0.08		1.06	0.39	***	−0.99	0.40	**
Market potential	0.24	0.06	***	−0.17	0.09	**	0.19	0.08	**	−0.03	0.10	
Manuf. (LT)	2.10	2.70		2.12	4.00		−4.09	3.10		0.88	4.11	
Manuf. (MT)	1.76	1.82		−3.79	2.49		−2.68	1.87		5.00	2.63	*
Manuf. (HT)	2.15	4.82		−1.24	5.87		1.10	4.83		0.03	6.31	
Business services	2.34	1.68		0.55	2.41		1.61	2.34		1.12	2.82	
Corp. managers	26.68	4.66	***	6.54	5.03		29.61	4.74	***	−0.98	5.50	
SME managers	−6.88	3.34	**	1.98	4.78		3.37	5.38		−14.06	6.62	**
Professionals	1.85	2.38		−0.09	2.81		−3.13	2.90		6.15	4.38	
White collars	−0.24	2.97		0.26	3.70		2.27	3.54		−1.55	4.93	
Blue collars	6.75	2.59	***	1.04	3.72		9.67	3.38	***	−7.66	4.55	*
Country effect	0.16	1.04					10.61	4.10	**			
n. of obs.	260						260					
λ	0.66	0.33	**				0.45	0.49				
Wald test for $\lambda = 0$	4.09		**				0.87					
LM test of $\lambda = 0$	1.39						0.33					
Log likelihood	−223.83						−219.84					

Spatial error model. All variables are in log forms, therefore coefficients can be interpreted as elasticities. The constant term as well as dummies for Romania and Poland regions has been omitted. Robust standard errors. ***, **, * implies significance at 10, 5, and 1%, respectively

accessibility but rather to increases in labor productivity (or decreases in labor costs) and agglomeration externalities. Foreign firms providing services are instead more sensitive to market access and high-level functions, two important signals of well-developed local markets. Origin from within or outside Europe does not seem to be associated with substantial differences in location patterns.

These results explain why we found in Chap. 5 that FDI in manufacturing concentrates in Eastern European regions, and why we observed a strong concentration of foreign firms producing services in the capital regions. However, they do not help in understanding why regions with the same labor costs or with the same access to the EU core market have different levels of attractiveness. In order to answer this question, it is necessary to consider another important dimension, one often neglected by previous similar studies, i.e., spatial diversity.

Spatial heterogeneity may assume different forms, in that it is more a conceptual problem than a technical one. Given the aims of this book, we explored two forms of regional diversity: the attitude towards globalization and the role played by national specificities.

Global players are, *ceteris paribus*, more attractive than regional and local players. Their increased capacity to attract FDI is linked, on the one hand, to their greater international openness and specialization in open sectors, and on the other, to the fact that globalization has increased the explanatory power of three factors of attractiveness: specialization in business services, the endowments of professionals and scientists, and the skills of blue collars. The first two effects are direct consequences of the qualitative changes brought about by globalization in the economic structure of EU regions and countries; while the last effect is indubitably driven by Eastern European global players, which are particularly attractive for foreign manufacturers operating in low-tech, labor-intensive sectors.

Although interesting and new,[13] these results do not completely explain the geographical distribution of FDI in Europe. We have found that global regions are, on average, more attractive than regional and local players; but we have not been able to explain the uneven distribution of FDI within each type of region. In an attempt to do so, we have argued that regional attractiveness does not depend entirely on locational advantages, but may be enhanced or diminished by a country's performance. We have modeled two different country effects: the within-country effect, which refers to the relative performance of a region within the country to which it belongs; and the between-country effect, which instead concerns the relative performance in Europe of the country to which a region belongs. We have obtained the following interesting results:

[13]Previous studies have concentrated mainly on the impact of economic integration through Preferential Trade Agreements (PTAs) on FDI flows, rather than on globalization. See, among many others, Blomstrom et al. 1998; Ethier 1998; Levy-Yeyati et al. 2002; Balasubramanyam et al. 2002; and, as regards the EU, Egger and Pfaffermayr 2004; Resmini 2003; Liebscher et al. 2007 and Barrell and Pain 1999.

- The within-country effect is only marginally significant. This implies that regions that outperform within their own country are not, *ceteris paribus*, more attractive than other regions.
- Despite its low level of significance, the within-country effect points up the importance of accessibility to the EU market, and not to national fragmented markets.
- The between-country effect is instead highly significant and affects several traditional FDI determinants. In particular, we have found that it magnifies agglomeration externalities, makes labor costs relevant in location decisions, and reduces the importance of low-level functions as attractive to foreign firms.
- The country effect is not constant over sectors. In the service sector, it magnifies the importance of agglomeration externalities in medium-/high-tech economic activities and related high-level functions, such as professionals and scientists, while it reduces the capacity to attract FDI inflows through self-cumulative processes.

These results have interesting policy implications. Firstly, they suggest that what makes regions more attractive is not their own absolute performance, but instead that of the country to which they belong. This explains why South-Western regions attract so few foreign firms compared, for example, with Eastern regions: the former perform, in absolute terms, better than the latter, but they are penalized in the FDI attraction game by the performance of their own countries, whose growth trends have been poorer than those of new Eastern-Europe member states.

Secondly, the competition to attract FDI does not occur among regions belonging to the same country, but among regions belonging to different countries; and, in particular, between regions belonging to dynamic national systems and regions belonging to nondynamic ones. Attractiveness factors differ between these two groups of regions and they consequently attract different kinds of FDI. In particular, FDI inflows into regions belonging to less dynamic national systems seem to be more attractive for foreign firms producing in low-value added activities (both services and manufacturing), while regions belonging to well-performing national systems attract high value added FDI. The contribution of these kinds of FDI to local growth and development may be different.

The foregoing considerations imply that if a region's attractiveness is to be improved, it is necessary to act first at national level, and then at regional level, and not vice versa, given that national champions are not, *ceteris paribus*, more attractive than other regions. This implies that FDI promotion policies cannot be implemented at either national or regional level, but should be the result of coordination efforts between the two levels of governance.

These interesting results, together with those obtained in Chaps. 5 and 6, provide profound insights into the impact of globalization on regional growth, attractiveness, and competitiveness. As mentioned in the introductory chapter to the book, however, the interest in globalization's spatial impact does not only lie in interpretation of past experience. The capacity to interpret what will happen in the future is of paramount importance, because the main challenges facing the European regions are embedded in alternative future globalization patterns driven by

several factors: how and when the world economic crisis will end; how it affects geo-political games; how the complex interactions among large global players will develop; how international competitiveness will be achieved by advanced and emerging economies; and which different intervention policies will be put in place by the European Commission.

A prospective analysis will raise awareness about the likely territorial effects generated by different (alternative and rather extreme) visions of the future states of the socioeconomic system. How these visions are built (Chaps. 8 and 9) and the results of the simulation exercises (Chap. 10) are the subjects of the next and last part of the book.

Annex 7.1 Regional Database

Table 7.9 Variable description and data sources

Variables	Definition	Source of raw data
GDP growth	Percentage change in real regional GDP (2004).	Eurostat
Labor cost	Average annual labor cost: salaries and wages in 2004 (excluding apprentices and trainees).	Eurostat
Market Accessibility	Weighted average of GDP of all European regions *j* other than *i*. The weights are the reciprocal of the time distances between the respective capitals. Reference year: 2004.	Eurostat and DGRegio
FDI/Lag_FDI	Number of new foreign firms per million inhabitants. Reference period: 2005–2007 for the dependent variable and 2001–2003 for the independent variable.	Eurostat and FDIRegio
Low Tech	Specialization Index. Share of regional value added generated by sectors with low technological intensity on total value added generated by the region. Reference year: 2004	Eurostat
Medium Tech	Specialization Index. Share of regional value added generated by sectors with medium technological intensity on total value added generated by the region. Reference year: 2004.	Eurostat
High Tech	Specialization Index. Share of regional value added generated by sectors with high technological intensity on total value added generated by the region. Reference year: 2004.	Eurostat
Business Services	Specialization Index. Share of regional value added generated by business services sectors on total value added generated by the region. Reference year: 2004. Source: Eurostat	
Corporate Managers	ISCO-88/12 employment share on total regional employment (3-year average, 2002–2004). Data provided by DGRegio.	
SME Managers	ISCO-88/13 employment share on total regional employment (3-year average, 2002–2004).	DGRegio

(*continued*)

Table 7.9 (continued)

Variables	Definition	Source of raw data
Professionals and Scientists	ISCO-88/2 employment share on total regional employment (3-year average, 2002–2004).	DGRegio
Clerical workers (White Collars)	ISCO-88/4 employment share on total regional employment (3-year average, 2002–2004).	DGRegio
Skilled Workers (Blue Collars)	ISCO-88/8 employment share on total regional employment (3-year average, 2002–2004).	DGRegio

Table 7.10 Classification of economic sectors by technology intensity

Nace code	Economic activity
AB	Agriculture, hunting, and forestry + fishing
C	Mining and quarrying
DA	Manufacture of food products, beverages, and tobacco
DBDC	Manufacture of textiles, clothing, and leather
DD	Manufacture of wood and wooden furniture
DE	Manufacture of paper, publishing, printing
DFDG	Chemical industry
DH	Manufacture of rubber and plastic
DI	Manufacture of nonmetal products
DJ	Manufacture of metal and metal-based products
DK	Manufacture of machinery and equipment
DL	Manufacture of electrical and electronic equipment, precision instruments
DM	Manufacture of automobile and other transport equipment
DN	Other manufacturing
E	Electricity, gas, and water supply
F	Construction
G	Wholesale and retail trade
H	Hotels and restaurants
I	Transport, storage, and communication
J	Financial intermediation
K	Real estate, renting, and business activities
L	Public administration and defense, compulsory social security
M	Education
N	Health and social work
OP	Other personal services

Low-Tech (LT): manufacture of food products, beverages, and tobacco; textiles, clothing, and leather; wood and wooden furniture; paper, publishing, printing; other manufacturing
Medium-Low Tech (MLT): rubber and plastic; other nonmetal products; metals and metal-based products
Medium-High Tech (MHT): chemicals; machinery and equipment; automobile and other transport equipment
High Tech (HT): electrical and electronic equipment, precision instruments
Business services: real estate, renting and business activities; financial intermediation; transport, storage, and communication

Part III
Globalization Scenarios for European Regions

Chapter 8
Scenario Methodology: A New MASST Model

8.1 Quantitative Foresights

This part of the book is devoted to the creation of scenarios under different assumptions on how globalization patterns will develop in the future.

The reason for this prospective analysis is evident. Globalization is in fact a process and not a state of the system; the way in which this process develops, the actors and the geopolitical framework that emerge, will give rise to different scenarios that the European regions will have to face.

In the present situation of a world economic downturn – not yet present in the historical data available up to 2007 – no scenario can be formulated without some assumptions on how the crisis will evolve. In our scenario building, we intend to take into consideration the speed of recovery from the economic downturn, which influences public expenditure growth rates, the capacity of extra-European economies to grow, competitive strategies in favor of protectionism of national goods, and incentives to national demand.

The importance of the world economic crisis also resides in the fact that it gives rise to long-term breaks in the structural features of the economy stemming from recent emerging contradictions: demand based on debt in many advanced countries, growth of the financial sector in Western economies, China and BRICs supporting Western consumption with low-price goods, Western real income decreasing because of high inflation, and financing the trade deficit of USA (buying USA Treasury Bonds). By consequence, at the end of the crisis, the balance of the geopolitical game will be different; winning assets will be different; the dollar may no longer be the only reference currency for international exchanges; and a "regionalized" globalization will take place. Needless to say, all these structural breaks will have strong effects on the possible future economic trajectories of regions in Europe.

This chapter is devoted to the methodological aspects of scenario building. The need for anticipatory and farseeing economic visions has always induced economists to seek reliable methodologies with which to produce insights into what the future will look like. Among existing alternative methodological exercises, the distinction between forecasts and foresights is useful, and it helps specify the

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approach used in this book. In general, a forecast aims to obtain precise values of specific economic variables in the future, on the basis of extrapolations from a system of past socioeconomic relations. Exactly because they extrapolate from past tendencies, forecasts yield the best results in a short-term perspective. The aim of a forecasting exercise is, in general, to achieve a quantitative value in a certain year, paying little attention to the intermediate path, or to the feedback and adjustment processes by which the end value is determined.[1]

Foresight is a radically different exercise. It is mostly qualitative in nature, and its aim is to provide an image of the future based on radical breaks, on structural effects which destroy past tendencies. A new technological paradigm, new socio-cultural models, and new political regimes are all examples of structural breaks in the elements regulating an economic system which give rise to completely new and radically different images of the future. A foresight is a possible, probable, and sometimes desirable image of the future under the assumption that these events, or perhaps only one of them, will occur. Contrary to forecasts, foresights do not address the dynamic processes that will produce the final outcome; rather, they explore the general consistency of the final image by analyzing all the adjustment processes that are likely to happen. In general, a foresight is built on an image of what the future will look like (explorative projections), but also of what the future should look like (desirable projections). Foresight provides insights into the future based on a structural and radical break with the past, and assuming in general a long-term perspective (usually decades).[2]

The logic of our methodology is neither that of a pure forecast nor that of a pure foresight. Our approach can be defined as a *quantitative foresight* in that it is the result of three major steps (Fig. 8.1). The first involves scenario building, whereby an image of the future is constructed on the assumption that a discontinuity will emerge in the main elements or driving forces that influence and regulate the system. The second step is to insert these changes into a model of structural relationships, which in traditional manner links conditional (explanatory) variables and the dependent variables. The qualitative assumptions of the first-step procedure are translated into quantitative ones linking the expected driving forces to specific values of the model's independent causal variables. The third step involves a simulation procedure leading to a "conditional" forecast of the dependent variables.

Our approach is thus similar to a forecasting exercise because it is rooted in quantitative estimates of a system of relationships. However, it differs from typical forecasting exercises in that it inserts discontinuities into the driving forces of the system that allow for bifurcations in the system's dynamic trajectories. The structural relationships that hold together the economic system and its multiple linkages with the territorial system are assumed to remain stable in the transition from the

[1]On forecasting methodologies, see, among others, Armstrong 1985; Hawkins 2001; Hendry and Clements 2001; and Loomis and Cox 2000.

[2]On foresight methodologies, see, among others, CEC 2004; Miles and Keenan 2000; UNIDO 2004.

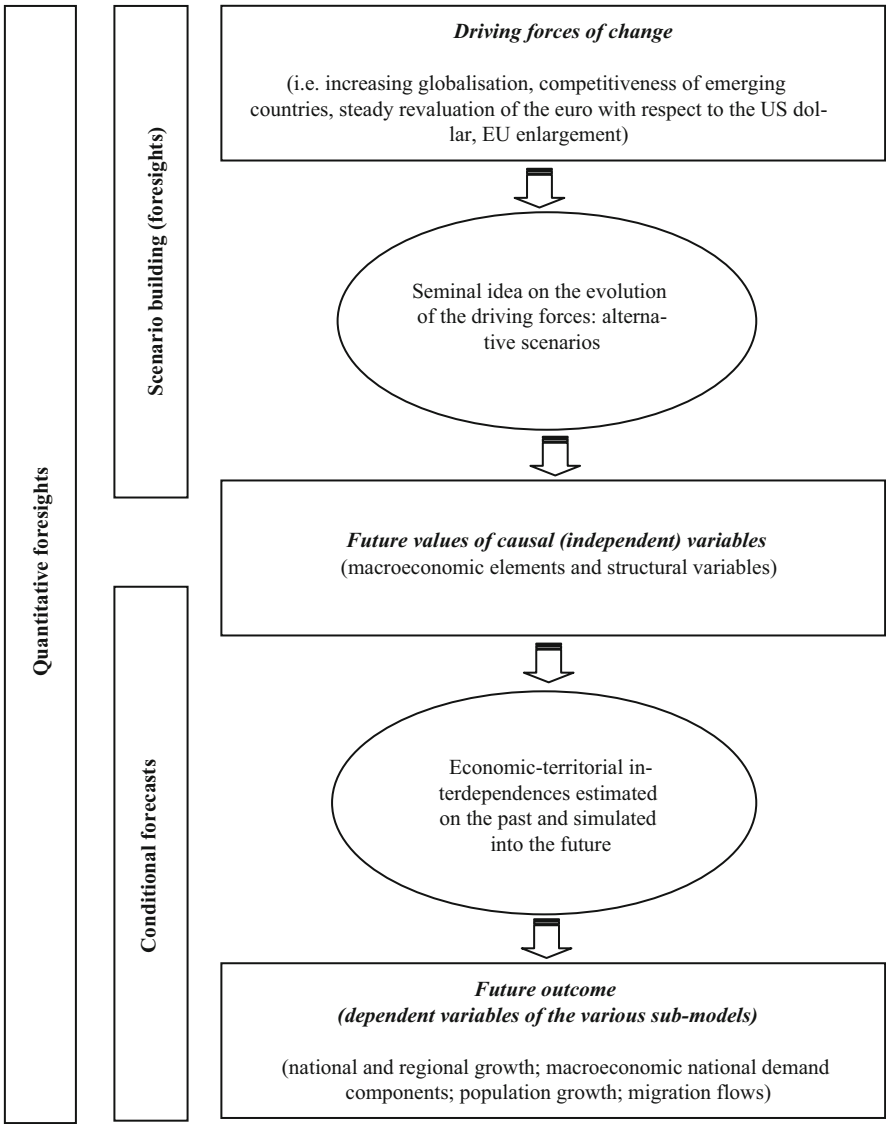

Fig. 8.1 Logical steps of quantitative foresights
Source: Capello et al. 2008

past (estimation phase) to the future (simulation phase), but the combination of the main driving forces changes in the transition, giving rise to new, hypothetical but consistent scenarios.

This methodology has already been successfully adopted by the authors in a previous scenario exercise (Capello 2007a; Capello et al. 2008; Capello and Fratesi

2009, 2010). Two main aspects are radically new in this work. First of all, this book contains a new version of the econometric model estimating the system of cause–effect relationships – termed the MASST (MAcroeconomic, Sectoral, Social, and Territorial). In this new, revised, and updated version, the MASST model allows investigation of not only future regional growth patterns but also service and industrial employment dynamics.

Moreover, this version of the model entails estimations on nonmaterial factors such as trust in the identification of regional dynamics, drawing on the most advanced theories of regional growth, without denying the importance of the achievements accomplished by the traditional theories. As we will see, the results are interesting and useful, in that they are able to provide a complex picture of regional growth potentialities (in terms of GDP and employment growth) and the interregional and territorial effects that are likely to arise from alternative globalization patterns.

Secondly, the present analysis differs from the previous one in that it adds reflections and hypotheses on how the present economic crisis will influence the future of the European economy through structural changes already observable, and links them to the assumptions on the competing strategies put in place by the main actors. Therefore, while future trajectories are based on assumptions on alternative competing strategies of the main actors, which are the same as those proposed in the previous scenario exercise (Capello et al. 2008), they are here also made dependent on assumptions concerning the duration of the present crisis. A slow recovery from the economic downturn is accompanied, with respect to a rapid recovery, by lower inflation rates, lower increases in energy prices, and lower interest rates: all these macroeconomic trends may be interpreted as having positive effects on the economy. Moreover, a long-term recovery from the economic downturn exacerbates other macroeconomic trends to a greater extent than in the case of a quick recovery, so that it is characterized by a more limited European consumption increase, a lower world demand increase, higher unemployment rates, greater public expenditure, and a more limited production increase, especially in open sectors, which certainly penalize the long-term future economic trajectories of advanced economies. The spatial distribution of the effects of these macroeconomic trends is treated by the macroeconometric regional growth model described in the next section.

8.2 A New Version of the MASST Model

The macroeconomic regional growth model used here is labeled MASST, an acronym recalling its structural features: a macroeconomic, social, sectoral, and territorial model (Capello 2007a; Capello et al. 2008). The "territorial" element was rightly and satisfactorily taken into account in the first version of the model by means of a typology on settlement structures in each region; NUTS 2 were divided among agglomerated, urban, and rural regions, most of which proved to have an important role in the explanation of regional dynamics.

Found to be unsatisfactory in the first version of the model were the sectoral and the social dimensions: the former was represented by a simple variable, i.e., the share of service activities present in the region; the latter by demographic elements. Both these solutions were dictated by data scarcity, and did not adequately capture the complexity of the cause–effect chain between a sectoral specialization or a social atmosphere and regional performance. Sectoral composition as well as local sectoral dynamics in the tradition of a shift-share analysis (Perloff 1957; Perloff et al. 1960) should be taken into account and given a role in the explanation of regional growth. Theories of social and relational capital (Putnam 1993; Camagni 2002), highlighting the crucial role of nonmaterial, intangible assets in the explanation of regional dynamics, should be considered by a modern regional growth model, reinforcing its generative, bottom-up, capacity to explain regional performance.

Moreover, in the first version of the model the effects of an international demand volatility were captured through simple changes in the constant of the export and import growth equations: a more precise indication of international demand changes has been required.

In light of these considerations, an updated version of the MASST model has been built by the same authors. The effort has proved worthwhile: the sectoral and social dimensions have been drastically reconsidered and now have a more solid role in explaining regional growth made possible by a recent collection of sectoral and social data comparable for all NUTS 2 regions of the European Union, which enable exploration of the role performed by regional specialization/despecialization and by intangible assets such as trust in regional performances in the medium-to-long run.

These aims have been achieved without forgoing the most attractive aspect of MASST: its nature, in the words of Richardson (1967), as a "distributive" and a "generative" model at the same time, i.e., as both a top-down and bottom-up model. Indeed, the model allows for endogenous differentiated regional feedbacks of national policies and trends, and distributes them differently among regions, according to their capacity to capture national growth potentialities, following a distributive logic. In their turn, regional shocks, and regional feedbacks, propagate on regional GDP growth on the basis of structural elements explaining regional capacity to react to shocks. Regional shocks propagate to the national level through the sum of the regional GDP levels, giving the model a generative nature (Capello 2007a; Capello et al. 2008).

Other improvements on the first version of the model, besides full reestimation over an extended time span (1995–2005), concern, at national level, its capacity to take account of demand coming from different areas of the world.

8.3 Characteristics and Structure of the New MASST Model

When applied to the study of regional economic growth, econometric model specifications have always been grounded on the main economic growth theories developed at regional level. Regional econometric models began as further elaborations

of macroeconomic models dealing with variables such as production, investment, consumption, and exports (Nijkamp et al. 1986). In these approaches, important attempts were made to translate econometric models interpreting economic growth of national systems into regional econometric models (Glickman 1977, 1982; Cappellin 1975, 1976). These models reflected the Keynesian approach to growth, based on the theoretical assumption that local development is a demand-driven process, supported by increases in internal or external consumption of locally produced goods which, via multiplicative effects, generate increases in local employment and income. These models were based on macroeconomic theories of the 1950s and drew in particular on the macroeconomic export-base theory.

The need to emphasize supply elements in explaining growth pushed regional econometric models toward different specifications; interregional flows of resources (capital and labor) were the main modeling elements, given their primary role in neoclassical growth models (Moody and Puffer 1969). During the 1980s, supply regional econometric growth models developed in two directions. The first was a more heterodox neoclassical approach to growth characterized by a specification of a production function containing production factors (infrastructure and accessibility) other than the mere traditional capital and labor resources, as proposed by the microterritorial and behavioral theories of the 1970s and 1980s (Biehl 1986). The second direction shifted the focus to endogenous growth elements, and to estimation of regional growth disparities, being induced to do so by the success of the neoclassical (macroeconomic) endogenous growth theory of the mid-1980s (Barro and Sala-i-Martin 1995).

All these specifications seem inappropriate when the new theoretical bases for regional economic growth must be considered. In particular, recent regional growth theories mainly refer to an endogenous, cumulative, and self-reinforcing development pattern, whose competitive elements reside in nonmaterial factors embedded in the social and cultural environment of a local economic system.[3]

According to most recent territorial endogenous growth theories, regional growth is the result of (Capello 2007a):

- A *competitive process* based on supply rather than demand elements, such as the quality (and quantity) of local resources, product and process innovation, technological advances, and local knowledge. Purely demand-driven growth models are therefore unsuitable
- A *sociorelational process*, because this is based not only on material production factors but also on nonmaterial ones endogenously developed thanks to multiple relations obtained within the local context. Relational elements (such as social capital *à la* Putman, relational capital *à la* Camagni, trust *à la* Becattini, and leadership *à la* Stimson and Stough[4]) give rise to local cumulative processes of

[3]Regional development theories based on these ideas are all endogenous theories that start from the industrial district theory, such as the *milieu innovateur* (Camagni 1991a) and the learning region theories (Lundvall 1992).

[4]See on this issue Becattini 1990; Camagni 1991a; Putnam 1993; Stimson et al. 2005.

knowledge creation, and processes of collective and interactive learning, which reinforce the decision-making processes of local actors.[5] These elements have an active and vital role in defining local economic competitiveness and growth. Traditional local growth models based merely on resource endowment have limited interpretative power in this respect

- A *territorial and spatial process* where territory is interpreted as an autonomous production factor, rather than as the mere geographical place where development occurs. Territory generates increasing returns, cumulative self-reinforcing mechanisms of growth which take the form of dynamic agglomeration economies. Local economic growth is also the result of interregional interaction processes, rather than the result of interregional resource allocation decisions or of an increase in resource endowment. A-spatial local growth models are for this reason inappropriate
- An *interactive process* of the local economy within the wider national and international economic system. Pure bottom-up models by and large neglect national–regional linkages and should therefore be avoided
- An *endogenous process* whose explosive or implosive trajectory is determined by how the entire local production system reacts to external stimuli and is able to take advantage of short- and long-term trends in the national and global economy.

The specification of our model seeks to take account of the above-mentioned theoretical elements in a stylized quantitative way. These territorial, social, and sectoral elements are those that explain the competitive forces of a region, its capacity to grow more than the other regions, within the same macroeconomic framework. The model must be first of all a territorial model in which spatial linkages among regions (such as proximity and spillover effects) and the territorial structure of regions (urbanized, agglomerated, and rural) play a role in explaining local growth. At the same time, it must be a relational and sectoral model where the sectoral and relational elements find a place in explaining growth; but also, more traditionally, it must be a competitive model in which the dynamics of the local economy are explained by supply elements such as the quality and quantity of the resource endowment.

All these structural elements explain the differential growth of a region with respect to the nation. In the MASST model, the national growth is instead explained by demand-driven elements, more than by the competitiveness of national economies (the supply side of the national economy), only partially inserted for the explanation of investment growth through the attractiveness of foreign direct investments (FDI).

This solution allows full consideration to be made also of aggregate macroeconomic components of growth, which must be assigned their proper role (sometimes overlooked in purely regional approaches). Macroeconomic variables, in fact, are of enormous importance in boosting national (and therefore regional) growth: suffice it to consider currency devaluations, movements in exchange rates, and

[5]See on these concepts Lundvall 1992; Keeble and Wilkinson 1999; Camagni and Capello 2002.

fiscal and monetary policies at both the national and EU levels. Their effects on regional growth largely follow a demand-driven logical chain that must be accommodated alongside supply-driven processes if the model is fully to interpret regional growth patterns. The MASST model therefore encompasses all these factors and logics, as shown later in this chapter. However, full closure of the macroeconomic interrelationships of national accounts is not possible at this stage; most macroeconomic variables concerning state budget or balance of payments disequilibria remain exogenous.

As in the first version of MASST, so in this version regional growth is therefore the sum of two components: the national growth and a regional differential shift (Fig. 8.2):

$$\Delta Y_r = \Delta Y_n + s; r \in N \tag{8.1}$$

where ΔY_r and ΔY_n denote the GDP growth rate respectively of region r and nation n to which the region belongs, and s represents the regional differential growth with respect to the nation.

This structure differs substantially from the existing econometric regional growth models, which in general move toward a direct interpretation of absolute regional growth either by replicating national macroeconomic models, or by constructing complex systems of equations for each region linking the region both to the national aggregate economy and to the other regional economies through input–output technical coefficients.

The advantage of the MASST model's structure is that a strong interconnection between regional and national growth is established: national macroeconomic trends and policies generate an effect on both national and regional growth, but at the same time regional structures and policies affect both regional and national performance in an interactive national–regional manner. This structure allows to take account of complex vertical feedbacks between the regional and national economy without imposing a complex system of interlinked equations.

The national component takes into account the regional growth effects of national macroeconomic variables: for instance, the components of aggregate GDP, i.e., internal consumption, investments, imports, exports, and public expenditure. The public expenditure growth rate is the only exogenous variable among those determining national growth in the model. All other macroeconomic GDP components are endogenous and determined by mechanisms that are mainly Keynesian and demand driven, but with also some supply-side aspects. GDP growth positively influences internal consumption, investment, and import growth. Interest rates negatively influence the national investment growth. Productivity, on the contrary, has a positive influence on investment growth and, also, a positive influence on national export growth. FDI have a positive influence on total investment growth and also when they relate to assembly activities. A higher inflation rate, owing to its effects on the relative prices of domestic and imported goods, increases imports and decreases exports. For the same reason, a devaluation of the nominal exchange rate decreases imports and increases export growth.

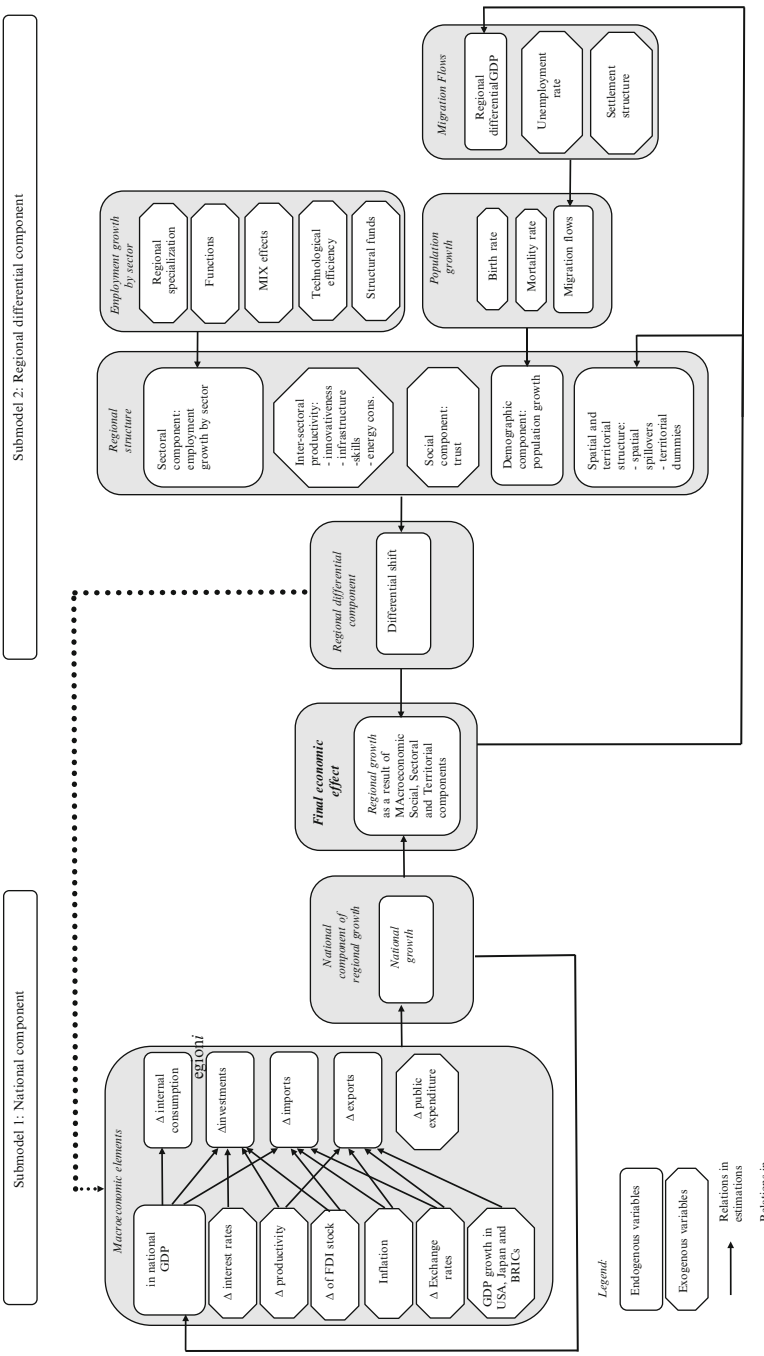

Fig. 8.2 The new MASST structure

Export growth in this version of the model explicitly depends on the growth of the external world, in particular on the growth of the most important extra-European trade countries, the USA, Japan, and the BRICs countries (Brazil, Russia, India, and China) with the latter group expected to increase its importance in the future.

The regional differential component of MASST is depicted on the right-hand side of Fig. 8.2. Consistently with (8.1), this is estimated as a shift of regional growth from national growth, and this shift is dependent on five main components, of which two are exogenous and three endogenous.

The first component is the *industry component*. This was only sketched in the first version of MASST, where solely an exogenous share of tertiary activity employment was present. In the new version of MASST, thanks to theoretical reflection and new data availability, employment growth in manufacturing and in services are present and separated. Both have effects which are spatially differentiated and both are endogenous in the model, depending on regional (de-) specialization, on the regional functions, on MIX effects, on technological efficiency, and on policies (structural funds).

