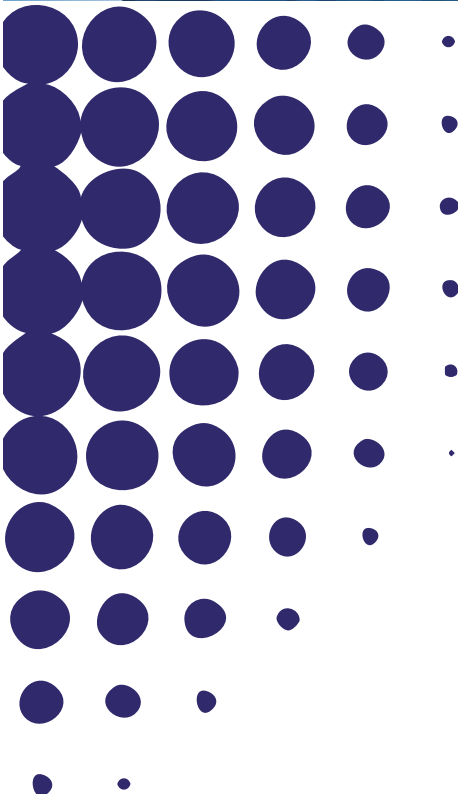


# D7.7 SEARCH DERIVERABLE

SEARCH Free Access Database

January 2014



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# Sharing Knowledge Assets: InterRegionally Cohesive NeighBORhoods (SEARCH) Project

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## Deliverable 7.7: SEARCH Free Access Database

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## 1. Introduction

This report summarizes all the information related with the databases used during the development of SEARCH Project. We present details about the databases used in different tasks and working papers of the Project together with details on how to access the statistical information and the links associated to additional information for the different sources.

SEARCH Project is a Seventh Framework Programme - SSH – 2010, Socioeconomic Sciences and Humanities, FP7 Collaborative Research Project ( Topic SSH-2010.2.2-1 EU regions and their interaction with the neighbourhood regions, Funding Scheme: Collaborative Research Project, 2011-2014).

The main objective of SEARCH Project is to strengthen the integration process between the EU and the Neighbourhood Countries (NCs) by focusing on the European Research Neighbourhood (ERN). The SEARCH Project, analyses the impact of the ENP on the integration of neighbouring countries and the EU in the areas of trade and capital flows, mobility and human capital, technological activities and innovation diffusion, and the institutional environment. This will facilitate an understanding of the institutional framework conditions of the European Neighbourhood Policy (ENP) countries and their economic interactions with the EU in terms of people, capital, trade, knowledge, and innovation

For more details, the reader is invited to see the different working papers written during the Project. All information is available at [www.ub.edu/searchproject](http://www.ub.edu/searchproject).

## 2. Work Package 2: Trade Flows and Localisation Choices

### 2.1. Introduction

The general Objective of this work package is to study, both theoretically and empirically, the patterns of economic interaction between the EU and its neighbouring countries (NCs), to project future trends and identify the effects of higher levels of economic integration to the growth, competitiveness and cohesion prospects of the two areas. The specific objectives of the WP are the following:

1. Analysis of the trade patterns between EU and NCs and their possible effects on growth, structural change and cohesion in both areas.
2. Analysis of the locational choices of EU mobile investment, the direction and drivers of capital mobility and its effects on the EU new member states and NCs.
3. Assessment of the efforts made by domestic and foreign firms to invest in technological and organisational capacities with a special focus on the impact of localised institutional environments.
4. Analysis of the spatial intra-country effects of higher levels of trade and investment interaction in both the EU and the NCs areas.
5. Discussion of the policy options at the EU level that take into consideration the effects of integration and attempt to increase and spread its benefits on both sides of the external EU borders.

### 2.2. Datasets used by tasks

#### 2.2.1. Task 2.1: Analysis of trade patterns over time in EU and NCs

There are several databases that entail trade data available for data processing. However they differ on the variables (including only merchandise trade or both merchandise and services trade), on the geographic level (referring to specific area(s) of reporters and partners or to the world level), on the time periods (providing data in depth of time or for the last years), on the sectoral disaggregation level (providing data on different number of digit sectors) and decidedly on the availability of data and the elimination of missing data values (Table 2.1.1 and Table 2.1.2).

The most appropriate databases for our trade analysis seems to be the UN COMTRADE and the UN-Services trade as they fulfil the needs of a series of required variables by providing data for both merchandise and services trade, for both reporters' and partners' side, for all the world economies and for an adequate time

period. They have been collected data for the ENP countries (except Palestine due to data limitations) and the EU countries. A series of research papers have oriented to using this database (Artelaris et al 2013, Kallioras 2013, Petrakos et al 2013a, Anagnostou et al 2013).

In some papers the authors in order to meet the needs of the analysis, they have utilized some additional databases. First, BACI is a World trade database developed by the CEPII at a high level of product disaggregation. BACI is developed using an original procedure that reconciles the declarations of the exporter and the importer. Original data are provided by the UN Statistical Division (COMTRADE database). The harmonization procedure enables to extend considerably the number of countries for which trade data are available, as compared to the original dataset.

Boschma and Capone (2013a and 2013b) have deduced data from the BACI dataset in order to analyze the degree of relatedness between export products based on co-occurrence analysis. Pinna (2013) and Kallioras and Pinna (2013) have also used the BACI dataset in order to examine in depth the bilateral trade relationships between the EU and its neighbouring countries.

The EFIGE dataset is a database recently collected within the EFIGE project (European Firms in a Global Economy: internal policies for external competitiveness) supported by the Directorate General Research of the European Commission through its 7th Framework Programme and coordinated by Bruegel. The dataset is focused on international operations combining information about firms' international activities (i.e. exports, outsourcing, FDI, imports). The EFIGE dataset consists of about 15,000 firms. It is the first dataset in Europe, which comprises quantitative and qualitative information comparable across countries about six main categories on firms' economic activity. Data refers to seven EU countries: six countries are from the EU-15 (Austria, France, Germany, Italy, Spain, and the UK) and one is from the new EU members states (Hungary). Pinna, Schivardi and Licio (2013) use the EFIGE dataset for their empirical study on the export decisions of the European firms and on the exploration of firms' international activities to the European Neighbouring Countries.

Also data for trade analysis is sourced by IMF and the DoTS (Direction of Trade Statistics) database. Pinna (2013) deduces data from these sources in order to detect the major EU partners.

As concerns the trade analysis of EU in energy issues, the Europe's energy portal Factsheet has been used in order to estimate the sources of EU in gas and oil. Moreover, for the section of the trade policy profile, data for tariffs have been obtained from the World Trade Organisation (WTO) which provides tariff statistics for each economy with disaggregation by sector and duty ranges. Liargovas (2013) utilises data from the aforementioned sources for a review of the complex EU trade policies towards neighbouring countries.



**Table 2.1.1 Brief description of data sources for bilateral trade analysis**

Data-Set	Indicator	Reporter	Partner	Time Period	Sectors	Web-Page
Eurostat-COMEXT	Merchandise trade	EU	World	1988-	Disaggregated level (5-digit)	<a href="http://epp.eurostat.ec.europa.eu/newxtweb/">http://epp.eurostat.ec.europa.eu/newxtweb/</a>
UN-COMTRADE	Merchandise trade	World	World	1962-	Disaggregated level (4-digit)	<a href="http://comtrade.un.org/db/dqBasicQuery.aspx">http://comtrade.un.org/db/dqBasicQuery.aspx</a>
UN-Service Trade	Services trade	World	World	2000-	Disaggregated level	<a href="http://unstats.un.org/unsd/servicetrade/">http://unstats.un.org/unsd/servicetrade/</a>
UNCTAD	Merchandise and services trade	World	World	1995-	Disaggregated level (broad sectors)	<a href="http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx">http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx</a>
ITC	Merchandise and services trade	World	World (only for merchandise)	2001-	Disaggregated level (4-digit)	<a href="http://www.intracen.org/">http://www.intracen.org/</a>
NBER (World Trade Data)	Merchandise trade	World	World	1962-2000	Disaggregated level (4-digit)	<a href="http://www.nber.org/data/">http://www.nber.org/data/</a>

**Table 2.1.2 Additional sources on trade analysis**

Data-Set	Indicator	Web-Page
IMF-DoTS	Bilateral trade	<a href="http://elibrary-data.imf.org/finddatareports.aspx?d=33061&amp;e=170921">http://elibrary-data.imf.org/finddatareports.aspx?d=33061&amp;e=170921</a>
BACI Database-CEPII	Bilateral trade	<a href="http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=1">http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=1</a>
EFIGE dataset	Information about firms' international activities	<a href="http://www.bruegel.org/datasets/efigedataset">http://www.bruegel.org/datasets/efigedataset</a>
WTO – Tariff profiles	Tariffs	<a href="http://stat.wto.org/TariffProfile/WSDBTariffPFHome.aspx?Language=E">http://stat.wto.org/TariffProfile/WSDBTariffPFHome.aspx?Language=E</a>
EC – Market observatory and statistics	EU energy trade	<a href="http://ec.europa.eu/energy/observatory/statistics/statistics_en.htm">http://ec.europa.eu/energy/observatory/statistics/statistics_en.htm</a>

### 2.2.2. Task 2.2: Capital mobility among EU and NCs

There is a variety of sources that provide data for Foreign Direct Investments (FDI). However, the several datasets differ at large in covering geographic areas (Eurostat and Amadeus focus on Europe, OECD focus on OECD focuses on OECD members), origin or/and destination places (UNCTAD and ITC do not provide data for each destination country separately), sectoral analyses (Eurostat, OECD and ITC provide sectoral data for FDI), or time periods (ITC and IMF provide data for the recent years) (Table 2.2.1 and Table 2.2.2).

The datasets that have been utilised for the FDI study are not common for all the working papers so to be covered the different requirements of each analysis. UNCTAD-STAT dataset provides FDI data for in depth of time and for each reporter country. Zvirgzde et al (2013a, 2013b) have deduced data from the UNCTAD-STAT database to evaluate the FDI flows and stock for a series of countries.

Eurostat and OECD provide data for both inward and outward FDI stock, in sectoral level, for both home and host country (OECD does not cover all countries) and in depth of time. Beenstock et al (2013a) have utilised data from these sources in order to observe FDI flows to those Eastern Europe (EE) countries that joined the EU in its successive enlargements from 1995 to 2007.

The FDI Markets-Financial Times Business database includes all cross-border greenfield and expansion investment. Joint ventures are tracked in this database only when they lead to new physical operation, whereas Mergers & Acquisitions as well as other equity investment are not included. Overall, the inclusion in the dataset is conditional on the fact that investment projects generate new jobs or capital investment. Foreign firms' operations are identified by Financial Times analysts through a wide variety of sources, including nearly 9,000 media sources, project data provided from over 1,000 industry organizations and investment agencies, and data purchased from market research and publication companies. Furthermore, each project is cross-referenced across multiple sources and more than 90% of investment projects are validated with company sources.

Ascani et al (2013) make use of FDI Markets-Financial Times Business database and specifically of investment projects originated in EU countries and directed towards EU New Member States and European Neighbouring Countries, the latter being Accession Countries, European Neighbourhood Policy countries and the Russian Federation.

Investment from the entire world towards the same destination countries are also employed to test the attractiveness of the countries of interest towards global capital. The dataset contains information on both greenfield (new investment) as well as brownfield (expansion investment). Since the aim of the analysis is to investigate Multinational Enterprises (MNEs) location choices, only data on greenfield investment is considered. The reason for this is that the location of brownfield investment is clearly made in function of a greenfield investment undertaken in a previous period. Hence, only greenfield investments are subject to a choice based on location attributes.

A firm-level data analysis is based on the Business Environment and Enterprise Performance Survey (BEEPS). This survey is implemented by the EBRD together with the World Bank and it enquires individual firms in Eastern Europe and Central Asia about their business and business environment.

Monastiriotes and Borrell (2013) use the BEEPS dataset in order to estimate the direct and intra-industry productivity effects of foreign ownership and examine how these differ across regional blocks, according to the origin of the foreign investor (EU versus non-EU), across geographical scales (pure industry versus regional spillovers) and for different types of locations (capital-city regions versus the rest). The dataset contains information on sales, employment, fixed assets, share of foreign ownership, share of exports, sector (using NACE two-digit classification), country and region where the firm is located and origin of FDI. The availability of some of these variables (share and nationality of foreign presence; region; sector) is limited to certain years so, where available, we projected the values available in previous years or in the cross-sectional editions of BEEPS (e.g., assuming that the region, sector, or share of foreign ownership has not changed between two survey years). Some data-points on employment and capital have also been estimated, using either interpolations (when information was missing for an intermediate year) or projections.

The regional dimension of FDI in Ukraine has been analysed based on data from the State Statistical Committee of Ukraine. Zvirgzde et al (2013b) analyse the FDI breakdown by region and sector.

Especially interesting is the analysis on the location choices of multinational companies in Ukraine that was conducted by Zvirgzde et al (2013b, 2013c), based on an enterprise survey of 305 domestic and 153 foreign owned firms of the country. The survey focused, among other issues, on location choices and location patterns of

FDIs. The firms were asked to rate the importance of different factors, which played a role in their investment decision; to choose the initial aims of investment with respect to serving the local market or just using the market as the resource base for manufacturing facilities with further re-import to their home countries. Moreover, the survey covered questions on institutional environment. The results allow linking the institutional quality at a certain location to the location choice of MNCs in this region ([see SEARCH website](#)).

**Table 2.2.1 Brief description of data sources for FDI analysis**

Data-Set	Indicator	Home Economy	Host Economy	Time Period	Sectors	Web-Page
UNCTAD-World Investment Report	Inward, outward FDI stock & flow	World (country)	-	1970- (flow) 1980- (stock)	-	<a href="http://unctadstat.unctad.org">http://unctadstat.unctad.org</a>
ITC	Inward, outward FDI stock & flow	World (country)	-	2007-	Disaggregated level (ISIC3)	<a href="http://www.intracen.org/foreign-direct-investment-data/statistics-exports-country-industry">http://www.intracen.org/foreign-direct-investment-data/statistics-exports-country-industry</a>
Eurostat	Inward, outward	EU	world	1980-	Disaggregated level (4-digit)	<a href="http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bop_fdi_pos&amp;lang=en">http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bop_fdi_pos&amp;lang=en</a>  <a href="http://epp.eurostat.ec.europa.eu/NavTree_prod/AppLinkServices?pid=458_1209540_458_211810_211810&amp;lang=en&amp;appId=nui&amp;appUrl=http%3A%2F%2Fappsso.eurostat.ec.europa.eu%2Fnui%2Fshow.do%3Fdataset%3Dbop_fdi_flows%26lang%3Den">http://epp.eurostat.ec.europa.eu/NavTree_prod/AppLinkServices?pid=458_1209540_458_211810_211810&amp;lang=en&amp;appId=nui&amp;appUrl=http%3A%2F%2Fappsso.eurostat.ec.europa.eu%2Fnui%2Fshow.do%3Fdataset%3Dbop_fdi_flows%26lang%3Den</a>
OECD	Inward, outward	Range of countries that OECD covers	Range of countries that OECD covers	1985-	4-digit	<a href="http://stats.oecd.org/">http://stats.oecd.org/</a>
IMF	Inward, outward	world	world	2009-		<a href="http://cds.imf.org/">http://cds.imf.org/</a>

**Table 2.2.2 Additional sources on FDI analysis**

Data set	Indicator	Internet site
FDi Markets - Financial Times Business database	Cross-border greenfield and expansion investment	<a href="http://www.fdimarkets.com/">http://www.fdimarkets.com/</a>
Business Environment and Enterprise Performance Survey - BEEPs	Data for firms in Eastern Europe and Central Asia	<a href="http://www.enterprisesurveys.org/">http://www.enterprisesurveys.org/</a>

### 2.2.3. Task 2.3: Spatial implications of integration and expansion of capital flows in and out of the EU borders

The investigation of regional data for non-EU countries, meaning the detection of data on the administrative divisions of the non-EU countries, is a difficult task as they do not exist in a specific united platform (as this of Eurostat) while, additionally, the Statistical Agencies of those countries encompass often limited to none data breakdown by regions.

In the context of the project SEARCH there was an attempt to collect data for the ENP countries (Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Syria, Tunisia and Ukraine, no data for Palestine) from their corresponding Statistical Agencies. In Table 2.3.1 the sources for the regional data for each ENP and their internet addresses are presented.

