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## The ESPON 2013 Programme

### TIGER

Territorial Impact of Globalization  
for Europe and its Region

Applied Research Project 2013/1/1

Interim Report



EUROPEAN UNION  
Part-financed by the European Regional Development Fund  
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This report presents the interim results of an Applied Research Project conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

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# 1. Introduction

The ESPON 3.2 project on spatial scenarios identified Globalization as one of the four main challenges for European regions in the future. This has been taken up in diverse documents dealing with regional development such as the Territorial Agenda and the 5<sup>th</sup> Report on Economic and Social Cohesion, as well as, to a limited extent, the Green Paper on Territorial Cohesion and the EU2020 strategy. Beyond this regional scale, raising the competitiveness of Europe as a whole in the context of Globalization is also one of the major driving forces behind the most important EU-level policy of the last decade, the Lisbon Strategy.

Within this policy context, the main question in the policy domains covered by ESPON is obviously the role and fate of regions and regional economies in Europe's path in a globalised economy. This means, on the one hand, the impact of increasing openness, increasing trade and more global location decisions on the economic development of individual regions and, on the other hand, the role of regions in the overall position of Europe in the global economy. The project raises both of these issues:

- the impact of globalization on European territories at different scales. Since globalization certainly has a spatially differentiated impact, this first issue raises the question of regional competitiveness in globalization but also its impact on territorial and social cohesion. How can territorial policies help improve the position of the different types of regions in the world and ensure the objectives of social and territorial cohesion despite the potentially unequal impacts of globalization on European territories?
- The second issue takes the reverse perspective. What is the situation of Europe in the world and how can it be improved? More precisely, how can territorial policy improve European competitiveness? For example, should we invest mainly in the global cities to improve Europe's position in the world?

Figure 1 illustrates the general approach of the project to achieve in providing some inputs to these major questions and proposing policy options at different scales.

At the first level, three types of analyses are carried out:

- i. WP2.2 aims at assessing the territorial structures of Europe in a comparative perspective.
- ii. WP 2.3 aims at assessing how Europe, its regions and cities, participate in the global flows and networks (trade, finance, knowledge, human mobility) and how the global processes impact on the territorial structures of Europe;
- iii. WP 2.4 aims at analysing how Europe and its territories position themselves in the world through cooperation and networking with other parts of the world.

WPs 2.2 and 2.3 are closely related since territorial structures impact on flows and, in reverse, current flows in globalization constantly reshape the territorial structures of Europe.

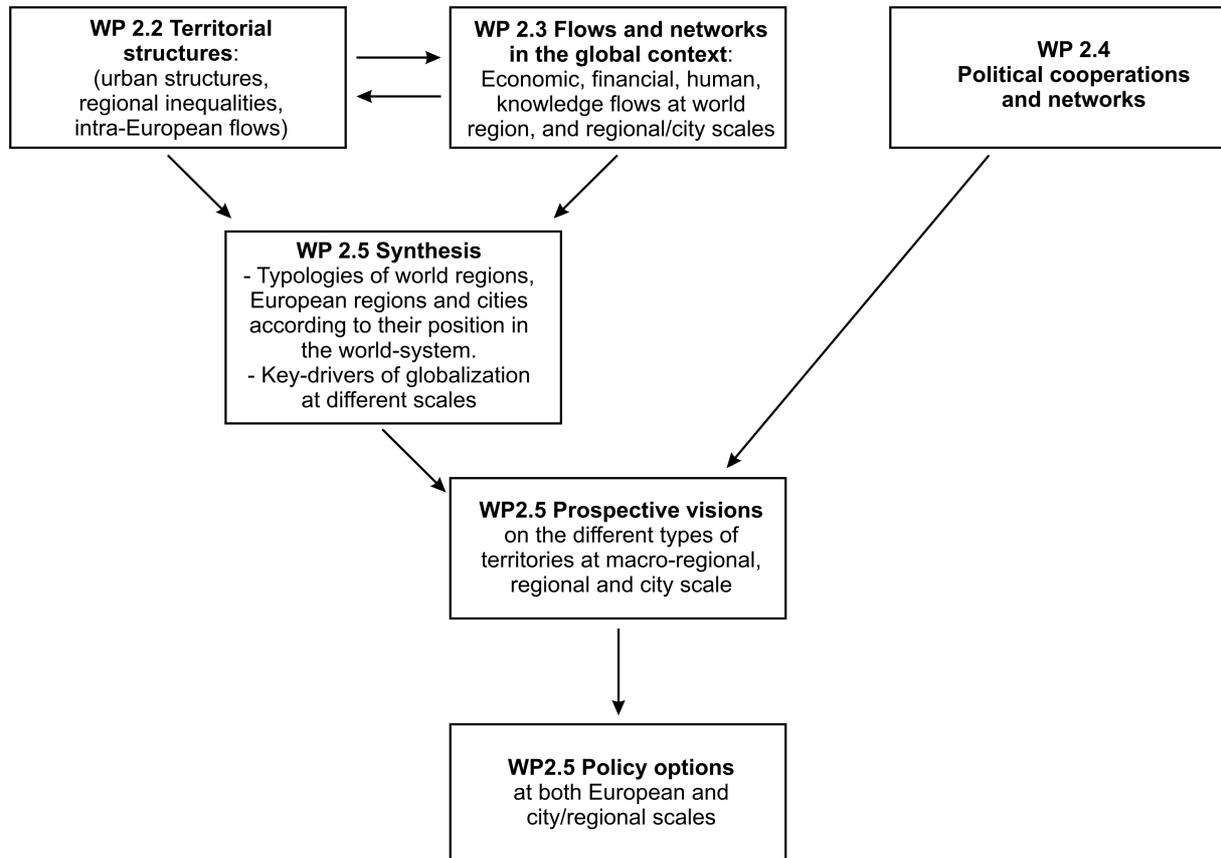
At the second level, we aim at synthesizing the above analyses by answering the major scientific questions:

- i. How do territorial structures impact on global competitiveness?
- ii. How do global flows impact on Europe and its territories?

This will end up with classifications of European cities and regions according to their role in the world-system. Also, analyses implemented in WP2.2, 2.3 and 2.4 will result in identifying key drivers of globalization at different scales.

At the third level, by crossing key-drivers of globalization and typologies at different scales, we will produce prospective views on the different types of territories at macro-regional, regional and city scale.

Finally, at the fourth level, prospective analyses segmented by types of regions and visions for Europe described in WP2.4 will feed into the reflection to propose policy options at both European and city/regional scales.



**Figure 1. General implementation of the project**

In this interim report, we describe the state of the project mainly focusing on the first level. The plan of the report is the following one:

1. In line with what is expected from the interim report, we first provide an operational concept of globalization and of the territorial aspects of the globalisation process with most relevance for Europe and its regions. This is largely based on the answers to the call which already provided answers on how to achieve operational conceptualisation of globalization, what types of flows should be taken into consideration and how to deal with the territorial impact of these flows.
  2. For analytical WP and sub-WPs (WP 2.2, 2.3 and 2.4), we follow similar structures by presenting:
    - theoretical background;
    - methodologies and databases. We precisely describe the current state of the database. This task of collecting data has taken most of our time in the last months but is now on the point to be achieved. This means that we have now one complete year to implement rich and original analyses;
    - first results are shown through maps briefly commented. This is just to give ideas of what can be achieved with data we collected in the different WPs.
    - finally, the steps toward the final report are described in the final section of each WP.
  3. WP 2.5 gives details about the approach which will be followed to synthesize the scientific results of the project and propose policy options from the above analyses.
  4. We end up with a proposal of table of contents for the final report.
- These two last points have of course to be discussed in-depth in the TPG and sounding board meetings.

So, what have we achieved up to now?

- literature review;
- databases about competitiveness and social cohesion indicators at country level in the world; about cities in Europe and USA; about trade, financial, migratory, maritime and air flows at different scales; about political cooperation between EU and the rest of the world.
- first rough analyses on urban database
- first rough analyses on flows about the position of Europe in the world;
- first rough analyses on EU political cooperation with the rest of the world.
- Plan for the case studies. All case studies are on the way and they are in this report already inserted at the relevant place. This includes London as a global city (WP2.2); Le Havre Paris as an illustration of the port development (WP2.3.5); Rome to studying migratory flows and their impacts (WP 2.3.4); the textile, software and automotive industries (WP2.3.1); the networks of excellence (WP2.4).

What remains to be done?

- in-depth analyses to achieve each work package's objectives;
- connect the different analyses to synthesize the results, notably through typologies at different scales;
- propose prospective views at different scales;
- propose policy options at different scales;
- develop case studies.

This further work is in two phases: the first phase (until autumn 2011) is mainly dedicated to achieve the individual work packages; the second phase (from autumn 2011 to February 2012) is the integrative phase of the project resulting in coherent policy options.

## 2. Globalization and its territorial aspects

The concept of globalization is largely discussed in the literature with different views and perspectives (Veltz, 1996; Chase-Dunn, 1999; Sklair, 1999; Cochrane & Pain, 2000; Beaverstock et al., 2000; Sassen, 2001). In the framework of this project, we first need a pragmatic rather than a theoretical definition of globalization. However, assessing the territorial impacts of globalization does require further theoretical consideration in order to better focus on empirical analyses. In this project, globalization is defined as an unprecedented growth of flows and, as a consequence, a growing integration between different parts of the world. For Europe, it means that exchanges with the rest of the world are rapidly growing and that the interdependencies between European territories and the rest of the world are stronger than before.

The types of flows concerned by this growth are of course a central issue for this project and need to be tackled at this stage. The main conceptions of globalization have generally focused on economic aspects or on cultural features (Sklair, 1999). In this project, we will mainly focus on the economic perspective. This choice is not related to the relevance of these approaches but rather to the objectives of assessing European territories in relation to global flows as well as the necessity of achieving policy options in terms of competitiveness, social cohesion and territorial cohesion. However, the economic perspective does not mean that we focus only on pure economic flows (trade, FDI...) but it includes other types of flows strongly related to the economy, for example demographic and knowledge flows.

From the literature, we identify the major relevant flows that impact on a differentiated way on Europe and its territories.

First, the increasing trade of Europe with the rest of the world is at the same time a potential threat for regions specialized in low technological manufacturing industries because of increasing competition with low wages countries and an opportunity for regions specialized in the highest technological segments and in high level services because of their increasing markets. However, previous studies have already shown that this vision is too mechanical and simplistic since, even in some of the most potentially vulnerable regions, regional characteristics have in some cases permitted sustained good economic performance (DG Regio, 2008).

Second, another key-driver of globalization is the increasing role of Transnational Corporations and subsequently, the growing potential impact of foreign direct investments on regional economies. The capacity for cities and regions to attract investments is thus a decisive factor of their competitiveness.

Third, financial flows play a decisive role in the globalization processes. The main feature of the current second wave of globalization is not rising trade and FDI, which have already reached high levels at the beginning of the twentieth century, but financial flows less directly related to the production process. This financialization of the world economy dates from the 1980s. Few studies have analysed the geography of this new financial system at the global and, moreover, at the regional scale (Laulajainen, 2003). Even fewer studies have been able to assess the consequences of growing financial flows from a perspective of territorial development. Of course, there has been a general movement of spatial concentration of financial functions at different scales (global and national mainly). The reasons for this are well known and relate, on the one hand, to agglomeration effects and, on the other hand, to the growing concentration of economic activities in terms of property. But the issue of the consequences of the growing concentration of finance at both global and national levels for territories which are not the global and leading cities is rarely raised. It is absolutely necessary to treat these questions since the financial crisis has a global impact on the world economy, reshaping once again the economic geography of Europe.

Fourth, human mobility has increased and spatially extended in the last decades, at least for the most qualified segments of workforce. The attraction of qualified labour has thus become an important aspect of territorial competitiveness. The international debate about this topic was stimulated and inflamed by the seminal work of Richard Florida (2002). This scholar argues that the "creative class" – that we interpret as a proxy of the highly skilled workers – is very mobile in the USA. The same phenomenon is revealed for Europe (Florida and Tinagli, 2004). This idea is very controversial and has stimulated further research. Martin-Brelot *et al.* (2009) for example impugns the high level of mobility of the "creative class" in the European context providing empirical evidence that disproves the Florida thesis.

Fifth, "knowledge flows" are decisive aspects of globalization and do impact in a much differentiated way the European territories. In the current era of globalization the diffusion of knowledge has been facilitated by the decreasing costs for transportation of goods, people, and information, deregulation, liberalization... However, there are no guarantees that a more rapid diffusion will benefit all nations and regions, since the value of knowledge for the receiver is dependent upon his/her absorptive capacity. Furthermore, since there are increasing returns in knowledge production there are strong forces stimulating the spatial agglomeration of knowledge production. The spatial extent of knowledge spillovers and knowledge flows more generally is a critical factor for the territorial development in Europe.

We rely on two theoretical backgrounds to assess and understand how globalization and the growing flows related to it impact on territories. These theories largely ignore each other but do not necessarily enter in contradiction.

The *core/periphery* approach provides useful conceptualization to deal with the territorial impacts of flows in the world-system (Wallerstein, 1980). Also, Global Commodity Chain approach – built upon the world-system approach – provides operational tools to assess the position of economic actors and territories in the international division of labour or commodity chain (Gereffi, Korzeniewicz 1994). In territorial terms, the basic tenet of world-system approach is that the world is, at different scales (the world, the macro-regional blocks, the nation-states...), divided between centres – rich and powerful – and peripheries – poor and dependent. This opposition is historically inherited but its spatial configuration may evolve across time. This theoretical perspective has informed the consideration of issues of uneven economic development at different spatial scales in the academic literature and is an important input to policy making on the globalization process. To ignore it could sometimes lead to much generalized policy priorities, such as the necessity for all regions to raise their position in the value chain when, in practice, regions have different inherited positions in the international division of labour. The *core/periphery* theory thus might help have more nuanced policy approaches to deal with such distinctions.

From *the network/global cities* perspective, globalization has an impact on spatial patterns of growth due to the advantage it gives to the most global and connected cities (Castells, 1996; Sassen, 2001). Sassen's 'global city' conception is particularly useful since it proposes a multiscale perspective: "The massive trends toward spatial dispersion of economic activities at the metropolitan, national and global level, which we associate with globalization, have contributed to a demand for new forms of territorial centralization of top-level management and control operations" (Sassen, 1996). According to this view, (global) cities are not only nodes within a network but they are part of a global process of complementary decentralization and centralization of economic activity at different spatial scales. Such a conception helps us understand spatial processes of globalization beyond the major nodes, that is to say the global cities. However, it should be kept in mind that, in the context of flexible capitalism that emerges from the eighties, cities – and mainly big cities – have a competitive advantage which should not only be associated with globalization, but also with Marshallian

contextual factors such as size of labour pool, the specialization and diversity of inputs this provides, as well as technological spillovers (Turok, 2004). In this perspective, globalization mainly changes the extent of the international competition not the decisive factors of competitiveness. The question of the importance of the global connectivity of cities, all other things being equal, should be addressed by this study, extending the work done in other European projects (see the FOCI ESPON project).

The existing literature provides little systematic evidence on this complex topic of the territorial impact of globalization. We find either a globalization perspective which pays too little attention to territories, at least never in a systematic way and in an empirical perspective, or a regional literature in which globalization is nothing more than a backdrop (see for example Dunning, 2002; and to some extent the "Globalization and regional economies", OECD, 2007). Few attempts have been made to provide a more systematic analysis of the territorial/regional impacts of globalization in Europe. The OECD study on "Globalization and regional economies" (OECD, 2007) and the DG REGIO studies (2008, 2009) on regions vulnerable to, and benefiting from globalization and increased trade, are the most notable exceptions. They come to the conclusion that sectoral specialization is not the decisive factor determining regional success in the world economy. Also, even though connections to the rest of the world may be correlated with better economic performance in general, this relationship is far from strong and systematic. From these studies, it appears very important to go beyond a sectoral approach and to see territorial position in the world economy also in terms of tasks and functions (Baldwin, 2006; Grossman & Rossi-Hansberg, 2008). In our project, these studies will be used as a starting point.

In conclusion, this project opts for a pragmatic basic definition of globalization, which allows us to keep the windows for empirical analyses open. However, proper consideration of different theoretical approaches is still necessary in order to inform the treatment of time and space perspectives on globalization in the research. Theoretical approaches are also important in highlighting the dialectical process between territorial structures and globalization: on the one hand, territorial structures help us understand the way that European territories – and Europe as a whole – are facing the challenges of global processes; on the other hand, these global processes – that is to say increasing flows and connections across space – are reshaping the territorial structures of Europe, and have huge impacts on the economic and social realities of the European territories.

### **3.WP 2.1. Territorial structures on a global scale: Divisions of the world and European performances in a comparative perspective**

This part of the project aims at providing a functional division of the world and a comparison of Europe with other parts of the world in terms of competitiveness, territorial cohesion and social cohesion.

To this purpose we have built a country-level database, almost completed, including different themes related to the latter three aspects. In the next period we will focus on the analysis, provide divisions of the world highlighting territorial structures on a global scale, and propose an in-depth comparison of Europe with other regions of the world as far as competitiveness, social and territorial cohesion are concerned. This comparison will also be fed by the other work packages such as the analysis of territorial inequalities.

This report presents the elaboration of an atlas of Lisbon indicators as a basis to achieve our objectives (section 1). We will also show some maps illustrating the performances of our database (section 2), and conclude with the working plan until the draft final report (section 3). The current state of the atlas of Lisbon indicators can be found in annex.

#### ***a. Elaboration of an atlas of Lisbon indicators***

##### **i. Selection of thematic indicators according to the Lisbon strategy**

The Lisbon strategy political orientations and territorial effects are most of the time assessed at the European level (i.e. national or regional level within the European Union space). However, as one of the aims of the Lisbon strategy is to make the European Union “**the most** competitive and dynamic knowledge-based economy **in the world** capable of sustainable economic growth with more and better jobs and greater social cohesion”, we stress the importance of taking the rest of the world into account in our analysis.

Starting from the example of ESPON project 3.3, we analyze the definition of the Lisbon strategy and try to interpret the thematic it develops in operational indicators. At the end of the process, the database should contain indicators that allow a comparison of the ESPON/EU spatial position with the rest of the world countries regarding the Lisbon strategy indicators. The main themes developed are the following (the complete list of indicators is shown in Table 1):

- ⇒ **Wealth & Population.** Those are classical and well-known indicators that have already been analyzed in many reports, including ESPON 3.4.1. “Europe in the world”.
- ⇒ **Telecommunication.** Those indicators will be used to take into account the changes in global productive processes in which the ICT dimension has an increasing significance.
- ⇒ **Higher education and research.** The research and development dimension is a major question in the Lisbon strategy analyses because it is an indicator of innovation capabilities. Data on higher education also reveal social dimensions such as university fees and public expenditure per student.

- ⇒ **Labour.** Maintaining employment in EU countries despite the competition with low labour cost countries is one of the aims of the Lisbon strategy. Two dimensions are present here: "quality" and "quantity" of labour. Like the indicators on higher education, indicators on labour have a competitiveness and a social dimension.
- ⇒ **Environmental indicators.** They will be used to assess the "sustainable" dimension of the Lisbon strategy.
- ⇒ **Health.** Health indicators are quite interesting to analyze the evolution of the welfare model of the European states. Moreover, the health situation of the population is also relevant to analyze the "sustainable" dimension of the Lisbon strategy.
- ⇒ **Education.** Education indicators are efficient indicators to analyze the social situation of countries. Different aspects can be analyzed: the cost of education, public expenditure in education, child enrolment rate (and particularly girls' enrolment, etc...).
- ⇒ **Poverty and inequalities.** Those indicators will be used to assess the social dimension of the Lisbon strategy.
- ⇒ **Gender approach of some indicators.** They will contribute to examine the "sustainable" dimension of the Lisbon strategy.

## ii. Building the database

Our first step in the construction of the database was to find indicators linked to the major issues of the Lisbon strategy and to find sources for those data.

The main advantage offered by the best known data providers (World Bank, UNESCO, ONPP, OECD...) is their reliability. Indeed, those organisms have collected and dealt with data for decades and have a huge experience. The data collected until now are almost completed, especially the usual indicators like GDP or Population. Some exceptions are mainly the indicators that measure (relatively) recent phenomena like the number of internet users per country or the HIV prevalence.

To deal with the problem of incomplete data, we first need to increase the number of our sources. Second, we will call upon national statistic agencies (when they exist). Finally, we will try to find some ways to make statistical interpretations.

Enhancing our database will enable us to find territories similar to Europe allowing the best and finest comparisons possible. Table 1 shows the advancement of the work on the database.

## I. Competitiveness Indicators

### 1.1 - Richness & Growth

<i>Indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
GDP	Good	completed	1990-2009	World Bank
GDP/Inhabitant	Good	completed	1990-2009	World Bank
GNI	Good	completed	1990-2009	World Bank

### 1.2 - Population & demographical structure

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Population	Good	completed	1990-2009	World Bank
Migration (net values)	Good	completed	1990-2009	World Bank
Dependency Ratio	Good	completed	1990-2009	UNPP
Life Expectancy	Good	completed	1990-2009	World Bank
Median Age	Good	completed	1990-2009	UNPP
Age Structure	<b>LACKING</b>			

### 1.3 - Telecommunications

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Telephone lines	Good	completed	1994-2009	UIT
Telephone subscriber	Good	completed	1999-2005	UIT
Cellular	Good	completed	1994-2009	UIT
Nb PC	Good	completed	1999-2005	UIT
Internet host	Good	completed	1999-2005	UIT
Internet User	Good	completed	1999-2009	UIT

### 1.4 - Higher education & Research

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Graduated students	Rather good	not completed	2000-2005	UNESCO
Graduated students by domains	<b>LACKING</b>			
Superior Students	Rather good	not completed	2001-2005	UNESCO
Public expenditure/Student	Bad	not completed	2000-2006	UNESCO
Expenditures on R&D	Rather good	not completed	1996-2008	UNESCO
R&D personnel	Rather good	not completed	1996-2008	World Bank

\* attention risques de données manquantes selon les pays

### 1.5 - Labour

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Labor cost	<b>LACKING</b>			
Employment Rate	Bad	not completed	1991-2008	World Bank
Work by Sectors	Bad	not completed	1980-2008	World Bank
Unemployment	Bad	not completed	1980-2008	World Bank

### 1.6 - Green Indicators

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
CO2 Emissions	<b>LACKING</b>			

## II. Social & Territorial Cohesion

### 2.1 - Health

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Child Mortality	Good	not completed	1992-2009	World Bank
Health Expenditure per Capita	Good	not completed	2003-2007	World Bank
HIV Prevalence	Good	not completed	1990-2008	World Bank
Couverture assurance maladie	<b>LACKING</b>			
Couverture vaccinale à un an	Good	not completed	1980-2009	WHO

### 2.2 - Child Education & Literacy

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Literacy Rate	Good	not completed	1975-2008	World Bank
Primary School Enrollment	very bad	not completed	1970-2010	World Bank

### 2.3 - Poverty & Inequalities

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
HDI Index	Rather good	not completed	1980-2010	UNDP
GINI Index	Very bad	not completed	1980-2007	World Bank
HPI Index	<b>LACKING</b>			

### 2.4 - Work Indicators - Gender Approach

<i>indicator</i>	<i>Spatial coverage</i>	<i>Time serie</i>	<i>Time Coverag</i>	<i>Sources</i>
Gender Unemployment	Very bad	completed	1980-2008	World Bank
Revenus H / F	<b>LACKING</b>			
Girls education	<b>LACKING</b>			

**Table 1. Definitive list of indicators, with sources and availability.**

### ***b. The atlas of Lisbon indicators: First results***

To assess the situation of the European Union in the world at the beginning and the end of the Lisbon strategy period (1990s to 2010s), the ideal solution would be to map the indicators in 1990 and in 2010. However, one main difficulty is linked to the quality and availability of data, especially social data at the world level. We still have some gaps in the database and we need to complete the missing values and improve their quality. For this report we have chosen to use two main complementary solutions in order to show the evolution of European countries' position in the world as far as Lisbon strategy indicators are concerned (both are not always used for all indicators in the report):

- Build two maps of the beginning and end of the period
- Build one map showing the evolution between 1990 and 2010.

In some cases, the map of evolution has no meaning if the situation at the beginning of the period is not shown, because of catching up processes from very low initial levels. This is exactly what can be observed from the internet annual growth rate between 1999 and 2009.

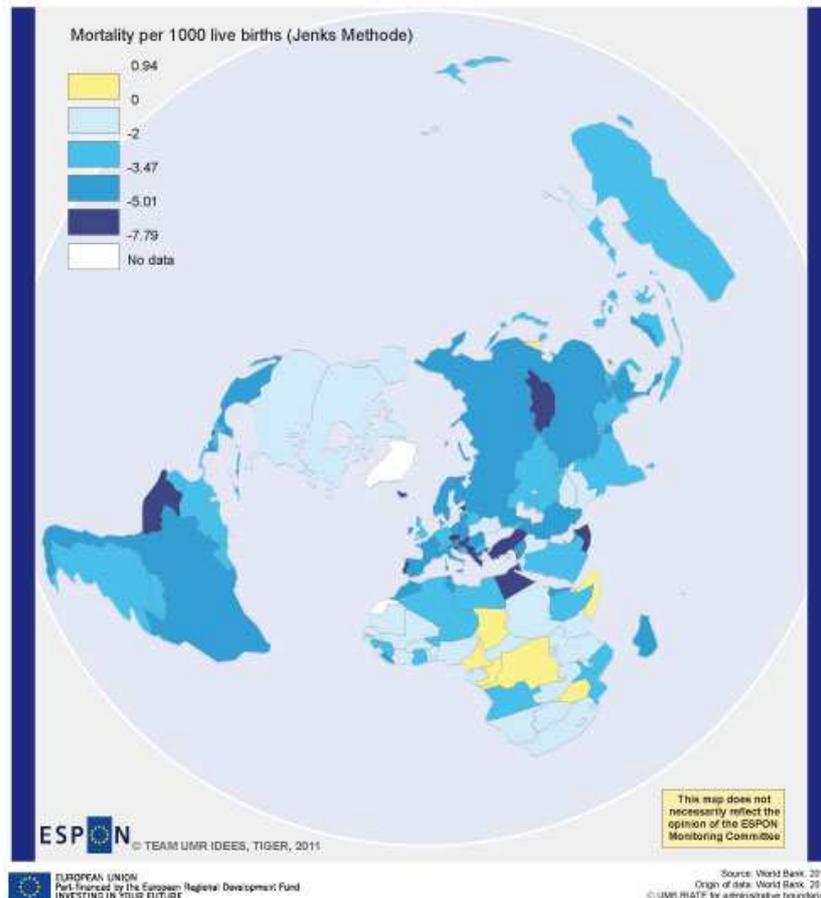
In this section, some interesting maps are produced and commented. GDP, population and demography figures have often been examined in previous ESPON reports (notably

ESPON 3.4.1. "Europe in the world") and are well known. We have chosen here to focus on less used indicators, and first, health indicators because we think they are efficient to show the evolution of social situations. We will comment briefly two indicators that can be seen as "competitiveness" indicators, but not directly linked with wealth such as internet connection level. All other maps on completed indicators are available in the annex of the report.

## i. Health

The following comments are based on 2 indicators that can be considered as "proxies" in order to measure the variations of health inequalities in the world and to evaluate the "sanitary" parts of "social cohesion". They include both epidemiological (infant mortality) and "structural" indicators of the health system (health expenditures...). A special attention is given to situate Europe in the contemporary transformations of the world-wide health systems, especially by focusing on the variation of the out-of-pocket expenditure on health.

### **Infant Mortality**

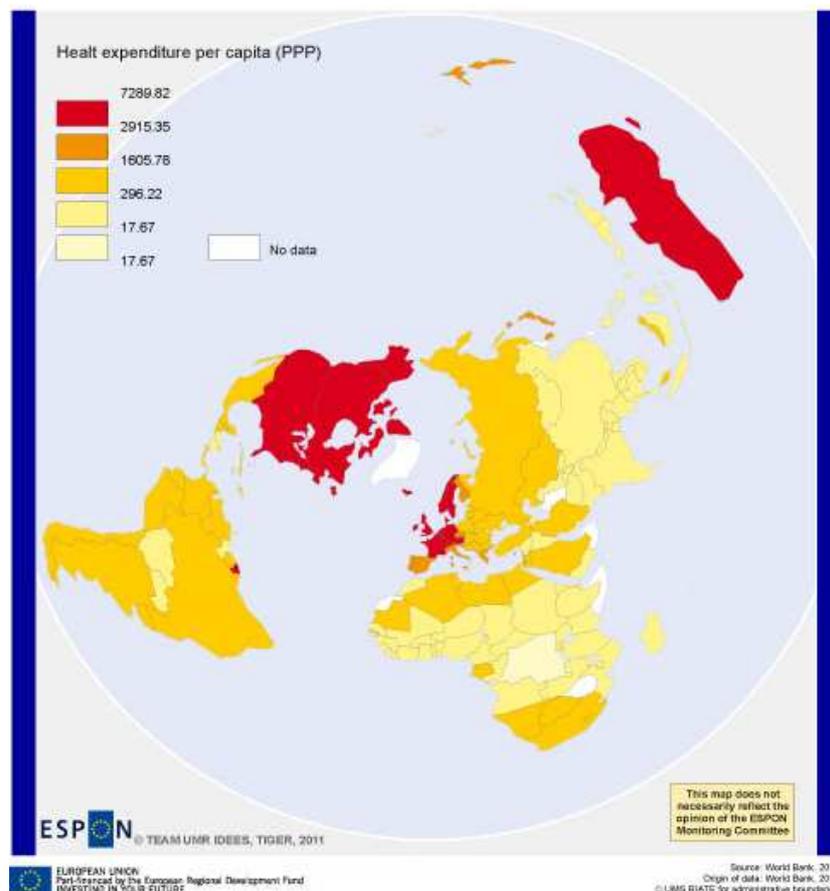


**Figure 2. Evolution of infant mortality on the 1990 – 2010 period**

This ratio is the number of infants dying before reaching one year of age per 1,000 live births, in a given year. As such, these precious indications translate the mutations of social conditions prevailing in a population. As a matter of fact, compared to all other indicators, within two decades child mortality shows a very strong decline.

In 1990, the picture offered by the ratio showed clear evidence of the great divide between North and South, with low figures attached to the richest countries, including all European nations. Twenty years later, in spite of the well documented increase of inequality in the world, the gap has been reduced, except in Africa and South Asia, where high figures remain with slow dynamics. It is noteworthy that the main reducing transition occurred mainly among the neighbouring states of the most well off countries (i.e. North America and Europe). As such, Turkey and the entire Maghreb have joined or are on the way to join the group of low child mortality states. On the contrary, Asian fascinating economic growth did not lead to the expected reduction of the ratio. This indicator can be an argument to prove that economic growth is, at least in a first step, far from being sufficient to measure the improvement of living conditions.

### **Health expenditures**



**Figure 3. Health expenditure in 2007**

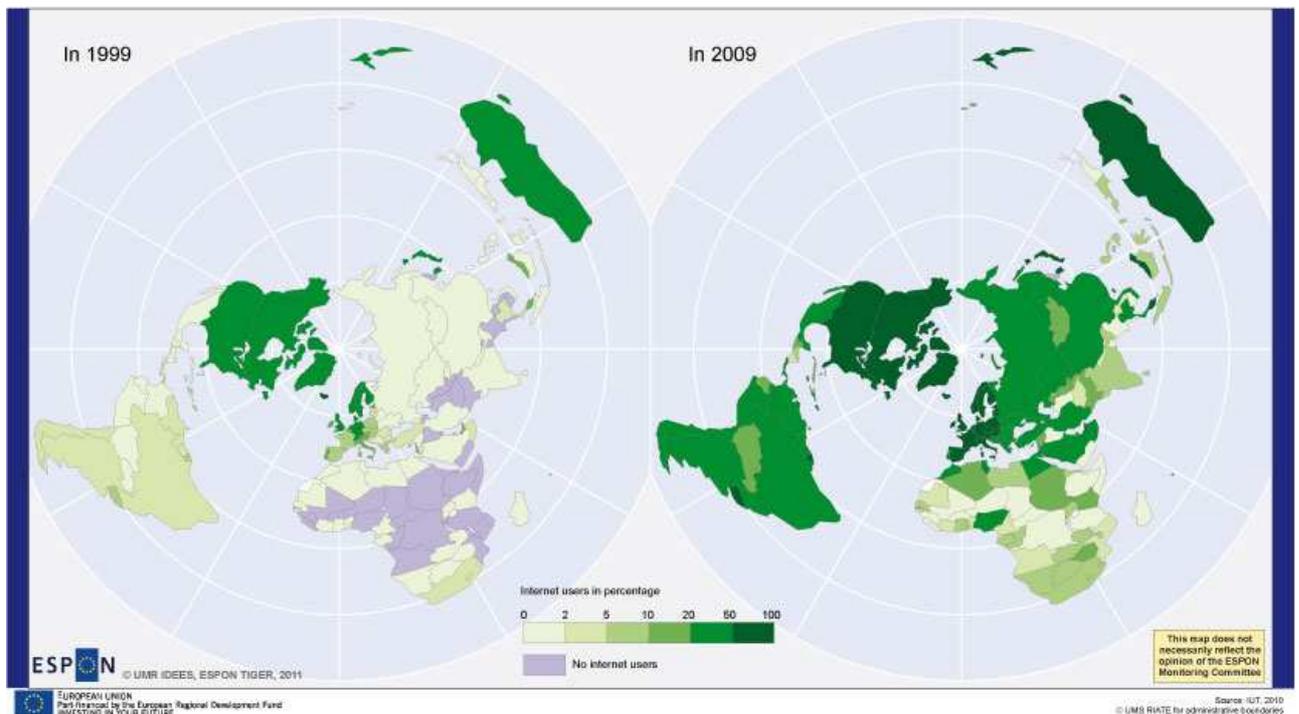
Health expenditure summarizes, as percent of Gross Domestic Product, the total private and public health expenditure. It covers the provision of health services, preventive and curative, including family planning and nutrition, but excludes the provision of water and sanitation. Within a short span of time, no real dynamic was expected between the two available years of 2003 and 2007. Nevertheless, the steadiness of spatial structures could be explained by the well known statistical correlation between the level of wealth of nations and the level of national health spending. As child mortality, health expenditure reveals the impressive division of the planet: the lowest expenditure in the poor countries, still including the emerging ones, and the highest in North America especially. In this regard, European countries appear in a second rank but not all of them offer a medium position. Broadly speaking, since the cold war, a frugal East has been opposed

to a well off West, though United Kingdom and Sweden sustain a good level of health indicators and at the same time, quite reduced health expenditure.

## ii. Telecommunication

Telecommunications data and particularly the internet users' data are quite relevant to analyze the EU position in the world as far as the competitiveness dimension of the Lisbon strategy is concerned.

The diffusion of the internet use to a large public is quite recent: it really emerged in the nineties. During this period the discussions on the telecommunication infrastructures, internet connections and their role in the development have been very frequent. In developed countries the telecommunication sector is not only seen as an interesting domain of innovation but also as a necessary tool to face changes in the global productive process. The map of the evolution of the internet users' rate is presented here. No data is freely available at state level before 1999 (the International Telecom Union provides them from 1999), even if global figures are available from 1994.



**Figure 4. evolution of the use of the Internet 1999-2009**

The leading position of EU countries together with other developed countries has been maintained between 1999 and 2009. Those countries were among the first to experiment rates of internet users higher than 20% (even if the situation is contrasted between European countries in 1999), and they are still among the countries where the highest rates can be observed. During this ten year period, the situation of European countries has been at least maintained if not reinforced in this field.

### ***c. Toward the final report***

The work until the final report includes first the improvement and extension of the database, followed by a reinforcement of the analyses to achieve the main objectives.

#### **1. Improvement of the database and finalization of the atlas of Lisbon indicators**

- ⇒ The first future step will be to **check deeply and to complete the database** as much as possible, using the methods suggested above.
- ⇒ The improvement of the world country database will allow **updating the atlas** of "Lisbon indicators".
- ⇒ Next, the database will be extended by **using the regional rather than national scale** for some indicators and large countries in order **a)** to make the comparison between selected world regions but also **b)** to build a more accurate vision of the world on some specific and refined indicators.

#### **2. Analyses**

On this basis, we will fulfill the two major analytical objectives of this work package

- ⇒ We first have to propose **comparable world regions** in order to deepen the analysis of the EU position in the world. We will compare the ESPON space with Northern America (Canada, USA and Mexico) where the indicators will be gathered at the infra state level. The second region we would like to compare the EU with will be an Asian one. We propose to look at the most developed countries of Eastern Asia (Japan, South Korea, Taiwan and Singapore) and China separately. For these comparisons, we suggest to start from the indicators of the Lisbon strategy already collected but to be completed by more refined data on issues for which data are not available for all countries (some social cohesion indicators in particular). We will of course use the literature on the subject. This comparison will also be enriched by the indicators provided by other work packages, for example on territorial inequalities, knowledge flows, migrations etc.
- ⇒ Using the world database on Lisbon indicators and mainly the dynamics indicators, we have then to build a **regionalization of the world**. In a first step we will use classical methods of spatial analysis to explore similarity and proximity. Concerning the similarity approach we will use multivariate analysis methods that produce homogenous groups of spatial units. We will also use regionalization methods based on a proximity approach, such as area of influence or area of potential. In a second step, we propose to go further in the regionalization of the world by using regionalization methods based on the fuzzy logic approach taking into account the three conceptual principles of regionalization (homogeneity, interaction and localization) and based on the concept of similarity (Ruffray S. (de), 2007). The interest of such an approach is to put stress on transitions or overlapping areas that reveal complex spatial structures that classical methods are unable to catch. From a methodological point of view, another advantage of this set of methods is to mix quantitative and qualitative indicators in the analysis. In addition, the method proposes a dynamic vision of space thanks to the fuzzy region descriptions that underline diffusion and/or conflict areas. Using fuzzy logic methods together with a long term database will provide an interesting picture of the dynamics of world regionalization and therefore the evolution of Europe's position on the world scene.

## **4. Work Package 2.2. Territorial structures at continental scale: urban structures and territorial inequalities in a comparative perspective**

The main objective of this WP is to assess the territorial structures of Europe in a comparative perspective and their impacts on competitiveness, social and territorial cohesion at both the European scale as a whole and a regional/urban scale.

This is absolutely vital to allow political reflection on the situation of Europe in the world and how can it be improved. More precisely, it should shed light on how territorial policy can enhance European competitiveness. For example, should we invest mainly in the global cities to improve Europe's position in the world? Moreover this question cannot be separated from the question of territorial and social cohesion. This is why both urban structures and regional inequalities are tackled in this WP.

