ESPON project 3.4.2 'Territorial impacts of EU economic policies and location of economic activities'

Draft Final Report

May 2006

TPG members

- **Lead Partner:**

IGEAT – Institut de Gestion de l'Environnement et d'Aménagement du Territoire, Université Libre de Bruxelles

- **Partners:**

CERUM – Centre for Regional Science – Umea University
DULBEA-CERT - Université Libre de Bruxelles
EUROREG – Centre for European and Local Studies - University of Warsaw
NORDREGIO – Nordic Centre for Spatial Development - Stockholm
SEFeMEQ – University of Rome 'Tor Vergata'

- **Experts:**

Roberto CAMAGNI – Politecnico di Milano
Ron MARTIN – University of Cambridge

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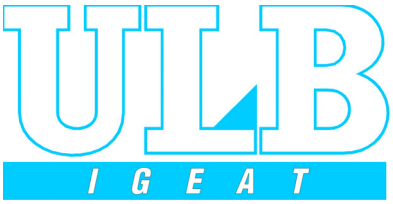

Lead Partner

Lennert Moritz
Patris Catherine
Roelandts Marcel

CERUM

Hanes Niklas
Lundberg Johan

Copus Andrew
Jorgensen John
Steineke Jon M.

UNIVERSITÀ DEGLI STUDI DI ROMA "TOR VERGATA"

Dipartimento di Studi Economico – Finanziari e Metodi Quantitativi (S.E.F. e ME.Q.)

Imparato Gianluca
Mundula Luigi
Prezioso Maria

Al-Assi Samir
Capron Henri
Greunz Lydia

Kozak Marek
Maciej Smetkowski

Experts: Camagni Roberto
Martin Ron

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John Jørgensen
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Maria Prezioso, Sefemeq
Niklas Hanes, CERUM
Samir Al-Assi, Dulbea and Moritz Lennert, IGEAT

The growing awareness that surrounds the issue of European competitiveness and Europe's innovative capacities is echoed – and largely inspired by – theoretically informed investigations of the importance of medium- and long-term changes in regional economies throughout Europe, as well as the crucial role of territorial innovation systems for economic development. It is the purpose of this chapter to present and discuss some of the most important theories of the localization of economic activities, regional development, and regional competitiveness, in order to provide a state-of-the-art overview of the fundamental processes influencing the location pattern of European industries[19], thus helping in the understanding of the territorial structures depicted in chapter 1.

In the chapter some of the primary research questions raised in the ToR are addressed explicitly:

- Regional competitiveness, what does it mean and how can it be measured?
- What are the main factors influencing the location decisions of enterprises?
- How do these factors influence location decisions, and how do existing structures and endowments influence location patterns?

This implies that the state-of-the-art overview of theories of location of economic activities, as well as theories of regional development and competitiveness, will focus on arguments that try to understand the origin of those 'specific environments', and how and whether they are related to regions that are already endowed with attractive resources. Furthermore, while evaluating the policy recommendations that come with each of the theoretical standpoints, the possibility of creating 'specific environments' also comes into focus.

[19] The chapter draws upon the results that are conveyed in the WP2.1-report: 'The localization of economic activity: A theoretical review'. References are kept at a minimum here. Please, consult the WP2.1 report for more accurate and complete references.

To paraphrase a distinction used in a study published ten years ago (Cheshire and Gordon, 1995) between demand-side and supply-side questions, the focus here is more on the former, but throughout the chapter, the latter is integrated in the argumentation. Amongst the most crucial demand-side questions are: What are economic agents seeking from areas in which they are operating? What factors favour or impede local development? What is the response in different locations and economic environments to various European policies? And which factors, on which local policy makers could exert an influence, actually affected the performance and location of firms? Focusing on supply-side questions a set of related questions becomes important: Actions of local agents involved in the supply of sites for economic activity supply both in terms of their supply and in terms of the attributes which they are seen to offer. What kind of policies is being pursued?

Clearly, this chapter covers a vast, trans-disciplinary field of research engaging a variety of geographers, economists, and sociologists. As such, we have had to be very selective in the presentation of the literature. The primary research questions and the working hypothesis have thus guided the selection process. It is thus of prime concern to understand how and why firms compete by means of their location. The competitiveness of a firm is dependent on the environment, including the relations firms have with other firms and institutions in their surroundings, hence regional development and regional competitiveness are strongly linked to the behaviour and interdependencies of firms (sections 3.3 –> 3.5). In the chapter we have a closer look at agglomeration economies (section 3.6), as we investigate those arguments in the literature relating in particular to re-concentration and re-metropolisation. In the report this is done by looking at (a) business networks and processes of clustering, (b) larger firms and (c) smaller enterprises, respectively. In this chapter, however, we are focusing on the former.

In this report it is stressed that the notion of competitiveness, and indeed regional competitiveness, is far more complex than it is generally believed. Focusing on regional competitiveness it becomes clear that it differs from both national competitiveness and competitiveness at the level of the firm. In order to distinguish between the various components of regional competitiveness an elaborated version of the 'pyramidal model' of regional competitiveness' suggested by Gardiner et al. (2004) and Martin 2005 is used. Hereby it is possible to distinguish between the sources of competitiveness, the 'revealed' competitiveness, i.e. the performance of regions that can be measured by various indicators, and the target outcomes, the aim of rising quality of life and standard of living.

3.1 The localisation of economic activities

In the debate on the localisation of economic activities, and in the literature on territorial development, industrial (re-)organisation and issues related to regional and economic competitiveness, such as innovation and technological development, it is clear that orthodox perspectives, e.g. the paradigmatic status of Weberian locational theory, have been increasingly challenged in the last 10-20 years by a plethora of heterodox perspectives (Storper, 1997). Orthodox perspectives argue that firms seek locations that minimize distance-transactions and production costs. In the orthodox perspectives the focus has primarily been directed towards demand-side questions, i.e. what are economic agents seeking from areas in which they are operating?

Most notably the orthodox perspectives include application of neo-classical economics while discussing the issue of regional development. Within this framework, the processes of equilibrium will work in the direction of regional convergence at all scales, although various hindrances to convergence can be detected, and dealt with theoretically. The neo-classical growth model (Solow, 1956) operates with diminishing returns to capital - ensuring that poorer regions tend to have faster income growth than wealthier regions. The mobility of production factors tends to speed up the convergence process. The neo-classical growth model is based on the assumption of an exogenous technology base. This means that the model predicts that all economies grow at the same rate in steady state. Economies with a small capital stock will however experience faster growth in the short run. There is an extensive empirical literature on income convergence across nations and regions. Several studies find evidence for convergence, e.g., Barro and Sala-i-Martin (1992) find support for the convergence hypothesis for European regions using data for 7 countries and 73 regions. However, this convergence tends to be relatively slow. Armstrong (1995) also includes regions from southern Europe and concludes that the inclusion of these regions in the regression models results in smaller parameter estimates for convergence. Some authors have however argued that growth studies often suffer from methodological problems, which may bias the results towards convergence (see, e.g., Quah, 1993).