**Table 2.3.1 Sources for regional data in ENPs**

<i>Countries</i>	<i>Sources</i>
Algeria	Office National des Statistiques of Algeria, Available <a href="http://www.ons.dz/">http://www.ons.dz/</a>
Armenia	National Statistical Service of the Republic of Armenia, Available <a href="http://www.armstat.am/en/">http://www.armstat.am/en/</a>
Azerbaijan	The State Statistical Committee of the Republic of Azerbaijan, Available <a href="http://www.azstat.org/indexen.php">http://www.azstat.org/indexen.php</a>
Belarus	National Statistical Committee of the Republic of Belarus, Available <a href="http://belstat.gov.by/homep/en/indicators/main1.php">http://belstat.gov.by/homep/en/indicators/main1.php</a>
Egypt	Central Agency for Public Mobilization and Statistics, Available <a href="http://www.capmas.gov.eg/">http://www.capmas.gov.eg/</a>
Georgia	National Statistics Office for Georgia, Available <a href="http://www.geostat.ge/index.php?action=0&amp;lang=eng">http://www.geostat.ge/index.php?action=0&amp;lang=eng</a>
Israel	Central Bureau of Statistics of Israel, Available <a href="http://www1.cbs.gov.il/reader/">http://www1.cbs.gov.il/reader/</a>
Jordan	Department of Statistics of Jordan, Available <a href="http://www.dos.gov.jo/dos_home_e/main/index.htm">http://www.dos.gov.jo/dos_home_e/main/index.htm</a>
Lebanon	Central Administration of Statistics of Lebanon, Available <a href="http://www.cas.gov.lb/">http://www.cas.gov.lb/</a>
Libya	General Information Authority of Libya, Available <a href="http://www.gai.gov.ly/">http://www.gai.gov.ly/</a>
Moldova	National Bureau of Statistics of the Republic of Moldova, Available <a href="http://www.statistica.md/?lang=en">http://www.statistica.md/?lang=en</a>
Morocco	Haut commissariat au plan (HCP) of Morocco, Available <a href="http://www.hcp.ma/">http://www.hcp.ma/</a>
Syria	Central Bureau of Statistics of Syria, Available <a href="http://www.cbssyr.org/index-EN.htm">http://www.cbssyr.org/index-EN.htm</a>
Tunisia	National Institute of Statistics of Tunisia, Available <a href="http://www.ins.nat.tn/indexen.php">http://www.ins.nat.tn/indexen.php</a>
Ukraine	State Statistics Service of Ukraine, Available <a href="http://www.ukrstat.gov.ua">http://www.ukrstat.gov.ua</a>

The most important data collected for the regional analysis are presented in Table 2.3.2.

The exploitation and evaluation of these regional data has been carried out by a quite interesting study by Petrakos et al (2013b). Their analysis investigates the patterns of spatial inequality in the ENC and the driving forces behind these processes, paying a special attention on the impact of economic growth and deeper integration into the European economy. Data limitations restrict their analysis in only five countries (Azerbaijan, Armenia, Georgia, Israel and Ukraine) and a period of 11 years (2000-10).

**Table 2.3.2 Availability of basic variables collected in regional level for each ENP country**

	Variables									
	population	area	urban/rural population	Gross Regional Product	sectoral structure in broad sectors		sectoral in manufacturing	external trade	wages	unemployment
					in employment	in value added				
<b>Countries</b>										
Algeria	1998,08	x								
Armenia	1999-11	x	2005-11	GVA, 1998-10		1998-10	2006,2010	2006-10	1998-10	1998-10
Azerbaijan	1979,1989,1999,1990-2012	x	1990-2012	2006-10		2010			2000,2003-11	2000,2003-11
Belarus	1989,1996,1999,2001-12	x	1996, 2001-12	2009-10		2009-10	2009,2010	2000,2005, 2007-11	1990,95,2000, 2005-10	2000,2005,2009,2010
Egypt	1996,2006,2012	x	2006,2011		2006					2006
Georgia	2002,2012	x	2002, 2012	2002-10		2001-10 <sup>a</sup>	2001,10-11		2000,04	2000,04,08
Israel	1996-2010	x	2000,2010	2000-2010	2001-2010		2004,2008		2010	2008-2011
Jordan	2000-11	x	1994,2004,2011		2001,2011					2000-11
Lebanon	2004, 07	x			2007					2004,07
Libya	2006	x								
Moldova	2005-12	x	2005,2012	GVA, 2010		2010			2010	2008-10
Morocco	2003-09	x	2003-2009	2009-10	2008-11	2009-10				2008-10
Syria	2004,11	x	2011		2008					2010
Tunisia	2004,11	x								2004
Ukraine	1990,1995,2000-11	x	2003,2011	1998-2000,2003-09	2007-10	2003-09		2006-11	2000,06-10	1995,1996,2000,2001,2005-10

a: available data only for some sectors



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### **3. Work Package 3: People Mobility and Human Capital**

#### **3.1. Introduction**

The main objective of WP3 is to elaborate policy measures addressed to improve the economic potential of ENP regions and to minimize the impact of their further integration on current EU members. In particular, we analyse the actual and potential future role of labour migration and its economic and social consequences (costs and benefits) both for destination (EU regions) and origin regions (neighbouring ones). Particular attention is given to the role of particular intangible assets, such as human capital, entrepreneurship and technology diffusion.

The specific objectives of this workpackage are the following:

1. Predicting migration flows considering the role of policy and structural issues: The objective of this research is to provide scenarios on migration flows between EU and ENP regions putting special attention to two particular issues: particular migration legislations and policies in the EU; and the international specialization patterns in EU regions.
2. Returns to human capital and workers mobility from and to neighbouring regions: it focuses on the analysis of spatial differences in the return to human capital as a potential explanatory factor of workers mobility from and to the neighbouring countries.
3. Remittances and human capital formation: explore the factors that account for variation in remittance flows and if remittances contribute to human capital formation in neighbouring countries.
4. Return migration, entrepreneurship and the mobility of inventors: to explore how schooling and work experience acquired by immigrants in the destination countries can affect economic growth in their sending regions.
5. Migration and social capital: to analyse the influence of migration flows and attitudes towards ethnic diversity on social capital formation and thus, on EU regions' economic growth.

6. Case-study of the impact of tourism in people mobility: The influence of tourism activity on people mobility has been scarcely analyzed in previous research studies, and due to its importance, a case study has been carried out in SEARCH project.

In this section, we describe the data sources considered in the 23 working papers produced within this work package. The rest of the section is structured in six subsections, each of them related to the previously mentioned tasks.

## **3.2. Datasets used by tasks**

### **3.2.1. Task 3.1: Predicting migration flows considering the role of policy and structural issues**

It is a difficult task to collect data on homogeneous international migration for a large number of countries. There are problems of data availability and difficulties in getting comparable statistical information across countries. Table 3.1.1 shows a summary picture of currently databases for the analysis of migration from and to a wide set of countries with a long enough time series perspective. The different databases are grouped depending on the institution in charge of collecting and disseminating the data. From our comparative analysis of these datasets, the most complete source seems to be World Bank Bilateral Migration Database 1960-2000 completed with the World Bank Bilateral Migration Matrix 2010. Data based primarily on the foreign-born concept are presented. Over one thousand census and population register records are combined to construct decennial matrices corresponding to the last five completed census rounds. The only problem with this dataset is that it provides information on stocks rather than on flows. However, as data on immigration stocks are based on national censuses, they will be probably of higher quality than those that report annual immigrant flows, as censuses deal with unambiguous net permanent moves. This justifies that the stocks of immigrants will be chosen as dependent variable for part of our empirical analysis. Besides immigration stocks, an additional number of variables related to pull and push factors of migration (as shown in table 3.1.2) have been collected and will be used in the empirical analysis.

**Table 3.1.1. Brief description of data sources for migration analysis (1/5)****United Nations datasets**

Data set	Countries covered	Time period considered	Description	
United Nations Global Migration Database v.0.3.6	More than 200 countries (including ENC)	The time period varies from country to country. It relies on different sources such as population censuses, population registers, nationally representative surveys and other official statistical sources.	Migration stocks by origin and by destination (when possible, disaggregated by gender and age group)	<a href="http://esa.un.org/unmigration/">http://esa.un.org/unmigration/</a>  (It currently requires previous registration).
United Nations World Population Prospects, the 2010 Revision	197 countries (including ENC)	5 year intervals since 1950 to 2010 (projections from 2010 to 2100)	Net number of migrants Net migration rate	<a href="http://esa.un.org/unpd/wpp/index.htm">http://esa.un.org/unpd/wpp/index.htm</a>
United Nations Trends in International Migrant Stock: Migrants by Age and Sex, 2011	196 countries (including ENC)	Data for 1990, 2000 and 2010 with small variations as it is based on Population Census	Estimated number of international migrants at mid-year Total population at mid-year by age and sex International migrants as a percentage of the population Percentage distribution of international migrants by age and sex	<a href="http://esa.un.org/MigAge/">http://esa.un.org/MigAge/</a>
United Nations International migration flows to and from selected countries: The 2010 Revision	43 countries (including some ENC)	Annual data from 1960 to 2010, but for most country it starts after 2000	Number of immigrants and emigrants by country of residence, citizenship and country of birth.	<a href="http://esa.un.org/MigFlows/MigrationFlows.html">http://esa.un.org/MigFlows/MigrationFlows.html</a>  (It is also available as a CD-ROM)

**Table 3.1.1. Brief description of data sources for migration analysis (2/5)****OECD datasets**

Data set	Countries covered	Time period considered	Description	
OECD Database on immigrants in OECD and non-OECD countries (DIOC-E) 3.0	32 OECD and 68 non-OECD destination countries and 233 countries of origin (including some ENC countries)	2000	Bilateral flows to OECD countries and non-OECD countries	<a href="http://www.oecd.org/migration/dioc/extended">http://www.oecd.org/migration/dioc/extended</a>
OECD Database on Immigrants in OECD countries (DIOC)	OECD countries	2000	Bilateral flows to OECD countries with very high detail on gender, age, education level, duration of the stay, labour force status, occupation and activity sector.	<a href="http://www.oecd.org/document/51/0,3746,en_2825_494574_40644339_1_1_1_1,00.html">http://www.oecd.org/document/51/0,3746,en_2825_494574_40644339_1_1_1_1,00.html</a>
OECD International Migration Data 2011	OECD countries and the Russian Federation	Annual data 2000-2009	Stocks and flows of immigrants and labour market outcomes of immigrants (2008-2010)	<a href="http://www.oecd.org/document/30/0,3746,en_2649_37415_48326878_1_1_1_37415,00.html">http://www.oecd.org/document/30/0,3746,en_2649_37415_48326878_1_1_1_37415,00.html</a>

**Table 3.1.1. Brief description of data sources for migration analysis (3/5)****Eurostat datasets**

Data set	Countries covered	Time period considered	Description	
Eurostat International Migration and Asylum	46 countries for international migration flows (it varies depending on the topic)	Annual data from 1998 to 2010, but again depending on the chosen topic	<p>International Migration and Asylum (migr)</p> <p>Regional migration statistics (migr_r)</p> <p>Acquisition and loss of citizenship (migr_acqn)</p> <p>Asylum (migr_asy)</p> <p>Enforcement of Immigration Legislation (migr_eil)</p> <p>Active population and workers by citizenship (migr_lab)</p> <p>International migration flows (migr_flow)</p> <p>Population by citizenship and by country of birth (migr_stock)</p> <p>Residence permits (migr_res)</p>	<a href="http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database">http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database</a>

**Table 3.1.1. Brief description of data sources for migration analysis (4/5)****ILO datasets**

Data set	Countries covered	Time period considered	Description	
ILO LABORSTA	140 countries	Annual data from 1986 to 2008	Inflows and outflows by gender, employment status, occupation and economic sector.	<a href="http://laborsta.ilo.org/STP/guest">http://laborsta.ilo.org/STP/guest</a>

**World Bank datasets**

Data set	Countries covered	Time period considered	Description	
World Bank Bilateral Migration Database 1960-2000	226 countries	1960, 1970, 1980, 1990, 2000	Bilateral migration flows	<a href="http://data.worldbank.org/data-catalog/global-bilateral-migration-database">http://data.worldbank.org/data-catalog/global-bilateral-migration-database</a>
World Bank Bilateral Migration Matrix 2010		2010	Bilateral migration flows	<a href="http://go.worldbank.org/JITC7NYTT0">http://go.worldbank.org/JITC7NYTT0</a>
World Bank Panel Data on International Migration 1975-2000	6 OECD destination countries and 194 countries of origin (including some ENC countries)	5 year intervals since 1975 to 2000	Number of immigrants by educational attainment	<a href="http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21866422~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html">http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21866422~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html</a>



**Table 3.1.1. Brief description of data sources for migration analysis (5/5)****Additional sources**

Data set	Countries covered	Time period considered	Description	
Global Migrant Origin Database	226 countries	2000	Bilateral matrix of stocks	<a href="http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html">http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html</a>
Migration Modelling for Statistical Analyses (Mimosa) dataset	EU-27	Annual data for 2002-2007	matrix of flows by origin/destination, sex and age; immigration and emigration by citizenship and country of birth, sex and age; population by citizenship and country of birth, sex and age;	<a href="http://mimosa.gedap.be/">http://mimosa.gedap.be/</a>
CARIM database on migration	17 Southern and Eastern Mediterranean (SEM) and Sub-Saharan Africa (SSA) countries and 19 destination countries	Annual data from 1990 to 2010 but the availability is quite different from country to country.	Demographic and economic module Legal module Socio-political module	<a href="http://www.carim.org">http://www.carim.org</a>
CARIM-East database on migration	7 Eastern European countries and 27 destination countries	Annual data from 1990 to 2010 but with very different availability from country to country	Demographic and economic module Legal module Socio-political module	<a href="http://www.carim-east.eu/">http://www.carim-east.eu/</a>

**Table 3.1.2. Migration pull and push factors**

	Pull factors	Push factors
Economic and demographic	<ul style="list-style-type: none"> <li>○ Poverty</li> <li>○ Unemployment</li> <li>○ Low wages</li> <li>○ High fertility rates</li> <li>○ Lack of basic health and education</li> </ul>	<ul style="list-style-type: none"> <li>○ Prospects of higher wages</li> <li>○ Potential for improved standard of living</li> <li>○ Personal or professional development</li> </ul>
Political	<ul style="list-style-type: none"> <li>○ Conflict, insecurity, violence</li> <li>○ Poor governance;</li> <li>○ Corruption.</li> </ul>	<ul style="list-style-type: none"> <li>○ Safety and security</li> <li>○ Political freedom</li> </ul>
Social and cultural	<ul style="list-style-type: none"> <li>○ Human rights abuses</li> <li>○ Discrimination based on ethnicity, gender and religion</li> </ul>	<ul style="list-style-type: none"> <li>○ Family reunification</li> <li>○ Diaspora migration</li> <li>○ Freedom from discrimination</li> </ul>

While the main aim of our analysis is to analyse the potential role of ENP, it is also interesting to analyse the effect the last EU enlargement on migration flows from these countries to the EU. As data for intra-EU flows is much more detailed than the one available for a wider sample of countries, two different datasets have been constructed: the MIG-SEARCH database and the MIGEU-SEARCH database.

The MIG-SEARCH database includes data for nearly 200 countries for a long time period starting in 1960 and ending in 2010 and it provides information on bilateral migration stocks (accumulated flows by decades can, however, be calculated as difference between stocks) and several variables related to the economic, social, political and cultural pull and push factors identified by the literature as shown in table 3.1.3. As previously mentioned, bilateral migration data have been obtained from the World Bank Bilateral Migration Database 1960-2000 and the World Bank Bilateral Migration Matrix 2010, while the rest of explanatory variables have been collected from additional sources such as the World Bank Development Indicators, the CEPII Geodist dyadic dataset, the Quality of Government dataset and the Fraser Institute, among others. The current version of the dataset includes 193060 observations (from the 231672 potential observations: bilateral relations between 197 countries in 6 periods) and 83 variables.

The MIGEU-SEARCH database provides similar information only for the EU27 countries and a shorter period (2002-2007), but data are available at the yearly frequency. In fact, the MIGEU-SEARCH focuses on within Europe migration flows using annual data before and after the last accession to the EU. The source for bilateral migration flows in this second dataset is the EUROSTAT project "Migration Modelling for Statistical Analyses (Mimoso)". Regarding explanatory variables, similar sources have been obtained although the available information is significantly lower as not all data are available at annual frequency. It currently includes 5580 observations (bilateral relationships between 31 countries and 6 time periods) and 51 variables.