The analyses of globalization have highlighted the importance of territorial structures – the space of places – to understand the space of flows at the global scale. This work package together with WP's 2.3.1 and 2.3.2 are founded upon this conception. More precisely, we are working at two different scales:

- at the urban/regional scale, we are trying to understand how cities' participation in global networks is related to their spatial and economic internal structures and how it impacts on their competitiveness;
- at the continental scale, we will assess whether urban structures at continental scales – the level of concentration of gateway and urban functions – might play a role in EU dynamics as a whole in the world economy.

In this part of the study, we will build on the data and analyses provided by the ESPON 1.1.1 and 1.4.3 projects as well as the FOCI ESPON project. By using the results of WP2.3, especially WP2.3.1, WP2.3.2 and WP2.3.5, we will be able to assess the connections between European cities and the rest of the world and moreover to provide an in-depth analysis on gateways (financial, maritime, air), including the physical assets of these different types of gateways. It will enable us to map the changing urban structures which support connectivity to global service business flows across the European territory. Second, this Euro-centric mapping will be compared with contemporary urban structures present in other 'developed world' economic regions. Together, these two scales of comparative urban analysis (within Europe, and between Europe and other developed world regions) will inform consideration in WP2.3.1 and WP2.3.2 of how contemporary global spaces of business flows map onto the territorial structures of urban spaces of places.

To achieve this major task, we will build a database on European and US cities including size, structure, competitiveness and connectivity indicators. This database is nearly achieved while some indicators derived from WP's 2.3. have still to be integrated.

In this interim report, we first produce a literature review on recent trends in territorial structures to develop the main questions briefly raised in the introduction. Second, we describe the database in its current state. Third, we show some first results in a descriptive way. Finally, we develop the further steps toward the final report.

### **a. Recent trends, dynamics and spatial patterns related to territorial structures in the world: a literature review**

The spatial relations of cities and regions have been a longstanding matter of enquiry and debate however two major urbanisation developments have been recognised since the end of the twentieth century.

Firstly, cities have come to be the dominant location for human habitation, social and economic reproduction. In 2008, over half the global population became urban (UNFPA 2007) and this shift is expected to double by 2050 (UNDP 2009, p.32). By 2015, 58 cities are expected to have a population size over five million (Liotta 2009). Already eighteen cities in the world have a population size in excess of 10 million. The world's largest city, Tokyo, has a population of 34 million and a further six cities have in excess of 20 million population (Heathcote 2010).

Secondly, the external relations of enlarging cities have come to be increasingly important as technological developments and globalization have proceeded. In recent years, much attention has been given to defining emergent urban configurations and their global relations, including at a European geo-political scale (CEC 2007, Bialasiewicz 2008, Bachman *et al.* 2009).

Academic and policy interest in a scale of urban organisation beyond territorially defined metropolitan boundaries has extended worldwide during the past decade because this is now recognised as the new scale where economic globalization is active. A number of terms have been used to describe the new scale of urban formation being identified in different world locations, including 'mega-city', 'meta-city', 'mega-region', 'mega-city region', 'global city-region' and 'global mega-city region'. Pain (2008c, 2010a, b, 2011a) has attempted to unravel what, if any, distinctions underpin the use of this array of terminologies. Definition proves important because apparently similar physical configurations vary dependent upon differences in urban processes occurring in different world locations. In order to assess the processes underlying changing morphologies it proves imperative to develop an understanding of the functions of enlarged cities and regions, and their interconnections at different local to global scales. Population size proves an inadequate indicator of the economic, social and environmental situations and sustainability of emergent cities. This literature review examines the conditions leading to different process and functional outcomes of urban expansion leading to new spatial relations and considers the appropriate responses of states.

As long ago as the mid-twentieth century, urban sociologists were making distinctions between the nature of cities and smaller towns (for example Weber 1958 p.65, see also Taylor 2007). At a time when the formal classification of regional models was being sought in regional science and systems theory (for example Isard 1960, Haggett 1965, see also Berry 1995), Jacobs saw the relations between cities and larger urban regions as characterised by complex, diversified systems of economic production and divisions of labour (Jacobs 1969). From a political economy perspective, Harvey focused on the construction of cities by 'social practices' that are productive of urban space and its economic relations (Harvey 1973) while Lefebvre (1970, 1991) and Bourdieu (1990) investigated the ways in which the complexity of large cities evolves over time in a socio-economic context, mediated by government. By the end of the century, a range of disciplines were questioning an evident restructuring of spatial relations impacting on urban and regional geography associated with major world economic change (Carney *et al.* 1980, Lewis 1984, Dunford 1988, Massey and Allen 1988, Martin 1989, Beynon and Hudson 1993, Claval 1998, Holt-Jensen 1999). Ohmae took the (controversial at the time) positivist view that a single global financial 'marketplace' was an inevitable and desirable outcome of economic globalization (1990, 1995).

Jacobs (1985) saw the development of export industries and import-replacement as of key importance for cities and their hinterlands in order to create diverse and flexible/resilient local economies. She identified over-specialization as a risk. Jacobs also saw economic growth built through a city region's external relations as a virtuous circle, allowing innovation and vertical disintegration, creating 'new work' and leading to the development of new labour skills. Ahead of her time, she identified access to venture capital as a key advantage of proximity in addition to the need to be close to suppliers. Her opposition to the use of grants and subsidies to address regional differences on the ground that these create dependency as opposed to dynamic growth, has contradicted an established Keynesian orthodoxy of the late twentieth century that state interventionist regimes should be adopted to redistribute resources on a territorial basis. Krugman (1991) for example has taken the view that state subsidies to regions lacking development in Europe can be appropriate.

Nevertheless, Porter's (1990) analysis of internationally successful industries in Denmark, Germany, Italy, Sweden, Switzerland, UK, USA, Japan, Korea and Singapore generally supported Jacobs' contentions. He believed that "a nation's competitiveness depends on the capacity of its industry to innovate and upgrade" (p.73) and that geographical concentration boosts innovation through inter-firm competition and cooperation (Porter 1990 p.82, 1995, 1998). He drew attention to numerous complementarities associated with clusters and concentration such as proximity of specialised labour and suppliers, infrastructure and tacit information. Like Jacobs, Porter has seen the evolutionary process leading to path dependence as evidence of positive agglomeration economies which are hard for planners to replicate. This view was supported in relation to international financial services and financial centres by Porteous (1999) based on the location of high-skilled labour, foreign banks, head quarter functions, stock exchange volumes and depth of city infrastructure, including informational and communications technologies (ICTs). Porter has endorsed Jacobs' focus on export orientation linked to inner city service clustering as fundamental to production (Porter 1995). His views have had major international policy influence.

The literature on business clustering following Porter has emphasised 'place embeddedness' (which Porteous describes as 'stickiness') as an outcome but also the notion that 'institutional thickness', associated with agglomeration in large cities, allows *mutually beneficial* cooperation and competition between international clusters. Drawing on Castells (1996), Allen has theorised clustering as non-competitive power relations in network organisation (1999) and Golding and Murdoch too have seen complex institutional network interactions as a non-hierarchical process (2001). Empirical research in Europe's reputedly leading competing IFCs, London and Frankfurt, has supported this view (Beaverstock *et al.* 2001, 2005, Hoyler and Pain 2002) and subsequent empirical research on London clustering has indicated the benefits of international interaction within a discreet area of the City for a large surrounding hinterland (Taylor *et al.* 2003).

Brenner (1998, 1999) has claimed that, recognizing the economic productive capacity of successful cities, European states are actively mobilizing their place-specific economic assets as a neo-liberal strategy through spatial planning, including competitive strategies such as city branding (see also Knox and Pain 2010). An empirical study of UK regional development by Mahroum *et al.* (2008) has emphasized the importance of city network participation in order for cities to be able to capture external knowledge and new ideas but agrees with Brenner's stance stating that "policy-makers too often focus on the capacity of places to create their own new knowledge and innovations and their ability to commercialize them." (p.11.) Replicating Harvey's (1982) perspective that state political decision-making and planning systems 'hold down' global flows in specific locations to provide the 'spatial fix' for flows of capital, Jessop (1999, 2000) has argued that, as a dynamic of capitalism, globalization produces 'disembedded flows' of capital within a single world market which need to be fixed in territorial space for purposes of production

and reproduction. By 'territorializing' globalization, European city space is argued to be becoming "an arena both for market-oriented economic growth and for elite consumption practices" (Brenner and Theodore 2002 p. 21) which meet the needs of the state (see also Biggs 1999).

Two strands of wisdom have thus come to inform contemporary territorial policy on urban spatial development in Europe. On the one hand, Keynesian or social democratic ideological traditions have emphasized the role of subsidies in promoting spatial and economic rebalancing (mainly through Structural Funds), now applied at state, region and EU-wide inter-regional scales to promote territorial cohesion in the context of enlargement. On the other hand, the productive capacity of large internationally oriented cities in economic globalization is recognised, leading to a policy dilemma regarding the dynamics of spatial concentration versus dispersion in the global context of city-region expansion. The incorporation of the territorial cohesion objective in new Lisbon directives leaves an open question on this matter.

As Dicken *et al.* (1997) have emphasized, for territorially focused state strategies to be successful, the diverse local and historical situations that are causes of development must be taken into account. Researching this diversity underlying the emergence of enlarging urban formations to inform spatial policy approaches was the central purpose of the 2003-06 INTEREG IIIB 'POLYNET' study in North Western Europe (Hall and Pain 2006).

The Polynet study set out to examine the ESDP concept of 'polycentricity' in eight densely urbanized regions located in the area long regarded as having key European economic strength. With pronounced international relations and thus increasing integration in economic globalization, development in this cross-border area is of vital importance in informing EU strategic objectives to promote more balanced and sustainable development (EC, 1999) together with European competitiveness in the global service economy (CEC 2010). Eight multinuclear urban regions of North West Europe were examined in the Polynet study: 'South East England', 'Paris Region', 'Central Belgium', 'Randstad' Netherlands, 'Rhine-Main' and 'Rhine-Ruhr' Germany, 'Greater Dublin' Ireland, and 'Northern Switzerland'. The area thus approximates to the EU 'Pentagon' addressed by specific rebalancing objectives in the NWE Spatial Vision and falls within areas previously described variously as the economic backbone, or powerhouse, of the European Union in Friedman's nineteen sixties 'meta city' and Brunet's (1989) 'Le Ring' (see also Brunet 2002 p.16) or 'blue banana' visualisations.

In contrast to previous research, Christaller's (1933) central place theory was not regarded as an appropriate analytical model for understanding the profound changes such regions are undergoing in economic globalization in the Polynet study. Instead, the approach adopted reflected GaWC insights into service business network organisation and city extra-national relationships theorised as constructing a "multilevel hierarchy of economic and political institutions ranging from the global to the local" (p. 814) in Scott's (2001a, b) 'global city-region' hypothesis. It therefore addressed the topics identified by the CEC (2007) Urban Audit of 258 cities in 27 EU Member States as of key European importance, "Cities are the indisputable engines of economic growth across Europe... urban economies are rapidly becoming service economies. The service sector is by far the most important source of employment in European cities" and their uneven economic growth. Uniquely, the study did not simply investigate urban attribute data for the eight cases furthermore it went beyond classic functional urban area (FUA) or functional urban region analysis (FUR) analysis based on statistical data. Instead it examined the structure of the regions in terms of their connectivity to the world economy through APS network organization and practices.

The results make an important distinction between city-region morphological polycentricity based on population size and 'functional polycentricity' which derives from

APS sectoral clustering and functional specialization. They endorse Jacobs' speculation that the external relations of cities can support the development of complementary functions in proximate hinterlands of smaller towns and cities but also draw attention to the governance challenges presented by polycentric regions. Counter to ESDP thinking, London's strong global APS connectivity was found to be producing a high degree of functional polycentricity at a 'global mega-city region scale' compared to morphologically polycentric regions such as the Rhine Ruhr and the Randstad. At the same time, all eight regions had a concentration of international APS functions in just one city, providing evidence that numerous cities are globalizing in NW Europe (see also Marcuse and van Kempen (2000)). None of the regions had a smooth distribution of economic activity and all faced challenges of addressing the need for cross-cutting movement sustainably and managing spaces of flows that do not map onto fixed territorial boundaries.

Two important issues arise from the study:

### 1. Polycentricity

The extension of Sassens' (1991) global service network centralities to a number of business centres across North West Europe and the regional growth dynamic associated with this, questions the role of state intervention to reduce concentration. Attempts to rebalance urban Europe using morphological approaches (such as urban transportation 'gateways' and 'corridors' Pain 2010a) over-simplify the complexity of spaces of flows. Non-binary conceptual and policy approaches require development. As Castells' has proposed, "the global city phenomenon cannot be reduced to a few urban cores at the top of the hierarchy. It is a process that connects advanced services, producer centres, and markets in a global network, with different intensity and at a different scale depending upon the relative importance of the activities located in each area *vis-a-vis* the global network" (1996 p.411).

Taylor and Pain's research for the US Regional Plan Association 'mega-regions' initiative (2007) concluded that two types of region should be recognised – regions of proximate cities and functionally polycentric regions. The latter regions have an active Jacobs' economic expansion process whereas morphologically polycentric regions of proximate cities lack this enveloping and upgrading dynamic. More recent research in Eastern Asia is examining the emergence of Jacobs' expansion process in leveraging the value-adding capacity of WCN-GPN relations (world city network - global production network) at an international scale in the Pan Yellow Sea Region. This intervention is directly engaging with the operation of global economic and social networks active in territorial structures spanning the nation state borders of Japan, China and Korea (Pain 2010b).

### 2. Territorial governance and spaces of flows

The European Commission (EC) (EC 2000, 2001) White Paper on 'European Governance' draws attention to the need to construct new modes of multi-level governance which include private as well as public actors in Europe however a conclusion of the Polynet study has been that this is not happening in the area of North West Europe examined. There is a lack of coordinated action on economic and spatial development issues which amplify existing contradictions between Lisbon and ESDP objectives (Halbert *et al.* 2006). Furthermore there is a lack of vertical and horizontal coordination between policy scales to deal with functional developments arising in polycentric urban regions. These findings confirm Castells' prediction that

"The dominant tendency is toward a horizon of networked, ahistorical space of flows, aiming at imposing its logic over scattered, segmented places, increasingly unrelated to each other... (p.459). In the absence cultural and political 'bridges' these two forms of space will be like "parallel universes whose times cannot meet because they are warped into different dimensions of hyperspace" (p.459).

Taylor and Pain (2007) identify a need "to obtain evidence for the veracity of regional concepts in the work carried on in cities: planning should not be carried out separate from the practice of current economic actors (firms) that use cities." Functional scales for strategic policy networking need to be informed by an appropriate shared evidence base (this need is especially acute in the UK where new governance systems are currently being introduced).

EC (2010) indicates a recent tacit acceptance by the European Commission that although "economic activity is more concentrated across the EU than population. There are gains from such concentration in terms of the increasing returns from agglomeration and from the clustering of particular activities in specific locations, including the wide availability of health care services and relatively easy access to higher education institutions and training facilities. This is reflected in the high level of GDP per head, productivity, employment and research and innovation activity relative to the national average in capital cities and in most other densely populated conurbations." (p. 5.) The polycentric region now seems to be downplayed and the focus is shifting to a more 'fuzzy' conceptualization of EU spatial relations, "to ensure a balanced and sustainable territorial development of the EU as whole, strengthening its economic competitiveness and capacity for growth while respecting the need to preserve its natural assets and ensuring social cohesion. This implies avoiding excessive concentrations of growth and facilitating the access to the increasing returns of agglomeration in all territories." (p. 6.)

This recent interjection demonstrates the importance of extending research on how global network flows of capital map onto, into and through, the urban and regional territorial structures of Europe and in comparison with other mature and developing world economic regions in WP2.2.2 of the ESPON *Tiger* project.

### ***b. The Data base on European and US cities***

The data base will be built upon the data and analyses provided by the ESPON 1.1.1 and 1.4.3 projects as well as the FOCI ESPON project. By using the results of WP2.3, especially WP2.3.1, WP2.3.2 and WP2.3.5, we will be able to assess the connections between European cities and the rest of the world and moreover to provide an in-depth analysis on gateways (financial, maritime, air), including the physical assets of these different types of gateways. It will enable us to map the changing urban structures which support connectivity to global service business flows across the European territory. Second, this Euro-centric mapping will be compared with contemporary urban structures present in other 'developed world' economic regions. Together, these two scales of comparative urban analysis (within Europe, and between Europe and other developed world regions) will inform consideration in WP2.3.1 and WP2.3.2 of how contemporary global spaces of business flows map onto the territorial structures of urban spaces of places.

Two major steps have been followed to provide an assessment of European urban structure, also in a comparative perspective with USA:

#### **The delimitation of cities**

Several delimitations of European cities exist. In order to be comparative, we will use functional delimitations of cities, which correspond to Large Urban Zones (LUZ) provided by the Urban Audit. While the basic idea is to consider the influence area of core cities through daily commuting, exact definitions differ across Member States. In order to have more statistics, we also use the NUTS3 proxy of LUZ, that is the NUTS3 that fit best to the LUZ area defined by the Urban Audit (see FOCI interim report for precisions). Finally, ESPON DB proposes a more homogenous delimitation of European cities based on functional areas (FUA).

In USA, the delimitation of Metropolitan Areas has been provided on the same principle, but in a much more homogenous way throughout the US territory. The Office of Management and Budget (OMB) has defined « Core Based Statistical Area » throughout the country. Metropolitan Areas include all counties which send more than 25% of their workers to the core area. This definition is also used by the US census Bureau and the Bureau of Economic Analysis which makes easy the collection of data for US metropolitan areas.

Delimitations are thus roughly comparable between Europe and USA as long as we use Large urban zones and Metropolitan areas. On this base, we provide a list of cities, which include all European and US cities with more than 500000 inhabitants.

### **The database for large urban zones (Europe) and Metropolitan areas (USA)**

On the base of the list of cities and their delimitation, we built a database that includes:

- basic indicators, such as population, GDP, GDP per sector from 1995 onwards
- More sophisticated indicators that allow understanding the position of cities in the world networks. Indicators include the number of headquarters, the extra-continental flights, GAWC indicators on networks of advanced services... Most of these indicators will be collected in the WP2.3 but not all. This includes mainly indicators of gateway function (airports, ports, financial gateways, commanding cities). The weight of the major gateways will be assessed at the global level, but mainly we will compare the internal level of concentration of the gateways at the macro-regional level. For more details, please refer to WP2.3.2 and 2.3.5.

Table 2 gives the current state of the database.

Themes	Indicators	Time frame	USA	EUROPE	Source
Population	Total population; population growth	1990-2010	Complete from 2000 onwards	Complete	Calculations on Eurostat data; US Census Bureau
GDP	Total GDP, GDP growth, GDP per capita	1995-2007	complete from 2000 onwards	complete	Calculation on NUTS3 regional data of Eurostat; Bureau of Economic Analysis
Economic structure	Share of each sector, sectoral growth, evolution of economic structures	1995-2008	Added value in 6 sectors for 1995, 2000, 2004, 2006	Employment in 5 sectors for 1995, 2000, 2004, 2008	Calculation on NUTS3 regional data of Eurostat; Bureau of labour Statistics
Education	Share of low, medium and high diploma		Data for 2000, and average 2005-2009	Only for 2001 in Europe	Census data of Eurostat and Labour Force Survey statistics of Eurostat; US Census Bureau
Advanced service producers	Connectivity indicators	2000, 2004, 2008	Complete	Complete	GAWC
Air services	Number of international flights or destinations outside Europe and inside the area	1990, 1999, 2008, 2010	Complete	Complete	OAG
Transnational headquarters	sales, profits, assets, employees	2008	Complete	Complete	Forbes
Innovation	To be included from the work achieved in WP 2.3.				
Harbour functions					
Real Estate					
Financial functions					

**Table 2. Current state of the database on urban structures**

### ***c. First results***

We propose to map and analyse the indicators to assess the urban structure:

- indicators of urban concentration in terms of population, employment and added value (share of the 5,10, 50 first cities; gini coefficient...);
- indicators of economic structure of the cities and regions (share of manufacturing, of basic or high-level services).

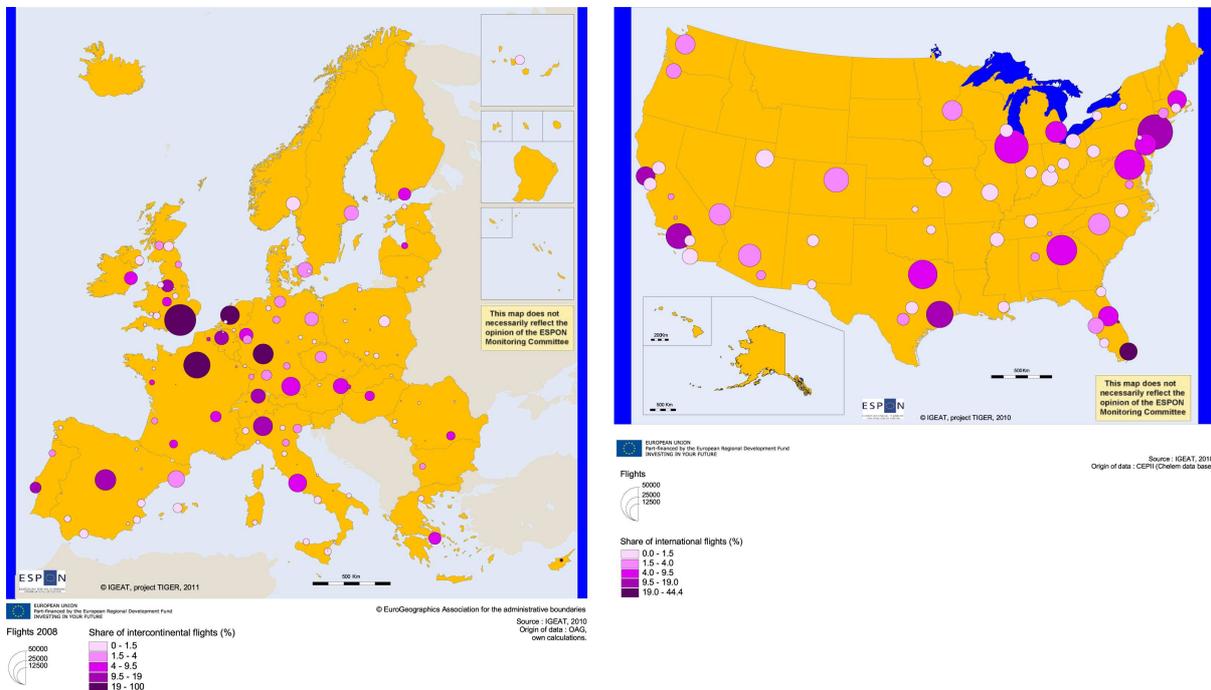
Table 3 illustrates the higher concentration of the urban system in USA compared to Europe, only when measured through population. This is further illustrated through the airport gateway function (Figure 5).

Rank of the cities	Europe (ESPON space)			USA		
	Total	Share of		Total	Share of	
		the cities population	The whole population		the cities population	The whole population
1 to 5	41 012 300	17%	8%	52 818 471	27%	18%
1 to 10	61 055 900	25%	12%	78 639 292	40%	27%
1 to 20	87 813 300	37%	17%	112 803 829	58%	38%
1 to 50	139 554 600	58%	28%	160 919 486	83%	54%

**Table 3. Population of major cities in US and Europe in 2006**

Source: FOCI, Urban Audit, US Census Bureau

The figure below is only an example of what can be done with the data base produced in terms of mapping. This figure allows comparing urban structures through air services in US and European space. We notice from this comparison that intercontinental hub/gateway functions are much more concentrated in US than Europe. In the latter, besides major hubs (London, Paris, Amsterdam, Frankfurt), we find many more or less specialized hubs (Madrid for South America, Milano and Rome, Zurich etc.). In US, these functions are concentrated in 4 majors gateways: New-York, Miami, Houston and Los Angeles. Other major airports do not have important gateway functions (Dallas, Atlanta, Chicago) while in Europe international gateway functions seem to be more related to the size of the airports.



**Figure 5. European and US cities in the intercontinental airflows, in 2008.**

## ***d. Toward the final report***

Toward the final report, we will produce the following analyses:

### **1. - Descriptive analyses of urban structures and urban dynamics in the US and Europe**

- A systematic assessment of the position of European cities in the world city networks will be produced based on the results of WP's 2-3.
- Using the database, we will produce a systematic comparison of concentration levels (urban structures) in population, production and gateway functions according to different indicators in the US and Europe. We will also describe the dynamics according to these topics: Has production concentrated more during the two last decades? Have financial activities concentrated more? Have gateway functions in air services been concentrating more on particular hubs? Etc.

### **2. - Classification of cities according to their structural features**

Considering the functions of cities and their economic structures, we will propose classifications of cities according to their structural features.

### **3. - Explaining urban dynamics with structural features of cities**

This part of the study lies at the junction with WP2.3 (mainly WP2.3.1 and 2.3.2). Using the database, we intend to explain urban dynamics by both structural features and connectivity in the cities' networks. As already stated, scientific approaches have not paid sufficient attention to the potential links between structural features, networks and competitiveness.

### **4. - Linking territorial/urban structures and global dynamics**

Using the US/EU comparison with care, we will tackle the question of whether territorial structures in Europe have an impact on the competitiveness of the EU as a whole. This reflection is a necessary step in informing a general understanding of how territorial policy can improve European competitiveness and, for example, whether the EU should invest mainly (or at least more) in its global cities to improve Europe's position in the world?

**5 - Case study on a global city: London.** The main objective of the London case study is to examine its inter-city interactions at three spatial scales in order to provide insights into its contribution to Europe's sustainable growth and competitiveness in a global context.

The study will also attempt to address key questions about the role of London agglomeration (a focus of the ESPON, *CAEE: The Case for Agglomeration Economies in Europe* project). It will attempt to shed light on the conundrum for EU and member state policy evident from the (2009) EU *Barca Report*, on the concept of urban 'polycentricity' at different EU territorial scales. The latter document indicates a softening of the EU stance on this concept with a shift towards an emphasis on its relevance as a descriptive device as opposed to a normative/prescriptive rhetoric. The evidence on London's inter-city relations in networks of the new service economy as well as the geographies of city financial flows into territorial assets, will afford a more nuanced appreciation of the role of city specialization at state, EU and global scales. As the ESPON *FOCI* project has demonstrated, Europe's global context is increasingly important to its internal development capacities because "city development is strongly embedded in processes happening at other scales" (Ludlow 2011).

Firstly, data on London's economic relations as defined by advanced producer services (APS) and financial services (FS) and data on international real estate finance inflows and outflows will be examined at three spatial scales: A. The scale of the world city network.

B. The European scale. B. The UK sub-national scale. Secondly, data on the internal structures of London as a global city will be drawn on to interrogate the reasons behind its present position in global networks.

## 6- Territorial inequalities

Introducing the question of territorial cohesion is another necessary step in the reflection upon territorial policy in Europe. Here again, using comparative perspectives, we will shed some light on this issue.

For Western Europe, it is possible to go back until 1960 in terms of GDP level, using national statistics at regional level. With EUROSTAT, we can use indicators from 1980 onwards. In terms of GDP per capita; Eastern Europe can only be integrated from 1995 onwards. In the USA, it is possible to have much more historic data at the state level using the data of the *Bureau of Economic Analysis*. Data at a more detailed geographical scale are also available: this will enable us to achieve better comparability with European data. Data from the US Bureau of the Census and of Labor Statistics can also be used for more detailed scale analysis.

Of course, when measuring territorial inequalities in a comparative perspective, the scale question is decisive. This question of scale has been explored in a report for the European Parliament ("Regional disparities and cohesion: what strategies for the future", May 2007) and will be further developed in this comparative and long term perspective we intend to implement in this part of the project.

On this basis, we propose the following indicators and analyses:

- Standard deviation of GDP per capita at different scales (national, NUTS2, NUTS3)
- Convergence measures of GDP per capita at different scales:
  - sigma convergence  $C_\sigma$  measuring the evolution of the GDP per capita over  $n$  years, calculated as the annual variation gap of the coefficient of variation between two periods  $t_0$  et  $t_n$ , where  $m_i$  is the GDP mean of the year  $i$  and  $\sigma_i$  its standard deviation
  - beta convergence  $C_\beta$  which measures the relation between the GDP per capita (logarithmical) variation over a given period compared to the initial level.
- Comparison between GDP and incomes in order to assess spatial redistribution of revenues at the NUTS2 level.

## **5.WP 2.3.1. Economic flows and networks: a multiscalar perspective**

This work package has two major objectives that lie at the heart of the whole study.

First, we will assess the European countries, regions and cities' position in the international division of labour and international networks. This is a very difficult issue because networks and relations between European territories – or more precisely economic actors embedded in European territories – and the rest of the world have become increasingly complex and diversified. Trade, FDI and networking (through subcontracting chains for example) are the key drivers of global economic integration (OECD, 2007a). In the two last decades, trade and FDI flows have considerably increased in both absolute and relative terms. The main drivers of these processes are well known: reducing transportation and communication costs, liberalization of trade, increased specialisation at different scales, globalization of value chains (OECD 2007b; Curve, 2007). Transnational companies are among the main actors of this process: by increasing cross border vertical integration, they induce at the same time growing flows of investment and trade (intra-branch and intra-firm trade). This global process has, as we already stated, unequal impacts across territories. In Sassen's dual perspective (Sassen, 1996), it produces at the same time a dispersal spatial process and a concentration of commanding and strategic functions in some big cities. In such a perspective, globalization should benefit first global cities which concentrate high level and commanding functions and are the most interconnected spaces at the global level. But it should also benefit those regions which are able to take advantage of the dispersal process of production of goods and services. Within Europe, this is mainly those regions and cities that are able to rise in the value chain and/or restructure to higher added value productions (DG Regio, 2008, 2009). This is because for most parts of Europe, regions are not anymore able to compete with extra-European producers of intensive labour production, with temporary exceptions. In theory, the regions most specialized in this type of low qualified strongly competing sector should be the most vulnerable to globalization. However, the DG Regio study concluded that this was not necessarily the case since a significant part of these regions has been able to rise in the value chain or restructure their economies.

To achieve this first objective, we use three complementary approaches:

- using countries and regions' trade data, we can assess the regional position in the international division of labour. However, this only allows considering merchandises and neglect services;
- using commodity chain analyses in several sectors and regions, we better understand processes that could allow regions to upgrade (or not) in the international division of labour;
- using network approach in advanced producers' services, we better highlight the decisive role of cities and focus on the service economy.

These complementary approaches will allow producing classifications according to the role of regions and cities in the global economy.

Second, we will assess the impacts of globalization trends on European regions and cities. Trends in globalization will affect in a differentiated way European regions and cities according to their position in the global economy.

This approach is also a multiscalar one because European regions and cities are embedded in their national space as well as in the European space. We cannot understand how regions and cities evolve in the global economy without tackling the issue of the position of Europe as an integrated economy in the world. Reciprocally, the

position of regions and cities in the world economy has obviously an impact on the European position in the international division of labour as a whole.

In the interim report, we present the three complementary approaches. For each approach, we present the theoretical background, then move to the data we are using and show the first mapping and results. We end with the further steps of the research toward the final report. More developed analyses can be found on all these topics in annexes.

### ***a. The position of Europe and European countries in the world economy: a long term assessment through trade***

In this first part, we propose to draw the general long term trends about how Europe and European countries position in the world trade and the international division of labour. It is absolutely vital to have this long term trends and global structures to understand how European regions and cities position in the international division of labour. The complete analysis can be founded in annex 2.3.1.a where facts and figures about world trade as well as the position of Europe in the world trade since 1968 are developed more in-depth.

Here we synthesize this long term evolution in 3 major trends characterizing Europe in the global economy.

#### **i. The declining position of Europe in the world trade**

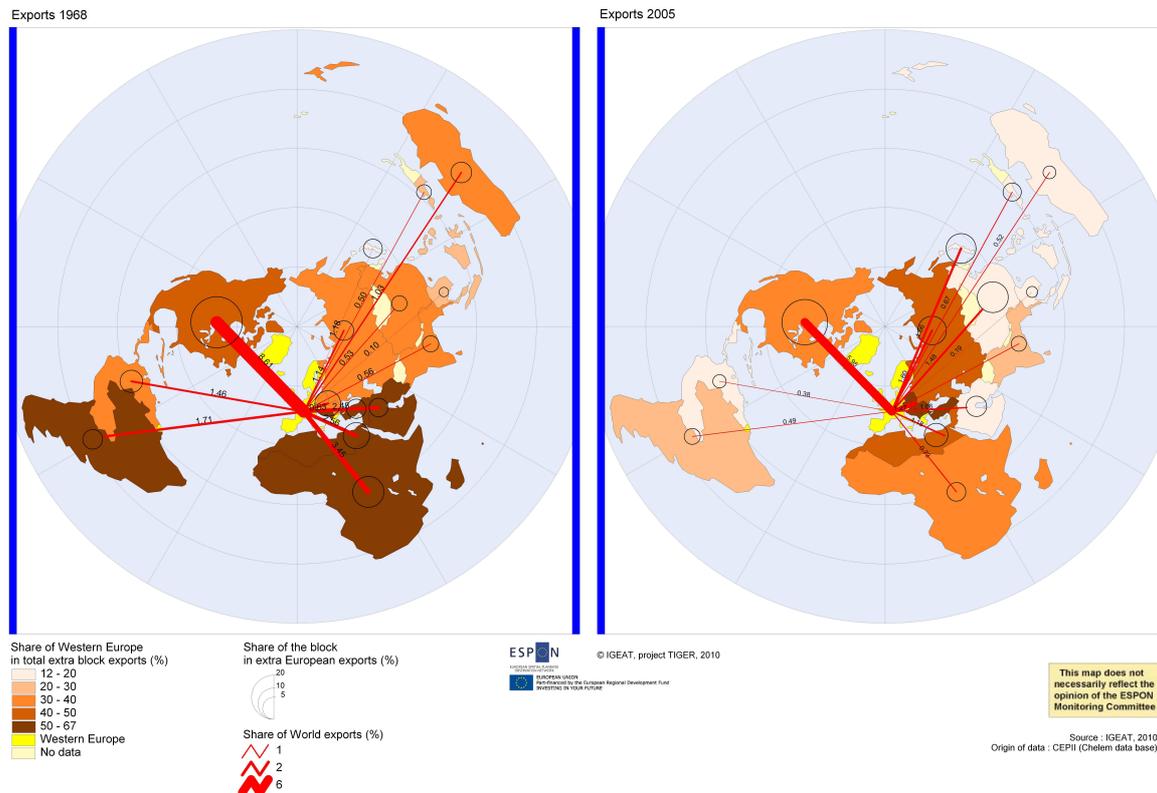
The position of Europe in the world trade is declining in a long term perspective but EU and associates remain by far the first trade area in the world. In 1968, West European countries represent about 28% of world inter-block trade (see figure 6 to see the blocks we use) while 40 years later, it has dropped until 22%. This decline occurs in a context of increasing trade at the world level and has thus to be interpreted as a slower growth rate of trade than observed in other parts of the world. This decline reflects mainly a major shift toward Eastern Asia, rather than a shift toward BRIC since the share of Russia, India and Brazil have been rather stable or at low level in a long term perspective.

The declining position of Europe in the world results in a shrinking of its influence, except in some neighbourhood regions in the neighbouring East and South. While in 1968, Western Europe was the main partner of many macro-regions in the world, we clearly observe in 2005 the dramatic fall of Europe's influence in the world. But the most important evolution is that Europe's influence has been reduced to the neighbourhood regions towards south (Northern Africa, Eastern European countries and the ex-USSR). This decline has been dramatic in some regions that constitute the traditional area of influence of Europe, namely the Middle East and to a lesser extent Sub-Saharan Africa. It is also interesting to notice that the weak influence in the most growing areas of Southern and Eastern Asia has been declining as well.

But this is only one side of the story. Figure 6 also shows (by the size of the circles) the reverse information, that is the importance of the other macro-regions (or blocks) for Europe. The picture is rather different: Northern America, Japan, China are nowadays the main trade partners of Europe (for exports) while the importance of Africa or Latin America for Europe have dramatically decreased.

Hence, the influence of Europe in the world does not correspond at all with the areas that really matter for Europe: while the influence of Europe has been more and more reduced

to its direct neighbourhood, the areas that matter for Europe are indeed the other big economic poles.



**Figure 6. The exports of Western Europe with the rest of the world in 1968 ad 2005**

## ii. The economic integration of the European area

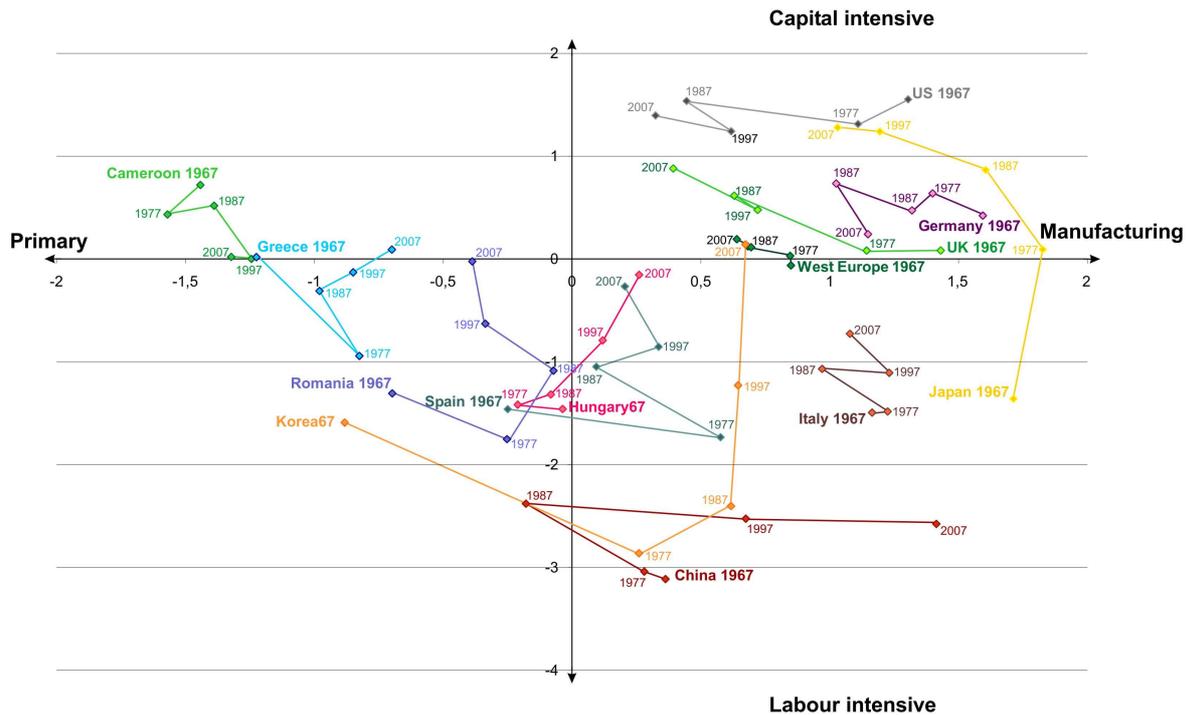
Europe is an integrated macro-region in terms of trade, mainly trading with itself. This integration has increased in a long term perspective but has slightly declined in the last decade: intra-EU trade was around 62% of total trade of EU countries according to the current definition of EU, it grows until 69% in 1988 to decrease around 63% at the end of the years 2000. Other analyses to be found in Work Package 2.4 show that European countries trade more with themselves than can be expected from their economic importance.