Within the neo-classical framework, economic integration is predicted to speed up convergence towards steady state. However, the neo-classical model does not explain factors determining higher growth rates in the long run. If we believe that economic integration will enhance economic growth in the long run, we cannot use the neo-classical model in order to find out why growth may be enhanced. The neo-classical model can thus be questioned at several levels. A general conclusion from more recent theories is that economic growth is often associated with agglomeration and scale effects, e.g., endogenous growth models (see, e.g. Romer, 1986) and theories of the 'new economic geography' (see,

e.g. Krugman, 1991). These models are not based on the assumption of diminishing returns.

Territorial development and regional competitiveness

The *heterodox perspectives* on territorial development build upon developments within various strands of economic theory, for example, on evolutionary and institutionalist economics. A major inspiration referred to by many scholars here is the seminal work of Piore and Sabel (1984), which spurred researchers to look more carefully at localised, specialised productions systems, e.g. the 'industrial districts', or 'Marshallian' districts, found in The Third Italy, in Baden-Württemberg and other places throughout the European space. In this way, various developmental paths have been detected, for example, regions that are 'high road' instances (e.g. Baden-Württemberg); upstream innovations (e.g. Québec); downstream near-market innovations (e.g. Catalonia); '*dirigiste*' systems (e.g. Midi-Pyrénées); localist systems (e.g. Tuscany), etc.

These heterodox perspectives are elaborated in and through a rather vivid, and at times bewildering, inter-disciplinary discussion among economic geographers, urban and regional economists, and economic sociologists. Despite the dissimilarities between the heterodox perspectives, they share a rather critical stance towards the orthodox approach. Moreover, this is particularly pronounced in relation to their stance on neo-classical economics, challenging orthodox perspectives to rethink their assumptions. As far as economic development theories are concerned then, a whole range of competing theories exists. Martin (2005) proposes a useful didactic presentation of those theories and their implications for 'regional competitiveness,' (see table). In the table below, the first two sets of theories remain firmly within the orthodox mainstream, while the latter form an essential part of the heterodox discourse:

Theory	*Main Source of Regional Growth and Productivity*
Export-base theories	The competitiveness (productivity) of a region's tradable base is an important determinant of its overall economic performance and success. Export base theory highlights the role that a region's export sectors play – both directly and via multiplier effects on the region's non-tradable activities – in stimulating incomes, investment and productivity advance.
Endogenous (or 'new') growth theory	The accumulation and attraction of educated and skilled human capital is the key source of local economic growth and productivity advance, via its effect on technological progress. The localised concentration of such workers promotes knowledge creation and spillovers, and thence innovation.
Neo-Schumpeterian theory	Innovation, technological advance, and entrepreneurialism are the key drivers of regional competitive performance. There are two opposing views as to what stimulates local innovation: local economic specialisation (through rivalry between similar and competing firms), or local economic diversity (through the greater scope for novelty and market opportunities).

Cluster theories	A region's competitive advantage depends on the presence of localised clusters of specialised export-orientated industries, and associated supporting supplier and institutional networks. Such clustering stimulates: inter-firm rivalry and knowledge spillovers, innovation, investment, and a local pool of specialised skilled labour, all of which increase local productivity.
Evolutionary theory	An evolutionary perspective emphasises dynamic competitive advantage, and the adaptive capabilities of a regional economy to respond to shifts and changes in markets, the rise of new competitors, and the development of new technologies. A region's competitive advantage is the complex outcome of its past development – path dependence- and its capacity to create new pathways of development. The evolution of institutional forms is crucial to this process.
Institutionalist theory	A region's competitive advantage is held to derive from the 'thickness' of its institutions. That is, a well-developed and regionally embedded set of informal and informal institutions, from business and trade associations, to educational and training institutions, to entrepreneurial culture, to civic trust and other forms of 'social' capital, all with a common sense of purpose, provide a highly favourable environment for economic development and expansion.
Cultural theory	A looser body of 'theory' that attributes regional (and city) success to the existence, on the one hand, of cultural diversity and tolerance (which allegedly stimulates creativity, innovation and entrepreneurship), and, on the other, to favourable cultural amenities and infrastructure which enhance the quality of life and help to attract workers and businesses.

(Adapted from Martin, 2005)

Table 19 Competing theories of regional competitiveness

If the distinction between orthodox and heterodox theoretical perspectives on the (re-) location of economic activities is combined with the three scales applied in many ESPON-studies, namely, the micro-, meso- and macro-levels, (see table below), it can be observed that the orthodox perspectives often confine themselves to one of the scales, while the heterodox perspectives are usually much more open to applying a 'multi-scalar' approach, enabling them to analyse the interrelated processes at play, e.g. how does globalization influence, and how is it itself influenced by these processes, including the relocation of businesses, even at the local/regional level? This development towards more 'relational' perspectives has also had an impact on empirical studies of locational behaviour at a local/regional scale. Here the tendency is to move away from – or to supplement – studies of, for example, Christallian spaces (studies of the city and its hinterland) and behavioural studies, with an analysis of the complex relationship with wider socio-economic processes outside the firm's immediate business environment. In short, regional economies are viewed as 'stocks of relational assets' (Storper, 1997:28).

	Micro-level	Meso-level	Macro-level
Orthodox perspectives			
Heterodox perspectives			

Table 20 Analytical schemas

In the context of these heterodox perspectives, firms are regarded as bundles of resources, competencies, or capabilities that are then strategically deployed to realise corporate strategies. Resource or capability developments are tied to territories and networks, and the locational behaviours of embedded firms are constrained by these networks or territories (Maskell and Malmberg, 1999a). These heterodox perspectives span theories that are accompanied by advanced econometric analyses and multi-variable, statistical analyses to theories that point to the importance of 'softer' factors, such as human and social capital, industrial milieux, institutional set-ups and the 'cultural' aspects of competitiveness (Lundvall (ed.) 1992, Braczyk et al., 1998), Dunning (ed.), 2000). Indeed, the latter are often based on qualitative research methods, though in recent years numerous research teams have undertaken comparative studies at the meso- and macro-levels using quantitative research techniques in order to rank the importance of various 'softer' development factors, including analyses that compare the importance of 'softer' factors to economic parameters of performance.