Table 3.1.3 provides a more detailed description of the contents of the two datasets. At this stage, the databases are only available to all researchers within the SEARCH project, but in the future, once the information has been verified and tested, access to them will be granted to all potentially interested researchers through the SEARCH Open Data catalogue ([see SEARCH website](#)). Both datasets are currently distributed as independent STATA data files, but other formats will be available on request.

These datasets have been used in the different working papers produced within this task. In some of them, however, there have been additional efforts to collect additional data. For instance, Cicagna and Sulis (2013) have also used data on bilateral migration flows Ortega and Peri (2012)<sup>1</sup>, that were originally derived from the European Labour Force Survey database.<sup>2</sup> Moreover, data on labour market institutions from different sources have also been considered. The first source of data is the "Fondazione Rodolfo De Benedetti" that provides information about labour market institutions. The data is obtained thanks to collaboration with the IMF, and it is available for the period 1980-2005, for 91 countries and includes data on minimum wages, coverage of unemployment benefits and employment protection legislation. They have integrated these data for EPL with information from the OECD. The latter database provides several variables and indexes of employment protection legislation over the period 1985 – 2009 for 40 countries. In particular, they use four different variables for labour market institutions. The first one is Employment Protection Legislation (EPL) and it is derived from the OECD. The EPL index measures how relevant are hiring and firing along different dimensions. They use two different versions of the OECD index, the former is an overall index of EPL while the second is

<sup>1</sup> Ortega F Peri G (2012) The Role of Income and Immigration Policies in Attracting International Migrants, IZA DP No. 6655

<sup>2</sup> Ortega and Peri (2012) provide other data on migration flows based on other sources. In particular, they refer to Mayda (2010), International Migration Database (2007), and United Nations (2008). The definition of immigrant is consistent across all databases as they all use as primary sources the original data released by the statistical offices of each receiving country.

a weighted average of employment protection that takes into account differences between permanent, temporary contracts and collective dismissals (EPL\_2). They also use three other variables for labour market institutions. The first is a measure of unemployment benefits coverage, that is the percentage of unemployed workers covered by unemployment benefits and it is derived from the FRdB. Data for unions and the presence of the minimum wage are from Visser (2011)<sup>3</sup>. The former is the share of workers covered by collective bargaining agreements over total employment, while the second is a dummy for the minimum wage, and zero otherwise.

Beenstock and Felsenstein (2012) have also enlarged the number of variables considered in the analysis. These variables and data sources are listed in table 3.1.4.

Last, the papers by Denisenko and Choudinovskikh (2013) and Denisenko and Varshavskaya (2013) considered national sources and ad-hoc surveys to analyse the characteristics of migration within CIS countries. For example, Denisenko and Varshavskaya (2013) use data from a survey carried out in November, 2011, at the request of the Highest School of Economics. In particular, the NGO "The Centre for Ethnopolitical and Regional Studies" conducted a sociological survey aimed to analyze migrants' status in the Russian labour market, as well as issues associated with their adaptation and integration. The survey was conducted in eight RF constituent areas: Moscow, Moscow Oblast, St. Petersburg, Astrakhan Oblast, Samara Oblast, Sverdlovskaya Oblast, Permskiy Krai, Primorsky Krai . Sampling quota distribution among the regions was based on a region's share in all selected constituent areas in terms of its cumulative number of working migrants, having a work permit or license, adjusted towards a slight increase in quotas for Astrakhan and Samara Oblasts and Permsky Krai. Besides, the sample composition took into account the distribution of legally employed migrants by respondents' home country (citizenship). The total number of interviewed migrants was 8499. Respondents were foreign citizens, regardless of their legal status and ethnicity.

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<sup>3</sup> Visser J (2011) The ICTWSS Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, Version 3.0, Institute for Labour Studies, University of Amsterdam

**Table 3.1.3. The MIG-SEARCH and the MIGEU-SEARCH databases (1/3)**

Variable	Description
year	year
cname_o	Country Name Origin
cname_d	Country Name Destination
iso_o	Country of origin - iso3d code
iso_d	Country of destination - iso3d code
migstocks	Bilateral migration stocks
ur_o	Unemployment rate - country of origin
gdppc_o	GDP per capita - country of origin
migstock_o	Immigrants stock - country of origin
pop_o	Population - country of origin
ur_d	Unemployment rate - country of destination
gdppc_d	GDP per capita- country of destination
migstock_d	Immigrants stock - country of destination
pop_d	Population - country of destination
contig	1 for contiguity
comlang_off	1 for common official of primary language
comlang_ethno	1 if a language is spoken by at least 9% of the population in both countries
colony	1 for pairs ever in colonial relationship
comcol	1 for common colonizer post 1945
curcol	1 for pairs currently in colonial relationship
col45	1 for pairs in colonial relationship post 1945
smctry	1 if countries were or are the same country
dist	simple distance (most populated cities, km)
distcap	simple distance between capitals (capitals, km)
distw	weighted distance (pop-wt, km)
distwces	weighted distance (pop-wt, km) CES distances with theta=-1
DR_IG_d	KOF Index of Globalization - country of destination
DR_IG_o	KOF Index of Globalization - country of origin

**Table 3.1.3. The MIG-SEARCH and the MIGEU-SEARCH databases (2/3)**

Variable	Description
FI_CI1_GOVSIZE_d	Fraser Institute - Chain index 1 - country of destination
FI_CI2_LEGAL_d	Fraser Institute - Chain index 2 - country of destination
FI_CI3_SOUNDMONEY_d	Fraser Institute - Chain index 3 - country of destination
FI_CI4_TRADE_d	Fraser Institute - Chain index 4 - country of destination
FI_CI5_REG_d	Fraser Institute - Chain index 5 - country of destination
FI_CI_SUM_d	Fraser Institute - Chain index sum - country of destination
FI_CI5b_LABREF_d	Fraser Institute - Chain index 5b - country of destination
FI_CI1_GOVSIZE_o	Fraser Institute - Chain index 1 - country of origin
FI_CI2_LEGAL_o	Fraser Institute - Chain index 2 - country of origin
FI_CI3_SOUNDMONEY_o	Fraser Institute - Chain index 3 - country of origin
FI_CI4_TRADE_o	Fraser Institute - Chain index 4 - country of origin
FI_CI5_REG_o	Fraser Institute - Chain index 5 - country of origin
FI_CI_SUM_o	Fraser Institute - Chain index sum - country of origin
FI_CI5b_LABREF_o	Fraser Institute - Chain index 5b - country of origin
fh_ipolity2_d	Democracy (Freedom House/Imputed Polity)
icrg_qog_d	ICRG Indicator of Quality of Government
p_democ_d	Institutionalized Democracy
undp_hdi_d	Human Development Index
van_index_d	Index of Democratization
fh_ipolity2_o	Democracy (Freedom House/Imputed Polity)
icrg_qog_o	ICRG Indicator of Quality of Government
p_democ_o	Institutionalized Democracy
undp_hdi_o	Human Development Index
van_index_o	Index of Democratization
NEW_RELFRE_d	CIRI - Freedom of Religion - country of destination
NEW_RELFRE_o	CIRI - Freedom of Religion - country of origin
y1	year== 1960
y2	year== 1970
y3	year== 1980
y4	year== 1990
y5	year== 2000
y6	year== 2010
dgdppc	GDP per capita differences - destination minus origin
dur	Unemployment rate differences - destination minus origin
pop	Total Population - origin + destination

**Table 3.1.3. The MIG-SEARCH and the MIGEU-SEARCH databases (3/3)**

CEPII Geodist dataset	225 countries		GeoDist 's provides several geographical variables, in particular bilateral distances measured using city-level data to assess the geographic distribution of population inside each nation. The a dyadic file includes a set of different distance and common dummy variables used in gravity equations to identify particular links between countries such as colonial past, common languages or contiguity.	<a href="http://www.cepii.fr/anglaisgraph/bdd/distances.htm">http://www.cepii.fr/anglaisgraph/bdd/distances.htm</a>
Quality of Government Dataset	207 countries	1946-2009	1.WII (What It Is) variables, that is, variables pertaining to the core features of QoG (such as corruption, bureaucratic quality, and democracy) 2.HTG (How To Get it) variables, that is, variables posited to promote the development of QoG (such as electoral rules, forms of government, federalism, legal & colonial origin, religion and social fractionalization); and 3.WYG (What You Get) variables, that is, variables pertaining to some of the posited consequences of QoG (such as economic and human development, international and domestic peace, environmental sustainability, gender equality, and satisfied, trusting & confident citizens).	<a href="http://www.qog.pol.gu.se/data/">http://www.qog.pol.gu.se/data/</a>
Multiculturalism Policy Index	21 western democracies	1980, 2000 and 2010	Different indicators on multiculturalism policies	<a href="http://www.queensu.ca/mcp/index.html">http://www.queensu.ca/mcp/index.html</a>
Ethnic Power Relations dataset	155 countries	Annual data from 1946 to 2005	It identifies 733 politically relevant ethnic groups in 155 sovereign states from 1946 to 2005, provides group size estimates, codes the level of access to the executive branch by representatives of these groups in each year, and notes if an armed conflict was fought in the name of a particular ethnic group	<a href="http://www.epr.ucla.edu/">http://www.epr.ucla.edu/</a>

**Table 3.1.4. Variables considered in Beenstock and Felsenstein (2013) (1/3)**

Variable	Unit	Definition	Source	Link
Immigration stock	Persons	Stock of persons born in country A living in country B at time t	World Bank - Global Bilateral Migration Database	<a href="http://data.worldbank.org/data-catalog/global-bilateral-migration-database">http://data.worldbank.org/data-catalog/global-bilateral-migration-database</a>
Immigration flow	Persons	Stock of persons born in country A living in country B at time t minus stock of persons born in country A living in country B at time t-1	World Bank - Global Bilateral Migration Database	<a href="http://data.worldbank.org/data-catalog/global-bilateral-migration-database">http://data.worldbank.org/data-catalog/global-bilateral-migration-database</a>
GDP	U.S. Dollars, current prices	Gross domestic product per capita	IMF - World Economic Outlook Databases	<a href="http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/download.aspx">http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/download.aspx</a>
Education expenditure	%	Public expenditure per pupil as a % of GDP per capita	UNESCO	<a href="http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=143&amp;IF_Language=en_g">http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=143&amp;IF_Language=en_g</a>
Inequality	Gini coefficient		OECD	<a href="http://stats.oecd.org/">http://stats.oecd.org/</a>
Social expenditure	U.S. Dollars, constant (2000) PPPs	Expenditure per head	OECD	<a href="http://stats.oecd.org/">http://stats.oecd.org/</a>
Common language	-	Common official language	CEPII Geodist dyadic dataset	<a href="http://www.cepii.fr/anglaisgraph/bdd/distances.htm">http://www.cepii.fr/anglaisgraph/bdd/distances.htm</a>
Distance	Km	Simple distance between most populated cities	CEPII Geodist dyadic dataset	<a href="http://www.cepii.fr/anglaisgraph/bdd/distances.htm">http://www.cepii.fr/anglaisgraph/bdd/distances.htm</a>
Labour Market Mobility	Index	Experts index on the Labour Market Mobility of immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Family Reunion	Index	Experts index on the possibility of family reunion of immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Education	Index	Experts index on the special attention given to immigrants needs in the education system	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>



**Table 3.1.4. Variables considered in Beenstock and Felsenstein (2013) (2/3)**

Variable	Unit	Definition	Source	Link
Political Participation	Index	Experts index on the level of political participation of immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Long Term Residence	Index	Experts index on the long term residency possibilities for immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Access to Nationality	Index	Experts index on access to nationality possibilities for immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Anti-Discrimination	Index	Experts index on anti-discrimination regulations to protect immigrants	MIPEX – Migrant Integration Policy Index	<a href="http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx">http://www.mipex.eu/sites/default/files/downloads/mipexrawdata_final_13_02_2012.xlsx</a>
Toleration of residence	Index	Index based on policy options for persons not removed due to practical or technical obstacles	FRA (European Union Agency for Fundamental Rights) - Fundamental rights of migrants in an irregular situation in the European Union	<a href="http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf">http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf</a>
Crime	Index	Index based on whether irregular entry/stay considered a crime?	FRA (European Union Agency for Fundamental Rights) - Fundamental rights of migrants in an irregular situation in the European Union	<a href="http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf">http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf</a>
Housing	Index	Index based on the level of punishment for renting shelter to migrants in an irregular situation	FRA (European Union Agency for Fundamental Rights) - Fundamental rights of migrants in an irregular situation in the European Union	<a href="http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf">http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf</a>

**Table 3.1.4. Variables considered in Beenstock and Felsenstein (2013) (3/3)**

Variable	Unit	Definition	Source	Link
Healthcare	Index	Index based on the general healthcare entitlements for migrants in an irregular situation	FRA (European Union Agency for Fundamental Rights) - Fundamental rights of migrants in an irregular situation in the European Union	<a href="http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf">http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf</a>
Education	Index	Index based on the right to education for undocumented children	FRA (European Union Agency for Fundamental Rights) - Fundamental rights of migrants in an irregular situation in the European Union	<a href="http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf">http://research.icmpd.org/fileadmin/Research-Website/FRA/FRA_irregular_migration/Final_Reports-FRA_published_2011/FRA_2011_Migrants_in_a_n_irregular_situation_EN.pdf</a>
Apprehensions	%	% of the number of foreign nationals apprehended/found to be illegally staying vs. the migrant stock in the destination country	EMN (European Migration Network) - Annual Report on Migration and International Protection Statistics 2003-2009	<a href="http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics">http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics</a>
Refusals	%	% of the number of foreign nationals refused entry vs. the migrant stock in the destination country	EMN (European Migration Network) - Annual Report on Migration and International Protection Statistics 2003-2009	<a href="http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics">http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics</a>
Removed	%	% of the number of foreign nationals removed vs. the migrant stock in the destination country	EMN (European Migration Network) - Annual Report on Migration and International Protection Statistics 2003-2009	<a href="http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics">http://emn.intrasoft-intl.com/Downloads/prepareShowFiles.do?entryTitle=2%2E%20Annual%20Reports%20on%20Migration%20and%20International%20Protection%20Statistics</a>

### 3.2.2. Task 3.2: Returns to human capital and workers mobility from and to neighbouring regions

The objective of this task is to analyse differences in the return to human capital as a potential explanatory factor of workers mobility from and to the neighbouring countries. Taking this into account, research papers within task 3.2 make intensive use of microdata from different sources.

In particular, Ramos et al. (2013) use microdata from the European Commission, Eurostat, cross-sectional EU-SILC 2004 to 2010 database made available by Eurostat under contract EU-SILC/2012/17. To conduct their analysis, they use the most recent waves of the EU Statistics on Income and Living Conditions (EU-SILC) which provide comparable microdata for the member states of the European Union. In particular, the EU-SILC cross sectional files for 2004, 2005, 2006, 2007, 2008, 2009 and 2010 are used in the empirical analysis

([http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/eu\\_silc](http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/eu_silc)). Although the dataset provides information for 26 EU countries (Malta is not included) plus Iceland and Norway, only 22 EU countries were considered. In particular, they exclude from the analysis Bulgaria, Poland, Romania and the Slovak Republic because the presence of immigrants is very low. This data set provides detailed information on foreign-born, education, wages and other personal and job characteristics that make it an appropriate data set for their study that was focused on estimating returns to human capital for native and immigrant workers. Regarding variables related to human capital, they focus their attention in the role of formal education, although they also control for potential experience including age and the squared of age as explanatory variables in our model. One shortage of the EU-SILC database is that it does not provide information about the age at arrival to the host countries that would have permitted to calculate years since migration and to differentiate actual experience in the home and in the host countries. Coming back to formal education, instead of converting the information on educational levels available in the EU-SILC into schooling years, they chose to construct three different educational levels: no education, primary education and low-secondary education; upper-secondary education and tertiary education. Their objective was to minimize the potential measurement errors when converting information from different educational systems (not only among EU countries but also between the different home countries of immigrants) into schooling years. Regarding the measurement of the earnings variable, for all of the analysed countries they use the variable "Cash or near cash

income received in the main and any secondary or causal jobs including social contributions and income taxes" which reflects gross income. However, the collected information between countries slightly varies. In particular, gross monthly wages are facilitated for Austria, Spain, Greece, Italy, Portugal and United Kingdom, while for the rest of countries data on gross annual wages is provided but we convert it to monthly wages. All monthly wages have been deflated using national indexes on purchasing power parities for actual individual consumption provided by Eurostat. Additional data is also used in order to control for different national migration policies. With this aim they used the MIPEX 1.3 index for the period 2007-2010 which focuses on "Targeted Support for Labour Mobility". This index goes from 0 to 100, with lower values indicating more unfavourable policy frameworks for immigrants and it is freely available from [www.mipex.eu](http://www.mipex.eu).