The second main component is *interindustry productivity*: this component is exogenous and measures the fact that, also with the same industrial specialization, regions may differ in productivity. For this reason, factors expected to affect productivity are considered: innovation (detected by human resources in science and technology), transport infrastructure, the skills of the workforce, and the availability of energy. Interindustry productivity was present in the first version of MASST but has been reformulated and improved with skill variables.

The third component is also new with respect to the old MASST: it is the social component as measured by the regional level of trust, which has been included thanks to the availability of data in the European Value Survey Database.

The fourth component was already present in the old MASST and is the *demographic component*. Population growth is needed in the MASST for the computation of per capita GDP, but it is not expected to have important GDP growth effects on European regions, where it is inserted more as a correction of possible bias. Population growth is made to depend on exogenous birth and death rates, and on endogenous migrations which, as in the previous version of the model, are dependent on (exogenous) unemployment rates and settlement structures and on the differential GDP of regions, which is obviously predetermined by the model.

The fifth component is the *spatial and territorial structure*. This is characteristic of the MASST model and involves spillovers differentiated on regional types and territorial dummies.

The last important aspect to be evidenced in Fig. 8.2 is the dotted arrow, which links regional differential components to macroeconomic national elements. Because the MASST model is a top-down and bottom-up model, the top-down element of regional growth is clearly due to the national component of regional growth. The bottom-up element, in contrast, depends on the fact that the competitiveness of regions is assumed to affect, with a mechanism similar to the one of the accelerator, consumption, and investments at national level, so that the regional

submodel not only distributes national growth among regions but is also able to boost national growth when regions are virtuous. This is achieved in the simulation algorithm, which is extensively explained in Capello et al. 2008.

8.4 The National Component of the MASST Model

At the basis of the national component of MASST lies a pseudo-identity which links the national growth of GDP (Y) to its main components in the national accounts: consumption (C), investments (I), public expenditure (G), exports (X), and, negatively, imports (M) from a generic country n (8.2):

$$\Delta Y_n = \beta_1 \Delta C_n + \beta_2 \Delta I_n + \beta_3 \Delta G_n + \beta_4 \Delta X_n - \beta_5 \Delta M_n + \varepsilon \tag{8.2}$$

As already mentioned, all these components depend on exogenous macroeconomic factors and predetermined past GDP growth, with the exception of public expenditure growth.

Table 8.1 presents the estimation results for the national equations. These estimations have been obtained for 27 EU countries over the period 1995–2006 (see the Annex for description of the data sources). All dependent variables are lagged in order to avoid simultaneity and endogeneity.

The first column represents the consumption growth equation. This depends, consistently with Keynesian macroeconomics, on the growth of GDP, which provides purchasing power to the citizens of the various countries, as in (8.3):

$$\Delta C_n = \alpha + \beta \Delta Y_n + \varepsilon \tag{8.3}$$

It is interesting to observe (Table 8.1) that the effect of an increase of GDP growth on domestic consumption is higher for the New 12 member states, where, owing to initial lower levels of income per capita, growth boosts consumption more than in Old 15 countries. This estimation is obtained in panel where fixed effects are significant, meaning that the effect is not only different by groups of countries but also by country within the group, probably also because of different propensities to consume. The R-square, at 0.39, is not very high, but it is satisfactory for a model where consumption growth is only one part of a complex exercise.

The second column of Table 8.1 gives the estimates of investment growth. This is made to depend on the real GDP growth rate, on real interest rates (ir), on unit labor costs (ulc), and on foreign direct investments (fdi) (8.4)

$$\Delta I_n = \alpha_1 + \beta_1 \Delta Y_n + \beta_2 \mathrm{ir}_n + \beta_3 \Delta \mathrm{ulc}_n + \beta_4 \Delta \mathrm{fdi}_n + \varepsilon \tag{8.4}$$

In the estimations reported, the growth of investments is shown to depend positively on the real GDP growth rate, with an effect not significantly different between Eastern and Western countries. Real interest rates have a significant and

Table 8.1 National estimation results

Dependent variables / Independent variables (lagged 1 year)	Consumption growth (8.3)		Investment growth (8.4)		Export growth (8.5)		Import growth (8.6)	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
Real GDP growth rate	0.18	***	1.17	***			0.89	***
Real GDP growth rate in New EU countries	0.34	**						
Real interest rates			−0.53	***				
Unit labor cost			−17.43	***				
Change in unit labor cost					−0.33			
Growth rate of inward FDI stock			0.22				4.35	***
Change in the nominal exchange rate of the national currency against the dollar					−0.27	***	0.07	*
Inflation rate					−0.79	***	0.25	***
Growth rate of GDP of USA and Japan					2.072 (6.21)	***		
Growth rate of GDP of BRIC countries					0.14 (1.82)	*		
Constant	2.13	***	10.03	***	3.49	***	2.98	***
Type of estimate	Panel fixed effects (robust estimates)		OLS common constant (robust estimates)		Panel fixed effects (robust estimates)		OLS common constant (robust estimates)	
Number of observations	301		224		181		235	
R-square	0.39		0.33		0.09		0.19	
Pseudo-identity	$\Delta\%Y = 0.623\Delta\%C + 0.113\Delta\%I + 0.007\Delta\%G + 0.239\Delta\%X - 0.143\Delta\%M$							

*significant at 10%; **significant at 5%; ***significant at 1%

Note: All independent variables are lagged 1 year

negative effect on investments because they affect the returns on investments and, when high, may lead to the postponement or even cancelation of investment decisions. Unit labor costs constitute another factor which negatively affects investments in the country, because they decrease the returns for the capital owner. In the estimations, the growth rate of inward FDI stock is kept even if it is not statistically significant: given the importance of this variable in a scenario exercise on future globalization trajectories, its presence with the corrected sign in the model is preferred even if the coefficient has a high standard error. The *R*-square is satisfactory here as well, at 0.33, and the estimate is robust OLS given the nonsignificance of fixed effects.

Export growth is made to depend on the competitiveness of the country, as measured by the unit labor costs (ulc) and by the exchange rates (e). Secondly, and differently from the previous version of the MASST model, the role of world demand for exports is also explicitly taken into account. In particular, owing to the importance of these countries, two variables are chosen: one for the GDP growth rate of the USA and Japan ($Y_{\text{US\&Jap}}$), the traditional partners with which international trade is established and is in large part intraindustry, and one for the GDP growth rate of BRIC countries (Y_{BRIC}), which, though different in many respects, share an increasing role in world trade and may evolve in the future from exporters of commodities and low-price manufactures to (also) importers and exporters of high-quality products. All these measures are explicitly present in (8.5):

$$\Delta X_n = \alpha_1 + \beta_1 \Delta \text{ulc}_n + \beta_2 e_n + \beta_3 \text{in}_n + \beta_4 \Delta Y_{\text{US\&Jap}} + \beta_4 \Delta Y_{\text{BRIC}} + \varepsilon \tag{8.5}$$

In the estimations, the competitiveness of the country was measured by the change in the unit labor cost (which is almost significant) and by the variation in the nominal exchange rate of the domestic currency against the US dollar. This exchange rate was chosen instead of a weighted effective version because most of the trade by European countries takes place with other EU countries, and, because the euro, exchange rates within Europe are either fixed or highly constrained. In contrast, many goods and commodities are still traded with the rest of the world in dollars, so that this exchange rate is the most relevant when the intention is to model scenarios with different effects of globalization. Interestingly, this exchange rate is also highly significant and has the expected negative sign (i.e., a revaluation of the domestic currency decreases exports). As already expressed in (8.5), the effects of nominal exchange rates on competitiveness must be corrected for the national inflation rate, which affects domestic prices at the origin. Inflation is significant and negative, so that, as expected, the higher the domestic inflation, the less competitive domestic products become on international markets.

The growth rates of the two groups of important extra-European importers of European goods are both highly significant and positive; and because of the declining but still large share of USA on European extra-EU imports, the coefficient for USA and Japan is higher. The estimation, which has a low R-square but in line with other findings on export growth, has significant fixed effects, so that export growth is, ceteris paribus, different by country.

The last national equation to be estimated concerns the growth rate of imports, which depends on the growth rate of GDP (Y), which should affect consumption demand, on the interaction of the nominal exchange rate (e) and the inflation rate (in), and on incoming FDI (fdi), since these latter should generate imports of intermediate goods, as reported in (8.6):

$$\Delta M_n = \alpha_1 + \beta_1 \Delta Y_n + \beta_2 \Delta \text{fdi}_n + \beta_3 \Delta e_n + \beta_4 \text{in}_n + \varepsilon \tag{8.6}$$

Estimations of the import growth equation are presented in the last column of Table 8.1. As expected, import growth is positively dependent on GDP growth,

which provides domestic consumers with purchasing power. More interesting is the fact that also the growth rate of FDI has a positive and significant effect. FDI, in fact, activate productions which need materials and semimanufactured goods; these are in part present in the host country, and in part need to be imported, and hence the positive sign.

The terms of trade, as captured by domestic inflation and nominal exchange rates, behave well and significantly, with a coefficient whose sign is opposite to that in the export equation, so that a revaluation of the domestic currency makes cheaper imports grow, while an increase in domestic inflation, which makes domestic products more expensive, also increases imports.

This estimation is obtained as OLS with robust estimates, since no fixed effects are significant. The *R*-square at 0.19 is good enough for a model whose purpose is to produce scenarios for all EU regions and not to explain detailed determinants of import growth.

Finally, the quasi-production function has also been estimated, showing that, in the period 1995–2006, the growth of consumption accounted for more than 62% of GDP growth, investments for more than 11%, and exports for almost 24%. The effect of public expenditure growth is instead rather small; and the negative effect of imports, 14%, is smaller than that of exports.

8.5 The Regional Component of the MASST Model

8.5.1 The Differential Component

The regional differential component, i.e., the relative regional growth with respect to the national dynamic, is explained also in this version of the model by structural elements that characterize the region: human capital, accessibility, structural and cohesion funds, and relative position with respect to other regions, to cite just some of them.

With respect to the previous version of the model, in this version these structural elements are separated into two conceptually different groups of variables. The first group is intended to measure sectoral dynamics, through both manufacturing (*Man*) and service (*Ser*) employment growth rates (Part 1 of 8.7). The second part seeks to measure the effects of interindustry productivity through the presence of innovation capacity (inno), high-value functions (funct), accessibility (in), relative geographical position vis-à-vis other regions (spill), relational capital (trust), settlement structures (Daggec), and regional policy support (pol) (8.7):

$$\Delta \mathrm{diff}_r = f\left[\underbrace{(\Delta \mathrm{Man}_r, \Delta \mathrm{Ter}_r)}_{\mathrm{Part1}}, \underbrace{(\mathrm{inno}_r, \mathrm{funct}_r, \mathrm{in}_r, \mathrm{spill}_r, \mathrm{trust}_r, \mathrm{Daggec}_r, \mathrm{pol}_r)}_{\mathrm{Part2}}\right] \quad (8.7)$$

Some additional aspects are inserted into this version of the model, and some traditional aspects are reconsidered with respect to the old version (Capello 2007a;

Capello et al. 2008). As regards the additional aspects, (8.3) contains an industry dimension; as explained in the following section, the two variables of regional manufacturing and service employment growth rates capture both industry composition effects and intraindustry productivity effects. Secondly, thanks to data availability, the social/relational capital (*à la* Putman) component is directly inserted into the model as an intangible asset that can make the difference in regional performance.

In regard to the traditional aspects reconsidered, regional interindustry productivity is also made dependent on the composition of functions present in the region: for this purpose, a measurement of the professional status of the labor force has been introduced. The level of population in the region is inserted to control for regional size.

The results of the estimates are presented in Table 8.2. The effects of intraindustry productivity and evolution are captured by four regressors. In particular, the growth rate of manufacturing employment plays an overall positive and significant role in regional GDP growth.

However, this positive role is reversed in agglomerated regions by a negative coefficient, implying that, among the denser regions, those which retain (or increase) a manufacturing specialization are also those which grow less than the others because they can obtain higher value added in advanced services.

As far as service employment is concerned, the situation is the reverse at territorial level. Here too, in fact, the coefficient is positive and significant overall, but for rural regions, those where employment is more dispersed and hence agglomeration economies are unlikely, a service specialization is detrimental, as shown by a negative and significant coefficient. This may be due to the fact that service employment, where agglomeration economies are not present, is generally low-skilled, so that regional GDP can benefit more from industrial employment.

Intersectoral productivity aims to measure why some regions perform better than others while maintaining their sectoral specialization unaffected. Among the factors that are introduced to explain intersectoral productivity, innovation, measured by the share of human resources in science and technology, has been kept even if, with robust standard errors, it is highly nonsignificant, given its importance in the scenario exercise.

Low-value functions, measured by operators and assemblers as a proxy for low-skilled manual workers, have the expected negative sign, although it is nonsignificant.

Transport infrastructure endowment is considered to be another factor which should enable regions to grow more than the national average. Our results, however, show the nonsignificant value of the coefficient for the amount of transport infrastructure per square kilometer. Transport infrastructure turns out to be significant only in urban regions.

The availability of energy, proxied by energy consumption per capita, is a factor that positively affects intersectoral productivity, with a positive and significant coefficient.

Finally, also policies may affect regional productivity. In our case, the expenditure from the cohesion fund has a positive and significant coefficient, whereas the

Table 8.2 Regional differential component estimation results

Independent variables	Coefficient	*p*-value	sig.
Intrasectoral component			
Growth rate of manufacturing employment	0.38	0.02	**
Growth rate of manufacturing employment in agglomerated regions	−0.70	0.00	***
Growth rate of service employment	0.53	0.07	*
Growth rate of service employment in rural regions	−1.13	0.00	***
Intersectoral productivity			
Innovation capacity (share of human resources in science and technology)	0.02	0.63	
Low-value functions (share of plant and machine operators and assemblers)	−10.06	0.25	
Accessibility (total transport infrastructure per square kilometer)	0.15	0.87	
Accessibility in urban regions (total transport infrastructure per square kilometer in urban regions)	2.16	0.02	**
Energy consumption per capita	92.35	0.04	**
Structural funds policies (cohesion funds per capita)	2E-05	0.04	**
Social component			
Trust	4.84	0.01	**
Demographic component			
Regional share of population on national population	−0.02	0.23	
Spatial and territorial structure			
Spatial growth spillovers	−0.00	0.00	***
Spatial growth spillovers in rural areas	2.03	0.00	***
Spatial growth spillovers in inner regions	0.05	0.00	***
Dummy for agglomerated regions in New 12 countries	6.28	0.00	***
Constant	−3.13	0.07	*
Number of observations	195		
R-square	0.30		
Moran's I	0.31	0.76	
Spatial error			
Lagrange multiplier	0.442	0.506	
Robust Lagrange multiplier	0.00	0.997	
Spatial lag			
Lagrange multiplier	0.52	0.47	
Robust Lagrange multiplier	0.08	0.78	
Wald test for $\lambda = 0$	0.61	0.43	
Lagrange multiplier test of $\lambda = 0$	0.44	0.50	
Log likelihood	−456.03		

*significant at 10%; **significant at 5%; ***significant at 1%

Note: Robust OLS estimation. All independent variables are lagged or initial values. The dependent variable is the regional differential growth rate with respect to the country

other structural funds, as illustrated in the next section, are only significant in the employment equations.

The new MASST model is able to take explicit account of the social component. The variable "trust", i.e., the share of respondents in the EU values survey which have high or very high trust in other persons, is positive and significant. Ceteris paribus, regions where there is more trust are able to take advantage of cooperative behavior and less illegality, so that they are able to grow to a greater extent.

The demographic component of the regional differential shift in the new MASST model is not taken into account by pure growth population, since this effect is already captured by employment growth. In contrast, a correction is made for the size in terms of population of the regions, which, although nonsignificant, has been retained because it limits the problem of estimating a differential shift giving the same weight to regions of different sizes.

The last part of the regional differential shift is the spatial and territorial structure, which is characteristic of the MASST model. This part is composed of growth spillovers which are different by spatial structure and by territorial dummies directly inserted in the model.

Spatial growth spillovers are overall negative in the model, and they have a negative and significant coefficient.[6] Ceteris paribus, being close to fast-growing regions exerts a negative effect on regional growth, because the positive demand effect is less important than the leakage of opportunities toward neighboring regions. However, the effects of spillovers are positive for rural areas, which take advantage of fast-growing close regions. Moreover, for inner regions, i.e., those surrounded by only one region, the coefficient is also positive, since these regions are peculiar and non-self-inclusive in economic terms, being strictly linked with the region around them.

Finally, among the various territorial dummies tested, ceteris paribus, agglomerated regions in a New 12 country grow more than the others through the exploitation of agglomeration economies. However, the same does not hold for agglomerated regions in the Old 15 countries where, probably, decreasing returns on large city size are already manifesting their detrimental effects.

8.5.2 The Sectoral Component

The most innovative aspect of the advanced MASST version is that the sectoral component is explicitly modeled so as to take account of both the MIX and the intrasectoral differential effects of a traditional shift-share analysis.

The total manufacturing employment growth in each region r is modeled as follows:

$$\Delta \mathrm{Man}_r = \mathrm{const}_r + \sum_i \beta_{1i} \mathrm{LQ}_{ir} + \sum_i \beta_{2i} \Delta \mathrm{LQ}_{ir} + \beta_3 \mathrm{prof}_r + \beta_4 \mathrm{en}_r + \varepsilon \qquad (8.8)$$

where LQ_{ir} is the location quotient of sector i in region r, prof is the functional specialization, and en is the energy consumption. (8.8) measures intrasectoral productivity effects. The increasing/decreasing returns to scale within a certain sector, or intrasectoral productivity effects, may derive from particularly efficient

[6] Spatial growth spillovers are calculated as in Chap. 6.

performance by that sector. This is captured by the link between the degree of specialization (or its variation) in each sector and industrial employment growth; a certain industrial specialization provides advantages/disadvantages for absolute industrial employment growth. Specialization is measured by a location quotient traditionally calculated as the share of employment (or value added) in industry i in region r on total employment with respect to the share of employment (or value added) in the same industry at the European level. Moreover, increasing/decreasing returns may also result from the presence of value-added functions of that sector in that region, measured in terms of the share of employment engaged in high or low professions (prof).

Total tertiary employment growth is explained following the same logical structure in the following equation:

$$\Delta \mathrm{Ter}_r = \mathrm{const}_r + \sum_i \beta_{1i} \mathrm{LQ}_{ir} + \sum_i \beta_{2i} \Delta \mathrm{LQ}_{ir} + \beta_3 \mathrm{prof}_r + \beta_4 \mathrm{pol}_r + \varepsilon \qquad (8.9)$$

where all variables have the same meaning as in (8.8) and pol is public policy support. In the simulation part of the model, for both industrial and service growth rates, the constant term is calculated as follows:

$$\mathrm{const}_r = \mathrm{const}_r^0 + \sum_i (E_i / E_{\mathrm{EU}}) \mathrm{LQ}_{ir} \Delta E_{i\mathrm{EU}} \qquad (8.10)$$

where E_i is the employment in sector i at European level and E_{EU} is total employment in the EU. Equation (8.10) hence measures the increase of total industrial (or service) employment in a region due to an exogenous increase of the European employment growth rate in a certain sector ($\Delta E_{i\mathrm{EU}}$), weighted by the specialization of that region in that sector and by the weight of that sector on European total activities. On the logic of a shift-share analysis, (8.10) represents the MIX effect. This formula is a pure decomposition of the employment growth rate into its different parts and each weight is known.

In a simulation, this structure was used to measure the effects of an exogenous increase in employment in one sector at the European level on regional growth by taking into account a sectoral (MIX) composition effect and an intrasectoral productivity element at the same time. Moreover, it could be used to foresee the effects of an exogenous and external demand-driven effect in a specific sector on regional total employment growth, and to foresee the effects of possible changes in regional sectoral specialization within manufacturing or service activities. In the simulation exercise, the latter was made possible by the change in the location quotient of one (or a group) of regions. Consistency in all the location quotients (each of which must achieve value 1 at the European level) is guaranteed at the simulation level by recalculating location quotients in all sectors and regions of Europe so that each European location quotient at European level is equal to 1, assuming perfect intersectoral mobility of labor across Europe.

In the estimation of the sectoral component for manufacturing employment growth, the choice of the sectors was conceptually driven. We expected, in fact,

to find that manufacturing employment growth is affected by the dynamics of those sectors that are more vulnerable to an open economy.[7]

Table 8.3 reports the results of the estimates.[8] Being specialized has positive and significant employment growth effects in the two sectors DB + DC (manufacture of textiles and textile products + manufacture of leather and leather products) and DD (manufacture of wood and wood products). Negative and significant effects on employment growth are generated by the specialization in sectors DE (manufacture of pulp, paper, and paper products; publishing and printing), DL (manufacture of electrical and optical equipment), and DN (manufacturing n.e.c.). Negative but slightly nonsignificant effects are also present in sector DJ (manufacture of basic metals and fabricated metal products) (Table 8.3).

A variable in (8.8) was intended to capture the efficiency of regions in manufacturing, measured by the energy consumption per euro of aggregate regional GDP. It turns out that, with the exclusion of rural regions, the most energy efficient regions are (almost significantly) able to increase their manufacturing employment to a greater extent. This means that heavy industry, with the exception of the less dense regions, is less able to create employment with respect to other less heavy activities.

Table 8.4 presents the results of the estimation for services growth. The estimation was first run with robust OLS and then, owing to the results of the spatial autocorrelation tests, with a robust spatial error model and a robust spatial lag model. The three models were very similar in terms of coefficients and their significance, so that the choice of the one most adequate according to the statistical tests, a spatial lag model, did not affect the results in simulation.

The intrasectoral productivity element is statistically significant for a number of specific service sectors. In particular, it turns out that regional specialization (i.e., localization economies) is advantageous in the more open and market-oriented service sectors. For instance, the coefficient is positive and significant for sectors H (hotels and restaurants), J (financial intermediation), and K (real estate, renting, and business activities).

[7]For the European Commission, vulnerable sectors are those with a negative trade balance, import penetration, and growing import ratio, namely DB (manufacture of textiles and textile products) + DC (manufacture of leather and leather products), DJ (manufacture of basic metals and fabricated metal products), DL (manufacture of electrical and optical equipment), and DN (manufacturing n.e.c.) (see for this definition also Affuso et al. 2011). In addition to vulnerable sectors, two other sectors (DD, manufacture of wood and wood products, and DE, manufacture of pulp, paper, and paper products, and publishing and printing) were kept because their coefficients, which were significant with robust OLS estimation, remained very similar, though not significant, in the robust spatial lag model. We preferred to use these sectors rather than the open sectors identified in Chap. 3 to avoid any endogeneity once dummies for global and regional players (identified on the basis of the open sectors) had been introduced in our simulation exercise.

[8]Once spatial dependence is corrected for, most coefficients lose statistical significance (Table 8.3). However, if direct and indirect effects for each regressors and the joint significance of all parameters associated with the regressors are calculated, they turn out to be nonsignificant. For all these reasons, coefficients of robust OLS method were inserted into the simulation exercise.

Table 8.3 Manufacturing employment growth estimation results

Independent variables	Robust OLS			Spatial error model			Spatial lag model		
	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.
Location quotient in sectors DB (manufacture of textiles and textile products) + DC (manufacture of leather and leather products)	0.28	0.08	*	0.07	0.63		0.12	0.40	
Location quotient in sector DD (manufacture of wood and wood products)	0.20	0.08	*	0.11	0.35		0.13	0.20	
Location quotient in sector DE (manufacture of pulp, paper, and paper products; publishing and printing)	−0.43	0.05	*	−0.27	0.20		−0.29	0.14	
Location quotient in sector DJ (manufacture of basic metals and fabricated metal products)	−0.13	0.49		−0.06	0.692		−0.06	0.70	
Location quotient in sector DL (manufacture of electrical and optical equipment)	−1.31	0.00	***	−1.24	0.00	***	−1.16	0.00	***
Location quotient in sector DN (manufacturing n.e.c.)	−0.30	0.09	*	−0.08	0.65		−0.14	0.41	
Absolute change in location quotient in sector DL (manufacture of electrical and optical equipment) in agglomerated regions	−1.40	0.03	**	−1.10	0.05	*	−1.18	0.04	**
Energy consumption per euro of GDP in agglomerated and urban regions	−1,068	0.13		−609.5	0.33		−724.1	0.23	
Constant	0.69	0.12		3.92	0.37		1.27	0.00	***
λ/ρ				0.95	0.00	***	0.95	0.00	***
Number of observations	226			226			226		
R-square/squared correlation	0.20			0.19			0.36		
Moran's I	14.5	0.00	***						
Spatial error									
Lagrange multiplier	75.87	0.00	***						
Robust lagrange multiplier	0.702	0.402							
Spatial lag									
Lagrange multiplier	113.3	0.00	***						
Robust Lagrange multiplier	38.13	0.00	***						
Wald test of $\lambda = 0$				340.5	0.00	***	352.40	0.00	***
Likelihood ratio test of $\lambda = 0$ or $\rho = 0$				31.21	0.00	***	38.74	0.00	***
Lagrange multiplier test of $\lambda = 0$ or $\rho = 0$				75.86	0.00	***	113.20	0.00	***

*significant at 10%; **significant at 5%; ***significant at 1%

Note: All independent variables are lagged to their initial values. The dependent variable is the regional growth rate of manufacturing employment

Table 8.4 Services employment growth estimation results

Independent variables	Robust OLS			Spatial error model			Spatial lag model		
	Coefficient	*p*-value	sig.	Coefficient	*p*-value	sig.	Coefficient	*p*-value	sig.
Location quotient in sector H (hotels and restaurants)	0.49	0.00	***	0.42	0.00	***	0.42	0.00	***
Location quotient in sector J (financial intermediation)	1.04	0.00	***	0.84	0.01	**	0.89	0.00	***
Location quotient in sector K (real estate, renting, and business activities)	1.75	0.03	**	1.42	0.05	*	1.57	0.02	**
Location quotient in sector L (public administration and defense; compulsory social security)	−1.11	0.02	**	−1.114	0.011	**	−1.12	0.01	**
Location quotient in sector N (health and social work)	−0.59	0.15		−0.534	0.214		−0.35	0.34	
Location quotient in sector O (other community, social, and personal service activities) + P (activities of households)	−1.34	0.00	***	−0.88	0.06	*	−0.90	0.04	* *
Share of clerical workers	−12.52	0.03	**	−6.24	0.31		−7.65	0.15	
Share of legislators and senior officials	168.27	0.05	**	207.34	0.01	**	196.32	0.01	**
Structural funds expenditure per capita	7E-07	0.04	**	5E-07	0.11		5E-07	0.09	*
Constant	2.03	0.01	**	2.70	0.21		0.10	0.90	
λ/ρ				0.91	0.00	***	0.92	0.00	***
Number of observations	194			194			194		
R-square/squared correlation	0.36			0.34			0.45		
Moran's I	7.742	0.00	***						
Spatial error									
Lagrange multiplier	14.51	0.00	***						
Robust Lagrange multiplier	7.15	0.00	***						
Spatial lag									
Lagrange multiplier	43,361	0.00	***						
Robust Lagrange multiplier	36,004	0.00	***						
Wald test of $\lambda = 0$				97.78	0.00	***	162.59	0.00	***
Lagrange multiplier test of $\lambda = 0$ or $\rho = 0$				14.50	0.00	***	43.36	0.00	***
Log-likelihood				−355.31			−349.64		

*significant at 10%; **significant at 5%; ***significant at 1%

Note: All independent variables are lagged or initial values

Dependent variable is the regional growth rate of service employment

Specialization in other more market-sheltered services is instead negative and significant, in particular for sectors of public administration and defense; compulsory social security (L), health and social work (N), and other community, social, and personal service activities (O), and activities of households (P).

The functions present in the region explain a cumulative and self-reinforcing process of regional sectoral specialization: service employment growth increases in those regions where the share of clerical workers (which exclude all engineers and professionals) is low and where the share of legislators and senior officials, a proxy for high-level public managers, is high.

The public sector also has another positive and significant coefficient, the one related to the total structural funds expenditure. As expected, these instruments are able to increase total regional GDP more through the creation of new employment opportunities.

8.6 The Demographic Subcomponent

The final part considered by the model is the demographic subcomponent. Endogenous population growth is needed to produce estimates of GDP per person.

Tables 8.5 and 8.6 present the values of the estimated coefficients. Population growth was expected to be positively dependent on (exogenous) birth rate and negatively dependent on (exogenous) death rate. Moreover, the three age groups of migration flows were introduced, including the elderly, whose contribution to population growth was expected to be positive. Dummies for territorial settlement structure were also inserted (D_{terst}), as shown in (8.11):

$$\begin{aligned}\Delta \text{pop}_r = {} & \alpha_1 + \beta_1 \text{br}_r - \beta_2 \text{dr}_r + \beta_3 \text{mig}_r^{17-27} + \beta_4 \text{mig}_r^{32-42} \\ & + \beta_5 \text{mig}_r^{52-67} + \alpha_2 D_{\text{terst}} + \varepsilon\end{aligned} \tag{8.11}$$

The estimated coefficients are significant and have the expected sign (Table 8.5). Among the possible territorial settlement structure dummies, rural regions in New 12 member countries and agglomerated regions in Western countries turn out to be significant and show that rural regions in Eastern countries significantly lose population, ceteris paribus, while at the same time agglomerated regions of Old 15 countries tend to attract population flows. Significance and values of the coefficients do not change once estimates are corrected for spatial autocorrelation with a robust spatial error model.[9]

[9]Although for some migration equations spatial lags appear to be stronger in the tests with respect to spatial errors, it was decided to use spatial error models because spatial lag models are hard to justify theoretically in population growth equations.

Table 8.5 Estimation results for population growth

Independent variables	Robust OLS			Spatial error model		
	Coefficient	*p*-value	sig.	Coefficient	*p*-value	sig.
Birth rate (lagged 1 year)	0.10	0.00	***	0.10	0.00	***
Death rate (lagged 1 year)	−0.08	0.00	***	−0.07	0.00	***
Net immigration flows (people aged 17–27). Average value in the period 1995–2000	0.013	0.00	***	0.01	0.00	***
Net immigration flows (people aged 32–42). Average value in the period 1995–2000	0.04	0.00	***	0.03	0.00	***
Net immigration flows (people aged 52–67). Average value in the period 1995–2000	0.02	0.04	**	0.01	0.09	*
Rural regions in New EU countries	−0.46	0.00	***	−0.37	0.00	***
Mega regions in Old 15 countries	0.31	0.00	***	0.22	0.01	**
Constant	−0.03	0.63		0.54	0.55	
λ				0.96	0.00	***
Number of observations	255					
R-square/squared correlation	0.58					
Moran's I	17.65	0.00	***			
Spatial error						
Lagrange multiplier	141.67	0.00	***			
Robust Lagrange multiplier	57.59	0.00	***			
Spatial lag						
Lagrange multiplier	97.46	0.00	***			
Robust Lagrange multiplier	13.39	0.00	***			
Wald test of $\lambda = 0$	637.36	0.00	***			
Lagrange multiplier test of $\lambda = 0$	141.66	0.00	***			
Log-likelihood	−129.80					

*significant at 10%; **significant at 5%; ***significant at 1%

Migration flows, in their turn, were made dependent on the regional differential per capita GDP, unemployment level, and territorial dummies, as shown in (8.12)–(8.14), each representing different ages of migrants:

$$\text{mig}_r^{17-27} = \alpha_1 + \beta_1(\text{GDP/pop}_r - \text{GDP/pop}_{\text{EU}}) + \beta_2\text{unemp} + \alpha_2 D_{\text{terst}} \quad (8.12)$$

$$\text{mig}_r^{32-42} = \alpha_1 + \beta_1(\text{GDP/pop}_r - \text{GDP/pop}_{\text{EU}}) + \beta_2\text{unemp} + \alpha_2 D_{\text{terst}} \quad (8.13)$$

$$\text{mig}_r^{52-67} = \alpha_1 + \beta_1(\text{GDP/pop}_r - \text{GDP/pop}_{\text{EU}}) + \beta_2\text{unemp} + \alpha_2 D_{\text{terst}} \quad (8.14)$$

The results, presented in Table 8.6, show that migration flows depend on the regional differential GDP, so that young people move to richer regions, where there are more job opportunities. Middle-aged and elderly people move to richer regions only in New 12 countries, whereas for Old 15 countries these persons appear to move

Table 8.6 Estimation results for migration flows

Independent variables	Net immigration flows (people between 17 and 27 years)						Net immigration flows (people between 32 and 42 years)						Net immigration flows (people aged 52–67)					
	Robust OLS			Spatial error model			Robust OLS			Spatial error model			Robust OLS			Spatial error model		
	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.	Coeff.	*p*-value	sig.
Regional differential GDP (with the EU) (lagged 1 year)	0.88	0.00	***	0.94	0.00	***												
Regional differential GDP (with the EU) (lagged 1 year) in New 12 countries							0.21	0.00	***	0.183	0.00	***	0.18	0.00	***	0.16	0.00	***
Regional differential GDP (with the EU) (lagged 1 year) in Old 15 countries							−0.37	0.00	***	−0.35	0.00	***	−0.39	0.00	***	−0.38	0.00	***
Unemployment rate (lagged 1 year)	−0.17	0.22		−0.25	0.10	*	−0.41	0.00	***	−0.42	0.00	***	−0.23	0.00	***	−0.25	0.00	***
New 12 countries	12.51	0.00	***	12.98	0.00	***												
Agglomerated regions	7.40	0.00	***	6.95	0.00	***	−2.10	0.00	***	−1.86	0.004	***	−2.91	0.00	***	−2.64	0.00	***
Constant	−0.55	0.77		−0.76	0.94		7.64	0.00	***	8.14	0.00	***	5.71	0.00	***	6.37	0.00	***
λ				0.93	0.00	***				0.93	0.00	***				0.92	0.00	***
Number of observations	249			249			249			249			249			249		
R-square/squared correlation	0.32			0.32			0.32			0.32			0.37			0.37		
Moran's I	13.41	0.00	***				7.38	0.00	***				6.98	0.00	***			
Spatial error																		
Lagrange multiplier	73.77	0.00	***				19.71	0.00	***				17.29	0.00	***			
Robust Lagrange multiplier	46.98	0.00	***				1.41	0.23					0.95	0.33				
Spatial lag																		
Lagrange multiplier	29.96	0.00	***				20.67	0.00	***				20.09	0.00	***			
Robust Lagrange multiplier	3.17	0.07	*				2.37	0.12					3.75	0.05	*			
Wald test of $\lambda = 0$	188.11	0.00	***				53.35	0.00	***				32.56	0.00	***			
Lagrange multiplier test of $\lambda = 0$	73.77	0.00	***				31.61	0.00	***				11.23	0.00	***			
Log-likelihood	−715.96						−671.83						−147.04					

*significant at 10%; **significant at 5%; ***significant at 1%

to regions less rich but probably with a better quality of life (Table 8.6). This interpretation is reinforced by the coefficient of agglomerated regions, which is significantly positive for younger people but negative for the others. The unemployment rate is ceteris paribus a significant and negative factor for all age groups, signaling that job opportunities are important drivers of intra-EU migrations. As in the case of population growth estimates, coefficients have been corrected for spatial autocorrelations.