3.2 Regional development

In this section neo-classical growth theory, and in particular, more recent models of endogenous growth are considered. Regional growth and convergence is a significant issue in itself, and as such, it would merit having its own ESPON project. It is quite clear that the study of economic growth and convergence faces significant methodological problems. Furthermore, empirical results seem sensitive to the selection of countries or regions, as well as to the time period selected. Barro and Sala-i-Martin (1992) argue that evidence of convergence is more likely to be found in studies on regional data, since regions are more homogenous with respect to preferences and institutions. Although several studies find evidence for convergence among European nations and regions, other studies find instead that rather more complex patterns can be seen to be developing. Some of the research is concerned with the existence of 'regional convergence clubs' (see, e.g. Quah, 1996a, 1996b, for a discussion of convergence in the neo-classical model and 'regional convergence clubs). These regional clubs can emerge from regional differences in saving ratios, technology, etc. Mora et al (2005) studied conditional convergence for European regions related to the initial sector specialisation. The data covers 108 regions (NUTS 1 and NUTS 2) for the EU-12 members during the period 1985-2000. They found that regions specialised in low tech intensive industries before integration have not showed any sign of

convergence. They also found that regions with lower specialisation in low-tech industries, located further away from the core saw significantly higher convergence.

Esteban (2000) points out that one explanation for the inconclusive results on economic growth and convergence is that most empirical studies use per capita income instead of productivity per worker as the dependent variable. The problem with per capita incomes is that differences in income may reflect employment rates and participation rates and not necessarily productivity. Esteban states that interregional differences in aggregate productivity (per worker) may be compatible with the regional equalisation of productivity sector by sector. Even if the productivity for each sector is equal across regions, differences in industry mixes can give variation in aggregate productivity in a region if the productivity per worker differs between industry sectors. It is also possible that regional differences in average productivity affects all industries in the same way, e.g. through regions' specific endowments such as infrastructure. Esteban (2000) studies interregional differences in productivity among European regions. Sector data on regional employment and gross value added are analysed for NUTS 2 regions. The empirical results indicate that interregional differences in aggregate productivity are predominantly explained by region-specific productivity differences, and that regional specialisation has a much lesser role in explaining aggregate productivity. Esteban concludes that this result indicates that policies should be aimed at stimulating productivity uniformly in lagging regions, e.g., infrastructure and human capital.

Happich and Geppert (2003) study convergence across European regions by applying a Markov chain on GDP data for 57 regions for the period 1980-1999. They found no evidence for convergence for the period 1980-1992. Although they found evidence for convergence for the post-Single Market period, this convergence was very slow, a result which is consistent with many other empirical studies on convergence within Europe.

Although the empirical literature on economic growth and convergence is extensive, the results on convergence are ambiguous. Furthermore, the empirical results that have been presented cannot definitively answer the question of whether European integration has enhanced economic growth. They do not however prove that it has not either!

Contrary to prominent views that globalisation would gradually decrease the importance of geography and location for economic activity (Vernon, 1997; Cairncross, 1995), the logical consequence of the interactive linkage model is that geographical proximity matters. Moreover, knowledge spillovers and externalities are geographically bounded, and the main mechanism of high contextual, tacit, or uncertain knowledge spillovers is face-to-face interaction through repeated and frequent personal contacts (von Hippel, 1994). This

observation implies that social capital is indeed the material of knowledge spillovers. A final observation relates to the cumulative nature of innovation processes. As advocated by the endogenous growth literature, knowledge accumulation constitutes the primary element of economic growth and is the main source of increasing returns to production factors (Romer, 1986, 1990; Lucas, 1988). This cumulative nature of knowledge and innovation may be part of the explanation of why regional disparities regarding GDP per capita in the EU persist. This also explains the location choices of multinational corporations with respect to their innovation activities (Cantwell and Iammarino, 2003)

Forms of capital	Nature	Content	Intervention means
Natural Capital	Public	Natural resources and environment	Subsidies to businesses Public investment
Productive Capital	Private Public	Business investments Infrastructures investments	Subsidies to businesses Public investment
Creative Capital	Private Public	R&D private spending R&D public spending	Subsidies to businesses Universities Public Research Centres
Human Capital	Private	Knowledge and skills of the workforce	Subsidies to businesses Education, trainings
Social Capital	Public	Depth and extent of interactions between business networks, public organisations, associations, etc.	Economic, technologic and social animation

(Capron, 2002)

Table 21 Forms of capital – base for regional development

In their turn, those new concepts encouraged the creation of 'clustering policy'. Interest in cluster theory, developed by Porter (1990), lies in the relationship between collaboration and competition. According to cluster theory, 'a region's competitive advantage depends on the presence of localised clusters of specialized export-oriented industries, and associated supporting supplier and institutional networks. Such clustering stimulates: inter-firm rivalry and knowledge spillovers, innovation, investment, and a local pool of specialized skilled labour, all of which increase local productivity'[20].

Numerous studies have produced evidence that global corporations have increasingly sought out regional economies with competitively advantaged regional industrial clusters (for example, De Vet (1993), a study of patterns of FDI flows in seven advanced economies). 'As economic coordination becomes increasingly globalized, the key interactions among firms in specific industry clusters become regionalized'.

[20] Martin (2005), p.17

3.3 Regional competitiveness, innovation and technology

What is meant by reference to the competitiveness of regions, cities, and localities? In what sense can one talk of regional competitiveness? In what sense do regions and cities compete? These are important questions that have been raised again and again over the last years. This debate has been synthesized in a recent special issue of Regional Studies (Vol 38, 9, December 2004), most notably by Gardiner et al. (2004).

3.3.1 Drivers of Regional Competitiveness

For the last years the concept of 'competitiveness' has gained growing influence. Martin (2005) considers that it became a 'new conventional wisdom' implying that 'nations, regions and cities have no option but to strive to be competitive in order to survive in the new marketplace'. 'Economists and experts everywhere have elevated 'competitiveness' to the status of a natural law of the modern capitalist economy'.

At the same time, there is an overwhelming academic agreement that, as part of the process of accelerating globalisation, regions are the primary spatial unit (perhaps even displacing nation states) of wealth production and economic governance (see for example, Ohmae, 1995).

The European Commission is one of many institutions anchoring its analysis into the 'regional competitiveness' concept. Indeed, the improvement of regions' competitiveness is at the core of the Cohesion policy. In its 'third report on economic and social cohesion', the European Commission points to the wide disparities in terms of output, productivity and employment which persist between EU member states and regions. According to the report (EC, 2004) 'these disparities stem from structural deficiencies in **key factors of competitiveness** – inadequate endowment of physical and human capital (of infrastructure and skills), a lack of innovative capacity, of effective business support and a low level of environmental capital (a blighted natural and/or urban environment)'.