Nieto et al (2012) use microdata from the European Commission, Eurostat, AES 2007 database made available by Eurostat under contract AES/2012/06. The Adult education Survey is a survey addressed to private households with members between 25 and 64 years old

([http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/adult\\_education\\_survey](http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/adult_education_survey)). The survey has been carried out in 29 countries between 2005 and 2008 and the reference year is set at 2007. The main objective of the survey is to study lifelong learning, that is, those training and learning activities that the adult population performs with the objective of improving or extending their knowledge, skills and competences, from a personal, civil, social or work-related perspective. This database is particularly appropriate for their analysis because is the only one that allows to measure both vertical and horizontal mismatch in a homogeneous way for a wide set of European Union countries and to make comparisons between immigrant (from EU countries and from non-EU countries) and native workers. The variables used in their analysis are related to personal and job characteristics. As for personal characteristics, they use information related to gender, age, nationality, years of residence in the host country, number of members of the household, children at home, level and type of education and participation in non-formal education activities during the last 12 months. As for job characteristics, they consider information about tenure in the current firm, type of contract (permanent or not), part-time job, the economic activity of the firm, and the size of the firm. Last, we consider information about the country of residence.

Last, Motellón and López-Bazo (2012) used data included in the Spanish wave of the LFS ([http://www.ine.es/prodyser/micro\\_epa.htm](http://www.ine.es/prodyser/micro_epa.htm)) during the period between the first

quarter of 2008 and the first quarter of 2009. They selected this period with the aim of comparing the probabilities of job loss just before the impact of the crisis in the Spanish labour market, in mid-2008, and when it started to exert a strong effect, from the last quarter of 2008. The LFS, produced by the Spanish National Office for Statistics (INE), provides information on the personal characteristics of individuals as well as of the jobs and firms where they were employed. In addition, the LFS includes information that allows identifying immigrants by country of origin (and thus select those from developing countries and the ENC), irrespective of their legal status in Spain. This means that the sample they used in this study potentially represents both immigrants with legal status, and those in irregular legal situation. Thus, despite the limitations of this database in measuring the immigrant population (likely underestimating the number of immigrants) is probably the most appropriate one for the type of analysis we intended to do. The sample includes individuals aging between 16 and 60 years, in the Spanish territory with the exception of Ceuta and Melilla (two Spanish city regions in North Africa), whose main occupation was not military, business management, or public administration, and who did not have dual nationality. Since their focus is on immigrants from developing countries, those foreign nationals from North America, Oceania and other states members of the EU-15 were excluded from the sample. The object of study in their work lies in the probability that individuals in the sample had of losing or maintaining their jobs for a given quarter at the start of the crisis. This requires building job transitions (from employment to a different status in the labour market) by linking the information contained in the responses of individuals to some of the questions in the LFS questionnaire. The process begins by taking as reference a given quarter of the LFS (quarter  $t$ ), and classify individuals as employed or not. An individual would have kept her job during the quarter if being employed at  $t$  declares seniority higher than three months. By contrast, an individual would have lost her job during the quarter if not being occupied at  $t$ , the time since her last job indicates that the job loss took place not later than the previous quarter. To be included in the category of individuals that lost job, the individual has to meet two requirements: i) to have been a wage earner, and ii) not have stopped the job voluntarily. We therefore consider that lost their jobs only those individuals who were employed in quarter  $t-1$  but not in quarter  $t$ , either because they were unemployed, affected by an employment regulation order (the so-called ERE), or looking for a job but did not meet some of the conditions to be officially classified as unemployed. As a result of the process, they define a binary variable, job-loss, which is equal to 1 if the individual lost his job during the quarter, moving from being employed at time  $t-1$  to not occupied at time  $t$ , and 0 otherwise, i.e. when the individual was employed in period  $t-1$  and period  $t$ .

### **3.2.3. Task 3.3: Returns to human capital and workers mobility from and to neighbouring regions**

The objective of task 3.3 is to explore the factors that account for variation in remittance flows and if remittances contribute to human capital formation in neighbouring countries. As in previous task, research papers within this task make use of microdata from different sources.

Matano and Ramos (2013) use household data for 2008 coming from the CBSAXA Moldovan Household Survey provided by the Kiel Institute. They focus on household members of age comprised between 16 and 30, since 16 in Moldova is the age of compulsory education, while 30 represents a suitable age limit for the analysis on the impact on education. As variables of interest, we use as main independent variable a dichotomous variable which indicates whether a family receives remittances and, as main dependent variable, the education attendance of household members. Table 3.3.1 provides a detailed list and summary statistics of the variables used in the analysis of factors affecting human capital formation in Moldova.

Ramos and Matano (2013) consider the factors affecting remittance decisions and return migration of Moroccan immigrants in Spain. With this aim they use microdata from the National Immigrant Survey (hereafter, ENI). The ENI is a survey prepared by the Spanish National Statistics Institute in order to obtain detailed information on the international nature of immigration in Spain, supplementing information gathered from regular sources of data (such as the Padrón Municipal, the Encuesta de Variaciones Residenciales, the Encuesta de Población Activa or the Censo de Población), which provide partial information on the characteristics of immigration. The ENI covers all of the national territory of Spain and the data collection was conducted between November 2006 and February 2007 based on the Spanish Population Register (Padrón Municipal, using the week prior to the interview as reference period). The survey was addressed to foreign-born individuals who (intend to) live in Spain for at least one year and the original survey sample comprises approximately 15,500 individuals. The ENI provides detailed information on the sociodemographic characteristics of immigrants (e.g., age, gender, nationality, country of birth, marital status, education, legal status, and year of arrival in Spain), on their current work situation but also about their behaviour regarding remittances and their ties with origin countries. Microdata from the survey are freely available at [http://www.ine.es/prodyser/micro\\_inmigra.htm](http://www.ine.es/prodyser/micro_inmigra.htm).

**Table 3.3.1. Variables used in Matano and Ramos (2013)**

Variable	Remittance Family		No-Remittance Family		Type of Variable
	Obs.	Mean	Obs.	Mean	
Individual characteristics:					
age	853	21.81	334	21.57	discrete
gender (=2 female)	853	1.60	334	1.57	binary
education attainment	838	2.03	330	1.95	ordered
education attendance (dicotomic)	853	0.48	334	0.40	binary
citizenship	852	1.08	332	1.03	discrete
marital status:					
- single	852	0.68	332	0.69	binary
- married with spouse from RM	852	0.28	332	0.28	binary
- married with foreign spouse	852	0.02	332	0.02	binary
- widow	852	0.00	332	0.00	binary
- separate/divorced	852	0.02	332	0.01	binary
- cohabiting	852	0.01	332	0.00	binary
Household characteristics:					
- Composition					
size of the household	853	5.08	334	5.46	discrete
n. child <5 years old	853	0.29	334	0.37	discrete
n. adults	853	2.36	334	2.29	discrete
n. of male adults	853	0.87	334	0.98	discrete
- Education					
average education attainment of the household	853	1.62	334	1.65	ordered
education level household head	853	1.95	334	1.86	ordered
education level household spouse	853	1.57	334	1.67	ordered
education level of the migrant	652	2.14	332	2.05	ordered
- Wealth					
car	853	0.33	334	0.24	binary
land	853	0.74	334	0.81	binary
pc	846	0.25	334	0.21	binary
incomeclass	829	3.79	321	3.18	ordered
- Location					
urban	853	0.29	334	0.20	binary

The range of questions on immigration covered by the survey is very wide comprising, among others, immigrant household structure and accommodation characteristics; family and social networks and various aspects of their migration experience. The ENI defines immigrants as any individuals born abroad (regardless of



whether they have Spanish nationality or not) who at the time of doing the interview had reached at least 16 years of age and had resided in Spain for a year or longer (or, alternatively, in the case of individuals with less than one year's residence in Spain, had the intention to remain there for at least a year). The only exception is individuals born outside Spain who have possessed Spanish nationality from birth, but had not reached two years of age by the time of arrival in Spain. In that case, Spain was considered as their country of origin. This definition of immigrant meant, among other circumstances, that individuals born abroad but with Spanish nationality are considered immigrants, while foreign nationals born in Spain are not. Hence, this approach excludes individuals born in Spain of foreign immigrants, even if their nationality is not Spanish. It also excludes Spanish emigrants who have returned to Spain. Regarding remittances, two different but related variables are considered in their analysis: first, a dummy which indicates whether a migrant remits or not and, second, the amount of remittances sent. The first variable takes the value of one (remit) whether the migrant gives a positive answer to the question "Do you sent money out of Spain?" while the second variable is defined as the logarithm of the total amount of money sent overseas during the year 2007. Human capital is proxied in two different ways: first, the information on schooling levels has been recoded as the number of finished schooling years and, second, the different schooling levels have been grouped in 3 categories: primary studies, secondary studies and tertiary studies. This second specification permits us to avoid the critique related to the potential non-linearity of human capital. In relation to permanent and temporary migration, our data set only provides information on return intentions rather than realized returns. However, Dustmann and Mestres (2011) argue that the history of return intentions represent the optimal data source for modelling the effect of return migration on economic decisions in the host country, such as labour supply, since the economic behaviour is determined by intentions, not by the realizations. On the other hands, intentions are less appropriate to model return determinants and durations, since migrants are likely to adjust their plans over the course of their migration, but this was not their objective. The data set allows to consider whether the immigrants' plans are to stay in Spain, to return to their country in the next 5 years or to move to a third country in the same period of time. In their analysis, they consider two dummy variables related to the last two categories: return migration and circular or repeated migration. Other variables employed in the empirical analysis include gender, age, marital status, whether the spouse is living abroad, the number of children in the household and those abroad, the years since the migration, the employment status and the annual income. In addition, a variable has been devised to capture immigrants' legal status, reflecting whether or not they have documents to



become legally contracted employees under current Spanish law. We have also considered whether the immigrant asked for a loan in origin country when migrating, if there are plans to bring family to Spain, if they are in touch with family at the origin country and if they are owners of dwelling in Spain. Last, they also consider in the empirical analysis the province of residence in Spain to account for potential differences in the regional labour market of the immigrant. Table 3.3.2 provides a detailed list and summary statistics of the variables used in the analysis of factors affecting remittance behaviour of Moroccan immigrants in Spain.

Last, Ibourk and Chamkhi (2013) have used microdata from the MIREM survey that was conducted in the North African region on a sample composed of 992 emigrants, who have chosen to go back to their native countries (Algeria: 332, Morocco: 330 and Tunisia: 330). The structure of questionnaire attempted to underline a biographical analysis via the determination of different stages through which the emigrant underwent during his career; that is, starting from the preparation for the migration project and its concretisation to settling down in the native country and infinite return. The richness of the context (566 variables to be raised) and the diversity of profiles of individuals as well as countries (national/regional dimension) make the MIREM survey an excellent platform for empirical studies on the effective mechanisms of returning among the North African emigrants while taking into account the different advanced theoretical conceptions. The structure of the questionnaire comprises three steps: the situation in the native country before departure; the time spent in the Main Country of Immigration (MCI); and, the returning to the native country.

**Table 3.3.2. Variables used in Ramos and Matano (2013)**

	All immigrants		Developed countries		Developing countries		Ecuador		Romania		Morocco	
	Mean	Sd	mean	sd	Mean	sd	mean	sd	mean	sd	mean	sd
Remit	0.416	0.493	0.0441	0.205	0.532	0.499	0.659	0.475	0.597	0.491	0.42	0.494
Amount remitted	1,922	2,577	3,613	7,464	1,880	2,317	2,268	2,847	1,387	1,964	1,509	1,656
Annual income	12,946	8,574	16,558	11,523	11,983	7,303	11,368	4,118	10,660	4,966	11,864	4,623
Return migration	0.0695	0.254	0.0255	0.158	0.0832	0.276	0.148	0.356	0.0818	0.274	0.0133	0.115
Circular migration	0.0114	0.106	0.0145	0.119	0.0104	0.101	0.0107	0.103	0.00798	0.0891	0	0
Schooling years	11.03	3.306	11.61	3.241	10.85	3.305	9.588	3.139	10.45	2.779	8.06	3.843
Primary education	0.167	0.373	0.134	0.341	0.177	0.382	0.363	0.481	0.162	0.369	0.36	0.481
Secondary education	0.588	0.492	0.534	0.499	0.604	0.489	0.554	0.498	0.747	0.435	0.417	0.494
Tertiary education	0.218	0.413	0.317	0.466	0.187	0.39	0.0708	0.257	0.0679	0.252	0.0667	0.25
Male	0.461	0.499	0.473	0.499	0.458	0.498	0.485	0.5	0.497	0.5	0.64	0.481
Age	35.49	10.59	40.13	11.2	34.03	9.951	31.28	9.254	31.61	9.532	31.49	10.87
Married	0.515	0.5	0.525	0.499	0.511	0.5	0.489	0.5	0.599	0.491	0.56	0.497
Spouse living abroad	0.0518	0.222	0.0133	0.115	0.0638	0.244	0.0494	0.217	0.0419	0.201	0.0833	0.277
Children living in Spain	0.764	0.997	0.753	0.941	0.768	1.013	1.251	1.305	0.916	1.057	1.167	1.569
Children not living in Spain	0.449	0.952	0.349	0.809	0.48	0.991	0.474	0.94	0.307	0.714	0.243	0.87

								8				2	
Years since migration	8.95	10.43	16.47	12.9	6.591	8.219	4.908	2.668	2.98	1.976	7.487	7.133	
Legal status	0.86	0.347	0.997	0.0584	0.817	0.386	0.918	0.274	0.525	0.5	0.903	0.296	
Employed	0.691	0.462	0.642	0.48	0.706	0.455	0.725	0.447	0.747	0.435	0.567	0.496	
Having a loan in origin country	0.111	0.314	0.00266	0.0516	0.145	0.352	0.303	0.46	0.156	0.363	0.0767	0.267	
Plans to bring the family	0.261	0.439	0.0441	0.205	0.329	0.47	0.421	0.494	0.188	0.391	0.43	0.496	
Keeping in touch with family	0.904	0.295	0.792	0.406	0.939	0.24	0.974	0.159	0.974	0.159	0.957	0.204	
Owner of dwelling in Spain	0.305	0.46	0.553	0.497	0.227	0.419	0.27	0.445	0.11	0.313	0.18	0.385	
Developed country	0.239	0.426											
Developing country	0.761	0.426											
Ecuador	0.0423	0.201											
Romania	0.0455	0.208											
Morocco	0.0272	0.163											
Observations	11,013		2,628		8,385			466		501		300	

### 3.2.4. Task 3.4: Return migration, entrepreneurship and the mobility of inventors

The objective of task 3.4 was to explore how schooling and work experience acquired by immigrants in the destination countries can affect economic growth in their sending regions.

Most working papers in this task use patent information as a way of following inventors across space. Patent information was obtained from REGPAT database (OECD, January 2010 edition). In spite of the vast amount of information contained in patent documents, there is no single ID for each individual inventor. To be able to trace the mobility history of inventors, it is needed to identify them individually by their name and surname, as well as via other useful information contained in the patent document. With this aim, the different papers by Moreno and Miguélez followed Miguélez and Gómez-Miguélez (2011)<sup>4</sup>, who, in line with a growing number of researchers in the field, use different heuristics for singling out individual inventors using patent documents (see SEARCH WP3/12- Ernest Miguélez, Rosina Moreno, 2013a). The variables proxying for the concepts of Mobility and Research networks are obtained as shown in SEARCH WP3/12 and SEARCH WP3/13 (see Miguélez and Moreno (2013a, b), after the information cleaned from the patent documents. Table 3.4.1, describes the specific data used in WP3/12 and WP 3/13; table 3.4.2 summarises specific data in WP3.14 and WP3.15 (Miguélez and Moreno (2013c,d), and table 3.4.3 shows the data used in WP3.16 (Miguélez and Moreno (2013e).

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<sup>4</sup> Miguélez, E.; Gómez-Miguélez, I. 2011. "Singling out individual inventors from patent data," Working Papers XREAP2011-03.