8.7 The Generative and Distributive Nature of the MASST Model: The Simulation Algorithm

As said, one of the most innovative aspects of MASST is that it is simultaneously a top-down and a bottom-up model. This is made possible by the way in which its simulation algorithm is structured. In the case of the MASST model, the simulation algorithm has the specific role of creating a "generative" process of regional growth. In other words, our intention was to create a model in which regional dynamics play an active part in explaining national growth and do not derive solely from distributive mechanisms of national growth allocation.

It is useful to draw a conceptual distinction between ex post and ex ante national growth, and this receives operational treatment in MASST. Ex post national growth rates cannot be anything other than the weighted sums of regional growth rates. If an ex post, competitive, approach to growth is chosen, the regional blocks of equations only distribute national growth among the regions of the country. In contrast, if an ex ante, generative, approach is chosen, national growth can be obtained from the performance of the single regions; in this case, regional growth plays an active role in defining national growth.

Our conceptual and operational approach follows the second definition: in MASST, the regional submodel partly explains the national performance. Operationally, MASST treats ex ante and ex post growth rates as follows:

- Ex post national (and regional) growth rates are obtained by means of the national submodel and distributed to the regions through the results of the regional differential submodel, rescaled in order to match the aggregate result (point C_{t+1} in Table 8.7); these results are considered to be the actual outcome of the model at time t;
- Ex ante regional growth rates are obtained when the regional differential growth is not rescaled; they are interpreted as "potential" growth rates (point Dt) from which potential regional GDP levels are obtained. The sum of the increase in GDP levels determines the "potential" national GDP growth rate in the following year (point A_{t+1}) through its influence on aggregate consumption, investment, and imports.

Thanks to this simulation algorithm, MASST can be interpreted as a definitely "generative" model: ex ante regional growth rates play an active role in defining national growth. Ex post, the national account identity is fulfilled. Moreover, thanks to this algorithm, the model allows an interdependent system of national

Table 8.7 Logic of the simulation procedure

Forecasts	Year (t)[a]	Year ($t + 1$) (and thereafter)
Estimated national growth	(A_t) Calculation of actual *national growth* with the national submodel (output of MASST at time t)	(A_{t+1}) Calculation of actual *national growth* with the national model, as a function of lagged potential growth (output of MASST at ($t + 1$)
	(B_t) Calculation of *regional differential shift* with the regional submodel	(B_{t+1}) Calculation of *regional differential shift* with the regional model
Estimated regional growth	(C_t) Actual regional growth is calculated as the *sum of A and B*, where B is rescaled to have 0 mean within each country (output of MASST at time t)	(C_{t+1}) Regional growth is calculated as the *sum of A and B*, where B is rescaled to have 0 mean within each country (output of MASST at ($t + 1$)
	(D_t) Potential regional growth is equal to the *sum of A and B* (nonrescaled).	(D_{t+1}) Potential regional growth is equal to the *sum of A and B* (nonrescaled).
	Potential national growth is equal to the increase in the sum of potential regional income levels in D_t	Potential national growth is equal to the increase in the sum of potential regional income levels in D_{t+1}

[a]The last year for which official statistics were available at the beginning of the estimations was 2005

Source: Capello et al. 2008

and regional effects to be built. This structure enables account to be taken of vertical and horizontal feedbacks between the regional and the national economy. In fact, thanks to its structure, the MASST model is able to register the effects of a shock at the national level (whether a change in macroeconomic trends or a policy choice) on both the national and regional growth rates; moreover, it is able to interpret the effects of a shock at regional level on both the national and regional performance.

The model allows for endogenous differentiated regional feedbacks from national policies and trends; it captures the vertical feedbacks of a national policy on regional growth and distributes them differently among regions according to their capacity to capture national growth potentialities (regional growth spillovers and settlement structure). National shocks are registered on national GDP growth rates through the national GDP growth present in the consumption and import growth equations. National shocks propagate to the regional level since regional GDP growth is obtained as the sum of the national GDP growth and the regional differential GDP growth. The latter is distributed differently among regions via spillover effects and territorial dummies.

Regional shocks, and regional feedbacks, propagate on regional GDP growth thanks to the shift equation: regional shocks differ among regions because of spillovers, dummy variables, and different levels of the control variables. Regional shocks propagate to the national level through the sum of regional GDP growths which defines the annual national GDP growth. This feedback is the only one which takes place in the simulation and not in the estimation procedure (Fig. 8.3).

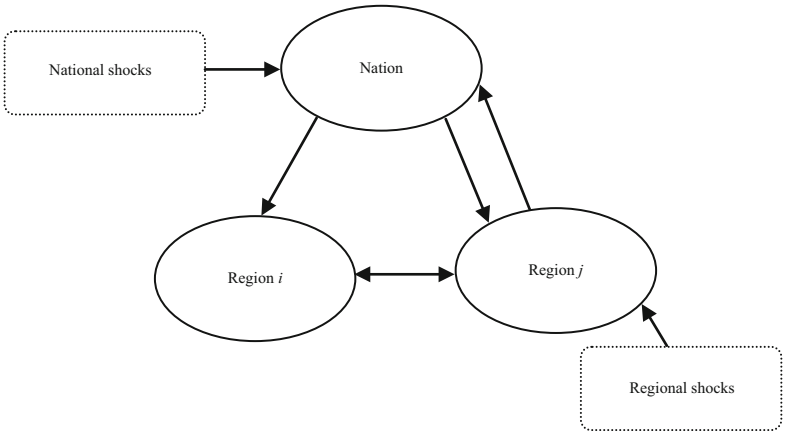

Fig. 8.3 National–regional linkages in MASST
Source: Capello et al. 2008

Thanks to its simulation algorithm, the MASST model takes full consideration of both cooperative and competitive dynamics among regions. Cooperation among regions is captured by socioeconomic and spatial (horizontal) feedbacks among regional economies; the former are captured by the socioeconomic conditions generating interregional migration flows; the latter are measured by spatial spillover effects, the growth rate of a region being also dependent on the growth rate of neighboring regions. Interregional competitiveness stems from specific locational advantages and resource endowments that explain regional growth.

8.8 Conclusions

This chapter has presented the methodology for the scenario building. In particular, it has described the regional growth forecasting model. The econometric model estimating the system of cause–effect relationships – termed the MASST (MAcroeconomic, Sectoral, Social, and Territorial) model – is a new one conceptually defined for the purpose of investigating regional growth, its determinants, and its territorial evolution. It draws on the most advanced theories of regional growth, without denying the importance of the achievements accomplished by the traditional theories. MASST explains relative regional growth through territorial and spatial factors such as agglomeration economies, territorial capital, and spatial spillovers (i.e., the influence of each region on the growth trajectories of neighboring regions). These factors determine the cumulative nature of regional growth patterns, as widely emphasized by the new endogenous growth theories and the "new economic geography" rooted in Myrdal's and Kaldor's cumulative causation theory (Myrdal 1957; Kaldor 1970). Social factors (demographic change due to natural population change or migration flows) are included and have a role in explaining regional growth patterns together

with the widely recognized factors of local competitiveness, i.e., accessibility, presence of human capital, and local resource endowment.

In this way, MASST allows the building of European regional growth scenarios on different assumptions concerning a large number of variables, at national and regional level. At national level, these variables include the growth rates of the USA and Japan, the growth rates of BRICs, the trends of world integration, the economic policies of European countries (in terms of public expenditure, inflation, and interest rates), national productivities in terms of unit labor cost, exchange rates, trends in FDI flows, changes in energy prices, and the differential behaviors of the various ATECO sectors at European level. At regional level, MASST is able to model the regional growth effects of different assumptions on socioeconomic and sectoral trends, including possible changes in the localization of sectors, social trust, European cohesion policy, energy consumption, transport infrastructure investments, and the skilling of the local workforce.

With its relatively simple structure, MASST makes a step forward with respect to existing models, sacrificing a general equilibrium approach in favor of a generative, distributive, and, at the same time, partial equilibrium approach to regional growth. In so doing, the endogenous capabilities of regions, much emphasized as those explaining regional competitiveness, are taken into account without denying a role to national effects, which inevitably still play an important role in regional growth explanations.

This model can be used to simulate quantitative foresights. Chapter 8 presents the scenarios that we built in order to understand what would happen to benefiting regions and to global players once different and alternative assumptions were made concerning how globalization will continue to affect global markets. Chapter 9 sets out the simulation results.

Annex 8.1 National and Regional Database

This annex comprises three tables with all the variables used to estimate the MASST model. In particular, Table 8.8 contains the variables used for the national component. Table 8.9 presents the territorial and social regional data, while Table 8.10 summarizes the economic database at regional level.

Table 8.8 Variables used by the MASST model at national level

National variables (NUTS 0 level)	Definition	Source of raw data
GDP growth rate	Annual percentage growth rate of real GDP – 1995–2005	Eurostat
Annual change in interest rate	Absolute change in short-term interest rates (3 months) – 1995–2005	Eurostat
Annual change in unit labor cost	Absolute change in unit labor cost (calculated as unit salary × number of employees/GDP) – 1995–2005	Eurostat

(*continued*)

Table 8.8 (continued)

National variables (NUTS 0 level)	Definition	Source of raw data
Share of FDI on total internal investments	Flow of inward FDI/gross fixed capital formation – 1995–2005	OECD
Exchange rate	Bilateral nominal Euro–US Dollar exchange rate for individual EU countries – 1995–2005	Eurostat
Inflation rate	Inflation rate (percentage change of CPI) – 1995–2005	Eurostat
Consumption growth	Percentage annual real consumption growth rate – 1995–2005	Eurostat
Investment growth	Percentage annual real gross fixed capital formation growth rate	Eurostat
Import growth	Percentage annual real import growth	Eurostat
BRIC GDP growth	Percentage annual real GDP growth rate in BRIC countries – 1995–2005	The World Bank (WDI)
US and Japan GDP growth	Percentage annual real GDP growth rate in US and Japan – 1995–2005	Penn world tables
New member states	All 12 countries which have joined the EU after 2004 – dummy	

Table 8.9 Territorial and social regional data

Data	Definition	Source of raw data
Agglomerated regions	With a city of >300,000 inhabitants and a population density >300 inhabitants/km^2 or a population density 150–300 inhabitants/km^2	Espon database
Urban regions	With a city of between 150,000 and 300,000 inhabitants and a population density of 150–300 inhabitants/km^2 (or a smaller population density) – 100–150 inhabitants/km with a bigger center (>300,000) or a population density between 100 and 150 inhabitants/km^2	Espon database
Rural regions	With a population density <100/km^2 and a center > 125,000 inhabitants or a population density <100/km^2 with a centre <125,000.	Espon database
Mega regions	Regions comprising at least one of the 76 "Megas" – FUAs with the highest scores on a combined indicator of transport, population, manufacturing, knowledge, and decision-making in the private sector	Espon database
Regional population	Regional average population in each year at NUTS 2 level in the years 1995–2005	Eurostat
Net immigration flows (people aged between 17 and 27 years)	Average net immigration flows of people aged 17–27 in the period 1/1/95–1/1/00 at NUTS 2 level	Espon database

(*continued*)

Table 8.9 (continued)

Data	Definition	Source of raw data
Net immigration flows (people aged between 32 and 42 years)	Average net immigration flows of people aged 32–42 in the period 1/1/95–1/1/00 at NUTS 2 level	Espon database
Net immigration flows (people aged between 52 and 67 years)	Average net immigration flows of people aged 52–67 in the period 1/1/95–1/1/00 at NUTS 2 level	Espon database
Regional birth rate	Share of births on population at NUTS 2 level in the years 1995–2005	Eurostat
Regional mortality rate	Share of deaths on population at NUTS 2 level in the years 1995–2005	Eurostat
Regional trust	Share of respondents in the EU Values Survey with high or very high trust in other persons	EU Value Survey
Energy consumption	Share of energy toe (tons oil equivalent) on 1,000 inhabitants at NUTS 0 1990–2002. Estimations at Nuts 2 level made as reported in note[a]	Our estimation from national data of ESPON 2.1.4
Energy price elasticity[b]	Percentage change in GDP due to 10% change in energy price	Espon 2.1.4 project

[a]Regional energy consumption was estimated by distributing total national consumption to regions on the basis of a weighted sum of regional km traveled by car (weight = 0.15), by train (weight = 0.35), and by plane (weight = 0.5) in 2001 and of the share of population.
[b]The energy price elasticity is an estimated datum. The estimation procedure is described in the final report of the ESPON project 2.1.4 available at the Espon website (http://www.espon.eu), pp. 135–145.

Table 8.10 Regional economic data and variables

Indicators	Definition	Source of raw data
Regional GDP	Regional GDP in real terms at NUTS 2 level in the period 1995–2002, computed from the nominal one, using national GDP deflators	Eurostat
Regional employment growth of the tertiary and manufacturing sectors	Regional employment growth of the tertiary and manufacturing sectors, computed from absolute employment in the years of period 1995–2005	Eurostat
Regional employment by NACE 2 sector	Regional NUTS 2 employment for each NACE 2 sector for the year 2002	IGEAT matrix[c]
Location quotient by NACE 2 sector	Regional share of employment or value added by sector for the years 1995 and 2002 at NUTS 2 level	IGEAT matrix
Regional value added by NACE 2 sector	Regional value added for each NACE 2 sector for the years 1995 and 2002	IGEAT matrix
Regional employment by function (ISCO)	Regional employment by function at ISCO 2 digit classification at NUTS 2 level	European labor force survey
Regional share of human resources in S&T	Share of people working in S&T on population at NUTS 2 in the year 2000	Eurostat

(*continued*)

Table 8.10 (continued)

Indicators	Definition	Source of raw data
Regional average annual population growth rate	Average annual population growth rate at NUTS 2 in the period 1995–2002	Eurostat
Regional unemployment	Share of unemployed people, available for the period 1995–2002. In the model 1999 data are used	Eurostat
Regional infrastructure endowment	km of high-speed railways, main railways, express roads, motorways, and inland waterways in year 2000	KTEN data within the Espon database
Per capita structural funds	Total structural funds expenditure/population in the period 1994–1999. Also divided into five types of expenditure	Espon database
Regional average annual differential GDP growth rate	Annual average regional GDP growth rate less national GDP growth rate in the period 1999–2002	Eurostat

[c]The employment and value-added data at regional (NUTS 2) level have been estimated by IGEAT, a research center of the Free University of Brussels. The authors thank IGEAT for providing these data.

Chapter 9
Globalization and European Strategies: Alternative Scenarios

9.1 Introduction

As explained in the introductory chapter, the interest of this study is not only in the success factors of benefiting regions in the past, but mainly concerns what will happen to benefiting and global regions once different and alternative assumptions are made on how globalization will continue to affect international markets.

Who will win and who will lose if a protectionist strategy adopted by the European countries is coupled with a reinforcement of the present price-competitive absolute advantages of emerging economies? Or, alternatively, will global regions be able to face stronger competition if emerging economies start to be competitive in advanced sectors and in high-value-added manufacturing goods? And moreover, what will happen if advanced economies have to face higher global competition in a situation of long-term recovery from the present economic crisis?

The aim of this chapter is to build alternative, rather extreme, scenarios able to respond to all these questions. The aim is not to achieve precise quantitative values of economic elements, nor to provide a qualitative image of what the economic system will look like; rather, but to show the main trends and relative behavioral paths that will be at work under specific assumptions on how the main driving forces of change will evolve. The results obtained are in fact neither precise quantitative values of regional growth rates, as a forecast would produce, nor an image of the future such as would be obtained on the basis of assumptions on radical breaks, on structural effects which destroy past tendencies, such as a new technological paradigm, new socio-cultural models, or new political regimes. What our exercise predicts are quantitative, conditional foresights based on an image of the future built on the assumption that a discontinuity will emerge in the main elements or driving forces that influence and regulate the system. This image is translated into quantitative results once the qualitative driving forces have been converted into quantitative levers and inserted into a model of structural relationships which, in traditional manner, links conditional (explanatory) variables and dependent variables.

The intention is not to identify desirable, positive, ideological, or most probable scenarios; rather, the aim is to combine in a strictly logical way the different trajectories, or different bifurcations, that can be envisaged in the main economic,

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institutional, and social driving forces of change and, consequently, to build a small number of alternative, likely and "conditional" scenarios. The approach is as neutral as possible *vis-à-vis* the results, leaving it to the forecasting model to produce the outcome associated with a particular set of assumptions about the future.

The logical steps behind our simulation exercise are presented in Fig. 9.1. The first step is identification of the driving forces and then followed by identification of the logical combination of the driving forces. The alternative scenarios are then presented. Qualitative assumptions are translated into quantitative assumptions concerning the independent causal variables of the forecasting model presented in Chap. 8; both the values assigned to the target variables and the regional values emerging from the final results indicate orders of magnitude and some relative behavioral classes (high/medium/low increase or decrease), rather than precise quantitative values.

Once these values are decided and the model is run, growth rates of GDP, industrial and service employment, and population as well as their levels for each year up to 2020 are simulated. The results are presented in the next chapter.

This chapter is devoted to description of the various driving forces. In particular, it focuses on the identification of the present driving forces (Sect. 9.2). Their current

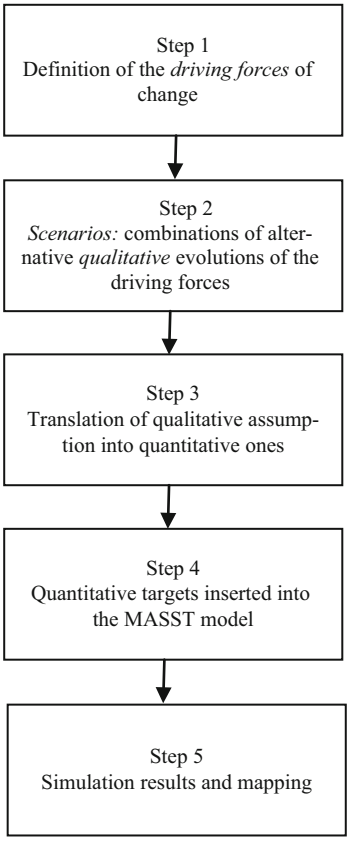


Fig. 9.1 Logical steps of the simulation procedure

trends and policies, extrapolated into the future, give rise to what is labeled a "baseline scenario".

The reason for constructing this baseline scenario is that it will act as a benchmark for different scenarios; it will enable comparison of alternative, extreme, and imaginary scenarios with a picture of what a structural situation like the present one will look like in 2020. Moreover, a baseline scenario can be useful in itself: it can be interpreted as an awareness-raising exercise on the risks and opportunities for the European territory if the present normative as well as macroeconomic, institutional, and socio-demographic trends continue in the future.

Moreover, this chapter presents the logic used to combine the assumptions on the driving forces in order to give a systematic and consistent image of the elements influencing possible future growth trajectories (Sect. 9.3). A number of possible scenario alternatives emerge from the exercise; this chapter explains the criteria used to choose the alternative scenarios and presents their intrinsic features (Sect. 9.4). As a last step, the chapter describes the logic with which the qualitative assumptions are translated into quantitative levers for the regional growth forecasting model (Sect. 9.5). The exact quantitative values of the target variables are presented in the Annex to this chapter.

9.2 Present Challenges for the World's Economies

The methodology now applied to produce future territorial scenarios first requires identification of the economic, socio-demographic, and institutional driving forces of change currently at work, and the present challenges confronting the world's economies, in order to foresee their possible bifurcations, or their possible alternative trajectories, which give rise to alternative scenarios.

Our scenarios are built on different assumptions concerning important challenges that Europe already has to face. The present challenges are of different natures; some are natural trends and others are policies. The former are in the economic and demographic sphere and the latter are in the field of economic, transport, and energy policies:

- Increasing globalization trends, and the contemporary economic crisis
- Demographic trends
- Upgrading and advance of transport systems
- Energy sources and production

9.2.1 Challenges in Globalization Trends

As emphasized in the previous parts of this book, the European economy has for long been placed under severe strain by increasing competition stemming from emerging countries, which have found a way to conquer European markets through

a price-competitive strategy, at least in traditional manufacturing goods. Notwithstanding the recent recession, the growth rates of Brazil, India, China, and Russia, the so-called BRIC countries, are still substantial, and their comparative advantage still holds with respect to European and advanced economies.

In recent years, however, some signs of possible change in the present trends have emerged, and they give rise to an alternative image of what the competition raised by these countries will look like. A constant increase in wage and technological development in emerging countries will inevitably reduce their competitive advantage in terms of low labor costs. This trend may progressively induce these economies to seek other competitive advantages, probably by competing with European economies also in high-value-added market segments. The likely increase of wages and related production costs in emerging economies (especially Asian countries) may generate inflation likely to spread throughout the world economy. The emergence of higher interest rates and mounting inflation may occur during the recovery from the economic crisis and also for a longer period.

Higher competition may engender greater integration within the various world regions than between them. This may have significant consequences for the orientation of FDIs, which would tend to remain within their world region instead of spreading around the world.

9.2.2 Challenges for European Economies

During the decade before 2008, Europe was confronted with a series of challenges in context of accelerating globalization, and it entered this phase of increasing competition with a very limited capacity to assimilate existing technologies, organizational practices, and increasing activity rates; this capacity had already come to an end at the beginning of the 1980s. Although productivity increased more dynamically in Europe, it was counteracted by weak employment performance and diminishing working hours. While in 1970 the entire difference in GDP/capita between Europe and the USA could be attributed to lower labor productivity, this represented only one third of the difference by 2000, one third being accountable to fewer working hours, and one third to lower employment rates (Robert 2009).

By and large, Europe suffered from insufficient adoption of the new economic paradigm based on new organizational forms, less vertically integrated firms, greater mobility both intra- and interfirm, greater flexibility of labor markets, closer reliance on market finance, and greater demand for both R&D and higher education.

Although the catching-up process by the economies of Eastern Europe has been encouraging, with the 2004 and 2007 enlargements the European Union has inherited the largest levels of territorial inequality in its history. The Lisbon Strategy, adopted in 2000 to address the issue of European technological competitiveness, has not produced the expected outcome, and the innovation gap of Europe *vis-à-vis* the most advanced countries remains quite substantial. At the same time, the expansion of international trade and international investments has far outpaced

the growth of output and income. The emerging economies (BRICs) have played a major part in this process, mainly by using their comparative advantages of lower labor costs and growing domestic markets.

The New 12 countries seem to be oriented to the exploitation of their cost advantages in the awareness that cost-competitiveness diminishes over time; for this reason, a restructuring strategy has already been put in place by some countries. On January 1, 2007, Romania and Bulgaria joined the EU and became eligible for structural funds and community agricultural policies. Major changes are required in their national macroeconomic trends: a decrease in the inflation rate and a consequent decrease in nominal interest rates are expected to take place, as well as curbing of public expenditure growth rates.

Moreover, in recent years Europe has been faced by a significant process of world integration. The WTO has recently been able to remove a number of major trade barriers in the manufacturing sector, while in the agricultural sector, export subsidies are expected to be completely abolished in 2013. The positive marginal effects of these multilateral agreements are expected to slow down, with the consequence of a slight decrease in the international trade growth rate of European countries.

9.2.3 The Economic Crisis

The above-mentioned strategies of the different blocks of actors have been impeded by the most severe crisis of the postwar period. The crisis has disrupted the global integration of the movements of goods, capital, and jobs. In the advanced economies, in particular those of Europe and the USA, governments have taken action to counteract the crisis by injecting money into sectors considered strategic, such as the automobile industry, and by accelerating the implementation of infrastructure projects in order to save jobs and enterprises. Public debt has dramatically increased in most European countries, so that public initiatives will be more limited in the years to come. After 1 year of recession in the Western economies and in Japan, the growth rates of the emerging economies, especially in Asia, are still substantial. Within Europe (and not only), the impacts of the crisis are not homogeneous among countries and even less among regions; regional productive specialization in open sectors explains much of the vulnerability of local economies, together with differentiated local endogenous competitiveness capacities toward new products and new technologies.

It is difficult to envisage how rapid the recovery from the crisis will be. There are at present (June 2010) signs of a slow recovery in some countries in Europe and in the USA, accompanied by restrictive demand policies put in place by all major European countries (especially Germany, the driver of European growth) which raise doubts as to a possible rapid economic recovery.

The duration of the economic crisis will inevitably also influence the public debts of national economies, although evident attempts to keep public debt increases under control have been made, being influenced by the bad experiences of national economies, such as that of Greece, where bankruptcy was indeed envisaged.

9.2.4 Demographic Trends and Challenges

In the socio-demographic sphere, two main driving forces are currently at work. Europe is notoriously out of line with major global population trends on a world scale, given the declining or zero natural population growth rates in the majority of European states. Demography, in fact, has become an outright challenge for the development of Europe. While population was abundant and underwent sustained growth during the Fordist period, the long-lasting decline of fertility rates has generated modest population growth (average annual growth rate below 0.5% since 2000) and progressive population aging. The inclusion of the countries of Central and Eastern Europe in the "European family" has aggravated the general demographic situation, as population decline has already started in most of these countries, where strong population aging is counteracted only by low levels of life expectancy.

At the same time, like other parts of the world, Europe is experiencing high levels of in-migration. Immigration from outside Europe is the sole means by which a demographic equilibrium is maintained in many countries. All EU countries, with the exception of Latvia, Lithuania, and Poland, currently record positive net migration rates. In 2003, in Europe the natural annual population growth was 0.8 per thousand inhabitants, while the net migration surplus was 2.6 per thousand inhabitants. Three quarters of the growth was therefore due to immigration.

Because of in-migration from outside Europe, fertility rates have slightly increased since 2000, but not enough to ensure the replacement of generations and to counterbalance population aging.

The transformation of the demographic structure has, and will have, significant impacts on the evolution of the working-age population. Since 2000, the latter has been declining in most regions of Germany, especially in the Eastern *Länder*, in the Northern regions of Norway and Sweden, in Eastern Finland, in the Baltic States, as well as in several Slovak, Rumanian, and Bulgarian regions. Only 16% of European regions have experienced annual growth rates of the working-age population higher than 1%.

There may be two alternative trajectories for Europe in this regard:

- A drastic increase of in-migration from outside Europe induced by a strategy of openness adopted by European countries, whose fertility rates will be enough to guarantee a replacement of generations and to counterbalance population aging. At the same time, in-migration will increase not only in quantitative terms but also in qualitative ones: Europe will be able to attract specialized human capital, and the shortage of manpower, especially of skilled human resources, will not be a handicap for numerous European countries
- A drastic closure of European borders with very little chance of entry for non-Europeans. The natural population growth rate would in this case be very limited, and the shortage of human capital would drastically affect European labor markets

9.2.5 European Transport Infrastructure Policy Choices

Another important driving force shaping the future European territory is linked with solution of the most severe accessibility and transport congestion problems. The past decade saw not only a worrying increase in traffic congestion in urban areas, but also a new phenomenon of congestion in the major axes of the trans-European network, with a consequent increase in bottlenecks. Missing links in the network, lack of interoperability among specific transport modes and intermodal transport systems, and different energy systems in transborder rail systems are further factors aggravating the inefficiency of the network.

Decisions on EU transport policies can be based on two different principles:

- An efficiency principle oriented to development of Transnational European Networks (TEN) projects on the basis of profitability criteria
- A cohesion principle which focuses on the selection of TEN projects to rebalance infrastructure endowment gaps

The present expected decisions on EU transport policies will probably be oriented to both profitability and spatial balancing goals, which means that priority will be given to cases where the density of mobility demand is higher and faster growing, with a large share of the public budget devoted to less developed regions.

9.2.6 Energy Source Policy Choices

Another crucial lever for European economic growth in the future consists in the energy production strategies developed by European countries.

Although renewable technologies for energy production already exist, they are currently unevenly and insufficiently exploited throughout the Union. The contribution of renewables to energy production across the EU is only around 6%, of which hydropower represents 4% (2/3). Europe is therefore highly dependent on conventional energy sources. If this tendency continues in the future, the European economy will suffer severely from the steady increase in oil prices, exacerbated by the increasing energy demand normally related to economic development.

Moreover, in context of rapid recovery from the crisis, global energy demand, and especially oil demand, will grow significantly. If the new "green economy" is a significant factor of economic recovery, at least in the more developed countries, the share of renewable energy sources will also increase substantially, somewhat attenuating the impact of oil price increases.

In context of slow recovery from the crisis, global energy demand, and especially global oil demand, will be more moderate. However, fewer resources will be available for promoting the "green economy."

The two possible (extreme) alternatives in this area are as follows:

- Continued dependence on conventional energy sources
- Significant policy decisions in favor of renewable energy sources and more energy-efficient technologies

9.3 Present Trends: The Baseline Scenario

All the above-mentioned driving forces have at present certain tendencies which, if extrapolated into the future, give rise to what is called a "baseline scenario". As mentioned in the introductory section to this chapter, the reason for implementing a baseline scenario is to create a benchmark for the alternative scenarios that are built thereafter and to raise awareness of the risks associated with the present trends.

The baseline scenario rests on the following assumptions. Firstly, the present tendency of emerging economies is to exploit their labor cost comparative advantage, maintaining global price competitiveness on products, and limiting the increase in their purchasing power and new markets for European products. It is easily predictable, in fact, that the price-competitive advantages of emerging economies will be absorbed only in the long run, as a result of wage increases.

As regards the strategy of European countries, the rate of growth of extra-EU trade by the European economies is decreasing, accompanied by protectionist policies for certain national industries, like the car industry. New 12 countries base their competitiveness on low-cost production, attracting the foreign direct investments on which their main economic private resources for growth rely. Probably, the composition of FDI in the future will be increasingly in favor of service FDI, but the capacity of New 12 countries to attract especially intra-European FDI will persist. The Old 15 member countries pursue an innovative strategy which is only partially successful because of public budget constraints and limited private financial resources.

Public resources are limited; European economies seek to keep public debt under control, but find this extremely difficult because of the need for Keynesian policies devoted to recovery from the economic crisis. For these reasons, lagging regions in Europe still rely a great deal on structural funds, and 80% of the available structural funds are committed.

Trans-European Networks (TEN) projects are selected with both aims in mind: profitability and rebalancing of infrastructure endowment are both pursued with no specific preference; priority will be given to cases where the density of mobility demand is higher and growing, more rapidly, with a large share of the public budget devoted to less developed regions.

European countries record increasing external immigration growth rates which only partially counterbalance population aging. The labor market in Europe registers a shortage of manpower, especially advanced human capital, only partially

counterbalanced by the increase of unemployment in some sectors, such as finance and insurance.

Finally, European economies persist in their dependence on traditional energy source, suffering from the steady increase in oil prices.

9.4 Globalization, European Strategies, and the Economic Crisis: Logical Combination of the Driving Forces

None of the driving forces of economic growth presented in Sect. 9.3 are independent; they mutually interact, reinforcing some trends and limiting others, or even counterbalancing one another. The strength of a scenario lies in its intrinsic logic and in its capacity to select levers coherent with its internal logic and to justify their presence and their change consistently with the image of the future that they produce.

In order to ensure this internal coherence, we build our scenarios by identifying possible, alternative (and extreme) competitive strategies that the different actors may put in place. The choice of a competitive strategy can easily and logically be associated with demographic and economic trends, with economic policies, and with sectoral policies such as energy and transport policies.