The same report states that 'countries and regions need assistance in overcoming these structural deficiencies and in developing their **comparative advantages** in order to be able to compete both in the internal market and outside'. 'Strengthening the **regional competitiveness** throughout the Union and helping people fulfil their capabilities will boost the growth potential of the EU economy as a whole to the common benefit of all'.

What exactly is the precise meaning of 'regional competitiveness'? For many, 'competitiveness' remains a contentious concept (Martin, 2005) that is not well understood. While 'regional competitiveness' is indeed a key notion that should be a policy priority, it is

also still a complex issue with no consensus regarding its precise meaning or the underlying determinants.

The concept of 'competitiveness' has received considerable amount of criticism. Krugman denounces it as a 'dangerous obsession' (Krugman, 1994). He argues that it is wrong to draw an analogy between individual firms and national economy, and that if competitiveness has any meaning then it is simply 'productivity'. Even Michael Porter, whose work played a key role in transferring the notion into economics and public policy (Martin, 2005) prefers the notion of 'competitive advantage' instead, and also claims that 'true competitiveness is measured by productivity'.

However, it appears that increased productivity is a necessary but not sufficient condition for a 'true' competitiveness. 'Only a high-road to competitiveness, based on high productivity achieved through constant innovation in products and processes, investment, and a high-skilled labour force, is consistent with high wages and a high standard of living' (Martin, 2005).

These considerations come close to the **European Commission's definition of competitiveness** as 'the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income or, more generally, the ability to generate, while being exposed to external competition, relatively high income and employment' (EC, 1999, p.4). This definition could be improved by adding to the ability to meet the 'test of international market', the test of local and national markets.

The notion of competitiveness applied at the regional level is equally contentious (Martin, 2005). A region is neither comparable with a firm as an economic actor (no organisational identity or unity) nor with the national economy (no fiscal or monetary policy). However, unlike with nations, regional trade may well approach a zero-sum game. Indeed, regions with similar profiles of economic specialisation compete with each other. And within the national context, regions compete for the same labour force, capital and even public investments.

It is worth mentioning that for Krugman (2003) it may well be more meaningful to talk about competitiveness at the regional level than at the national level. According to him, at the national level what matters is 'comparative advantage', but interregional growth rates are much more sensitive to differences in efficiency. A region with a high productivity will have a competitive advantage in attracting capital and labour from other regions, and will thus tend to reinforce the region's productivity even more.

Per capita GDP, Gross Value Added per worker or employment rate are all measures of the overall regional competitiveness, but are themselves the outcome of the complex

interactions of various factors. When comparing different regional performances, what really matters is their dynamic measured for instance by their comparative growth.

As observed by Martin (2005) for the UK: even over the long-run, high productivity growth regions do not necessarily enjoy high employment growth (e.g. London). Actually, over the period 1980-2003, only one region (South-East) among 12 has recorded above average growth of both productivity and employment. Four regions even recorded above average employment growth associated to below average productivity growth. In summary, productivity is not the equivalent of regional competitiveness (as for Porter and Krugman).

Economic theory might help us to approach the underlying determinants of regional differences regarding competitiveness. It is possible to extract some 'key factors' or 'drivers' of regional competitiveness from the various and often overlapping set of economic theories. Generally, the literature identifies the following set of determinants: (1) productive capital (inherited economic and business structure, soft and hard infrastructures), (2) human capital, (3) knowledge capital and (4) social capital.

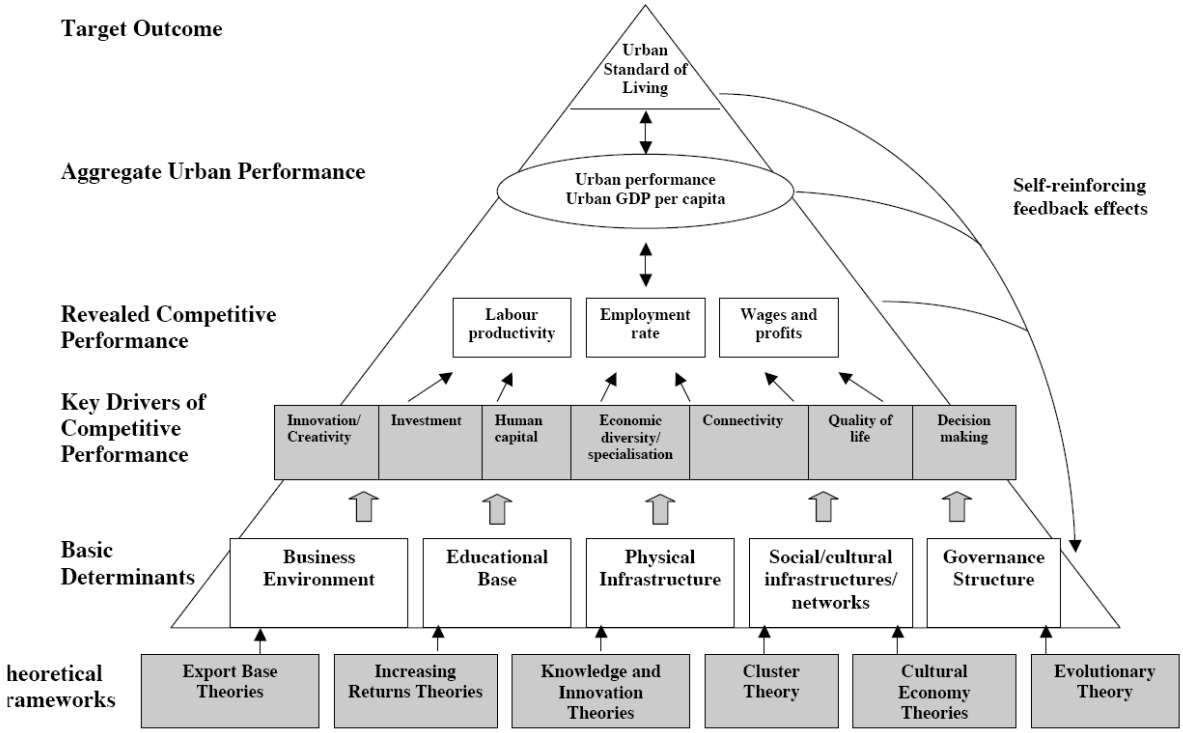
Forms of capital	**Nature**	**Content**	**(Intervention means)**
Natural Capital	Public	Natural resources and environment	Subsidies to businesses Public investment
Productive Capital	Private Public	Business investments Infrastructures investments	Subsidies to businesses Public investment
Knowledge Capital	Private Public	R&D private spending R&D public spending	Subsidies to businesses Universities Public Research Centres
Human Capital	Private	Knowledge and skills of the workforce	Subsidies to businesses Education, trainings
Social Capital	Public	Depth and extent of interactions between business networks, public organisations, associations, etc.	Economic, technologic and social animation

(Capron, 2002)

Table 22 Forms of capital – base for regional development

Camagni (2002) points to the fact that if a region display a higher competitiveness on a longer term basis then it is most likely based upon absolute competitive advantages rather than comparative advantages. A successful region is then to be thought of as possessing superior technological, social, infrastructural assets that are external to but which benefits individual firms to a degree that prevents geographical redistribution of economic activities to take place (see also Gardiner et al, 2004).