**Table 3.4.1. Specific data in Miguélez and Moreno (2013a, b)**

Variable	Proxy	Source
Patents per capita	Patents per million inhabitants	REGPAT and Eurostat
R&D stock p.c.	Stock of R&D p.c. (euros per 1000 inhabitants). Perpetual inventory method using R&D expenditure	Eurostat
Human capital	HRST (Occupations) to total population	Eurostat
Mobility	Average no. assignees per inventor	REGPAT and OECD HAN
Absolute connectivity	Absolute number of edges	REGPAT
Relative connectivity	Number of edges to no. of inventors	REGPAT
Size of largest component	% inventors in the largest component	REGPAT
Network density	$DENS_i = \frac{T}{Q(Q-1)/2}$	REGPAT
GVA per capita	Gross value added per capita	Eurostat
Population density	Population over total area (km <sup>2</sup> )	Eurostat
Specialisation Index	$SpIn_{it-1} = \frac{1}{2} \sum \left  \frac{PAT_{ij}}{PAT_i} - \frac{PAT_{Nj}}{PAT_N} \right $	REGPAT
Technological firms	No. of assignees to manufacturing establishments	REGPAT and Eurostat
Manufacturing	Share of manufacturing employment	Eurostat
% Organic chemistry	Share of patents in IPC chemistry	REGPAT
% Pharmaceuticals	Share of patents in IPC pharmaceuticals	REGPAT
% Biotechnology	Share of patents in IPC biotechnology	REGPAT
Outside collaborators	No. of inventors outside a region co-authoring patents with inventors inside the region	REGPAT
Inward Migration Rate	No. of inflows to no. of inventors	REGPAT

**Table 3.4.2. Specific data in Miguélez and Moreno (2013c, d)**

Variable	Proxy	Source
Patents	Patents, fractional count, 3-year moving average	REGPAT January 2010 edition
R&D	R&D expenditures (in euros), 3-year moving average	Eurostat
Human capital	Total population with tertiary education	Eurostat
Mobility	Share of multi-patent inventors with more than one applicant	REGPAT January 2010 edition
Average degree centrality	Average number of personal links in the form of co-patents per inventor	REGPAT January 2010 edition
Connectivity	Share of multi-patent inventors with at least 1 co-inventor	REGPAT January 2010 edition
Network density	$\text{DENS}_{it} = \frac{T_{it}}{Q_{it}(Q_{it} - 1)/2}$	REGPAT January 2010 edition
Net Migration Rate	Inflows minus outflows of inventors to the local no. of inventors	REGPAT January 2010 edition
Inward Migration Rate	Inflows of inventors to the local no. of inventors	REGPAT January 2010 edition
Gross Migration Rate	Inflows plus outflows of inventors to the local no. of inventors	REGPAT January 2010 edition
Outward Migration Rate	Outflows of inventors to the local no. of inventors	REGPAT January 2010 edition
Cross-regional networks	No. of patents, fractional count, co-authored with outside inventors, to the local no. of inventors	REGPAT January 2010 edition
Cross-regional networks – Europe (ESPON countries)	No. of patents, fractional count, co-authored with inventors from the remaining ESPON regions, to the local no. of inventors	REGPAT January 2010 edition
Cross-regional networks – US	No. of patents, fractional count, co-authored with inventors from the US, to the local no. of inventors	REGPAT January 2010 edition
Cross-regional networks – China, Japan and India	No. of patents, fractional count, co-authored with inventors from China, Japan and India, to the local no. of inventors	REGPAT January 2010 edition
Cross-regional networks – remaining OECD countries	No. of patents, fractional count, co-authored with inventors from remaining OECD countries, to the local no. of inventors	REGPAT January 2010 edition
Specialisation Index	$\text{SpIn}_{it} = \frac{1}{2} \sum_j \left  \frac{\text{PAT}_{ijt}}{\text{PAT}_{it}} - \frac{\text{PAT}_{Cjt}}{\text{PAT}_{Ct}} \right $	REGPAT January 2010 edition
Concentration index	$\text{ConIn}_{it} = \sum_{jt} \left( \text{PAT}_{ijt} / \text{PAT}_{jt} \right)^2$	REGPAT January 2010 edition
% Organic	Share of patents in IPC chemistry	REGPAT

chemistry		January 2010 edition
% Pharmaceuticals	Share of patents in IPC pharmaceuticals	REGPAT January 2010 edition
% Biotechnology	Share of patents in IPC biotechnology	REGPAT January 2010 edition

**Table 3.4.3. Specific data in Miguélez and Moreno (2013e)**

Variable	Proxy	Source
Inventors' flows	Counts of flows from home to host region	REGPAT and own calculations, and PATSTAT-KITeS
Geographical distance	Euclidean distance between UTM regional centroids	GIS
Geographical distance	Great circle distance	GIS
Geographical distance	Driving distance in km	Google Maps and SAS
Geographical distance	Driving distance in time (seconds)	Google Maps and SAS
Contiguity	1: contiguity; 0 otherwise	GIS
Social proximity	$A_{ij} = I_{ij} / n_i$	REGPAT and own calculations
Institutional distance	1: dif. country; 0 otherwise	
Technological distance	$1 - \left( \frac{\sum f_{ik} f_{jk}}{(\sum f_{ik}^2 \sum f_{jk}^2)^{1/2}} \right)$	REGPAT and own calculations
Language similarity		Ethnologue Project
Excellence	1: share HRST (core) of active population over the mean in both regions; 0 otherwise	Eurostat
Inventors	# inventors in origin and destination regions	REGPAT and own calculations
Population	Population in origin and destination regions	Eurostat
Border_d	Border with a foreign country	ESPON
Time2Brussels_d	Time (in seconds) from the regions' centroids to Brussels	Google Maps and SAS
HRST_d	Human Resource in Science and Technology (core) over active population	Eurostat
Population Density_d	Population over area (km <sup>2</sup> )	Eurostat
Average temperature_d	Average temperature in January (degrees Fahrenheit)	FOODSEC project, MARS units, EC-JRC
Coast_d	1: if the region has a coast; 0 otherwise	ESPON

**Notes:** 'o' and 'd' stand for origin-region and destination-region variables, respectively.



Last, Chepureenko (2013) use ad-hoc survey data to analyse Russian researcher migration to the EU supported by international science foundations. In particular the project "Reproduction of academic elite in Russia: contribution of foreign science foundations (A. Humboldt Foundation case)" supported by Moscow Scientific Foundation and A. Humboldt Foundation in cooperation with SU HSE was carried out in 2003-2004 with the aim of analysing the causes, mechanisms and effects of highly qualified researcher migration from Russia to EU countries. The outcomes of the project survey suggest a number of conclusions relative to the Humboldt Foundation (and western science foundations at large) as to the mechanism of reproduction of Russia's elite academic talent. In autumn 2012 and in the framework of the SEARCH project additional expert survey was conducted to analyse some selected cases of researchers' circulation between the EU countries (Germany) and Russia and to assess the role of cross-border researchers' interaction in the context of growing internationalization and globalization. The objective was to analyse whether the deep inclusion into international academic community is preventing or stimulating the brain drain in these countries. The case of Russia seemed to be an appropriate case in this context. Basing on a special survey (2004) and expert interviews (2012) it became possible to check the changes in the cross-border mobility and its impact on the academic environment in Russia.

### **3.2.5. Task 3.5: Migration and social capital**

The objective of this task is to analyse to analyse the influence of migration flows and attitudes towards ethnic diversity on social capital formation and thus, on EU regions' economic growth.

The analysis by Demidova and Paas (2013) is based on the European Social Survey (ESS) fifth round database (2010-2011) (<http://www.europeansocialsurvey.org/>). This is an academically-driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations. The ESS contains rich information on individual features such as age, sex, education, income, and other socio-demographic characteristics. We use part of this information as independent variables in our empirical analysis. The ESS also contains series of questions regarding the attitude of individuals to immigrants. People's attitudes towards immigrants are reflected by three questions asking opinion about the role of immigrants in country's economy, culture and living place. The authors used the answers to these questions as the

dependent variables in our regression models using corresponding abbreviations "Economy", "Culture" and "Living\_Place". The set of explanatory variables includes individual characteristics of the respondents: age, age squared, gender, income, education, labour market status, religiosity, citizenship and ethnic group

Parts (2013) carries out an empirical analysis using the European Values Survey (EVS) 4th wave data, which were collected mostly in year 2008 (for some countries in 2009) and were available since year 2010 (EVS 2010). EVS database was preferred to most often used European Social Survey (ESS) data because the former includes the information for much higher number of EU neighbouring countries. In the context of this paper, another advantage of using EVS stems from the fact that it covers larger variety of immigration attitudes (8 items as opposed to only 3 in ESS). However, as EVS is performed only in every 9 years (ESS in every second year) and earlier rounds did not cover so many neighbouring countries and new member states, it was not possible to investigate the changes in immigration attitudes and social capital over time. This should be considered as a limitation of the current study. Altogether the sample includes information of 20 Western European countries (WE) including 15 "old" EU members plus 5 other countries from the region, 12 new member states including 10 post-communist countries from Central and Eastern Europe plus Cyprus and Malta, and 15 neighbouring countries (NC), mostly from CIS and Balkan. Total sample includes more than 66 600 observations from 45 countries. However, the sample size of different country groups is rather different: there were approximately 27 800 respondents from WE, 15 200 from NMS and 23 600 from NC countries. Cross-section analysis combines the information from the above-defined three country groups and two population categories – immigrants and non-immigrants. There were two possible proxies to distinguish between immigrant and non-immigrant population in EVS dataset. The first is answer to the question "Have you born in country?" and the second "Do you have country's nationality?"

Last, using a standard education production function setting, Di Liberto (2013) investigates whether the length of stay in the host country play a role in the school outcomes of immigrant students in Italy. With this aim, she uses the database provided by the National Institute for the Evaluation of the Educational System of Instruction and Training (INVALSI henceforth), a government agency that carries out a yearly evaluation of students' attainment in both Mathematics and Language. Since the focus of her analysis is on language skills of immigrant students she only uses the results on the language test that covers the domains of Italian (reading

comprehension, knowledge of the language, grammar). In general, INVALSI test are similar to the PISA standardized tests since their aim is to measure how far students have acquired some of the knowledge and skills essential for full participation in the knowledge society. However, unlike PISA, since 2010 the INVALSI standardized tests are compulsory for all Italian schools and students, both public and private, attending specific grades of schooling. In her analysis she uses the 2010-11 school-year data for four levels of schooling: second and fifth grade of primary school, sixth grade of lower secondary school and tenth grade upper secondary school. The INVALSI questionnaire is designed to collect detailed information not only on students standardized test results but also about a significant number of student's background and family characteristics. In particular, this information is collected through a separate 'Family Questionnaire' sent to each family before the test, and a 'Student Questionnaire' filled by each student the first day of the test. This dataset permits to distinguish between Italian and non-Italian students. It is important to note that this classification refers to a pure citizenship criterion and that, unlike other countries, in Italy this follows the *Ius sanguinis* rule that states that individuals (and their citizenship) belonged to a family and not to a territory. For immigrant students she uses a standard approach and separately classifies first generation students, that is, students born abroad of foreign-born parents, from second generation students, that is, native-born children of foreign-born parents.

### 3.2.6. Task 3.6: Case study on migration flows and people mobility

Tourism is a key industry in many ENPs and its importance in some of these countries cannot be overstated. Tourism is also a channel for wider socio-economic objectives. Since tourists may be sources of new ideas, types of demand and standards, tourism might generate positive externalities that increase efficiency and productivity in host countries. In this way tourism might serve as an important conduit for social and economic. The research by Beenstock et al. (2013b) examines the relationship between tourism and immigration. Ostensibly, tourism and immigration would seem to be independent over the short term since factors affecting tourism (airfare, substitute prices, habit persistence, exchange rate fluctuations and the like) would not seem to affect immigration. Similarly factors affecting immigration decisions (employment, social benefits etc) are unlikely to affect tourism. Over the longer term, however, matters may be different. There may also be common factors such as terror and geo-political upheaval that have mutual and reciprocal impacts. Taking this

into account, they investigate the relationship between tourism and immigration using time series (1960 – 2011) and panel data (1978-2011). The variables considered in the analysis are tourism flows, the stock of immigrants, global tourism and real exchange rates.

Annual data on tourists entering Israel is published by the Israeli Central Bureau of Statistics (CBS 2012c) ([http://www1.cbs.gov.il/reader/shnatonenew\\_site.htm](http://www1.cbs.gov.il/reader/shnatonenew_site.htm)). Since 1980, this is available by continent of origin. They distinguish between stock of immigrants defined as residents born abroad (Foreign-born) and flow of immigrants (termed 'immigrants'). The source of both series is the Annual Statistical Abstract of Israel (CBS). Global tourism is represented by International Tourism Receipts in constant \$USb ([http://stats.areppim.com/stats/stats\\_itr.htm](http://stats.areppim.com/stats/stats_itr.htm)). The source for this series is UNWTO (2012). Last, the real exchange rate is calculated as the shekel- US dollar exchange rate multiplied by the ratio of the CPI (consumer price index) for industrialized countries (IC's) divided by Israel's CPI ([http://www1.cbs.gov.il/reader/prices\\_db/PricesDB\\_E.html](http://www1.cbs.gov.il/reader/prices_db/PricesDB_E.html)). The source of this data is the Bank of Israel, Israeli CPI comes from the CBS database (CPI 2005=1.0) and IC CPI comes from the IMF IFS database (2005=1.0) (<http://elibrary-data.imf.org/DataExplorer.aspx>).

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### **Task 3.6 Case study on migration flows and people mobility**

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## **4. Work Package 4: Technological Activities and Innovation Diffusion in the EU and Interactions with the Neighbouring Regions**

### **4.1. Introduction**

The general objective of Work Package 4 is to investigate on the innovative performance of countries and regions in the European Union (EU27) and in the 16 European Neighbouring Countries (ENC). We aim at understanding to what extent this performance depends on the one hand on the endogenous ability in knowledge creation and on the other hand on the absorptive capacity to adopt and imitate other regions' innovations taking advantages of various form of research and technological networks.

In particular we analyse how internal and external factors (such as human capital, social capital, institutions, public policies, spatial spillovers) affect the innovation activities and, consequently, the regional economic performances. Moreover, we focus on the process of innovation diffusion and research networking in order to assess to what extent the EU and EN countries have established valuable collaboration procedures. Throughout the analysis we devote specific attention to the economic dynamics of those countries (and regions) which have recently entered the EU (EU12) in order to conjecture on the evolution process which may involve in the near future the neighbouring countries due to the reinforcement of the integration process. In all the research activities we have tried to derive useful policy recommendations at both the European and the EN countries level.

In order to widely explore all the issues presented above, researchers make use of several methodologies. Descriptive analysis is accompanied by parametric and non-parametric methods. Among the parametric methods a large set of econometric tools have been employed (i.e. econometric estimation methods, spatial analysis, etc) while among the non-parametric methods, Data Envelopment Analysis. Moreover some results are obtained through qualitative analysis of empirical data collected through interviews. Finally, in order to clearly observe the relationships among people involved in the innovation process, some analysis takes advantage of Social Network Analysis (SNA) tools.



It is worth noting that with respect to the initial project proposal, in some parts of the research activity we had to change the territorial unit of analysis due to the lack of data for the ENC at the sub-national level. Moreover, the innovation activity, for most EN countries, is quite negligible and thus a regional breakdown would have been of limited significance.

In this section, we describe the data sources considered in the 29 working papers produced within this work package. The rest of the document is structured in five subsections, each of them related to specific tasks. Finally, in the Annex 4.1 we present a short statistical description of main indicators used.

## **4.2. Datasets used by tasks**

### **4.2.1. Task 4.1: Technological activities of countries and regions**

In this first task, which includes 7 working papers, researchers focus on the main determinants of innovation. Most important indicators for innovation have been collected in order to deeply describe the innovation endowment of European Neighbouring countries (ENC). Moreover, the same indicators have been collected for EU27 regions, if possible, in order to make comparisons with ENC.

As indicated previously, data collection has faced some problems related to the limited availability of data for ENC. Furthermore available indicators were not always comparable with the ones available for EU countries. This is because the data collection activity, essential for describing technological activities of countries and regions, has been very challenging. In any case, we were able to collect main indicators that are listed in the following pages (Table 4.1).

We choose to focus on the most widely used indicators in literature concerning technological activity and innovation endowment, i.e. research expenditure and personnel, patent activity but also indicators related with the socio-economic framework, very useful in order to make comparisons among countries. Some of these indicators are public but in some cases they are not. In any case, a brief description is included with the source indication.