The prospective analysis presented here is therefore based on alternative competitive strategies pursued over the next 10–15 years until 2020 (the last data are from 2006) by two main blocks of countries: the EU Member Countries, and the emerging countries, taking the European Commission's strategies as a third discriminating element. Our scenarios are therefore based on the following:

- The complex interaction among large global players: the European countries; the BRICs, Brazil, Russia, India, and China, the new strong competitors of the twenty-first century, and the European Commission
- The different ways in which international competitiveness may be achieved: through modernization/innovation or through a wage/price advantage
- The different intervention policies that the European Commission may put in place: an excellence-based investment policy or a pure cohesion one

In particular, in the case of emerging economies we assume two possible alternative bifurcations in the way that they may develop their competitive strategies in the future (Fig. 9.2a):

- *A modernizing trend*, in which comparative advantages in low wages are replaced by other comparative advantages, challenging the European economies on world markets in segments of significantly higher added value
- On the contrary, *reinforcement of the present price-competitive trend*, in which comparative advantages in low wages remain and reinforce the position of emerging economies, also attracting FDI from emerging economies

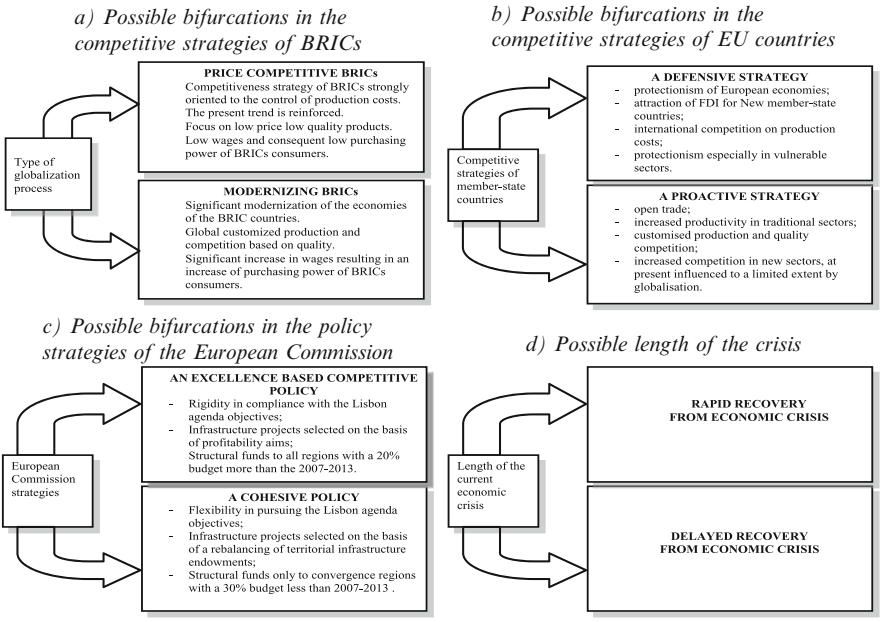


Fig. 9.2 Possible bifurcations in the main driving forces

Two extreme alternatives can be foreseen for European economies (Fig. 9.2b):

- *A proactive strategy* developed by relaunching high-value-added activities, reinforcing private and public investments in R&D, and priorities such as knowledge and innovation –as reiterated in "Europe 2020 strategy" (CEC 2010), modernizing transport infrastructure on the basis of profitability criteria, and competing internationally on the basis of high-quality standards
- *A defensive/protectionist strategy* based on protectionism against the external world; expansion in external markets through devaluation of the euro; particular attention to internal socio-economic disparities; reinforcement of the institutional achievements already in place; and exploiting lower labor costs in European countries that still maintain their comparative advantage. Implicit in this case is a tendency for these countries to become the "manufacturing belt" of the EU 15 countries

A third and last actor considered is the European Commission, which can choose to distribute structural funds according to alternative criteria (Fig. 9.2c):

- An excellence-based criterion aimed at increasing the EU's competitiveness without forgoing a cohesion strategy, with rigidity in compliance with the Lisbon agenda objectives, and 20% budget more than the 2007–2013 structural funds, distributed to all regions, including the core ones.
- A cohesive policy with management of structural funds based on flexibility in pursuing the Lisbon agenda objectives, and 30% less than the 2007–2013 structural funds budget devoted only to convergence regions.

This broad perspective enables full consideration to be made of numerous important issues and challenges in the present – and the future – economic context:

- The difficult transition of today's advanced societies to a knowledge-based economy
- The significant challenge raised by the new "tigers" against the industrial systems of advanced countries
- The narrow growth pattern faced by the new EU member countries between the strength of consolidated advanced economies and the price-competitiveness of the new emerging countries
- The potentialities that may derive from integration and division of labor, between the entire EU and the emerging economies, in terms of relaunching the competitiveness of the European production system through the international decentralization of certain manufacturing phases along the entire value chain
- The new demand buffer for the EU countries potentially arising from a fast-growing BRIC area, in terms of both capital goods provision and sophisticated/luxury consumer goods, provided that the advantages of their development can diffuse in their societies through wage increases and exchange rates revaluation.

This line of reasoning is similar to that of a previous scenario exercise run by the authors (Capello et al. 2008). What is different, and which augments both the conceptual reasoning and the empirical results, is the fourth element added to this analysis: the assumptions on how long recovery from the crisis will take (Fig. 9.2d):

- A situation in which the crisis is resolved in the short term (up to 5 years). Demand for consumption goods, such as electronic instruments, textiles, and clothing, declines in the short run, and the negative effects propagate especially in the sectors that produce those goods
- A situation in which the crisis is resolved in the long run, affecting demand for durable goods as well

When the different combinations in the bifurcations of the main driving forces are taken into consideration, the analysis assumes a game-theoretic structure. To all possible combinations of the different strategies that could be formulated, we added different assumptions on the duration of the crisis, and among all combinations, we chose the following scenarios as being of special interest (Table 9.1):

- A scenario combining a proactive strategy by the EU 27, a modernizing strategy by BRICs, and an excellence-based EU policy developed in a general economic setting of a short-term recovery from the economic crisis. In this scenario, the rapid recovery from the crisis, obtained through efficient Keynesian macroeconomic policies, makes it possible to move to excellence-based policies thanks to a new wave of private investments that takes place after the end of the crisis;
- A scenario based on opposite strategies – a defensive EU27, a price-competitive strategy by BRICs, and a cohesive policy of the European Commission – developed in a general economic setting of recession and deep long-term crisis, in which the consumption of durable goods is strongly depressed.

Table 9.1 The selected scenarios

Selected scenarios / Main scenario assumptions	A proactive strategy in a highly competitive world and in a rapid economic crisis recovery framework (scenario A)	A defensive strategy in a price-competitive world and in a slow economic crisis recovery framework (scenario B)
Competitive strategies of BRICs	A modernizing strategy	A cost-competitive strategy
Competitive strategies of 27 EU countries	A proactive strategy	A defensive strategy
European Commission strategies	An excellence-based EU policy	A cohesive policy
A crisis setting	A short-term recovery from the crisis	A long-term recovery from the crisis

Macroeconomic policies remain Keynesian throughout the scenario period; structural policies are oriented to cohesion aims in order to limit the effects of the crisis.

By means of simulations run with the MASST model, what Europe will look like in 2020 in terms of regional GDP growth rates and regional GDP per capita level, industrial and service employment growth rates have been obtained under the assumptions of these two scenarios.

9.5 The Main Features of Two Alternative Scenarios

9.5.1 A Proactive Europe in a High-Quality Competitive World and in a Rapid Economic Crisis Recovery Framework

The first scenario, *an aggressive Europe in a high-quality competitive world and in a rapid economic crisis recovery framework*, is built on courageous strategies by all national economies, in Europe and outside Europe, and on the assumptions that expansionary Keynesian policies are efficient enough to allow rapid recovery from the present crisis and that these demand policies can in the short run be substituted by excellence-based supply policies.

For the emerging countries, the main assumption is that the strategies put in place are all an endeavor to compete on the basis of quality of products and of labor, and no longer on the basis on prices, as they do at present. Global competition is increasingly based on product innovation, customized production, and international specialization; under these conditions, there is huge potential for worldwide development and increasing welfare in all countries involved. The market potential thus generated is initially limited by the economic crisis, which also limits the purchasing power of inhabitants. However, in the medium to long term, efficient Keynesian policies allow a recovery of internal demand and of BRICs' purchasing power, and

they enlarge the market for European intermediate and final goods (Table 9.2). Trade flows increase between BRICs and European countries. The increased competitiveness of BRICs and the high-quality standard of living in those countries is reflected in increased energy consumption in them, only partially counterbalanced by the development of renewable technologies. An increase in energy price is the result of an increase in energy demand. All sectors recover from the losses in production that they suffered during the first years, and the increase in value-added returns to the level of the period before the crisis.

In this scenario, the European Member States adopt a proactive and aggressive strategy and compete on external markets on the basis of product innovation. Open trade with external countries in agricultural, industrial, and service products is seen more as an opportunity for growth than a risk. This is a common strategy between Eastern and Western countries. To pursue it, Eastern countries restructure their economies, progressively replacing their manufacturing activities with, or adding to them, segments of higher value added, and adopting advanced technologies. The restructuring process is also made possible by the increased presence of FDI, which reinforces the increase in internal private investment foreseen as a strategy for both Eastern and Western countries.

Virtuous public spending and strict compliance with the stability and growth pact are part of the proactive strategy of the member states, which is only partially achieved because of the drain of public resources for Keynesian policies. Economic growth is mostly based on private investments and, in general, on efficiency principles. Public investments are efficiently spent and also devoted to R&D and value-added functions.

Internationalization processes reinforce the present ones: the best competition strategy for large multinationals is to relocate packages of intertwined functions, such as production together with R&D, or marketing together with design and final parts of production. Large multinationals will therefore be in search of, and be attracted by, high-value functions locations. The rapid recovery from the economic crisis generates positive employment growth rates in open service sectors at the EU level.

Economic growth is based on endogenous, material and nonmaterial, resources and internal production capacities, and not just on exogenous investment and production. Excellence-based policies invest in research and development, in human capital, in innovation, and in advanced infrastructure. These national policies are reinforced by European Union policies mostly devoted to (i) fulfillment of the goals set by the Lisbon agenda pursued as a "must" for all European countries; (ii) a 20% increase in the 2007–2013 structural funds budget; and (iii) EU budget devoted to all regions.

A socio-demographic consequence of the decisive and vital development strategy of EU countries is a positive attitude toward economic integration, trade openness, and market penetration in the external world. Open trade and lower barriers to in-migration stem from this attitude, the consequence being an increase in the natural population growth rate. The rapid recovery from the crisis makes it possible to assume that unemployment rates will decrease, notwithstanding the restructuring processes taking place in the economies.

Table 9.2 Present trends (baseline) and alternative scenarios: qualitative assumptions

Driving forces	Baseline scenario (past and present trends)	A proactive Europe in a high-quality competitive world	Impact of a crisis with rapid recovery	A defensive Europe in a price-competitive world	Impact of a crisis with a delayed recovery
Competitive strategies of BRICs					
Quality of global competition	Reduced cost-competitive strategy of BRIC countries	Significant modernization of BRIC countries	Lower growth rates everywhere	Significant cost-competitive strategy of BRIC countries	Much lower growth rates everywhere, especially in US and Japan
	However, global cost competition on products still holds	Global customized production and competition on quality	Lower increase of wages in BRICs	Global cost competition on product	Much lower increase of wages in BRICs as crisis affects them as well
	Low purchasing power in BRIC countries	Significant increase in wages and in purchasing power in BRIC countries		Low wages and low purchasing power in BRIC countries	
	Constant financial capital demand. Low interest rates, partially balanced by internal demand increase	Higher interest rates		Lower interest rates	
Globalization of markets	World crisis, partially balanced by internal demand		Recovery from world demand crisis		Strong world demand crisis. Constraints to trade by national governments
	Limited trade increase	Trade increase due to higher wages and purchasing power in BRIC countries			

	Decreases of growth rates with respect to the past in all sectors, especially open ones	No decrease of industrial growth rates with respect to the past		Decrease of growth rates in open sectors with respect to the past due to competition from BRICs and the persistence of the economic crisis	
Energy sources	Persistence of traditional energy source dependence	Introduction of energy-efficient technologies		Limited trade increase due to lower wages and purchasing power in BRIC countries	Strong decreases of growth rates in all sectors with respect to the past, especially open ones
		Diffusion of renewable technologies and less dependence on traditional energy sources.		Persistence of traditional energy source dependence	
	Limited increase in energy prices	Significant increase in energy prices because of higher oil demand by BRIC countries and recovery from crisis		Low increase in energy prices, accentuated by the persistence of the economic crisis	
Competitive strategies of Europe					
European competitiveness strategy	World demand crisis	Free trade	Recovery from world demand crisis		More demand crisis than in the baseline
	Limited opening up to extra-EU trade	Free trade	Maintenance of free trade to recover from crisis	Constraints to free trade by European national governments	Limitation of free trade to protect national productions from crisis

(*continued*)

Table 9.2 (continued)

Driving forces	Baseline scenario (past and present trends)	A proactive Europe in a high-quality competitive world	Impact of a crisis with rapid recovery	A defensive Europe in a price-competitive world	Impact of a crisis with a delayed recovery
	Cost-competitive strategy of New 12 countries	Significant modernization of New 12 countries		Cost-competitive strategy of New 12	
	An innovation strategy of the EU 15, only partially successful	Innovation strategy throughout Europe		Low-cost production competition	
	A partial decrease in concentrated intranational development		More concentrated intranational development		Less concentrated intra-national development
Macroeconomic conditions	Revaluation of euro with respect to the past	Stronger revaluation of euro		Lower euro exchange rates with respect to the Baseline	
	Decrease of inflation	Higher inflation		Lower inflation	
Management of public finance	Increase of public expenditure growth rates	Virtuous public expenditure: decrease in public expenditure growth rates	Keynesian policies for a limited period and then excellence-based policies to maintain low deficits	High increase of public expenditure growth rates	Heavy public expenditure with Keynesian policies
	Weak control on the stability and growth pact	Strict compliance with the stability and growth pact		Low respect of the stability and growth pact	
Globalization of production (supplier/ producer reorganization effects)	Same composition of the labor force	More high-value functions especially in regions already specialized in high-value functions	Higher increase in service employment than in the baseline	Less high-value functions especially in regions now specialized in high-value functions	Lower increase in industry employment than in the baseline

Globalization of ownership	Lower attraction of FDI with respect to past situation	Increase of FDI thanks to the strong European currency	Lower FDI attraction in the short run, then recovery and higher FDI penetration	Increase of FDI due to low-cost area attraction, partially limited by the economic crisis	Much lower FDI attraction due to protectionism
	Weakening of social fabric due to transformation processes	Greater weakening of social fabric due to strong transformation processes in global areas		Lower weakening of social tissue	
Socio-demographic trends	Increasing external in-migration growth rates counterbalancing population aging	Openness to external in-migration	Maintenance of labor circulation	Relative closure to external in-migration	Limits to labor circulation (explicit or de facto)
		Greater natural population growth due to higher fertility rates of immigrants		Low natural population growth	
	High unemployment rate	Lower unemployment rate due to recovery from crisis		Higher unemployment rate	
Strategies of the European Commission					
EU regional policy	Budget as in 2007–2013	20% increase with respect to the 2007–2013 budget distributed to all regions		30% decrease on the 2007–2013 budget distributed only to convergence regions	
TEN infrastructure projects	New TEN network projects chosen keeping present priorities	New TEN network projects chosen with efficiency aims		New TEN network projects chosen with the aim of rebalancing the territorial infrastructure endowment	

Overall, we expect this scenario to be more expansionary than the baseline scenario. The way in which the increasing GDP growth rates will be distributed among regions is less easy to predict. How global regions will behave in this more expansionary scenario is again an interesting empirical question that will be addressed in the simulation exercise.

9.5.2 *A Defensive Europe in a Price-Competitive World and in a Slow Recovery from Economic Crisis Framework*

The second scenario, a *defensive Europe in a price-competitive world and in a slow economic recovery from the crisis*, implies trends in the driving forces of change, which are almost the reverse of those in the previous scenario. The first important assumption is that the *crisis will last for a long period*, inevitably characterized by demand-driven macroeconomic policies absorbing most of public resources. National public expenditure growth rates increase, with the inevitable consequence of high flexibility in compliance with the stability and growth pact (Table 9.2).

BRIC countries opt for a price-competitive strategy, producing low-cost products in low-tech manufacturing industries. International competition in this scenario is based on local low-cost resources (land and labor) which allow for low-price products.

The EU member countries develop a defensive strategy; constraints to trade are imposed by national governments as a strategy to protect their internal markets. In particular, the New 12 countries try to focus on a cost-competitive strategy, with the aim of attracting FDI and becoming Europe's manufacturing belt. National policies are increasingly oriented toward the solution of internal problems and toward an economy where public investment is mainly intended to achieve balanced regional development and territorial cohesion, even at the expense of economic growth. Economic crisis does not stimulate innovation, and R&D expenditures are not the main priority of national and European policies. In the energy sector, production is based on traditional energy sources, exerting pressures for increases in energy prices. This latter effect is, however, counterbalanced by the lower growth rates of oil demand by BRICs. The delayed recovery from the economic crisis imposes negative employment growth rates in open industrial sectors at the EU level.

Interest rates are low owing to the persistence of the economic crisis, the latter also keeping inflation and exchange rates at lower levels than in the baseline scenario. The economic crisis is more acute in open sectors, which register a negative increase in their production growth rates in Europe. The euro exchange rate is lower than in the baseline.

Structural funds budget decrease by 30% and are devoted to convergence regions, while fulfillment of the Lisbon agenda goals is flexible. The importance of cohesion also determines the choice of new TEN projects, which are selected in order to rebalance the territorial infrastructure endowment.

Closure characterizes in-migration strategies, with the result of lower natural (and total) population growth. Unemployment increases owing to the persistence of the crisis, only partially counterbalanced by public job creation.

9.6 From Qualitative to Quantitative Assumptions: The Levers of the MASST Model

The methodology used to construct the qualitative–quantitative scenarios requires the qualitative assumptions to be "translated" into quantitative levers to be introduced in the MASST model in order to simulate future growth.

The linkage between the qualitative and quantitative assumptions is summarized in Table 9.3, which states the quantitative assumptions behind each scenario that represent the levers of the model. Technically speaking, these represent the target variables to which the model tends in 2020.

Although the quantitative assumptions on the target values of the exogenous variables of the model are defined subjectively, they respond to a very strict logic and to solid constraints. General consistency is required – and pursued – in the entire logical chain linking the general characteristics of each scenario to the potential trend of the main macroeconomic, technological, and social variables – our so-called driving forces.

The competitive strategies adopted by European countries influence their internal macroeconomic conditions through intertwined changes in unit labor costs, in exchange rates, in inflation rates, and in public expenditure growth rates. A devaluation implies an increase in inflation rates; an assumption of devaluation in Europe has to be adjusted for the assumption concerning the behavior of BRIC countries. Proactive, restructuring, and modernizing strategies are in general expected to couple with virtuous public expenditure, revaluation of the currency, a consequent containment of inflation, and an increase in the interest rate due to increased demand for financial capital and a slight increase in unit labor cost variations. The opposite trends are expected to arise from defensive, cost, and price-competitive strategies.

More aggressive strategies conceptually imply a larger share of employment in high-value-added activities and this being implemented in the model through the share of science and technology employment and the share of tertiary activities. In contrast, under more defensive strategy assumptions, these activities are expected to grow to a lesser extent.

A rapid recovery from the crisis allows a reduction of public expenditure growth rates, a move toward excellence-based policies influential on all macroeconomic variables, such as interest, inflation, and exchange and unemployment rates. The presence of a long or a short crisis affects the trends of these variables highlighted by the other assumptions made: sometimes the long or short crisis emphasizes the trends of these variables and in other it counterbalances them.

Table 9.3 Conceptual linkage between the qualitative and the quantitative assumptions

Qualitative assumptions	Quantitative levers of the model	Changes induced by a slow recovery from the crisis
Competitive strategies of BRIC		
Change in purchasing power which leads to:		
– Change in the external markets for the EU	Change in GDP of USA, Japan, and BRIC countries	Stronger decrease in GDP, especially for USA and Japan
– Change in energy prices at world scale	Change in energy prices in the EU	Lower increase in energy prices
– Change in financial capital demand	Change in interest rates in the EU	Lower interest rates[a]
– The greater FDI attractiveness of these countries, and therefore of Eastern European countries	Change in the share of FDI attracted by Eastern countries	Lower FDI attraction for Eastern countries
Globalization of markets	Change in trade patterns due to changes in purchasing power of BRICs	
Competitive strategies of Europe		
Macroeconomic conditions	Change in cost competitiveness, i.e., change in unit labor cost	Lower ULC because of higher unemployment
	Change in exchange rates	Revaluation due to shift from dollar
	Change in inflation rates	Lower inflation
	Change in the growth rates of public expenditure	Much higher public expenditure
	Change in the European growth rates of specific sectors (as above)	Services better than manufacturing
	Change in the constant of the consumption growth equation	Stronger decrease of consumption
Production changes		
– Shift of world demand	Change in the European growth rate of specific sectors	Open sectors more affected
– Globalization of production (supplier/producer reorganization effect) (functional reorganization)	Change in the composition of the labor force at the regional level[b]	
– Globalization of ownership (mergers and acquisition)	Change in regional sectoral specialization[c]	Protection of sectors of specialization
	Change in the share of FDI attracted by Eastern countries	Lower FDI attraction by Eastern countries
	Change in trust	Lower change in trust
Spatial effects		
– Less concentrated development in New 12 countries	Change in the dummy for agglomerated and mega regions in New 12	Less negative effects for rural areas

(*continued*)

Table 9.3 (continued)

Qualitative assumptions	Quantitative levers of the model	Changes induced by a slow recovery from the crisis
Strategies of the European Commission		
– Lisbon	Change in the share of tertiary activity Change in the share of S&T employees	
– European infrastructure policy choices	Change in the km of transport infrastructure in each region	
– Institutional decisions	Change in the amount and spatial distribution of the structural funds spent Change in the amount and spatial distribution of CAP Pillar 2 expenditures	
Degree of openness	Change in the exogenous growth component of the population growth equation that influences both fertility and mortality rates Change in the exogenous growth component of the export and import equation	
Effects of economic crisis		Lower consumption growth rates Lower investment growth rates Higher public expenditure growth rates Higher unemployment rate

[a]Because recovery is procrastinated after the end of the simulation period.
[b]Increase of skilled and decrease of low skilled, stronger in global regions in scenario A. This applies also to regions where skills already exist.
[c]Specialization changes more when there is a greater loss due to the crisis: In scenario A, there is a decrease of specialization for those sectors/regions which are more specialized in the sectors affected by the crisis. In scenario B, there is an increase of specialization for those sectors/regions specialized in those sectors affected by the crisis (since they defend themselves better when there is more concentration, and also because of lobbying and protectionism).

9.7 Conclusions

This chapter has set out the methodology with which alternative territorial development scenarios are built.

The strength of a scenario exercise lies in its intrinsic logic and in its capacity to choose the levers of the simulation so that they are all coherent with the internal logic of the scenario. The achievement of this internal coherence is ensured in our

scenario exercises by the choice of possible, alternative (and extreme) competitive strategies that the different blocks of countries may put in place; as mentioned in the chapter, in fact, a competitive strategy can easily and logically be associated with demographic and economic trends, with economic policies, and with sectoral policies such as energy and transport policies.

Bifurcations in our scenarios are therefore due to the choice by different groups of countries between modernization strategies, on the one hand, and defensive, cost-competitive strategies on the other hand.

Two scenarios of policy interest have been envisaged on the basis of this logic:

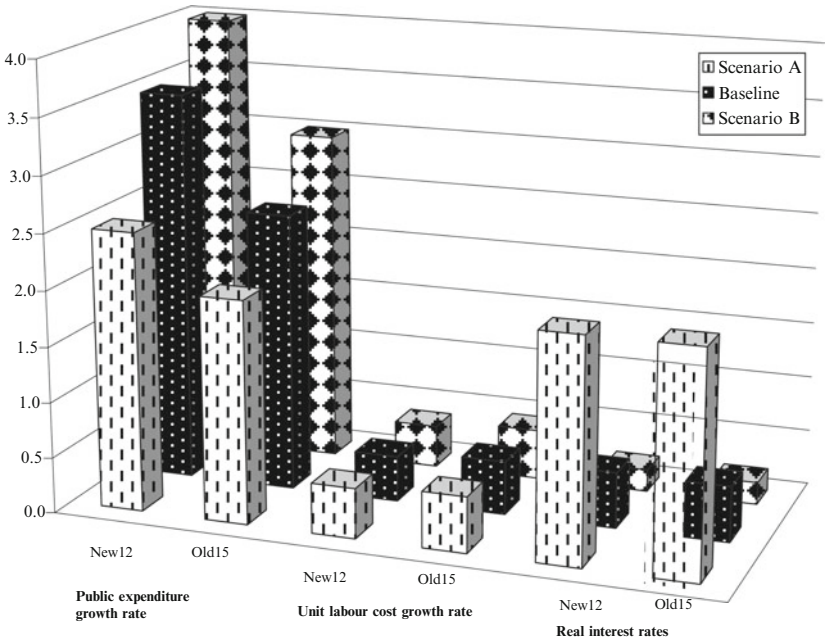
- An aggressive Europe in an integrated world, in which competitiveness is based on high-quality products in each block of countries, and with rapid recovery from the economic crisis
- A defensive Europe in a price-competitive world in which, on the contrary, each block of countries competes on the basis of production costs and prices, and with slow recovery from the economic crisis

Not only do the strategies of the European member states prove relevant, so too do those undertaken by emerging countries. In fact, the possibility of a macroeconomic reequilibrium in these latter countries, through wage increases and a revaluation of their currencies in the presence of huge trade surpluses, may have a beneficial effect on international trade and in particular on exports by Western countries, reducing evident social resistances against increased international integration and globalization.

The next chapter presents the results of the three scenarios in detail.

Annex 9.1 Quantitative Assumptions

a) Public expenditure, unit labour growth rate, real interest rates



b) FDI, inflation rate, US and Japan GDP growth rates, BRIC growth rates

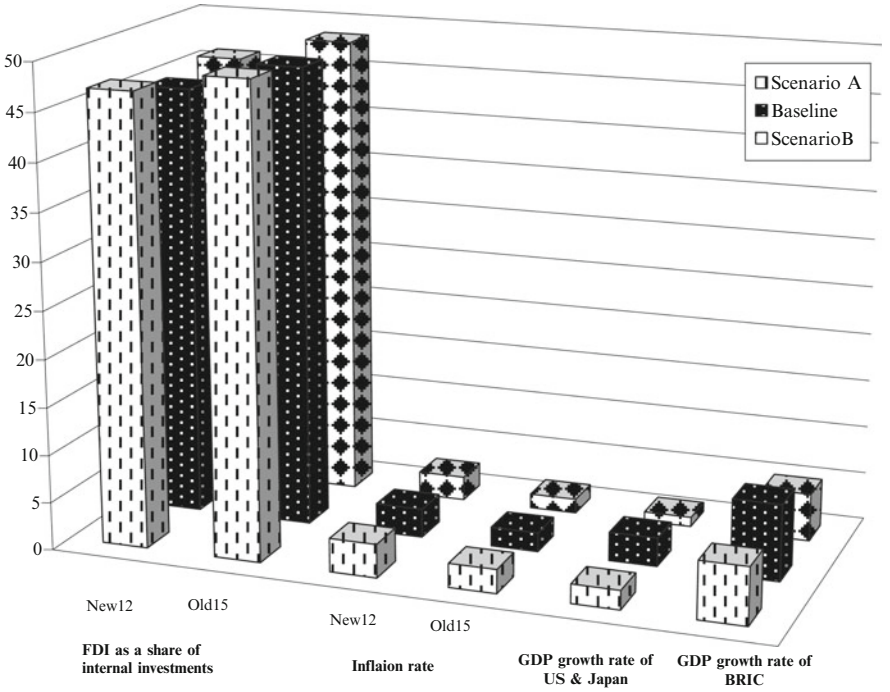


Fig. 9.3 National target values in the scenarios
Note: absolute values

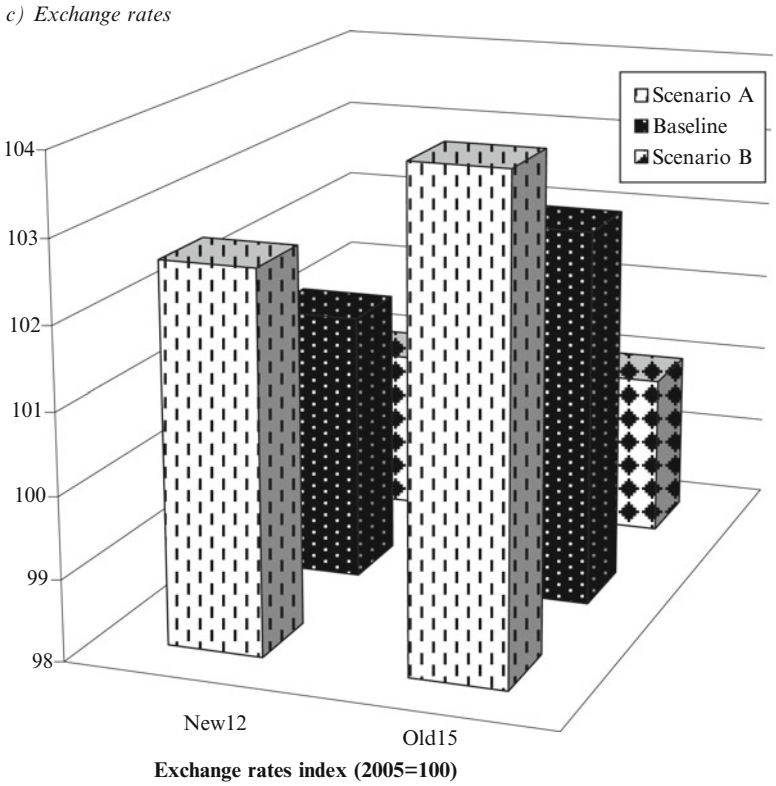
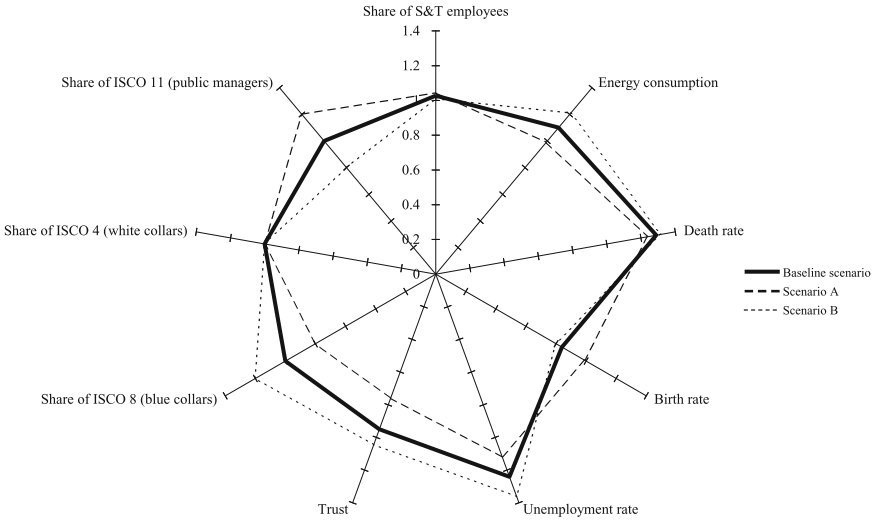


Fig. 9.3 National target values in the scenarios – Continued
Note: absolute values

a) Agglomerated and mega regions in OLD 15 countries



b) Urban and rural regions in OLD 15 countries

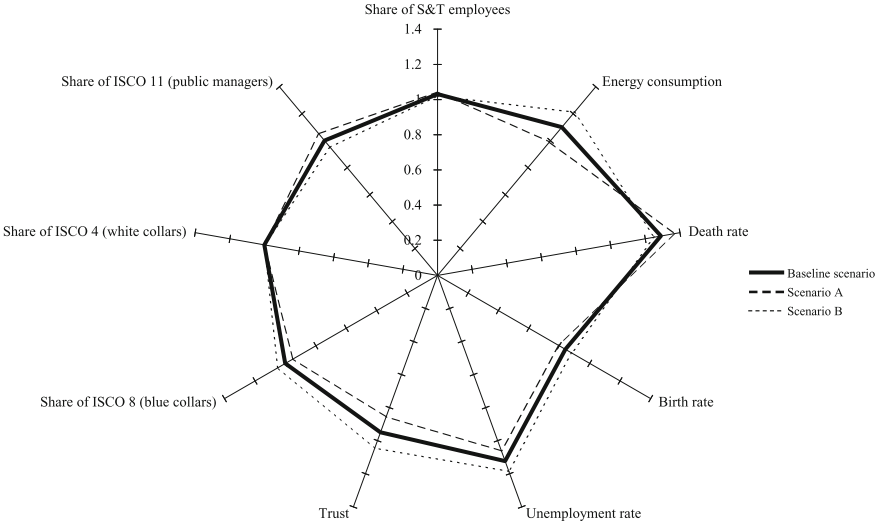
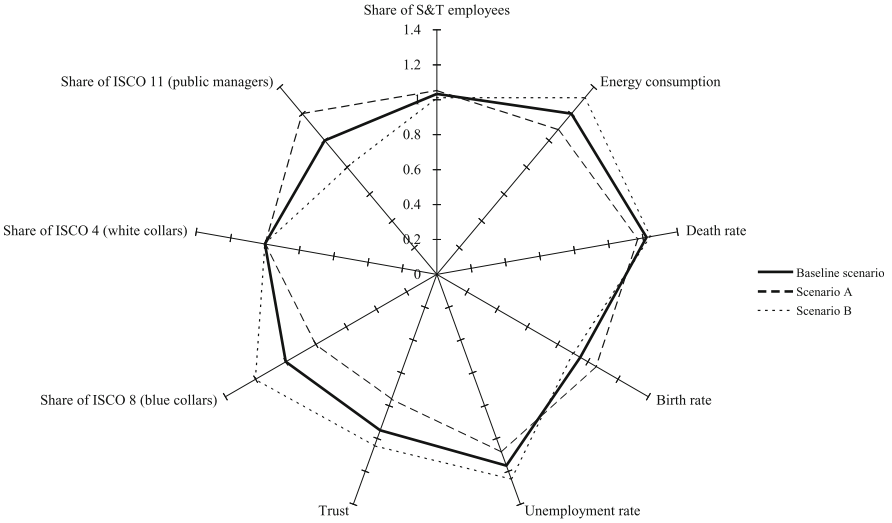


Fig. 9.4 Regional target values in the scenarios
Note: average group value in 2005 = 1

c) Agglomerated and mega regions in NEW 12 countries



d) Urban and rural regions in NEW 12 countries

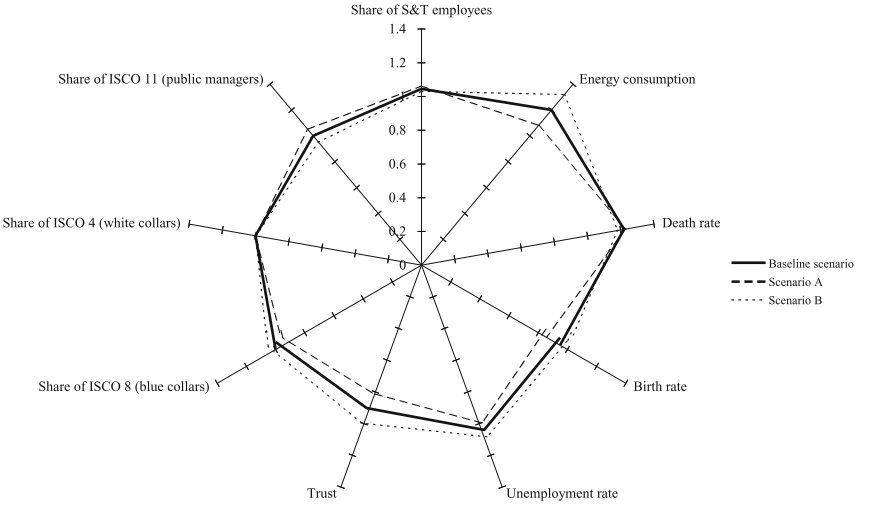


Fig. 9.4 Regional target values in the scenarios – Continued
Note: average group value in 2005 = 1

Chapter 10
The European Territory in 2020: Winners and Losers in a Globalized World

10.1 Introduction

This chapter is devoted to presentation of the results for the three scenarios set out in the previous chapter: the baseline, the proactive, and the defensive scenarios. First of all, it reports aggregate results for Europe as a whole, and for Eastern and Western countries. As will be shown, the three scenarios exhibit rather different growth patterns, and they highlight interesting aspects: the combination of proactive, modernizing, and reconverting strategies in an economic setting of a short-term crisis produces the most expansionary scenario. In general, the strategies put in place in the external world heavily influence European growth trajectories in both scenarios (Sect. 10.2).