Based upon such arguments Gardiner et al (2004) and Martin suggest the 'pyramidal model' of regional competitiveness' (see figure below):



Source: Martin, 2005

Figure 56 Conceptualising Urban Competitive Performance

Hereby it is possible to distinguish between the sources of competitiveness, the 'revealed' competitiveness, i.e. the performance of regions that can be measured by various indicators, and the target outcomes, the aim of rising quality of life and standard of living. The importance of the basic determinants can be understood by applying various theoretical viewpoints in the analysis some of which will be discussed below.

Drivers of regional competitiveness are also at the core of businesses concerns. In an attempt to improve its understanding of the broad range of factors which shape a region's competitiveness, the European Commission published a survey (IFO, 1990). It covered around 9000 companies located in (1) regions suffering from lagging development (Objective 1), (2) regions facing industrial decline (Objective 2) and in (3) ten more-favoured regions. The survey questionnaire listed 37 determinants of competitiveness and asked business managers to identify the three determinants with the highest priority for improvement. The 37 determinants are grouped into 9 main categories:

- Financial markets
- Educational system

- Labour market
- Macroeconomic outlook
- Infrastructure
- National policies and institutions
- Regional policies and institutions
- Regional economic structure
- Social facilities

In lagging regions, the determinant 'cost of credit' was mentioned most frequently, indicating that interregional disparities in interest rate appear to remain significant. The other most important determinants are common to all three types of regions. They include a lowering of income and corporate tax rates; an increase of qualified labour supply; a decline of indirect labour costs; a deregulation of the labour market; and a higher rate of national growth. The high ranking of this last factor illustrates the importance of the national macro-economic environment.

The survey gives a good indication of what drivers were given the highest priority by business managers in the beginning of the 90's. The 'cost of credit' can be clearly identified as a specific driver that could be renamed 'financing' (capital and credit). A question is whether the order of priority would have changed today, in addition to the fact that certain major determinants, such as innovation, were not clearly stated as possible choice in the survey (except in 'industrial policy).

3.3.2 Innovation and technological development

Regional economic growth rates tend to be closely correlated with regional rates of innovation (measured by patenting and R&D spending).

There is a growing consensus, within both orthodox and heterodox perspectives, that innovation is the key driving force behind economic growth, standards of living, international competitiveness, and regional development (Acs and Varga 2001). Three different, and distinct, literatures are re-examining these issues: what has become known as new economic geography (Krugman 1990), new growth theory (Romer 1990), and the new economics of innovation (Nelson 1993).

The *new economic geography literature* seeks to answer the question: why does economic activity concentrate in certain regions but not in others? One of the most important findings from this literature is that knowledge spillovers provide a mechanism for enhancing the innovative performance and growth of firms. Co-location facilitates knowledge spillovers by providing opportunities for both planned and accidental interactions, and that locations that

contain concentrations of knowledge-intensive resources will be the locus of knowledge spillovers.

New growth theory seeks to explain the causes of economic growth, leaving out regional considerations and ignoring completely discussions of the key processes and institutions involved in innovation. The new economics of innovation literature explains the institutional arrangements of the innovation process but leaves out regional issues and economic growth

New growth theories suggest that differences in growth rates may result from increasing returns to knowledge. One source of increasing returns may be agglomerations or geographic concentrations of knowledge that provide a means to facilitate information searches, to increase search intensity and to ease task co-ordination in general (Feldman 1999). Knowledge is not easily contained and for this reason, location may enhance the generation of innovation and yield higher rates of economic growth.

However, to the question of why some regions are more innovative than others, two opposing views emerge. The Marshall-Arrow-Romer view is that innovation is stimulated by externalities associated with economic specialisation, while Jacobs views innovation as being promoted by local economic diversity and heterogeneity. Despite the fact that the debate between these opposing views has not yet been resolved (Glaeser 2000), recent interventions in the literature find evidence that the influence of Jacobs' externalities on innovation increases together with technological intensity, while the Marshall-Arrow-Romer externalities are important for innovation in mature industries (Henderson et al. 1995; Greunz 2004).

In respect of the *new economics of innovation,* the importance of specific regional knowledge resources in the stimulation of innovative capabilities, and the competitiveness of firms and regions are combined in the concept of regional innovation systems. By this concept, it is argued that firm-specific competencies and learning processes can lead to competitive advantages if they are based on localized capabilities such as specialised resources, skills, institutions and shared common social and cultural values (Maskell and Malmberg 1999b).

In comparative studies of regional innovation systems, the relevance of various determinants for regional innovation potential as well as the innovative linkages and networks between different players, have been studied. It is generally conceded that the innovative performance of regions is improved when firms are encouraged to become better innovators by interacting both with various support organisations as well as other firms within their region. Basic stimuli in promoting innovative activities are not only the individual strategy and performance of firms, but also the institutional characteristics of the region, its knowledge infrastructure, and knowledge transfer systems (Doloreux and Parto

2004). These ideas have inspired studies on the spatial clustering of firms, in particular in the OECD.

The latter perspective is closely related to the views on innovation expressed in Neo-Schumpeterian theories as they focus on recurring structural changes, inspired by, what Schumpeter calls, the perennial gales of creative destruction, which is followed by waves of expansion and rapid growth. Pioneering entrepreneurs are responsible for creating these gales as they search for new productive and trade combinations (innovations in the Schumpeterian sense) to gain greater profits. In the Schumpeterian view of localisation and innovation, firms are viewed as learning agents. Hence, some Neo-Schumpeterian models of economic growth and industrial dynamics have much in common with evolutionary theories of economic growth, e.g. the discussion of 'regional innovation systems' (Lundvall et al, 1993). System interactions occur between firms and the innovation support infrastructure. A typology of Regional Innovation Systems (RIS) (Braczyk et al. 1996) based on dimensions of innovation activity (*governance infrastructure* and *business superstructure*) has been developed and helps to understand the similarities and differences in terms of the level and degree of RIS institutionalisation.