**Table 4.1.1 - Main indicators and databases used in Task 4.1 research activity (1/4)**

Indicator name	Short Description	Territorial disaggregation	Source	Year(s)	Other Info
<b>R&amp;D expenditure</b>	Total intramural R&D Expenditures (all sectors) for research and development (both public and private) on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture, and society, and the use of knowledge for new applications.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on Worldbank data.	2000-2008 (average)	Links to main cited public data sources:  www.worldbank.org  ec.europa.eu/eurostat
		EU27 - Regional level (NUTS 2)	CRENoS elaboration on Eurostat data.	2000-2008 (average)	
		EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on Worldbank data.	2000-2008 (average)	
<b>R&amp;D Personnel</b>	Total R&D personnel (Total of sectors)	EU27 - Regional level (NUTS 2)	CRENoS elaboration on Eurostat data.	2000-2008 (average)	
<b>EPO Patents - applicant</b>	Patent applications to the EPO by applicant(s) country of residence by selected technology domains (ICT, biotechnology, nonotechnology, environment and total amount).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on European patent bulletin dataset.	2000-2008 (stock)	www.epo.org
<b>EPO Patents - inventor</b>	Patent applications to the EPO by inventor(s) country of residence by selected technology domains (ICT, biotechnology, nonotechnology, environment and total amount).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on European patent bulletin dataset.	2000-2008 (stock)	
		EU27 - Regional level (NUTS 2)	CRENoS elaboration on OECD data.	2000-2008 (stock)	www.oecd.org
<b>PCT Patents - applicant</b>	Patent applications filed under the PCT by applicant(s) country of residence by selected technology domains (ICT, biotechnology, nonotechnology, environment and total amount).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on European patent bulletin dataset.	2000-2008 (stock)	
<b>PCT Patents - inventor</b>	Patent applications filed under the PCT by inventor(s) country of residence by selected technology domains (ICT, biotechnology, nonotechnology, environment and total amount).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on European patent bulletin dataset.	2000-2008 (stock)	

**Table 4.1.1. Main indicators and databases used in Task 4.1 research activity (2/4)**

Indicator name	Short Description	Territorial disaggregation	Source	Year(s)	Other Info
<b>EPO Patents - cooperation</b>	Domestic ownership of inventions made abroad: number of patents owned by resident(s) of country x (applicant) that have been invented by at least one foreign resident (inventor) from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Foreign ownership of domestic inventions: number of patents invented by resident(s) of country x (inventor) that are owned by at least one foreign resident (applicant) from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Patents with at least a foreign co-inventor: number of patents invented by a resident of country x with at least one foreign inventor from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	EPO total patents invented by resident(s) of country x (inventor).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	EPO total patents owned by resident(s) of country x (applicant).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents with at least a foreign co-inventor.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents invented abroad.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents owned by foreign residents.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	

**Table 4.1.1. Main indicators and databases used in Task 4.1 research activity (3/4)**

Indicator name	Short Description	Territorial disaggregation	Source	Year(s)	Other Info
<b>PCT Patents - cooperation</b>	Domestic ownership of inventions made abroad: number of patents owned by resident(s) of country x (applicant) that have been invented by at least one foreign resident (inventor) from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Foreign ownership of domestic inventions: number of patents invented by resident(s) of country x (inventor) that are owned by at least one foreign resident (applicant) from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Patents with at least a foreign co-inventor: number of patents invented by a resident of country x with at least one foreign inventor from country y.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	EPO total patents invented by resident(s) of country x (inventor).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	EPO total patents owned by resident(s) of country x (applicant).	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents with at least a foreign co-inventor.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents invented abroad.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	
	Percentage of patents owned by foreign residents.	EU27 & NCs - Country level (NUTS 0)	CRENoS elaboration on OECD data.	2000-2008 (stock)	

**Table 4.1.1. Main indicators and databases used in Task 4.1 research activity (4/4)**

Indicator name	Short Description	Territorial disaggregation	Source	Year(s)	Other Info
<b>Human capital</b>	Population aged 15 and over with tertiary education (ISCED5-6) over total Population	EU27 - Regional level (NUTS 2)	Eurostat	2002-2004 (average)	
<b>Population Density</b>	Population per square km, thousands	EU27 - Regional level (NUTS 2)	Eurostat	2002-2004 (average)	
<b>Gross Domestic Product</b>	Value 1 for regions above the average and zero otherwise (GDP per capita)	EU27 - Regional level (NUTS 2)	Eurostat	2002-2004 (average)	
<b>Manufacture specialisation</b>	Manufacturing employment over total employment.	EU27 - Regional level (NUTS 2)	Eurostat	2002-2004 (average)	
<b>Settlement Structure Typology</b>	1= less densely populated without centres, 2=less densely populated with centres, 3=densely populated without large centres, 4=less densely populated with large centres, 5=densely populated with large centres, 6=very densely populated with large centres	EU27 - Regional level (NUTS 2)	ESPON project 3.1 BBR	1999	<a href="http://www.espon.eu/main/Menu_ToolsandMaps/ESPON2013Database/">http://www.espon.eu/main/Menu_ToolsandMaps/ESPON2013Database/</a>
<b>Indicators on Russian Manufacturing firms</b>	Survey data on a sample of Russian Manufacturing firms. The Survey has been conducted since 2005 to 2009 by the National Research University – Higher School of Economics.		National Research University – Higher School of Economics	2005-2009	
<b>Indicators on Incubator and Technoparks</b>	Data on Incubators and Technoparks located in 43 different countries that are the EU27 countries and the 16 ENCs.		Science Park and Innovation Center Association's (SPICA) Directory for 2010		
<b>B-Index</b>	The B-Index measure the effective average tax subsidy per dollar invested in R&D.		Thomson's paper (2009)	From 1980 to 2006	

#### **4.2.2. Task 4.2: Descriptive analysis of knowledge diffusion and research network**

Task 4.2, including 10 working papers, is devoted to the analysis and description of Knowledge diffusion and research networks. The identification of main channels through which knowledge diffuses will help to understand how to foster innovation clusters and research networks including EN countries.

For this reason, most of working papers, have focused European case studies that can be useful to analyse the ENC framework.

Also in this case, a huge effort has been made to collect data for ENC that could be comparable with EU27 indicators. Anyway, the most important indicators about innovation adoption, cooperation and co-patenting activity have been collected and they are presented in Table 2. Please note that data already used and described in Table 4.1.1 are not listed in Table 4.2.1.

Most parte of data belong to CIS database but, as it is possible to see in Table 4.2.1, there are also many indicators from OECD and Eurostat that are public and freely available. Also in this case, some of the databases are private and, then, not available for public use.

**Table 4.2.1. Main indicators and databases used in Task 4.2 research activity (1/5)**

Indicator name	Short Description	Source	Year(s)	Other Info
<b>Innovation adoption rate</b>	Share of adopting firms (in percentage of total number of innovatives firms)	CIS	2000	
<b>Cooperation-based adoption</b>	Share of innovatives firms which mainly cooperate for developing innovation	CIS	2000	
<b>Other organisation-based adoption</b>	Share of innovatives firms which rely on innovation developed mainly by others	CIS	2000	
<b>Product adoption</b>	Share of product adopting firms (in percentage of product innovative firms)	CIS	2000	
<b>Process adoption</b>	Share of process adopting firms (in percentage of process innovative firms)	CIS	2000	
<b>Involvement in Business Operations</b>	Weighted average of two regulation indicators: Price Controls and Use of command and Control regulation	PMR OECD	1998	
<b>State Control</b>	Overall index for Scope of public enterprise sector, Size of public enterprise sector, Direct control over business enterprise, Use of command & control regulation, Price controls	PMR OECD	1998	
<b>Regulatory and Administrative Opacity</b>	Overall index for: (License and permits system, Communication and simplification of rules and procedures, Administrative burdens for corporation, Administrative burdens for sole proprietor firms, Sector-specific administrative burdens)	PMR OECD	1998	
<b>Product Market Regulation</b>	Overall index of Product Market Regulation as in Conway, Janod and Nicoletti, (2005). The indicators are constructed from the perspective of regulations that have the potential to reduce the intensity of competition in areas of the product market where technology and market conditions make competition viable. They summarize a large set of formal rules and regulations that have a bearing on competition in OECD countries.	PMR OECD	1998	

**Table 4.2.1. Main indicators and databases used in Task 4.2 research activity (2/5)**

Indicator name	Short Description	Source	Year(s)	Other Info
<b>Working days spent to deal with Bureacracy</b>	Index of bureaucratic quality	PMR OECD	1998	
<b>Number of bodies to be contacted in order to run a business</b>	Index of bureaucratic quality	PMR OECD	1998	
<b>Sectoral and ad Hoc State Aid as a % of GDP</b>	Proxy for fair competition	Eurostat, Internal Market Scoreboard	1999	
<b>TDI indexes</b>	Number of EU regulations (according to areas) which have been transposed by each member state over the total	Eurostat	1999	
<b>Freedom to Trade</b>	Overall index for: taxes on international trade regulatory barriers, actual size of trade sector compared to its expected size, differences between official exchange rates and black-market rate and finally international capital market controls	Economic Freedom of the World Index		
<b>Legal Structure and Security of Property Rights</b>	Overall index for protection of property rights	Economic Freedom of the World Index	1995	
<b>Trust</b>	"Most people can be trusted" index in each country	World Social Survey	2000	
<b>Total R&amp;D expenditure</b>	Expenditure for innovation (only for innovatives firms and transformed with neperian logarithm)	CIS3	2000	
<b>Science and technology graduates</b>	Share of labor force in science and technology domain	CIS3	2000	
<b>Organizational changes</b>	% of innovative firms having implemented new or significantly changed organisational structures	CIS3	2000	
<b>Cooperation</b>	Share of innovative firms engaged in R&D cooperation	CIS3	2000	
<b>Markup</b>	Value-added as a share of labour and capital costs	Griffith et al. (2006)	1998	
<b>Trade</b>	Share of export sales (in percentage of the turn over)	CIS3	2000	

**Table 4.2.1. Main indicators and databases used in Task 4.2 research activity (3/5)**

Indicator name	Short Description	Source	Year(s)	Other Info
$PAT_i$	Number of patent applications to the European Patents office (EPO) by region of inventor (fractional counts)	Eurostat NewCronos database	1998-2002	
$PUB_i$	Number of publications in scientific journals in the Thomson ISI database (search criteria: article, letter, review)	RFK database (data processed by CWTS, Leiden University)	1998-2002	
$GRD_i$	Gross regional expenditures on R&D, in millions of Purchasing Power Standard (PPS) Euros, 1995 prices	Eurostat NewCronos database	1998-2002	
<b>Knowledge Potential</b>	The directly available knowledge from a region's partners. FKP is calculated for the binary FP network with accumulated R&D stock as knowledge levels. PATKPW is calculated for the weighted patent network with accumulated patent stocks as knowledge levels.	Authors' elaboration on FP5 administrative database, DG RTD, Dir A and OECD REGPAT database	1998-2002	
<b>Local Density</b>	The average number of links in a region's neighborhood. FPLD is calculated for the binary FP network, PATLDW is calculated for the weighted patent network.	Authors' elaboration on FP5 administrative database, DG RTD, Dir A and OECD REGPAT database	1998-2002	
<b>Global Embeddedness</b>	The structure of the network behind a region's immediate neighborhood. FPGE is calculated for the binary FP network, PATGEW is calculated for the weighted patent network.	Authors' elaboration on FP5 administrative database, DG RTD, Dir A and OECD REGPAT database	1998-2002	
<b>Ego Network Quality</b>	A comprehensive measure of network position. FPENQ is calculated for the binary FP network, FPENQW is calculated for the weighted FP network, PATENQ is calculated for the binary patent network and PATENQW is calculated for the weighted patent network.	Authors' elaboration on FP5 administrative database, DG RTD, Dir A and OECD REGPAT database	1998-2002	
$FPDEG_i$ / $PATDEG_i$	The number of a region's direct partners in the network. FPDEG is calculated for the binary FP network and PATDEG is calculated for the binary patent network.	Authors' elaboration on FP5 administrative database, DG RTD, Dir A and OECD REGPAT database	1998-2002	



**Table 4.2.1. Main indicators and databases used in Task 4.2 research activity (4/5)**

Indicator name	Short Description	Source	Year(s)	Other Info
PATSTCKN <sub>i</sub>	National patent stock corresponding to the given region	Authors' elaboration on Eurostat NewCronos	1998-2002	
PUBSTCKN <sub>i</sub>	National publication stock corresponding to the given region	Authors' elaboration on Eurostat NewCronos	1998-2002	
AGGL <sub>i</sub>	Index of agglomeration. Size-adjusted location quotient of employment in technology- and knowledge-intensive sectors: high and medium high technology manufacturing, high technology services, knowledge intensive market services, financial services, amenity services – health, education, recreation. For more details see Varga, Pontikakis and Chorafakis (2012)	Authors elaboration of Eurostat NewCronos	1998-2002	
Number of scientific publications	Number of scientific publications by affiliation's location.	PASCAL (INIST-CNRS)	2004-2008	
FP5 and FP6 participations and collaborations	R&D collaborations are observed from Framework Programme (FP) projects. The participation density (number of participations per 100 000 inhabitants) is analyzed.	PCRDT French Research Ministry (EuroLIO treatments)		
Patents filed by National offices	Patents filed by National offices	WIPO Statistics Database, december 2011	1995-2010	
Student mobility		UNESCO		
Number of patent applications	Number of patent applications to the European Patents office (EPO) by applicants' location.	OECD, REGPAT database, June 2012	1994-1998 2004-2008	

**Table 4.2.1. Main indicators and databases used in Task 4.2 research activity (5/5)**

Indicator name	Short Description	Source	Year(s)	Other Info
Indicators on Spanish firms	Innovation in Companies Survey, repeated cross-section produced by the Spanish National Institute for Statistics (INE) on a yearly basis. Actually, it is used to produce the Spanish wave of the CIS.	Spanish National Institute for Statistics (INE)	From 2002	More info available at the INE website <a href="http://www.ine.es/jaxi/menu.do;jsessionid=D898E9BDAC852DA13D19B963F0052DB4.jaxi01?type=paxis&amp;path=%2Ft14%2Fp061&amp;file=inebase&amp;L=1">http://www.ine.es/jaxi/menu.do;jsessionid=D898E9BDAC852DA13D19B963F0052DB4.jaxi01?type=paxis&amp;path=%2Ft14%2Fp061&amp;file=inebase&amp;L=1</a>
Indicators on firms' deals	Data on deals was retrieved from the SDC Platinum database (Thomson Financial) considering transactions between January 1st 2000 and December 31st 2011 for which the target or acquiror companies are based in one of the sixteen EU Neighboring Countries.	SDC Platinum database (Thomson Financial)	2001-2011	
Indicators on International collaboration networks initiated under EU Framework RTD Programmes	Survey data conducted by INCO Consortium	Inco Consortium		

### **4.2.3. Task 4.3: The effects of Internal Market and Intangible Assets on innovation diffusion**

Task 4.3 aims at analysing the effects of the policies aimed to reinforce the Internal Market on innovation diffusion/adoption, with the objective of characterising this innovation diffusion/adoption in European countries stressing the different nature of innovations and also their geographical and temporal dimensions. It includes 3 research papers.

In the case of databases used in Task 4.3, we have no new indicators to present. In fact, data are the same presented in Table 4.2.1 (see the previous pages).

### **4.2.4. Task 4.4: The effects of firms networks in the process of cross-border technological diffusion**

In the case of Task 4.4, which includes 5 working papers, indicators at the firm level have been mostly used in order to analyse firms' networks in the process of cross-border technological diffusion. Among them, some have already been used in the previous Tasks and some examples are the OECD REG-PAT database or the SDC Platinum one. In other cases, data belonging from a specific survey are presented as in the case of the WP4.24, Kuznetsova et al., (2013): "The collaboration activities in the innovation system of Russia".

Firm level data are accompanied by context data belonging from very popular sources as Worldbank and others. Please notice that the empirical analysis often concerns a considerably large number of countries focusing on the relationships among ENC and the rest of the world (this is the case of WP4.21, Usai, et al (2013): "Networks, proximities and inter-firm knowledge exchanges", WP4.22, Ondos and Bergman (2013b): "The Concurrent Impact of Cultural, Political, and Spatial Distances on International Mergers and Acquisitions" and WP4.23, Di Guardo and Paci (2013b): "Firms' transactions and knowledge flows in the European Union's Neighboring Countries").

See details in table 4.4.1.