This chapter then moves to the results for the different groups of regions, i.e., global, regional, and local players. As the results show, global players are the regions that drive European growth in all the three scenarios. In particular, in the proactive scenario they take full advantage of the aggressive proactive strategy and of rapid recovery from the crisis to increase their growth rate by almost 1% point annually (Sect. 10.3).

Presented next are the results of the baseline scenario with respect to the present situation; the winners and losers in a globalized world will be specified (Sect. 10.4). The main difference with respect to the past positions of groups of regions will be underlined, with global players differing from regional and local ones because of their larger numbers of leading regions.

The results are then presented in detail at regional level for each scenario with the use of maps (Sect. 10.5). Once again the results of MASST in terms of annual average GDP growth rates and annual average industry and service employment growth rates will be reported.

The results of the three scenarios can also be read in terms of regional disparities. A Theil decomposition is able to distinguish the effects of the divide between Eastern and Western countries. It does so between countries and within countries and between regional degrees of openness to the international world (Sect. 10.5). As will be evidenced by the concluding section, in fact, the scenario results are differentiated not only by country, but also by types of region.

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_10,

10.2 An Aggregate Perspective

Table 10.1 reports the simulation results aggregated at European level. In the baseline scenario, the GDP growth rate is higher for the New 12 member countries with respect to the Old 15 members, continuing the present trend, albeit less markedly so with respect to the years of more rapid convergence. Old 15 member values are almost always reflected in the EU27 average because of their large share of GDP on the EU average.

The baseline scenario shows a constant negative trend of manufacturing employment growth, stronger for Western countries but also present in Eastern ones. These trends are only partially attenuated in the proactive, aggressive, and courageous scenario, while they are drastically amplified in the defensive scenario, testifying that protectionist strategies do not pay in the long run in terms of industrial employment growth (Table 10.1).

In the baseline scenario, the negative manufacturing employment growth rates are accompanied by a positive trend in service employment growth, although in reality this is substantial only for the New 12 member countries, where the shift to service activities is at present incomplete.

The scenario of *a proactive strategy in a highly competitive world and in a rapid economic crisis recovery framework* (hereafter labeled scenario A) is overall more

Table 10.1 Aggregate results of the three scenarios in the MASST model

	Average annual 2005–2020 growth rates of		
	GDP	Manufacturing employment	Service employment
Baseline scenario			
EU27	2.14	−1.00	0.14
Old 15	2.13	−1.13	0.04
New 12	2.38	−0.59	0.71
Proactive scenario (scenario A)			
EU27	2.93	−1.00	1.47
Old 15	2.92	−1.13	1.37
New 12	3.14	−0.57	2.05
Difference between scenario A and baseline			
EU27	0.79	0.01	1.33
Old 15	0.79	0.00	1.32
New 12	0.76	0.01	1.34
Defensive scenario (scenario B)			
EU27	1.43	−1.14	−0.02
Old 15	1.42	−1.26	−0.09
New 12	1.58	−0.77	0.40
Difference between scenario B and baseline			
EU27	−0.71	−0.14	−0.16
Old 15	−0.70	−0.12	−0.14
New 12	−0.81	−0.19	−0.31

Source: authors' simulation results

expansionary, both for the Old 15 and for the New 12 countries of Europe, with the former benefiting slightly more than the latter. The rapid recovery from the crisis and the aggressive strategies of EU countries pay off. Overall, the growth rate of New 12 member countries remains more sustained than that of Old 15 countries, implying that the present trends will continue also if world competition increases. As far as manufacturing is concerned, scenario A is not substantially different from the baseline; this reflects the assumption made that manufacturing will not be the main driver of growth for Europe, not even in the most expansionary scenario. The macrosector driving growth is on the contrary the service sector, with considerably higher employment growth rates both in the East and in the West. Job creation in services is hence what in scenario A can be expected to explain the positive GDP performance; but, as will be evident in the next section, this result is highly asymmetric in terms of different types of regions.

The scenario of *a defensive strategy in a price-competitive world and in a slow economic crisis recovery framework*, hereafter labeled scenario B, is less expansionary for all the EU27, owing to the slow recovery from the present economic downturn and the defensive strategies implemented by the European countries. Also in this scenario, the New 12 member countries outperform the Old 15 in GDP growth, but less sizably so with respect to the other scenarios. In fact, it appears that the Eastern countries, by following a cost-competitive defensive strategy, suffer from the crisis even more than the Western countries. As far as employment is concerned, as said before, the loss of jobs in the manufacturing sector in this scenario is more rapid with respect to the baseline in all Europe, and more so in the New 12 countries than in the Old 15 countries. The limited strategy of restructuring the economy explains, especially in Eastern countries, the loss of manufacturing employment, as well as the decisive loss of service employment growth; the service sector is used neither as a leading sector of the economy nor as a buffer for the decline in manufacturing employment.

10.3 Regional Performance: A Perspective by Types of Regions

10.3.1 Results for Global, Regional, and Local Players

The MASST model is able to produce results for each NUTS 2 region in Europe. Before moving to the disaggregated regional results (which will be presented in Sect. 10.4), here we analyze the aggregate performances of the three different groups of regions defined in Chap. 4, namely, global, regional, and local players.

Table 10.2 reports the average annual regional GDP growth rate of each type of region. Global players clearly emerge as those regions able to drive European growth in all three scenarios. In particular, in the baseline scenario, global players are expected to significantly outperform regional players and local players, with little differences between the two latter groups.

In scenario A, global players take full advantage of their aggressive strategies and of the earlier end of the crisis, and they increase their growth rate by almost 1%

Table 10.2 Aggregate results of the three scenarios in the MASST model by type of regions

	Average annual 2005–2020 growth rates of		
	GDP	Manufacturing employment	Service employment
Baseline scenario			
Global players	2.51	−1.18	0.45
Regional players	1.79	−1.26	−0.16
Local players	1.78	−0.37	0.02
Proactive scenario (scenario A)			
Global players	3.43	−1.18	1.78
Regional players	2.49	−1.25	1.15
Local players	2.38	−0.37	1.37
Difference between scenario A and baseline			
Global players	0.92	0.01	1.33
Regional players	0.70	0.00	1.31
Local players	0.60	0.01	1.35
Defensive scenario (scenario B)			
Global players	1.76	−1.29	0.31
Regional players	1.11	−1.42	−0.34
Local players	1.13	−0.50	−0.18
Difference between scenario B and baseline			
Global players	−0.75	−0.12	−0.14
Regional players	−0.68	−0.16	−0.17
Local players	−0.65	−0.13	−0.20

Source: authors' simulation results

point. Also regional players and local players benefit from scenario A, but their advantage is smaller, especially in the case of local players. A first important message stems from these results: the degree of a region's openness to international trade and integration with the global economy explains part of its economic success also in the face of fiercer competition and greater globalization patterns.

This finding is confirmed by the results of scenario B. In a scenario of protectionism and of limited openness to international integration, although global players still maintain the highest GDP growth rate, they record the largest decrease in GDP growth rate with respect to the baseline scenario (Table 10.2).

In scenario B, also regional players suffer more than local players; and this brings their total GDP growth rate to the lowest level. Moreover, although local players are the least affected in relative terms, they too significantly suffer from the crisis and the limited opportunities of a defensive scenario.

On looking at manufacture employment growth, it is possible to observe that its average annual growth rate in the baseline scenario is negative for all three types of regions, but mainly for those where globalization has most impact, i.e., global and regional players. Scenario A is built on assumptions similar to those in the baseline scenario concerning the dynamics of many sectors, and for this reason there is no significant difference for any of the three types of regions between the two scenarios. Scenario B is instead more restrictive in terms of manufacturing employment

growth for all regions, and in particular for those specialized in open growing manufacturing sectors.

The results for service employment growth are noteworthy. Contrary to the high growth achieved by global players, local players do not record service employment growth, and regional players even record a decline, although one less marked than in manufacturing. In scenario A, the European growth rates of service sectors are assumed to be higher, and the shift toward higher value-added functions contributes to generating further employment growth in service sectors. In scenario B, the growth of service employment is lower for all types or regions, so that it remains positive only for global players.

Because aggregate results by type of regions may conceal differentiated behaviors within each type, Fig. 10.1 plots the results in terms of relative growth for each individual region in the baseline scenario, which is chosen for parsimony because it is intermediate between scenarios A and B in terms of performance, and because the differences between the proactive and defensive scenarios will be studied in the next subsection. This figure differentiates regions in terms of initial GDP per person in order to detect whether there is a relationship between their initial status and their subsequent growth, which is expressed in terms of absolute change in GDP per person as a percentage of the EU27, so that positive values are given to those regions that are expected to outperform the EU27 mean.

Depicted in Fig. 10.1a is the GDP growth of global players. It is apparent that, similar to the past (see Chap. 6), there are significant differentiations among global players in the baseline scenario as well. The second interesting observation is that there are almost no global players which, starting from a lower-than-average GDP per person, achieve a lower-than-average growth of GDP per person. In contrast, almost all global players which were poorer than the EU average appear to outperform the EU27 mean. The situation for Western global players is more skewed, because there are many of them which, starting from above-average levels, worsen their relative status. It is, however, interesting that a number of those regions whose initial GDP per person was highest at European level are also among the best performers overall, whereas many of those closer to the average at the beginning of the simulation period do not perform as well.

Depicted in Fig. 10.1b is the same pattern for regional players, with the same axes. It is immediately clear that regional players started at levels of GDP per person lower than those of global players (see also Chap. 4), also with large differentiations within them, which makes it difficult to identify a clear pattern. The distinction between Old 15 and New 12 regions is evident, as shown by the two distinct clouds of values. The Eastern cloud in particular is less differentiated in terms not only of starting values but also of performance, which tends to be above the mean, but only slightly and not in all cases, unlike the findings for Eastern global players, which systematically exceed average EU growth. Western regional players are more differentiated, in terms of both starting values and performance. Unlike the global players, a large number of regional players perform below the average despite starting with initial values also below the average. However, having higher starting values is not a guarantee of good performance for regional players,

because most of the lowest performers among them are also those regions which had highest starting values.

The patterns for local players are finally depicted in Fig. 10.1c, again along the same axes. Once again, as in the case of regional players, local players belonging to the New 12 countries tend to form a rather homogeneous group, whereas

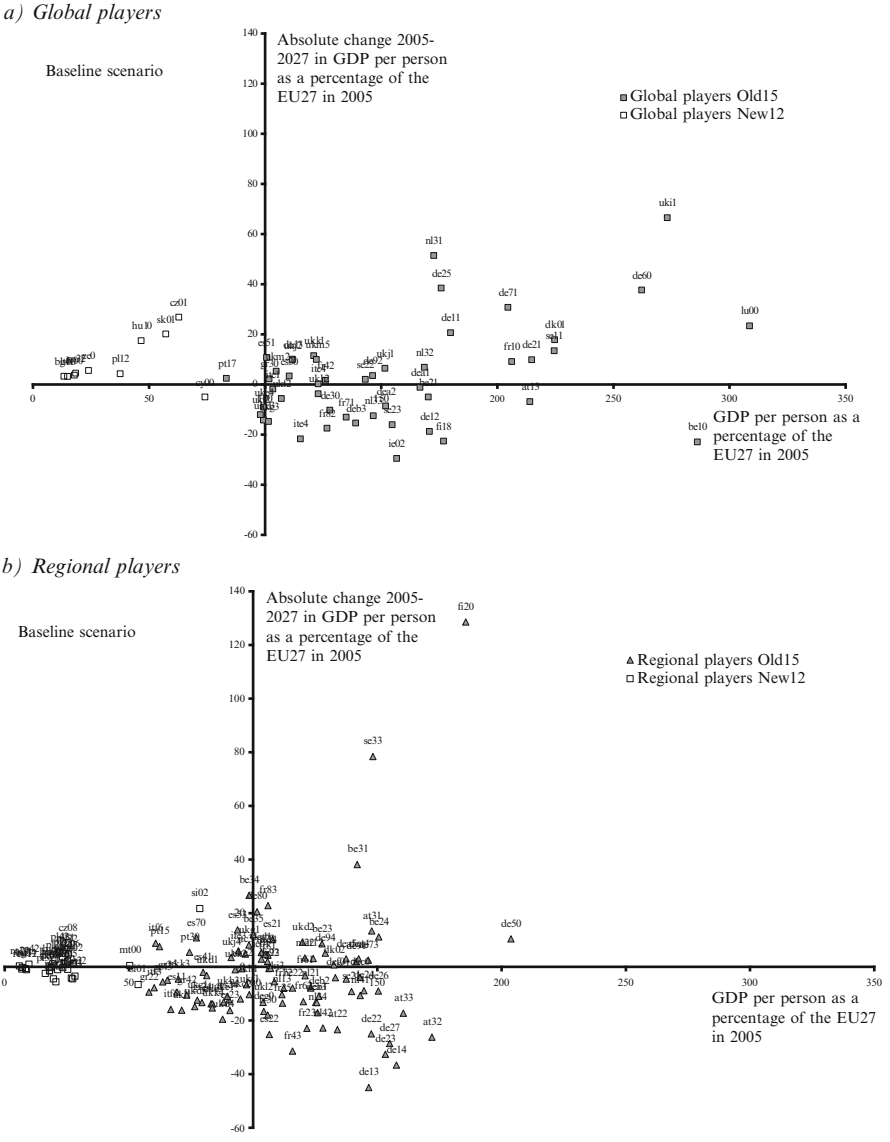


Fig. 10.1 Regional growth in the baseline scenario
Source: authors' simulation results

c) Local players

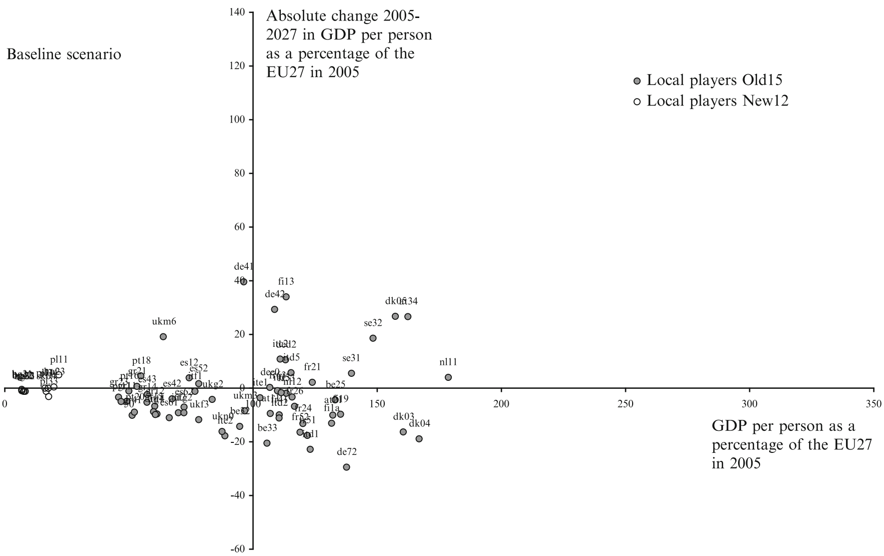


Fig. 10.1 Regional growth in the baseline scenario – Continued
Source: authors' simulation results

those belonging to Old 15 countries are more numerous and more differentiated. It appears that being a local player does not clearly affect the scenario performance in terms of GDP per person, because there is a similar number of regions above and below the horizontal axis, even if the mean is negative. Interestingly, it is very limited to the number of Western local players which, starting from lower-than-average values, outperform the rest of the Union in terms of GDP per person. In contrast, a nonnegligible number of Western local players, especially ones belonging to central and Northern countries, start from above-average values and improve their positions, although the number of those which lose ground is larger.

10.3.2 Who Gains from an Aggressive Scenario?

The previous subsection showed that the scenario performance of regions is differentiated in terms of types of regions but also within types of regions. The regional analysis has been conducted for the baseline scenario, which is central in most of its assumptions with respect to the other two (see Chap. 9).

One may wonder whether the scenario assumptions of the proactive and defensive scenarios have different impacts on the three groups of regions, and whether these regional impacts are differentiated within groups. Accordingly, Fig. 10.2 plots

the absolute and relative gains from an aggressive scenario, computed in terms of the annual average GDP growth rate in scenario A with respect to scenario B.

The analysis is first performed for global players (Fig. 10.2a). One first observes that for all global players the scenario of "a proactive strategy in a highly competitive world and in a rapid economic crisis recovery framework" (Scenario A)

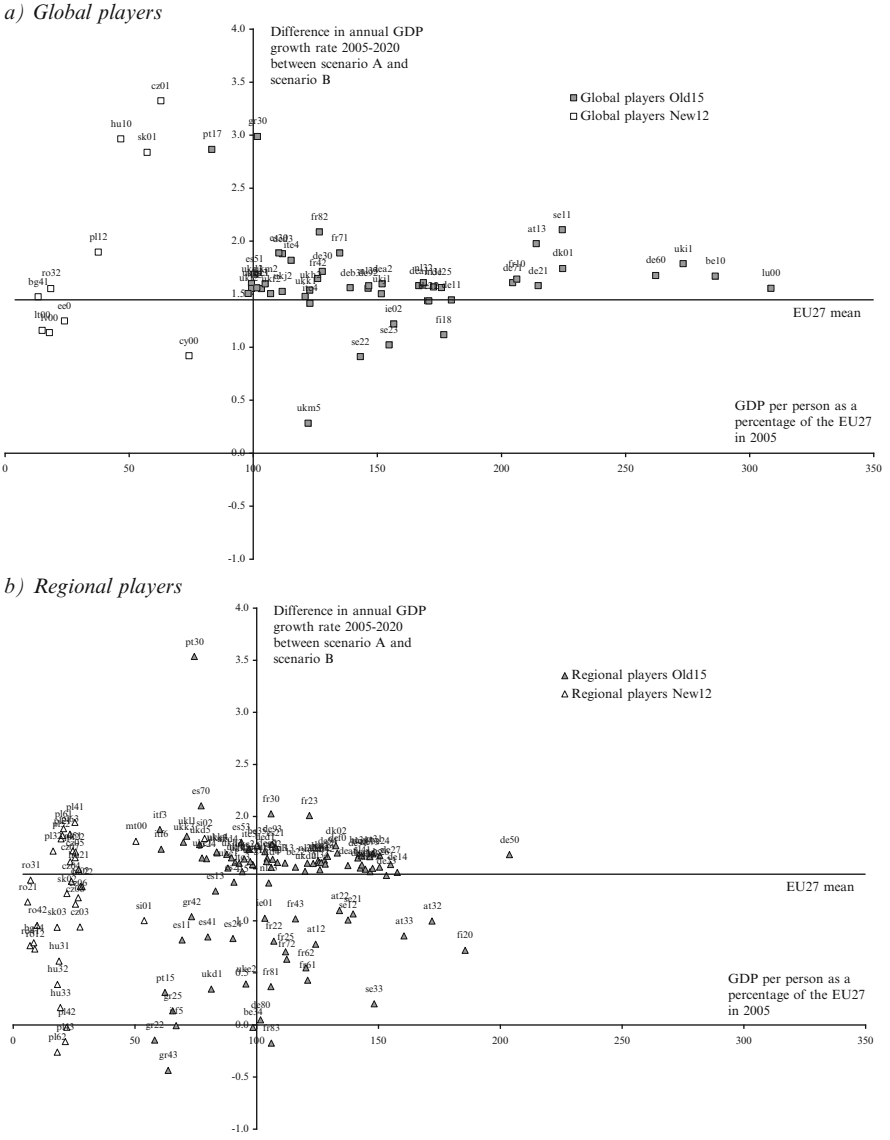


Fig. 10.2 Gains from an aggressive scenario
Source: authors' simulation results

c) Local players

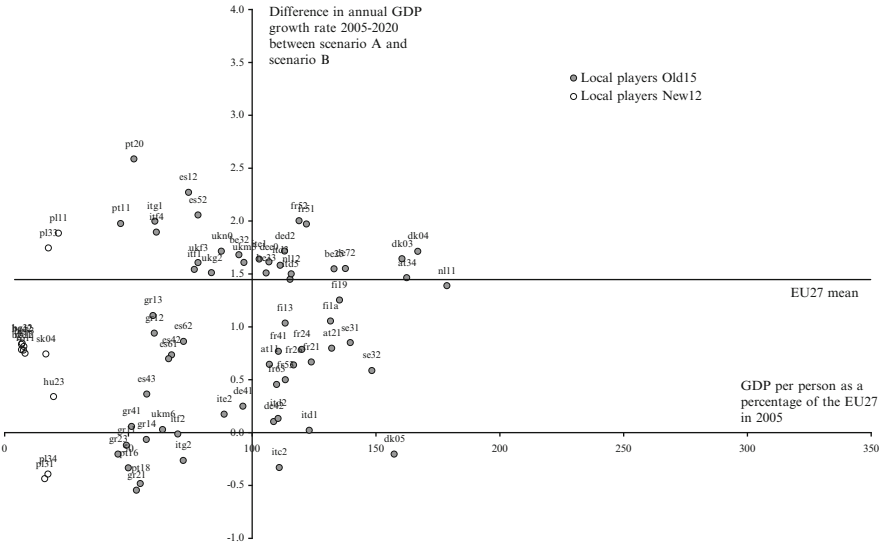


Fig. 10.2 Gains from an aggressive scenario – Continued
Source: authors' simulation results

brings higher GDP growth rates than scenario B. Moreover, for the majority of these regions, the results show that GDP growth is even greater than the EU average, confirming that global players gain more than the EU average from the opportunities offered by an aggressive proactive scenario, as Sect. 10.3.1 showed. Belonging to an Eastern or Western country does not appear to imply different advantages for global players, apart from a larger variance. Of great interest is the finding that the richest European regions in 2005 have a larger-than-average advantage in a proactive scenario.

Figure 10.2b plots the advantages from a proactive scenario for regional players. The picture is clearly different owing to the larger number of regions and the absence of very rich European regions in 2005. For almost all regional players, the proactive scenario brings positive effects with respect to those of the defensive scenario. However, the effects do not appear to be larger than average; especially, there appears to be some sort of upper bound which prevents them from being among the regions which gain the most.

As regards regional players belonging to New 12 member countries, they are quite similar in terms of income per capita in 2005, but highly differentiated in terms of impact of the proactive scenario, with a couple of Polish rural regions even exhibiting a negative impact. Regional players belonging to Old 15 countries are more dispersed in terms of initial GDP per person and hence are also more dispersed in terms of impact.

Finally, Fig. 10.2c shows the impact of the proactive scenario for local players, those that on average gain less from this scenario (Table 10.2). The aggregate

results are confirmed by the positions of regions in the picture, where also local players gain from this scenario to a less-than-average extent. Moreover, they appear to be divided into three groups, with some gaining more than the average, some gaining but doing so below the average, and some even losing. Interestingly, national effects, which are certainly at play, as demonstrated by the presence of groups of regions belonging to the same country, are not the most important factors. Many different levels of advantage are present in the same country even with similar initial levels of development.

10.3.3 Winners and Losers in the Past and in 2020

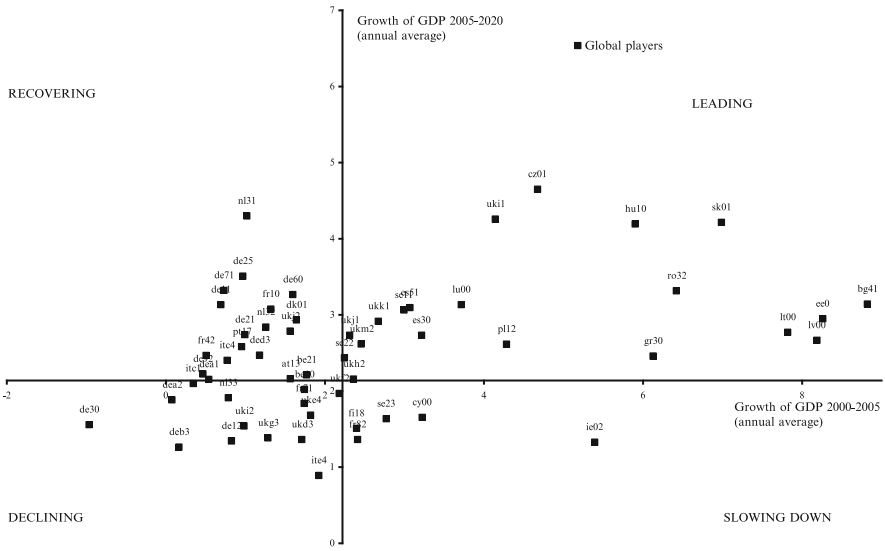
At this stage of the analysis of results, it is important to investigate for what regions the scenarios prolong the current growth trends, and for what other regions the scenarios mark a discontinuity with the recent past.

The average annual growth rate of the period 2000–2005 (last period with actual data before the simulation) has been scattered against the future average annual growth rate predicted by the MASST model for the period 2005–2020 in the baseline scenario (Fig. 10.3). The two axes are centered on the average of the EU27. It is immediately evident that the growth rate of the Union in the baseline scenario is rather similar to the one of the past. However, regional differences also emerge because some regions which grew above the average in the past continue to do so in the future, and are hence "*leading*" ones, whereas other regions with strong performances in the past are less strong performers in the future, and are hence "*slowing down*" ones. Among those regions that grew less than the average in the past, some are predicted to grow more than the average in the baseline scenario, and are hence labeled "*recovering*" regions, while some others are predicted to grow less than the average, and are hence "*declining*" because their economic performances continue to languish.

In Fig. 10.3a, the analysis is run for global players. It is immediately clear that global players used on average to have an advantage in terms of GDP growth rate (see also Chap. 6) and that they are predicted to maintain this advantage, on average, in the future. A significant number of global players, mainly belonging to New 12 member countries (e.g., Bratislava, SK01; Yugozapaden, BG41; Estonia; Latvia; Közép-Magyarország, HU10), but also to the UK (Inner London, UKI1; Gloucestershire, Wiltshire, and Bristol/Bath area, UKK1), Sweden (Stockholm, SE11), Spain (Madrid, ES30; Catalonia, ES51), and Luxembourg, are "leading" regions, because their structural characteristics enabled them to outperform the rest of the European Union in the past and also exert positive effects in the scenario simulations. Almost all these regions are characterized by the presence of large cities and/or capitals. Only very few global players are "slowing down" ones, notably Southern and Eastern Ireland (IE02), and they are as such to only a small extent. A significantly larger number of global players are "recovering" ones, being able to obtain a decisive annual average GDP growth rate in the baseline scenario, when this was

not the case in the period 2000–2005; these regions mainly belong to Western countries such as France, Germany, and the Netherlands (notably Utrecht, NL31). Finally, a nonnegligible number of global players are "declining" ones, i.e., have persistently low growth rates, and they mainly belong to Western countries such as Italy and Germany. Figure 10.3a clearly shows that being a global player did not automatically ensure good performance in the past, nor will ensure it in the future,

a) Global players



b) Regional players

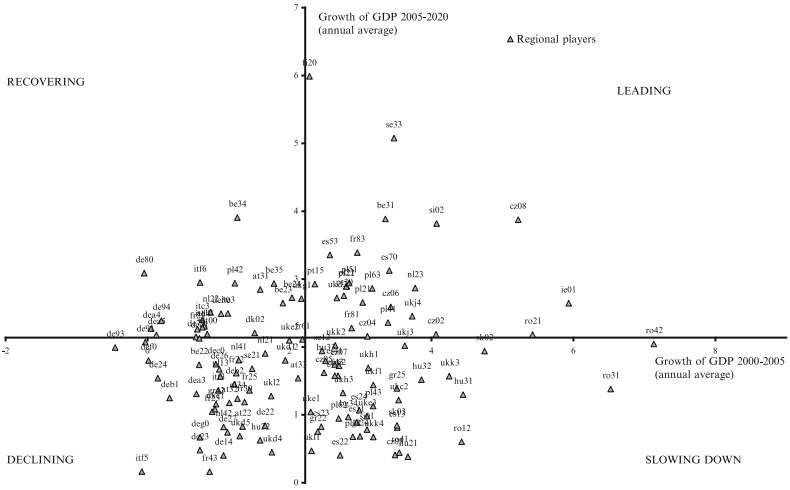


Fig. 10.3 Past and future growth trajectories
Source: authors' simulation results

c) Local players

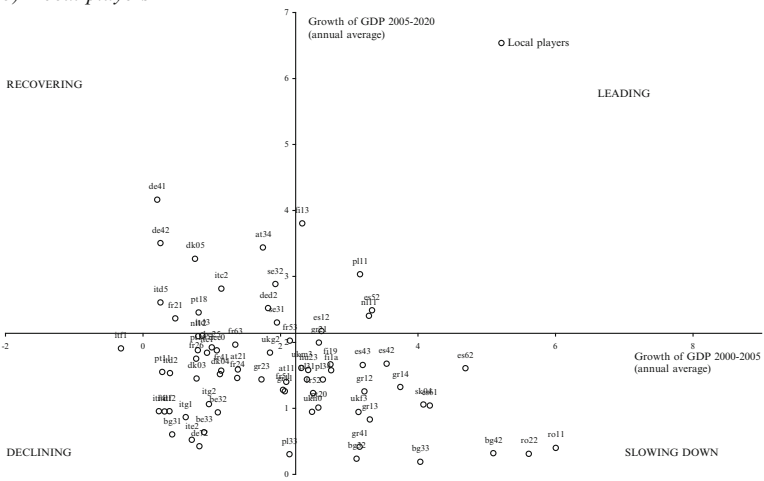


Fig. 10.3 Past and future growth trajectories – Continued
Source: authors' simulation results

notwithstanding the fact that these regions, on average, are more competitive in that they have both the structure and the right sectoral specialization. This is in line with the findings in Chap. 6, which evidenced that on average global players are more endowed with success factors, but this is not necessarily the case of all of them.

The same analysis is performed for regional players in Fig. 10.3b. It is immediately clear that, on average, the performance of regional players has been lower in the past and will also be lower in the future with respect to that of global players. However, a large number of regional players outperformed the EU in the past and many of them will do so also in the future. Among the leading European regions are many Eastern ones, including Zahodna Slovenija (SI02) and Moravskoslezsko (CZ08), as well as some Western ones such as Western Ireland (IE01) and Övre Norrland (SE33). Other regional players are "recovering" ones in the scenarios despite having been less well-performing in the past: these include Mecklenburg-Vorpommern (DE80), Prov. Luxembourg (BE34), Liguria (ITC3), and Zachodniopomorskie (PL42). Many – principally Western – regional players are "declining" ones because they are unable to reverse the negative pattern of the past. Other – principally Eastern – regional players are instead "slowing down" ones; this is the case of many Eastern regions which suffer from the fact that the GDP growth rate of their countries in the baseline scenario is no longer as rapid as in the years of recovery, and from the fact that growth tends to remain concentric in these countries, maybe even more concentric than in the past.