If European countries share a high level of integration with EU, they show some important differences in their geography of trade with the rest of the world. While UK is showing specific relations with commonwealth countries and USA, Eastern countries still have specific relations with former USSR, Spain with Africa and Latin America, France with Africa and Middle East... We have two types of explanations to this diverse geographical pattern: the most evident one refers to the historical relations (France and its former colonies; UK and the commonwealth; central and Eastern Europe with ex-USSR; Spain with Latin America...); but we should also underline the importance of technology which allows for example Germany or Sweden to develop specific trade relations with the most growing parts of the world, which for example need German technology in machinery.

### iii. The high and stable position in the international division of labour

Figure 7 opposes primary producers (Cameroon is shown as an example) to countries which are the most specialized in manufacturing production (Japan, China...). Within this latter group, the second component opposes the countries specialized (in relative terms) on more technological segments on the upper side (US, Japan...) from those specialized in labour intensive industries such as textile at the bottom (China...). This graph well illustrates the evolving position of countries in the international division of labour as illustrated by the South Korean example: while in 1967, Korea had the more positive balance in primary products, it progressively evolves toward a specialization in labour intensive industries (down and to the right in the graph) before moving up towards more technological productions and reaching the same position than Western Europe in the division of labour around 2007.

On this basis, what can we say about the position of Europe and European countries? The position of Europe is high and stable in the division of labour. Despite the relative decline in nearly all types of production (measured in its world share), Europe remains specialized in medium and high technological segments of production (Figure 7). However, this stable position hides different trajectories among European countries. In a long term perspective, we can observe a convergence among European countries: countries like Spain and Germany, to take only these examples, are much less different than some decades ago. While less spectacular, the evolution of Spain is similar to the one of South Korea (more labour intensive industries in the first phase and then moving up the value chain). But there are still differences among European countries according to their position and specialization in the world trade: Germany still focuses on manufacturing technological productions, France or Belgium in intermediate segments, South Eastern countries in more labour intensive industries... Some southern countries such as Spain, Greece or Portugal – and to a lesser extent Italy – seem to occupy a difficult position in this division of labour, where they are unable to compete on the most technological productions with North European countries but also on the labour-intensive and/or medium segments with countries where labour is much cheaper (Eastern countries for automotive industry; clothing and textile with Asia..). The evolution of UK is similar to the one of USA with a clear deindustrialization process while these countries remain specialized (in relative terms) in the most technological segments of production.



**Figure 7. Europe and European countries in the international division of labour, 1967-2007.**

### ***b. Assessing the position of European regions in the economic flows***

Regional trade statistics will enable us to go beyond the sectoral approach by having a more direct approach on the economic links between regions and the rest of the world. We are gathering these statistics through different national sources. FDI regional statistics in value will also be collected.

The final objective is to assess the position of region in the division of labour as well as the geography of its trade.

#### **i. Building the regional trade matrix**

Data on regional trade are not collected at the EU level. We have to collect such data from each National institute (see Table 1 for the sources of the data). These data have different levels of precision in terms of regions, destination and nature of products. We end up with a satisfactory division of Europe from the regional point of view. However, until now, we did not succeed in getting data of regional trade for New Member States except Bulgaria and Nordic countries. In some cases, these data do not exist, and in other cases they are too expansive. However, for several countries, we can accept keeping national trade statistics because these countries are relatively small (Baltic countries, Slovakia, Norway...). As we can conclude from the tables, the scale at which we can work on regional trade is usually large (NUTS1 or 2). We miss data for 8 countries at this stage for reason of excessive cost or because these data do not exist. For smaller countries, we might choose to keep national data, while for others, we will assess regional trade by breaking down detailed national trade with detail regional employment by sector. The following table gives the availability of regional trade data across ESPON countries.

	Country	NUTS level	Availability	by commodity	by country	year	Main source
AT	Österreich	0	HIGH COST			2007-2009	<a href="http://www.statistik.at/web_de/statistik/aussenhandel/">http://www.statistik.at/web_de/statistik/aussenhandel/</a>
BE	Belgique-België	1	YES	CTCI digit2	all countries	2007-2009	Regional statistical offices
BG	Bulgaria	2	YES	CTCI digit2	all european countries	2007	NSI (NVulkov@NSI.bg)
CZ	Ceska Republika	2	NO			2008-2009	infoservis@czso.cz
DE	Deutschland	2	YES	CTCI digit2	all countries	2007-2009	<a href="https://www-genesis.destatis.de/">https://www-genesis.destatis.de/</a>
DK	Danmark	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://www.statistikbanken.dk/statbank5a/">http://www.statistikbanken.dk/statbank5a/</a>
EE	Eesti	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
ES	España	2	YES	TARIC 99	all countries	2007-2009	<a href="http://aduanas.camaras.org/">http://aduanas.camaras.org/</a>
FI	Suomi / Finland	2	YES	No product differentiation	World	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
FR	France	2	YES	Specific classification	all countries	2007-2009	<a href="http://lekiosque.finances.gouv.fr">http://lekiosque.finances.gouv.fr</a>
GR	Ellada	2	HIGH COST	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
HU	Magyarország	2	NO			2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
IE	Ireland	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
IT	Italia	2	YES	Sezioni Ateco 2007 (119)	all countries	2007-2009	<a href="http://www.coeweb.istat.it/">http://www.coeweb.istat.it/</a>
LT	Lietuva	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
LU	Luxembourg	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
LV	Latvija	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
MT	Malta	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
NL	Nederland	2	NO			2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
PL	Polska	2	NO			2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
PT	Portugal	2	YES	CTCI digit2	all countries	2009	<a href="http://www.ine.pt">http://www.ine.pt</a>
RO	Romania	2	NO			2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
SE	Sverige	2	NO			2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
SI	Slovenija	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
SK	Slovenska Republika	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
UK	United Kingdom	1	YES	CTCI digit2	all countries	2007-2009	<a href="https://www.uktradeinfo.com/index.cfm">https://www.uktradeinfo.com/index.cfm</a>
CY	Kypros / Kibris	0	YES	CTCI digit2	all countries	2007-2009	<a href="http://epp.eurostat.ec.europa.eu/">http://epp.eurostat.ec.europa.eu/</a>
NO	Norvège	0	YES			2007-2009	<a href="http://statbank.ssb.no/statistikbanken/">http://statbank.ssb.no/statistikbanken/</a>
CH	Suisse	1	YES			2007-2009	<a href="http://www.ezv.admin.ch/themen/">http://www.ezv.admin.ch/themen/</a>

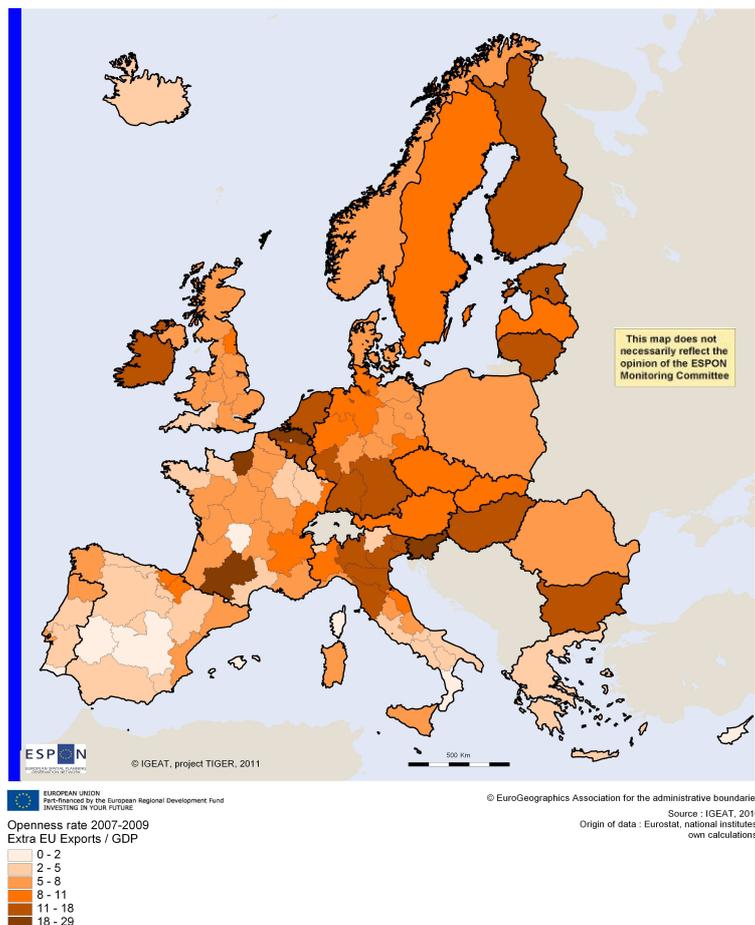
**Table 4. Data on regional trade across ESPON countries**

## ii. First results

The results described here are only to give examples of the potentialities of the database. They do not offer a complete and systematic analysis of the regional participation to global trade.

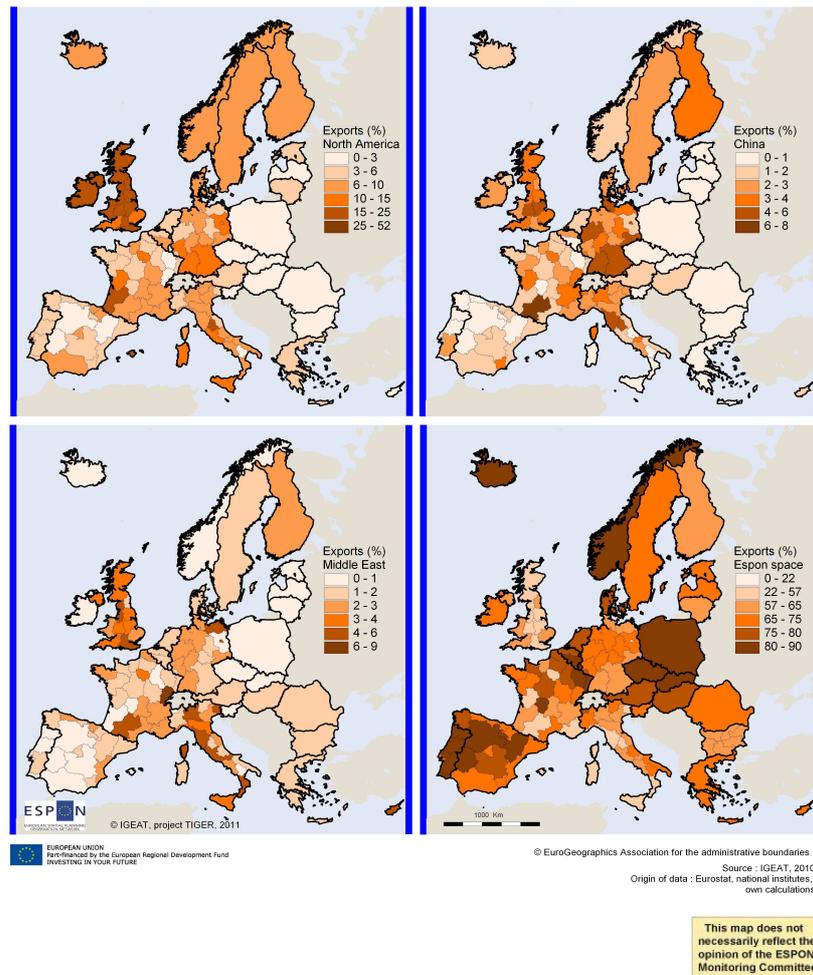
**The openness of regions to globalization** has been assessed by the ratio between exports and regional GDP (Figure 8). The geography of openness to trade at regional level contains several important elements:

- when regional data are available, national effects while present are limited. Within each big country, we see clear regional patterns emerging;
- regions within small countries are in general more open despite this is not a size effect (Belgium, Netherland, Ireland, Finland...), because only extra-EU is considered;
- in contrast, we observe no EU-border effect. Some regions at the border of EU are more open to extra-EU while others are not;
- the importance of harbour regions is partially due to statistical effect, but also to the functions of ports as major "manufacturing gateways" (Le Havre, Rotterdam, Amsterdam);
- several regions of Europe are open because of their capacities to sell competitive high technological products: Midi-Pyrenees (Airbus in Toulouse) or southern Germany are good examples;
- we observe the weak openness to extra-EU of Southern Europe, partially reflecting their weak competitiveness in both technological and more labour intensive industries.



**Figure 8. Openness to trade of European regions, average 2007-2009**

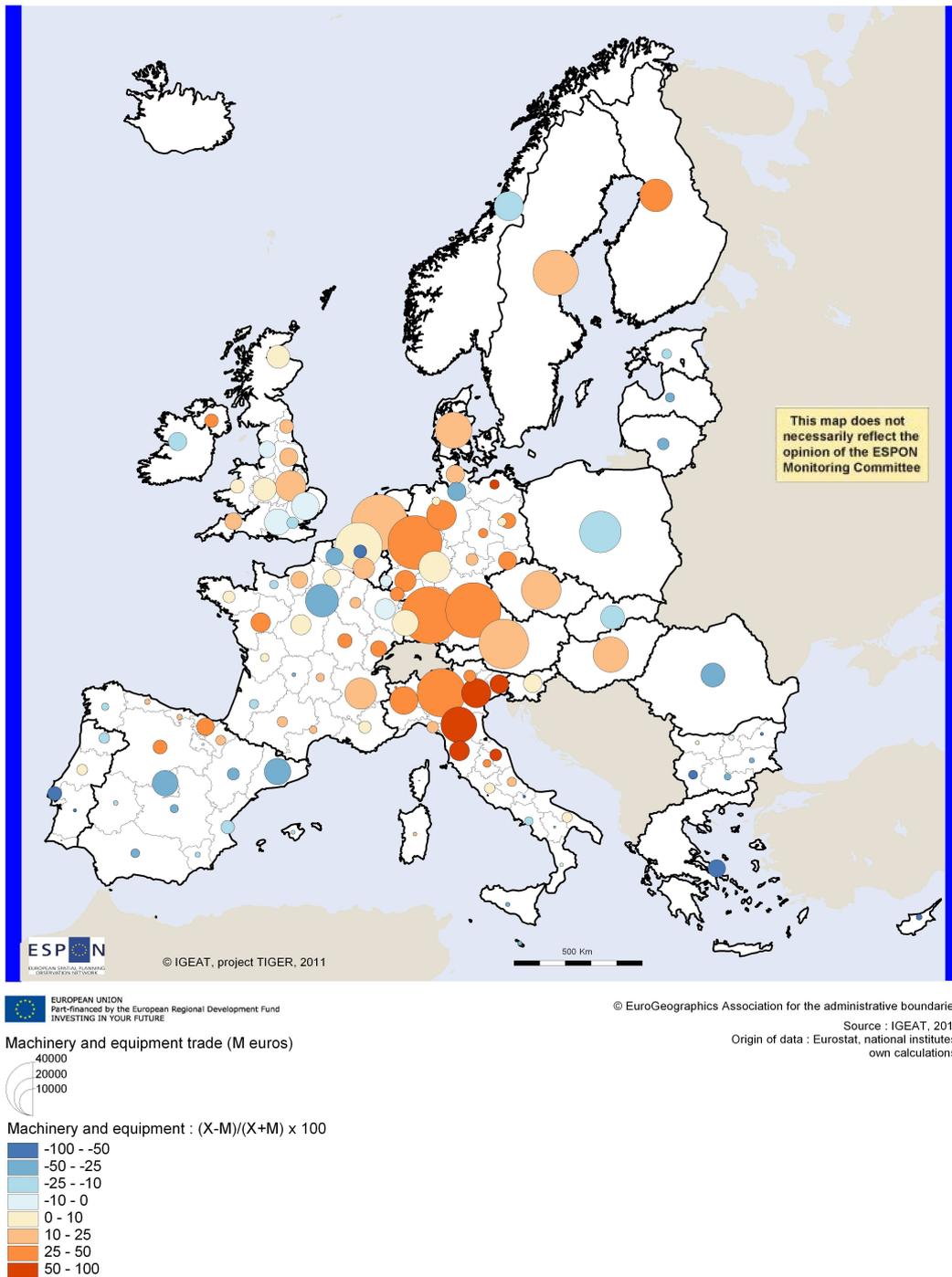
One of the most important features of **the geography of trade of European regions** is that national effects are limited (Figure 9). Of course, these national effects exist: British islands have more relations with Northern America for example. But, we also observe significant regional differences within each country. Of course, all regions have European Union and associates as their first partners but the share of EU in exports is weak for Great Britain, or Germany while very high for central-Eastern countries, Benelux, Northern France, Portugal, regions of central Spain, Norway and Iceland. When regional divisions allow to assess this, we can observe the weak Europeanization of metropolitan areas (London, Paris, Madrid, Berlin), except Brussels. This is well known since they constitute major gateways to the rest of the world. But our data concern merchandises, which mean that even for manufacturing products metropolitan areas are among the least European regions. Strong relations with Northern America characterize the British islands as well as Aquitaine (wines), and to a lesser extent, Southern Germany. Notice that relations to China are much weaker in general than with EU and Northern America (average values with Northern America are higher than high values with China!). Strong relations with China are to be found in Southern Germany – developing China asks for their machinery –, in Midi-Pyrenees (Airbus), some British regions and Central Italy, probably because of textile/clothing industry. Relations to Middle East are generally of limited importance. They concern Great Britain for historical reasons, many Italian regions, Midi-Pyrenees (Airbus selling planes to quickly developing Middle East airlines) and Franche-Comté. In some cases, we may suspect the importance of European luxury industry in strong relations with Middle East (Paris, London, Milano and other Italian regions). It is very important to notice the weak relations between new member states and the big world economic powers and developing areas. Eastern Europe focuses its relations to EU and Eastern neighbourhood.



**Figure 9. The geography of trade of European regions/nations, 2007-2009.**

Finally, **the regional specialization by products** is illustrated by the example of machinery (Figure 10). Notice that regional trade includes all international trade, including intra-European and excluding interregional trade within countries. In consequence, there might be a country size effect, which overstate the importance of regions belonging to small countries (Belgian regions for example).

Of course, the products specialization largely reflects the productive specialization of regions. However, the capacity to sell products outside the region – the competitiveness in strict terms – also plays a role. As for machinery, South Germany and NordRhein-Westfalen as well as Northern Italy have a decisive role. Many other European regions have positive balances but with much more limited trade on this category of products. The pattern is somewhat similar for the transport equipment (automotive industry mainly), except for Italy which plays here a much less important role. Also, Central-Eastern European countries have very positive balances with important trade, which was only true for Hungary and Czech Republic in machinery.



**Figure 10. Regional trade in machinery and equipment, 2007-2009**

### iii. Further steps

1. Improving the database. For some countries, we might be able to complete the database. Unfortunately, for most of new member states, this will be impossible because data do not exist.
2. Reinforcing the analysis. We only provide examples here. When the database will be completed, we provide systematic analyses of the whole database.

3. Typologies. We will propose classifications of regions according to their openness to trade, to their geography of trade and to their products specialization. This will allow to roughly position European regions in the international division of labour;

4. Finally, more in-depth analysis will be carried out using more detailed data where they are available (United Kingdom, Spain, Italy, France). This will allow to answer to important questions:

- by crossing products and destinations where possible, we might better understand the regional geography of trade, and notably better understand the relation between the structure of the regional productive system and its capacity to sell outside;
- the regional impact of the crisis can be assessed through the evolutions between 2007 and 2010;

by using detailed data on products, we will be able to better assess the position of regions in the European and international division of labour.

### **c. Global commodity Chain approach to assess the position of regions in the European and global economy**

#### **i. Theoretical background**

The analyses of globalization impact on division of labour is labelled as a complicated task, because of the high intensity and diversity in organization of global economic activities and significant diversification of the phenomena by space, time and economic activities. The Global Commodity Chain (GCC)/Global Value Chain (GVC) approach are network-based and studying 'the organizational dynamics of global industries' in order to understand where, how and by who value is created and distributed' (Appelbaum and Gereffi, 1994 by Bair, 2006). Hence, the separation of tasks by value is difficult to be defined with precision because of the high diversification of economic activities coexisting with creation of new ones (Gereffi, 2004). Therefore, more general groups by value of activities are focused by the GVC analysis, which differ by industries. The recent contributions to the GVC theory has been extended from the analysis of linear industrial relations to a broader context of local social and economic development and its impact on the position of the companies in the chains. Studying the global impact on the regions the global production network (GPN) analysis incorporates the main paradigms of GCC/GVC approach and focuses on three key topics: *value*; *power* and *embeddedness* (Dicken, 2003, Pickles *et al*, 2006). According to the new regionalism, network and territorial embeddedness, which are basic paradigms of the GPN theory, explore the connectivity of new economic actors or activities with the complex local socio-economic environment, which they have entered and where they operate. Dicken stresses that the impact of interaction and interconnectivity between the global/regional production networks and national/ local economies is crucial for the success or failure of particular industries and firms (2003).

The main dimensions of GVC analysis are related with an identification of organizational forms and trade patterns of particular production/service in accordance with upgrading and governance issues within the chain. Thus, the state and prospects of firm's competitiveness is possible to be outlined. In addition, an appraisal of globalization impact on host regions through exploring the interaction and interconnection with the regional social and economic environment contributes to a much complete assessment of the sustainability and resistance of particular chain and region.

The division of labour within the EU has been changed significantly in recent decades. In 2000 the economic interconnection between OMS and NMS was deepened. The Europeanization challenges have been accompanied by globalization challenges. Many CEE industries and regions experience a competitive pressure from intra-EU origin and extra-EU origin (Smith *et al*, 2005, Pickles *et al*, 2006, Labrianidis *et al*, 2007). NMS became preferable sourcing locations for many West-European companies. Key drivers of this outsourcing have been outlined - well-qualified and skilled labour force in NMS, lower labour cost and geographical proximity in physical, social and cultural terms. Both negative and positive features of impact of involvement in international chains are presented by the literature. The general negative implications of the relocation of production for the region/ firm are the jeopardy of their exclusion from international chains and networks. This might occur when relocation to more attractive locations become a continuous process.

In the context of main objectives of the project next sections present findings from the literature, which consider the answers of the following questions for computer services,

textile and clothing and automotive industry: *What and where is produced? How is produced? What is the territorial impact?*

## ii. Case study on Computer services and Software

The globalization of the EU computer services and software faces up severe competition of the fast-developing new economies. The increased spatial mobility of the services is accompanied by a tendency of products specialization intensification. The global economic crisis hit these services at a significantly less degree in comparison to many other economic activities. The small reducing of production volume and slower rates of development delay of services are a result from the higher flexibility and innovativeness of the branch.

EU was still a leader in the world trade of computer services in 2008. The world trade of computer services marks a growth and in 2008 the export is rated at 157.5 billion dollars, and the import – at 75 billion dollars (WTO, 2010). The world structure of computer services trade shows that the EU 27 takes the leading position with 60% of world export and 61% of world import. The share of the intra-EU trade is twice higher than this one of the extra-EU trade. India, which ranks second world exporter, has diminished the difference with extra-EU export from 2.1 billion dollars in 2004 to 0.2 billion dollars in 2008. In 2008 the active trade balance of EU 27 increases with 127% (51.6 billion dollars), as intra-EU trade balance grew with 100%, and extra-EU trade balance with 152% compared to 2005.

Two general kinds of software are defined: package software and custom software. The high value added activities are conceptualization and architecture of the product which are implemented mainly in home countries. The lower-value added activities as application development and maintenance, coding, testing, and sales and after sales services are objects of off-shoring. The research on software offshore outsourcing outlines that the trend of more R&D activities is intensified in recent decade. The largest R&D department of SAP Laboratories in CEE countries is in Bulgaria with 500 employees, while this one in Hungary employs only 50 persons (Aggarwal *et al*, 2008). The software companies take different positions within the value chain, depending on the production/service tasks they accomplish. The differentiation between particular software production and services is difficult to be recognized in most of the cases because the firms perform a whole set of software activities.

The high volume of intra-EU trade is due to the FDI flows and outsourcing/insourcing of production within EU members. The survey<sup>1</sup> of 190 software firms in five European countries (UK, Greece, Poland, Bulgaria and Estonia) has demonstrated that outsourcing/insourcing relations prevailed FDI flows both in OMS and NMS. The UK and Poland showed high extent of involvement in software production networks and chains, followed by Estonia and Bulgaria. Greece had very limited performance on the European map of software industry. FDI were presented by 32 % of all firms and the largest share of FDI had Poland, where foreign companies were 66% of interviewed companies. Second was Estonia with 29%. There were individual cases of CEE firms which invest abroad. Half of the UK firms outsourced orders abroad (off-shoring outsourcing). The survey outcomes substantiated that 72% of the firms undertook orders from abroad (insourcing). Subcontracting from abroad was essential for 98% of Bulgarian firms and 75% of Greek firms (Guzik *et al*. 2008). Cross-border effect was presented better by the subcontracting flows than by FDI flows.

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<sup>1</sup> The firm level survey was implemented in 2005 under project 'Moving Frontiers: Changing Geography of Labour Intensive Industries', funded by 6<sup>th</sup> FP, EC (MOVE project)

Analyzing upgrading impact or shift to higher value added activities, Guzik et al. pointed out that there was no different upgrading impact between different modes of delocalisation. More than a half of the companies considered that they have upgraded (Guzik et al, 2008).

The biggest share (above 60%) of interviewed firms estimated that the impact of delocalization was positive in terms of turnover and profits. The growth was more significant in NMS. Firms from home and host countries have underlined that the sector needs more new markets and growth than cost savings. The delocalization has not caused a decrease of employment in home countries and Guzik *et al.* have concluded that the process has to be defined not as relocation of activities but as a business extension (2008). India is producing standardized software and it is not a competitor to NMS, which are specialized in custom solutions and software services. NMS are attractive sourcing and market locations of European software, where the most important factors than labour cost are high-qualified labour force, and creativity, reliability and trust. The political and fiscal stability of these countries are important for development of the sector, except Hungary recently.

### **iii. Case study on textile and clothing sector**

Textile and clothing industry has severely declined in a long term perspective. Global challenges which EU textile and clothing (TC) industry faced up became stronger after liberalization of trade in 2005. In 2008 the EU 27 still takes second place in world clothing export with 31% after China and is a leader with 37% of the world import of clothing.

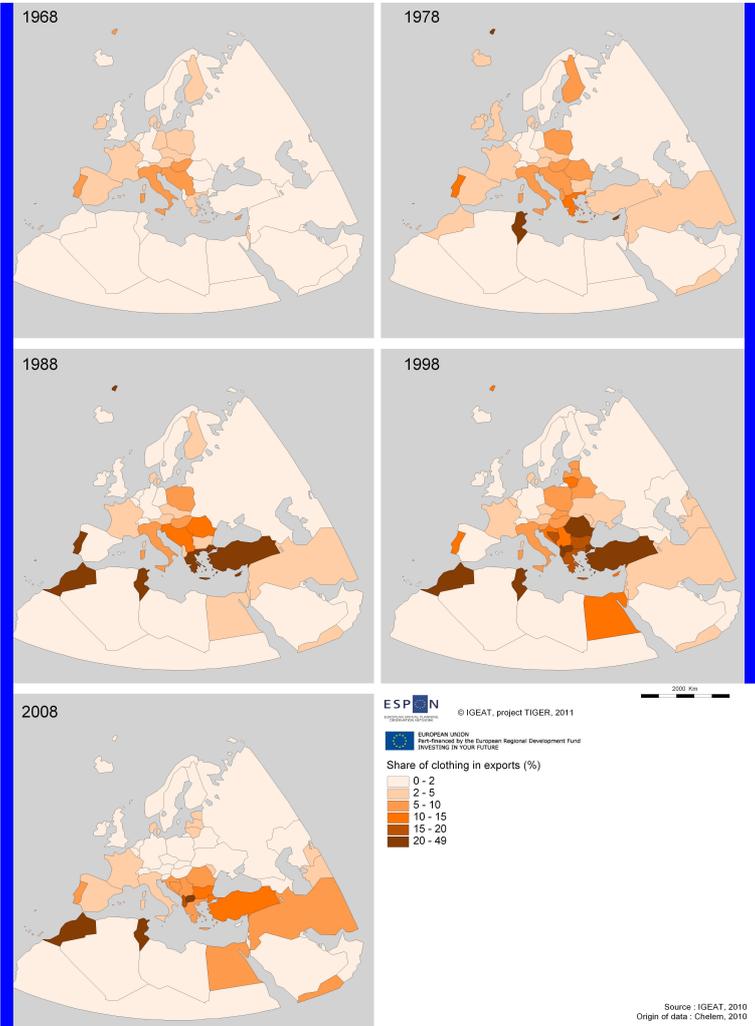
However, this general decline hides significant location shifts within Europe. The intensive direct and indirect off-shoring of labour intensive clothing production toward CEE countries explain the more and more negative balances of Western Europe. While the diffusion from core West- European countries has shortly benefited the peripheral CEE countries in the nineties – at least in some countries, the cost of labour made this off-shoring production process rapidly less profitable (on average) for the West-European clothing firms. This process of diffusion toward periphery is illustrated by the geographical shift of export specialization in clothing for European countries since 1968 (fig.3). While core countries were already weakly specialized in clothing industry in 1968, Mediterranean countries – except Spain – benefited from a growing specialization in clothing until 1988, after while more peripheral countries of the Euro-Mediterranean space benefited from relocation, notably in the Balkans and in Northern Africa. Morocco, Tunisia, Turkey and some Eastern Europe reach their specialization peak in clothing industry in 1998. But in 2008, all European countries marked a decline in their specialization in this industry in favour of South and East Asian countries.

The regions specialized in clothing production and with high concentration of employment are more vulnerable to further relocation of production, because they are less developed and have limited options to respond to global challenges. The impact was not only a decrease of employment but it led to vanishing of the sector in many regions of OMS. These trends were observed in some regions of NMS recently. In 2007 twenty EU regions (NUTS 3) had clothing employment shares to manufacturing employment of more than 10%. Only six of them were in OMS (North Portugal, North Greece and South-East Italy), and the rest 14 were regions of NMS (almost all regions of Romania and Bulgaria).

The high concentration of power within clothing value chain as buyer-driven one is on the top of the chain, where branders, traders and big retailers compete with each other. The distribution of value is related with the following groups of activities: high value added activities are design and product development, distribution and marketing; the low value added activities are production activities (from assembly to full package production). The

high value added activities require special competences and they have high entry barriers because of the huge concentration of the top of the chain (Gereffi *et al*, 2003). The upgrading options for the most part of companies involved as producers exist within the production activities and functions. European clothing chains show clear separation of tasks between OMS and NMS. The high value added activities remained in OMS and the lower value added jobs were moved to CEE countries. Some global buyers export some high-value added activities to East Asian countries in recent years, and this is not a practice in relations with NMS.

The main push factor in relocation of clothing production from OMS to CEE countries was OPT, which dated from the beginning of 80s. OPT had significant impact on the EU division of labour continued during the first decade of the 21 c., although it experienced at the end of 90s formally (Smith *et al*, 2005). The OPT support Western buyers to improve their competitiveness through cost savings. The labour costs account above 50% of the production costs in clothing and their diminishing remains an important task. Recent studies outlined that the market imperatives set up factors as high quality of production, short delivery time and labour standards. The countries sourcing clothing production were Germany, UK, France and Italy mainly.



**Figure 11. Specialization in clothing industry in the Euro-Mediterranean area, 1968-2008**

CEE clothing producers work mainly as subcontractors participating in a lot of regional production networks where they implement distinct by kind and by value production tasks (Pickles, et al. 2006, Smith et al, 2005). FDI and joint ventures are presented by a few number of CEE firms (Smith, et al, 2005, Pickles, et al, 2006). Most of the recent operating JVs and FDI in labour intensive branches in CEE are based on previous subcontracting relations (Begg et al. 1999; Pickles et al. 2006). In this connection, Pellegrin differentiates the 'footloose' off-shoring in the LDCs, such as Mexico, from outsourcing to CEEC (1999). The strong interconnectivity between EU clothing producers might be considered as a competitive advantage of the sector. An advantage of clothing companies in NMS is the enforcement of international social codes and strengthening of state labour regulations.

The cases of downgrading are more often observed than these ones of upgrading, or there was replacement of functional upgrading by process and product upgrading or shift to lower value added activities. The latter could, in some cases, generate better performance in terms of company's sales and profits both in old and new member states (Amighini et al. 2003; Pickles et al. 2006, Roukova et al. 2008). Being 'locked' in subcontracting and thus having limited access to resources, knowledge and freedom of decision-making, CEE companies of many branches have upgraded their products and processes mostly. They have very limited ability to change their functions within particular chain and to take key positions in the triangular production (Smith et al, 2005). Hence, during the first decade of 21<sup>st</sup> c. some CEE countries succeeded to keep or even improve their performance in clothing commodity chains.

In 2005 a firm level survey<sup>2</sup> of clothing firms in five European countries included 212 firms in NMS and in OMS - 31 firms in Greece and 12 firms in UK. The findings confirmed that the most broadly spread form of international integration was the outsourcing/insourcing (79% of firms) which prevailed FDI (15%) and joint ventures (6%) (Kalantaridis et al. 2008). The Bulgarian and Greek interviewed clothing firms are dominated by price-sensitive products, which define their low value position. Greek firms benefit from neighbour countries with lower labour cost and undertook maintenance of production relations with them. It is envisaged as functional upgrading. In Poland the price-sensitive products are important for 61% of respondents and 33% focus on achievement of flexible response. About a half of the Estonian and UK firms focus on the design. Flexibility and delivery time are important for almost one fourth of all firms, except for Bulgaria and Greece.

#### **iv. Case Study on the automotive industry**

The automotive industry is often seen as the driving sector of production in Europe. It supports over 2 million Europeans with jobs and an additional 10 million individuals employed in related industries. The industry exports of this sector are valued around €70 billion annually, making it a highly important sector in Europe. (ACEA, 2010). Automotive transnational companies are among major European Transnational companies, reflecting to a certain extent the specialization in medium and medium-high technological segments of the European economy. Also, Europe, while slowly declining in relative terms, has maintained positive balances and remains highly specialized in the automotive industry. In recent years, the automotive industry in the European Union has suffered hard from the economic crisis and from the increasing competition from global car manufacturers (ACEA, 2010). A direct implication, for the European automotive industry, has been that the automobile production has slowed down drastically. The production plants are being moved overseas, to lower cost countries in Central and Eastern Europe,

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<sup>2</sup> The firm level survey was implemented in 2005 under project 'Moving Frontiers: Changing Geography of Labour Intensive Industries', funded by 6<sup>th</sup> FP, EC (MOVE project) ject)

Asia and Latin America (Jürgens and Krzywdzinski, 2009; Sturgeon and Briesebroeck, 2010).

Western Europe is major actor in this industry and has a positive trade balance with the rest of the world. In contrast with what is observed in textile and clothing industry, Europe as a whole has remained specialized in automotive industry. This industry remains highly concentrated in the core countries at global scale (Grasland, Van Hamme, 2010). If the European space as a whole has largely maintained its position in the automotive industry, we observed significant shifts of location within the European space. However, we should notice that, within the European space, core countries and regions remain the most specialized in the industry, especially Germany, but also France or Belgium.

The spatial pattern of the automotive industry is made of different layers but most locations are related to two different types of reasons: historical heritage of original locations, such as Volkswagen in Wolfsburg, Fiat in Torino or Volvo in Goteborg; offshoring processes resulting in new sites of locations. These new sites of locations have privileged different types of regions through the times: urban or port location were favoured before WWII, because the industry still required qualified workforce; because of the standardization processes of production, new locations after WWII have privileged dense rural regions of core countries such as the Parisian basin or North East of Belgium; in the seventies and eighties, the same types of location have been privileged in semi-peripheral countries, for example the Northern Spain; from the 90's onwards, Central-Eastern Europe have benefited most of new investments sometimes on the basis of new green field investments but also through buying factories from the communist period (Skoda for example was bought by Volkswagen). Despite their development, we should notice that Eastern Europe remains relatively marginal in the European automotive industry. However, trade balances are very positive in Eastern Europe due to a very extroverted industry. Also, from the eighties onwards, the automotive industry has become much more flexible looking to exploit small niches of markets through less massive investments. Typically, the British automotive industry benefits from these types of investments, notably from Japanese companies in some old industrial cities.

## v. Next steps of research

### **Software and clothing industries**

**Global value/commodity chain analysis** affords an opportunity the division of labour by spatial separation of activities within a particular chain to be identified as well as its impact in consideration of project objectives to be assessed through a firm-level survey of clothing and software industries. The start point of the analysis is the database created through the survey and key informant interviews of clothing and software firms in Bulgaria and Poland<sup>3</sup> implemented in 2005. The database consists of well-developed GVC data set. This data provides a further analysis on a country level with emphasis on the country context of the EU division of labour. Poland has entered the European production chains earlier than Bulgaria and development features and consequences for the both counties differ in many aspects. On other hand, considering the dynamic nature of globalization and temporal dimensions of the phenomena, an updating of the data has to be implemented.

The proposed company-level survey is planned to cover firm-respondents of the survey 2005, and these firms are 60 clothing firms and 52 software firms in Bulgaria and in

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<sup>3</sup> The firm level survey was implemented in 2005 under project 'Moving Frontiers: Changing Geography of Labour Intensive Industries', funded by 6<sup>th</sup> FP, EC (MOVE project)

Poland 92 and 50 firms respectively. Interviews on semi-structured questionnaire will be implemented via e-mail and phone. To achieve a comparison with survey data in 2005 the questionnaire will consist of adjusted questions selected from the already applied questionnaire as well as new questions related to the particular industry will be included.

In accordance with GVC analysis the most important questions are:

- *General characteristics*: changes of forms of participation in the chain, changes of production lines and activities, share of export to the total production, share of export on subcontracting base from the total export, trends (increase/decrease) in employment/turnover/export;
- *Upgrading and Governance*: changes in production, process and functions within the chain; changes in partnership relations and trends in development of local competences;
- *Territorial/Social impact*: changes in quality of jobs, working conditions, wages.

The answers of the above listed questions will facilitate the analysis of regional trade data with more detail information which is not recorded by the statistics. Based on the findings of case studies of clothing and software industry in Bulgaria the GVC analysis contribute to the better understanding of how the globalization impact promotes/impedes the regional development in less developed EU regions, which are more vulnerable to globalization challenges and in fact will provide more detailed answer to the objectives the national/regional/cities position in the international division of labour and the territorial impacts of globalization inside Europe to be assessed.