**Table 4.4.1. Main indicators and databases used in Task 4.4 research activity**

Indicator name	Short Description	Source	Year(s)	Other Info
<b>Patent Citation Indicators</b>	The aim is to exploit the full population of patents available in OECD patent file since 1980, which provides 32 annual observations by cited and citing locations and technology, which are available at quite fine levels of detail. Annual observations are essential to understand the underlying dynamics of technological and sectoral evolution.	OECD patent database	Since 1980	
<b>Merger and Acquisition</b>	Completed Deals	SDC Platinum - Thomson Reuters	2000-2011	
<b>Population</b>	Million of resident individuals	World Bank	2000	
<b>GDP</b>	Billion International \$, constant at 2005 prices, in PPP	World Bank	2000	
<b>GDP Growth</b>	GDP annual average growth rate (%)	World Bank	2000-2011	
<b>Patent</b>	Patent applications at EPO by inventor residence and priority year, per million	OECD-REGPAT	2000-2010	
<b>Geography</b>	Euclidian distance between country capital cities (km)	Own calculation		
<b>Culture</b>	Composite index of cultural features	Kaasa (2013) based on World Value Survey and European VS		
<b>Governance</b>	Worldwide Governance Indicators (WGI)	World Bank		
<b>Risk</b>	Financial and Economic Risk (ECR)	euromoneycountryrisk.com		
<b>Democracy</b>	Unified Democracy Scores Index (UDS)	unified-democracy-scores.org		
<b>Corruption</b>	Corruption Perception Index (CPI)	trasparency.org		
<b>Russian Firms' Micro data</b>	Data are collected via the specialized survey "Monitoring of innovation behavior of Russian enterprises" carried out within the framework of HSE Basic Research Programme. This activity is executed as a part of European Manufacturing Survey (EMS). This study relies on the sample of 762 companies from Manufacturing (NACE rev 1.1 D) collected at the end of 2012. The results are representative at national and sectoral levels as well as at the level of eight federal districts.	"Monitoring of innovation behavior of Russian enterprises" Survey		

#### **4.2.5. Task 4.5: The effects of research networks within the EU Framework Program**

In order to observe and describe the effects of research networks within the EU Framework Program, the research activity has mainly focused on patenting activity and data on EU Framework Programs. It has been noticed that most part of databases has already been used in the previous tasks and, for this reason, they have already been described.

With respect to the data mainly used in Task 4.4 research activity, which includes 3 working papers, please notice also that in this case we have regional data in spite of firm level data because the dimension of the phenomenon we wanted to study is mostly related to a regional territorial dimension.

See details in table 4.5.1.

**Table 4.5.1. Main indicators and databases used in Task 4.5 research activity (1/2)**

Indicator name	Short Description	Source	Year(s)	Other Info
<b>Patents</b>	Number of patent applications to the EPO localized with respect to the inventor's country of residence in the field of ICT. Data concern 226 regions belonging from 25 members of EU during 7 years.	OECD REGPAT Database (2012)	2003-2009	
<b>FP5 and FP6</b>	Collaborative projects supported by EC. Row data have been obtained from the French Ministry of Higher Education and Research and they have been processed by EuroLIO.	French Ministry of Higher Education and Research		
<b>BERD</b>	Amount of gross regional R&D expenditure performed by the business enterprise sector in ICT.	EUROSTAT, PASCAL (INIST-CNRS)		
<b>HRST</b>	Human Resources in Science and technology.	EUROSTAT		
<b>Specialisation</b>	Degree of specialisation of a region in ICT. It is calculated by EuroLIO on the basis of PASCAL (INIST-CNRS). It is obtained by taking the ratio of two shares: the share of ICT publications of a region in its overall portfolio of publications, and the share of ICT publications in total number of publications for all regions. When the index is greater than one this means that the region is more specialized in ICT as compared to the average.	EuroLIO, PASCAL (INIST-CNRS)		
<b>PAT<sub>i,t</sub></b>	Number of patent applications from the ICT sector to the European Patents office (EPO) by region of inventor (fractional counts)	Eurostat database		
<b>RD<sub>i,t</sub></b>	Gross regional expenditures on R&D, in millions of Purchasing Power Standard (PPS) Euros, 1995 prices	Eurostat database		
<b>REG_FUND<sub>i,t</sub></b>	Regional FP funding under the information technology and society thematic areas (User Friendly Information Society in FP5, Information Society Technologies in FP6 and Information and Communication Technologies in FP7), in millions of Purchasing Power Standard (PPS) Euros, 1995 prices	Authors' elaboration on FP5-6-7 administrative database, DG RTD, Dir A		
<b>PATSTOCK<sub>i,t</sub></b>	Regional patent stock in the ICT sector	Authors' elaboration on Eurostat database		
<b>ENQ_DENS<sub>i,t</sub>, ENQ_STRH<sub>i,t</sub>, ENQ_MIXD<sub>i,t</sub>, KPI<sub>i,t</sub>, LS_DENS<sub>i,t</sub>, LS_STRH<sub>i,t</sub>, GE<sub>i,t</sub></b>	Ego Network Quality – a comprehensive measure of the knowledge accessible from a network position. ENQ values are calculated for the interregional FP collaboration network in the information technology and society thematic areas (User Friendly Information Society in FP5, Information Society Technologies in FP6 and Information and Communication Technologies in FP7) DENS refers to the cohesion, STRH to the structural holes and MIXD to the mixed approach of calculating the Local Structure component of ENQ. KP is the Knowledge Potential component, LS is the Local Structure component, LS is the Global Embeddedness component	Authors' elaboration on FP5-6-7 administrative database, DG RTD, Dir A		

**Table 4.5.1. Main indicators and databases used in Task 4.5 research activity (2/2)**

Indicator name	Short Description	Source	Year(s)	Other Info
<b>HTEMPi,t</b>	Regional employment in the high tech sectors according to the Eurostat classification (high-tech manufacturing and high-tech knowledge-intensive services)	Eurostat database		
<b>FP5-FP7 data</b>	Survey data. EU-Russia cooperation within FP5-7 (1998-2012) projects, classified by country, by discipline and by type of organisation. The synergy with the FP7 IncoNET EECA and FP6 SCOPE-EAST projects has been used.	EU CORDIS Projects Database and Questionnaires		

**Annex 4.1.****Table 4.6.1. Main indicators (1/3)**

Indicator	Short description	NUTS 0		NUTS 2	
		Obs.	Mean	Obs.	Mean
R&D expenditure	PPP (constant 2005 international \$), average 2000-2008	39	6,239,281,345.63	-	-
	Total intramural R&D expenditure (All sectors) (Millions of euro (from 1.1.1999)/Millions of ECU (up to 31.12.1998)) Average 2000-2008	-	-	271	733.44
	Percentage of GDP, average 2000-2008.	39	1.21	-	-
R&D personnel	Total R&D personnel (Total of sectors/ Head count) Average 2000-2008,	-	-	271	11843.33
EPO Patents	Applications to the EPO by applicant(s) country of residence, stock 2000-2008. Total Number.	42	11607.54	-	-
	Applications to the EPO by applicant(s) country of residence, stock 2000-2008. ICT Sectors.	39	3543.45	-	-
	Applications to the EPO by applicant(s) country of residence, stock 2000-2008. Biotechnology sector.	39	677.14	-	-
	Applications to the EPO by applicant(s) country of residence, stock 2000-2008. Nanotechnology sector.	39	92.94	-	-
	Applications to the EPO by applicant(s) country of residence, stock 2000-2008. Environment sector.	39	856.82	-	-
	Applications to the EPO by inventor(s) country of residence, stock 2000-2008. Total Number.	42	11973.60	269	1647.39
	Applications to the EPO by inventor(s) country of residence, stock 2000-2008. ICT Sectors.	39	3641.76	-	-
	Applications to the EPO by inventor(s) country of residence, stock 2000-2008. Biotechnology sector.	39	697.64	-	-
	Applications to the EPO by inventor(s) country of residence, stock 2000-2008. Nanotechnology sector.	39	94.09	-	-
	Applications to the EPO by inventor(s) country of residence, stock 2000-2008. Environment sector.	39	879.10	-	-



**Table 4.6.1. Main indicators (2/3)**

Indicator	Short description	NUTS 0		NUTS 2	
EPO Patents	Domestic ownership of inventions made abroad: number of patents owned by resident(s) of country x (applicant) that have been invented by at least one foreign resident (inventor) from country y. Stock 2000-2008.	39	2663.59	-	-
	Foreign ownership of domestic inventions: number of patents invented by resident(s) of country x (inventor) that are owned by at least one foreign resident (applicant) from country y. Stock 2000-2008.	39	3458.28	-	-
	Patents with at least a foreign co-inventor: number of patents invented by a resident of country x with at least one foreign inventor from country y. Stock 2000-2008.	39	2524.54	-	-
	EPO total patents invented by resident(s) of country x (inventor). Stock 2000-2008.	39	14236.69	-	-
	EPO total patents owned by resident(s) of country x (applicant). Stock 2000-2008.	39	12875.23	-	-
	Percentage of patents with at least a foreign co-inventor. Stock 2000-2008.	39	40.79	-	-
	Percentage of patents invented abroad. Stock 2000-2008.	39	28.20	-	-
	Percentage of patents owned by foreign residents. Stock 2000-2008.	39	50.18	-	-
PCT Patents	Patent filed under the PCT by applicant(s) country of residence, stock 2000-2008. Total patents.	42	9507.32	-	-
	Patent filed under the PCT by applicant(s) country of residence, stock 2000-2008. ICT sectors.	39	3191.65	-	-
	Patent filed under the PCT by applicant(s) country of residence, stock 2000-2008. Biotechnology sector.	39	693.40	-	-
	Patent filed under the PCT by applicant(s) country of residence, stock 2000-2008. Nanotechnology sector.	39	91.97	-	-

**Table 4.6.1. Main indicators (3/3)**

Indicator	Short description	NUTS 0		NUTS 2	
PCT patents	Patent filed under the PCT by applicant(s) country of residence, stock 2000-2008. Environment sector.	39	747.76	-	-
	Patent filed under the PCT by inventor(s) country of residence, stock 2000-2008. Total patents.	39	10404.37	-	-
	Patent filed under the PCT by inventor(s) country of residence, stock 2000-2008. ICT sectors.	39	3219.14	-	-
	Patent filed under the PCT by inventor(s) country of residence, stock 2000-2008. Biotechnology sector.	39	712.19	-	-
	Patent filed under the PCT by inventor(s) country of residence, stock 2000-2008. Nanotechnology sector.	39	94.06	-	-
	Patent filed under the PCT by inventor(s) country of residence, stock 2000-2008. Environment sector.	39	752.10	-	-
	Domestic ownership of inventions made abroad: number of patents owned by resident(s) of country x (applicant) that have been invented by at least one foreign resident (inventor) from country y. Stock 2000-2008	39	2432.36	-	-
	Foreign ownership of domestic inventions: number of patents invented by resident(s) of country x (inventor) that are owned by at least one foreign resident (applicant) from country y. Stock 2000-2008.	39	2921.97	-	-
	Patents with at least a foreign co-inventor: number of patents invented by a resident of country x with at least one foreign inventor from country y. Stock 2000-2008.	39	2308.90	-	-
	PCT total patents invented by resident(s) of country x (inventor). Stock 2000-2008.	39	11648.79	-	-
	PCT total patents owned by resident(s) of country x (applicant). Stock 2000-2008.	39	10630.46	-	-
	Percentage of patents with at least a foreign co-inventor. Stock 2000-2008.	39	33.23	-	-
	Percentage of patents invented abroad. Stock 2000-2008.	39	25.42	-	-
	Percentage of patents owned by foreign residents. Stock 2000-2008.	39	40.50	-	-

### 4.3. References

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## **5. Work Package 5: Current Status of the Social, Cultural and Institutional Environment in Neighbouring Countries**

### **5.1. Introduction**

Work Package (WP) 5, named "Social, Cultural and Institutional Environment", represents a very large research effort within the SEARCH project. The distinctive characteristic of WP5 is that it is fundamentally a crosscutting package, providing the contextual framework to most topics and issues discussed in other WPs. In fact, the core elements of WP5 are strongly interrelated to other aspects studied in the rest of SEARCH: that is, institutions, social factors and culture shape the setting where economic actors take decisions and operate.

In this respect, WP5 is designed to explore the current status of the social, cultural and institutional environment in the European Neighbouring Policy (ENP) area, and to identify the impact of current changes and transformations on the prospects for improved economic development, social cohesion, and stronger integration with the European Union (EU) and, in particular, with European New Member States (NMS). Within WP5 researchers suggest that in order to achieve cohesion among cores and peripheries, sustained process of economic development and well-being, good-quality institutional arrangements are essentially required. These should ensure an efficient long-term upgrading of capabilities, functions, and networks at various levels.

Although WP5 generally deals with the institutional environment of the ENP region, its content is extremely heterogeneous, covering a wide range of aspects linked to the large notion of institutions. Aspects of formal and informal institutions in ENP countries are addressed by researchers as well as elements linked to culture business environment, social cohesion and inclusion. As such, this report offers a relevant outlook of strengths, weaknesses, challenges, obstacles and opportunities that ENP countries face with respect to their institutional setting.

## 5.2. Datasets used by tasks

### 5.2.1. Task 5.1: Social capital in ENP countries and regions

This research task focuses on the specificities of social capital in Central and Eastern European countries, both those already members of EU (NMS) and those who are included in the ENP framework (including the countries who might apply for membership in possible future enlargement rounds).

Parts (2013)'s paper employs data on social capital from the European Value Survey 2010 (EVS) (<http://www.gesis.org/en/services/data-analysis/survey-data/european-values-study/>). For the analysis of the determinants of social capital, the data from the latest wave were used: for most countries the indicators pertain to the year 2008, except for Belgium, Finland, the United Kingdom, Iceland, Italy, Sweden, and Turkey (2009). In order to analyse the dynamics of social capital over time, the latest data were compared to those of year 1990. As many European countries outside EU were not included in the earlier rounds of EVS survey, the analysis of the changes in social capital levels covers less countries – 14 from WE and 10 NMS.

With respect to Hlepas (2013), this paper makes use of the Global Competitiveness Report (GCR) published by the World Economic Forum (WEF). Based on annual Executive Opinion Surveys (<http://www.weforum.org/reports/global-competitiveness-report-2012-2013>), the GCR provides a Global Competitiveness Index for each country (GCI), reflecting different aspects of the competitiveness of an economy. The WEF (World Economic Forum, 2011) defines competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be earned by an economy. The Global Competitiveness Index includes a weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into 12 interrelated pillars of competitiveness (Quality of Institutions, Infrastructure, Macroeconomic Environment, Health and Primary Education, Higher Education and Training, Goods Market Efficiency, Labor Market Efficiency, Financial Market Development, Technological Readiness, Market Size, Business Sophistication, Innovation). The GCI uses various data sources for statistics but also the World Economic Forum's annual Executive Opinion Survey (Survey) to capture concepts that require a more qualitative assessment (WEF 2011). Concerning the core element of social capital, interpersonal or generalized trust, this is reflected through the percentage of people who answered that "others" in their society could be trusted. Percentage of people

who trust strangers in a society is obviously a good measure of cooperative predisposition. Data are from 2012, Gallup World Poll (<http://www.gallup.com/poll/123653/Resources.aspx>) & World Values Survey (<http://www.worldvaluessurvey.org/>), elaborated by the Legatum Institute (2012).

In order to measure social capital more directly and at a sub-national level, Tatarko and Schimdt (2013) interview a sample of Russian adults with e-questionnaire<sup>5</sup>. The sample included 634 respondents (304 men and 330 women), aged 20 to 59 years, with a mean age of 38,4 years and a median age of 41. We have used a simple random sample. Respondents were recruited in seven different regions of Russia: Moscow Region- 16.5% of the sample, Irkutsk Region (16.4%), Kemerovo Region (38%), Transbaikal Province (14.6%), Republic of Bashkortostan (10.8%), Stavropol Province (3.3%), Chechen Republic (0.4% ) of the total sample. The sample was relatively highly educated, with 2.4% having completed general secondary education, 21.1% specialized secondary education, 21.5% incomplete indicators higher education(not finished), 55% higher education and exhibited substantial heterogeneity of occupations. Completed measures assessing the three dimensions of social capital(perceived social capital, civic identity, generalized trust) and monetary attitudes were assessed with the Russian version of the Money Beliefs and Behavior Scale (MBBS).

Similarly, Tatarko (2013) develop the analysis of socio-psychological capital based on questions to a sample of three different ethnic groups in Russia, and construct measures of trust, civic identity and perceived social capital.

Finally, the quantitative study carried out by Akçomak and Müller-Zick (2013) is based on data of the 30 European countries. It has been conducted every two years since 2001. ESS is a public database. The data, questionnaires and other related material can be downloaded from the ESS website <http://www.europeansocialsurvey.org/>. To measure generalised trust respondents were asked to indicate on a 0-10 scale.

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<sup>5</sup> This database is financed by other Russian funds and it is not publicly available.