Finally, the performance of local players is depicted in Fig. 10.3c. Among the more than 70 of these regions there are only five leading regions (e.g., Lódzkie, PL11), while most of them either had a low growth performance in the past, or will have one in the baseline scenario, or both. "Slowing down" regions mainly belong

to peripheral areas of Eastern and Western countries, including Vest (RO42), Nord-Vest (RO11), Yuzhen tsentralen (BG42), Región de Murcia (ES62), and Voreio Aigaio (GR41). While some local players are "recovering" ones (including some German regions such as Brandenburg, DE41 and DE42), many more are "declining," which signals that being detached from global markets may often reduce the risks, but that it more often reduces the opportunities for rapid growth.

10.4 Regional Performance in the Three Scenarios

10.4.1 Regional Performance in the Baseline Scenario

Map 10.1 reports the results of the GDP growth rate in the baseline scenario. It shows that the annual average GDP growth rate is positive for most European regions, with only a few exceptions spread among all countries. Interestingly, none of these regions is an agglomerated one, nor one which hosts a MEGA.

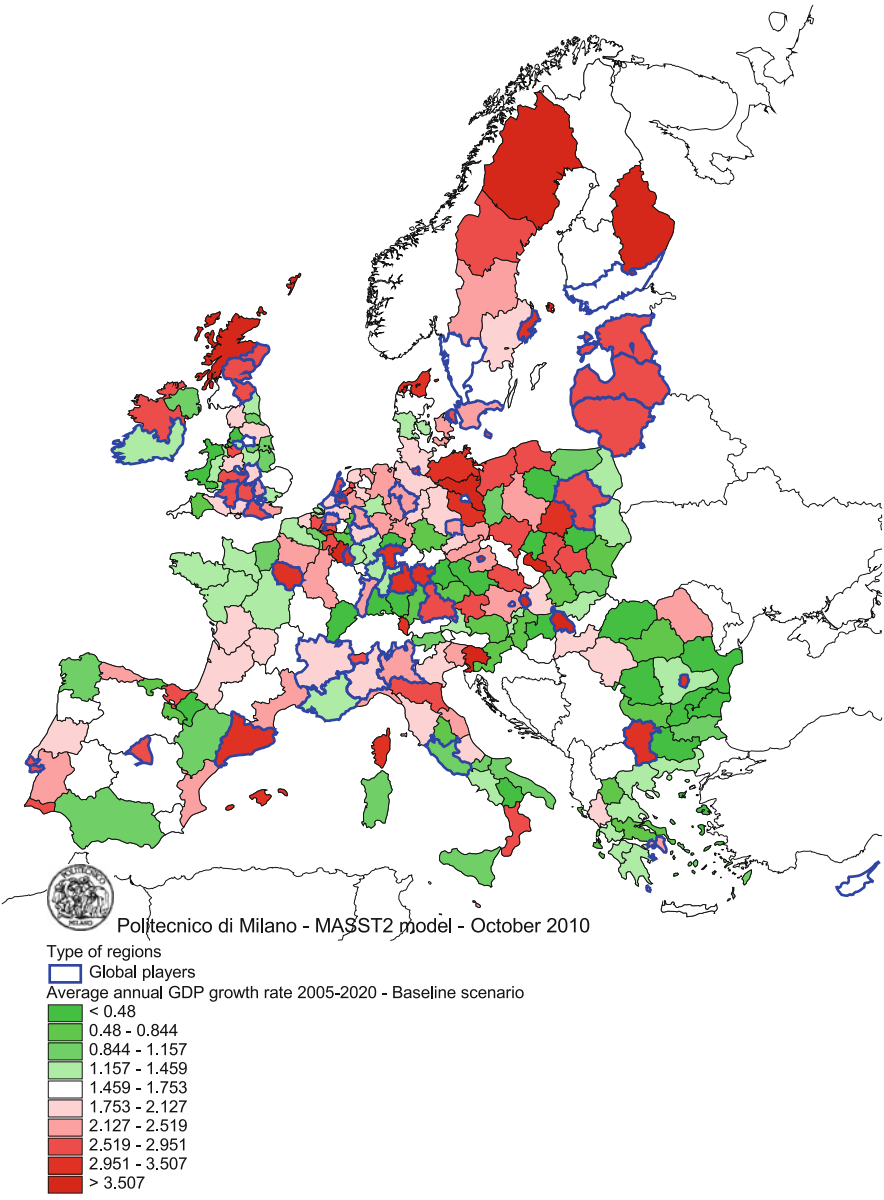
The map confirms that global players are regions which on average outperform the others. Most global players are in fact among the most growing regions, and they comprise important cities such as Frankfurt, Paris, Munich, Stockholm, and the Eastern European capitals, including Warsaw, Budapest, Prague, and Bratislava. Interestingly, global players are not always the best performing ones within each country, for in some cases also some peripheral regions, such as Highlands and Islands in the UK, and Övre Norrland in Sweden, have very good performances.

This scenario describes a centripetal development because, on average, the richest and central regions tend to outperform the poorer and peripheral ones within their countries. This effect appears stronger in Eastern countries, i.e., it extends into the future a pattern which already in the past has seen the Eastern capital regions outperform the rest of their respective countries.

However, some countries appear to be polarizing – notably Spain, Romania, Bulgaria, Hungary, Italy (in which the richer North outperforms the South), and the United Kingdom – whereas other countries are polarizing to a lesser extent, for instance Portugal and Germany, where most Eastern German regions are reducing their income gap with the West.

Map 10.2 shows the growth rate of manufacturing employment in the baseline scenario. It should be borne in mind that this growth rate, in the model, depends strongly on the actual regional specializations in sectors more or less affected by the crisis. The growth rate is more often negative than positive, signaling that the manufacturing crisis will continue in this scenario, but with strong differences at European level and within countries. In particular, negative growth rates are common in regions belonging to central Europe, notably in Germany, the Czech Republic, Austria, Hungary, as well as in northern countries such as Ireland, Denmark, Sweden, and Finland.

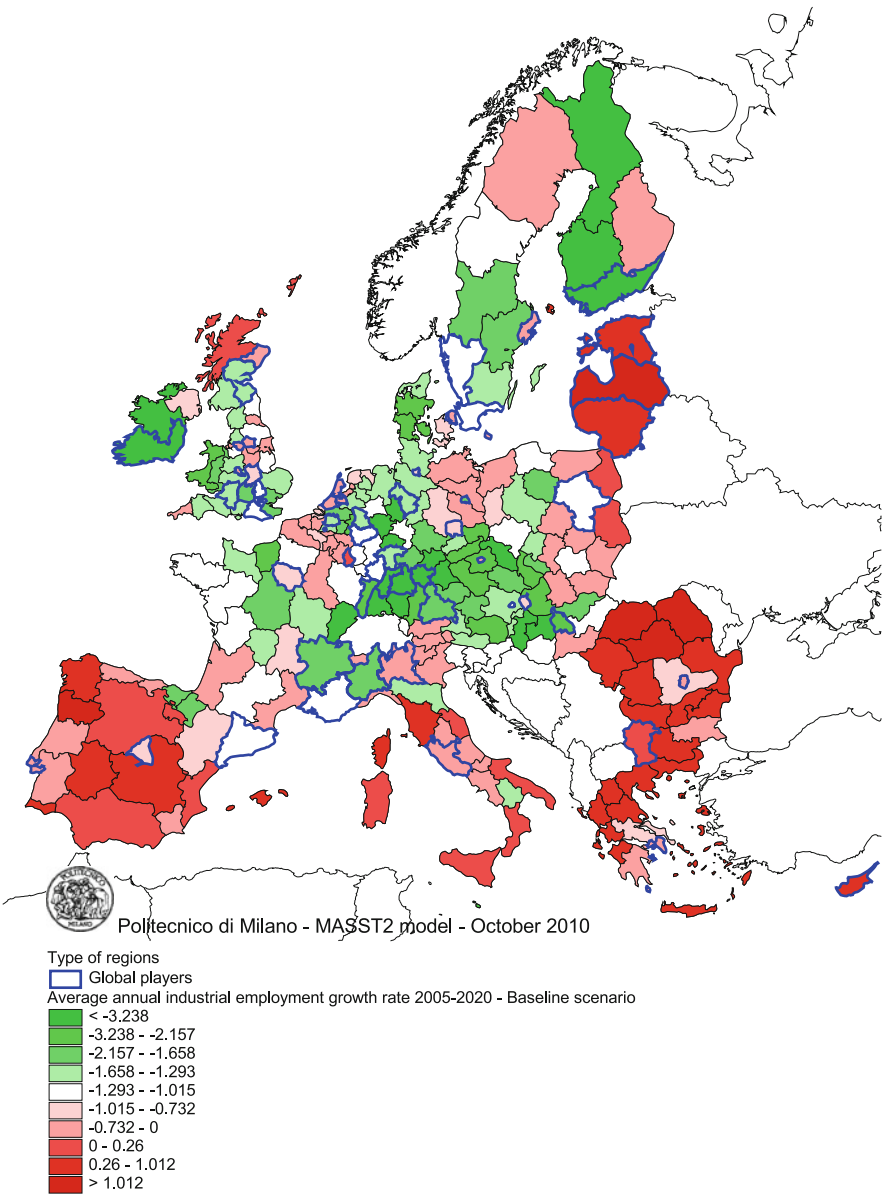
Positive manufacturing employment growth rates are present only in a number of rural, or in any case noncore, regions of Southern Europe, in the Baltic countries, and



Map 10.1 Average annual GDP growth rate in the baseline scenario

in Bulgaria and Romania – these being the last two member countries of the EU, but where positive growth rates of manufacturing employment do not take place in the capital region of Bucharest-Iflov, which is highly specialized in service activities.

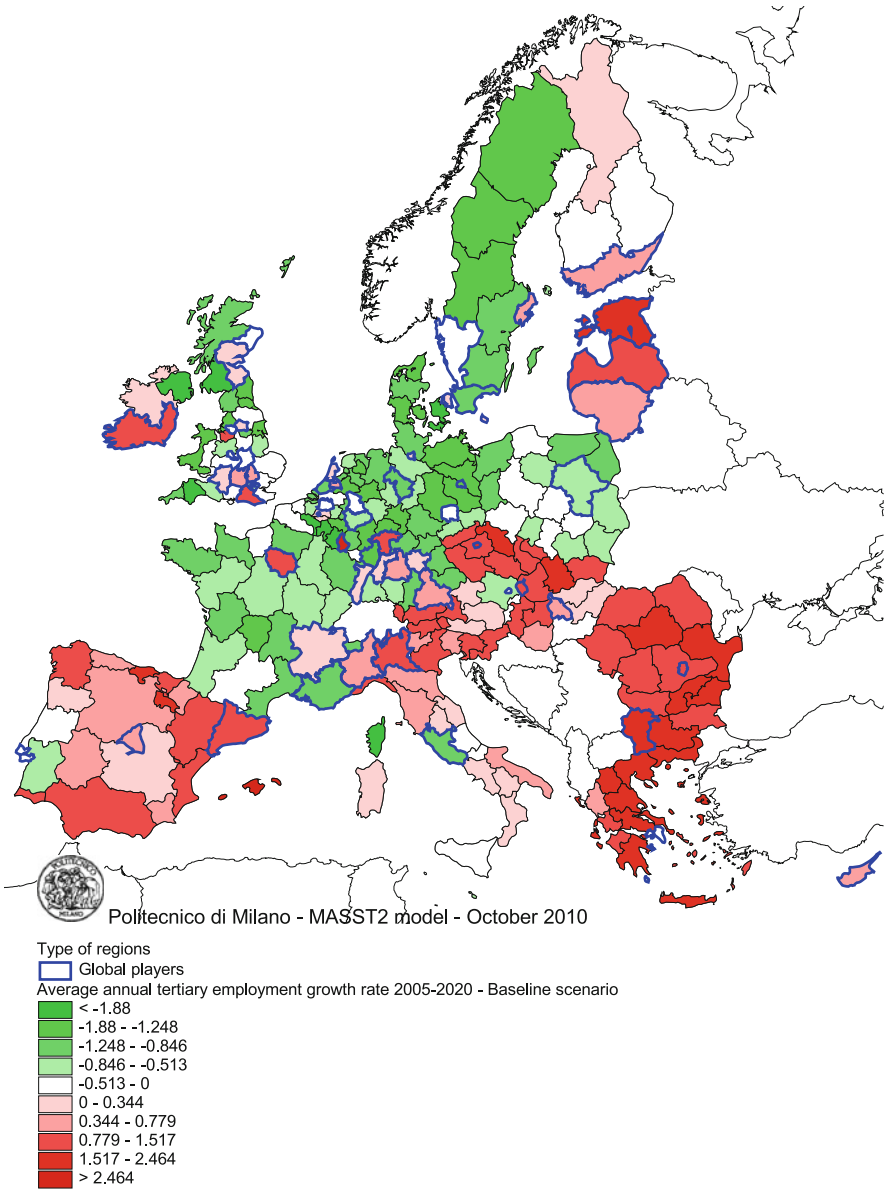
Global players appear to have lower manufacturing employment growth rates on average with respect to the rest of Europe; among them, only Sofia, Luxembourg,



Map 10.2 Average annual manufacturing employment growth rate in the baseline scenario

Cyprus, and the Baltic countries have positive growth rates. Local players, in contrast, have higher growth rates, but still negative on average.

Map 10.3 represents the growth rate of service employment in the baseline scenario. Also here, the results depend on the actual regional specialization, as well as other structural and policy variables. It can be observed that country effects



Map 10.3 Average annual service employment growth rate in the baseline scenario

appear to operate, since the growth of services is higher in Southern Europe, in Ireland, and in most Eastern countries, with the exception of Poland. Notably, within their countries, global players are the regions where most of the increase in services employment concentrates. This applies to almost all countries, and has notable exceptions only in Berlin and Rome, where a lower increase of public services

may be expected. For small regions, such as Brussels and Inner London, the positive effect of the increase of services appears to spread to neighboring regions.

10.4.2 Regional Performance in the Proactive Scenario

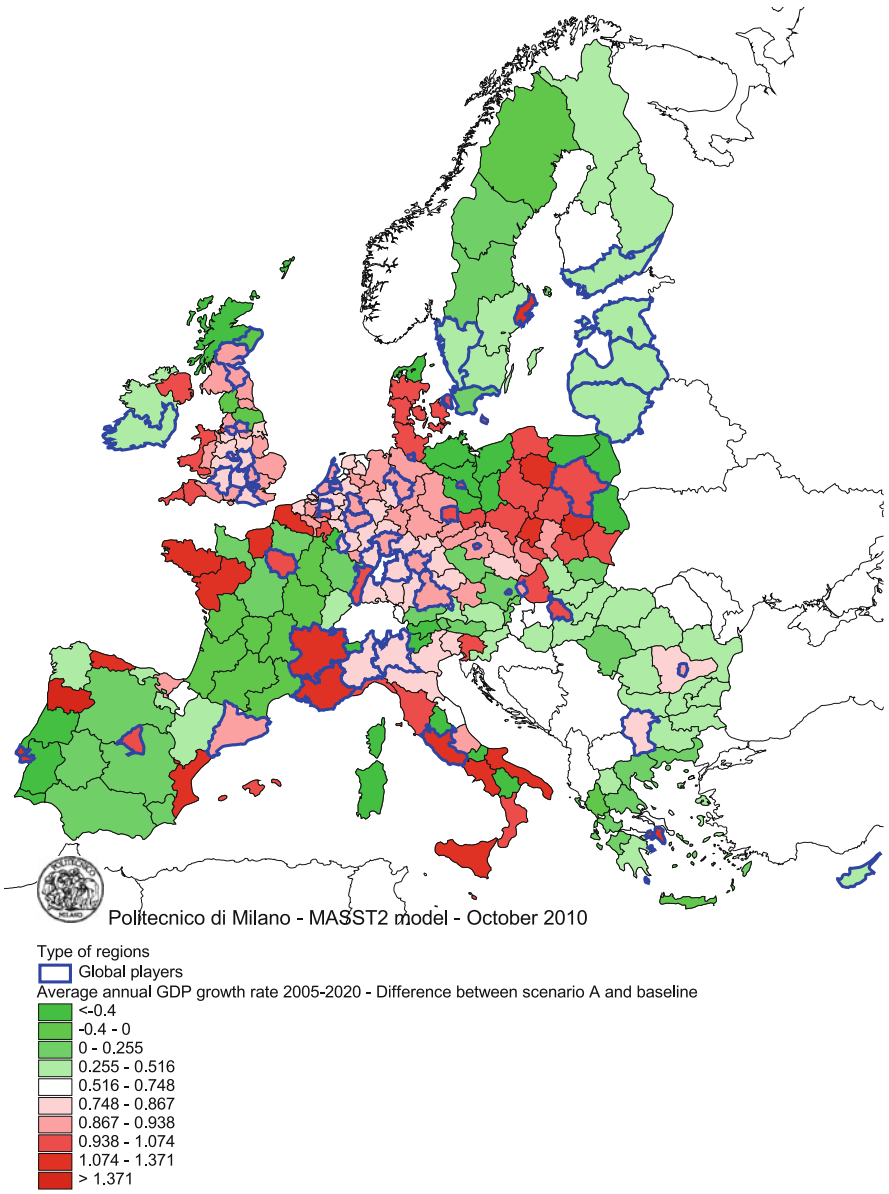
Map 10.4 presents the difference in average annual GDP growth rates between the scenario of "a proactive strategy in a highly competitive world and in a rapid economic crisis recovery framework" (scenario A) and the baseline. This proactive scenario is more expansionary. Excellent and efficient Keynesian policies put in place to overcome the economic downturn in a short time span, and aggressive competitive strategies may explain this positive trend, which is confirmed by the map at regional level: most European regions present growth rates higher than in the baseline scenario.

The benefits of this courageous scenario are fairly uniform within the country in the cases of Germany and Britain, whereas in other cases, such as France, Spain, Hungary, Portugal, Bulgaria, and Romania, they are concentrated in the core areas, with the lagging areas left behind. This applies especially to some rural French, Polish, Portuguese, British, Eastern German, and Italian regions, whose growth rates are even slightly lower than in the baseline scenario. Also, the rural regions of Spain, Greece, Austria, Sweden, Romania, Bulgaria, and Hungary gain only a small advantage in this scenario, but they have in any case GDP growth rates which are higher than the baseline one.

Global regions are those which benefit most from an aggressive scenario and a rapid recovery from the economic crisis. They are among the best performers in Europe, and generally also within their countries. In the cases of Athens, Stockholm, Budapest, Bucharest, and Sofia, they lead the growth of their countries. In other cases, the best performers are global regions of second hierarchical level, such as Leipzig and Hamburg in Germany, or Rhône-Alpes and Provence-Alpes-Côte d'Azur in France.

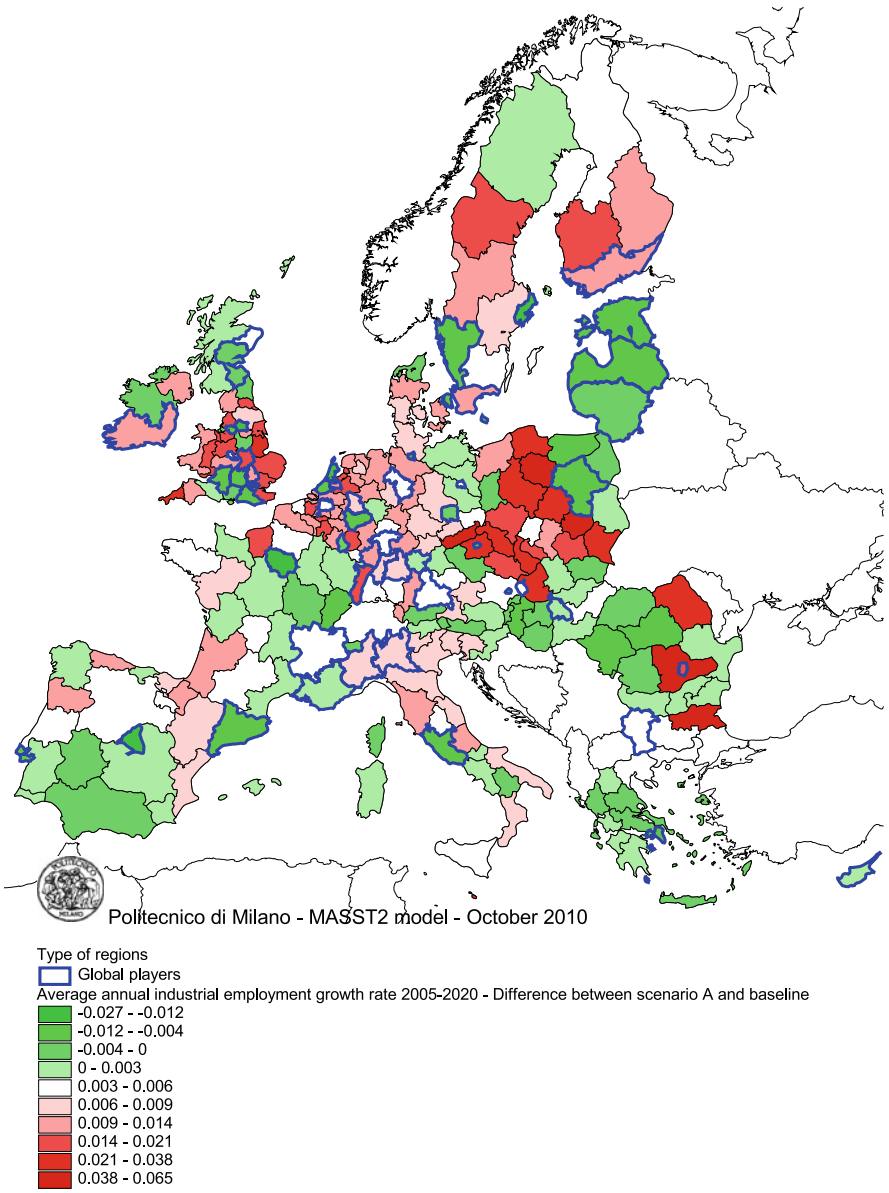
In Map 10.5, the difference of manufacturing employment growth rates between scenario A and the baseline is shown. The scenario A assumption is that at European level, and even in the event of a rapid recovery from the crisis, large employment benefits in the manufacturing sector are unlikely. Nevertheless, some small regional differences with the baseline arise because of the different productive and structural specialization of regions. In particular, many global players appear to lose employment slightly in manufacturing, since their higher GDP growth rates are led, as will be evident below, by the service sector. Other regions, in contrast, appear slightly to increase their manufacturing employment; this being the case of some urban nonagglomerated regions in the Eastern countries of Poland, Romania, and the Czech Republic and in Western countries such as Germany, Belgium, the Netherlands, and the UK.

Map 10.6 reports the difference in service employment growth rates between scenario A and the baseline. In this scenario, service employment grows



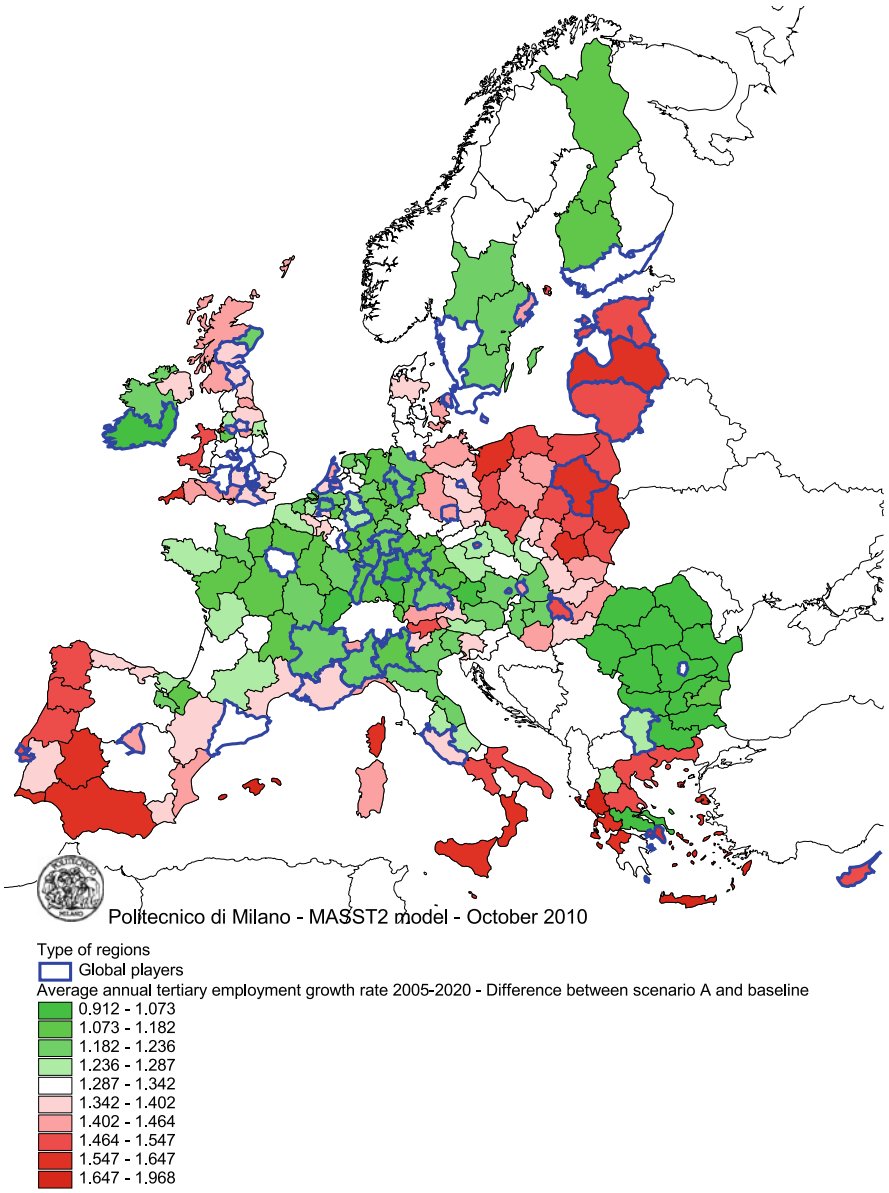
Map 10.4 Annual average GDP growth rate: difference between scenario A and baseline

significantly more for all European regions, especially on the Eastern, Southern, and North-Western fringes of the EU. Different patterns are apparent in the New 12 countries with respect to the Old 15 countries: in the East, service employment growth is more sustained in the capital regions, such as Prague, Warsaw, and Budapest, which are able to attract activities and exploit their superior productive



Map 10.5 Annual average manufacturing employment growth rate: difference between scenario A and baseline

systems. In the West, in contrast, the already service-capital, MEGA, or agglomerated regions appear to be outperformed by other more peripheral regions, whose higher growth rates are apparently due to the development of a later-coming service economy. Among the best performers, however, are also very strong regions such as Vienna, Utrecht, Noord-Holland, Brussels, and Outer London.



Map 10.6 Annual average service employment growth rate: difference between scenario A and baseline

Consequently, being a global player does not automatically entail a higher or lower service employment growth rate. In fact, global regions in Eastern and Southern areas appear to gain more than the average amount of tertiary employment, whereas those in central Europe, notably Germany, but also Lombardy and Piedmont, appear to have high, but lower than average, gains.

10.4.3 Regional Performance in the Defensive Scenario

The scenario of "a defensive strategy in a price-competitive world and in a slow economic crisis recovery framework" (scenario B) is a scenario in which a defensive strategy by the European Union combines with a cost-competitive strategy by the BRICs and a delayed end of the crisis. For this reason, it is no surprise to find that the difference in annual average GDP growth rate with respect to the baseline is negative for almost all European regions (Map 10.7).

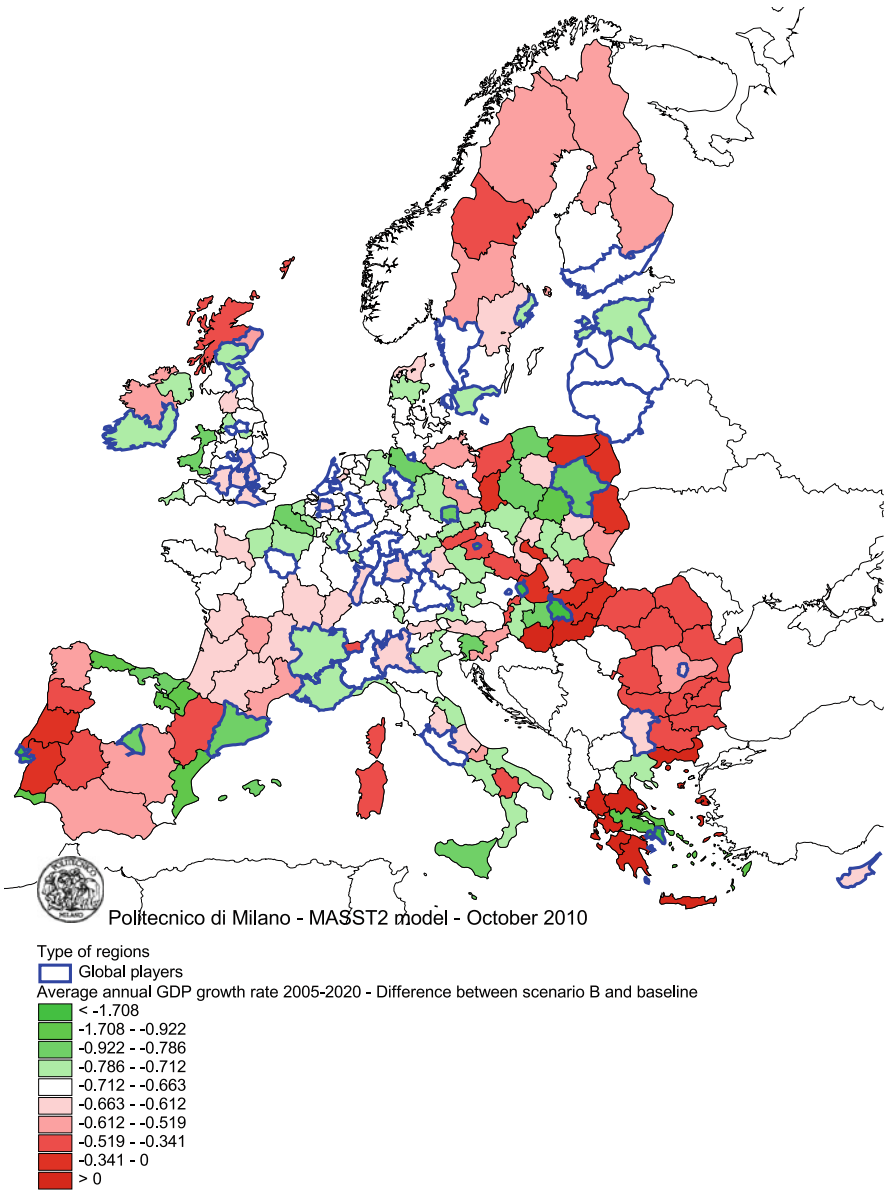
In this scenario, however, some regions are affected by the depression to a lesser extent than others, in particular in the Eastern and Northern countries; also within these countries, MEGA and capital regions are struggling, whereas the most peripheral and rural ones are less affected. Among the regions which survive better in this scenario are the rural peripheral regions of Greece, Spain, and Portugal, where European structural fund expenditure is larger.

Global players are among the worst affected in this scenario, especially Madrid, Cataluña, Lisbon, Leipzig, Athens, and the Eastern capitals of Prague, Bratislava, Budapest, and Warsaw. However, other global players survive with middle-range results: regions such as Munich, Frankfurt, and most Western German global regions, Antwerp, Lombardy, Berkshire, Bucks, and Oxfordshire, and most of the British South-East. Global players are on average the ones most affected, albeit to a limited extent; this may be explained by the fact that, although these regions are more open than the others to the external world, their strong economic structures enable them to deal somehow with the crisis.

Map 10.8 represents the difference of manufacturing employment growth rates between scenario B and the baseline. This difference is negative for all regions, implying a strong manufacturing restructuring process, with just a few exceptions in some regions of Southern Europe. Overall, in fact, it appears that better able to survive the crisis are the Mediterranean regions of Southern Europe in Spain, Portugal, Greece, and Southern France.