### **Automotive industry**

The focus will be on outsourcing activities performed as offshoring in the production of physical goods and service activities. Moreover, the outline of the value chains in Europe will also consider other indicators, such as industry localisation, trade flows and employment data. No specific enquiry will be implemented here.

#### **Ownership structure:**

- How does the ownership structure look like in the European automotive industry?

→ This question helps us to answer if offshoring motives in the automotive industry in Europe are driven by external (i.e. non-EU) trends in ownership.

#### **Value Chains (will cover the majority of the chapter):**

- How do the global value chains look like (trends)?
- What is being offshored?
- What are the reasons behind the global integration in this sector?

→ These questions will give indications on what is being relocated, and for what reasons (e.g. due to increased performance, proximity to markets, raw material or low price factor conditions).

#### **Localisation:**

- Where do the European industries locate?

→ This part will analyse the pattern of movement in the European automotive industry. We will analyse the whereabouts of the new emerging markets in automotive production.

#### **Employment dynamics:**

- What does the trend look like (on a down-turn or up-turn)?
- How is the average labour performance related to shifts in production?
- Does offshoring activities bring an increase to skills-intensive employments?

→ This is an important issue that needs further discussion since it concerns the future development of one of Europe's most important sectors in manufacturing.

#### ***d. Assessing the position of European cities in the advanced producers services networks***

Since the latter part of the twentieth century, a large international literature has addressed the major changes in the organisation of contemporary society associated with rapid developments in informational and communications technologies. While the concept of 'globalization' continues to be contested and a source of interdisciplinary debate (Cochrane and Pain 2000), the critical importance of adjustment to dynamic global economic changes related to this structural paradigm shift has become widely recognised giving rise to a new interest in cities as centralities in the new world space economy. Alongside the transformation in the operation of the global economy, the scale of world urbanization through rural-urban migration and natural population increase in the first decade of the new millenium, is making cities the principal organising structures for future global human habitation and economic production (Pain 2011b). It is therefore of vital importance to refocus European attention on the role of its cities as economic entities, centres for creativity, innovation and growth as acknowledged by the Commission of the European Communities (CEC1997) report *Towards an Urban Agenda* which recognised cities as the 'motors' of a European economy.

In this context, the notion of the 'world city', first introduced by Geddes in 1915 but brought to international attention by Hall in 1966 as defining the most successful and powerful business centres in the world economy, has attracted considerable enduring attention. Subsequent theorization has extended and deepened analysis of the world's major cities beyond Hall's original meaning yet his attention to the role and source of success of such cities remains of key policy interest and must be considered a central issue for the present ESPON *Tiger* research.

Friedmann and Wolff's (1982) formulation of the 'world city hypothesis' put forward the perspective that processes of economic globalization are articulated through specific nodal cities, leading to their restructuring. Drawing on Wallerstein's (1984) 'world systems theory' Friedmann (1986) specified this restructuring as creating a new hierarchy of 'world cities' in which finance, headquarters of transnational corporations, international institutions and the rapid growth of advance producer (business) services (APS) are distinguishing features of 'primary' and 'secondary' cities reflecting core-periphery world relations. Importantly for the ESPON research this conceptualisation of hierarchical city relations replicating a core-periphery spatio-economic framework has come to underpin key strands of European policy such as the ESDP (EC 1999) which attempts to address uneven development and promote territorial cohesion by means of spatial polycentricity at EU-wide, city region and intra-regional scales. This has significance for the European Lisbon agenda which since the year 2000 has focused on building Europe's global economic competitiveness, associated in the literature (Friedmann) with primary cities at the top of the world city hierarchy.

Pursuing Friedmann's analysis, Thrift developed the notion of a link between the operational structures of organizations and the structuring of city economic relations, identifying New York, London and Tokyo as a first tier of 'global cities', a second tier of zonal centres and a third of regional centres based on their concentration of international institutions, banks and transnational corporation headquarters (Thrift 1989). Sassen took the focus on organizational structures further, reinterpreting Friedmann's 'world cities' as a configuration of elite 'global city' servicing centres for the new key sectors of the new world economy, APS, and their command and control functions (1991). Her thesis distinguishes the 'global city' from the 'world city' on the basis of the international scope and interactions of the former as telecommunications technologies have allowed the geographical dispersion of APS and the simultaneous concentration of their key HQ coordinating and decision-making functions. Economic globalization has thus created a

new role for a small group of cities in the world, specifically New York, London and Tokyo in Sassen's first 1991 edition, which have the role of strategic centres for specialised global business.

New economic geography perspectives on the changes encompassing global cities took a micro-scale, intra-urban approach. Amin and Thrift (1992) for example focused on analysis of the new form of international cluster economy emerging in the City of London drawing on Marshall's earlier emphasis on the importance of 'industrial atmosphere' in localization. Their paper emphasised the importance of global city clustering for face-to-face contact and relationship building between foreign firms representing networks of global corporate capital, leading to the agglomeration of leading sectors of the advanced service economy, banks and financial services, law, accountancy and consultancy etc. Albeit from a different disciplinary and industry perspective, Porter's well-known work on business clustering agreed that traditional sources of competitive advantage such as low input costs and economies of scale were no longer relevant in globalization (1994). Firms operate globally to source inputs and access markets (p.37). The need to innovate and attract specialized skills has become the key locational driver in international competition. Gordan and McCann (2000) link work on international financial centres to the 'cultural turn' literature shedding light on the distinctiveness of actor relations in 'new' industrial-complexes. They distinguish three models of cluster - 'pure agglomerations' which are diffuse and unstable; 'industrial-complexes' where production links are critical; and 'social-network' clusters based on social relationships and the need for trust, 'shared intelligence' - this latter form represents the clusters exemplified by global cities such as the City of London (2000).

Sassen's (1994) exposition of cities in the world economy develops an approach which takes into account the interaction between the sociological and the urban in seeking to understand intersections between the local and the global. Here Sassen describes new global financial markets as producing transnational spaces for city economic activity (p.xiii). She expounds further how such global activity cannot be explained as completely "out there" for it is partially embedded in national territories. The role of national governments in facilitating global flows through deregulation and privatisation is producing transnational spaces within nation states and these are located in cities. The analysis extends the global city concept beyond London, New York and Tokyo to cities such as "Sao Paulo, Hong Kong, Toronto, Miami, and Sydney, among others" (p.xiv), and importantly it demonstrates the importance of understanding such transnational spaces as constructed through ethnographic (labour market) and macro-analytical (economic *and* financial) processes. Importantly for thinking about the position of Europe in the global economy, this analysis depicts the European space as being transformed by centralities which are located in its cities which are interlinked across national borders and are more 'global' than their surrounding national scale territories. The European advanced service economy, including international financial services, are the channels for this acceleration of city transnationality.

Network theory has lent weight to the need to understand the processes underpinning contemporary global city development as relating to *inter-city* relations constructed by the network organization of APS. Castells (1996) theory of the paradigm shift in spatial relations by the end of the twentieth century saw city interaction in the informational society and 'new economy' as forming a new 'space of flows'. Whereas in 1991, Sassen's work on global city formation emphasised the power attached to centralising tendencies that come from world-wide APS network dispersion, subsequent understanding has been inspired by Castells' notion of cities as occupying and increasingly co-constructed by a global spaces of flows. ICT has brought about an openness of spatial relations constituting "a multi-edged network" (PP. 75-76) within which the new economy is "informational, global, and networked" (p.77) operating on a global scale. Thus Castells brings to the fore the significance of APS network organisation for understanding new

*inter-city spaces of flows* as the informational society/economy continues to impact on Europe in the twenty first century.

Updating her earlier 1991 thinking on global cities, for Sassen, network transactions of global cities are conceptualized "as a space of centrality that is partly deterritorialized and takes place largely in digital networks but is also partly deeply territorialized in the set of cities that constitute the network." (p.350, 2<sup>nd</sup> edition). The "place-ness" of the global city" specified here has resonance with Harvey's (1989) concept of 'capital fixity' necessary for 'hypermobility' (p.350, 2<sup>nd</sup> edition). "It is the transterritorial networks of global cities which best capture the way in which global are functions of networks." (p. 350 2<sup>nd</sup> edition). Global hierarchies rewritten to reflect intensification of cross-border intercity transactions and networks (p.xxi, 2<sup>nd</sup> edition), and the development of a 'transnational urban system' (p.xxiii, 2<sup>nd</sup> edition).

Drawing on the writings of Friedmann, Sassen and Castells during almost two decades, the 'connectivity' of major cities operationalized by APS network business practices as a 'world city network' has been studied empirically by Taylor and colleagues in the Globalization and World Cities (GaWC) Network research group since the year 2000. An early paper introduces the notion of the emergence of a world-wide network of 'global' cities constituting a 'new metageography' (Beaverstock *et al.* 2000, see also Taylor 2001). The complete series of papers is publicly available at <http://www.lboro.ac.uk/gawc/publicat.html>.

The aim of the research is to inform states about the spaces of flows that are eclipsing the geographies of their territorial national and sub-national boundaries. This data will be analyzed in the European context in the present ESPON *Tiger* study. Taylor developed a method of measuring the city connectivity associated with the business developments enabled by late twentieth century technological changes (Beaverstock *et al.* 2000). The city locations of the offices of APS firms with a global servicing strategy are plotted and their staff size, roles and functions are studied as a measure of their relative importance within their world-wide network (Taylor 2004). When the results for all such APS networks have been computed, the distribution of activity between cities can be analysed for these powerful economic sectors world-wide. This measurement exercise has been undertaken in the years 2000, 2004 and 2008 thus the results allow the inter-city relations of Europe to be estimated quantitatively on a global scale for the first decade of the new millennium in WP3.2.1. The emphasis of this database on the *external* relations of cities will allow European spatial policy to be informed by an understanding of shifting 'spaces of flows' at multiple intersecting spatial scales and on a comparative basis in WP2.2.2.

### **i. The database: GaWC 2000, 2004, 2008**

The data provided are for the years 2000, 2004 and 2008. The aim of the first data collection exercise was to measure and analyze the world city network on the basis of information on the location of the world's leading advanced producer services (APS). The global service firms included are accountancy, advertising, banking and finance, insurance, law and management consulting firms (Taylor, 2001).

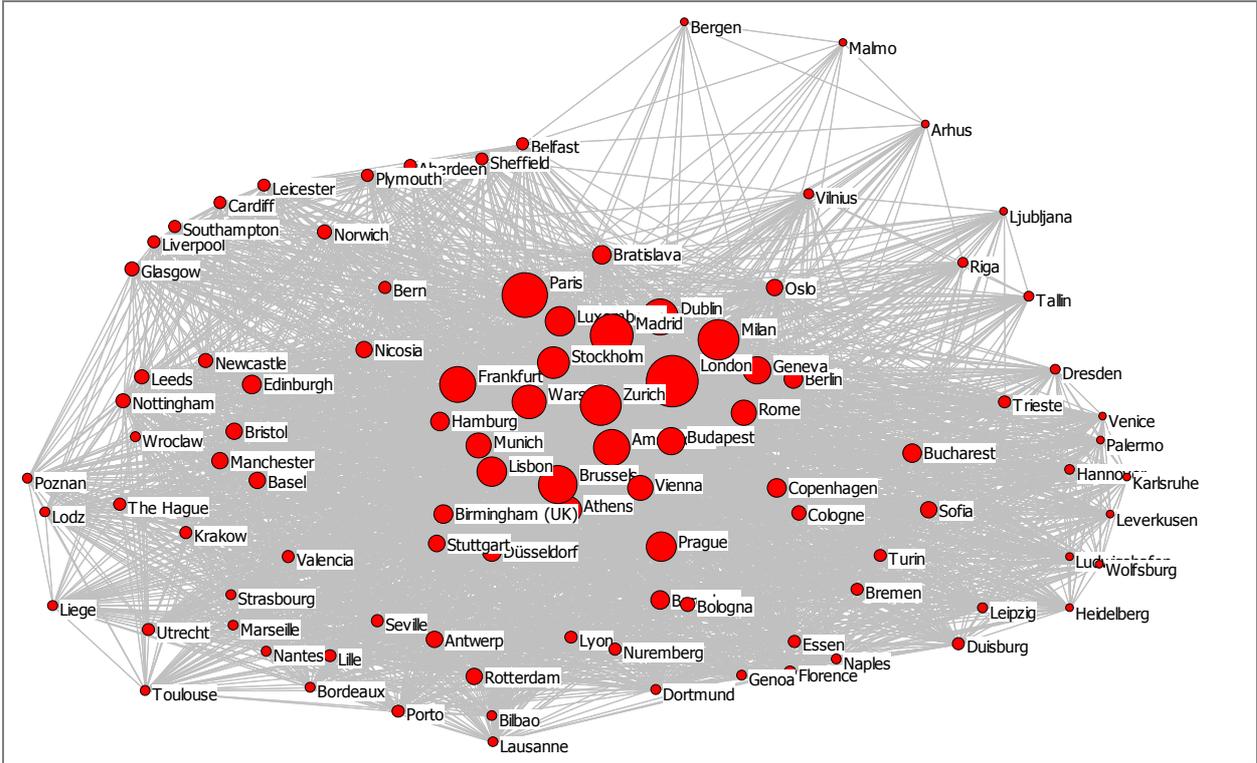
The composition of the dataset has changed over time to reflect changes in the structure of the service networks and the cities constituting the world city network; for this reason a direct comparison between the individual datasets cannot be made. The data made available by GaWC for assessment in the project are as follows: For the year 2000, data on 100 leading APS firms present in 314 cities; in 2004, on 92 firms in 315 cities, and in 2008, on 175 firms in 525 cities. Concerning the financial sector in particular, in 2000 and 2004 only 34 and 29 world financial services firms were surveyed, while information is available for 75 firms in the 2008 dataset. For technical details on the methodology

and the selection of firms and cities see Research Bulletin 310 on the GaWC website: <http://www.lboro.ac.uk/gawc>.

The datasets are composed by all cities present in the network for each year. All datasets show all values for Global Network Connectivity (GNC) and Financial Services Network Connectivity (FNC) relative to the year considered.

### ii. First results

In the following figures we illustrate an approach to analysis and visualization that will be used in the next research phase. All figures here refer to data for the year 2008 in its original format; no adjustments to allow comparability with other years have been applied yet.

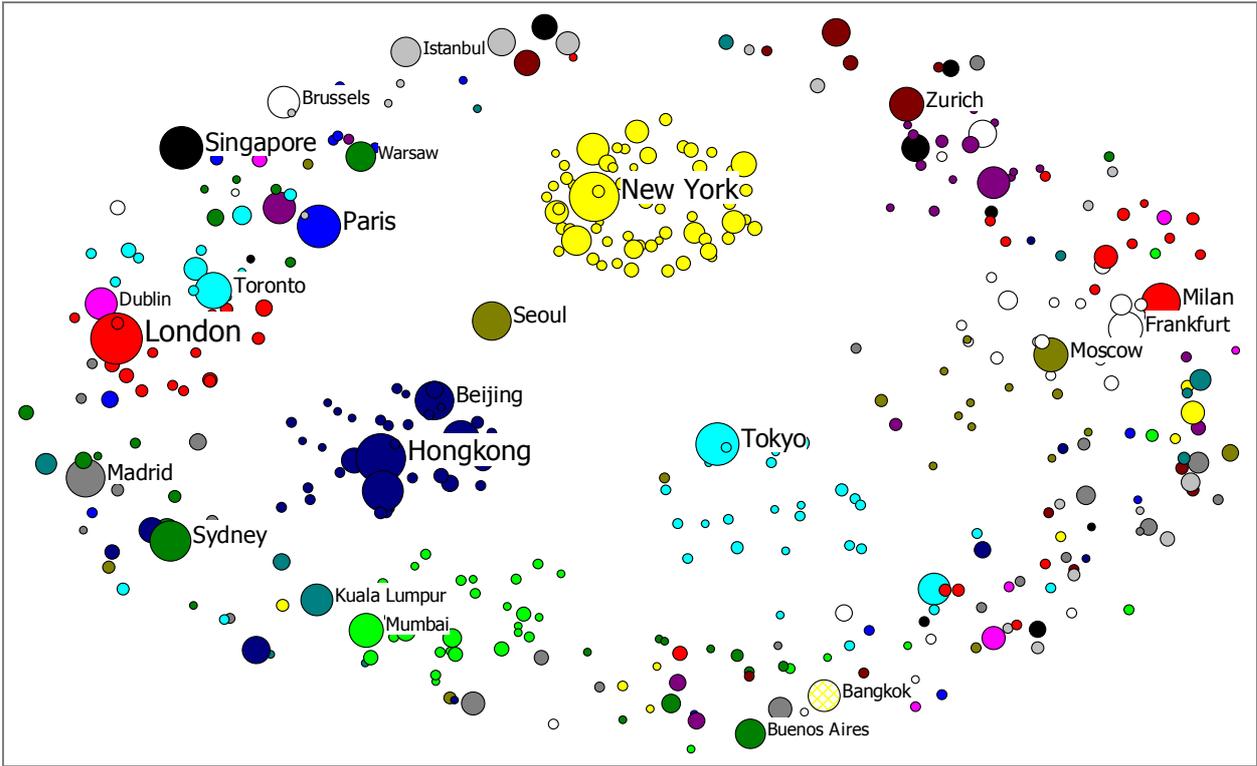


**Figure 12. FS network of European cities, 2008**

The graph presented in Figure 12 shows an extraction of data used in the world APS network “Contemporary Mappa Mundi” exercise (Vinciguerra *et al.*, 2010) extracting Financial Services(FS) from the whole Advanced Producer Services (APS) network; only European cities are represented here. The position of cities in the map indicates their position in terms of importance and centrality within the European FS network, where geographical distance is not considered. To obtain the specific visualization we ran the spring embedding algorithm on the reduced network data. The spring embedding algorithm assigns forces to every link, which can be represented by springs – thus the name “spring embedding’. The effect is that a repelling force is applied when nodes are too close together and an attractive force when nodes are too far apart. Furthermore the strength of forces is influenced by the link value. In this way, the position of nodes changes continuously within the graph, throughout iterations, until an approximate equilibrium is reached. In the outcome, Euclidean distances between nodes are proportional to the graph distances. The size of both nodes and labels are proportional to the Connectivity Index calculated for the European FS network, the bigger the node the

more central the node is in the system. It is interesting to note from Figure 13 visualization that FS are centralized in a small group of very connected European cities.

We have run a similar exercise for the FS network alone again in relation to all world cities present in the GaWC dataset. Figure 13 shows the visualization outcome after running the spring embedding algorithm and forcing city groups to form according to their country. In this case we decided not to visualize individual connectivities as their density would make it impossible to identify important connections. In Figure 13, we see the central position of the United States in the world for FS however other countries are pushing towards the middle of the network. China seems to be powered by the connectivity of a number of well connected financial centres, whereas the positioning of Korea and Japan relates to one dominant centre.



**Figure 13. FS network of world cities grouped by country, 2008**

**iii. Future steps**

In the next phase of the research, standardization techniques will be applied to the data to allow comparative analysis between the years 2000, 2004 and 2008 (see Derudder *et al.* 2010 for a similar exercise applied just to the 2004 and 2008 datasets). This will allow us to conduct a series of investigations adopting a time-series and/or sector perspective. In particular we are interested in the financial sector, how it has changed over time, both in terms of absolute numbers and geographical location. Network analysis can also help us to develop an understanding of the position of particular cities in both the European and the World network of APS and FS.

In line with what has been proposed in work package 2.2.2, we will also cross-relate the cities' position in global networks to their structural features and to their economic performances.

### ***e. Toward a synthesis***

By combining the different perspectives, we will assess the territorial impacts of economic globalization. On the basis of existing DG Regio studies about the spatial consequences of the liberalization of trade (2008, 2009), completed by value chain and regional trade analyses at the regional level as well as network analyses at the city level, we will provide a complete picture of the cities and regional participation in the global economy and of regional (and cities) vulnerability/strength in the face of globalization. This will result in a classification of cities and regions according to their position and vulnerability in the global economy.

## 6.WP 2.3.2. Financial flows and the impact of the financial crisis

The main objectives of this Work Package are the following ones:

- To assess the position of Europe and its cities in global financial flows.
- To explain the spatial consequences of the crisis.
- To analyse data on real estate investment flows in Europe that create the 'spaces of places' in which the global service economy operates.

We will assess the position of Europe and its cities in global financial flows on a worldwide scale as revealed by stock-exchange and property market flow data. By analyzing time-series data on virtualized financial market flows which facilitate the construction of Europe's 'space of places', we will inform hitherto unanswered questions in the literature about the embeddedness of capital flows in European cities and the spatial consequences of the world financial crisis.

In this interim report, we present first the main messages from the literature (a complete version is proposed in annex). Second, we develop both approaches on stock exchange flows and real estate flows. For each type of flows, we present the data and first general results before. Finally, we detail the steps toward the final report.

### ***a. Main messages from the literature***

The growing importance of transnational financial flows through global stock exchanges and property markets for cities has been recognised in the literature for at least three decades. A group of the world's most powerful international financial centres has been theorized as *embedding* capital flows in the 'global cities' literature (Sassen 1991, 1994, Budd 1999). The agglomeration economies associated with the location of stock exchanges and the clustering of international business services in such centres (Porter 1998, Taylor *et al.* 2003) have become increasingly dependent on the availability of physical infrastructures provided by global investment. Recent financialization of the world economy, as well as the European Union, associated with ICT advances, economic integration and the deregulation of financial markets, has led to an acceleration of financial flows through global 'circuits' (Sassen 2006) and city capital markets (Lizieri 2009). Within Europe, the MiFID (Markets in Financial Instruments Directive) directive and on-going regional consolidation of the stock-exchange industry facilitate these transnational financial flows. In consequence, few authors now assert that global financial integration might annihilate any geographic relevance of space and places, forming a fluid, smooth and uniform world. Furthermore, these developments have drawn attention to the exposure of cities (globally and in Europe) that are economically reliant on the finance and business service economy to global financial shocks. Volatility of office rents and capital values varies significantly with city characteristics and so this has implications for European regional and city strategies based on property-led urban regeneration and economic clustering (Lizieri 2009). Territorial governance strategies therefore need to be informed about the ways in which inter-city financial flows and contemporary property markets are *connecting, or disconnecting*, European cities to global finance circuits worldwide (Brenner 1998, 1999, 2004, Brenner and Theodore 2002, Knox and Pain 2010).

## **b. Stock exchange flows**

Our research method on **stock exchange flows** will describe the geography of the financial system in progress both on *worldwide* and *regional* scales, and will assess the consequences of *changes in* the financial system using a territorial approach. We will first explore the extent to which the stock-exchange industry generates *inequalities of domain, erects barriers*, and simultaneously *strengthens the spatial concentration* of financial intermediaries within global cities, while *reinforcing regionalization* on a continental scale. Our analyses will examine how stock exchange flows are shaping European *economic territories* as well as the integration of Europe and its financial metropolises *within global networks and flows of finance*. In addition, we will examine *the effects of the recent financial crisis* both on financial centres and on the pattern of globalization. To do this, we will build and analyze an innovative database of cross-listing and trading flows matrixes, using statistics which will reflect almost the total universe of stock markets around the world. This indicator will highlight the choice of corporate issuers with respect to where their shares are listed and where they raise capital. Cross-listings will also reveal the unequal attractiveness of stock markets. In addition, this indicator will allow us to draw typologies or to rank financial centres into a world-wide hierarchy.

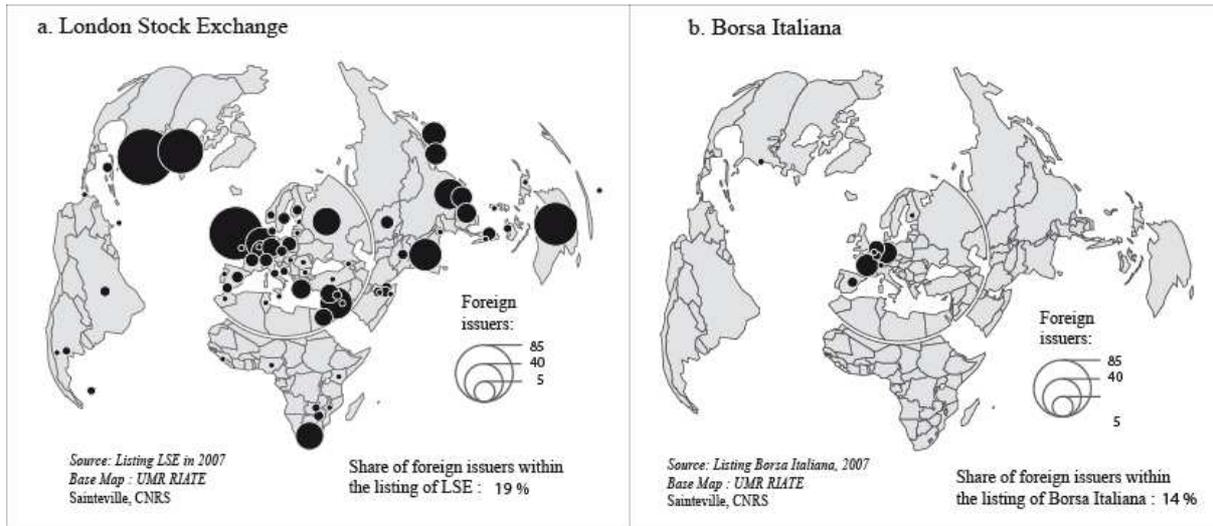
### **i. Database of cross-listings**

The building of the cross-listings dataset is in progress. The data are collected from the official listings of more than hundred stock markets that quote foreign equities throughout the world, and also from specialised agencies such as Reuters. This innovative dataset enables us to get a glimpse of the position of Europe and its financial centres in global financial flows, and in the process of capital raising in foreign markets. Thus, Europe can be considered either as a pool of investors that attracts the cross-listings of foreign companies or as a group of firms that raise capital in different market places, more or less distant. More basically, this data highlights the geographic pattern of the global financial integration of the stock exchange industry before the financial crisis, at the end of year 2007. The on-going gathering of the data will enable us to observe the evolution before and after the financial crisis, and to consider the questions: what hypothetical redistribution of roles is likely? Or will the pattern of global stock exchange relationships persist?

This dataset is a square directed matrix of cross-listing flows which displays the number of companies from a country (column) that are listed on a stock market from a distinct country (rows). As far as the origin of each firm is concerned, the operational address has been chosen, which enables us to get around the tax havens bias and the dummy legal addresses located in Bermuda, British Virgin Island, and so on. Furthermore, this choice of focussing on the location of the real operational headquarters remains coherent with the building of the dataset of real estate flows (see below).

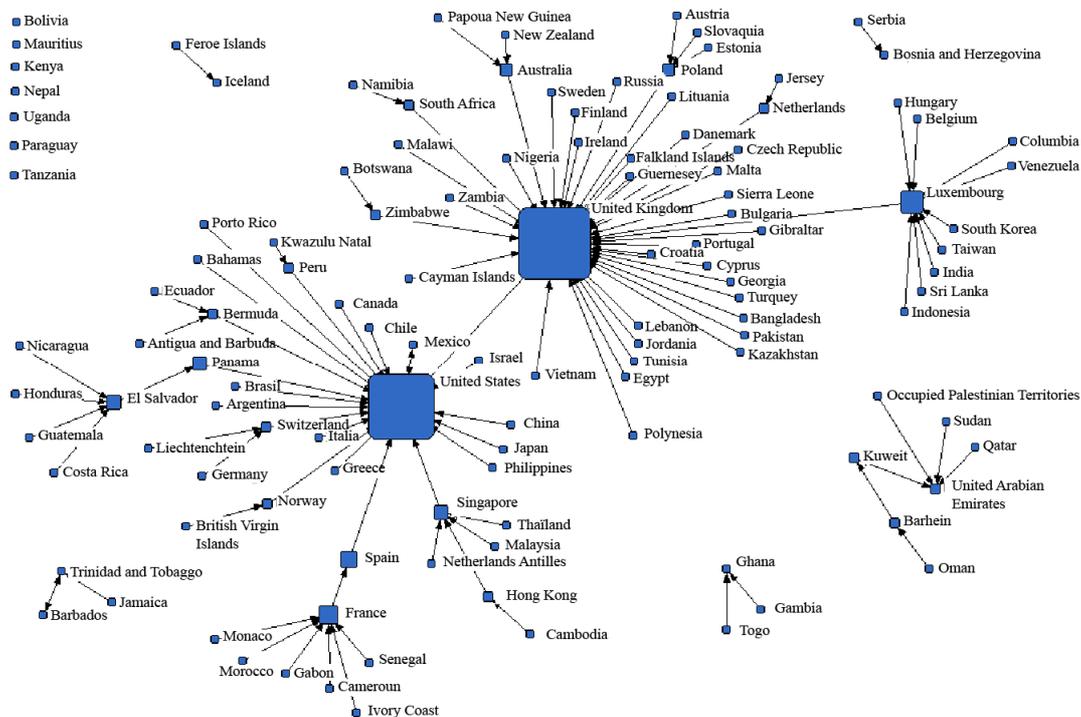
### **ii. First results**

Initial results confirm the relevance of cross-listings as indicators to observe the pattern of globalization and the various influences of market places. As far as Europe is concerned, it appears that the financial centre of London and the *London Stock Exchange* attracted issuers from the four corners of the earth at the end of 2007 (figure 14a). But, against all expectation, this 'global profile' of attractiveness is not prevalent in other financial centres, which throws doubts on the range of the so-called 'global' financial integration. Indeed, the results also underline that many stock markets, such as the *Borsa Italiana* attract corporate issuers primarily on a regional scale, owing to proximities effects (figure 14b).



**Figure 14 a and b. Origin of the foreign corporate issuers listed on the British marketplace (LSE) and on Borsa Italiana at the end of the year 2007**

Additionally, the matrix can also be studied using network analysis methods. The aim is to point out the preferential relations and dyads of cross-listings and, more basically, to rank the listing places into a hierarchy. The choice of the method still remains to be determined so as to clean up and make the graphs of cross-listings readable. Till then, a first insight is provided by the method of the dominant flows (figure 15), which highlights the attractiveness and main nodes of the financial networks of the capital rising in 2007. Unsurprising is the leading ranking of the British and US market places, which attract corporate equities on London Stock Exchange, NYSE-Euronext or either Nasdaq. But the graph also points out the role of secondary nodes, such as the United Arab Emirates or Singapore.



**Figure 15. Graph of the dominant flows of cross-listings at the end of year 2007**

### iii. Toward the final report

In preparing the final report, the data collection must be updated by the matrix of changes (if any) in the most recent time period, in order to be able to observe the impact of the financial crisis. Does it imply any upheavals of the ranking of stock markets and their attractiveness within the network of cross-listings? Let's recall also that it will be difficult to separate the effects of the financial crisis from the institutional changes and the current economic trends, such as corporate consolidations within stock exchange industry. The explanation can then be enriched with local observations and specific applied research in order to provide an up-to-the-minute view of the evolution and relative attractiveness of the world's stock markets, large and small.

#### c. Real estate flows

Our research method on **real estate industry flows** will describe the geography of financial flows and differential market patterns both *within Europe* and *relative to other world regions before and since the impact of the financial crisis*. We will examine the relationship between the *concentration of financial service centre activity* and *office rental movement* in global cities. Analysis of the occupation costs faced by office-based firms, the returns available for investors and the co-movement of these indicators across cities will be conducted, with data available post-credit crunch. It is difficult to find reliable and comparable stock figures, particularly on a time series basis so in order to do this we will use several data sources. A number of international real estate agents (for example CBRE, Cushman Wakefield, DTZ, JLL) and research houses (e.g. PMA) monitor office markets in major cities within Europe, providing estimates of stock, vacancy rates, prime rents and yields (which enables estimates of capital values). Cambridge University expert Professor Lizieri's specialist experience in analyzing these data and in resolving the considerable definitional problems associated with their use will inform and guide this research.

#### i. Data and first results

The data used to inform WP2.3.2 on financial flows have been provided by RCA (Real Capital Analytics, Inc.). These include information on the top 1000 commercial real estate deals for each of the years 2007, 2008, 2009 and 2010. Deals range from office, apartment, hotel and shopping centre sales to acquisitions of development sites; 40% of the deals are office transactions. We have records of deals with a total value of \$958billion, with deals ranging from Dubai World's \$5billion investment in the Las Vegas City Center casino and hotel project down to \$50million acquisitions of offices and apartment blocks.

To be able to compare this dataset with other datasets represented in the *Tiger* project and to create a network of financial investment flows, we needed not only the location of the sold property but also the location of the buyer. In this way it is possible to allocate, for each commercial deal, where the investment comes from and where it goes to.

In most of the cases, we were able to identify the location of the purchaser, defined as the headquarters of the beneficial owner. We encountered various data issues in identifying the main residence of the purchaser: some firms are registered and have notional head offices in tax havens. Where we could identify where real operational headquarters were located, we have used that information instead of the location of the registered office. At the same time, many owners are possible nominee purchasers, masking the underlying owner. Ownership by private individuals presents problems too, as they tend to have multiple residences for tax purposes. Many of the deals consist of joint ventures; where the division is known, we have used that information in order to

divide the acquisition price into equal parts (we know this is a strong assumption). Many financial firms act as asset managers for a wide range of investors whose identity is unknown. Here, we use the principal office of the fund manager as the location. This may differ from the head office of the parent company (for example, a Swiss bank may run its real estate funds out of London) but this reflects both the flows of capital into the fund and the location of the asset managers.

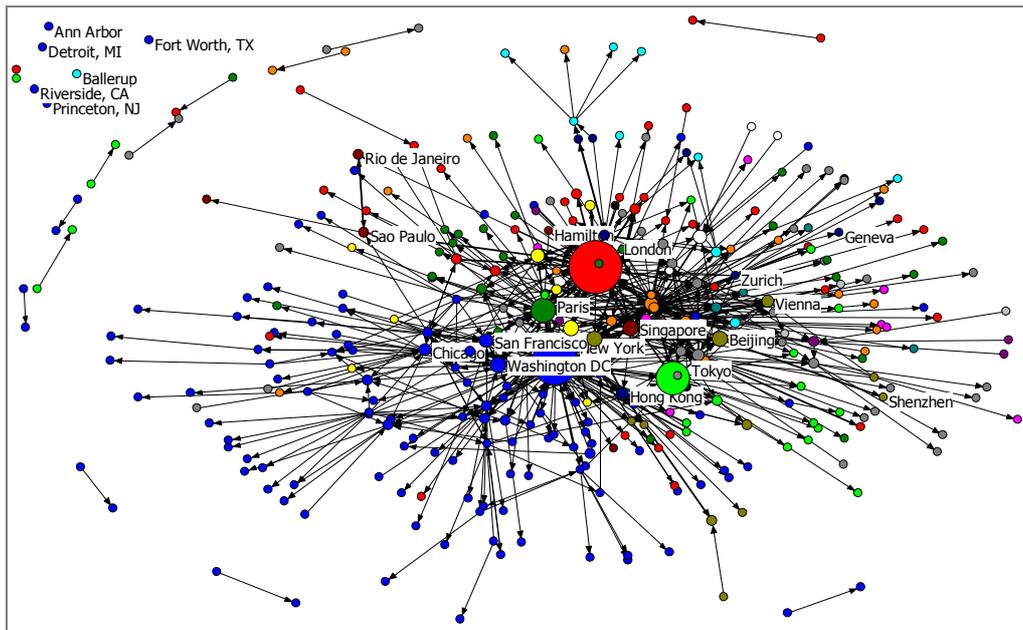
Finally, it must be acknowledged that RCA's data collection relies on the accuracy of reported deals. RCA makes every effort to check and triangulate information, but there may be issues with data in less transparent markets. For all this, the dataset represents a robust view of major real estate deals in the period 2007-2010, around the financial crisis.

At the end of the day, we were able to complete the dataset which includes 313 cities all over the world. We delineated the global network of financial investments in the commercial real estate market. In the network, nodes identify cities and links represent the aggregation of commercial deals that took place between every pair of cities. These financial flows have a direction, from the investor's city to the city where the property is located. This allows us to distinguish between inflow and outflow investments for each node.

The dataset is not in its definitive format; it still requires some revision and cleaning, but it gives us a good view of what the dataset can offer. The specific dataset is composed by 313 cities, with which are associated the absolute numbers that refer to the total amount of investment inflows, in US dollars, only for office space, occurring between the years 2007 and 2010. The dataset can be analyzed in different ways, especially using network analysis methods; we could focus on a time perspective and estimate the extent to which the financial crisis has affected the commercial real estate market; where investments moved over this time period, or whether they have reduced.

The position of cities in the map indicates their position in terms of their importance and centrality within the network of investment flows, where geographical distance is not considered.

To obtain this specific visualization we ran the spring embedding algorithm on the network data (see WP231). In Figure 16, the position of cities in the map indicates their position in terms of their importance and centrality within the network of investment flows, where geographical distance is not considered. The outcome is clear since the most connected nodes are located in the centre of the graph. Also visible are all nodes that do not exchange transactions flows with any other city (on top left of the graph) because investments for office space are kept within the same city. At the edge of the graph small nodes are located in groups of two; these dyads exchange some smaller transactions but are not integrated with the main part of the network.



**Figure 16. Offices deals, 2007-2010**

## ii. Toward the final report

This WP has two major objectives that lie at the heart of the whole study. These are, first, to assess the position of Europe and its cities in financial flows now operating at a global scale due to the integration and financialization of the world economy and, second, to examine the spatial consequences for Europe of the recent world financial crisis. By analyzing data on global real estate investment flows involving European cities, we intend to assess the interaction between international finance and the European territory.

### 1. Further steps

Analyses to be undertaken - The first step will be further checking, cleaning and revision of the data to check for potential distortions, for example where places listed separately in the database are in fact located within the metropolitan area of a larger city. We expect that some additional real estate investment data will also be incorporated, subject to availability and quality. Secondly, we will assess how best to approach the analyses with regard to real estate sectors, based upon the robustness of the data. Information on the office sector is likely to be the most robust in terms of the size and representativeness of data available as well as being the most important sector to serve as an indicator of the global economic integration and development of European cities. Thirdly we will progress analysis of the data for each year from 2007 to 2010 and conduct comparisons between investment patterns across this time period. We will adopt a multiscalar approach to visualization of the results because, in spite of contemporary processes of globalization enveloping the European territory, the trajectories of individual European cities remain differentiated due to Member State development path specificities. In consequence we will compare real estate investment in-flows and outflows for Europe at city and country levels. Dyadic relations of a selection of major FS centres will also be examined within Europe and worldwide; at a country level, these should provide some evidence of territorial 'self investment' by private and government bodies. Importantly, the time series data on real estate investment flows and data on rental levels will be compared at a city level in order to shed light on the extent to which the financial crisis has affected commercial real estate markets across Europe and in a global context. The geography of the crisis, where investments have moved over the 2007-10 time period and whether they have reduced, will be assessed.