Recent studies on innovation systems indicate that the region is a key level at which innovative capacities are shaped and where value-generating processes are governed and coordinated (Asheim et al. 2005). Moreover, governments and national agencies now approach regional innovation systems (RIS) as key elements in promoting the innovativeness and competitiveness of regions and firms.

RIS are defined as interacting knowledge generating sub-systems, composed of public and private R&D establishments, higher education institutions (universities and colleges), technology transfer agencies, vocational training organisations and the production structure – i.e. the business community. RIS studies have been inspired by Porter's work on how clusters, geographically proximate groups of interconnected firms in the same or adjacent industrial sectors, can produce competitive advantage based on exploiting unique resources and competencies.

Although his work has also been severely criticized[21], the recent contribution of Florida[22] is also worth mentioning here. He argues that the role of the regions in the new era of global capitalism is a key element but is generally still misunderstood. Regions are becoming the

[21] The main arguments against Florida's theories are that he uses a biased data set (conflating city centres and metropolitan regions), that his association of the 'creative class' with economic development has no empirical basis, and that the notion of the 'creative class' is, as such, misleading, since there is no homogenous ' class' in that sense (Levine, 2004; Kotkin, 2005).
[22] Florida (2000), pp. 231-239.

reference points for the creation and transmission of knowledge. Florida introduces the concept of 'learning region'. 'Learning regions' are vehicles of globalisation: they function as collectors of knowledge, providing the necessary environment for knowledge creation, circulation, and learning. In opposition to old industrial regions, learning regions are characterized by bottom-up governance structures reflecting those of knowledge-intensive firms: mutual dependency relations, a network organization, decentralised decision-making processes, flexibility and a constant concern to meet the needs of consumers-citizens. More recently, knowledge externalities have been acknowledged to exacerbate spatial disparities of growth. The following table compares the opposing characteristics of industrial and learning regions.

The contrast is very evident between the functional logic that prevails in industrial regions and the territorial logic that is seen as making learning regions successful. Transition from one model to the other cannot be achieved without a regional strategy providing the impetus essential to mobilise the process of change[23].

	Industrial regions	**Learning regions**
Basis of competitiveness	Comparative advantages I. Natural resources I. Physical labour	Sustainable advantages - Knowledge creation - Continuous improvements
Production system	Mass Production I. Physical work √. Separation of production and innovation	Knowledge-based production √. Continuous creativity I. Integration production and innovation
Industrial Infrastructure	Arms's length supplier relations	Businesses networks
Human Infrastructure	I. Low cost and low qualified work I. *Tayloristic* workforce X. *Tayloristic* education and training system	X. ' intelligent ' work I. Continuous training and education
Physical and communication infrastructure	I. Infrastructures conceived on a national basis	I. Infrastructures conceived on a global basis √. Electronic exchange of information
Industrial governance system	√. Conflicting relations I. Hierarchical organisation I. Regulatory framework for control and command	I. Partnership relations of mutual dependency X. Flexible regulatory framework
Institutional governance system	Centralised, hierarchic and reactive functional logic X. Separation of skills I. Intervention based on market deficiencies I. Centralisation of decisions I. Administrative management	Ascendant and proactive territorial logic √. Integration of skills √. Intervention based on systemic deficiencies I. Decentralisation of decisions I. Public-private partnership

(Adapted from Florida, 2000)

Table 23 From industrial regions to learning regions

[23] Capron (2001).

More than ever then, innovation is a necessary condition for economic growth, and nowadays knowledge has become a production factor. In recent decades, *the model of innovation* gradually evolved *from being linear to that of an integrated and networking model*[24]. The linear model, dominant from the 1950s until the 1970s, views innovation as a straightforward path from the laboratory directly through to the marketplace. The incompatibility of the linear model with the present techno-economic paradigm has however received a great deal of attention in the literature (Kline and Rosenberg, 1986; Lundvall, 1988; Dosi, 1988). In contrast, regions characterised by an integrated innovation and production system with flexible linkage, feedback and looping relations between actors (Kline and Rosenberg, 1986) revealed themselves to be the winners in the competition race (for example: Third Italy (Pyke and Sengenberger, 1992) or Baden-Württemberg (Braczyk et al., 1998).

Innovation is a key weapon in today's system of global economic competition (Brazcyk et al., 1998). Major changes in the organization of production, policies, and business location also mean that the regional level has grown in importance as a source of innovation support for business. This is particularly so where regional business is predominantly small-firm based in nature, or linked in supply chains to larger enterprises. Some regional administrations are well equipped to perform this function, others less so.

3.4 The role of Business Networks in the Localisation of Economic Activity and Differential Regional Performance

In recent years, a number of different 'schools of thought' have described the various aspects of the resurgence of regional economies. The heterodox perspectives have in common a 'relational approach' to the discussion of regional development and competitiveness. Regional development and competitiveness stem from 'relational assets', which are primarily embedded within the regional economies – as opposed to the orthodox views, where technological development is seen as an 'external' factor to the regional economy. This development has inspired researchers to identify the various aspects of a regional environment that tend to foster 'endogenous' development.

Business linkages and networks have been recognised as very important features of the economic landscape. A substantial and varied literature reflects the research carried out within a range of disciplinary contexts. Although the terminology varies considerably, and the exact nature of cause and effect relationships is not always clear, it is nevertheless evident that business networks cannot be ignored in any review of the changing geography of economic activity in Europe.

[24] Greunz (forthcoming in 2006).

In the interests of clarity, it would be helpful to begin by briefly considering the nature of business linkages and networks, before reviewing the network characteristics of different types of clustering and agglomeration, and the relationships with governance environments, and with innovation. The section concludes with a discussion of the potential for networks to act as surrogates for agglomeration, and of the geographical implications of this.

3.5 Definition of Business Linkages and Networks

Business networks, and the linkages that compose them, have been variously defined and described by writers from a range of disciplines. A fundamental distinction should perhaps be made at the outset between those who focus on linkages/networks based upon transactions, and those who stress the importance of social relations and informal contacts between entrepreneurs. The former could be described as the 'transaction cost' school, while the latter could be labelled, the 'embeddedness' school. The former grouping equates to the older academic tradition, which can be traced back to the writings of Alfred Marshall in the 1890s[25]. The latter grouping is often associated with the Norwegian sociologist Granovetter (1985), but also draws very much upon studies of industrial districts in Italy, and of networks in South Asia. It has become popular in recent years, in association with the decline of manufacturing and the increasing role of service and high technology industries, in which the exchange of 'tacit knowledge' is especially important to innovation and growth.