### 5.2.2. Task 5.2: Impact of cultural diversity on innovative performances

Cultural diversity is a concept that includes very different aspects, ranging from values and norms to elements such as trust. For this reason, different indicators can be used as proxy for cultural diversity. In Task 5.2, there are several examples of how this concept can be operationalized empirically.

The paper by Kaasa (2013) employs data from the 2009 and 2010 World Value Survey (WVS) (<http://www.wvsevdb.com/wvs/WVSData.jsp>). Although some Neighbouring Countries are not covered by these databases, WVS provides a valuable measurement of the concept of culture. Both WVS waves are multi-country surveys that are repeated every nine years and cover an increasing number of countries. In order to describe four cultural dimensions, the indicators were chosen based on the Hofstede's (2001) overview of the characteristics and differences of dimension extremes, and also resting on the previous analyses describing these cultural dimensions with the help of data from new surveys (see Kaasa and Vadi, 2010; Kaasa et al., 2012). Unfortunately, while the referred studies used the data from the European Social Survey, the choice of suitable variables for constructing the indicators of cultural dimensions is different and poorer in the EVS/WVS (<http://www.europeanvaluesstudy.eu/evs/data-and-downloads/>). Therefore, the dimensions of power distance, uncertainty avoidance and masculinity were each described by four indicators and individualism by three indicators. In order to capture the information of initial indicators into corresponding dimensions, a confirmatory factor analysis (the principal components method) was performed.

In Hlepas (2013), the concept of cultural diversity is explored by means of several indicators. These include measures of ethnic fractionalization from Fearon (2003), cultural diversity index by Okedji (2011), and acceptance of diversity. The latter is based on seven indicators, as follows:

- Firstly the *Rule of Law*, since this is of particular importance to any kind of minorities.

The Rule of Law index shows the extent to which individuals within a society respect property rights, the police and the judiciary system, as well the quality of police and legal safeguards. Data are from 2010 World Bank Governance Indicators (<http://info.worldbank.org/governance/wgi/index.asp>), ordinal rating -2 to 2. Elaboration by Legatum Institute, 2011.

- Directly connected to the Rule of Law is also *confidence in the judicial system*. A reliable *judiciary* is of particular importance for the protection of minorities and individuals with distinct opinions, attitudes and lifestyles. The question was: Do you have confidence in each of the following or not? How about the judicial system? Data are from 2010 Gallup World Poll (<http://www.prosperity.com/#!/?aspxerrorpath=%2Frankings.aspx> and <http://www.gallup.com/poll/123653/Resources.aspx>), elaboration by Legatum Institute, 2011.
- *Tolerance for Immigrants* obviously is an appropriate measure of public acceptance for diversity. The question was: Is the city or area where you live a good place or not a good place to live for immigrants? Data are from 2010 Gallup World Poll. Elaboration by Legatum Institute, 2011.
- *Tolerance for ethnic minorities* is also a proper measure of public acceptance for diversity. The question was: Is the city or area where you live a good place or not a good place to live for ethnic minorities? Data are from 2010 Gallup World Poll. Elaboration by Legatum Institute, 2011.
- *Generalized trust* score refers to percentage of people who answered that "others" their society could be trusted. Percentage of people who trust strangers in a society is obviously a good measure of public acceptance for diversity. Data are from 2010, Gallup World Poll & World Values Survey, elaborated by the Legatum Institute.
- Concerning values, there is a fundamental dichotomy between *secular-rational values* on the one hand and *traditional values* on the other. This dichotomy reflects the contrast between societies in which religion and traditions are very important and those in which it is not. It replicates the cleavage between societies where traditionalist ideals of an "undying" "sacred" community prevail and societies where rationalist ideals of secular community overcome. A wide range of behavioural orientations are closely linked with this fundamental contrast of values. Societies near the traditional pole emphasize religion, pride on own nationality, respect for authority, familism and obedience. Societies with secular-rational values have the opposite preferences on all of these topics and promote independent thought (Inglehart and Welzel 2005). It is obvious that secular-rational values pave the way for the acceptance of cultural diversity. Data on values (composite index), are from World Values Survey, 4th and 5<sup>th</sup> round (2000 and 2006) (<http://www.worldvaluessurvey.org/>). Although these data were collected in 5-

10 years earlier than the rest of the data concerning acceptance of diversity (e.g. tolerance for immigrants), they can be used as an indicator of prevailing orientation within the society in a certain country, since values usually do not change so fast over time.

The role of cultural diversity is also investigated in Periac (2013). In this paper a measure of network density as a proxy for cohesiveness is constructed, following Reagans and Zuckerman (2001). Density is calculated as the number of existing links in the network divided by the number of possible links (i.e. [number of actors in the network] X [number of actors in the network - 1]). Data come from OECD Regpat 2010.

In Lebedeva and Schmidt (2013), culture and attitudes towards innovation are proxied by means of Schwartz Value Survey (SVS) (Schwartz, 1992). This is a 56-item measure now validated in more than 60 countries. Participants rate the importance of 56 values on a scale from -1 (*opposed to my values*) to +7 (*of supreme importance*). Each value item provides a key phrase plus a parenthetical elaboration. To illustrate, self-direction includes the item "*CREATIVITY (uniqueness, imagination)*" and universalism includes the item "*A WORLD OF BEAUTY (beauty of nature and the arts)*." Forty-five of the 56 values are grouped into the 10 composites and several additional items are counted in the higher order dimensions. Analyses of SVS data can be performed at three levels: (1) individual items, (2) the 10 cross-culturally meaningful values composites, and (3) two higher-order dimensions of Self-transcendence (universalism, benevolence) vs. Self-enhancement (achievement, power); and Openness to change (self-direction, stimulation) vs. Conservation (tradition, conformity, security).

SVS is also used in related papers such as Lebedeva and Grigoryan (2013) and Lebedeva, Osipova and Cherkasova (2013) in order to operationalise notions such as trust and cultural differences in values.

### 5.2.3. Task 5.3: Quality of national institutional environments

National institutional environment is a concept encompassing several different aspects of regulation, democracy, political stability and others. It is not easy to measure with only one indicator the relevance or the quality of national institutions. Therefore, papers in WP5 that addressed the issue of the importance of national institutions for countries welfare and performance have employed a number of

different datasets that provide information on different and notable aspects of institutions. In particular, databases such as World Bank World Governance Indicators and surveys such as the Enterprise Survey and Ease of Doing Business represent very important tools for the analysis of the role of institutions and for cross-country comparison.

In the paper by Bartlett, Čučković, Jurlin, Nojković, Popovski (2013), the institutional environment refers to the development of democratic institutions, which include both formal institutions such as parliaments and political parties as well as informal ones, such as civil society organisations. Authors focus on selected institutions as measured by the Worldwide Governance Indicators (WGI) from the World Bank Governance Matters database (Kaufmann et al., 2010). They also make use of data from other international sources such as Freedom House, Transparency International, UNESCO and the World Bank Doing Business database.

Hlepas (2013), who offers an interesting analysis of dynamics of convergence and divergence in institutional quality across countries and time, employs data from World Economic Forum (<http://www.weforum.org/reports/global-competitiveness-report-2012-2013>) and it is based on the selection of the most appropriate indicators. Four pillars of institutional quality are individuated: "Government Effectiveness", "Regulatory Quality", "Rule of Law" and "Control of Corruption" as well as a "composite" Index of Institutional Quality for each country. According to the different "waves" of Europeanization and geographical criteria, several groups of countries are comparatively analysed: EU 15 old member states, EU 12 new member states, EU 27 of today, candidate countries, ENC countries (south and east) and Black Sea countries.

The paper by Kaasa (2013) offers an explanatory analysis of governance in most EU and NCs. This is based on the employment of World Governance Indicators (WGI) similar to Bartlett et al. (2013) above. The cross-country comparison of governance quality is based on indicators such as: Voice and Accountability, Political stability, Government effectiveness, Regulatory quality, Rule of law and Control of corruption. Besides looking at the six indicators separately, the mean values of six indicators are calculated and a latent factor is composed with the help of confirmatory factor analysis that captures all the information about the governance quality into one indicator, enabling a simple comparison of countries according to governance quality.

Revilla-Diez, Schiller and Zvirgzde (2013) provide a comparative assessment of institutional change in NCs versus East Asian countries. The role of both formal and informal institutional features is explored by making use of World Bank Doing Business 2012 Report data. (<http://www.doingbusiness.org/~media/FDPKM/Doing%20Business/Documents/Annual-Reports/English/DB12-FullReport.pdf>). Therefore, the focus is on characteristics of the national institutional environment related to regulation (a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency). Furthermore, data from World Bank Enterprise Survey (<http://www.enterprisesurveys.org/data>) is also employed for South Korea, Morocco, Ukraine and Thailand. This allows exploring other attributes of the institutional setting such as corruption, crime and finance among others. Finally, another measure employed in the paper is proposed by the World Economic Forum, which since 2005 has based its competitiveness analysis on the Global Competitiveness Index (GCI), ([http://www3.weforum.org/docs/WEF\\_GCR\\_Report\\_2011-12.pdf](http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf)) a comprehensive instrument for measurement of the micro- and macroeconomic foundations of national competitiveness.

#### **5.2.4. Task 5.4: Local Business Culture and SMEs**

In this research task, the quality of formal and informal institutional settings that influence SMEs development and performance in NCs has been analysed. Measuring business culture is not straightforward and the two contributions of this task have adopted different strategies to cope with this notion.

Bartlett, Popa and Popovski (2013) provide an investigation of entrepreneurship development in transition countries and Eastern ENP countries. They make use of World Bank data from the Entrepreneurship Survey 2010 (<http://www.doingbusiness.org/data>). This allows making cross-country comparisons in terms of market entry density rates, as a measure of entrepreneurial activity. The analysis also benefits from the employment of the Ease of Doing Business Survey 2010 conducted by World Bank, through which an assessment of obstacles of starting an economic activity, such as number of procedures, cost of business and other barriers to entry, is made.

In the second paper, Zvirgzde, Schiller and Revilla-Diez (2013), focuses on the quality of different aspects of national institutional settings that spur SMEs development and also multinational firms' activity. A new enterprise survey in Ukraine has been conducted by authors to this aim, thus gathering primary data on a group of local SMEs and foreign affiliates ([see SEARCH website](#)). Overall 305 domestic SMEs and 153 subsidiaries of MNEs from the food and machinery & equipment sectors were surveyed in different three regions of Ukraine: the capital region Kyiv, close to the EU border region Lviv (the Western region) and far from the EU border region Kharkiv (the Eastern region). The criteria of selection of the regions were based on the FDI inflows in these regions and geographical position towards the EU border. The criteria of selection of the sectors of the survey firms were determined by the strong presence of companies with FDI in these sectors (Table 2). The survey companies were selected randomly from the manufacturing firms. The empirical data of the enterprise survey is represented by a set of a standardized questionnaire data. There were two questionnaires developed: one for the MNEs and one for domestic SMEs, both with closed likert-scale questions. Each questionnaire consisted of 6 thematic blocks. One separate block was devoted specifically to the investigation of institutional environment, covering the questions of the assessment of the quality of such aspects of an institutional framework as: enforceability of legislation and regulation policies, physical and intellectual property rights protection, reliability of oral contracts and agreements, central and regional government. In order to analyse the perceptions towards institutional quality at a certain location firms were asked to assess on the scale from 5 (very good) to 1 (very bad) the quality of the above elements of institutional environment. Table 1 below reports the response rates of the survey.

**Table 1. Response rate in different regions**

	<b>Lviv region</b>	<b>Kyiv region</b>	<b>Kharkiv region</b>	<b>TOTAL</b>
Survey <b>subsidiaries of MNEs</b>	50	53	50	153
Contacted foreign firms	280	298	285	863
<i>Response rate</i>	17,9 %	17,8 %	17,6%	17,7 %
Survey <b>domestic SMEs</b>	100	105	100	305
Contacted domestic SMEs	350	402	385	1137

<i>Response rate</i>	28,6 %	26,1 %	26,0%	26,8 %
<b>Total surveyed firms</b>	<b>150</b>	<b>158</b>	<b>150</b>	<b>458</b>
<b>Total contacted firms</b>	<b>630</b>	<b>700</b>	<b>670</b>	<b>2000</b>
<b>Total response rate</b>	<b>23,8 %</b>	<b>22,6 %</b>	<b>22,4%</b>	<b>22,9 %</b>

Source: Zvirgzde, Schiller and Revilla-Diez (2013)

### 5.2.5. Task 5.5: Institutional structure of vocational, educational and training (VET) systems

This research task is based on one working paper by Bartlett (2013), who investigates the ability of education systems in the ENP region to offer skilled workforce that is matched to the changing needs of the labour market. The comparative analysis is carried out for 5 countries, including Moldova, Ukraine, Croatia, Turkey and Egypt. Data comes from National Labour Force surveys of each country.

### 5.2.6. Datasets used in Task 5.6: Local governance and social participation

This research task explores the state of quality of life and local governance in the ENP area, with specific reference to crucial aspects such as social cohesion and trust towards national and local governments. As such, the task encompasses several different aspects of institutions and papers adopt different measures to proxy these concepts.

Hlepas (2013) employs data from the European Quality of Life Survey (2012) ([http://www.eurofound.europa.eu/surveys/eqls/2011/index.htm?utm\\_source=email\\_press&utm\\_medium=email&utm\\_campaign=childpoverty20121018](http://www.eurofound.europa.eu/surveys/eqls/2011/index.htm?utm_source=email_press&utm_medium=email&utm_campaign=childpoverty20121018)). This contains information only on the EU 27. Thus, it is not possible to have comparable outcomes for the neighbouring and candidate countries. Data on candidate countries will be published later on in 2013. Thus, the analysis focuses on two different groups of countries:

a) The 15 old members of the EU: (EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom)



b) The 12 new EU member states (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia)

For each indicator analysed and presented in the following chapter, the working team has produced analytical diagrams with countries' national scores and average scores of EU15 and EU12.

This Survey offers indication on the following elements: Trust in governments, Trust in local or municipal authorities, General Satisfaction, Perceived tensions on social inequity and Inequality of income distribution.

Bartlett and Popovski (2013) provide a sound analysis of the relationship between participation of people in social a political life and the quality of governance in Ukraine. Both quantitative and qualitative data are used in this paper.

First, local governance and social cohesion are measured by means of information collected in European Quality of Life Survey, European Working Conditions Survey, European Social Survey and the EBRD Transition in Life Survey. The European Quality of Life Survey is based on research at the Dublin Economic and Social Research Institute

([http://www.eurofound.europa.eu/surveys/eqls/2011/index.htm?utm\\_source=email\\_press&utm\\_medium=email&utm\\_campaign=childpoverty20121018](http://www.eurofound.europa.eu/surveys/eqls/2011/index.htm?utm_source=email_press&utm_medium=email&utm_campaign=childpoverty20121018)). It defines quality of life using seven indicators: 1. income, living standard and deprivation; 2. subjective well-being; 3. work-life balance; 4. family life, 5. housing and local environment, 6. health and health care and 7. quality of society. Quality of life studies focus on the individual and refer to the overall well-being of individuals measured by social indicators. (Nolan *et al.*, 2003). European Working Conditions Survey argues in the Introduction of the Executive Summary, "Work is an important dimension in many long-standing European policies and norms, covering aspects such as equal opportunities for men and women, active ageing, working time, lifelong learning, work organisation, work-life balance, health and safety, labour standards and the prevention of discrimination, work-related stress and in-work poverty. The EWCS can contribute to discussions on the importance of work in relation to well-being at individual and societal level." (Eurofound, 2012, p.8). European Social Survey, as its first coordinator Roger Jowell argues, is "dedicated to discovering more about the changes in Europe's social, political and cultural fabric (and) providing a means by which societies can judge themselves –at least partly- according to how their citizens feel about and fair in the world they inhabit." (European Social Survey, 2012) These changes are investigated using "twelve broad topics": 1. trust in



institutions; 2. national, ethnic, religious identity; 3. political engagement; 4. well-being, health and security; 5. socio-political values; 6. demographic composition; 7. moral and social values; 8. education and occupation; 9. social capital; 10. financial circumstances; 11. social exclusion and 12. household circumstances. The survey is undertaken every two years and at each round some additional topics are investigated. EBRD together with the World Bank has undertaken research on individuals and households in 2006 and 2010 in 30 countries of Eastern Europe and Central Asia, with the aim of understanding how people's lives have been changed and shaped since the late 1980s. The 2010 survey covers five broad topics: 1. impact of the global economic crisis; 2. attitudes and values; 3. governance and public service delivery; 4. corruption and trust and 5. gender differences in social integration.

Second, fieldwork in Ukraine was aimed at collecting qualitative data, through semi-structured interviews on local governance.

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