## **2. Integration to the rest of the project (connection with 231 and 222)**

Comparison between the results from the WP2.3.2 analyses and those for WP2.2.2 and WP2.3.1 will allow us to establish how patterns of FS and real estate investment flows map onto economic network and territorial structures. We will combine the real estate data with GaWC indices relating to the APS network, and more specifically to FS. Comparison of the two datasets should be relatively straightforward since the structure of the datasets is similar. We anticipate that Mappa Mundi analysis can also be developed to allow comparison between the US and the European region for GaWC APS, in particular FS, and real estate investment flow data, complementing the integration of other WP2.2.2 and WP2.3.1 indicators by providing insights based on network analysis.

## **3. Main expected results**

We expect to find a high correlation between the variables included in the datasets. In particular we expect to find correlations between real estate in- and outflow flows at city level and European territorial differentiations at a country level. APS market development, economic and labour market restructuring are expected to be raising the connectivity of the European territory as a whole to global networks however FS connectivity and real estate flows are likely to be predominantly concentrated in a relatively small number of cities. Whereas APS market development and global connectivity may be catching up in peripheral regions, investment flows may still be focusing on cities in states with more mature economies, reflecting a 'stickiness', or 'lock-in', effect associated with interaction between international finance and physical urban infrastructures.

## **7. WP 2.3.3. Knowledge flows**

The current era of globalization started around four decades ago and manifested itself at almost the same time in a number of knowledge-intensive urban regions. It is based on a rapid expansion of the networks of motorways and air connections and on an increased capacity and speed of information processing and transmission. It is characterized by a rapid knowledge-intensification that manifests itself through strongly increased R&D investments and a rapid increase of the share of knowledge-handlers in the labor force in the Western countries but increasingly so also in newly industrialized countries. Thus, the generation of knowledge is widely dispersed and takes place in regions all over the world. Any country or region that wants to preserve or increase its international competitiveness must have enough efficient knowledge channels to be able to tap the latest relevant knowledge wherever it is generated. This new knowledge is used as an input in product development as well as knowledge generation in the region. In the current era of globalization the diffusion of knowledge has been facilitated by the decreasing costs for transportation of goods, people, and information, deregulation, liberalization, and lowered barriers for international trade and foreign direct investments. However, there are no guarantees that a more rapid diffusion will benefit all nations and regions, since the value of the knowledge for the receiver is dependent upon his/her absorptive capacity. Furthermore, since there are increasing returns in knowledge production there are strong forces stimulating the spatial agglomeration of knowledge production. The spatial extent of knowledge spillovers and knowledge flows more generally is a critical factor for the territorial development in Europe.

The general objective of this WP is to measure and understand the growing knowledge flows across the world and within Europe. More targeted objectives have nevertheless been redefined after coordination with the KIT project on innovation which mainly deals with the regional scale. We will focus here on the position of EU as a whole in the knowledge flows and through specific analyses not implemented in the KIT project. These include between countries' trade on high value goods products and meta-analysis on spillover effects in Europe.

In this report, we present a first version showing the position of Europe in the knowledge flows within the triad. A detailed report on this topic can be found in the annex.

### ***a. Background and Trends in the European Knowledge Economy***

The world's leading economies of innovation and knowledge creation are referred to in the literature as the triad regions. The definition of this concept varies, but is generally known to, and will in this paper, entail Europe, and in particular the European Union, the United States and Japan.<sup>4</sup> The purpose of this paper is to assess the capacity of the European Union to absorb new knowledge created in the other triad regions through different channels of knowledge flows. Furthermore, the position of Europe as a leading knowledge-based economy is analyzed in relation to the United States and Japan. The channels for international knowledge flows that are of focus for this paper are flows through academic channels, patent related knowledge flows, technology trade, strategic R&D cooperation, trade networks, foreign direct investments (FDIs), and international migration. These flows of knowledge are analysed by means of a literature survey and compilations of recent available data.

In line with earlier research, this paper focuses on the triad EU-USA-Japan to make it possible to make comparisons with previous research. Future analysis must increasingly

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<sup>4</sup> Ohmae (1985) refers to this concept in his early work "Triad power" where the triad regions are North America, Western Europe and Southeast Asia.

consider what is going on outside the triad and not least in China and the other BRIC countries. However, even if the triad regions' share of the worldwide exports of, for example R&D-intensive goods, declined from 82 percent in 1993 to 69 percent in 2004, the triad regions are still major players in the global economy (Gehrke, Krawczyk & Legler, 2007).

The background to our report has been the prominent concern for many years within the European Union (EU); how to strengthen its innovative capability since it is becoming an increasingly networked node within the global system (Kale & Little, 2007). One example is the development of a European 'knowledge economy', which has been at the heart of EU's economic policy since the launching of the so-called 'Lisbon strategy' in March 2000. The strategic goal of the Lisbon strategy was that Europe the coming decade should 'become the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment'. Later at the European Council meeting in Barcelona in March 2002 it was agreed that the 'overall spending on R&D and innovation in the Union should be increased with the aim of approaching 3 percent of GDP by 2010. Two-thirds of this new investment should come from the private sector.'<sup>5</sup>

These targets were very ambitious and at the same time the European summits failed to provide the necessary instruments to reach these targets and left a number of critical questions unanswered. How should the private sector be stimulated to increase its R&D investments? How should the growth of R&D investments be distributed between the different member countries and between different industries? How should the responsibilities to reach the targets be distributed between the individual governments and the EU institutions? Furthermore, the Lisbon strategy did not focus enough on the need to increase the flows of knowledge and technology, in particular from the two other triad regions. Thus, it was not surprising that the Lisbon strategy to a large extent failed.

Concerns that Europe is lagging in terms of knowledge production compared with in particular the United States have been expressed at least since the 1960s (Servan-Schreiber, 1968; Patel & Pavitt, 1987; Archibugi & Pianta, 1992).<sup>6</sup> This is from one perspective very remarkable, since Europe is a major player in the generation of scientific and technological knowledge. However, from another perspective it is not very remarkable, since Europe is underperforming when it comes to taking advantage of the new knowledge in terms of new products and entrepreneurship, which also results in underperformance in terms of employment growth and economic growth.

The literature and the summarized data in the report indicate that:

- Europe is lagging behind the two other triad regions in terms of investments in science and technology, and the gap is larger for business-related indicators than for publicly funded R&D
- Europe lags behind the other two regions in terms of innovation in science and technology as shown by the patenting statistics
- Europe is increasing its competitiveness on the global market for high-tech exports, whereas both the US and Japan have lost market shares. Even so, Europe still lags behind the US and Japan in per capita figures.
- Europe lags behind the US in terms of high quality scientific publications. Although the absolute number of published articles is higher in Europe, the number of publications per capita is lower.

Europe still lacks an integrated R&D and innovation strategy with proper instruments to achieve the goals laid out by the Lisbon strategy. Europe lacks cohesion and central decision-making regarding R&D and innovation comparable to what exists in the US and

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<sup>5</sup> See [http://europa.eu.int/comm/lisbon\\_strategy/index\\_en.html](http://europa.eu.int/comm/lisbon_strategy/index_en.html)

<sup>6</sup> Interestingly similar concerns have been raised in the US (See, e.g. Kennedy, 1988; Pianta, 1988; Nelson, 1989)

Japan. The individual member states still have a substantial autonomy when it comes to R&D, innovation and higher education. It has been far beyond the scope of this paper to try to design a new R&D and innovation strategy for Europe. Instead, we have focused on one critical factor for a successful such strategy and that is the capacity of Europe to rapidly acquire knowledge developed in the two other triad regions.

The importance of such a capacity is well understood as soon as we realise that the gross domestic R&D expenditure in current USD (PPP-adjusted) in the US and Japan taken together is about double of that in the EU, and that researchers in the US and Japan produce approximately the same number of scientific and technical articles as the researchers within the EU (Archibugi & Coco, 2005). The underlying reason why such a capacity is so important is the role of diversity or heterogeneity of knowledge for new combinations to emerge, i.e., for the creation of new knowledge and (technological) innovations (Schumpeter, 1939; Nelson & Winter, 1982; Nonaka, 1994; Nooteboom, 2004). According to this perspective, new knowledge and new technology are assumed to emerge from the combination of existing knowledge bits.

In order to improve the above stated trends, Europe needs to enhance its potential to absorb new knowledge created in the other triad regions through different channels of knowledge flows.

### ***b. Data and Indicators***

In this paper, we broaden the scope and concentrate on channels for international knowledge flows and we identify and analyze the following channels for international knowledge flows:

#### 1. Academic channels

##### Sources

Academic co-authorship: NSF (2000); NSF (2010); UNESCO (2010)  
Citations of scientific articles: NSF (2010); World Bank (2010b)  
Mobility of academic researchers and scientists: OECD (2010b)  
Student exchange: OECD (2010b)

#### 2. Patent

##### Sources

Patent citations: Eurostat (2010); Mancusi (2008)  
Science cited in patents: Verbeek, Debackere & Luwel (2003)  
Cross-border patenting: OECD (2010a)

#### 3. Technology trade (including international consulting)

##### Sources

Royalty and licence fees: World Bank (2010a); World Bank (2010b)

#### 4. Strategic R&D cooperation

##### Sources

Strategic R&D alliances: NSF (2002); OECD (2010); NSF (2010)

#### 5. Trade networks

##### Sources

Imports of goods: NSF (2010); EC (2007); Eurostat (2010)  
Imports of services: Havlik, P., R. Stollinger, O. Pindyuk & G. Hunya (2009)  
Unit value of imports: Comtrade (2010)

#### 6. Foreign direct investments (FDIs)

##### Sources

Intra-MNF networks: Chaloff & Lemaître (2009)  
Inward FDI: OECD (2010d)  
Outward FDI: OECD (2010d)

#### 7. International migration

##### Sources

Demand for skilled migration: Chaloff, & Lemaître (2009); OECD (2010c)

Europe's position and capacity of attracting high-skilled migrants: Chaloff & Lemaître (2009); Japanese Statistics Bureau (2010); OECD (2010c); Eurostat (2010); US MPI (2010)

### **c. Summary of results**

In terms of academic knowledge flows we can observe in Table 1 that European scientists are deeply engaged in international co-authorships. This might be an effect of, among other things, EU's framework programs stimulating cooperation among scientists within Europe. It seems that the co-authorships with scientists in the US have remained rather stable as a share and the number of articles co-authored with Japanese researchers is almost negligible. The EU should consider the possibility to revise the framework programs to include leading scientists from other parts of the world to a higher extent. Another interesting observation is that advanced research programs in Europe only enrol around 15 percent international researchers compared to around 28 percent in the US. This result points in the same direction. Europe must become much more open to engage international researchers in its advanced research programs. These observations might contribute to the fact that the quality of European articles is well below that of US articles as measured by the number of citations.

Region	Co-authored articles between EU-27 and the triads (% of world's internationally co-authored articles)		Number of internationally co-authored articles per million people	International researchers enrolled in advanced research programs as a % of all researchers	International students enrolled in tertiary education as a % of all students	Share of cited papers in the Top 1 percentile <sup>1</sup> (%)
	1998	2008	2008	2008	2008	2008
EU-27	-	-	429	14.9 <sup>2</sup>	5.9 <sup>2</sup>	29.6
USA	28,714 (28.0)	53,406 (29.0)	275	28.1	3.4	51.6
Japan	4,622 (0.1)	8,243 (0.1)	142	16.2	2.9	4.5
World	102,438	184,394	-	-	-	-

**Table 5. Scientific publications in international collaboration, 2008**

Source: UNESCO (2010); NSF (2010); OECD (2010)

<sup>1</sup>More than 21 citations

<sup>2</sup>EU-19 average, includes students moving within EU

Turning to patent citations it is evident that European inventors seem to build their new inventions on knowledge embedded in patents from abroad to a larger extent than the other two regions take advantage of foreign patents. US and Japanese inventors cite their own inventions and national patents more frequently (roughly 40 percent of all US citations are to international patents; 41 percent of all Japanese citations are to international patents) compared to European<sup>7</sup> inventors (71 percent on average of all European citations are to international patents) (Mancusi, 2008). There seems to be little barriers to knowledge flows through patent citations among the European countries and from the other triad regions.

It is noteworthy, however, that EU patents cite US scientific publications to a much lower extent than US patents cite EU scientific publications (Table 2). This is an indication that European inventors do not take full advantage of potential knowledge flows from scientific publications from the US. It is unclear what the barrier might be but it is

<sup>7</sup> European in this case refers to the average value for Belgium, Germany, Spain, Finland, France, UK, Italy, Netherlands and Sweden

important that European inventors are made aware that US scientific publications might be an underutilized knowledge source. We can also observe that the European inventors co-patent with inventors from the US to a larger extent with reference to USPTO patent grants than US inventors co-patent with inventors from the EU. The reverse is true with reference to patent applications to the EPO, although the gap is much smaller.

Triad relation	Citation flows to published literature, 1992-1996		International cooperation in patents, 2007	
	USPTO patents	EPO patents	USPTO patents (grants)	EPO patents (applications)
EU-15 to US	30	23	21.1	4.5
US to EU-15	36	45	2.2	8.4
EU-15 to Japan	9	6	1.0	0.5
Japan to EU-15	33	38	0.6	1.4

**Table 6. Geographic distribution of citation flows to published literature and of international cooperation in patents present in triad USPTO patents and EPO patents (percentage of total)**

Source: Verbeek, Debackere & Luwel (2003); OECD (2010)

Considering knowledge flows to Europe via technology trade, we can observe a very rapid increase in the payments for royalty and license fees from the EU member countries indicating a rapid increase in the imports of knowledge to the EU. The payments per inhabitant for the EU are 4.5 times higher than those for Japan, and 6.5 times higher than those for the US (World Bank, 2010b). The technology export from the EU is less than 60 percent of the technology export from the US indicating that the EU is not up to standard when it comes to developing new knowledge that is attractive on the world technology market.

Another interesting knowledge channel is strategic R&D alliances between firms. The trend of these type of alliances is increasing and, in particular, it can be observed that it is R&D alliances between firms in the US and firms in the EU that are increasing (from 86 new annual R&D alliances in 1990 to 207 in 2006; corresponding figures for Japanese-USA alliances are 35 in 1990 and 55 in 2006) (NSF, 2010). Europe-USA alliances haven increased their share of all R&D alliances in the triad region from 45 percent to 75 percent at the expense of USA-Japan alliances that have decreased their share from 40 percent to 17 percent between 1980 to 2000 (NSF, 2002). The conclusion we can draw is that European firms are interesting partners for international strategic R&D alliances for US firms. This indicates that European firms are taking advantage of this particular knowledge channel.

Imports of high-value goods are an important channel for knowledge imports. The EU countries have rapidly increased their imports of high-tech products since the mid-1990s. However, in per capita terms EU was in 2005 about 30 percent below the US in terms of imports of high-tech products EC (2007). This indicates that the EU has a large potential to increase its knowledge imports by increasing the imports of high-tech products. Available data also indicates that the unit value of EU's high-tech imports are far below that of the high-tech imports of the US. The unit value of US' high-tech imports is almost 60 percent higher than that of EU's high-tech imports (own compilation of Comtrade statistics, 2010). This indicates that EU fails to import the most advanced high-tech products, i.e. the high-tech products with the highest knowledge content.

Multinational firms play an important but probably underestimated role for international knowledge flows. EU receives massive inflows of foreign direct investments, which indicates the potential for substantial inflows of knowledge as well as a large potential for knowledge spillovers benefitting European firms. EU is also a major origin of foreign direct investments, which potentially is a source for reverse knowledge flows to the extent that the investing firms use their foreign affiliates as listening posts and as

sources of innovation. Data from OECD (2010d) highlights the above observations. Almost half of the outward stocks of US FDI are invested in Europe. This trend has remained stable during recent years. About ¼ of the Japanese FDI stocks are invested in Europe, also a trend that has not changed in the past years. Out of all of the FDI stocks in the US, European MNFs account for above 60 percent of the investments. Europe account for around 40 percent of the FDI stocks in Japan. Moreover, Europe invests about the same amount of FDI in the US as the US invests in Europe.

Our final channel for international knowledge flows is international migration. EU has generally a lower share of immigrants among the employed than the US (Chaloff & Lemaître, 2009). The share for the EU is 20-30 percent below that for the US. For high-skilled jobs, the difference is about 20 percent. However, for professionals the situation is much more dramatic. Here the figure for Europe is 36 to 43 percent below that of the US. Furthermore, immigrants with tertiary education is lower in Europe (16 per 1000 people) than in the US (28 per 1000 people) in 2008 (Eurostat, 2010; US MPI, 2010). This indicates clearly that Europe has failed to take advantage of one important source of knowledge, i.e. the immigration of professionals. The reason is of course the rather strict regulation of the labour markets within the EU.

Europe has shown improvements in terms of its absorptive capacity of knowledge flows for a few of the indicators applied and examined in this report. Nevertheless, the indicators show that there are certain types of knowledge channels that Europe must try to use much more extensively. Europe can never become the leading knowledge economy in the world without taking advantage of all the potential benefits of different types of international knowledge channels.

#### ***d. Steps toward the final report***

##### **1. Knowledge Flows: Triad economies**

**Still to do:** Further analysis and concluding remarks on important indicators such as academic knowledge flows, patents, R&D collaboration, technology and trade, imports of high technology goods, FDI and migration flows.

Follow up with some more recent data for some of the above mentioned indicators.

##### **2 - Knowledge Flows: EU (September 2011)**

This part of the work package will map the same type of indicators as in the former case of the Triad. However, it will focus on knowledge flows across the countries of the European Union.

##### **3 - Meta analysis**

The meta analysis will be based on what former empirical studies have found. These results, will then be analysed by the help of econometric analysis. The creation of meta tables will help us to overview the last 15-20 years of studies on knowledge flows between regions. We will draw our conclusions based upon these meta tables and the associated empirical estimations (the minimum requirement is 30 empirical studies).

## **8. WP2.3.4 Migratory flows : European territories in the Global Human Flows**

### ***a. Theoretical background***

The profound transformations that have occurred in the European continent during the last fifteen years have certainly contributed to the radical qualitative changes that have affected, and still affect, human mobility flows in Europe and at global scale. Although the analogies between human mobility in Europe and in North America are evident, attention from scientific literature has been limited.

Up until then, the literature had actually referred to the “push-pull” concept. In post-industrial society, work or recreational mobility tends to assume more subtle differences as occurs with places of work, free-time, recreation, training and education. The propensity to emigrate, which so far was based on decisions made by single individuals, is today considered to depend also on the characteristics and culture of the families and communities of origin. Mobility can be activated in various ways: (i) For economic reasons; (ii) For social and demographic reasons; (iii) For residential reasons; (iv) For reasons linked to quality of life; (v) For educational reasons; (vi) As a result of the consequences of natural events or disasters also connected to climate change; (vii) For reasons linked to political, military and religious events and persecution; (viii) For the necessity of work demands based on the business internationalisation; (ix) For tourism, recreation and free-time: for activities in constant qualitative evolution which attract increasing numbers of people.

More recently human mobility flows relate to two socio-economic procedures – production processes and consumption processes – and to the way they overlap in time and space. In this context, there no longer exist definite places of departure and arrival, but a series of places which are simultaneously places of departure and arrival, with flows which concern both consumption and production activities.

Studies are hindered by the difficulty in correctly detecting and studying the phenomenon at a general level. It is therefore convenient to analyse the phenomenon integrating quantitative and qualitative data on a local scale.

In the scientific literature a new interest is shown for the mobility of: (i) university students; (ii) women; (iii) researchers. In this case a quantitative/qualitative approach will be applied in order to identify the reasons for: (i) new flows of international students in some European universities; (ii) the leading role of women in taking decisions concerning human mobility; (iii) the effects of scientists’ mobility due to a growing number of research programmes (the FP6 and FP7 will be taken as a reference) supported by the European Commission.

More precisely, this work package aims at achieving the following objectives:

- to establish the relationship between tourism and migration in Europe at the macro scale, identifying areas characterized by different degrees of mobility and by different roles played by production-led mobility and consumption-led mobility;
- to assess the position of Europe in the global human flows, considering the main distinction between production-led and consumption-led mobility;
- to evaluate internal mobility in Europe in a comparative perspective with Northern America;
- to assess the position of Europe in the female mobility;
- to analyze specific forms of mobility (highly qualified migration, students mobility, women migration) at the local scale using specific case studies in order to understand those phenomena that cannot be understood through mere statistics.

## ***b. The database***

The main aim of this WP is to analyze the different patterns of migrations in the ESPON space and in USA. A collection of data on migration in the ESPON Space and USA is provided. Specifically, the database contains information on interregional intra-national and inter-national migration movements, and on migration movements between the ESPON Space and the USA and the rest of the world. The database has been obtained by merging information from various sources, and it provides a novel set of integrated information at different aggregation levels (from NUTS3 to NUTS0).

Data cover:

1. Total flow of persons between pairs of ESPON countries at a NUTS0 level (in the period: 2006-07).
2. Total flow of persons between pairs of NUTS2 regions in a country (in the period: 2006-07).
3. Change in net migration at a NUTS2 and NUTS3 level – i.e. annual average change per 1000 inh. – (variation for the periods: 2000-06 and 2000-07).
4. Change in internal net migration at a NUTS2 level – i.e. annual average change per 1000 inh. – (variation for the period: 2000-07).
5. Change in international net migration at a NUTS2 level – i.e. annual average change per 1000 inh. – (variation for the period: 2000-07).
6. Total emigration from individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
7. Total immigration into individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
8. Emigration to ESPON countries from individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
9. Immigration from ESPON countries into individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
10. Emigration to non-ESPON countries from individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
11. Immigration from non-ESPON countries into individual NUTS0 ESPON regions – abs. levels – (in the period: 2006-07).
12. Share of immigrants from ESPON countries into individual NUTS0 ESPON regions (in the period: 2006-07).
13. Share of immigrants from non-ESPON countries into individual NUTS0 ESPON regions (in the period: 2006-07).
14. Share of emigrants to ESPON countries from individual NUTS0 ESPON regions (in the period: 2006-07).
15. Share of emigrants to non-ESPON countries from individual NUTS0 ESPON regions (in the period: 2006-07).
16. Net number of migrants by five-year intervals for the USA (time series from 1950 to 2010).
17. Stock of emigrants from the USA to individual 225 countries (2000 round of population census).
18. Stock of immigrants in the USA coming from individual 225 countries (2000 round of population census).
19. Estimated migration flows between (and migrants stocks in) individual States within the USA (for the year 2008).
20. Estimated migration flows from individual non-USA countries into individual States within the USA (for the years from 1919 to 2008).

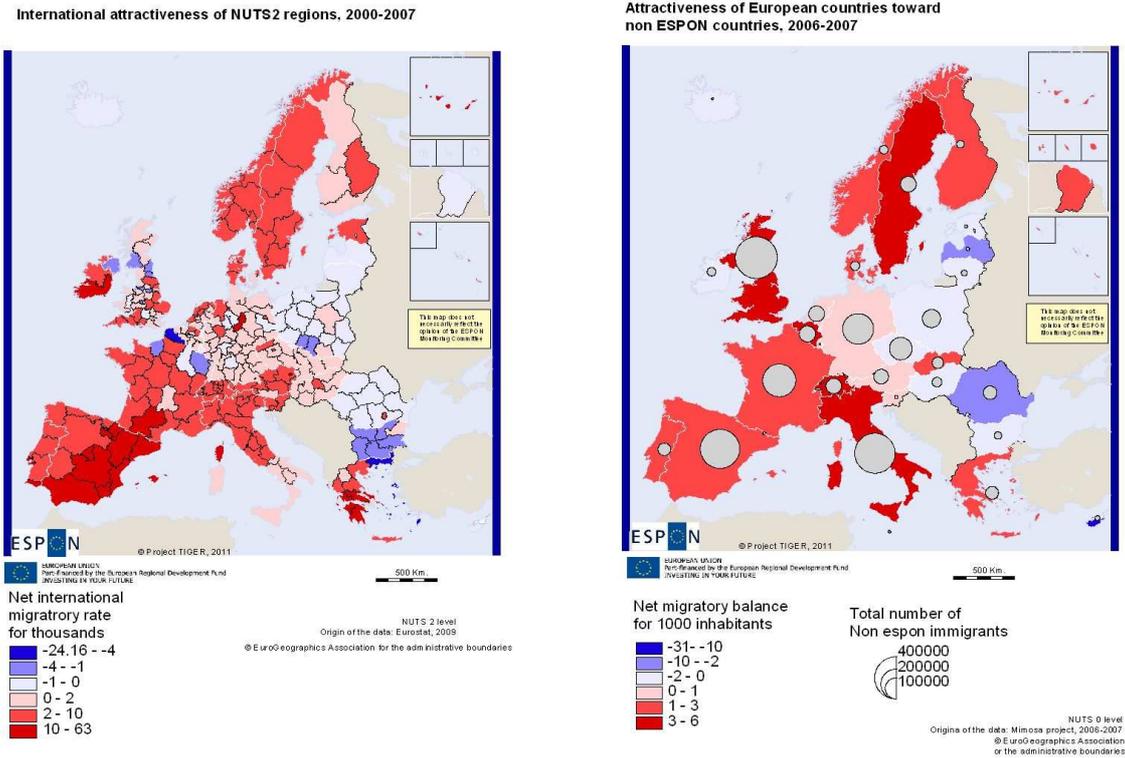
Source of data are: Demifer Project (European Union); Migration Policy Institute – MPI; Development Research Centre on Migration, Globalisation and Poverty – Migration DRC (UK's Department for International Development); United Nations; US Census Bureau.

Besides the general database, a database on students' flows across the world has also been nearly achieved. Data have been collected on the Unesco website. This database is

quite useful but it suffers from several shortcomings: it provides no useful data for the period before 2001; apparently, it is not complete with many lacking data in certain parts of the world over the last decade; the database is updated slowly (for instance, no information on the total number of foreign students residing in some countries during the most recent years). However, this database cannot be ignored because it is the only harmonized one at global level. For instance, it is more relevant and much more complete than the OECD database which releases data only for the OECD members as destinations of international flows of students (until 2004).

**c. First results**

As an illustration of what we can achieve with this database, we propose maps of territorial attractiveness for human flows within Europe (Figure 17). As one can see, at regional level, no distinction can be made about the origin of migratory flows (map on the left side) while this is possible at national level (map on the right side). The maps confirm the importance of the differences between old and new member states, even if Slovakia appears as an attractive area for Non Espo migrants. It also clearly shows the ante crisis pattern of international migrations, with the importance of flows toward Southern Europe – even the peak of immigration has occurred before this date -, UK and Northern Europe. The regional pattern confirms the general attractiveness of West European regions, while with important differences within countries between northern and southern France or Italy, between metropolitan and suburban/rural England. In Eastern Europe, capital cities are much more attractive than the rest of the territory.



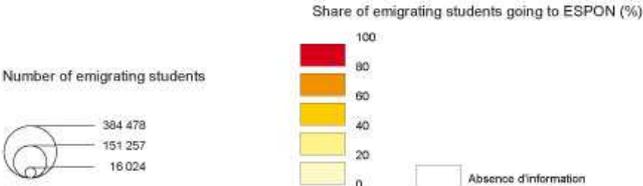
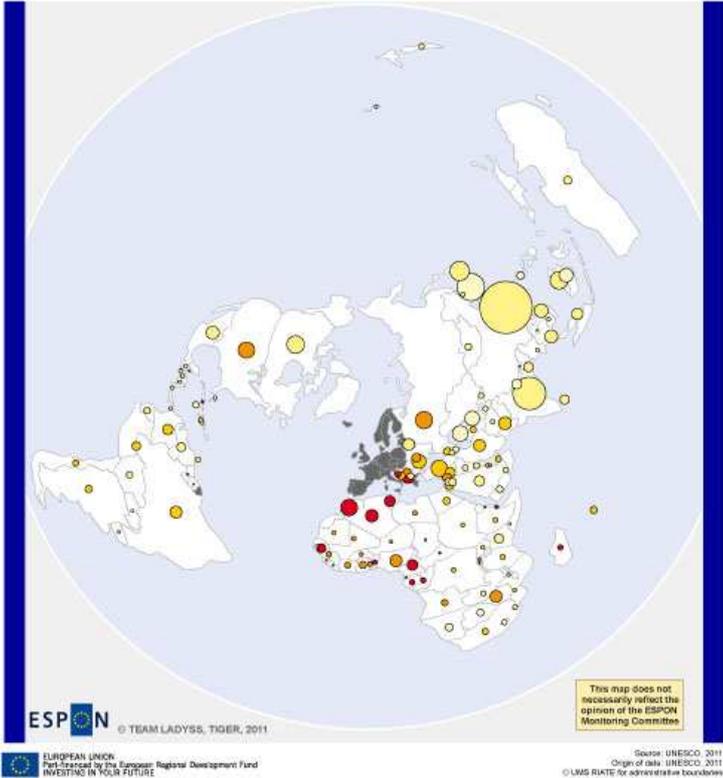
**Figure 17. Territorial attractiveness for human flows at country and regional level.**

As an example of the analysis of specific forms of mobility with strategic importance for the European space, we show a map depicting the geographical pattern of attractiveness of the ESPON space toward the rest of the world (Figure 18). A more complete analysis, yet unachieved, can be found in the annex. Proximity still plays a major role in the

attractiveness of students, since we clearly observe the high level of relative attractiveness toward non Espo Eastern Europe ad Northern Africa. It is also interesting to notice the attractiveness toward sub-Saharan Africa, especially Western Africa which has to be confronted with the declining economic influence of Europe in this part of the world. Finally, it is very important to take the volume of students into account because it completely changes the picture. Indeed, most of the students toward Europe come from Southern and Eastern Asia, even if students from this part of the world are more attracted by US than Europe (see also map 3 of annex WP2.3.4).

### Attractiveness upon foreign students

2006 - 2008 Average



**Figure 18. The geographical pattern of students emigrating toward the ESPON space, 2006-2008**

#### *d. Toward the final report*

1. The database has been achieved to analyze the total human mobility between European territories and the rest of the world. However, the database is still to be completed to analyse specific forms of mobility, especially the highly qualified labour. This will be soon achieved by using Labour Force Survey data. Yet, the database on students' flows has already nearly been achieved.

2. The complete analysis of the database will be made in-depth in the next month. The final aim is to describe and understand the spatial pattern of mobility within Europe in a comparative perspective with US.

More precisely, we will analyze at the three following scales:

- the place of Europe in the human flows at global level. This will be achieved through the mapping of flows with the different parts of the world. This will also be achieved through complex typological procedure (like intramax) to assess whether Europe constitutes a coherent area in terms of human flows;
- the place of European countries in human flows. The country level is the only which really allows to study human mobility in terms of origin and destination. Typologies of countries will be achieved in order to classify European countries according to the geographical pattern of their human flows.
- Using Labour Force Survey (LFS), we will also produce some rough analyses of flows between European NUTS 2 regions and the rest of the world. More importantly, LFS data will allow producing classifications of regions according to the characteristics of the migrants.
- finally, a comparison between mobility in Europe and US will be achieved at both general level (level of internal mobility, areas of influence) and US states versus European country scale.

3. An in-depth study of students' mobility has been launched. The current state of the research has been added in the annexes.

4. The mobility in general and of students in particular will be studied more in-depth through the case study of the metropolitan area of Rome. In order to implement a qualitative approach the research will be applied to the Sapienza University of Rome. This University has 150,000 students; the research will be focused on the university courses most attractive for international students (Corso di Laurea in Mediazione and Corso di laurea in Scienze Turistiche) and where the percentage of foreign students is around twenty per cent. The research will be also applied to the female component of the largest foreign communities in Rome. The mobility of scientists will be analysed using the Sapienza University of Rome where about one hundreds teams are involved in the European supported FP7 research projects.

5. Finally, in order to connect this Work package with the rest of the project, we will study the relationship between mobility and territorial attractiveness at both regional and European scale and other types of flows between European territories and the rest of the world, notably economic flows studied in WP2.3.1. This should help understanding how far human flows of European territories with the rest of the world are economic-driven or respond to much more complex determinants as highlighted by the literature.

## **9.WP2.3.5 Flows and gateways: maritime and airflows**

The main objective of the WP3 is to underline the position of Europe and its hub/port gateways in worldwide air and maritime flows. Three levels of analysis are considered: global, regional, and local, as well as relations between those scales. The global level focuses on the weight and position of Europe in global port traffic and maritime connections over time, notably looking at their changing geographic distribution and identifying which dominant port gateways have ensured Europe's maritime relations with the rest of the world. On a world level, the position of Europe will be analysed on various degrees of aggregation: as one single entity, as groups of port gateways (maritime ranges), and as individual cities (multiple or single terminals). The regional level looks at how such traffic and connections are distributed within the European territory, taking into account the previous level (world) while proposing a multi-scalar view on port gateways. We also wish understanding the mutual influence between global level and regional level since port gateways are embedded within local, regional, national, and trans-national economies and spatial systems. The local level will focus on one gateway-corridor through a case study highlighting concrete issues of regional planning and socio-economic development in relation with port and transport activities.

The objectives can be synthesized as follows:

- To assess the position of Europe in maritime and air flows;
- To assess the changing patterns of ports and airports in maritime and air flows;
- To assess the territorial impacts of global maritime flows on regional development.

This interim report mainly focuses on the position of Europe as a whole in the maritime and airflows. Databases that constitute the base for further analyses at port/airport level are described, and first results are already presented. We finish by proposing the further steps to be achieved for the final report.

### ***a. The maritime flows***

There exists numerous studies of European ports and gateways but few of them have a European-wide or worldwide focus, such as traffic concentration analyses. More likely are individual case studies on a local level of port hinterlands, port terminals or the port-city interface where technological and socio-economic changes are more readable (e.g. waterfront redevelopment, value-added and planning issues). European ports have mostly been analysed from a continental perspective (e.g. their position and accessibility in the road network), notably due to the inland centrality of the London-Milan megalopolis. Therefore, the link with the research on maritime networks remains rather limited, whereas European ports are often compared with each other based on sole traffics regardless of their position globally. Conversely, research on maritime networks is dominantly local in scope, with studies of specific basins such as, for instance, the Caribbean, the Mediterranean, and East Asia, notably about container ports and liner shipping services, while their industry coverage is bound to few or main operators. Recent research has provided some measures of the polarised structure of the global liner shipping network but without looking at its detailed geographic coverage and its evolution except from identifying the most central ports on the East-West trunk route. There remains much to do on the interdependence among the three main elements of the port triptych: maritime foreland, port (city), and hinterland, although this concept has emerged in the 1960s and has been put in question later on with the advent of

newer concepts such as transport (or commodity, supply, value, logistics) chains and global production networks. No research has been done yet putting together those elements in a simultaneous analysis, although it may best highlight the strengths and weaknesses of European ports and gateways in the worldwide and European context. This part of the interim report primarily looks at the weight and position of Europe and European ports and port cities in the worldwide distribution of port traffic and maritime networks. We divided the section in a number of sub-sections, each one referring to a specific analysis: port throughput (volume, concentration) in containers and for all commodities, liner shipping networks, and specialization of maritime forelands.

## **i. Data**

The data used for the different analyses is as follows:

- *Containerisation International*: yearly report on the total container throughput of ports in the world, from 1970 to nowadays (the most recent year available is 2009). It figures the number of twenty-foot equivalent units (TEUs) by port.
- *Journal de la Marine Marchande (JMM)*: yearly report on the total throughput of ports in the world, from 1971 to nowadays (the most recent year available is 2009). It figures the number of metric tons by port, and also provides other information such as national and international traffic, number of vessels and their total capacity, inbound and outbound traffic, and traffic per main commodity (liquid bulk, solid bulk, other) as well as the number of passengers and TEUs). Older versions of JMM reports, notably in the 1970s, also provided more detailed traffic figures per sub-commodity (e.g. refined oil, gas, minerals, coal, grains), but such information has gradually disappeared over time.
- *Lloyd's Marine Intelligence Unit (LMIU)*: this organization provides for all vessels ensured by Lloyd's (about 80% of the world fleet) their detailed sequence of calls on a daily basis as well as the characteristics of the vessels (capacity in TEUs, flag, year of build, etc.) and the names of the ports of call. This data is used for analysing the position of ports in the shipping network as well as mapping the maritime routes around the world. Data used in this report concerns about 90% of the world fleet of container vessels and their movements in 1996 and 2006. The container fleet represents only about 12% of the total vessel fleet, but it carries about 50% of world trade volumes. The collection of more data on other types of vessels is underway from the same source at selected years. In the related analyses, we do not consider the directionality of flows.

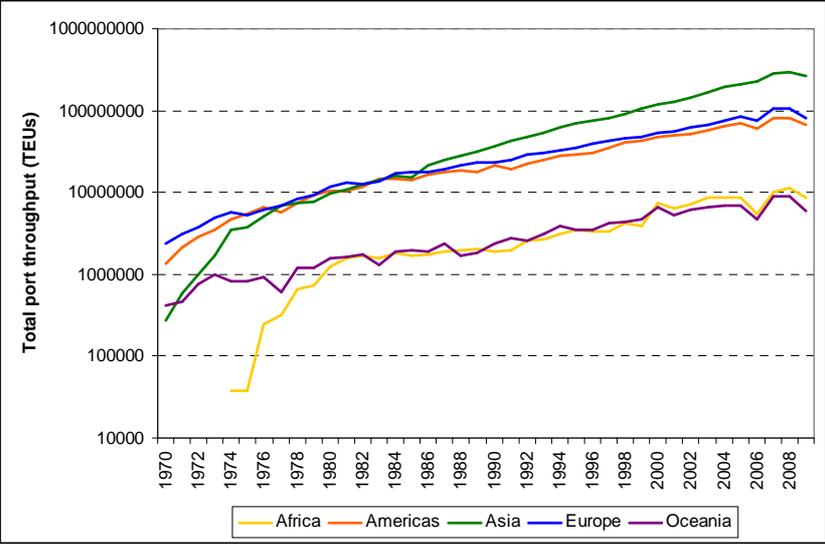
## **ii. Analyses**

### ***CONTAINER PORT THROUGHPUTS 1970-2009***

#### **Weight of Europe in world port throughputs**

- *Aim*: describe the weight and evolution of Europe's port performance in the world compared with other world regions.
- *Methodology*: sum of individual ports' annual container throughput based on Containerisation International data.
- *Main results*: while traffic volumes have grown continuously everywhere at reasonable pace, Europe maintains its position as world's leading port region only until the mid-1980s (Figure 19). Afterwards, Asia clearly dominates the world scene with a rapid take-off up to nowadays, and the Americas keep a third position by handling very similar (but slightly lower) volumes than Europe. The period 1976-1986 is marked by unstable traffics and has seen Europe losing its first position several times by dropping under the Americas (1975-1976), under Asia (1977), under both (1983). From 1986

onwards Asia has kept its first position without exceptions. The throughputs of Oceania and Africa remain highly comparable and far under the main poles, but they have followed similar evolution paths in terms of stable growth.