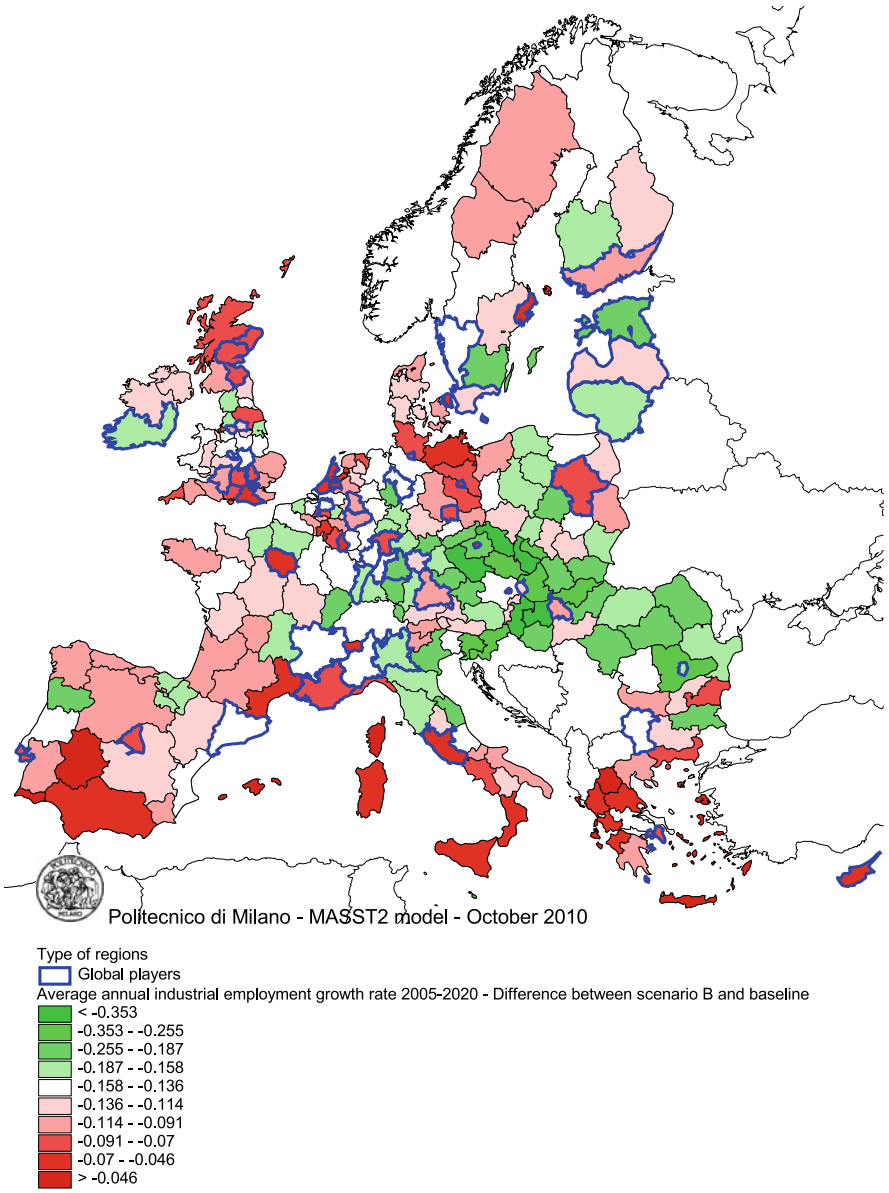
Rural regions in Eastern European countries, in contrast, appear to be the ones that suffer most. This may be due to the fact that, by applying a cost-competitive defensive strategy, these regions are unable to avoid restructuring through job cuts. In this sense, the most advanced Eastern regions, i.e., the capitals, lose fewer manufacturing jobs than the rest of their countries.

Also because of the relatively good performances of Eastern capitals, global players resist this negative pattern slightly better than the rest of Europe. Regional players, on the contrary, perform worst: they are highly specialized in the most open sectors and therefore suffer from this specialization more than local players (which are "protected" by an industrial specialization in nonopen sectors) and more than global players, whose economic structures are stronger. In fact, also in Western countries, global players appear to resist on average better than their own countries, and especially so Paris, Frankfurt, London, Brussels, Rome, Luxembourg, Utrecht, Noord-Holland, and Zuid-Holland.



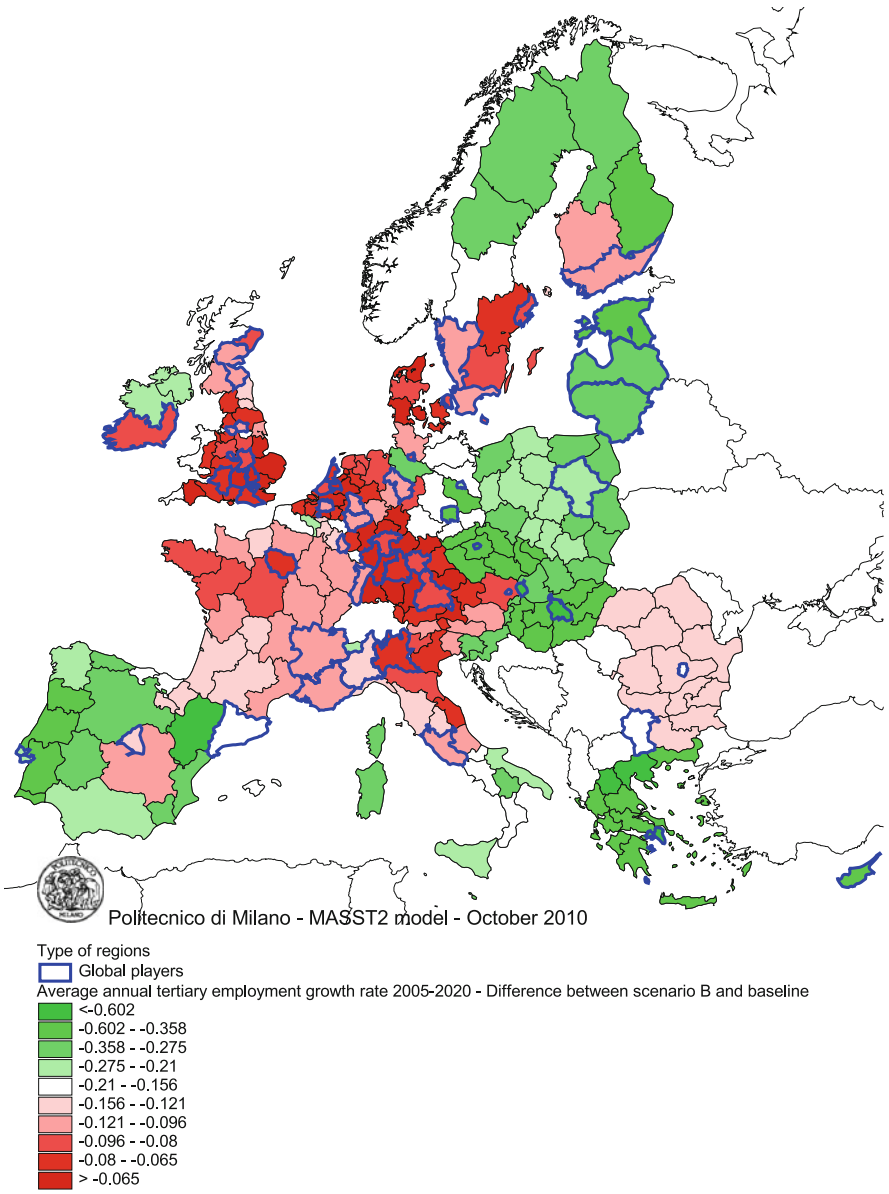
Map 10.7 Annual average GDP growth rate: difference between scenario B and baseline

Map 10.9 represents the difference in service employment growth rates between scenario B and the baseline. In this case, the difference is negative for all European regions, with no exceptions. The pattern appears to be strongly influenced by national effects. New 12 countries seem to be the ones that suffer most, with the exception of Bulgaria and Romania, where the increase in service activities is



Map 10.8 Annual average manufacturing employment growth rate: difference between scenario B and baseline

a process which is still ongoing. In the Old 15 countries, Spain, Portugal, and Greece are those with the largest decreases of service employment in scenario B with respect to the baseline, bearing in mind, however, that they were among the best performers in the baseline.



Map 10.9 Annual average service employment growth rate: difference between scenario B and baseline

Service employment growth is negative but to some extent resilient in central Western Europe, particularly in Britain, Denmark, France, Northern Italy, and Western Germany. In all these countries, global players perform better than average, especially in the cases of Utrecht, Bedfordshire, and Hertfordshire, Berkshire,

Bucks, and Oxfordshire, Lombardy, Karlsruhe, Rheinhessen-Pfalz, and Ile de France. Also, other urban nonagglomerated regions perform relatively very well, especially in Britain and Western Germany.

10.5 Regional Disparities in the Three Scenarios

10.5.1 The Evolution of Regional Disparities in the Three Scenarios

Because the performances of regions are highly differentiated, the three scenarios also differ in terms of disparities at European level. As was done in Chap. 6, the total regional disparities have been divided by means of a Theil decomposition into three parts: a between-country one, a within-country one, and another one between Old 15 and New 12 countries (Fig. 10.4).

Note that the division into these three groups is necessary because Chap. 6 has already shown that a large part of EU disparities still depend on the divide between the richer Old Western members and the still poorer New Eastern members. On looking at the three scenarios, it is interesting to observe that, as expected, the scenario with the largest amount of disparities is the proactive one, where those regions and those countries most endowed with local resources are better able to grasp the opportunities of globalization. Quite surprisingly, however, the second scenario for total disparities is not the intermediate baseline, but the defensive one.

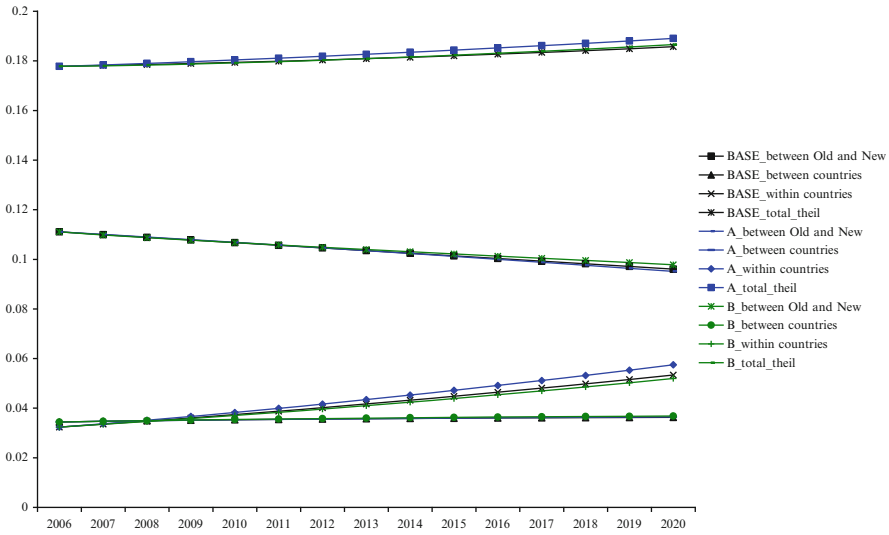


Fig. 10.4 The evolution of regional disparities in the three scenarios
Source: calculated by the authors on simulation results

As already shown by Table 10.1, the regions belonging to New 12 countries suffer more in this scenario because they are in more direct competition with low-cost emerging countries, which makes disparities between Old and New members decrease to a lesser extent.

In any case, all three scenarios show increased regional disparities overall. Contrary to a reduction of the divide between East and West due to the fact that the former outperform the latter in all three scenarios, there is a slight growth of between-country disparities and a much more marked growth of within-country disparities. As already shown by the maps, stronger agglomerated and MEGA regions tend to outperform other regions, and this induces intranational disparities to increase.

In particular, disparities between Old and New member countries decrease in Scenario A to a slightly lesser extent than in the baseline because the former scenario is slightly less expansionary for Eastern countries. Between-country disparities are substantially stable in the three scenarios, though slightly increasing more for the proactive scenario with respect to the baseline and defensive ones. Finally, within-country disparities are, on the contrary, increasing, and they decisively exceed between-country ones – especially in Scenario A – which benefits the strongest regions within each country.

10.5.2 Disparities Between and Within Types of Regions

If the role of European integration can be detected from the disparities generated by the East–West divide, the role of external global forces can be seen in the part of divide which is accounted for by between-type Theil index.

a) Between and within types in the three scenarios

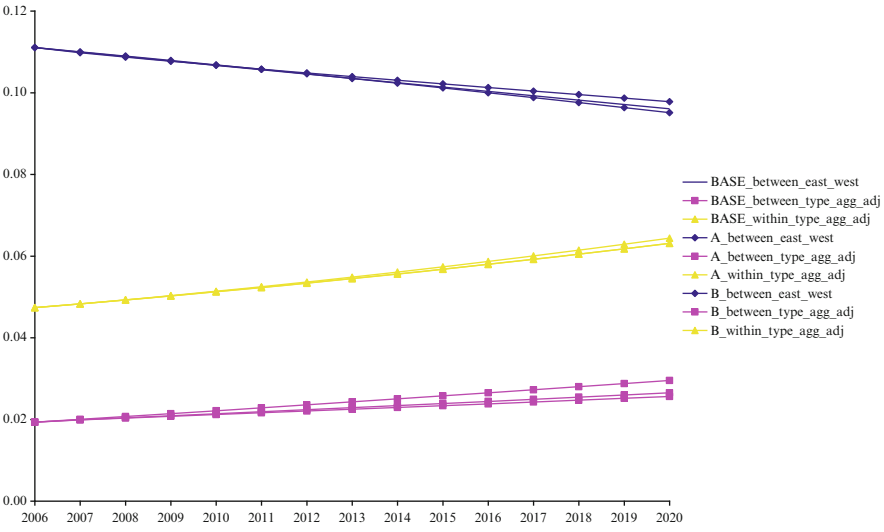
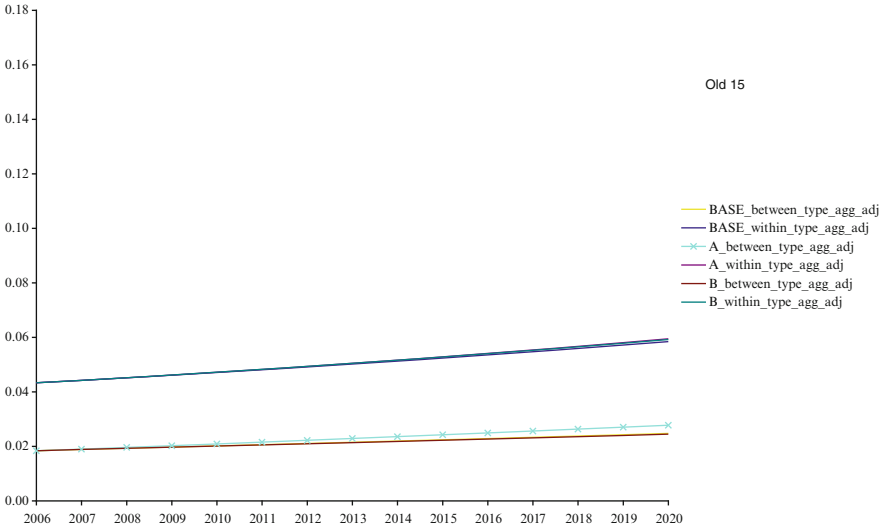


Fig. 10.5 The evolution of regional disparities
Source: authors' calculations on simulation results

b) Between and within types in Old 15 countries in the three scenarios



c) Between and within types in New 12 countries in the three scenarios

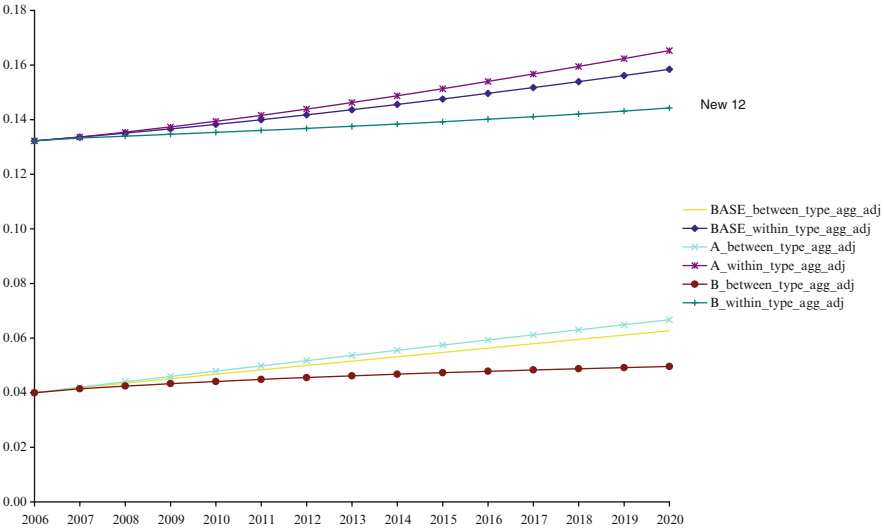


Fig. 10.5 The evolution of regional disparities – Continued
Source: authors' calculations on simulation results

As was done with actual historical data in Chap. 6, total disparities have again been decomposed into East–West, between types, and within types (Fig. 10.5a). As said in Sect. 10.5.1, the East–West divide still accounts for the majority of disparities, albeit with a decreasing path, which is more marked in Scenario A. Disparities within types (i.e., purely regional disparities not necessarily linked to

globalization) are important and growing, more markedly so in the proactive scenario, which favors regions able to compete. However, also disparities between types of regions are important and increasing, and once again more in scenario A, which has higher growth rates for global regions (Table 10.2). These two effects arise because, on the one hand, the different types have different average performances, and, on the other hand, because there is a strong differentiation of performances between regions belonging to the same typology.

As with the historical data, however, the pattern may be differentiated between Old 15 and New 12 regions, because in the past the New member states experienced marked growth of within-typology disparity which was not present in the Old members. As can be observed in Fig. 10.5a, b, the Old 15 countries have much lower disparities both between and within countries, and the three scenarios exhibit very similar patterns in which both types grow but not significantly. The New 12 member countries, in contrast, are characterized by more marked internal disparities, both within and between types (Fig. 10.5c). Moreover, these disparities grow significantly in all the three scenarios, and especially in scenario A, where global forces are left to exert their effects and induce growth for those countries able to grasp their opportunities. Very interesting is the fact that in Eastern countries, between-type disparities are almost flat in scenario B, the defensive one in which global forces are restrained, whereas they are steeper in the baseline and much steeper in scenario A. This is because a defensive strategy is weak for all types of regions, whereas a proactive one exerts its positive effects mainly for those regions able to grasp opportunities, i.e., global players, which in the East tend to coincide with the capital regions.

It is therefore possible to conclude that, as expected, the role of globalization in regional disparities is much more important in a proactive scenario than in a defensive one. Moreover, the role of global forces in regional disparities appears to be much more important for Eastern countries with respect to Western ones, a result which was probably less to be expected but is plausible. In Eastern countries, in fact, the divide between regions in terms of their capacities to attract FDI and to play a role in the international economy is still substantial.

10.6 Conclusions

This chapter has analyzed the simulation results of the three scenarios in the MASST model. On aggregate, it has evidenced that the scenario of "a proactive strategy in a highly competitive world and in a rapid economic crisis recovery framework" is the most expansionary one, because of the effects of rapid recovery from the crisis and the courageous strategies implemented by European countries, followed by the baseline scenario, and by the least expansionary scenario of "a defensive strategy in price-competitive world and in a slow economic crisis recovery framework."

However, this chapter has also shown that the three scenarios do not exhibit the same effects for all countries and regions since, for example, at national level the New 12 member countries appear to outperform the rest of Europe in all the three scenarios, but they are unable to gain as much as the Old 15 countries in the proactive scenario and, at the same time, lose more than their Old 15 counterparts in the defensive scenario.

Also at regional level, the three scenarios are non-neutral, even if in all three of them the strong regions generally outperform the weak regions of their respective countries, as evidenced by the increase in the within-country Theil index. In particular, global players outperform the rest of the EU in all three scenarios but especially in the proactive one, where they are able to unleash their potential, whereas they suffer more in the defensive scenario. Moreover, the growth of global players appears to be mainly due to service employment, whereas regional players lose many more jobs, and local players, protected by a closed economy, maintain their jobs but with poor productivity performances.

All these macroeconomic results also have implications for regional disparities, which are increasing. A steep rise of intranational disparities weakens the East–West divide. Moreover, disparities increase both within and between regions with a different degree of international integration, signaling that regional disparities are not only a matter of Eastern–Western divide, but also of globalization openness divide.

These are all factors which call for tailor-made regional policies, as will be shown in the next and concluding chapter.

Chapter 11
Towards a Conclusion: Policy Implications

11.1 Introduction

This chapter examines the potential new role and style of regional policies in the European Union (EU) in the context of the different globalization strategies highlighted in the previous chapters. Regional policy suggestions are derived deductively from interpretations of the results of the empirical analysis on both the past and the simulation exercise. The latter has been based on different scenarios concerning the evolution of macroeconomic, structural, and technological forces unified into a few stylized "strategies" adopted by the main global player countries and by the European Commission, and framed by alternative assumptions on the duration of the economic crisis.

Much can be learnt from past experience, from the weaknesses and strengths identified by the empirical analyses on the effects of globalization on regional performance, interregional imbalances, and their economic and social costs. These lessons can provide the basis for reorienting regional policies and strategies toward more efficient visions and styles.

Moreover, future expectations in regard to different competitive strategies resulting from differentiated globalization patterns reinforce policy suggestions by highlighting different growth opportunities for different types of regions causing different, and sometimes unexpected, interregional imbalance trends. It is true that the strategies on which the scenarios are based encompass different regional policies – transport and energy policies favoring some kinds of regions more than others, emerging vs. advanced regions, global vs. local regions – but these policy choices derive mainly from very general, political and strategic decisions, rather than from a determination to address specific territorial issues. Policy suggestions are instead derived in this chapter from the empirical results by deduction.

Finally, discussion will be conducted on the role that structural, long-term, supply-oriented policies play in a period of economic downturn that naturally calls for short-term demand intervention strategies.

R. Capello et al., *Globalization and Regional Growth in Europe*,
Advances in Spatial Science, DOI 10.1007/978-3-642-19251-7_11,

11.2 The Role of National Policies in a Period of Globalization

One of the main ideas behind our analysis is that national performance explains much of regional success and failure, especially in a period of tougher competition at the world level. The explanation of this starting point is twofold (Camagni 2008). As suggested in Chap. 6, among the causes of regional success and failure are factors which are directly linked with certain pervasive and generalized characteristics of the national economy. We refer in particular to institutional factors such as the performance of the high functions of the nation-state – legislative, judicial, and governmental; to organizational factors such as the efficiency of services of general interest such as education, transportation, communication, health and security services; to economic factors such as general fiscal pressure, the effectiveness of public expenditure, the pervasiveness of environmental regulations, and the efficiency of contract enforcement procedures. Once competition is at world level, the international disparities in legislative, judicial, and governmental factors, as well as in the efficiency of public services widen dramatically; as a consequence, the role of these elements in regional growth explanations grows.

A second element linking regional economies with the national economy's general performance is close interregional, within-country integration, relative to international integration, in terms of the exchange of goods, services and production factors, due to proximity effects and the absence of any kind of institutional or linguistic barrier.

This idea is reflected in our conceptual and empirical approach. Conceptually, one of the distinctive features of our regional forecasting macroeconomic, sectoral, social (MASST) model is that it pays direct attention to national performance and trends and their impact on regional performance, together with close emphasis on the importance of territorial specificities in determining regional destinies.

But, especially, our idea finds evidence in empirical analyses, both on the past and the future growth trajectories. Past experience shows that benefiting regions within Europe experience an Eastern–Western divide; moreover, within the two blocks of European countries, clear national trends emerge, with most of the regions of the same countries exhibiting similar growth patterns. This result holds for all kinds of regions regardless of their exposure to globalization patterns, their economic specialization, or their territorial settlement structure.

The interpretative analysis explaining the endogenous success factors of regional growth reminds us that most of regional performance is explained by national growth, and that endogenous local assets account for only 20% of the regional growth variance.

Moreover, the competition to attract both intra- and extra-FDI characterizes regions belonging to relatively better performing countries within Europe, rather than regions registering higher regional performance with respect to their nation. Foreign firms' location strategies are influenced first and foremost by efficient national systems, rather than by single regional dynamic entities.

Finally, our empirical analysis on regional growth in the EU between 2002 and 2005 shows that almost all countries exhibit standard deviations in interregional growth rates, which are lower than the international standard deviation of growth

Table 11.1 Differentials in inter-regional GDP growth rates between 2002 and 2005

Geographical unit of reference	Standard deviation	Minimum	Maximum	Range
EU 27	1.74	0.54	8.81	8.28
Austria	0.34	1.34	2.48	1.13
Belgium	0.80	0.54	3.64	3.10
Bulgaria	2.47	1.15	7.53	6.37
Cyprus	–	3.35	3.35	–
Czech Republic	1.34	3.59	8.08	4.49
Denmark	1.10	0.15	3.29	3.14
Estonia	–	8.54	8.54	–
Finland	1.20	0.04	3.39	3.35
France	0.77	0.59	3.18	2.60
Germany	0.54	−0.87	1.81	2.68
Greece	1.73	−0.31	6.35	6.66
Hungary	1.50	1.95	6.43	4.48
Ireland	1.37	4.45	7.12	2.67
Italy	0.63	−0.88	1.80	2.68
Latvia	–	8.52	8.52	–
Lithuania	–	8.81	8.81	–
Luxembourg	–	3.99	3.99	–
Malta	–	1.08	1.08	–
Netherlands	1.06	0.49	3.82	3.32
Poland	0.98	2.36	5.57	3.21
Portugal	0.57	−0.27	1.62	1.89
Romania	1.10	3.86	6.94	3.08
Slovakia	2.40	2.44	8.43	5.99
Slovenia	0.46	3.30	4.21	0.91
Spain	0.64	2.28	4.80	2.53
Sweden	0.85	1.58	4.23	2.65
UK	0.96	0.66	4.67	4.01

Source: authors' calculations on Eurostat data

rates of EU 27 countries. This is particularly the case of the Old 15 countries (Table 11.1). On the contrary, all New 12 countries record a greater variability of internal regional growth rates, thus lending support to expectations *à la* Williamson that there will be increasing interregional disparities in the first phase of a development or integration process (Williamson 1965).

All these theoretical and empirical reflections remind us that national policies play a decisive role in identifying regional growth destinies; the way in which regions conquer a role in the international division of labor very much depends on the capacities of countries to compete in the international arena through, also, efficient national policies.

At first glance, this statement suggests that national policies provide the same growth opportunities to all regions in the country. But national policies are not space invariant: interest rate policies, monetary and fiscal policies driving movements of the exchange rate, but also such policies as transportation and Transnational European Network (TEN) policies, excellence policies in R&D, and agricultural policies, exert selective effects on different types of regions because of a wide array of transmission channels or preferential regional targets. They therefore contribute strongly to the economic performances of regions.

Some cases are easy to understand because they are conceptualized as impacting on selected regions: agricultural policies provide direct support to rural regions which, at present, are often among the richest ones, at least in many Old 15 countries. Transport policies are naturally biased in favor of stronger regions, where most of the favorable preconditions for successful competitiveness policies are in place, and where the demand for new transportation infrastructure is greater, and guarantees the highest economic return to investment.

Macroeconomic policies, by contrast, are apparently neutral *vis-à-vis* regional growth opportunities. Yet, for reasons of differentiated productive specialization, selective effects are visible in this case as well. In fact, a rise in interest rates is likely to have the greatest impact on regions specialized in capital-intensive sectors such as manufacturing and building and construction. A similar effect may be expected to ensue from a real revaluation of the currency, which generates wider tensions in industries and regions characterized by a greater degree of openness to international trade. Furthermore, revaluation is likely to hit more, *ceteris paribus*, those regions specialized in labor-intensive industries, because it raises labor costs expressed in international currency (while the cost of capital will remain unchanged at the level determined internationally, especially if the revaluation is indicative of a strong and potentially fast-growing economy).

Map 11.1 presents the simulation of an expansionary public expenditure policy run through the MASST model. In general, this policy is expansionary throughout Europe, but the effects are generally stronger in the four old Cohesion countries, the Italian Mezzogiorno and Eastern Germany. Relatively expansionary effects are registered also in the New 12 member states of the EU, and in the rural regions of the West.

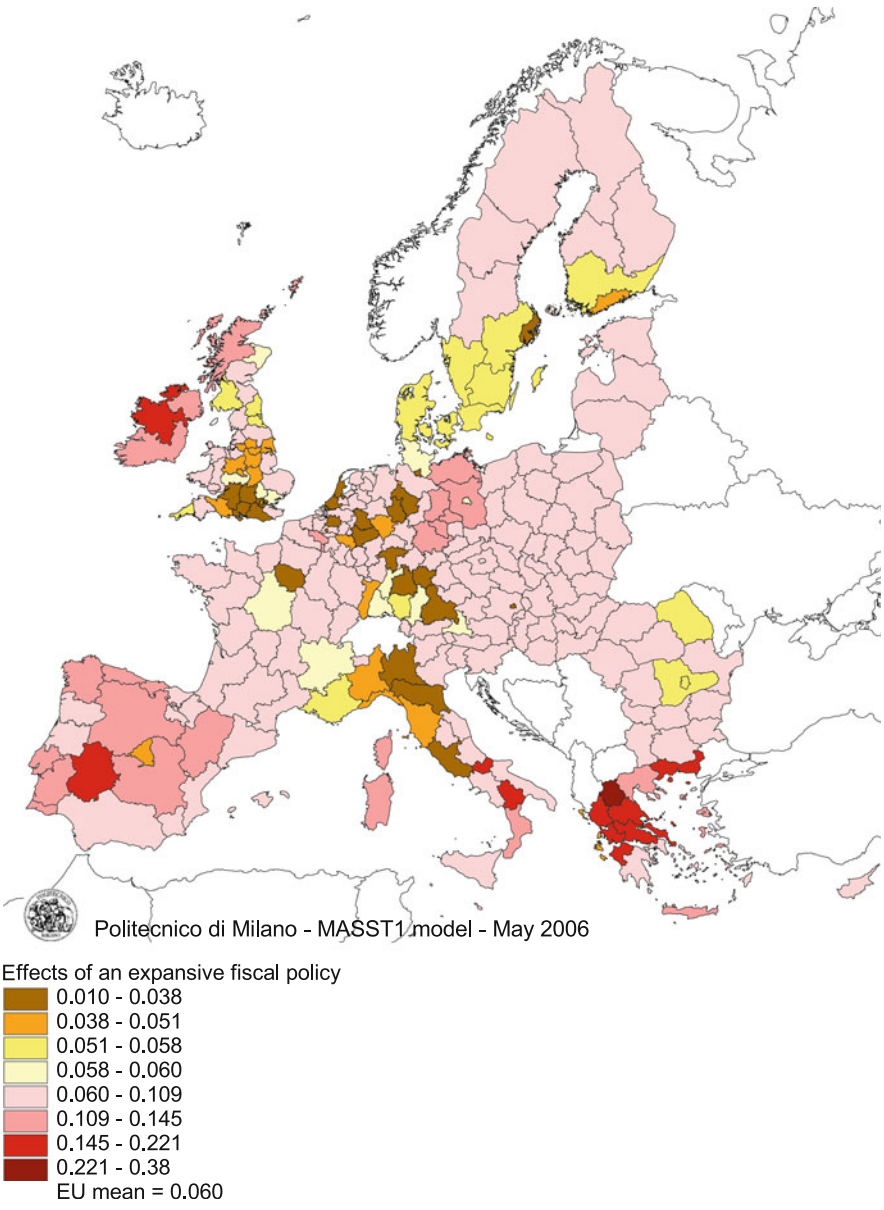
The capital city regions and agglomerated areas of the United Kingdom, Germany, France, Belgium, the Netherlands, Italy, Finland, and Sweden also gain very little from this expansionary policy.

These considerations justify careful inspection and monitoring of the regional effects of certain aggregate and structural policies managed at the national and EU level, especially in a period of crisis that requires large injections of public funds into national economies.

11.3 The Role of Regional Policies in a Period of Globalization

11.3.1 Territorial Capital: The Need for Regional Tailor-Made Policies

Besides the national component, regional performance is also explained by each region's internal development capability. Through the interpretation of this endogenous capability, spatial economic theory has shown the following paradigm shifts over the last few decades (Camagni 2008) (Map 11.1):



Map 11.1 Spatial effects of an expansionary fiscal policy. (Annual percentage GDP growth rates)

– From development (or even location) factors to innovation factors (Ewers and Wettman 1980; Camagni and Cappellin 1985; Cappellin and Nijkamp 1986).
– From hard to soft factors residing either in intangible, atmosphere-type, local synergy and governance factors (Bagnasco 1977; Brusco 1982; Becattini 1990; Camagni 1991a), or in human capital and knowledge assets (Foray 2000).

– From a functional to a cognitive approach (Boschma and Lambooy 1999; Boschma 2005; Capello 2009), the latter underlining that cause–effect, deterministic economic relationships should give way to other kinds of complex, intersubjective socioeconomic relationships, which impinge on how economic agents perceive economic reality, are receptive to external stimuli, can react creatively, and can cooperate and work synergetically.

An effective conceptual and comprehensive summary of strategic local assets for endogenous growth, rooted in all interpretative paradigms, has been recently proposed with the concept of "territorial capital" (OECD 2001).

In the scientific context, this concept has been formulated in an innovative way by stressing at the same time two important aspects of the wide spectrum of territorial assets that might influence territorial development (Camagni 2009). On the one hand, particular attention has been paid to the nature of public vs. private goods of territorial assets; this dichotomy explains much of the differences in the law of accumulation and exploitation of these assets, and of the returns on investments that these assets yield. On the other hand, the conceptual proposition of territorial capital stresses that the latter encompasses not only just material assets, typical production factors such as infrastructure, private production assets, human capital, technological and managerial knowledge, but also nonmaterial and relational ones in the form of "industrial atmosphere" elements, trust, and cooperation. The presence of material assets does not exclude the presence of nontangible, relational ones; on the contrary, they co-exist, and when this occurs the latter reinforce the former in their generation of increasing returns to growth, giving rise to cumulative self-reinforcing patterns of growth. In an innovative way, the concept of territorial capital encompasses at the same time a functional and a cognitive approach, stressing that material assets are able to generate their highest efficiency on growth when nonmaterial, cognitive assets, such as trust, cooperation, sense of belonging, are present.