3.6 Business Networks, Clusters and Agglomeration

McCann and Shefer (2004) distinguish three types of agglomeration or clustering behaviour, associated with (a) Marshallian or New Economic Geography clusters, (b) Industrial complexes and (c) Social Networks.

The first type is characterised by transient inter-firm relations (spot trading). Cluster membership and benefits are associated only with location, and are therefore open and free to all once local rent costs are met. According to the 'Marshallian School', agglomeration brings 'external economies of scale' due to reduced transaction costs, labour pooling and the rapid diffusion of technical information. The 'New Economic Geography' school built on the 'cumulative causation' ideas of Myrdal (1957), Friedman (Wight 1983) and Hirschmann (1958) producing a 'buttoned-down, mathematically consistent analysis' of agglomeration economies (Fujita et al 1999, Krugman 1994).

[25] For a 'potted' history of the concept, see Johansson and Quigley, 2004.

Industrial complexes are common among heavy industries where long term investment in locations and long-term inter-firm relationships along the production chain are necessary. Access to this sort of 'cluster' is restricted by high costs, and location may be dispersed (implying attenuated linkages).

The third type of cluster is typified by the term, 'New Industrial District'. Inter-firm relations are characterised by high levels of trust and co-operation, entry may be restricted according to social criteria, and the geographical manifestation is most likely to be relatively localised.

Moulaert and Sekia (2003) have provided a very detailed review of this last group, which they give the generic title, 'Territorial Innovation Model'. Over the past two decades, they explain, there has been a resurgence of interest in the region as an environment for innovation and economic growth. This has been associated with the rejection of Keynesian regional interventions and the acceptance of structural shifts away from heavy and manufacturing industries and towards light, technology-based industries and services. Within this context, there has been an interest in identifying the characteristics of regional environments, which can help to explain why some regions have adjusted to the 'post-Fordist' world better than others. This has resulted in the development of a number of 'Territorial Innovation Models', including:

- Innovative Milieux
- Industrial Districts
- Localised Production Systems
- New Industrial Spaces
- Clusters of Innovation
- Regional Innovation Systems
- Learning Regions

All these conceptualisations share many elements, and differ in emphasis rather than substance[26] – they are, indeed a part of the heterodox perspective identified previously. All of them, for instance assume that firms within an innovative region will interact within a relatively dense network of linkages. Most stress the importance of informal linkages as well as transactions. Several stress the importance of kinship relationships. Co-operation is generally considered more auspicious than competition, and path dependency is important, (in the sense that relationships of trust, traditions and institutions generally develop relatively slowly).

[26] Although Moulaert and Sekia argue that this unity is semantic rather than substantive, due to the flexible way in which the core concepts are treated.

3.7 Institutional Thickness and the Associational Economy

Most 'territorial innovation models' recognise the importance of links between firms and organisations within the public and third sectors. Johannisson *et al.*, 2002, propose a three-fold classification of business linkages. They define first order networking as comprising business to business links (both transactional and social), second order networking as comprising business to institutional links, and third order networking as indirect (social) links between firms via local institutions. Thus networks not only extend to include the public and third sector development organisations, but the latter are seen as an essential component of local networks, since they connect firms which may be unlikely to form transaction links.

Particular emphasis is laid upon second and third order links in the work of Amin and Thrift (1995) on 'institutional thickness', and Cooke and Morgan (1998) (among others) on the 'associational economy'.

Amin and Thrift (1995) claimed that a particular model of regional governance - –nown as 'institutional thickness' – can provide one of the preconditions for successful economic development. They suggested that institutional thickness may be broken down into four elements:

(i) A large number and variety of institutions (ranging from development agencies, local authorities industry associations, unions and research institutes, and, even, the firms themselves) to represent the actors in the network.
(ii) High levels of interaction within the network are necessary. 'The institutions involved must be actively engaged with and conscious of each other, displaying high levels of contact, cooperation and information interchange which may lead, in time, to a degree of mutual isomorphism.'
(iii) The development of '…sharply defined structures of domination and/or patterns of coalition resulting in both the collective representation of what are normally sectional and individual interests, and the socialisation of costs and the control of rogue behaviour.'
(iv) A 'commonly held industrial agenda, which the collection of institutions both depends upon and develops'. This common agenda for development may be formally defined, or simply a common set of priorities, perhaps reinforced by other sources of common identity, reflecting their embeddedness in local culture.

The authors stress that the first of the elements is a necessary precondition, but not sufficient without the development of the other three less tangible processes. 'What is of significance here is not only the presence of a network of institutions per se, but rather the

processes of institutionalisation; that is, the institutionalising processes that both underpin and stimulate a diffused entrepreneurship' (Amin and Thrift, 1995). Furthermore they point out that while the former is relatively easy to create by policy intervention, the institutionalising process is much more difficult.

More recently, it has been argued that the 'associational economy' offers a 'third way' (Cooke and Morgan, 1998; Garmise and Rees, 1997; Hudson et al 1997), between state and market led strategies. 'The common thread running through many third wave conceptions is the idea that to be an effective animateur of development the state must be reconstructed rather than dismantled and this means enhancing its capacity rather than its size' (Cooke and Morgan, 1998). This third approach, namely the associational model, considers more the efficacy of the state as opposed to the scale of state intervention (which had been a key distinction between previous Keynesian and neo-liberal approaches).

Like the concept of institutional thickness, the associational model is based upon 'networks of institutions, both private (such as firms) and public-sector (such as universities and research laboratories, etc) as well as 'intermediate' (trade associations, chambers of commerce, etc) (Garmise and Rees, 1997). However, it differs in that it explicitly seeks to empower the intermediate associations that lie between the state and the market, where economic activity is increasingly based on modes of collective learning and where competition increasingly involves partnership and interactive innovation (Cooke and Morgan, 1998).

Within this context, '…one of the key developmental roles of the state is to create the conditions – the formal framework as well as the informal norms of trust and reciprocity – whereby firms, intermediate associations and public agencies can engage in a self-organised process of interactive learning' (Cooke and Morgan, 1998).

Those promoting the associational model stress that the state is just one among many institutions in the developmental process. Salas et al (1999), for example, suggest that universities, local governments, labour markets, communities, entrepreneurs, infrastructure, and financial sources are all shapers of the economic structure of a region. Consequently, '… the effective use of state power is contingent on the active cooperation of others, hence it needs to collaborate with and work through the institutions which collectively constitute the national system of innovation' (Cooke and Morgan, 1998).