**Figure 19. Container throughput evolution**  
 Source: own elaboration based on Containerisation International data

**Container port throughput concentration**

- *Aim:* measure the concentration of traffic among ports on a world level and on the level of world regions, so as to estimate to what extent the spatial distribution of traffic has changed within regions over time, following convergent or divergent paths between regions.
- *Methodology:* application of Gini coefficient on container port throughputs (at port level) based on Containerisation International data.
- *Main results:* there is a common trend among regions that is a parallel increase of throughput volume and throughput concentration, despite some exceptional years. Although Europe has the best fit between the two indicators over the period, the last period (2000-2009) shows an inverse relationship due to the lowering concentration of increased traffics. The same trend has occurred in Asia and to a lesser extent in the Americas, because traffic has only slightly dropped in volume (global financial crisis since 2007) compared to the negative fluctuations of concentration. After a period of rapid volume and concentration growth everywhere (1970s to mid-1980s), Europe’s traffic has remained far less concentrated than in other regions (except Africa being the least concentrated) until the late 1990s. The rise in concentration may be explained by the new role of Mediterranean hubs competing for transshipment activities along the Asia-Europe trunk line (e.g. Malta, Valencia, Calabria, etc.) thereby capturing flows from traditional gateway ports.

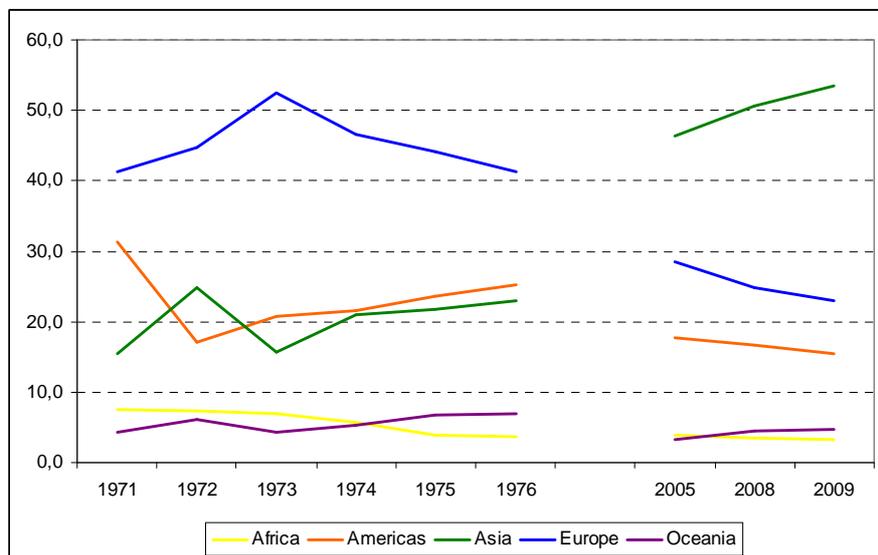
	1970-2009	1970-1979	1980-1989	1990-1999	2000-2009
Africa	0.487	0.953	-0.302	0.398	0.328
Americas	0.608	0.836	0.077	0.647	-0.150
Asia	0.511	0.895	0.693	-0.004	-0.470
<b>Europe</b>	<b>0.777</b>	<b>0.632</b>	<b>0.681</b>	<b>0.841</b>	<b>-0.499</b>
Oceania	0.415	0.902	0.528	0.539	0.373
World	0.686	0.967	0.699	0.766	0.151

**Table 7. Correlation between throughput volume and concentration by region and period**

Source: own elaboration based on Containerisation International data on Containerisation International data

**Provisional analysis of total port throughputs, 1971-2009**

- *Aim:* describe the weight and evolution of Europe’s overall port performance in the world compared with other world regions<sup>8</sup>
- *Methodology:* sum of individual ports’ annual total throughput based on data obtained from *Journal de la Marine Marchande’s* annual reports
- *Main (provisional) results:* for the years studied so far, Europe maintains a leading position on the world scene by the volume of its throughput volumes, followed by the Americas and Asia. However, the oil crisis of the early 1970s seems to have had direct impacts on port traffic in Europe, since the volume has dropped regularly from 1973. Although years are still missing, a pattern is already visible with the continuous downfall of European and American traffics until nowadays, with Asia taking over the first position.



**Figure 20. Share of regions’ overall port throughput in world totals**

Source: own elaboration based on Journal de la Marine Marchande data

**CONTAINER SHIPPING NETWORKS 1996-2006**

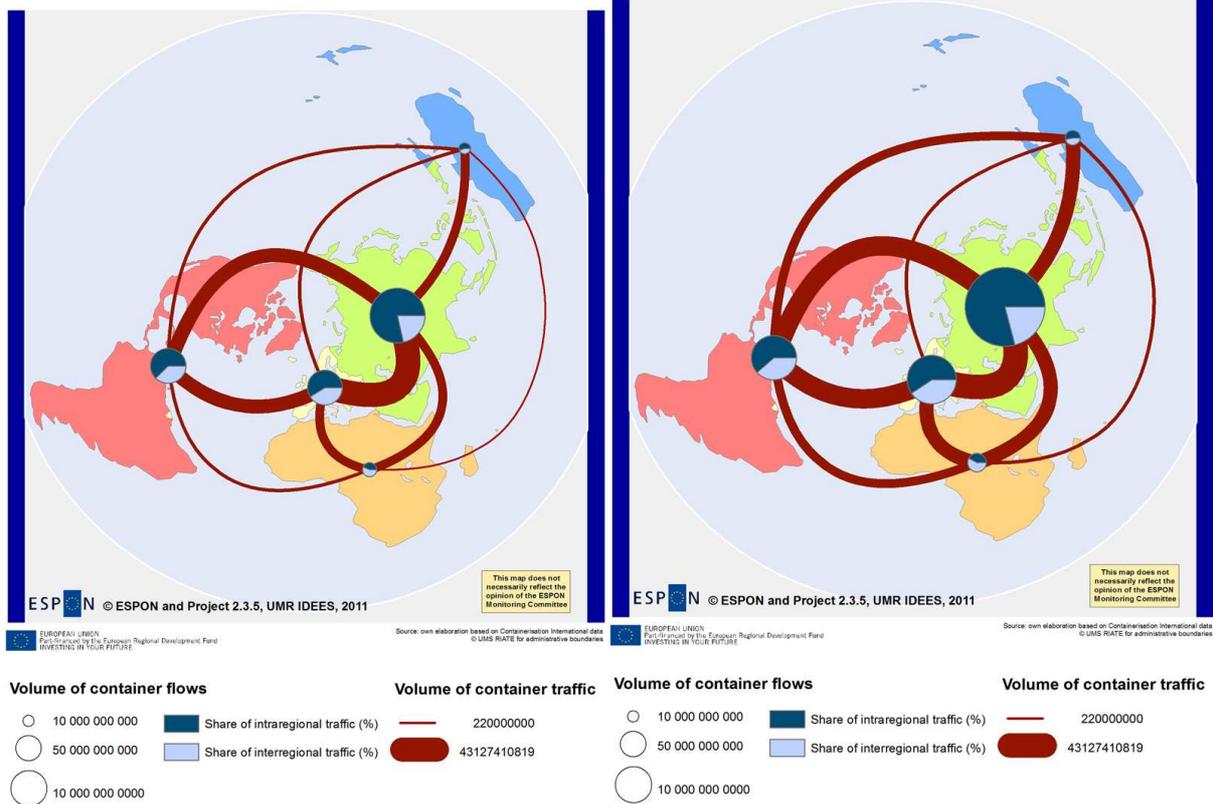
**Interregional and intraregional flows**

- *Aim:* analyze the position of Europe in the network formed by container flows among world regions, and highlight the respective importance of interregional and intraregional flows for each region<sup>9</sup>.
- *Methodology:* measurement of flows based on frequency (number of trips per year) and volume (vessel capacities), aggregation of port-to-port successive calls into an origin-destination matrix (direct links and indirect links) among world regions.
- *Main results:* we observe a strengthening of relations among the three main poles of the world system (Asia, Americas, Europe), and a stable proportion of intraregional flows versus interregional flows for each region. The latter is much larger for Asia, thereby

<sup>8</sup> The collection of intermediate years is currently underway for totals and also per main commodity (liquid bulks, solid bulks, and general cargoes).

<sup>9</sup> The analysis of interregional links at port level and region level is still underway for other commodities than containers.

confirming the paramount importance of intra-regional trade in this region. Conversely, Europe and the Americas have a lower share of intraregional traffic (about 60%), followed by Oceania (50%) and Africa (40%). Largest traffic regions are thus more integrated internally and with each other than smaller traffic regions. The global pattern of interregional flows has not much changed between 1996 and 2006, despite a noticeable increase of other links such as Africa-Americas, Asia-Oceania, and Asia-Africa. Traffic by region confirms aforementioned evolutions based on container throughput, with more rapid growth at main poles than at Africa and Oceania, which tend to stabilize.

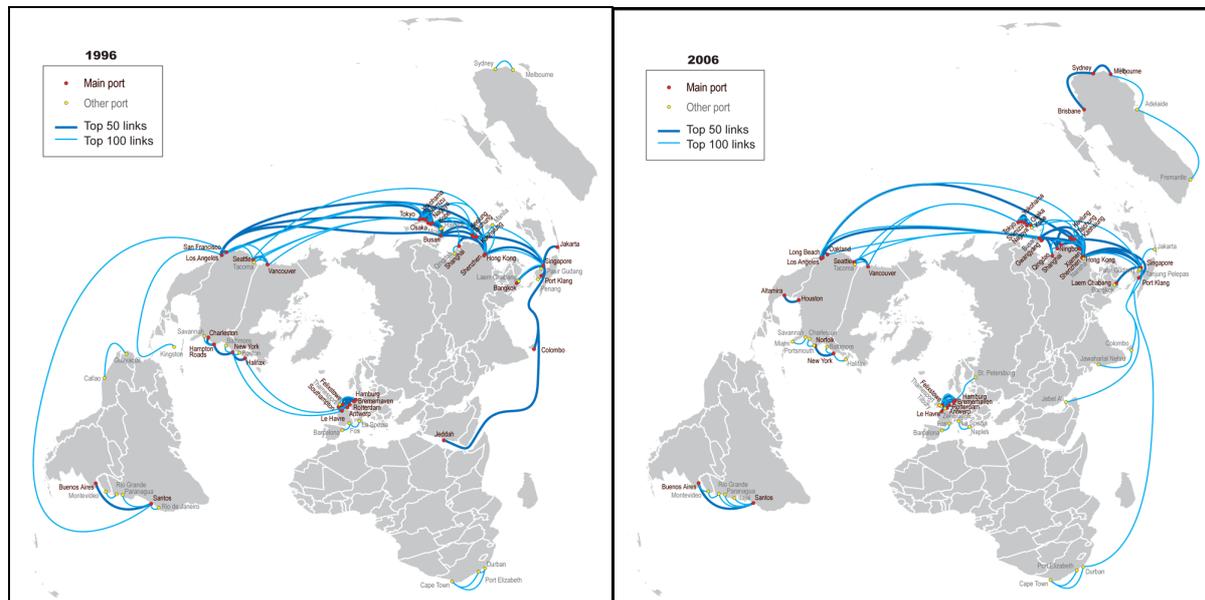


**Figure 21. Interregional and intraregional container traffic in 1996 and 2006**  
Source: own elaboration based on Containerisation International data

**World’s top 100 maritime links**

- *Aim:* the distribution of main inter-port links provides evidence on the role of short and long distance connections shaping the world system
- *Methodology:* measurement of flows based on frequency (number of trips per year) and volume (vessel capacities), resulting in a port-to-port matrix of direct links (previous/next ports of call)
- *Main results:* the top 100 direct inter-port links represent 52% and 39% of total worldwide vessel traffic in 1996 and 2006, respectively. They connect primarily neighbouring ports and remain intra-regional rather than interregional. There is a clear dominance of three main poles: Asia, Europe, and North America. In each pole, a small number of ports constitute the backbone (i.e. East Asian corridor, North European range, and US East and West coasts). In 1996, only Buenos Aires, Santos, Jeddah, and Colombo stand out as main ports outside of these poles. The strongest interregional links run between Asia and the two other large poles, with Japan (i.e. Tokyo) and Singapore acting as turntables across the Pacific and the Indian Ocean, respectively. Most other inter-regional links generate less traffic, while some regions remain isolated (e.g. South Africa and Australia). The pattern in 2006 is similar, but there is an intensification of intra-

regional links at the expense of inter-regional links. Busan has taken over as the key bridge between East Asia and North America, and Trans-Atlantic links has disappeared from the top 100 list.



**Figure 22. Top hundred direct maritime links in 1996 and 2006**  
 Source: own elaboration based on Containerisation International data

When taking into account all direct links, it can be calculated that most traffic occurs across relatively short distances: 80% of worldwide vessel traffic concentrated over links of 500km or less and 50% concentrated over links of 100km or less at both years. Strong traffic links are likely to occur among adjacent seaports serving shared hinterlands (e.g. Antwerp/Rotterdam in the Benelux area) or acting as dual hubs (e.g. Busan/Gwangyang in South Korea), which often receive multiple calls for the same vessels or liner services. The share of these shortest links has increased from 51% in 1996 to 55% in 2006, thereby confirming the strengthening of intra-regional connectivity through multiple calls, short-sea shipping, and/or hub-and-feeder services with a high sailing frequency. By nature and unlike air transport, maritime transport is constrained by coastal morphology thus forcing vessels doing regular calls between ports.

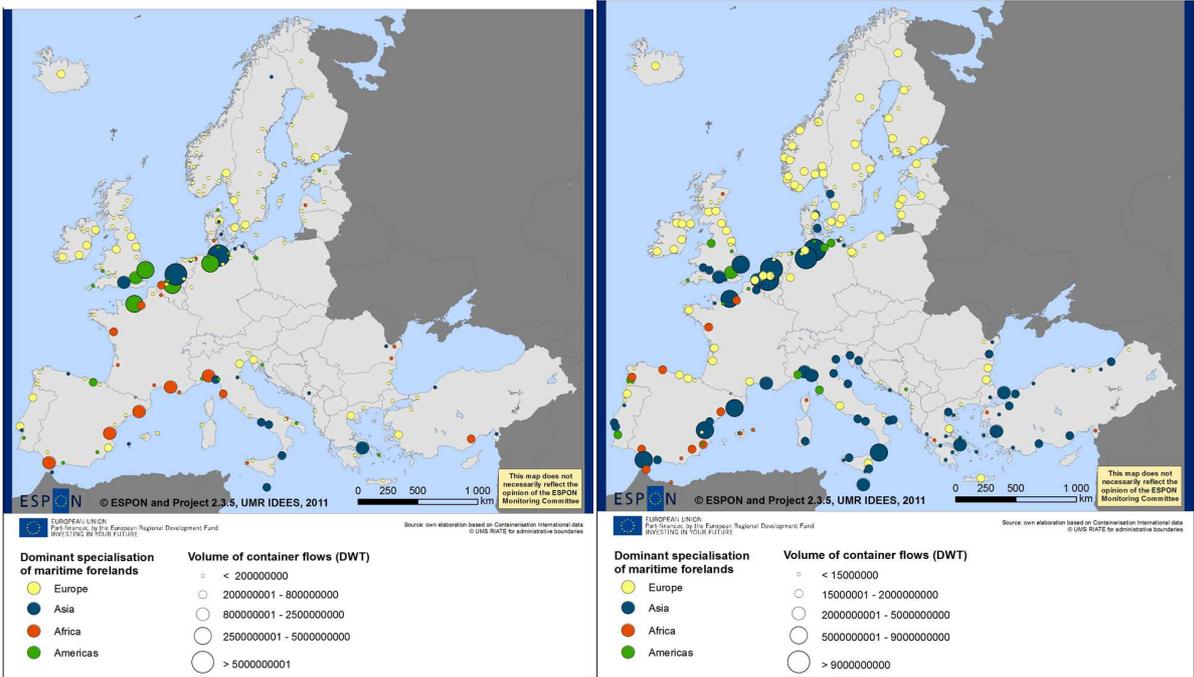
## ***GEOGRAPHIC SPECIALIZATION OF FORELANDS 1996-2006***

### ***Specialization of European ports' forelands***

- *Aim*: differentiate the geographic orientation of maritime forelands at European ports. Is there one dominant influence or multiple influences from other regions, how are such influences distributed across Europe, and how has this evolved over time?
- *Methodology*: Each port in Europe has been included in either a Large Urban Zone (LUZ) or a regional unit (NUTS-3 level) in order to gain coherence in the results and limit the number of isolates. Indeed, many ports in Europe locate in close proximity and often serve shared hinterlands, notably around some large coastal cities. Some ports in the original data were simply terminals located 10-20 kilometres from such cities (e.g. Fos and Marseilles in France, Thamesport and London in UK). Traffic was calculated on the same basis than in 2.1. Two analyses are compared, with or without intra-European connections, in 1996 and 2006, as we believe that their inclusion can be important in looking at the overall specialization of ports. Based on the flow matrix between European

ports and main world regions (Africa, Americas, Asia, Europe, and Oceania)<sup>10</sup>, we applied conventional statistical tools (principal components analysis and hierarchical classification) in order to make a typology of main influences<sup>11</sup>.

- *Main results:* at both years, we obtained four main classes corresponding to the main regions of the world, except for Oceania whose traffic was not sufficient to form one distinct class. Although some ports have multiple connections to more than one region, we did not obtain mixed classes such as Asia/America or "global ports". As expected however, at both years the largest ports (in terms of total container throughput) are those specialised on extra-European forelands. In 1996 (Figure 23), the specialisation on the Americas is concentrated along the North European range (Le Havre, Antwerp, Bremen, Felixstowe, and London) and on Bilbao (Spain), while Hamburg, Rotterdam, and Southampton are specialised on Asia. A large number of small and medium-sized ports remains specialised on intraregional traffic due to their limited volumes and to their polarisation by large hub ports, resulting in a dominance of short-sea shipping versus long-distance shipping (e.g. Scandinavia-Baltic, Ireland and UK). All French ports as well as Zeebrugge and the West Mediterranean range (Genoa-Algeiras) have a strong orientation on African forelands. This notably confirms important trading links between Spain and Morocco, while French ports have traditional (former colonial) links with West Africa and the Maghreb. The Asian specialisation is also visible in other Southern countries such as Italy (La Spezia, Naples, Salerno, Gioia Tauro), Malta (Marsaxlokk), and Greece (Piraeus), due in part to their proximity to the Middle East and to the transshipment activity of some hubs on the Europe-Asia trunk line.



**Figure 23. Geographic specialisation of European ports’ forelands in 1996 and 2006**

Source: own elaboration based on Containerisation International data

In 2006, there are drastic shifts of specialisation across Europe. The main dynamic is a shift towards Asia for a majority of ports, notably in the South, but also in the North with most large ports of the North European range from Le Havre to Hamburg. The African

<sup>10</sup> The definition of main regions is the one of United Nations: <http://unstats.un.org/unsd/methods/m49/m49regin.htm>

<sup>11</sup> Further analyses shall provide complementary results based on sub-regions of the world in order to better differentiate among ports connected to more specific forelands (e.g. North or South America, East or South Asia, North or West Africa, etc.), and also compare current results with maps excluding intra-European flows.

specialisation is still visible but it has concentrated on Spain and France mostly, with a shift from large ports to smaller ports. Marseilles, Barcelona, Valencia and Algeciras are now turned towards Asia. Only Rouen and Nantes in France remain specialised on Africa, and other regional ports in Spain (e.g. Tarragona, Alicante, and Seville). The American specialisation has reduced greatly, notably in line with the decrease of transatlantic shipping links, but it often remains located at similar ports than in 1996 (e.g. Sines in Portugal, London in UK). Thus, the geography of foreland specialisation has some permanencies, but the main trend is a shift towards Asian forelands, as a result of increase trade with Asia and the China effect.

### **iii. Towards the Final report**

#### **Analysis of the position of European ports in the global networks**

##### Port throughput analysis:

- complete the analysis of total port throughputs 1971-2009 (tonnage evolution, concentration, and also specialization by main commodity types of each world region and sub-region)
- analysis of traffic specialization of ports within the ESPON space
- analysis of port-city relations and their evolution in the world and within the ESPON space

##### Port hierarchy:

- measure the centrality of European ports and groups of ports (LUZ, NUTS3, ranges) in the global maritime network for different fleet types and different years (e.g. degree centrality, betweenness centrality, closeness centrality...)

##### Global maritime network:

- add maps of top 100 interregional links at port level (remove intraregional links from the current maps and insist on interregional ones)
- maps of dominant flows among world regions and sub-regions to produce a tree graph showing the polarized structure among regions and its evolution
- complete the database on other fleet types (bulks, general cargoes) for a comparison with container shipping, if possible from the 1970s
- provide measures used in graph theory and complex networks analysis about the topology and structure of the global network as well as sub-networks on world region level and sub-region level (presented in table form)
- the importance of Europe for other world regions and sub-regions based on Europe-related traffic shares in total traffic of each region (for different fleet types and at different years)

##### Geographic specialization of maritime forelands

- analyse the foreland specialization of European ports based on sub-regions of the world
- analyse the worldwide foreland distribution of some European countries
- run the same analyses on a) other fleet types; and b) Chinese ports and U.S. ports

##### Relation between port throughputs, maritime connections, and urban/regional development

- measure the evolution of the interdependence between foreland, port, and hinterland by crossing port/maritime data with territorial data on city level (LUZ) and regional level (NUTS)

## Case study

*Objective:* in the context of competition between main European gateways, analyse the situation of Le Havre itself as gateway city in Europe, as a port in the Le Havre-Hamburg range, and the problems related with the formation and strengthening of a wider Le Havre-Paris corridor in the light of current plans for establishing a Greater Paris area in France. This case study will be useful for both WP and the overall project by insisting on the territorial dimension of gateways, as a complement to a macro level approach based on networks and traffics. It will also reveal the strengths and weaknesses of the gateway by confronting them to the results obtained at macro level for Le Havre port.

### Overall profile of Le Havre port city

- Comparison with other port cities having either similar demographic size or similar port traffic volume worldwide, in order to highlight the peculiar profile of Le Havre as a second-order city with high traffic volume due to the importance of Paris hinterland;
- Review of former comparative studies and typologies of port cities including Le Havre, based on multiple indicators on a world or European level, and discussion about the implications;
- Description of current socio-economic trends based on employment figures, traffic figures, etc. also in a comparative perspective (e.g. Le Havre and other large ports of the North European and West Mediterranean ranges)

### Le Havre port in logistics and supply chains

- Land-based accessibility: position of Le Havre in accessibility studies on a European level (cf. studies based on road networks), potential population and economic wealth accessible to/from Le Havre in Europe, overview of Le Havre hinterlands;
- Maritime-based accessibility: measurement of network indicators based on the LMIU data, position of Le Havre (and major competitors) in the global shipping network (e.g. centrality, etc), distribution of maritime forelands;
- Position of Le Havre in French exports: results of a recent survey towards French shippers and exporters, position of main competitors (e.g. Antwerp), strengths and weaknesses
- Position of Le Havre in the port selection process among North European ports, notably focusing on the transshipment market

### Performance of Le Havre gateway

- Review of port performance studies including Le Havre, based on infrastructure characteristics, container terminals, etc.
- Structure and evolution of Le Havre's traffic: composition by commodity, specialization, modal split to/from the hinterland
- Transport-related employment and transport integration in Le Havre: some insights on intermodal potentials

### Le Havre and the Seine corridor

- Current issues in the transformation of "Greater Paris" and implications for Le Havre's role
- Problems and prospects for a better planning of the Le Havre-Paris corridor (e.g. enhancement of multimodal transport, attraction of leader firms)
- Evaluation of recent French regional policies and their influence on the emergence of an integrated polycentric corridor

## **b. Air flows**

In this section, we focus on the position and geography of airflows for Europe as a whole as well as for the different countries.

### **i. The database**

The data we used derive from the databases produced by the OAG firm. The latter describe in a both exhaustive and geographically disaggregated manner the scheduled air service throughout the world. For each flight they indicate, among other fields, the operating airline, frequency and number of seats powered. We use data for 1990, 1999 and 2008. We will probably be able to add 2010 data in the near future.

The main reason for using these data on the offer is their availability at the world level and their disaggregation according to airports. This allows to aggregate data at continental, countries or urban scale. For the continental scale, we use the WUTS classification described for the world trade data. As for urban scale, we assign each airport to a functional urban area using LUZ definitions in Europe and metropolitan areas defined by the Bureau of Economic Analysis in US. In the rest of the world, the assignment to urban areas has been based on airport names and rough locations.

Data from OAG are indicators of offer and do not allow to know the final destinations of passengers. Spatial structures derived from such data are thus much influenced by the hub functions and airlines' strategies.

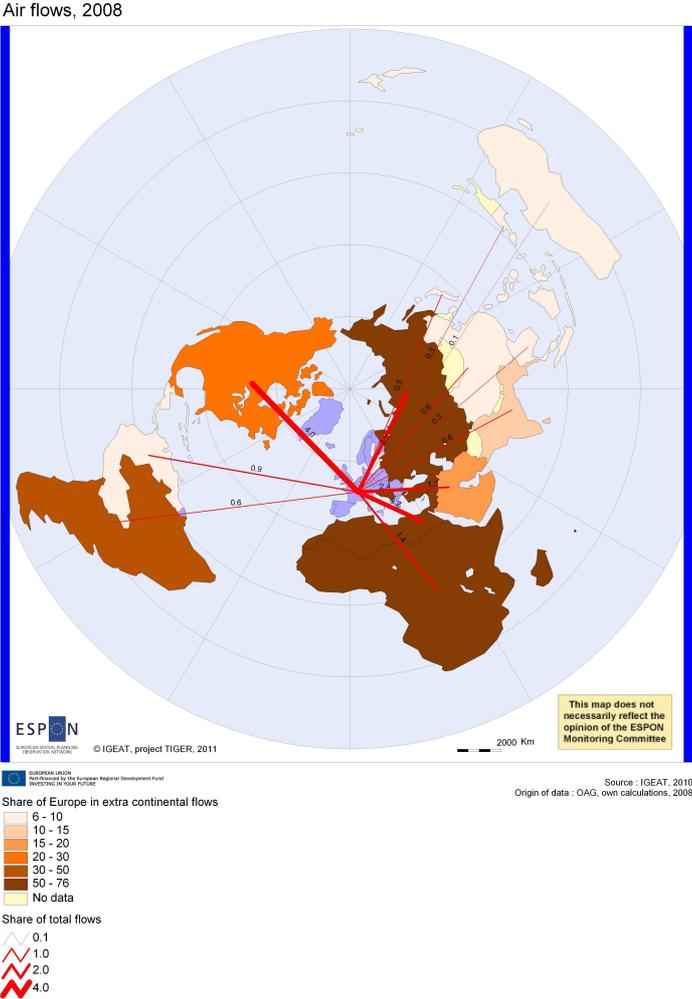
### **ii. Europe and European countries in the airflows**

In 2008, Europe defined by the ESPON area accounts for 46.4% of all airflows when intra-national airflows are excluded. In these flows, intra-European airflows represent 38.7% of all airflows. Indeed, the share of intra-European flows in all European flows is about 83.3% in 2008, a moderate increase since 1991 when this share equals 80.9%. However, there is something artificial to exclude intra-national airflows and not intra-continental airflows, considering that Europe is a totally free airspace. When intra-continental flows are excluded, Europe only accounts for 19.3% of all intercontinental flows in 2008, while it represents around 17% in 1991 (Graph 1).

Figure 24 shows the extra-continental air flows for Europe. The major flows are toward Northern America, followed by the most proximate areas of former USSR, Balkanic States, and Northern Africa/West Middle East. These relations might be of very different nature: flows toward Middle-east and Northern Africa relate to strong historical relations, the share of immigrants – notably from Maghreb and Turkey – and the tourist flows, notably to Morocco, Tunisia, Egypt and Turkey. Interestingly enough, those areas appeared of limited importance as far as trade is concerned, reinforcing thus the hypothesis that the higher importance of these parts of the world for Europe are due to migratory and tourist flows rather than economic relations. In comparison, we make the hypothesis that flows with Northern America – the first partner in terms of trade and investments – are much more related to business travels, and less for other types of motives.

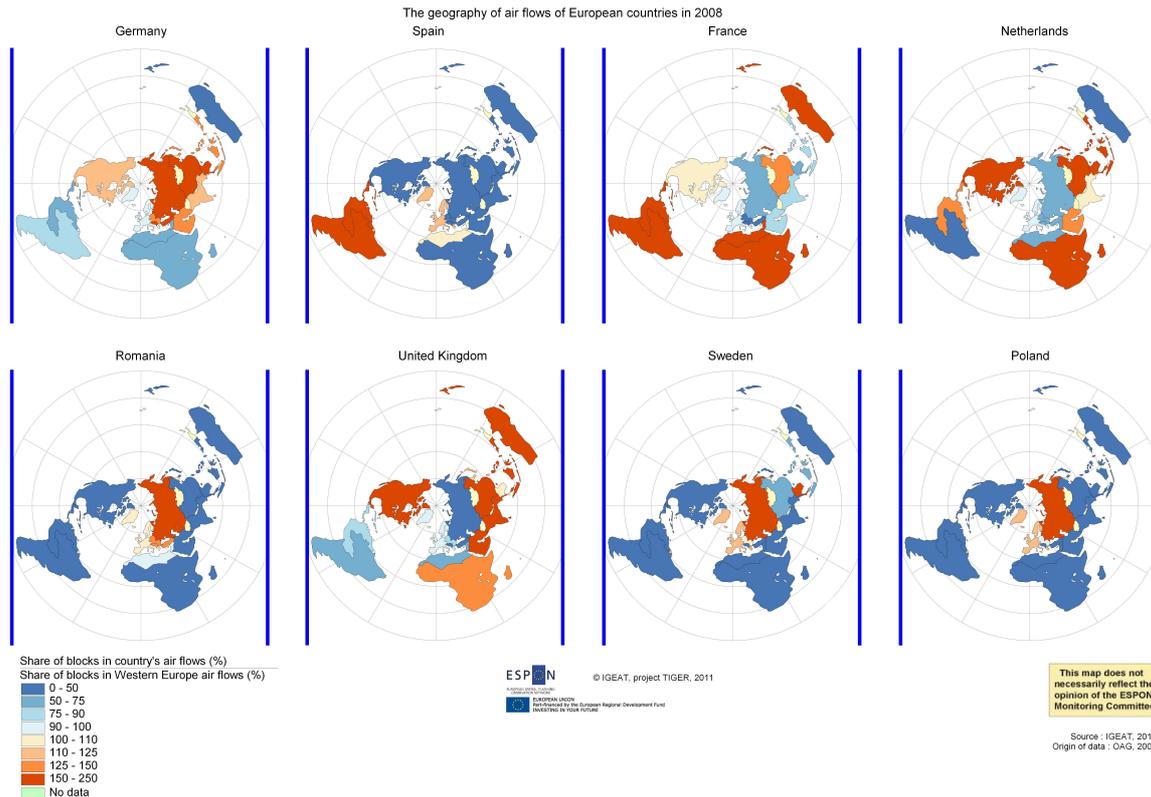
When it comes to the influence of Europe in the world – as measured by the share of Europe in the flows of each macro-region (colors of the map) – the picture is very similar with the one of trade, with the highest influence to be found in neighbourhood regions: ex-USSR, Middle-East and Africa. Concerning the latter, in contrast with the trade influence, Europe is by far still the first destination for extra-Subsaharan flights while the

Europe’s influence in this part of the world has considerably decreased in terms of trade. The low influence of Europe in the Gulf countries, in Southern and Eastern Asia is also confirmed.



**Figure 24. Air flows between the ESPON space and the other world regions in 2008**

However, this general picture hides major differences between countries. First of all, for all countries, Europe is by far the first destinations in terms of flights. But, some countries are less European than others in the air flows. This is notably the case for countries hosting the major European hubs: Netherland, France, UK and Germany. Once again, we cannot eliminate this hub effect and are therefore unable to know whether in their final destinations the different national citizens travel more or less within Europe. The extra-continental destinations from selected European countries are showing interesting facts. They largely confirm the geographical specificities of European countries in terms of extra-European relations as observed for trade: the Eastern bias of Germany; the importance of the commonwealth for UK; the importance of Africa for France and of Latin America for Spain; the importance of Eastern Europe and former USSR for Poland or Romania. However, some striking differences appear. The low share of Africa for Spain: while Madrid has a hub function toward South America, this is not the case for Africa where this function is devoted to Paris or Amsterdam. We may also note the specific relations of France with Oceania.



**Figure 25. The geography of airflows for selected European countries in 2008**

### iii. Further steps

In the future, the analysis will focus on the urban level. Indicators of airflows have already been integrated in the urban database built in the WP2.2.2 (see above). In-depth analyses of the position of cities in the air networks will be carried out. Moreover, position in airflow indicators will be crossed with other network indicators, as well as structural and performances indicators in order to unravel the complex relationship between structures, networks and performances at urban level.

## 10. WP2.4 Political cooperation and networks

### *a. Theoretical background*

EU is considered as an actor in the international relations and to a certain extent as a global actor and as a normative power which takes a major part in the global governance. The EU is also major actor in its regional context. It has been deepening its relations with all the neighbour countries over the last two decades in various domains. This multifaceted process is partly based on a regionalist strategy (generally called "regionalism") which enhances trade exchanges at the macroregional level, deepens North and South relations, bolsters the common management of international public goods at the macroregional level and is sometimes presented as a relevant transitional step for some national economies before getting fully embedded in globalization and full multilateralism. In fact, regionalism no longer designates a simple *de facto* increase of relations inside a cluster of countries (regionalization). It is more a proactive way of doing things by which several countries try to better regulate their relations at the political level in various domains (regional development, culture, trade, economy, migrations, energy procurements and transit, etc.).

The current wave of regionalism was launched in the 1980s and urges groups of states to deepen their integration at the macroregional level and to share some institutions and politics. This process challenges the independence of States and national economies. It goes along with a so called "new regionalism" based on networks of cooperation between non state actors generally. The new regionalism approach is based on the hypothesis that regions are not only governmental construction but also, and maybe more, social constructions based on the intensification of social interactions at the regional level between contiguous countries. In this framework, different types of actors are encouraged to develop networks of horizontal relations with other regions in the world in various domains. It may help some regions maintain their competitiveness by developing fruitful and more direct cooperation with other ones without going through the central administration. It encourages horizontal relations more than hierarchical ones. It involves many kinds of actors from private and public institutions in complex networks of relations and interactions. It stands for a more flexible territorial basis, etc. The regions of the EU member states are involved in this new horizontal and networking regionalism in several domains (twinning, decentralized official development assistance, etc.).

These questions do not simply relate to purely academic discussions. The place and role of Europe in the world can be described as a threefold one, characterised by three visions: a continental vision, a centre/periphery vision, a global and networking vision or "archipelago vision", assessed in the *Europe in the World* report (Espon 3.4.1). These visions are confirmed by the observation of empirical facts. They are articulated with a fourth one deeply explored by the "Europe in the World" Espon TPG, based on observed facts and tendencies and on scenarios regarding the future of EU as a global actor. The EU will certainly not be able to maintain its status at world level in the long run. The response to this could be a revised form of regional integration no longer strictly limited to the European Union (i.e. EU European member states) but enlarged to a broader territorial basis which encompasses neighbour countries, especially those of the former USSR and those surrounding the Mediterranean Basin. This enlarged regionalism is based on a state run and EU run regionalism but also on functional interactions, social practices, etc. It involves not only the EU and the states but also the regions of the EU and many social and economic actors (civil society, individuals, firms, higher education institutions, etc.). That is why this work package will pay as much attention to the

initiatives of the EU as an official actor as to those of lower level actors such as students and universities.

This work package aims:

- To check the validity of the "regionalization and regional integration hypothesis",
- To analyse how Europe and its territories position themselves in the world through cooperation and networking with other parts of the world,
- To show how this positioning participates in achieving the objectives of improving competitiveness as well as social and territorial cohesion in the Espo space.

To address the "regionalization and regional integration", we will first have a look at integrated trade areas across the world.

We will in a second step work on the European Union and the Espo space in the world and in its regional background. Does the EU, as an actor in international relations, give any priority to its regional neighbourhood when it comes to political cooperation in various domains (economy, environment, migrations, energy and so on)? Do various European non official actors develop and implement specific strategies and cooperation networks oriented to actors located in the neighbourhood or mainly in more distant parts of the world? Are different kinds of flows involving the EU, sometimes related to these strategies, regionalized or not? Do they tend to concentrate at the regional level (i.e. in EU + neighbours)? Do they reveal the existence of strong relationships and, why not, strong interactions between the European territory and its neighbourhood?

## ***b. Regional trade areas and the process of regional integration***

### **i. Introduction**

Globalization has been described as the major feature of the contemporary world, at least since the two last decades. But many authors insist also on the existence of intermediate levels of organization between the local/national and the global scale, be it from an economic or political point of view. The European Union appears of course as the most advanced in this process of *regionalization*, notably because the economic integration has been accompanied by a (timid) political process of integration. Many other areas, some of which taking EU as a model, have engaged in a process of regional integration. Here we use the term regionalization to describe the process of economic integration while regionalism is used to characterize the political process that favours the regional integration.

In this context, there has been an intense theoretical debate about whether the regionalization process has accompanied or has been antinomic to globalization. In the latter hypothesis, the regionalization process increases internal integration but slows down the global integration notably through protectionism. In the first hypothesis, on the contrary, it is argued that the regionalization favours global trade.

In the ideological context of the nineties, the European integration has been perceived by many economic authors as a potential threat, especially when EU became a completely integrated market with the free circulation of services and capital in 1993 (Krugman, 1991; Frankel *et al.*, 1995). The basic fear was that internal economic integration would be accompanied economic protectionism, acting as a restraint to economic multilateralism, that is a world free trade area considered as the best way to economic progress (Richard & Zanin, 2008).

However, as soon as the end of the nineties those fears seem to decline and conceptions about free trade area have completely changed. Indeed, several authors demonstrated that internally integrated regions did not lead to economically protected areas (Anselin & O'Loughlin, 1996; Poon, 1997). On the contrary, internal and external trade were both developing at very high rates. Hence, theoretical conceptions about regionalization have progressively changed, while the objective was still the same: increasing liberalization and trade. For some authors, regionalization has thus been considered as a second rank optimum while for others as a necessary transition to a complete liberalization at the global scale (Richard & Zanin, 2009; Bhagwati, 1992 ; Mashayeki, 2005 ; Newfarmer *and alii*, 2005). This latter view has certainly been adopted by the World Bank in their famous 2009 World Development report on "Spatial disparities and Development Policy". If the final aim is economic integration to the world, notably for third world countries, regional integration is now perceived as a good way to achieve this objective. This is because regional integration might reinforce economic development by benefiting of higher agglomeration economies but also because, for political reasons, liberalization is better accepted in a limited regional framework. Briefly said, regionalization is now perceived as a positive process because it favours trade and globalization, and favouring trade is supposed to boost economic development (Van Hamme *et al.*, 2010).