Territorial capital matters in the explanation of regional growth differentials, and this is reflected in our empirical analysis. Despite their similar degrees of exposure to the external world, global regions show very diverse receptivity to globalization. Especially, the economic performance of these regions is strongly dependent on the endowment of local strategic assets, such as FDI attraction, innovation capability, and high-level functions. Among global regions, "benefiting regions" – defined as those regions able to maintain and even reinforce their competitive positions in the European economy thanks to globalization processes – are those endowed with command and control functions, a dynamic productive structure, high-value-added manufacturing production, localization economies, and location attractiveness with respect to nonbenefiting global regions. Among global players, the winning regions exhibit a strong correlation between the presence of high-value functions and innovation capacity and productivity gains (Figs. 11.1 and 11.2).[1]

[1]Winning regions are those identified by the cluster analysis on global regions in Chap. 6.

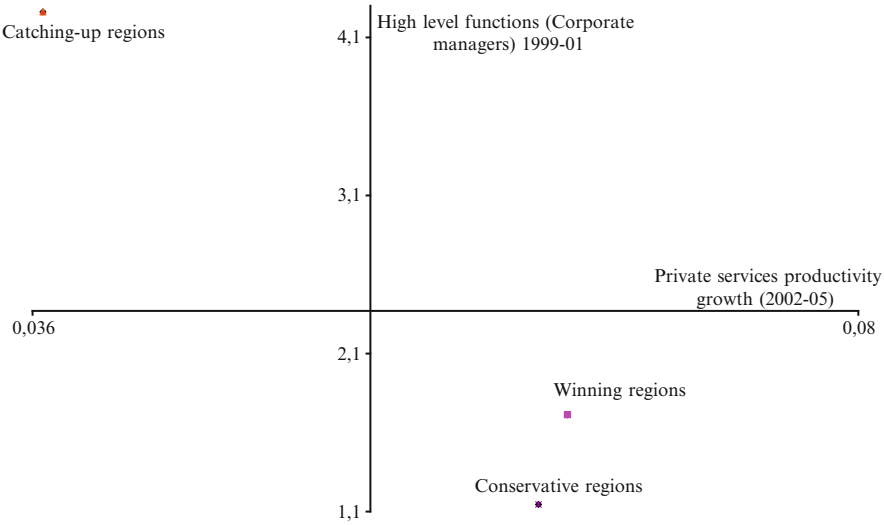


Fig. 11.1 Relationship between high-value functions and private service productivity growth for global players
Source: authors' results from the cluster analysis

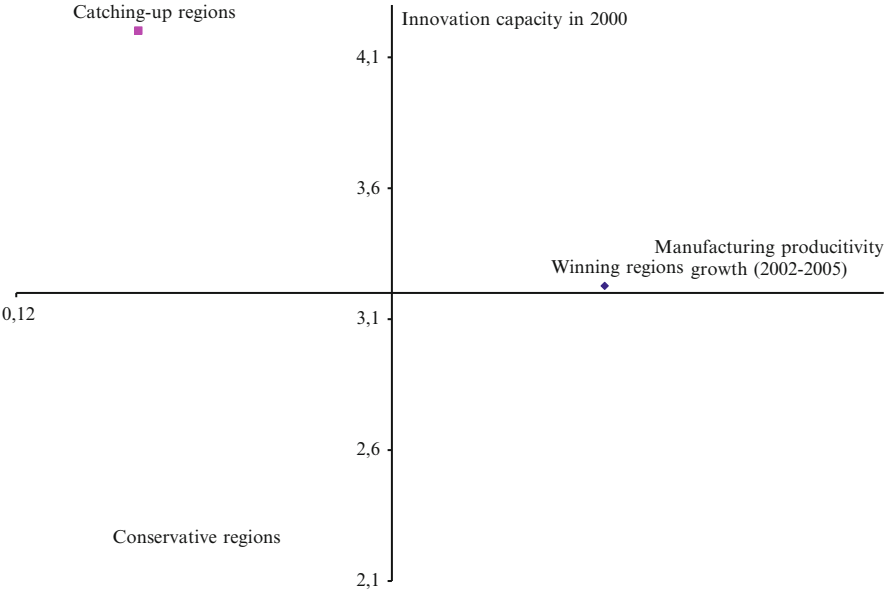


Fig. 11.2 Relationship between the presence of human resources in S&T and the growth of manufacturing productivity for global players
Source: authors' results from the cluster analysis

Different territorial capital characteristics are associated with "benefiting regions" among regional players; the success of these regions – integrated with the rest of the world only from the point of view of their productive structure – resides in the presence of medium-tech manufacturing activities, the availability of specialized, second-level-qualification manpower, the capacity to attract FDI, and intermediate-level service functions.

A second consideration stems from the result that global and regional benefiting players ground their success on different elements of the territorial capital. This suggests that the two types of regions play different roles in the international division of labor. Global players are called upon to play a role of leaders in their national economies, competing to become international locations of advanced functions and sectors, attracting knowledge, and high-skilled human capital. By contrast, in the case of regional players, regional policies should be designed to help them become the most attractive areas for medium-tech activities and functions both in industry and in services, bearing in mind that direct competition with the global regions would be detrimental for regional players.

These results recall the importance of regional policies tailored to the *uniqueness* of places, reinforcing local assets, and core competences already present in the area. "*Turning Territorial Diversity into Strength*," the title of the Green Paper on territorial cohesion issued by the EU (CEC 2008) summarizes the notion, stated some 15 years ago in similar terms ("turning specificities into assets") (Camagni 2001), that regions should build their competitive advantages from below, investing in their particular competences, resource endowments and even weaknesses (such as *in*accessibility, if this means conservation of an unspoilt environment), renovating their productive "vocations" and cultural assets. This is still valid today; and even more so in an era of globalization in which local specificities allow regions to emerge and compete in a global economy.

Regional policies should therefore be oriented to supporting regional growth not according to the needs of each region, but to the innovative projects and ideas that each region builds around its uniqueness.

11.3.2 Regional Policy Style

Each region's internal development capability is a crucial component of regional performance, and regional policies should be rooted in each region's winning assets.

However, our empirical results tell us something more about regional growth patterns. The latter, in fact, can easily be associated with different strategic behavioral patterns. Our analysis shows that global players benefiting from globalization avoid a simple quantitative substitution effect between industrial and service jobs; they accompany an increase in service jobs with an increase in private service productivity. Moreover, global players cope with a negative increase in manufacturing employment by increasing productivity: they are able to attract FDI to their sector of specialization. The winning global players are also characterized by dynamic efficient urban systems

with high command and control functions, and by the presence in the area of large enterprises playing a leading role in the national economies.

The profile of an Eastern benefiting regional player is that of a regional economy able to reconvert its industrial activities toward the most dynamic manufacturing sectors (not particularly high-tech ones), where gross domestic product (GDP) growth is achieved, not through productivity increases, but through strong advantages in industrial restructuring and entrepreneurial capacity. The dynamic of the industrial sector is accompanied by a dynamic of the service sector, which is not particularly advanced but closely integrated with the industrial system. In Western countries, winning regional players are highly specialized in small and medium-sized enterprises (SMEs), which maintain high-level functions, and are thus able to develop product innovation and be competitive. Interestingly, they are not specialized in the high-value functions of large firms, which on the contrary are typical of global players. They specialize in medium-tech industries and are therefore successful because they do not compete with the global players.

These results also highlight the importance of policy goals and policy style. Over time, policy goals in regional development studies, together with the theoretical approaches explaining regional growth determinants, have changed in the following sequence: the implementation of infrastructure as a precondition for growth in the 1950s, attraction of external activities and export industries in the 1960s, endogenous development driven by SMEs in the 1970s, endogenous creation of innovation in the 1980s, knowledge base and cultural elements in the 1990s, and relational capital in the 2000s. Relational capital is devoted to creating synergies, promoting cooperation and partnership, and exploiting the richness of local relationships that define a productive "vocation," local know-how and a local culture.

All these success factors act on intersectoral productivity and, as our empirical analysis on success factors showed in Chap. 6, they are important for the growth of regions of all kinds. What makes the difference between a growing and a lagging region is the endowment of those success factors with greater impact on growth.

All these success factors should increase productivity growth through innovation, where innovation is not understood merely as the degree of R&D produced by a region, but in a more general sense as all efforts devoted to increasing knowledge, fostering industrial transformation, developing local capabilities to cooperate synergically with other regions, and inventing new organizational solutions at both the firm and the public governance levels. Once again, sectoral policies to support innovation *tout court* do not pay. A change in policy style is required: integrated, interindustry, pervasive policies should be devoted to preparing territories for innovation, enhancing their adaptability to a changing external context, promoting their openness and receptivity to new business ideas and organizational styles, rather than forcing the locational decisions of single firms; and they should negotiate the terms for fruitful cooperation between territories and firms, rather than merely supply favorable location factors.

Intangible factors can be considered the targets for a renewed and modern territorial development policy. They implicitly refer to the most important "soft" components of the "territorial capital"; as mentioned before, their presence ensures

greater efficiency in traditional productive factors, and cumulative self-reinforcing endogenous regional growth patterns.

From what has been said it is evident that mere assistance policies with a short-term job-creating aim reflect an outmoded vision of territorial development. At the least, an employment-creating strategy should be coupled with productivity increase policy aims. This twofold strategy can be achieved when it is applied either in sectors in which the region is specialized, where core competencies and specific local assets are present, or in high-value sectors such as advanced services, which entail productivity gains by definition. Figure 11.3 depicts two regional trajectories to achievement of these two policy goals; the first (a) envisages a pattern, which goes from increased employment growth in indigenous activities to an increase in productivity growth in these sectors; the second (b) highlights a trend of increased productivity growth in new sectors and activities, followed by increased employment in the newly established sectors.

Both trajectories end with a situation defined by a higher productivity growth rate and a higher employment growth rate. Trajectory (b) requires a courageous strategy for the rationalization of local inefficient activities and creation of new high-value sectors and activities. By contrast, trajectory (a) is rooted in indigenous activities and preserves local core competences, and over time increases employment and productivity, the latter at a slower pace than the former. An implicit risk is associated with trajectory (a): that of achieving higher increases in employment, easily obtained even with assistance policies, without forcing the economic system to achieve higher growth rates in indigenous activities, so that a move to the upper quadrant of Fig. 11.3 is prevented. A regional policy of this kind does not generate the competitive conditions for a local economy to be able to withstand fiercer international competition.

The shift of a local economy from a simple job-creating policy to a complex productivity increase strategy in indigenous activities is relatively simple if the local economy is specialized in capital-intensive advanced sectors and activities. When, instead, indigenous activities are related to labor-intensive sectors, regional policies must be devoted to facilitating a transition to higher-efficiency functions and

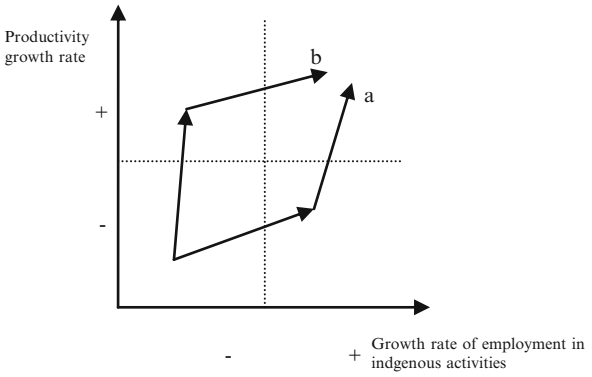


Fig. 11.3 Possible regional growth trajectories

activities, enlarging the *filière* to include advanced complementary activities (e.g., design, product innovation, marketing) located upstream and downstream from the core production. Many examples of the successful application of this strategy can be found in the real world: in Europe, for instance, the capacity to move upstream of the production chain and specialize in knowledge-economy activities has been the key to success for local economies such as the Stockholm and Barcelona regions.

11.3.3 The Rationale for Regional Policy

A final consideration in regard to regional policies concerns their rationale. The strongest argument in favor of regional policies lies in the long-term persistence, and even widening, of interregional disparities. In fact, the entire history of the European integration process has apparently been characterized by slowly decreasing overall interregional disparities; yet, in reality, this process generally results from strong catching-up processes among nations, accompanied by increasing disparities at the intranational level.

Between 1995 and 2005, a positive evolution in per capita income disparities was recorded as a result of a decrease in between-country disparities, which had not yet been affected by the last enlargement of the EU. Within-country disparities, on the contrary, exhibited an increasing trend typical of converging periods that call for stronger growth rates in the richest regions (see Sect. 6.6). Eastern countries displayed an inverted U-shaped pattern, which gave support to expectations *à la* Williamson (Williamson 1965) about increasing interregional disparities in the first phase of a development or integration process.

In our prospective analysis, the results change. Overall, between the initial simulation period and 2020, disparities in the EU27 increase, mainly due to the economic downturn, which affects strongly on both core and peripheral regions, the latter showing a lower capacity for reaction. The economic downturn annuls the advantages of rapid processes of international catching-up (mainly by new member-states), with an increase in intranational disparities (Table 11.2). But this general trend is generated by two different evolutions: interregional disparities increase because of a widening intranational dualism between core and periphery regions insufficiently counter-balanced by slowly decreasing international disparities (Fig. 11.4). In all cases, intranational disparities are likely to widen. Overall, considering that a new phase of continental integration is beginning (and that our initial year for long-term comparison is 2005), Williamson's prediction may come true – once again.

Our prospective results tell us more. The extrapolated tendencies of the baseline scenario are reinforced in the scenario with rapid recovery from the economic downturn, as a probable outcome of the capacity of strong areas to be the first to take advantage of the revitalization of the economy. But, unexpectedly, the slow recovery protectionist scenario records an increase in regional disparities higher than the baseline trend; this result tells us that, in a period of crisis, defensive

Table 11.2 Evolution of per-capita income disparities, 2005–2020

Theil index	2005	2020	Difference
Baseline			
Total	0.17766	0.18568	0.00791
Between countries	0.14543	0.13232	−0.01310
Within countries	0.03233	0.05335	0.02102
Scenario A			
Total	0.17766	0.18903	0.01127
Between countries	0.14543	0.13157	−0.01385
Within countries	0.03233	0.05746	0.02512
Scenario B			
Total	0.17766	0.18656	0.00879
Between countries	0.14543	0.13462	−0.01080
Within countries	0.03233	0.05193	0.01960

Source: our scenario simulations

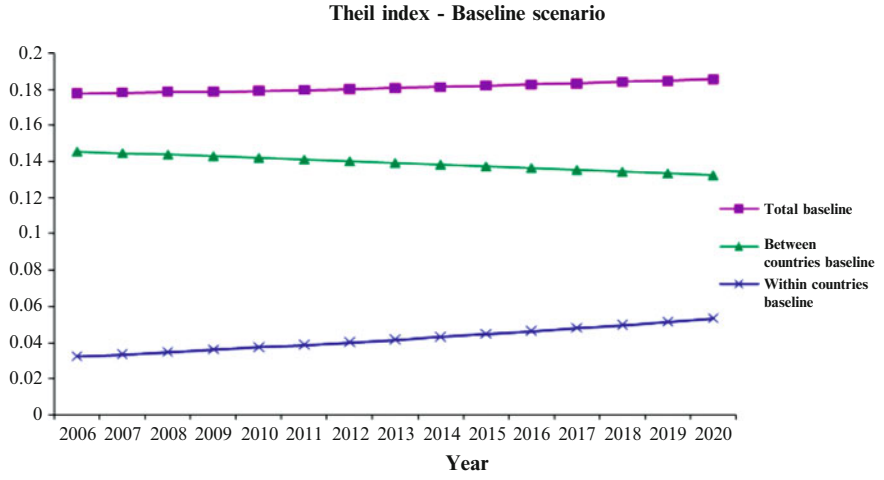


Fig. 11.4 Evolution of per capita income disparities, 2005–2020
Source: authors' calculations on simulation results

behavior does not entirely protect against worsening interregional imbalances and the economic and social costs that accompany them (Fig. 11.5).

Moreover, this result tells us that Europe is likely to emerge from the present economic recession period with a "two-speed growth model." Global regions will perform better than the others by recording either higher growth rates in a scenario of rapid recovery or a smaller economic downturn in a scenario of a protracted economic crisis (Table 11.3). In the long run, whatever the duration of the crisis, there will be strong regions which, like the conservative regions, will require particular help in turning their potentialities into growth opportunities; but there is also a sort of cumulative reinforcing learning process that takes place in governance and public policies and which enables benefiting regions to achieve constant good performances.

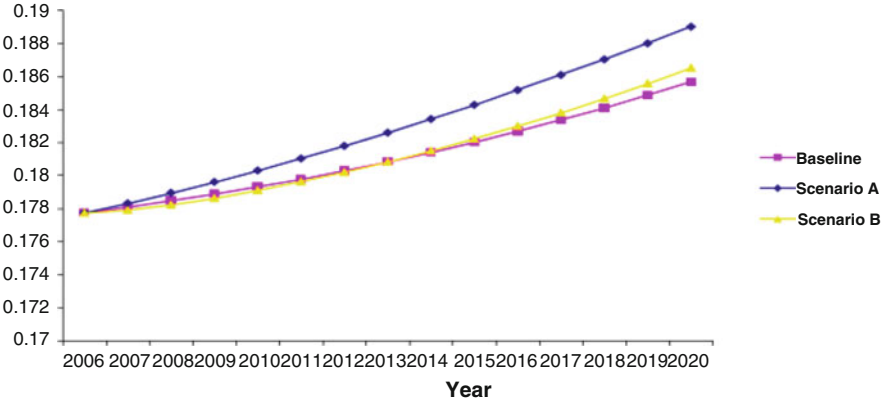


Fig. 11.5 Differences in the evolution of per capita income disparities among scenarios, 2005–2020. Total Theil index in the three scenarios
Source: authors' calculations on simulation results

Table 11.3 Average annual GDP growth rates between 1996 and 2020

	Benefiting regions	Catching-up regions	Conservative regions
Baseline	2.75	2.77	2.03
Scenario A	3.74	3.85	2.99
Scenario B	2.01	1.19	1.28

Source: authors' calculations on simulation results

11.4 The Rationale for Structural Policies in a Period of Economic Crisis

Despite some limited signs of recovery, the economic crisis that has hit most advanced economies in the last 2 years is still a reality. The economic downturn has called for short-run Keynesian demand-oriented policies, with the result that public debt has dramatically increased in most European countries, reaching a level that obliges governments to adopt (mid-2010) restrictive fiscal policies for the years to come, being also encouraged to do so by slight signs of economic recovery.

A legitimate question is how the implementation of structural policies can be justified in a period of economic downturn. A second question is how these structural policies should be formulated, when short-term demand policies seem to be the obligatory ways out of the crisis.

Two kinds of justifications may be envisaged. A first, more immediate one, resides in how economic systems generally react to an economic crisis: strong regions are expected to have, in general, the opportunities and the capacities to react more rapidly and more efficiently than weak regions, with the immediate consequence that the "two-speed growth model" that will characterize Europe in the coming years will worsen regional imbalances.

From this perspective, structural funds find an immediate *raison d'être*: they must limit the worsening of the regional imbalances that will stem from the way economic systems emerge from the crisis. The policy vision behind the formulation of structural policies, however, must change. An integrated approach between supply-side and demand-side interventions can be viewed as a winning solution which reinforces the outcome achieved in the short term by demand policies thanks to the strategic long-term planning of supply-oriented strategies. This aim is accomplished when structural, long-term policies are planned in order to complement public investment, when regional long-term policies are devoted to increasing efficiency, innovativeness, and competitiveness in the long run in those areas of intervention where short-term policies are intended to increase consumption. For example, when public incentives are coupled with structural policies oriented to the development of hydrogen cars, their effects in the automobile sector are reinforced by pursuit of a long-term objective. Likewise, when structural policies support social reforms, both a long- and a short-term goals are accomplished; in Eastern countries, precautionary savings may turn into internal consumption as a result of pension reforms.

A second explanation for the necessity of structural policies is less immediate, and it derives from the structural changes that advanced economies are undergoing in this period of economic crisis.

In this book, economic downturn has been treated from the point of view of its duration, and the scenarios have been built on the assumptions that no structural breaks in the economy will take place. However, we are aware that the economic crisis has brought about structural changes, already visible in European economies, which reformulate the terms of international competition, the competitive advantage on which blocks of countries may rely, geopolitical games, the macroeconomic conditions under which the international economy will work, and the nature of globalization itself.

We refer here to certain structural breaks due to contradictions generated in this period of crisis. A first such contradiction consists in the demand generated by public debt in advanced countries, which is an unsustainable macroeconomic condition in the long run. A second contradiction is the constant shift of Western economies from manufacturing to service activities, with the relocation of industrial functions to emerging countries to exploit low wage conditions, with the risk of eroding core competences in industrial activities, and of losing control over the technological upgrading that accompanies industrial development. A third contradiction is that emerging economies support Western consumption with low-price goods, Western real income due to low inflation rate, and finance the USA's trade deficit by buying US treasury bonds.

A series of consequences leading to structural breaks can be foreseen. First, *the balance of geopolitical games will be different*. It is likely that wages will increase and technology will significantly progress in the emerging economies. Their comparative advantage may shift from labor-intensive to higher value-intensive sectors, challenging the European economies on world markets in these sectors as well. If this is the case, the deflationary effect of Asia (mainly of China) on the world economy will probably be strongly attenuated and will progressively disappear. As a consequence, inflation will increase as well as nominal interest rates.

At the same time, it is likely that the growth of real income in Europe will be more modest than before, and the purchasing power of specific groups (retirees, civil servants, low-income groups) will be particularly affected. It may even happen that the younger generation will have to maintain its standard of living by selling its heritage and properties.

Integration will most probably progress more within the various world regions than between them. Debate continues as to whether Asian countries will create a common currency to better protect their interests; in this case, *the dollar may no longer be the sole reference currency* in the international trade of goods, energy and raw materials. The weakness of the dollar may generate, among other consequences, the relocation of significant production activities to the dollar zone to gain better access to markets and also to export under better conditions.

A "*regionalized*" *globalization* would take place in this case, with significant structural changes for the European economy. A geographical reorientation of FDI would be a first consequence. Low labor cost investments would favor a ring of countries outside the EU (except Bulgaria and Romania), such as Ukraine, Moldova, Croatia, Serbia, Turkey, Egypt, generating major difficulties for the countries of Central and Eastern Europe, which are not yet at the "cutting edge" of technological development and are progressively losing their comparative advantage of low labor costs. FDIs would also favor new geographical areas, especially in Africa, Latin America and Southeast Asia, to develop the local markets, create demand, and exploit cheaper labor.

But foreseeable after the crisis is a major and more important structural break due to a "regionalized" globalization. This in fact entails *the recovery of manufacturing activities in Europe*, which will have to seek productivity gains to compete. If this trend comes about, disparities in the productivity of the main economic sectors are easily foreseeable, especially between advanced economic functions (financed by capital) and basic services (paid by incomes, including social transfers). Such disparities are also projected for territorial development. The advent of a number of new technologies during the coming 15 years will have significant impacts on the economy, especially in the fields of energy production and use, including the processing of biomass, nanotechnologies, biotechnologies, and transport systems. On these bases, we can also foresee a development of the "green economy" in Europe – driven by increasing energy prices and a growing concern about climate change – which creates jobs both in R&D and in manufacturing activities, and new demand.

The reindustrialization of Europe will not be space invariant: new manufacturing activities, benefiting from significant technological progress and from the related productivity growth typical of urban areas, will be attracted by well-developed regional locations. In addition to the main metropolitan regions, second-rank cities and metropolitan areas will also be beneficiaries, with the possible exception of a number of second-rank cities in Central and Eastern Europe, which are handicapped by their low accessibility.

One can speculate further on the intensity with which these structural changes will take place; however, most of them are already in place, and for this reason construction of a plausible "trend" (baseline) scenario for the economy will not be possible in the near future. A "reference scenario" taking into account a number of

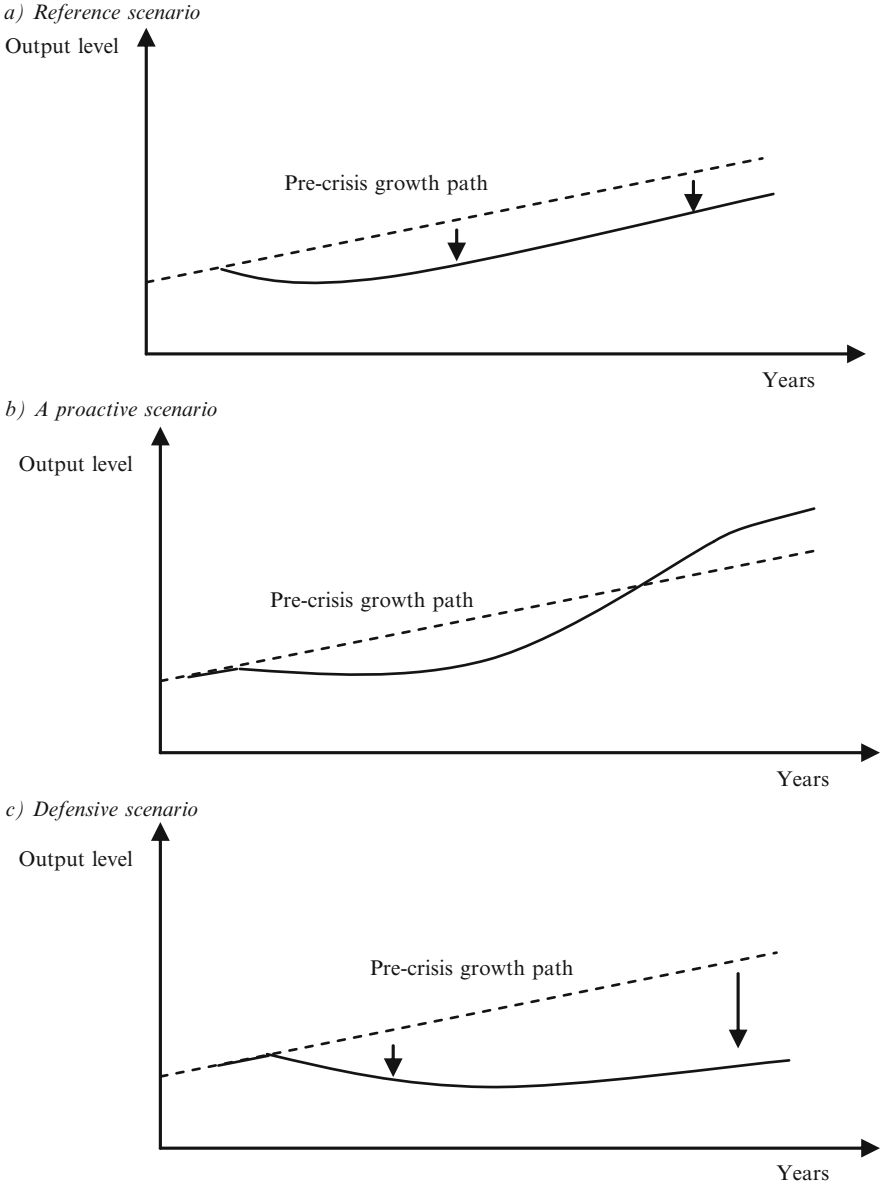


Fig. 11.6 Alternative growth patterns out of the crisis
Source: authors' adaptation on CEC (2010)

recent structural changes in addition to more long-term evolutions seems more appropriate; this scenario will register the effects of the structural breaks leading to a permanent loss of wealth, with growth starting again from this eroded base (Fig. 11.6a).

Against this background, the capacity (or incapacity) of the European economy to take advantage of the new global situation and its internal potentialities can be anticipated in the form of contrasting scenarios. In particular, it would be interesting to construct two possible alternative scenarios: one in which these structural changes are perceived and even anticipated, and where the capacity to pro-act and re-act is large; this scenario would enable Europe to make a full return to an earlier growth path and raise its potential to go beyond pre-crisis output levels (Fig. 11.6b); by contrast, a scenario in which these changes are not perceived by economic actors, which remain anchored to the traditional development assets and miss many of the opportunities offered, thus risking low development patterns and a permanent loss in wealth (Fig. 11.6c). In aggregate terms, these expectations are in line with the ones proposed by the European Commission in the "Europe 2020" report (CEC 2010), bringing in our opinion a new rationale and justification to them.[2]

To return to our original question, namely the role of structural policies in a period of crisis, our analysis induces us to claim that supply-oriented initiatives have a twofold role in this period of crisis. First, they must accompany the present structural changes with initiatives able to correct for the negative externalities that these changes may produce, and to exploit the positive effects that they may generate. Second, they must stimulate awareness among economic actors that these changes are occurring, that winning assets are changing, that competitive conditions are no longer the same, and that a new form of globalization should probably be expected. All this can be achieved by giving strong policy support to technological investments and productivity gains, an industrial shift to high-value sectors, and investments in the exploration and discovery of new energy sources.

The formulation of appropriate structural policies would benefit from the creation of alternative scenarios on how structural changes are perceived. Their implementation takes first priority on our research agenda.

11.5 Conclusions

This book has widely analyzed the present difficult times of tougher global competition and the significant challenge raised by the "new tiger" countries against the industrial fabric of the advanced economies over the past few years, and the subsequent transition imposed on advanced economies toward a knowledge-based service economy and toward high-value added manufacturing. The territorial impacts of these phenomena have been empirically investigated, and lessons have been learnt.

At the same time, the difficult choice between rapid modernization and smooth exploitation of the cost-competitiveness presently faced by the new EU member countries, together with the new potential market for European countries generated

[2]In the *Europe 2020* Report, the three growth paths are labeled, respectively, as "Sluggish recovery," "Sustainable recovery" and "Lost decade" (CEC 2010, p. 7).

by a fast-growing Brazil, Russia, India and China (BRIC) area, and, last but not least, the duration of the present economic crisis, are all elements that will characterize the future scenarios in which European countries find themselves in the next decades. Their spatial impacts have been thoroughly explored by the simulation exercises presented in the third part of this book.

Two important lessons have been learnt from past experience. The first is that national effects play an important role: clear national trends emerge, with most of the regions of the same countries exhibiting similar growth patterns, and this result holds for regions of all kinds, regardless of their exposure to globalization patterns, their productive specialization, or their territorial settlement structure. The second important lesson is that benefiting global and regional players ground their success on different endowments of territorial capital assets, and it suggests a different role that these types of regions may play in the international division of labor. Contrary to regional players, global players should act as leaders of their national economies, competing to be international locations of advanced functions and sectors, attracting knowledge, and high-skilled human capital. This does not mean, however, that endowment on its own is a guarantee of success. Our analysis shows that regions similar in terms of degrees of exposure to the external world show very diverse receptivity to globalization; how they exploit their territorial capital matters in the explanation of regional growth differentials. The difference in the exploitation of material territorial assets resides in the presence of nonmaterial aspects. The latter strengthen local potentials and, by enhancing local receptivity to external stimuli and opportunities, foster cooperation networks among cities and regions, particularly across the previous East–west border. They boost knowledge-oriented human capital and reinforce social ties and relational capital within each territorial community. They couple hard preconditions for growth such as physical infrastructure and accessibility with soft characteristics such as urban quality, cultural identities, organizational efficiency and governance innovations.

Even if not empirically demonstrated by our analysis, our impression is that all these aspects, once they have been mixed with appropriate material assets, ensure the efficient exploitation of material assets. A modern regional policy vision should take these aspects into consideration; a modern regional policy style should develop regional interventions tailored to each region's uniqueness. Regional structural interventions should therefore be addressed to reinforcing and strengthening regions' capacities to exploit their territorial capital, rather than to regional needs.

As regards national policies, the analysis highlights that they are not space invariant; our simulation exercise has measured the extent to which macroeconomic policies yield different regional effects, for reasons of differentiated productive specialization.

All these lessons have been borne out by our prospective analysis: whatever the pattern of globalization, regional competitive assets will make the difference in winning the competition. Global regions, endowed more than others with command and control functions, specialized human capital, knowledge and physical infrastructure and accessibility, will be those able to win more (or lose less) in the scenarios forecast.

Our prospective analysis has told us more: despite various challenges that may be raised by the "new tiger" countries against the industrial fabric of the advanced economies, different competitive strategies between rapid modernization and smooth exploitation of the present cost-competitiveness facing the new EU member countries as they select an effective and consistent economic strategy after accession, and with different durations of the crisis, regional imbalances will increase more than in an extrapolated scenario. This result justifies the existence of regional structural policies in a period of crisis; a modern and efficient regional policy vision should in this case be a blend of short-term, demand-oriented policies and structural, long-term interventions.

A further reason for the importance of long-term policies in a period of economic downturn consists in the structural breaks accompanying the present crisis. Our analyses suggest that a scenario embracing these structural breaks by adjusting or even anticipating them with strategic proactive and reactive behaviors would be an expansionary scenario in which Europe would be able to make a full return to earlier growth paths and heighten its potential to go beyond pre-crisis output levels. By contrast, a scenario in which economic actors do not perceive any structural changes or any opportunities raised by these changes, and remain anchored to the traditional development assets, would be a scenario of permanent wealth loss by Europe. Our research agenda envisages in-depth analysis of after crisis scenarios, which represent the most advanced scenario-building and simulation exercises for devising anticipatory and far-sighted development strategies and regional policies in an era of structural breaks brought about by the economic downturn.

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