As noted earlier on, in recent years the concept of innovation as a driver of economic growth has shifted away from that of being an individualistic 'linear' technology transfer

process[27], towards an incremental, endogenous, group activity. We have been reminded (North and Smallbone 2000, Asheim 1999) that innovations are not necessarily based on high or new technology, and that new products and new processes often originate within the manufacturing sector, or from an interaction between producers and their customers/suppliers. Innovation therefore depends not solely on technology transfer arrangements, or the presence of individual 'innovators', but upon the characteristics of the entire local economy, the various actors, the relationships between them, and the environment within which they operate.

Such incremental innovation, based upon 'learning by doing', and information, which is not formally codified (tacit knowledge), is shared between entrepreneurs of firms through informal contacts. This shows that non-transactional business linkages are of vital importance in the development of regional innovation systems.

Amin and Cohendet (1999) point out that the popularity of endogenous growth theories based on dense localised networks has tended to result in a strong emphasis being placed upon informal, tacit knowledge. They describe the popular view that 'Firms in regions that are replete with the assets which support innovation and learning – information, knowledge, technology, ideas, training and skill – gain dynamic efficiency through the access they enjoy through networks of interdependency with other firms, formal institutions of learning and common conventions and understandings that surround firms.' However, they argue that 'formally constituted and distantiated networks of knowledge and learning based on universally available fruits of science and education' (Ibid p88) are of equal importance to regional economic growth.

3.8 Networks as a Surrogate for Agglomeration

Agglomeration and Business Networks are alternative responses (though not mutually exclusive ones) to the need to minimise certain costs, and to maximise access to information relating to innovation. Cost minimisation may be achieved either by reducing transport costs (agglomeration) or by offsetting lower transaction costs against higher transport costs (networking). The diffusion of innovation is driven by 'knowledge spillovers' which may originate either in research and development institutes (often in cities) or from within the industry itself.

[27] Marshall, 1920; Schumpeter, 1934.

Transaction costs tend to be lower in urban areas, where a large number of potential trading partners are located within a relatively small area, and trading institutions and services are well developed and easily accessible. Therefore, within urban areas or conurbations competitive advantage is mainly derived from 'agglomeration', whereby large numbers of firms, located within a relatively small area are able to trade without incurring high transport costs, while benefiting from a degree of product differentiation and diversity, and relatively low transaction costs due to the presence of institutions and services. Shared access to specialised pools of skilled labour is also important. Knowledge spillovers are available both from publicly funded research institutes, and through formal or informal contact between firms (Goetz and Rupasingha 2002 p1229). The relatively large number of trading opportunities means that 'spot trade' or 'anonymous market' transactions tend to be common, flexibility and the benefits of differentiation being more attractive than those of 'routinised' business linkages. As such, both the benefits of agglomeration and the majority of knowledge spillovers are external to the businesses; they are predominantly public goods (Johansson and Quigley, 2004, p.168).

Agglomeration economies are not easily available outside cities and densely populated industrial regions. Here competitiveness must be based upon another strategy to offset reduced transaction costs against the generally higher transport costs. Indeed, the so-called 'Californian School', e.g. the writings of Scott and Storper in the late 1980s, showed that low transaction costs could be obtained in localised production systems through extended, 'untraded interdependencies' (Scott and Storper, 1988). Therefore, it might be advantageous to distinguish between 'urbanization economies', which are the agglomeration economies that can be obtained in urban settings where firms have access to pools of knowledge and skilled labour, and 'locational economies' which have the economic advantages that stem from business-to-business relations in a local, specialized production system. This often results in the development of stronger business networks, composed of spatially, dispersed firms linked by repetitive transaction relationships. Such transaction links may also develop into channels for the diffusion of information relating to innovation – some of which are 'untraded', i.e. the ideas travel 'informally' through personal contacts and social networks. Unlike agglomeration advantages, business networks are not a public good; they are a form of 'club good' (shared between each pair of network members).

'..for many transactions, an established network reduces the effective distance between nodes, reducing the transaction (or transport) costs that would otherwise be prohibitive. When co-location is infeasible, networks may substitute for agglomeration.

This possibility of substitution means that small regions may survive and prosper – to the extent that networks can substitute for geographically proximate linkages, for local diversity in production and consumption, and for spillouts of knowledge in dense regions.' (Johansson and Quigley, 2004, p. 175)

The above findings reflect the situation at the close of the 20th century. Johansson and Quigley (2004 p175) argue that technological change (affecting both production and transport and communication) are already changing the trade-off conditions between agglomeration and networking in complex ways, such that during the first decades of the 21st century spatial patterns of business networking are likely to change considerably. One hypothesis might be that some peripheral regions could see a broadening of their economic structure as transport and communication improvements increasingly allow firms located there to participate in long distance networking. Whether a remote region can exploit these new possibilities and become more competitive will depend upon a range of local characteristics, including attractiveness to inward investment due to quality of life characteristics, and the potential for endogenous entrepreneurship, reflecting human and social capital, governance and so on. Furthermore, in the literature on the 'clustering' of economic activities it has been shown that clusters often owe their success to 'pipelines', e.g. relations to centres of knowledge or expertise further away, and sometimes even to research centres located on another continent (Bathelt, Malmberg and Maskell, 2004). In terms of remote European regions this might very well point to the fact that policy measures will have to be set up to ensure that emerging, local production complexes have access to such 'pipelines'.

The very awareness of the possibility of having developments that echo 'Marshallian districts' implies that re-agglomeration does not necessarily equate to re-metropolisation. Surely, growth continues to favour the 'core' areas, including the larger metropolitan areas in the Pentagon, but throughout the European economic space, differential growth rates and different regional productivity rates are nevertheless found within the 'core', as well as in other sorts of regions. As such then, the focus on re-metropolisation should be 'balanced' against a discussion of the processes of endogenous growth – and the weaknesses of Less Favoured Regions.

3.9 Concluding remarks

Based on the review of literature, the following lessons can be learned:

- There is a growing consensus within both orthodox and heterodox perspectives that innovation is a driving force behind economic growth, standards of living, international competitiveness, and regional development.
- Regional competitiveness is linked to productivity; higher productivity on a persistent basis is linked to absolute competitive advantages
- Knowledge spillovers provide a mechanism for enhancing the innovative performance and growth of firms. Co-location facilitates knowledge spillovers by providing opportunities for both planned and accidental interactions.

- Regional models that favour an integrated innovation and production system with flexible linkages, feedback and looping relations between actors – are however also possible beyond the main metropolitan areas
- The geographical proximity of economic actors matters since knowledge spillovers and externalities are geographically bounded, and knowledge and innovation accumulate in a given region
- MNCs – tapping in, but also re-ordering local economies
- Due to their limited size, SMEs tend to be particularly sensitive to regional variations in different kinds of external economies.