But what can be said about the regional economic integration from the regionalization and regionalism perspective? Where does it occur and at what level of intensity? What can be said about regionalization vs. globalization process? What is the position of European Union compared to other regions in this process? These are the questions we will now answer through empirical analyses.

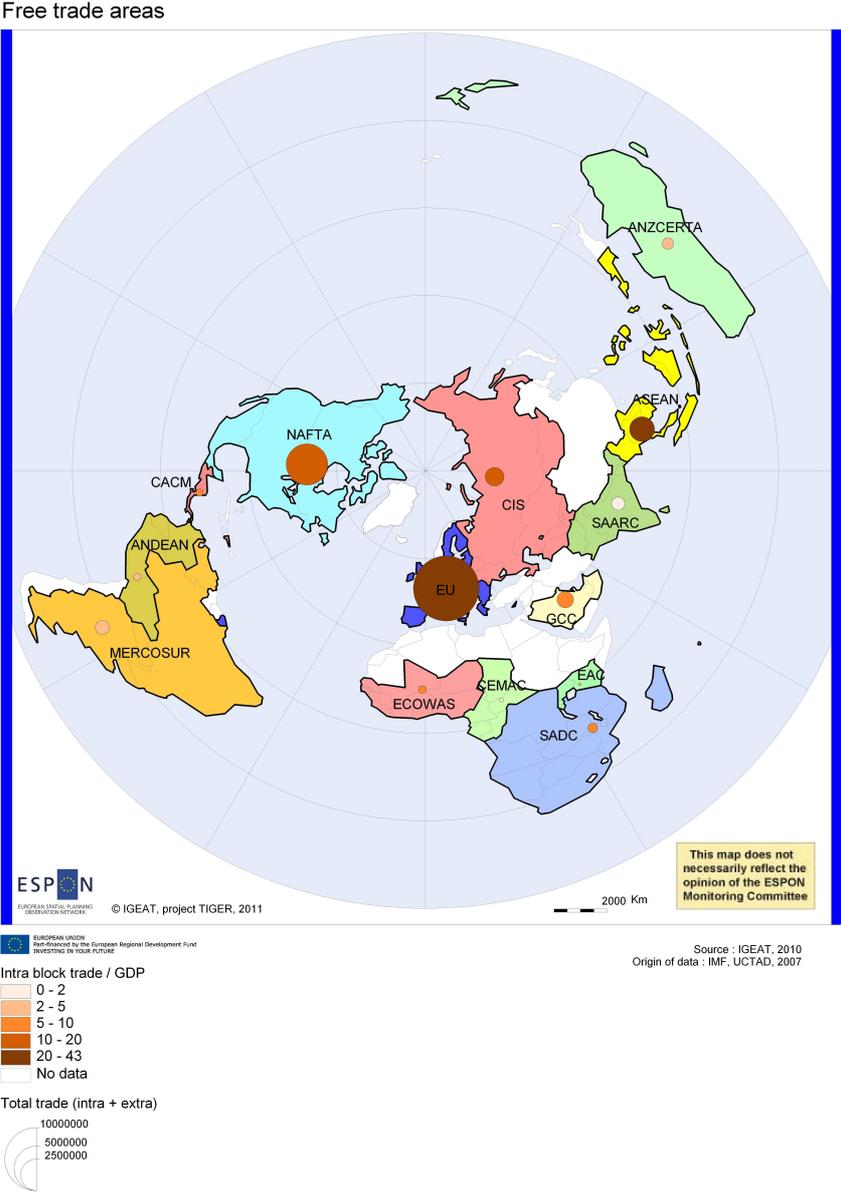
## **ii. The trade of macro-regions**

Nowadays, regional Free trade areas cover most parts of the world. Only Northern Africa, Middle East, as well as big economic powers such as China, Japan and South Korea do not belong to any of these multilateral regional agreements. However, these formal agreements mean very different things in reality: from a formal point of view, the economic integration is more or less achieved (limitations for some products, free circulation limited for capital and services etc.); but, more importantly, the effective integration can be very different, some formal agreements actually achieving very weak integration.

In general, the most developed areas appear to be the most economically integrated (Vandermotten *et al.*, 2010). Typically, least developed countries are oriented toward the developed core countries and have relatively few exchanges among them, notably because they produce primary products manufactured in developed countries or because they are competing for selling the same products. In contrast, developed countries are integrated leading to economic specialization within big integrated areas. As shown by Krugman, in opposition to the classical Ricardian theoretical vision of international trade, trade is more intense among developed countries because agglomeration economies lead to more specialization in manufacturing products.

European Union is by far the most integrated area, with two third of its trade which takes place within the block, and more than 40% of internal trade in comparison to GDP (Figure 26). Yet, the most specific feature of European Union is that economic integration is accompanied by a political integration, something which cannot be found in any of the other free trade areas. NAFTA (1994) also appears as a highly integrated area, with about 45% of intra-block trade. ASEAN groups together south east Asian countries: while the share of internal trade remains below 30%, the ratio between intra-trade and GDP is relatively high around 33%, meaning that the integration is the most advanced among peripheral countries. CIS is to a certain extent the continuation of former USSR, and appears still as a relatively integrated zone, with most of the countries still oriented

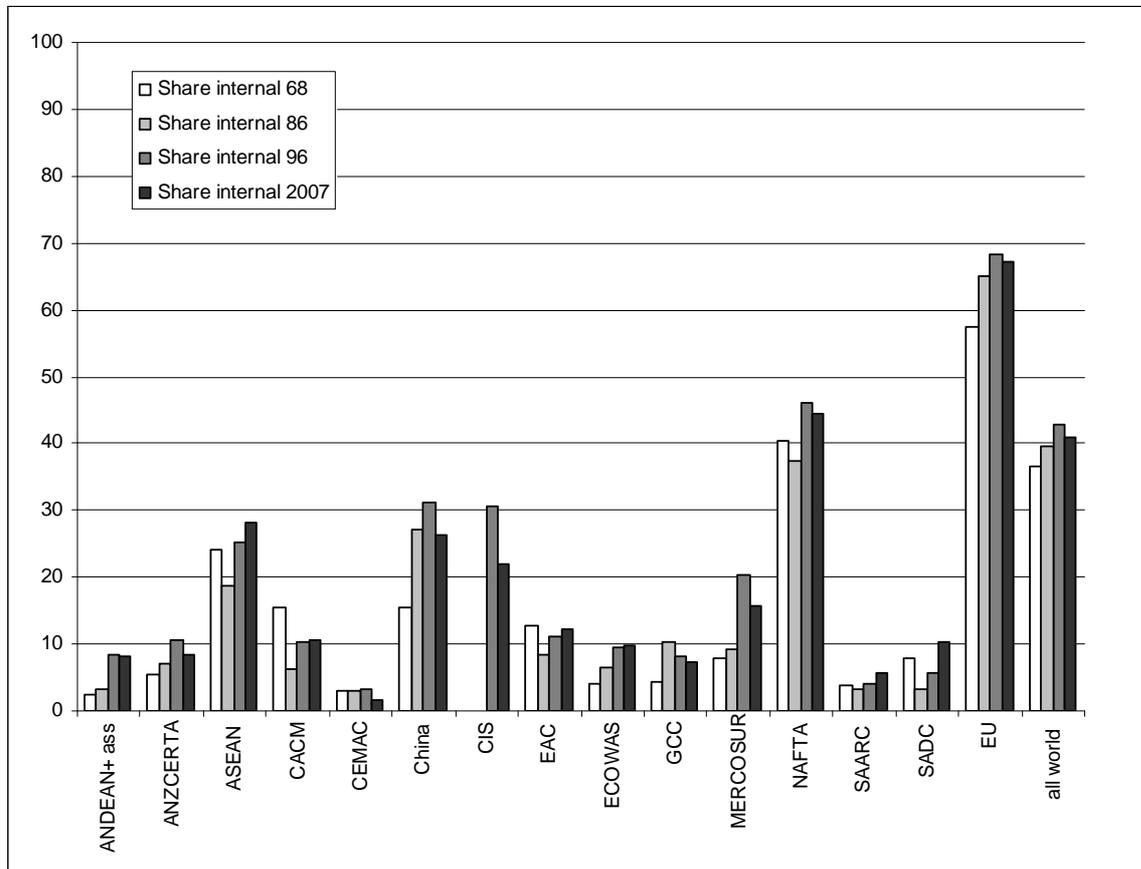
toward Russia. However, this integration is rapidly weakening. MERCOSUR (1991) includes Brazil, Paraguay, Uruguay, Argentina and more recently, Venezuela (2006) but is much less integrated than the others free trade areas mentioned, with intra-block trade only accounting for 15% of the total trade. The other free trade areas are more marginal in the global trade and moreover very weakly integrated. Some countries are part of several trade agreements, as it is the case for Congo and Angola included in SADC as well as CEMAC. In such contexts, trade agreements look more as formal agreements than as drivers to economic integration.



**Figure 26. Regional Free trade areas and their level of integration, in 2007**

At the world level, the intra-free trade area trade has increased between 1968 and 1996, and slightly declined afterwards (Figure 27). Most of this evolution is due to the European trend, but the same general trend is observed in other free trade areas: the NAFTA area has increased the share of internal trade between 1986 and 1996, in the period when the agreement came into force (1 January 1994); ASEAN and MERCOSUR also became more integrated while with different timing. However, during the 1996-2007 period, extra-

block trade has increased more than intra-block trade, resulting in a moderate decline of share of internal trade, as observed for EU, NAFTA or MERCOSUR. In contrast with major free trade areas, more marginal trade areas have low and even declining shares of internal trade: this is for example the case of CEMAC (North-Central Africa), CACM (Central America) or SAARC (Southern India).



**Figure 27. The share of internal trade in the total trade of trade regions, 1968-2007**

Source: International Monetary Fund (IMF), personal calculations

Note: China includes Hong-Kong and Macao

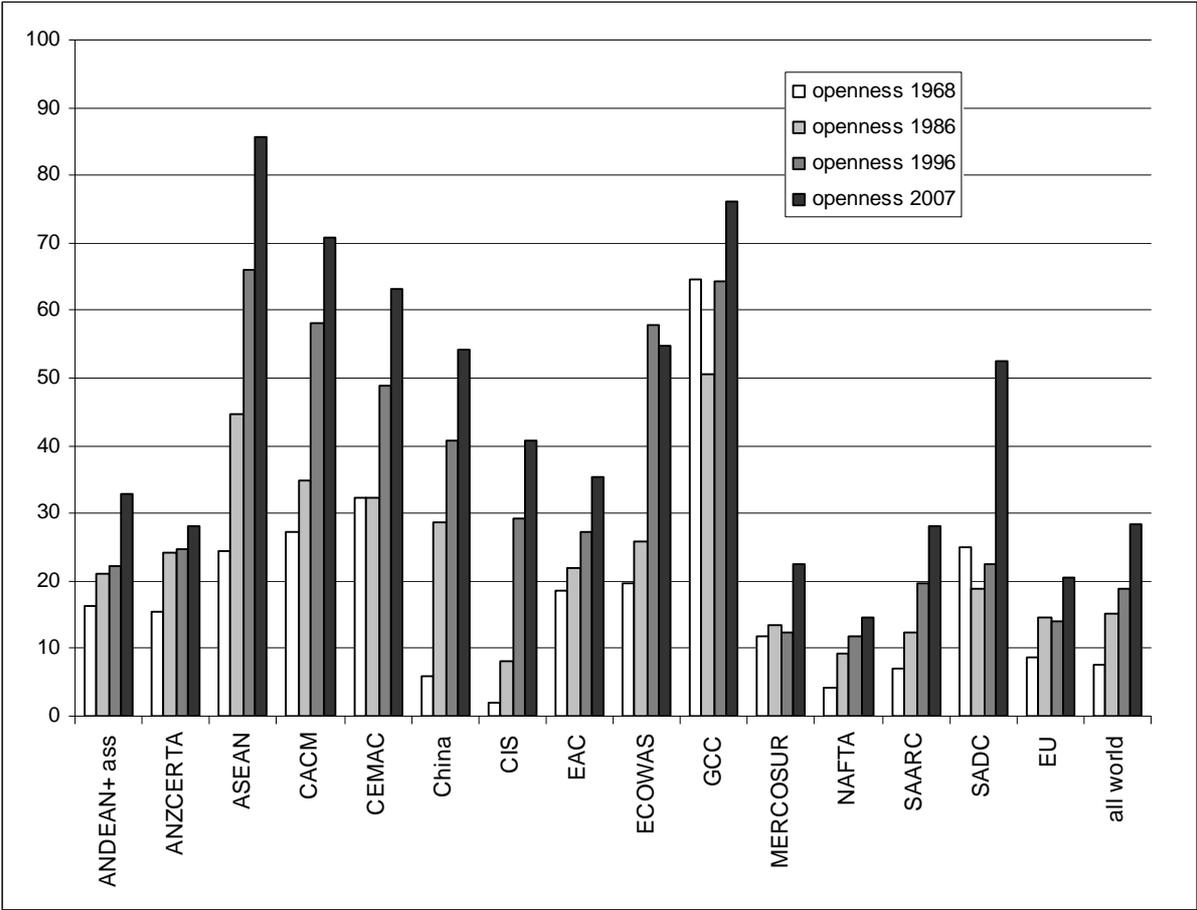
However, Figure 28 clearly highlights that regional integration has been accompanied by a growing openness to trade, defined as the ratio between external trade total regional GDP. At the world level, this opening process has been constant on the whole period, while accelerating in the last decade. Though increasing their rate of openness, the biggest free trade areas, namely EU and NAFTA, remain remarkably closed, while weaker free trade areas – because they are smaller and/or less integrated – appear to be much more extroverted: this is the case of CACM or CEMAC. Hence, we cannot argue that for peripheral countries, we find a process of strong integration despite the apparent ideological will to achieve it. We rather find weakly integrated areas strongly open to the rest of the world.

In this process, European Union distinguishes thus by very high level of integration, with two thirds of internal trade and a relatively closed economy, while much more open than NAFTA for similar total economic size. As a result, EU is the only area where the rate of internal openness is higher than the rate of external openness, respectively 42 and 20% of GDP. It makes also no doubt that the trend is one of growing economic openness to the world.

To conclude, we may say, from a political point of view, that the process of regionalization appears to be very advanced across the world, with few countries – but not the least – not making part of any regional trade agreement. However, this regional

integration process does not lead to significant integration except in core countries and some emerging areas: EU, NAFTA, MERCOSUR and ASEAN. In the same time, CIS appears as a declining historical heritage. Elsewhere in the world, the economic integration remains very weak.

This process of regional integration has developed in parallel with global economic integration, in contrast with fears of protected regional areas. Indeed, both intra-block and extra-block trade have increased at high rates. Hence, globalization trend has resulted in increasing shares of trade on GDP for both internal and external trade.



**Figure 28. Openness rate (a) to trade in Free trade areas, 1968-2007**

Source: Personal calculations on IMF and UNCTAD data.

(a) For each free trade area, the following indicators have been calculated:

Extra-block (Exports + Imports)/ GDP

***c. The European top down regionalism: what about the external political cooperation of EU?***

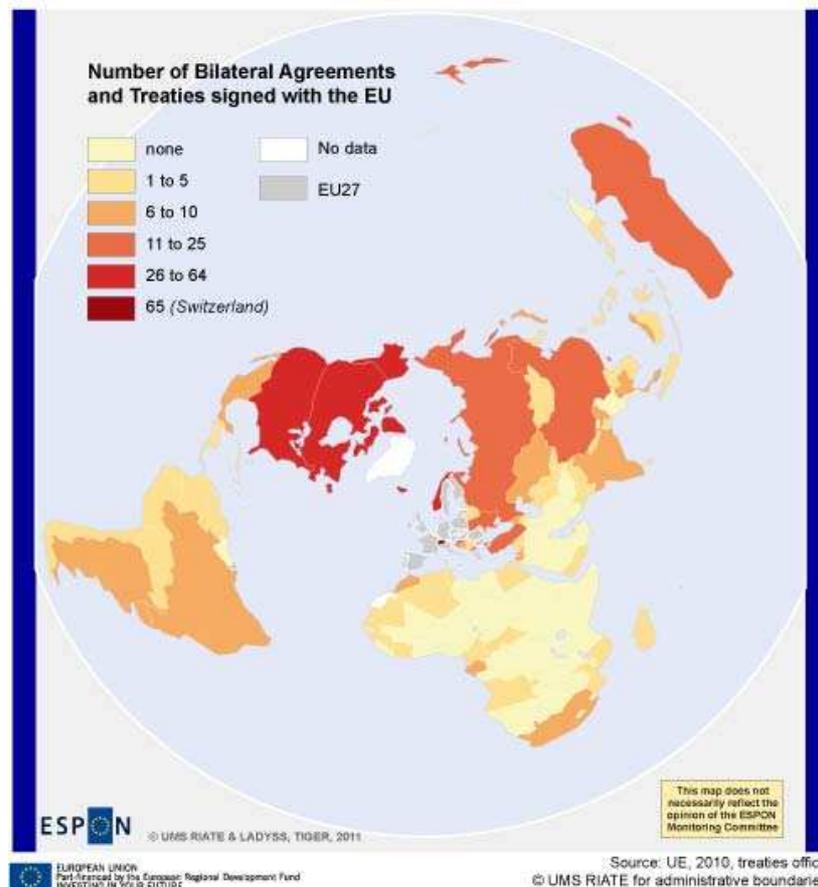
The neighbourhood has been pushed up to the top of the political agenda of the European Union in the 2000s. According to a wide range of official documents released by the European Commission, it is one of the top priorities of the European external relations. The objective is apparently simple. The neighbourhood policy must make the outskirts of the European Union more secure by convincing the neighbour countries to adopt various European norms and regulations and, why not, to take part to certain European policies in various domains (territorial cooperation, international migrations). The adoption of these norms and regulation is supposed to make the behaviour of the targeted countries more predictable. In its communication released in 2003 Romano

Prodi proposed to the eligible countries nothing less than a kind of second rate integration in a broader Europe. He proposed everything but the institutions. In this context, we can propose several hypotheses:

- The majority of treaties and agreements signed by EU with third countries are more oriented to neighbour countries than to the rest of the world.
- These treaties and agreements are legally binding.
- They pave the way of an EU-neighbourhood integration process. The political (in a broad sense) cooperation with the neighbour countries is deeper than with the rest of the world.

The first map shows the geographical distribution of all the bilateral agreements and treaties signed by EU (it shows the situation in 2010, Figure 29). The political cooperation is particularly intense with Northern America which appears as the first partner of EU in the world. China and Australia are also important partners as far as the number of treaties and agreement sis concerned. In the neighbourhood, the situation is contrasted: the cooperation is quite intense with rich neighbours such as Iceland, Switzerland and Norway, plus Croatia; it is moderately intense with Turkey, Ukraine and Russia and so on; the number of treaties is declining severely when it comes to Northern Africa, Mediterranean countries, Near and Middle East countries... This map may pave the way for a hypothesis: maybe the neighbourhood is not a top priority region for the EU. Is the neighbourhood a priority only in official speeches?

## Bilateral Agreements and Treaties



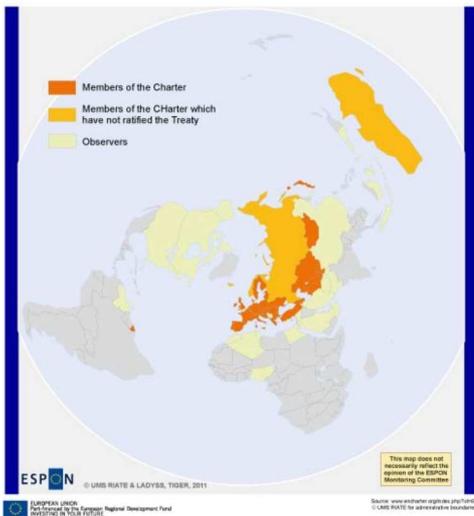
**Figure 29. Bilateral agreements and treaties**

In the first interim report, we propose to check the aforementioned hypotheses by analysing the external action of the European Union in one domain: the energy relations with neighbour countries. In the final report, the above mentioned hypotheses will be checked other domains (such as trade and international migrations).

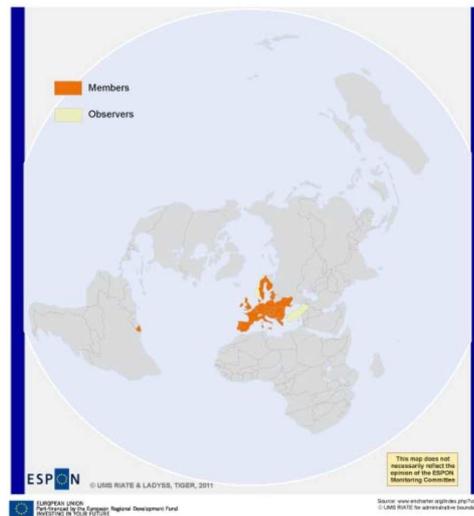
When it comes to the large domain of energy, the neighbourhood is not yet clearly targeted by the external action of the European Union. According to the treaties office database (<http://ec.europa.eu/world/agreements/default.home.do>), there are very few bilateral energy treaties signed by EU and third countries and regional organisations. Only 28 bilateral treaties and agreements have been signed among which several have not entered into force yet. Most of them concern non neighbour countries scattered in various parts of the world: 7 with Canada, 6 with the United States, 3 with Kazakhstan (among which 1 not yet into force), 2 with Korea, 2 with Japan, 2 with Russia (one not into force), 1 with Vietnam (not into force yet), Ukraine, Uzbekistan, Argentina, Australia, Switzerland. But when it comes to energy resources supplies, the external action of EU is more focused on the neighbourhood. This can be easily explained by the fact that most of the world natural gas and oil proved reserves are located in neighbour countries (mainly Gulf countries, Central Asia, Russia, Libya) and the bulk of EU imports comes from these countries. Besides, in order to secure its energy imports, EU is very much concerned by internal and external political evolutions of the transit countries. The maps of political cooperation confirm the existence of the EU energy regionalism based on the action of the European Commission. In this domain, the European Regionalism is clearly outlined on the following maps: Baku Initiative, Energy Memorandums of Understanding, Black Sea Synergy, Energy Charter Treaty and Energy Community. Nevertheless, only few of these treaties are legally binding (maps in Figure 30):

- The Energy Community, which was recently enlarged to Ukraine and Moldova, and the Energy Charter Treaty (but Russia has withdrawn from the Energy Charter in October 2009).
- Baku Initiative, Black Sea Synergy are simply regional forums. They are not based on permanent institutions. The objectives are ambitious: to make a regional energy market emerge, to pave the way to the integration of energy national market at regional level in order to build a energy bridge linking EU to the Caspian Sea and to Central Asia, to convince the involved countries that they should implement European norms and regulation related to energy issue, etc. Until now, these intergovernmental organisations have not proved efficient. The decisions are made at the States level.
- Energy Memorandums of Understanding: they are supposed to enhance the cooperation in trade, investments and transit of energy resources. Several have been signed by EU with Azerbaïdjan (November 2006), Kazakhstan (December 2006), avec Turkménistan (May 2008). There agreements are not legally binding although the concerned countries are supposed to put into force various European norms (especially the European directive 2003/54/EC). The memorandum says that « Azerbaïdjan will endeavour, where necessary, to create or strengthen the role of institutions for the operation of an open electricity and gas market ». The word « endeavour » clearly points the fact that the implementation of the memorandum is totally based on the good will of the Azeri authorities.
- EU has signed no agreement with the majority of neighbour countries, so that no political cooperation can be implemented with them in this domain and others. For instance, there is an energy EU-Russia dialogue which progresses at a very low pace because of deep disagreements. And there are no formal relations with Belarus.
- Nevertheless, energy is quite an issue in the European neighbourhood policy and some progresses have been made with Ukraine where significant legal evolutions have recently taken place, with a convergence between the Ukrainian law on gas and electricity market and the European *acquis* (thanks to the association agenda). But Ukraine is rather exceptional.

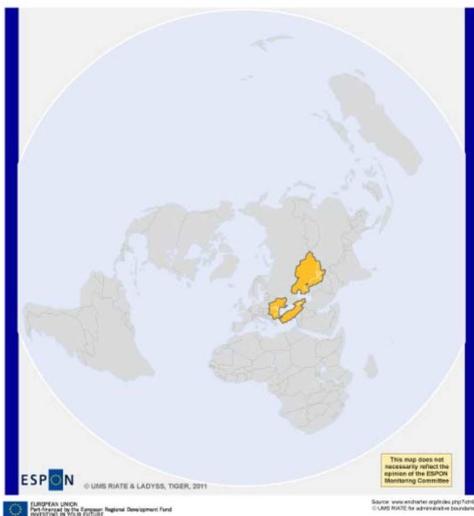
### Energy Charter Treaty



### The Energy Community



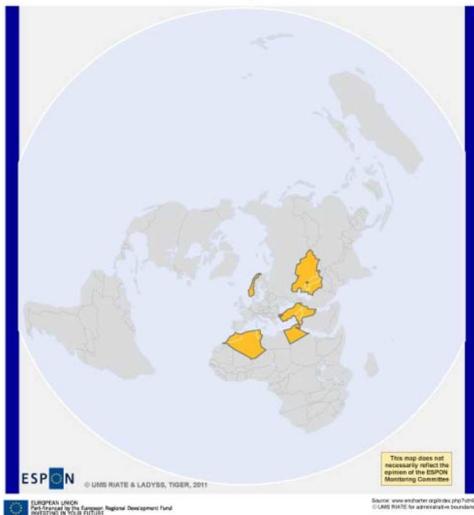
### Baku initiative



### Countries participating to the Black Sea Synergy



### Energy Memorandums of Understanding Signed with EU



**Figure 30. European Regionalism (Baku Initiative, Energy Memorandums of Understanding, Black Sea Synergy, Energy Charter Treaty, Energy Community)**

## ***d. Case study: The geography of European networks of excellence***

### **i. The importance of higher education cooperation programmes**

The European cooperation with external actors is a multilevel and multifaceted one. It is not carried out only by top level European administrations. Nor does it take place in the strictly political field. For example, the regional administrations or European universities are involved in various networks of excellence with European located in third countries. As regards the networks of scientific cooperation (networks of excellence), we will make the cartography of several types of scientific networks involving several European universities:

- We have already started the collection of data regarding the Erasmus Mundus Programme in order to outline the geographical patterns of relations between European and the rest of the world (origins flows of students from third countries, networks of universities in Master and PhD Programmes). The data capture is in progress.
- Thanks to the help of two officials at the Unesco (Mrs Sonia Bahri and Ms. Inga Nichanian), the capture of data regarding the Unitwin networks of excellence (Unesco) is also in progress.
- We have received from the DG Research an excel file which compiled all the data regarding ongoing research project in the 7<sup>th</sup> Framework Programme.

Why did we choose these programmes? As explained on the official web site of the European Union ([http://eacea.ec.europa.eu/erasmus\\_mundus/programme/about\\_erasmus\\_mundus\\_en.php](http://eacea.ec.europa.eu/erasmus_mundus/programme/about_erasmus_mundus_en.php)), Erasmus Mundus is a "cooperation and mobility programme in the field of higher education that aims to enhance the quality of European higher education and to promote dialogue and understanding between people and cultures through cooperation with Third-Countries". Its scope is global and it is aimed at developing the cooperation of higher education institutions between member and non member countries, by helping the mobility of students and the implementation of common curricula. Consequently, the geographical origin of students who reside in Europe in the framework of this programme gives a good picture of the influence of EU at the global and regional levels (capacity of attraction). Besides, the cartography of all common Masters and Doctoral levels is a relevant way to check whether the interactions are stronger with the neighbourhood or with the rest of the world. The same can be done with Unitwin and with the 7<sup>th</sup> Framework Program.

As stated on the Unesco website, Unitwin (University Twinning and Networking Programme) was officially established in 1992 (nevertheless, some networks are older). It is aimed at advancing research, training and programme development by building university networks and encouraging inter-university cooperation through the transfer of knowledge across border in the worlds. It has facilitated the creation of a number of new teaching programmes. There are currently 25 Unitwin networks in the world. The lead partners of these networks are higher education institutions located in the following countries: Australia (1), Belgium (2), Brazil (2), China (1), Egypt (1), France (1), Italy (1), Japan (3), South Korea (1), Russia (3), Spain (3), Thailand (2), UK + Tanzania (1) and USA (3). The programme involves dozens of countries. Several objectives have been put forward in the late years by the General Assembly of the Unesco: to readjust geographic imbalance of cooperation in favour of the South, stimulate triangular North-South-South cooperation, creation of regional or sub-regional poles of innovation and excellence, etc. What are the geographical patterns of cooperation of the network which involve European Institutions? Are they more regional or global? In order to answer these

questions, all the Unitwin networks will be represented on maps and analysed in order to eventually highlight regional groups of universities. The same method will be applied to the cooperation in the 7<sup>th</sup> Framework Programme of the European Union.

## ii. External cooperation of European Universities (case study)

We will also then carry out a geographical analysis of the cooperation projects and agreements set up by a sample of European universities with other universities whatever their location in the world is. The choice will be based on the international yearly ranking provided by the Times Higher Education Supplement (2009 ranking) which provides of world top 50 in several academic domains: engineering and IT, life sciences and biomedicine, natural sciences, social sciences, arts and humanities. The sample is composed by the best ranked EU universities in the top world 50 rankings in each domain (see table below):

Area of expertise	Country	Rank in <i>Times</i>	University
Arts and humanities	Germany	27	Free university of Berlin
Arts and humanities	Belgium	43	Katholieke Universiteit Leuven
Arts and humanities	Neetherland	29	University of Leiden
Arts and humanities	UK	2	University of Oxford
Arts and humanities	Austria	46	University of Vienna
Arts and humanities	France	21	University Paris IV
Engineering and IT	Neetherland	15	Delft University of technology
Engineering and IT	France	38	Ecole polytechnique
Engineering and IT	Switzerland	10	ETH Zurick
Engineering and IT	Germany	45	Technical university of Munich
Engineering and IT	UK	4	University of Cambridge
Live sciences and biomedicine	Germany	42	Heidelberg
Live sciences and biomedicine	Sweden	29	Karolinska Institute
Natural sciences	France	13	Ecole normale supérieur de Paris
Natural sciences	Italy	25	Sapienza university of Rome
Natural sciences	Neetherland	35	Utrecht University
Social sciences	Neetherland	32	University of Amsterdam
Social sciences	Denmark	36	University of Copenhagen
Social sciences	UK	1	University of Oxford

**Table 8. Sample of universities for the study of networks of excellence**

We have started the collection of information related to the foreign cooperation of the institutions with other universities. The collection is based on the systematic consultation of the official websites of the selected universities. Nevertheless, some websites are really poor and do not provide enough useful information. When necessary, we will get in touch with the relevant offices of the concerned universities in order to get more complete data.

## ***e. Toward the final report***

### ***Regionalization of the world***

The process of regionalization in the world will be further studied by considering other forms of flows and regional political cooperations in the following domains:

- Other economic flows (FDI)
- migrations
- transport, notably the liberalized airspace across the world

### ***The political cooperation of the European Union: top down regionalism?***

EU is now considered as an actor of the international relations. On a theoretical point of view, it is then possible to make a cartographic representation of the political relations and cooperation it has established with other actors in various domains. Two strong hypotheses have been pushed forward:

- The neighbourhood is one of the top priorities of EU; in the framework of a top down regionalism, it signs and implements many bilateral agreements and treaties at regional level; EU has more intense political relations with neighbour countries than with the rest of the world.
- The content of the agreements and treaties signed with neighbour countries is legally binding; it sets mutual obligations so that it paves the way to a deep regionalism that may help the involved parties proceed to a kind of regional integration.

The preliminary map of bilateral treaties and agreements shows that the political cooperation of EU reaches its highest intensity with Northern America. Beside this, we can distinguish different kinds of neighbourhood according to the number of treaties and agreements signed. This study must be now pushed into further details. The methods used for the energy issue will be applied to various domains:

- Collection of information about the bilateral treaties and agreements signed by EU (with countries or regional organisations) in various domains, on the website of the treaties office of the EU.
- Construction of a database and cartography of countries and regional organizations which have signed treaties and agreements with EU in each activity domain.
- Analysis of the content of treaties and agreements. However, it is impossible to make an in-depth analysis of all treaties and agreements in all the domains before the end of the project in 2012. The chosen domains are then: Trade and commercial policy, [Education, training, youth](#), Research and innovation, Energy, Environment, Development, [Foreign and Security Policy](#).

#### Expected results:

- A cartographical representation of external action of EU as an actor of international relations.
- A confirmation, or not, of the existence of a top down EU regionalism based on legally binding treaties.

### ***Case study: The scientific networks of excellence***

The final objective of this work program is to reveal the possible existence of regional clusters of universities in international research or education cooperation programmes. Is there a correlation between the intensity of scientific cooperation and geographical distance? Are the scientific and education cooperation project more regionalized than globalized?

The data related to the 7<sup>th</sup> Framework Programme have been collected but databases are not yet completely cleaned and finalized.

- Cartography of the geographical distribution of the universities and student's programs involved whatever the subject is: where are the involved higher education institutions (city and country)? What is the level of involvement of each country in the world (how many project and universities of higher education institutions in each country)?
- Cartographic representation of all universities networks for all the running projects of the program: graphic representation of all the networks. The objective is to highlight possible regional clusters of universities. It means that every cooperation relation between universities or scientific institutions will be considered as a flow and included in an O/D matrix of scientific cooperation links at global level.
- Gathering of all projects in 5 or 6 large scientific domains. Cartography universities networks for the running research projects in each domain (graphic representation). The objective is to highlight possible discrepancies in the geographical distribution of universities network according to the domain considered.
- Cartographic representation of research networks for several Espon countries so that we can check the geographical patterns of their scientific international cooperation: are there differences according to the chosen Espon country?
- Cartographic representation of research networks for several neighbour countries. Are they more or less linked to Espon or to other regions in the world?

The same method will be applied to two other scientific cooperation programmes: Erasmus Mundus and Unitwin.

## 11. WP2.5 Synthesis, prospective and policy options

This part of the study is the most strategic because it aims at translating the scientific information into policy-relevant information.

At the end of the day, we will gather evidence from WP2.2, WP2.3 and WP2.4 to answer the major questions raised by this study, that is to say:

- i. How do territorial structures affect competitiveness?
- ii. How does globalization affect territorial structures?

To achieve the general objectives of this WP – which are indeed the general objectives of the project –, we will follow four major steps:

1. propose classifications/typologies of World regions and European territories – regions and cities – according to their specific role in the global economy and networks;
2. identify relevant driving forces – and their possible breakage – at different scales;
3. apply relevant driving forces to the territorial classifications;
4. translate the results into relevant policy options at different scales and for different types of European territories, notably by applying the visions of Europe in the world as proposed by ESPON “Europe in the world”.

The first two steps are the politically useful synthesis of the scientific work achieved in work packages 2.2, 2.3 and 2.4; the third step provides a prospective approach at different scales and the fourth, a policy translation of these results. We detail this approach here.

**First**, we propose to integrate the results of the different work packages through the different scales they deal with. This will result in three synthetic typologies at the city, regions and macro-regional scales:

- 1) City scale. By integrating the results of the networks and flows analyses of WP 2.3 and of the urban structure implemented in WP2.2.2, we will provide a **typology of cities according to the intensity (synthetic index of connectivity derived from network analysis) and nature (types of services, type of gateways...) of their connections with the rest of the world**;
- 2) Regional scale. The analysis of flows and networks implemented in WP 2.3 will enable us to assess the role of European territories in globalization as well as the impact of the global space of flows on European territories. WP 3.1 will provide a **typology of regions according to their position in the international division of labour**, on the basis of existing studies complemented by analyses based on regional trade statistics as well as value chains. In this synthesis, we will go a step further by integrating the results of the other WPs (attractiveness for migrants, position of the knowledge flows, presence of gateways) to provide a **typology of regional vulnerability and strength towards globalization**.
- 3) World regions scale. First, we will propose classifications of world regions according to their role in the world-system as well as their continental structures. Second, we will classify world regions according to the nature and magnitude of their relations with Europe. This will integrate the results of WP2.3 and WP2.4 which take into account the human, economic, knowledge and political flows between Europe and the other world regions in order to provide a **synthetic typology of the relationship of the world regions with Europe**. This might for example distinguish between world regions with limited economic flows with Europe but strong political cooperation (this might be the case for some neighbourhood regions) or weak political cooperation but intense economic flows.

**Second**, we will identify the key-drivers of globalization, including the current trends of these drivers and possible breakage points in these trends. The ESPON 3.2 Scenarios project has already identified a series of driving forces, but did not go very far. But this part should also build upon the policy relevant documents, mainly the EU2020 Strategy, the 5th Cohesion Report on Economic, Social and Territorial Cohesion and the Territorial Agenda of the European Union. We plan on providing a more detailed list, also including a differentiation between those drivers which have remained stable and those which have changed because of the current economic crisis. This will be done through the literature survey – nearly achieved but not yet integrated – as well as specific analyses implemented within this project. Of course, key-drivers focusing on territorial impacts will also distinguish between the world regional scale and the city/regional scale.

**Third**, by crossing the key-drivers of globalization and typologies at different scales, we will provide prospective approaches at both world regions and city/regional scales. This means that considering the general trends observed and the role of territories in the global economy and networks, we will try to assess how the different types of territories might evolve in the future. This qualitative prospective approach is thus applied to types of regions and does not provide prospective views for each European region individually.

**Fourth**, we will attempt translating these results into policy options at both the European and city/regional scale. Concretely, this raises three different political questions:

1. what can regions and cities do about their possible evolutions in the world-system?
2. which territorial policies could improve the European competitiveness in the world and/or social and territorial cohesion?
3. how can EU position itself in the world-system and how would this impact cities and regions?

The policy options which derive from the answers to these questions should of course take in consideration the relevant policy documents, mainly the EU2020 Strategy, but also the 5th Cohesion Report on Economic, Social and Territorial Cohesion and the Territorial Agenda of the European Union. From these documents, we should extract the major political objectives of the EU in order to propose and to assess the policy options in line with these political objectives. The analysis of these policy documents will be achieved in the next months as a necessary background and step toward policy options.

1. At the regional scale and cities scale, in line with the previous approach, policy options will be segmented according to the types of regions and cities. First, regions and cities are more or less directly related to the space of global flows, at least they are not connected in the same way. Obviously, gateways and global cities are more directly concerned than some rural peripheral areas which are less directly connected to global networks. Second, according to their structures – mainly their position in the international division of labour – globalization processes affect regions and cities across Europe differently. Typologies of regions and cities according to their structures and position in the international division of labour (provided in the first step) are thus very important in order to establish relevant segmented policy options at these scales.

2. Territorial policies obviously impact cities and regions but also Europe as a whole. For example, should we invest mainly in the global cities, which are the gateways of globalization, to improve Europe's position in the world? What would be the negative consequences of such a choice in terms of territorial and social cohesion? Or, since these gateways are already well connected in the global networks, should we rather support second-ranked or even smaller cities to be better connected to the global networks?

Of course, the answers to these questions cannot be separated from the question how Europe positions itself in the world.

3. To reflect upon the position of Europe in the world, we build upon the ESPON "Europe in the world" visions.

These "Europe in the world" visions rely on partial readings of reality and put forward a normative vision for the place of Europe in the world. The "Europe in the world" report states that "the **continent vision** does not rely on any geographical scientific evidence" but "rather on the apparently obvious evidence that the size of the European Union in the world is sufficient to retain autonomy in the process of globalization..." (Europe in the world, page 64). In this vision priority is given to EU internal integration while "regarding the rest of the world, the emphasis is put on security" (Europe in the world, page 64). Largely in contradiction with the official vision of European documents which sometimes ignore globalization but rarely blame it, the social and political forces that could support such a vision are not mentioned in the ESPON report. Indeed, these forces exist because this vision could rely on both left Keynesianism and some conservative forces which could call for more protection, not only in terms of security (where this vision fits best with the official one), but also in economic terms. In the new context of the crisis, we cannot exclude the fact that these visions could gain some stronger support. The **centre/periphery vision** relies on the fact that the neighbourhood of Europe in the world is still very much dependent on the power of the European territory, as demonstrated by trade, FDI and other indicators of flows. In a normative vision, it insists on the integration of a territory from Russia to southern Africa in order to better face global competition, secure its frontiers and increase opportunities for the growth of the European economy. Finally, **the archipelago vision** "starts from the assumption that network relations are more important than purely geographical proximity" (Europe in the world, page 74). In this perspective, global cities and/or gateways have a central role to play in the future of Europe in the new context of globalization. In a normative vision, the main features are openness to global networks which implies free trade, deregulation and low European protection. It states that the concentration process in global cities is a necessity to face the challenges of globalization.

The project will not choose between these different visions but rather assess whether they are in line with the major EU objectives: competitiveness, social cohesion and territorial cohesion. This project will give few insights about the impact these visions would have on social cohesion but could provide more concerning the consequences in terms of competitiveness and territorial cohesion.

We will mainly assess in a qualitative way how these visions might impact the competitiveness of the different types of regions in the same logic as in the first point.

## **12. Final report: draft table of content**

In the final report, we only produce policy-relevant information focusing thus on final results. The whole scientific approach will be turned upside down by showing the final results and commenting them in-depth. These results are then used to be translated at the end of the day into policy options. The general approach developed in WP2.5 is the base of the structure of the final report.

The whole thematic scientific approach will be developed as complete and coherent working paper to be put in scientific annexes including theoretical background, methods and data, results and conclusions.

### **Chapter 1. Key-drivers of globalization**

Using literature and scientific analyses, we identify and develop the major key-drivers of globalization as the first main pillar of the final report.

### **Chapter 2. Europe and its territories in the world**

This part of the report aims at synthesizing the role of Europe and its territories in the world-system on the basis of the different thematic analyses proposed. For each relevant scale, we develop typologies which describe the roles of territories in the world-system and/or global networks.

The chapter is structured according to the relevant scales:

1. The macro-regional scale and the position of Europe in the world
2. The position of European regions in the world
3. European cities in the world

We might integrate the city and regional scale which largely superpose but are based on different thematic, data and methods.

### **Chapter 3. Prospective and visions for Europe in the world**

We develop here the methods described in WP2.5 to establish prospective at different scales and visions for Europe in the world.

### **Chapter 4. Policy options**

According to the method developed in WP2.5, we propose policy options at different scales and according to different types of territories.

### **Scientific Annexes**

The scientific annexes gather all thematic approaches and provide the necessary scientific information which underlies the results presented in the main report.

# Bibliography

- a-City Regions - 'One size fits all' policy, *Built Environment*, 32(2), 206-218.
- Aggarwal, A., O. Berry, M. Kenney (2008) Patterns of Enterprise Strategies in Labour-Intensive Industries: The Case of Five EU Countries - Corporate Strategies for Software Globalization . In: Labrianidis L. (ed.) *The Moving Frontier: The Changing Geography of Production in Labour Intensive Industries*, Ashgate, London
- Allen, J. (1999) Cities of power and influence: Settled formations, in *Unsettling Cities: Movement/Settlement*, Allen, J., Massey, D. and Pryke, M. (eds), Routledge, New York, pp.186-237.
- Amighini, A. and Rabellotti, R. (2003) 'The effects of globalization on Italian Industrial districts: evidence from the footwear sector', Paper presented at the Conference on Clusters, Industrial Districts and Firms: the Challenge of Globalization. (Modena, Italy).
- Amin, A. and Thrift, N. (1992) Neo-Marshallian nodes in global networks, *International Journal of Urban and Regional Research* 16 571-587.
- Anguera, R. (2006) The Channel Tunnel—an ex post economic evaluation, *Transportation Research Part A: Policy and Practice*, 40(4), 291-315.
- Appadurai, A. (1996) *Modernity at Large: Cultural Dimensions of Globalization*, University of Minnesota Press, Minneapolis.
- Bair, J. (2006), 'Regional trade and production blocs in a global industry: Towards a comparative framework for research', *Environment and Planning A* 38,
- Baldwin R. (2006), *Globalization: the great unbundling(s)*, Report for the Secretariat of Economic Council of Finland. Available: ([www.graduateinstitute.ch/webdav/site/ctei/shared/CTEI/Baldwin/Publications/Chapters/Globalization/Baldwin\\_06-09-20.pdf](http://www.graduateinstitute.ch/webdav/site/ctei/shared/CTEI/Baldwin/Publications/Chapters/Globalization/Baldwin_06-09-20.pdf))
- Baldwin, R., 1997, « The Causes of Regionalism », *The World Economy*, vol. 20, n°7
- Barca, F. (2009) *An Agenda for a Reformed Cohesion Policy: The Barca Report*, European Commission, Brussels.
- Baum, A., Crosby, N., Gallimore, P., Gray, A. and McAllister, P. (2000) The influence of valuers and valuations on the workings of the commercial property market, Report for the Education Trusts of IPF, RICS and Jones-Lang LaSalle.
- Beaverstock J., Smith R., Taylor P. (2000), "World city-network: a metageography?", *Annals of the association of American geographers*, vol 90, pp. 123-134
- Beaverstock, J. V., Smith, R. G. and Taylor, P. J. (2000) World-city network: a new meta-geography? *Annals of the Association of American Geographers*, 90(1), 123-34.
- Beaverstock, J.V., Hoyler, M., Pain, K. and Taylor, P.J. (2001) *Comparing London and Frankfurt as world cities: A relational study of urban change*, Anglo-German Foundation for the Study of Industrial Society Report, London.
- Beaverstock, J.V., Hoyler, M., Pain, K. and Taylor, P.J. (2005) Demystifying the Euro in European financial centre relations: London and Frankfurt, 2000-2001, *Journal of Contemporary European Studies*, 13(2), 143-157.
- Begg R., Pickles, J. and Roukova, P. (1999), 'A new participant in the global apparel industry: the case of southern Bulgaria', *Journal of Problems of Geography* 3-4.
- Berry, B. (1995) Whither regional science, *International Regional Science Review*, 17, 297-306.
- Beynon, H. and Hudson, R. (1993) Place and space in contemporary Europe: Some lessons and reflections, *Antipode*, 23, 177-190.
- Bhagwati, J. (1993), "Regionalism and Multilateralism: an Overview", in J. de Melo, A. Panagariya (eds.), *New Dimensions in Regional Integration*, Cambridge, Cambridge UP
- Bialasiewicz, L. (2008) The uncertain state(s) of Europe? *European Urban and Regional Studies*, 15(1), 71-82.
- Biggs, M. (1999) Putting the state on the map: cartography, territory, and European state formation, *Comparative studies in society and history*, 41(2), 374-405.
- Boden, D. and Molotch, H. (2004) *Cyberspace meets the compulsion of proximity, the Cybercities Reader*, Routledge, London.
- Bodie, Z., Kane, A. and Marcus, A.J. (2001) *Essentials of Investments*, McGraw-Hill, New York.
- Bourdieu, P. (1990) *The Logic of Practice*, Polity Press, Cambridge.
- Brenner, N. (1999) Globalisation as reterritorialisation, *Urban Studies*, 36(7), 431-51.
- Brenner, N. (2004) *New State Spaces*, Oxford University Press, New York.

- Brenner, N. (1998) Global cities, global states: global city formation and state territorial restructuring in contemporary Europe, *Review of International Political Economy*, 5, 1-37.
- Brenner, N. and Theodore, N. (2002) *Spaces of Neoliberalism. Urban Restructuring in North America and Western Europe*, Blackwell, Oxford.
- Brunet, R. (1989) *Les Villes Européennes: Rapport pour la DATAR*, RECLUS, Montpellier.
- Brunet, R. (2002) Lignes de Force de l'Espace Européennes, *Mappemonde*, 66(2), 14-19.
- Budd, L. (1998) Globalisation and the crisis of territorial embeddedness of international financial markets, Wiley, Chichester.
- Budd, L. (1999) "Globalization and the crisis of territorial embeddedness of international financial markets", in *Money and the Space Economy*, Martin, R. (ed) Wiley, London, pp.115-137.
- Carney, J., Hudson, R. and Lewis, J. (eds) (1980) *Regions in crisis : new perspectives in European regional theory*, Croom Helm, London.
- Castells, M. (1996), *The Rise of Network Society*, Cambridge MA, Oxford UK, Blackwell Publishers
- Castells, M. (1996, 2000 2<sup>nd</sup> edition) *The Information Age: Economy, Society and Culture*, Vol. I: The Rise of the Network Society, Blackwell, Oxford.
- CEC (Commission of the European Communities) (2000) *White Paper on European Governance, Enhancing Democracy in the European Union*, Work Programme, Commission Staff Working Document, SEC (2000) 1547/7 final. CEC, Brussels.
- CEC (Commission of the European Communities) (2002) *Towards a Global Partnership for Sustainable Development*. CEC, Brussels.
- CEC (Commission of the European Communities) (1997) *Towards an Urban Agenda in the European Union*, Communication from the Commission, COM (97) 197 final, 6 May 1997. CEC, Brussels.
- CEC (Commission of the European Communities) (2001) *European Governance: A White Paper*. CEC, Brussels.
- CEC (Commission of the European Communities) (2007) *State of European Cities Report*. CEC, Brussels. [http://ec.europa.eu/regional\\_policy/](http://ec.europa.eu/regional_policy/)
- CEC (Commission of the European Communities) (2010a) *Evaluating Regional Policy. Panorama*, 33, Publications Office, Brussels.
- CEC (Commission of the European Communities) (2010b) *Territorial cohesion: what scales of policy intervention?*. Follow up of Green Paper on Territorial Cohesion 2nd TCUM session. Seminar, Brussels, 12 March. [http://ec.europa.eu/regional\\_policy/conferences/territorial/12032010/index\\_en.cfm](http://ec.europa.eu/regional_policy/conferences/territorial/12032010/index_en.cfm)
- CEPII Report for the DG for Trade, European Commission (2006), *Sectoral and Geographical Positioning of the EU in the International Division of Labour*, 65 p., ([http://www.cepii.fr/anglaisgraph/reports/pdf/2008/re2008\\_02.pdf](http://www.cepii.fr/anglaisgraph/reports/pdf/2008/re2008_02.pdf))
- Chaloff, J. and G. Lemaitre (2009). *Managing Highly-Skilled Labour Migration: A Comparative Analysis of Migration Policies and Challenges in OECD Countries*, OECD Social, Employment and Migration Working Paper 79, Paris.
- Chase-Dunn C. (1999), "Globalizations: A world-systems perspective", *Journal of world-system research*, vol. 2, p. 187-215.
- Claval, P, (1998) *An introduction to regional geography*, Blackwell, Oxford.
- Cochrane, A., and Pain, K. (2000, 2<sup>nd</sup> edition 2004) 'A Globalising Society?' in *A Globalising World?* Held, D. (ed), Routledge, London, pp. 5-45.
- Corporation of London (2009) *The Importance of Wholesale Financial Services to the EU Economy 2009*. Corporation of London, London, <http://www.londecon.co.uk/>
- cross-sector analysis based on patents and citations. *Journal of International Economics*, 76, 155-165.
- Curve P. (2007) - Making the most of Globalization in "OECD Economic Outlook", No. 81, Vol.2007 Issue 1, June, OECD Publishing
- Daniels, P. (1986) foreign banks and metropolitan development: a comparison of London and New York *Tijdschrift voor economische en sociale geografie* 77, 269-87.
- Derudder, B., Taylor, P.J., Ni, P., DeVos, A., Hoyler, M., Hanssens, H., Bassens, D., Huang, J., Witlox, F., Shen, W. and Yang, X. (2010) Pathways of growth and decline: connectivity changes in the world city network, 2000-2008, *Urban Studies*, 47 (9), 1861-1877.
- DG Regio report, European commission (2003), *A study on the factors of regional competitiveness*, 184p. ([http://ec.europa.eu/regional\\_policy/sources/docgener/studies/pdf/3cr/competitiveness.pdf](http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/3cr/competitiveness.pdf))

- DG Regio report, European commission (2008), *The impact of Globalization and increased trade liberalisation on European regions*, 132 p.  
[http://ec.europa.eu/regional\\_policy/sources/docgener/studies/pdf/impact\\_liberalisation.pdf](http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/impact_liberalisation.pdf)
- DG Regio report, European commission (2009), *Regions benefiting from Globalization and increased trade liberalization*, [http://ec.europa.eu/regional\\_policy](http://ec.europa.eu/regional_policy)
- DG research- FP7-SSH-2007-1 Project EuroBroadMap, coordinated by Claude Grasland, <http://www.euroboradmap.eu>
- Dicken, P., Peck, J. A. and Tickell, A. (1997) Unpacking the global, *Geographies of Economies*, in Lee, R. and Wills, J. (eds), Edward Arnold, London, pp. 158-66.
- Dicken, P. (2003) *The Global shift: Reshaping the global economic map in the 21st century*. 4<sup>th</sup> edition. NY/London: The Guilford Press
- Didelon, C., Grasland, C. (dir.) (2007), *Europe in the World*, Paris, CNRS, Diact, Université Paris 1 Panthéon Sorbonne, Université Paris 7 Denis Diderot
- Dunford, M. (1988) *Capital, the state, and regional development*, Pion, London.
- Dunning J. (2002), *Regions, Globalization and the knowledge-based economy*, Oxford, Oxford University press.
- East-West Center/The Korea Transport Institute, Hawaii/Korea, electronic publication.
- EC (2007), *The Competitiveness of European Industry*, European Commission
- EIS (2007), *European Innovation Scoreboard 2007*, Commission of European Communities, Brussels
- Englund, P. Gunnelin, A., Hendershott, P. and Soderberg, B. (2008) Adjustment in Commercial Property Space Markets: Taking Long-term Leases and Transaction Costs Seriously, *Real Estate Economics* 36, 81-109.
- ESPON (2010) *Smart, Sustainable and Inclusive Territories: First ESPON 2013 Synthesis Report*, European Commission, Brussels..
- ESPON 3.2 (2007), *Scenarios on the territorial Future of Europe*, Final report, available at ([www.espon.eu](http://www.espon.eu))
- ESPON 3.4.2, *Competitiveness*, Final report, available on the Espon website ([www.espon.eu](http://www.espon.eu))
- ESPON project 3.4.1 (2007), *Europe in the World*, Extensive version of the report (3 volumes) available on the Espon website ([www.espon.eu](http://www.espon.eu))
- Eurocities (2009) *Eurocities Survey on Recession and Recovery in Cities in 2009, Annual Report*, Eurocities, Brussels, [www.eurocities.eu](http://www.eurocities.eu)
- European Commission (1999) *ESDP: European Spatial Development Perspective: Towards Balanced and Sustainable Development of the Territory of the European Union*, COM, Brussels.
- European Commission (EC) (2000) *White Paper on European Governance, Enhancing Democracy in the European Union*, Work Programme, Commission Staff Working Document, SEC (2000) 1547/7 final, CEC, Brussels.
- European Commission (EC) (2001) *European Governance: A White Paper*, CEC, Brussels.
- European Commission (EC) (2005) *ESPON 1.1.1: Potentials for Polycentric Development in Europe - Final Report*. CEC, Brussels,  
[http://www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/ThematicProjects/Polycentricity/fr-1.1.1\\_revised-full.pdf](http://www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/ThematicProjects/Polycentricity/fr-1.1.1_revised-full.pdf)
- European Commission (EC) (2010) *EUROPE 2020: A strategy for smart, sustainable and inclusive growth*, CEC, Brussels,  
<http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>.
- European Commission (EC) (2010) *EUROPE 2020: A strategy for smart, sustainable and inclusive growth*. EC, Brussels,  
<http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>.
- European Commission (EC) 2007, *The European Union in the world*, CEC, Brussels.
- European Council (EC) (2000) *Presidency Conclusions – Lisbon European Council, 23 and 24 March*, EC, Brussels, [http://ue.eu.int/ueDocs/cms\\_Data/docs/pressData/en/ec/00100-r1.en0.htm](http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/ec/00100-r1.en0.htm).
- Eurostat (2010) *Eurostat*, (database). European Commission. (Accessed January 2011)
- Florida R. (2002), *The rise of creative class and how it's transforming work, leisure, community and everyday life*. New York: Basic Books.
- Flyvbjerg, B. Buzelius, N. and Rothengatter, W. (2003). *Megaprojects and Risk*, Cambridge University Press, Cambridge.

- Friedman J., Wolff G. (1982), « World city formation: an agenda for research and action », *International journal of Urban and Regional Research*, vol. 6, pp309-344.
- Friedmann, J. (1986) The World City Hypothesis, *Development and Change*, 17, 69-73.
- Friedmann, J. and Wolff, G. (1982) World city formation. An agenda for research and action. *International Journal of Urban and Regional Research*, 6, 309-44.
- GaWC (2008) *The World According to GaWC 2008*, Globalization and World Cities research network, <http://www.lboro.ac.uk/gawc/world2008t.html>
- Geddes, P. (1915) *Cities in Evolution*, Williams & Norgate, London.
- Gereffi, G. and Memedovic, O. (2003), 'The Global Apparel Chain: What Prospects for Upgrading by Developing Countries', Sectoral Studies. (Vienna: UNIDO).
- Gereffi, G., T. Sturgeon. (2004) Globalization, Employment, and Economic Development: A Briefing Paper. Sloan Workshops Series in Industri Studies.
- Gereffi, G. and M. Korzeniewicz (1994) *Commodity Chains and Global Capitalism*, Westport: Praeger.
- Golding, P. and Murdoch, G. (2000) Culture, Communication and Political Economy, in *Mass Media and Society*, Curran, J. and Gurevitch, M. (eds) Hodder Arnold, London, pp 70-92.
- Gordon, I.R. and McCann, P. (2000) Industrial clusters: complexes, agglomeration and/or social networks, *Urban Studies* 37(3) 513-532.
- Graham, S. (2002) Communication grids: cities and infrastructure in Global networks, linked cities New York, Sassen, S. (ed) Routledge, New York, pp.71-91.
- Grenadier, S.R. (1995) The persistence of real estate cycles, *Journal of Real Estate Finance and Economics*, 10, 95-119.
- Grenadier, S.R. (1996) The Strategic Exercise of Options: Development Cascades and Overbuilding, *Real Estate Markets, Journal of Finance*, 51, 1653-1679.
- Grossman G. & Rossi-Hansberg E. (2008), "Trading Tasks: A Simple Theory of Offshoring", *American Economic Review*, 98:5, 1978-1997
- Guzik, R. and G. Micek. (2008) The Impact of Delocalisation on the European Software Industry. In: Labrianidis L. (ed.) *The Moving Frontier: The Changing Geography of Production in Labour Intensive Industries*, Ashgate, London
- Haggett, P. (1965) *Locational Analysis in Human Geography*, Edward Arnold, London.
- Hague, C. (2011) *ESPON 2013 Research and UK Development Strategies*, 14<sup>th</sup> February, London South Bank University, London.
- Halbert, L., Pain, K. and Thierstein, A. (2006) European Polycentricity and Emerging Meg
- Hall, P. (1966) *The World Cities*, Weidenfeld and Nicholson, London.
- Hall, P. and Pain, K. (2006) (eds) *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*, Earthscan, London.
- Hall, P., Pain, K. and Green, N. (2006a) Anatomy of the Polycentric Metropolis: Eight Mega-City Regions in Overview, in *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*, Hall, P. and Pain, K. (eds), Earthscan, London, pp. 19-52.
- Hall, P., Pain, K. and Green, N. (2006c) The Informational Geography of Europolis: Mapping the Flow of Information, in *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*, Hall, P., and Pain, K. (eds), Earthscan, London, pp. 70-87.
- Hall, P., Pain, K. and Kapoen, L. (2006b) The Connectivity of the European Heartland, in *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*, Hall, P. and Pain, K. (eds), Earthscan, London, pp. 65-69.
- Harvey (1989) *The Condition of Postmodernity*, Blackwell, Mass.
- Harvey, D. (1973) *Social Justice and the City*, John Hopkins University Press, Baltimore.
- Harvey, D. (1982) *The Limits to Capital*, Blackwell, Oxford.
- Havlik, P., R. Stollinger, O. Pindyuk & G. Hunya (2009), *EU and BRICs Challenges and Opportunities for European Competitiveness and Cooperation*, Industrial Policy and Economic Reform Papers No. 13, Enterprise and Industry Directorate-General, European Commission
- Heathcote, E. (2010) *From megacity to metacity*, The Financial Times, April 6, 2010, <http://www.ft.com/>.
- Hendershott, P., Lizieri, C. and MacGregor, B. (2010) Asymmetric Adjustment in the London Office Market, *Journal of Real Estate Finance and Economics*, published online August 2009.
- Henneberry, J. and Roberts, C. (2008) Calculated inequality? Portfolio benchmarking and regional office property investment in the UK, *Urban Studies* 45(5&6) 1217-1241.
- Herod, A. and Wright, M. (eds) (2002) *Geographies of Power: Placing Scale*, Blackwell, Oxford.

- Holt-Jensen, A. (1999) *Geography: History and concepts*, 3rd Edition, Sage, London.
- Hoyler, M. and Pain, K. (2002) London and Frankfurt as world cities: changing local-global relations, in *Stadt und Region: Dynamik von Lebenswelten*, Mayr, A., Meurer, M. and Vogt, J. (eds), Deutsche Gesellschaft für Geographie, Leipzig, pp. 76-87.
- Isard, W. (1960) *Methods of Regional Analysis: An Introduction to Regional Science*, Wiley, New York.
- Jacobs, J. (1969) *The Economy of Cities*, Random House, New York.
- Jacobs, J. (1985) *Cities and the Wealth of Nations: Principles of Economic Life*. Penguin, Harmondsworth.
- Japanese Statistics Bureau (2010), Judicial System and Research Department, Minister's Secretariat, Ministry of Justice.
- Jessop, B. (1999) Reflections on globalisation and its (il)logic(s) in *Globalisation and the Asia-Pacific*, Olds, K., Dicken, P., Kelly, P.F., Kong L. and Yeung H.W. (eds), Routledge, New York and London.
- Jessop, B. (2000) The crisis of the national spatio-temporal fix and the ecological dominance of globalizing capitalism, *International Journal of Urban and Regional Research*, 24(2), 323-60.
- Kalantaridis, C., I. Vassilev, G. Fallon, (2008) The Impact of Internationalization on the Clothing Industry. In Labrianidis, L (ed.) *The moving frontier: the changing geography of labour intensive industries on the software industry*, Ashgate, London
- Kindelberger, C. (1974) *The Formation of Financial Centers: A Study of Comparative Economic History*, Princeton Studies in International Finance, 36, Princeton University, Princeton.
- Knox and Pain (2010) International Homogeneity in Architecture and Urban Development? Special issue on International Real Estate Markets, *Global Real Estate Industry, Informationen zur Raumentwicklung (IzR)*, 34(2), 417-428.
- Krugman, P. (1991) *Geography and Trade*, Cambridge, MA, US.
- Labrianidis, L., B. Domanski, C. Kalantaridis, P. Roukova (2007) *The Moving Frontier: The Changing Geography of Production in Labour Intensive Industries*. Final report MOVE project PL 001695, 6<sup>th</sup> FP
- Laulajainen R. (2003), *Financial geography, A banker's view*, London, Routledge.
- Lefebvre, H. (1970) *La Révolution Urbaine*, Gallimard, Paris.
- Lefebvre, H. (1991) *The Production of Space*, Blackwell, Oxford.
- Lewis J, (1984) Regional policy and planning: Convergence and contradiction in *The State in capitalist Europe : a casebook* by Bornstein, S. et al., Allen & Unwin, London.
- Liotta, P.H. (2009), *The rise of the twenty first century megacity: Why it matters and what should be done*, ISA-ABRI Joint Conference paper, Rio de Janeiro, Brazil: ISA-ABRI. 22<sup>nd</sup> July 2009. [http://www.allacademic.com/meta/p381166\\_index.html](http://www.allacademic.com/meta/p381166_index.html)
- Lizieri, C. (2009) Real estate investment in global financial centres: risk, return and contagion, University of Reading, Reading, UK.
- Lizieri, C. (2009) *Towers of Capital: Office Markets and International Financial Services*, Wiley-Blackwell, Oxford.
- Lizieri, C. (2010) Global cities, office markets and capital flows, *GaWC Research Bulletin* 362.
- Lizieri, C. and Kutsch, N. (2006) Who owns the city 2006: Office ownership in the city of London, University of Reading and Development Securities, Reading, UK.
- Lizieri, C., Baum, A. and Scott, P. (2000) Ownership, Occupation and Risk: A View of the City of London Office Market, *Urban Studies*, 37(7) 1109-1129.
- Ludlow, D. (2011) ) *ESPON 2013 Research and UK Development Strategies*, 14<sup>th</sup> February, London South Bank University, London.
- Mahroum, S., Huggins, R., Clayton, N., Pain, K. and Taylor, P.J. (2008) *Innovation by Adoption: Measuring and Mapping Absorptive Capacity in UK Nations and Regions*, National Endowment for Science, Technology and the Arts, London, [http://www.nesta.org.uk/assets/Uploads/pdf/Research-Report/innovation\\_by\\_adoption\\_report\\_NESTA.pdf](http://www.nesta.org.uk/assets/Uploads/pdf/Research-Report/innovation_by_adoption_report_NESTA.pdf)
- Mancusi M.L. (2008), *International spillovers and absorptive capacity: A cross-country*
- Marcuse, P. and Kempen, R. van (2000) *Globalizing Cities: A New Spatial Order?* Blackwell, Oxford and Malden, Mass.
- Marshall, A. (1920) *Principles of Economics*, MacMillan, London.
- Marston, S., Jones, J.P. and Woodward, K. (2005) Human Geography without Scale, *Transactions of the Institute of British Geographers*, 30(4), 416-432.

- Martin, R. (1989) The new regional economics and the politics of regional restructuring in *Regional policy at the crossroads: European perspectives*, Albrechts, L. et al. (eds), Kingsley, London.
- Martin-Brelot H., Grossetti M., Eckert D., Gritsai O. and Kovács Z. (2009), "Not so mobile 'creative class': a European perspective". *GaWC Research Bulletin* 306.
- Massey, D. and Allen, J. (1988) *Uneven re-development: Cities and regions in transition* : A Reader, Hodder and Stoughton, London.
- MasterCard Worldwide (2008) *Worldwide Centers of Commerce Index 2008*, MasterCard Worldwide, New York.
- Nachum, L. (2000) Economic geography and the location of TNCs: Financial and professional service FDI to the USA, *Journal of International Business Studies*, 367-85.
- NSF (2000), *Science and Engineering Indicators*, National Science Foundation, US GPO, Washington, DC
- NSF (2002), *Science and Engineering Indicators*, National Science Foundation, US GPO, Washington, DC
- NSF (2010), *Science and Engineering Indicators 2010*, National Science Foundation, Arlington, VA.
- NWMA Spatial Vision Group (2000) *Spatial Vision for the North Western Metropolitan Area (NWMA)*, University of the West of England, Bristol.
- O'Brien, R. (1992) *Global financial integration: The end of geography*, Council on Foreign Relations Press, New York.
- OECD (1996), *The Knowledge-Based Economy*, OECD, Paris
- OECD (2002), *Science, Technology and Industry Outlook 2002*, OECD, Paris
- OECD (2004), *Compendium on Patent Statistics 2004*, Organization for Economic Cooperation and Development, Paris
- OECD (2007a), *Moving Up the Value Chain: Staying Competitive in the Global Economy*, OECD publishing
- OECD (2007b) - *Globalization and Regional Economies: Can OECD Regions Compete in Global Industries?* October, OECD Publishing.
- OECD (2010a), OECD.Stat, (database). (Accessed January 2011)
- OECD (2010b), *Measuring Globalisation: OECD Economic Globalisation Indicators 2010*, OECD Publishing.
- OECD (2010c), *International Migration Outlook 2010*, OECD Publishing.
- OECD (2010d), *Foreign direct investment: main aggregates, OECD International Direct Investment Statistics* (database). (Accessed January 2011)
- Ohmae, K. (1990) *The borderless world: Power and strategy in the interlinked economy*, Harper Collins, New York.
- Ohmae, K. (1995) Putting global logic first, *Harvard Business Review*, January/February, 119-25.
- Pain, K. (2007) City of London Global Village: Understanding the Square Mile in a Post-Industrial World Economy, in *The Geo-Politics of the City*, Barber, S. (ed) European Research Forum, London, pp. 19-38.
- Pain, K. (2008a) Spaces of practice in advanced business services: rethinking London-Frankfurt relations, *Environment and Planning D: Society and Space*, 26(2), 264-279.
- Pain, K. (2008b) Examining Core-Periphery Relationships in a Global Mega-City Region - The Case of London and South East England, *Regional Studies*, 42(8), 1161-1172.
- Pain, K. (2008c) Urban Regions and Economic Development, in *Connecting Cities: City-Regions*, Johnson, C., Hu, R. and Abedin, S. (eds) Metropolis Congress 2008, Sydney, Australia, pp. 20-47.
- Pain, K. (2010a) New Worlds for Old? 21<sup>st</sup> Century Gateways and Corridors: Reflections on a European spatial perspective, *International Journal of Urban & Regional Research*, electronic publication 2010.
- Pain, K. (2010b) Emerging Cross-Border Metacity in the Pan Yellow Sea Region, *The emerging cross-border mega-city region and sustainable transportation*,
- Pain, K. (2011a) Spatial transformations of cities – Global City Region? Mega City Region? *International Handbook of Globalization and World Cities*, Taylor, P.J., Derudder, B., Hoyler, M., Witlox, F. (eds) Edward Elgar, in press.
- Pain, K. and Hall, P. (2008) Informational Quantity versus Informational Quality: The perils of navigating the space of flows, *Regional Studies*, 42(8), 1065-1077.

- Pain, K., (2011b) Cities and sustainability – Reflections on a decade of world development”, *International Handbook of Globalization and World Cities*, Taylor, P.J., Derudder, B., Hoyler, M., Witlox, F. (eds), Edward Elgar, in press.
- Pellegrin, J. (1999), German Production Networks in Central/Eastern Europe between Dependency and Globalization, Discussion Paper FSI 99-304, Wissenschaftszentrum Berlin für Sozialforschung.
- Pickles, J., Smith, A., Bucek, M., Roukova, P. and Begg, R. (2006), 'Upgrading, changing competitive pressures, and diverse practices in the East and Central European apparel industry', *Environment and Planning A* 38, 2305- 2324.
- Porteous, D. (1999) The development of financial centres: Location, information, externalities and path dependence, in Money and the space economy, Martin, E. (ed) Wiley London, pp. 95-114.
- Porter, M.E. (1990) The competitive advantage of nations, Free Press, New York.
- Porter, M.E. (1998) Clusters and the new economics of competition, Harvard Business Review, Nov-Dec, 77-90.
- Porter, M.E. (1995) The competitive advantage of the inner city, Harvard Business Review, 55-71
- Pryke, M. and Lee, R. (1995) Place your bets: Towards an understanding of globalization, socio-financial engineering and competition within a financial centre, *Urban Studies*, 32, 2, 329-344.
- Raikes, D. and Newton, A. (1994) Competition and financial centres in Europe: London as a case study in The competitiveness of financial institutions and centres in *Europe, Financial and Monetary Policy Studies* 28, Fair, D. and Raymond, R. (eds), Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Roberts, C. and Henneberry, J. (2007) Exploring office investment decision-making in different European contexts, Journal of property investment and finance, 25(3) 289-305.
- Roukova, P., Sp. Keremidchiev, M. Ilieva, E. Evgeniev (2008) Footwear Industry: Delocalisation and Europeanisation. In: Labrianidis L. (ed.) The Moving Frontier: The Changing Geography of Production in Labour Intensive Industries, Ashgate, London, 2008, pp. 205-228,
- Sassen S. (2001), *The global city: New York, London, Tokyo* Princeton, N.J.: Princeton University Press. 2d ed
- Sassen, S. (1991, 2nd edition 2001) *The Global City: New York, London, Tokyo*, Princeton University Press, Princeton.
- Sassen, S. (1994, 2<sup>nd</sup> edition 2000, 3rd edition, 2006) *Cities in a World Economy*, Pine Forge Press, London.
- Sassen, S. (2006) Territory, authority, rights: From medieval to global assemblages, Princeton University Press, Princeton.
- Sassen, S. (ed) (2002) *Global networks, linked cities*, Routledge, New York.
- Sassen, S. (Ed.) (2002), *Global Networks. Linked Cities*, London, Routledge
- Scott, A. J. (1998) *Regions and the Global Economy*, Oxford University Press, Oxford.
- Scott, A. J. (ed) (2001a), *Global City-Regions: Trends, Theory, Policy*, Oxford University Press, Oxford.
- Scott, A.J. (2001a) Globalization and the Rise of City-Regions, *European Planning Studies*, 9 (7), 813-826.
- Sklair, 1999, "Competing conceptions of Globalization", *Journal of world-system research*, vol. 2, p. 143-163
- Smith, A., Pickles, J., Begg, R., Roukova, P. and Bucek, M. (2005), 'Outward processing, EU enlargement and regional relocation in the European textiles and clothing industry: reflections on the European Commission's Communication on 'The Future of the Textiles and Clothing Sector in the Enlarged European Union', *European Urban and Regional Studies* 12, 83-91.
- Taylor P. (2007), "Problematizing city/state relations: towards a geohistorical understanding of contemporary globalization", *Transactions Institute of British geographers*, vol 32-2, pp 133-150.
- Taylor, P.J. (2001) Specification of the World City Network, *Geographical Analysis*, 33, 181-94.
- Taylor, P.J. (2004) *World City Network: A Global Urban Analysis*, Routledge, London.
- Taylor, P.J. (2007) Cities within Spaces of Flows: Theses for a Materialist Understanding of the External Relations of Cities, in *Cities in Globalization: Practices, Policies and Theories*, Taylor, P.J., Derudder, B., Saey, P. and Witlox, F. (eds), Routledge, London, pp. 287-297.

- Taylor, P.J. and Evans, D.E. (2003) *Quantitative Analysis of Business Services: Summary Report, (Polynet Action 1.2)*, February, European Commission Interreg IIIB Community Initiative, Institute of Community Studies, The Young Foundation, London.
- Taylor, P.J. and Pain, K. (2007) Polycentric Mega-city regions: Exploratory Research from Western Europe, *The Healdsburg Research Seminar on Megaregions*, Todorovich, P., Lincoln Institute of Land Policy and Regional Plan Association, The Healdsburg Research Seminar on Megaregions. Regional Plan Association, Healdsburg, USA.  
[http://www.rpa.org/pdf/temp/America%202050%20Website/Healdsburg\\_pp59-67.pdf](http://www.rpa.org/pdf/temp/America%202050%20Website/Healdsburg_pp59-67.pdf)
- Taylor, P.J., Beaverstock, J.V., Cook, G., Pandit, N. and Pain, K. (2003) *Financial Services Clustering and its Significance for London*, Corporation of London, London.
- Taylor, P.J., Evans, D.M., Pain, K., (2006) Organisations of the Polycentric Metropolis: Corporate Structures and Networks, in *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*, Hall, P. and Pain, K. (eds), Earthscan, London, pp. 53-64.
- Turok I. (2006), "Cities, Regions and Competitiveness", *Regional studies association*, New York, pp. 79-94.
- UNCTAD (2010), *UNCTADStat*, (database). (Accessed January 2011)
- UNDP (United Nations Development Programme) (2009), *Human Development Report 2009*, UNDP, New York, <http://hdr.undp.org/en/reports/global/hdr2009/>
- UNESCO (2010), *UNESCO Science Report 2010*, UNESCO Publishing.
- US MPI (2010), *2009 American Community Survey and Census Data on the Foreign Born by State*, US Migration Policy Institute, Washington, DC.
- Veltz P. 1996), *Mondialisation, villes et territoires : une économie d'archipel*, Paris, PUF.
- Verbeek, A., K. Debackere & M. Luwel (2003), Science Cited in Patents: A Geographic "Flow" Analysis of Bibliometric Citation Patterns in Patents, *Scientometrics* 58, 241-263
- Vinciguerra, S., Taylor, P. J., Hoyler, M. and Pain, K. (2010) Contemporary *Mappa Mundi*: American exceptionalism in the world city network, *Environment and Planning A* 42(6) 1271-1272.
- Vinciguerra, S., Taylor, P. J., Hoyler, M. and Pain, K. (2010) Contemporary *Mappa Mundi*: American exceptionalism in the world city network, *Environment and Planning A* 42(6) 1271-1272.
- Wallerstein, I. (1984) *Politics of the World-economy: The States, the Movements, and the Civilizations*, Cambridge University Press, Cambridge.
- Wallerstein I. (1980), *Capitalisme et économie-monde, 1450-1640*, Paris, Flammarion.
- Wallerstein I. (2002), *Le capitalisme historique*, Paris, Ed. La Découverte, 123 p.
- Weber, M. (1958) *The City*, The Free Press, New York.
- World Bank (2009), *World Development report 2009*, Spatial disparities and Development Policy.
- World Bank (2010a), *World Development Indicators 2010*, (database). (Accessed January 2011)
- World Bank (2010b), *Knowledge Assessment Methodology 2010*, (database). (Accessed January 2011)
- Z/Yen (2010) *Global Financial Centres Index 7*, Corporation of London, London.